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REVIEWS

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THOMAS FUCHS, *ECOLOGY OF THE BRAIN: THE PHENOMENOLOGY AND BIOLOGY OF THE EMBODIED MIND*, OXFORD UNIVERSITY PRESS, OXFORD, 2018.

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How the brain works, what is consciousness, and why we shouldn't simply equate the two? Why is a living organism more than a mechanism determined by the laws of physics, and how should we study it? What can phenomenology offer neuroscience? To these and many other related questions, the answer lies in this extraordinary interdisciplinary work, bringing together fresh arguments in the field of philosophy of life and phenomenology with the latest research trends in neuroscience and biology.

This book, an extended and significantly revised version of *Das Gehirn: Ein Beziehungsorgan* (2016), offers the English-speaking audience a comprehensive view of the latest theoretical achievements coming from the embodied, extended, enactive and ecological approaches to the study of mind. What makes this contribution stand out from the increasing number of publications in this tradition is an informed integration of a wealth of scientific data with some of the most significant philosophical arguments in the mind/body debate.

The book opens with an extensive and detailed critique of the computationalist theories of mind, that still

dominate contemporary neuroscience. According to them, the brain is an information-processing machine, and consciousness is a mere epiphenomenon of neural processes. The author convincingly demonstrates the implicit idealism and Cartesianism of these approaches, linking it to their brain-centredness and explaining widespread fallacies in the interpretations of empirical experiments. As the author shows, the conclusion that is often mistakenly drawn from empirical data is that the qualitative experience of the world, as well as our own experienced embodied subjectivity, are illusions created by the brain in its attempt to produce internal models of the objective outside reality. A mechanistic understanding of living beings is also frequently invoked, banishing from the scientific worldview properties that cannot be quantitatively measured and experimentally tested in the lab, elevating the world of physics and neurobiology to the status of the only true reality. Thus, as Husserl was one of the first to notice, the world of subjective conscious experience becomes an inner sphere cut off from the outside world.

Opposing such reductionistic theories, the author carefully develops a

holistic and dynamic view of the mind that gives explanatory priority to the embodied, living subjects. The living organism as a whole can feel, think and act, not the brain on its own. Mental properties should be understood as developing in constant interaction of the organism with its environment, both natural and cultural.

Although the brain should not be understood as the sole center of our mental activity, it does play a crucial role as the organ of “mediation, transformation and resonance”. This means that the brain *mediates* the relation between the organism and the environment by *transforming* processes on the micro-level of sensation and perception into gestalts, thus enabling us to immediately perceive the world of meaningful wholes. The concept of *resonance* should replace the static relation of representation, or mirroring of the environment by the brain, with the idea of a constant attunement of the organism to the changes in the environment.

In addition, the author gives a novel description of consciousness as “an extended integral”, elaborating how our brain is embedded, as a system, within a system (of our entire body) within a system (of our environment), all of which create multiple causal loops between each other. At any given moment we experience a variety of sensorimotor stimuli that come from all our senses and need to be made coherent and coordinated in order for us to successfully react to multiple practical challenges posed by our environment. The main function of consciousness is thus to integrate all these elements, whereby the embodied “feeling of being alive”, mineness and intentionality of the first-person experience, which cannot be described in the language of physics, play a crucial role.

Moreover, the book makes a significant contribution to the discussion

and better understanding of downward causation and emergent phenomena, explaining how consciousness can causally influence the further course of action and perception, i.e. how “living beings become the causes of their own conscious enactments of life”. (p. xix) Circular (non-linear) causality characteristic of living systems, is divided into vertical (parts-whole) and horizontal (organism-environment) causality. Finally, integral causality is described as unifying the two in practically exercised habitualized capacities.

In response to the traditional problems of dualism that still plague cognitive science, the author offers a new version of mediated monism, called “the dual aspects theory”. Lived body (*Leib*, subjective) and living body (*Körper*, objective) are two aspects of “one and the same living being” (p. 80), that are revealed in two different attitudes that us humans can have about ourselves, constantly alternating between the personalistic (first-person) and naturalistic (third-person) perspective.

In conclusion, the readers of this book can expect a better understanding of why 4-e approaches offer a truly new scientific paradigm for the study of mind. Furthermore, they will learn about many interesting arguments and applications to related problems, regarding most notably free will, socialization, neuroplasticity, development of higher cognitive capacities, therapeutic methods in psychiatry, etc.

This book is written for a broad audience, including philosophers (especially those working in the fields of philosophy of mind, life, and cognition), neuroscientists, cognitive scientists, as well as biologists. It gives a great example of how a theory can avoid naturalizing the mind and still use the valuable contributions of natural science, as well as critically examine them.