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Original Citation:

Availability:

This version is available at: 11577/3261968 since: 2018-02-27T23:24:57Z

Publisher:

Published version:

DOI: 10.14658/URF-6-2

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Georg Northoff, *Minding the Brain: A Guide to Philosophy & Neuroscience*, Palgrave Macmillan, 2014, pp. 581, £70, ISBN 978023028354

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For a long time, the study of mind has been an exclusive privilege of Philosophy. Epistemic dispositions, the relation between mind, body and world, the nature of language and intentionality, even cognitive functions and emotional states have all been studied and discussed by the vast majority of philosophers. Nowadays, however, a purely philosophical perspective risks being quite limiting in the investigation of some types of these issues. In the last century, the neuroscientific revolution has changed the rules of the game, introducing new methodological and epistemological tools that allow the study of the mind by means of the brain. In this regard, it seems impossible to proceed towards any new theory of mind without discussing philosophical theses as well as relating them with empirical findings of Neuroscience and Cognitive sciences in general.

For this reason, Georg Northoff's "Neurophilosophy" could represent an optimal approach to explaining the relationship between mind and brain with both logical coherence and empirical plausibility. In *Minding the Brain: A Guide to Philosophy and Neuroscience*, Northoff exposes what he calls a "neurophilosophical approach" (p.x), by means of which he could analyse a wide range of issues, such as the mind-brain problem, the nature of consciousness, and the empirical structure of the self. This interdisciplinary approach needs a pluralist epistemological basis, grounded accurately between empirical and theoretical domains; therefore, a juxtaposition of new neuroscientific findings and logical theses is not sufficient to justify, ideologically, any classic theories about the mind. At the same time, Philosophy cannot passively approve data without challenging their empirical consistency and the scientific conditions of possibility.

The book's title itself suggests the author's intention to connect different epistemological and ontological domains. The motto "minding the brain" highlights the aim to "recall to mind the brain", but not in a memory-related sense. Indeed, Northoff expressively affirms his purpose to link the Philosophy of mind

with Neuroscience, but not in a reductive way (as some other neurophilosophical approaches do). In this regard, the author stands in the way of the reductive Neurophilosophy (p.4-6)—e.g. Patricia Churchland’s account in *Neurophilosophy: Toward a Unified Science of the Mind-Brain*, which aims to incorporate Philosophy into the general and variegated range of the so-called Cognitive Sciences, and consequently to raise Neuroscience to the main research about the binomial mind-brain. Nevertheless, it is quite inappropriate to place the author’s perspective as a polar opposite of reductivism; in fact, non-reductivism does not entail an anti-naturalist view, according to which the Philosophy of mind should have complete autonomy from Neuroscience. Rather, Northoff tries to stand in the middle, putting forward a Neurophilosophy that is “[...] non-reductive primarily in the methodological (rather than metaphysical) sense” (p.1). Thus, the meaning of the title does not imply an exclusivist return to the mind nor does it involve its elimination in favour of the brain; and the same applies to the relationship between Philosophy and Neuroscience. The author affirms that Kant himself inspired his approach and he actually compares the transcendental method with a neural activity investigation, considering the neural correlate of consciousness a necessary but not sufficient condition for the mental phenomena (p.6). Perhaps, this kind of research seems more similar to *a posteriori* research about the *a priori* structures of knowledge, typically referred to in the transcendental approach of one of the founders of Psychologism: Jacob Fries. Yet, in the Kantian transcendentalism both the content of the research and the research process itself are *a priori*. To be sure, the comparison works nonetheless in a metaphorical sense.

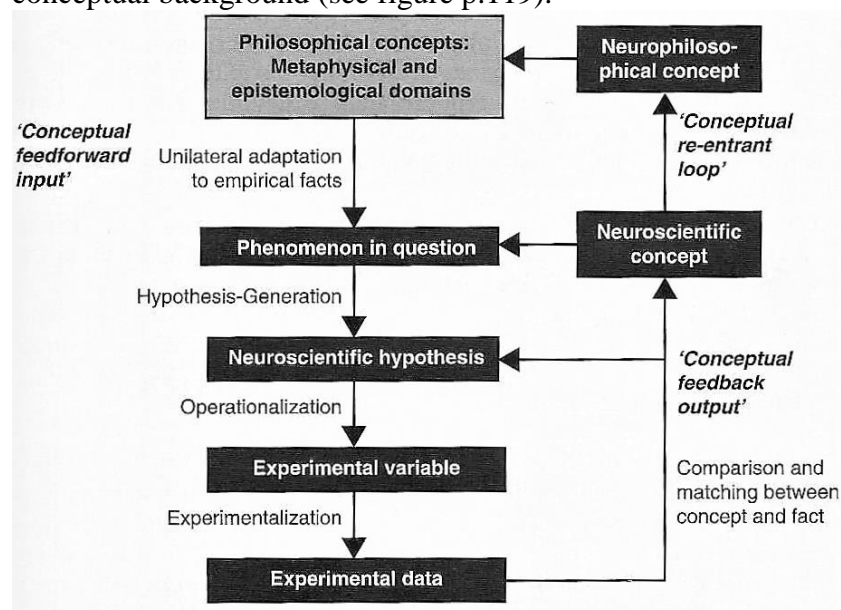
In order to explain his theoretical manifesto, the author distinguishes two main perspectives: the “mind-based” and the “brain-based” points of view (p.10). The former entails the assimilation of mental concepts into neuronal structure, through the question: “How is the mind and its mental features related to the brain?” (p.214). Surprisingly, according to the author, this methodologic strategy is ascribable to several trends such as mentalism, functionalism, physicalism, and so forth, regardless of the ontological commitment they endorse. For instance, ontologically speaking, reductive Neurophilosophy is based on strong physicalism, but it poses its epistemic starting point into the mind as a negative template, in order to substitute any

