

Philosophical foundations of neuroscience

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In this tome of wide ranging scope the authors continue to be interested in the philosophical analysis of non-philosophical disciplines. Some of the topics discussed technically in Max Bennett's 1997 book *The idea of consciousness* are now philosophically situated. For Peter Hacker, the present volume is the second comprehensive critique of a whole field of inquiry, after *Language, sense and nonsense* published in 1985 with Gordon Baker. Two decades ago intellectual opportunism was seen as pervasive in the modern theories of language; today transgressions of the bounds of sense are found to be ubiquitous in the theories of mind inspired by neuroscience.

The book has four parts and two appendices. The first part is a historical survey of philosophical problems posed by neuroscience. The second part assails present conceptual confusions surrounding the study of cognitive, cogitative, sentient, and volitional faculties. The third part is concerned with difficulties and misconceptions related to the study of consciousness and self-consciousness. The final part contains a methodological rebuttal of reductionism in neuroscience. The appendices focus, respectively, on the work of two philosophers of mind, Daniel Dennett and John Searle.

A more appropriate title for *Philosophical foundations of neuroscience* would have been *The fallacious foundations of neuroscience*, since its tone is overwhelmingly negative and criticisms far outnumber constructive attempts. The book is dominated by the charge of massive

misdirection in the theorizing of neuroscience research. The arguments are conducted in a strictly academic manner but the charge has indirect implications for the probity of the well funded professional field of neuroscience. The book may be seen, therefore, as an extensive attack on the neuroscience establishment, despite the authors' contrary assertions. Indeed, if one looks for neuroscience theorizing not authored by Gazzaniga, Edelman, Blakemore, Churchland(s), Dennett, Sperry, Crick, Searle, Gregory, Damasio, and their immediate collaborators – all of whom are accused of incoherence – one will find that very little remains available. The authors candidly include in the literature criticized one article contributed by Bennett (p. 163).

The conceptual critique presented in this book is convincing and powerful. It touches upon too many special aspects to be detailed here. The negative tone stems primarily from the sharp distinctions adhered to by the authors between the non-overlapping fields of psychology and neurophysiology and, similarly, between philosophical methods and empirical methods. Philosophy and science are enterprises concerned with different (kinds of) things, Bennett and Hacker contend; incoherence and conceptual confusions ensue from rejecting this dichotomy. The book is, in fact, an outstanding exercise in applying all these distinctions.

The method employed throughout the book is that of “connective analysis.” To clarify this term, Bennett and Hacker refer to the philosopher Peter Strawson, who defined it as an analysis exercised on a “model of an elaborate network, a system, of connected items, concepts, such that the function of each item, each concept, could, from the philosophical point of view, be properly understood only by grasping its connections with the others, its place in the system – perhaps better still, [on] the picture of a set of interlocking systems of such kind” (Strawson 1992, p. 19). In other words a multitude of interdependent ideas may not be reduced to separate entities without

loss in understanding. *Connective* analysis keeps concepts in context and preserves complexity. This is a bit ironic, though, given the etymology of the word “analysis.”

The connections to be grasped are those among current concepts employed in neuroscience and their antecedents in the history of philosophizing about the mind. Bennett and Hacker believe that from Aristotle to contemporary neuroscientists the progression of empirical clarifications in physiology was paralleled by a cascading succession of conceptual confusions. They define and describe the persistent attribution of physiological or psychological capacities to various organs instead of their attribution to the whole organism as “a *mereological fallacy* (mereology being the logic of the relations between parts and wholes)” (p. 29). It is seen as a conceptual error passed on in various and aggravated forms from Descartes to Sherrington to Eccles to most of today’s neuroscientists. In the past, great neurobiologists were attracted by Cartesian dualism - and many still are today. Bennett and Hacker describe what in their view is a correct alternative to the concept of mind prevalent throughout the history of philosophizing on this subject - an alternative that, they maintain, ceased to be followed after Aristotle: “Had they [Descartes, Eccles, etc.] heeded Aristotle in thinking of the mind not as an entity but as an array of powers or potentialities, they would have been much closer to the truth, and would not have become enmeshed in insoluble problems of interaction [between mind and body]” (p. 52).

The historical exposition is remarkably clear. It joins similar presentations of current states of theorizing in various biosciences as being entrenched in their respective conceptual traditions (e.g. Schlichting & Pigliucci 1998). However, the narrative is conveniently skewed and leaves out certain facts. Other authors have offered significantly different, yet compelling, histories of the mind-body problem (see Uttal 1978, p. 37-85). Even in the authors’ description, Eccles’s three-world conception (of physical things, mental things, and abstract things) is obviously not

dualistic. And the historical tradition is richer not only for the relatively distant past but also for the twentieth century. Important neurologists/psychiatrists did not cling to the thread of dualism, while the holistic approach was not totally absent (a good example is Goldstein 1995).

As a corollary, Bennett and Hacker hold that scientific inquiry may not be relevant at all to the study of history. Any empirical inquiry into human history would be conceptually flawed. In a previous book Hacker identifies such an attempt as being an instance of scientism, which he characterizes as “the illicit extension of the forms and methods of enquiry in the natural sciences to domains for which they are inappropriate” (Hacker 2001, p. xi). In my opinion this objection is imprecise, striking, and awry. It puts archaeology, anthropology and other forms of inquiry in limbo. Humans (and other animals) *are* natural, *are* part of nature, *evolved* naturally. The proximate environment to humans is no longer the cave but human history is *still* part of the natural history. Human thinking *is also* natural. Institutions and artifacts created by humans (including the most advanced technologies and the greatest works of art) sprang from thought, skill and social interaction, and may legitimately be object of empirical inquiry. Insofar as the results may be confused they should be subject to philosophical critique and conceptual *elucidation*; but being so does not make empirical inquiry into the past a priori non-sensical. Human history is not only social history, political history or ethic-normative history but also (neuro)biological history. Bennett and Hacker overreach when they consider neuroscience (and science generally) as an endeavor useless for making significant contributions to the study of history. Genuine questions about the past may not be approached without hints from science and without the explanatory restraints imposed by it. Whose domain is the elucidation of the beginning of life on earth? Is there any precedence to be established between anthropology and neurology? Whose *object of study* came first and how did they go together? Answering such

questions may be relevant, even important, for the study of human history. Employing neuroscience toward such types of inquiry does not concern neuroscientists today; apparently it does concern Hacker that it may happen in the future.

Some of the implicit assumptions held by Bennett and Hacker are vulnerable to precisely the sort of analysis that they practice. For instance, the psychological constitution of humans (the term “human nature” is used a few times) and the complexity of consciousness are seen as extremely static, seemingly unchanged over evolutionary time and independent of socio-historical and geographical context. Furthermore, the meaning of certain expressions is unclear. What is the “normal functioning of the brain” (p. 65) from an evolutionary or even an historical point of view? The set of powers and the range of human capacities *certainly* changed over time. The psychological attributes and their correlative neural concomitants undergo change; people alive today differ considerably in their capacities from people alive even in ancient Greece. This is not a relativistic formulation but one positively related to the possibility that humans are phenotypically more plastic than it is ascertained and accepted right now in the (neuro)biological literature.

Overall, this book contains a valid critique, although some arguments are weak. For instance, the problem of the variability of word meaning has cultural-context connotations ignored by the authors. Inattention to its complexity puts Bennett and Hacker in a paradoxical situation: they argue brilliantly that much conceptual confusion in neuroscience is due to received ideas gradually modified by individuals, but they also consider such a process as *the* legitimate way of changing common word meaning.

The acute criticism is also the effect of a collision between different standards of linguistic rigor. Bennett and Hacker exhibit an analytic bend. They demand a precise and clear use of

words. The neuroscientists whose work they examine are less demanding in this respect, sometimes going to the opposite extreme. Colin Blackmore, for instance, writes: “[I do not] think that the employment of common language words (such as map, representation, code, information and even language) is a conceptual blunder . . . Such metaphorical imagery is a mixture of empirical description, poetic license and inadequate vocabulary” (quoted on p. 79).

Scientists claiming poetic license as a legitimate means of expression is a recent peculiarity. The critique contained in *Philosophical foundations of neuroscience* marks, therefore, a new twist in the science wars. The accusation of circularity made to the reductionist type of explanation (on p. 377: “the very statement of the eliminativists’ claims presupposes the non-vacuous use of the concepts which the eliminativist contends are vacuous”) is similar to the circularity of the relativist position in epistemology. Almost in the same place comes the charge of impressionistic imprecision: “if the eliminativists are right . . . there is no such thing as knowing, believing or opining” (p. 376). To stand, the case against reductionism should certainly be made in a more sophisticated manner. Nevertheless, the accusations just quoted are symptomatic, as they are usually aired by scientists and addressed to their (postmodern) critics. The word “postmodernism” does not appear in this volume but the authors indirectly imply that neuroscientists, psychologists, and cognitive scientists have fallen into the postmodern morass, with troublesome consequences for their epistemological stance. With scientists accused of libertinism in their use of language and *defending* that practice, we are coming full circle. This illustrates how complicated the “wars” have become and how unforeseeable will be their (eventual) resolution.

The message of this interesting treaty consists in the urge to rephrase the psychological and neuroscientific discourse in such a way that the questions asked, the choice and purpose of

the experiments conducted, and the description of the results obtained will withstand a rigorous conceptual analysis of meaning. The constructive suggestions are powerful but in great need of elaboration; the authors believe that the constructive task is not primarily for the philosophers. The book is a valuable effort to persuade neuroscientists that their research and theorizing have important philosophical aspects that cannot be overlooked. It is worrying to see (but enjoying to see it proved in outstanding manner) that for some scientists truth, clarity, and consistency seem not to matter. Yet, this is still a mild statement. In my opinion, criticism of the quality practiced by Bennett and Hacker would be indeed devastating if applied to the discourse currently practiced in the *social* sciences.

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