mental element to a brain equivalent (p.184). On the contrary, non-reductive Neurophilosophy involves a brain-based approach, moving from the essential question: “How are the brain and its neural features related to the mind?” The reversal of the question produces some new perspectives about the “mind/brain” relationship, and there is no need to find a neural correlate for any single mental property. It is rather, possible to avoid this epistemological bottleneck by integrating the brain within a philosophical context, as well as by finding new interdisciplinary approaches, while dismissing the assumption of any kind of supernatural feature (p.15). Thus, it seems that the author’s intention is to account for a study of the brain as such, not as an empirical substitute of the mind; any possible relation with the concept of mind will come after testing the approach, not as an *a priori* metaphysical assumption.

A key issue of the book is Northoff’s epistemological justification of his theses. The author acknowledges the structural differences between scientific and philosophical domains. But, in spite of their reciprocal autonomies as to their methodology and field of research, he identifies – following Quine – the possibility of a connection in the breakdown of the resolute separation between analytic and synthetic sentences, and between *a priori* and *a posteriori* knowledge (p.48-51). Generally speaking, different domains of research do not lead to mutual epistemological exclusions; on the contrary, Philosophy and Science could be considered as “different degrees of abstraction on the same underlying continuum” (p.52). These Quinean claims lead the author to discuss the naturalistic ground of his Neurophilosophy. Hence, he distinguishes “replacement or incorporation naturalism” from “cooperative naturalism” (p.62-64); the former is typical of a reductive and monopolar methodology, while the latter allows for the development of different (philosophical and scientific) methods, towards a reciprocal complementarity. In this sense, Northoff’s methodology seems to rely on Quine’s “reciprocal containment” of philosophical epistemology and natural sciences, as it is defined in *Epistemology Naturalized*.

Once this account of complementarity is extended to the relationship between philosophy and science, the author can provide a concrete neurophilosophical frame, which he calls “concept-fact iterativity” (p.117-121). On these epistemological premises, the non-reductive Neurophilosophy must demonstrate

the consistency and coherence of its method, established on the borderline between concepts and facts, as well as between metaphysics and the empirical field. For this reason, Northoff cannot accept any kind of unilateral method of adaptation, merely from facts to concepts (Churchland) or from concepts to facts (Searle) (p.112-117). Instead, its account provides us with a transdisciplinary and iterative linkage between theoretical and experimental domains. This method consists of philosophical and neuroscientific passages in a flowchart marked by feedbacks from the empirical, correction loops and interactions with the conceptual background (see figure p.119).



After having exposed its theoretical claims about the relation between mind and brain, and having justified an original epistemology for its Neurophilosophy (part I), the rest of the book is nestled in this framework and all the issues are discussed from a non-reductive point of view.

In the second part, Northoff examines a great number of approaches on monism and dualism, with regard to the mind-brain problem. He translates the classic dichotomy monism/dualism into the division between mental, physical, non-mental, non-physical, and brain-based approaches. This kind of analysis is clear and willingly synthetic, due to the author's intention not to explain all the issues of the topic, but rather to show these various positions in light of his epistemological perspective. In particular, as mentioned above, he privileges a brain-based approach, referring to various

authors that consider the brain under different domains, such as McGinn, Nagel, Schopenhauer, and Merleau-Ponty. Interestingly enough, according to Northoff, Schopenhauer can be considered a neurophilosopher *ante-litteram*, because of his distinction between the brain as the “subject of cognition” and the brain as the “object of cognition” (p.231).

In the third part of the book, Northoff exposes and analyses some important issues about the philosophy of psychology and neuroscience – e.g. the variety of levels of explanation from subpersonal to personal stages, the nature of explanation in neuroscience, and holistic versus localizationist approaches. In particular, I would mention his position about the value of folk psychology and its irreducibility to neuroscientific explanation, however without falling into an ontological reification of mental states (p.274-275).

Parts IV and V are dedicated to consciousness and self. One of the main problems dealt with here is the “hard problem” of consciousness – i.e. “Why is there consciousness at all rather than non-consciousness? And how is consciousness possible?” From a philosophical point of view, besides analysing the phenomenal and epistemological features of consciousness, he tries to approach it from a non-reductive – but still non-dualist – perspective. At the same time, from a neuroscientific point of view, he discusses some neural theories of consciousness, in order to identify their potentialities and limits; in addition, he distinguishes between neural “correlates”, “predispositions”, and “prerequisites” of consciousness, while neuroscientists ordinarily consider only the first kind of concept in their studies. Moreover, the author discusses how our self is intertwined with the brain, also through the analysis of psychiatric disorders and the focus on our constitutive capability to relate with others, which points at the importance of intersubjectivity due to the features of mirror neurons (p.522-532).

To sum up, *Minding the Brain* is a very rich and variegated haven of arguments, topics, and fields of research, all unified under the umbrella of the interdisciplinary and constantly growing perspective of non-reductive Neurophilosophy. The clarity in its contents makes the book suitable for philosophers who want to become acquainted with contemporary neuroscientific progress, and for neuroscientists who want to deepen their understanding of some essential philosophical issues about mind and consciousness. Moreover, its pedagogic structure – e.g. its take-

home messages, summaries, revision notes and suggested readings – makes it a good choice for university courses. Maybe, the addition of footnotes with accurate citations or references to all the various philosophical arguments, authors, and empirical research would make reading this book more available.

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