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EMERGENCE, BRAIN AND MIND-
EVOLUTIONARY PERSPECTIVES

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Discussion Paper

on

Percy Lowenhard's

MIND AND BRAIN: REDUCTION OR CORRELATION?

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EMERGENCE, BRAIN AND MIND – EVOLUTIONARY PERSPECTIVES

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I have been very much attracted by Dr. Löwenhard's paper. The paper is an interesting and important contribution to an old and venerable problem: the mind-body problem. In particular, it examines the question if mind can be reduced to brain and if psychological phenomena are explainable in terms of biology.

Löwenhard argues from the viewpoint of a neurobiologist and, as in some of his earlier publications,[1] he comes to the conclusion that the phenomena of mind and consciousness are related to human brain functions. However, the author does not support an ontological reductionism; he rather shows that the brain is a complex system and that it represents an integral part of the information system of higher organisms. His paper brings together current interdisciplinary research which adds up to the emergentist view of mind.

I am quite in accordance with Löwenhard's conclusions, however, I hope that my following remarks, made from the standpoint of a philosopher of biology, are apt to stimulate further discussions in the "interface" between biology and psychology.

My own view of the problem in question is that of evolutionary biology and evolutionary epistemology. Evolutionary epistemology bases upon the fact that man is an outcome of evolution by natural selection; it implies, furthermore, the

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1 See e.g. P. Löwenhard, "Consciousness – A Biological View", Göteborg Psychological Reports, 1981, 10; "Knowledge, Belief and Human Behaviour", Göteborg Psychological Reports, 1982, 11.

assumption that mental activities are bound to specific biological conditions. To put it more precisely, I should like to stress the following thesis: "All psychic phenomena in the subhuman world as well as mental abilities proper to human systems ... are based on biological structures and functions; biological evolution has been the precondition to psychological and spiritual evolution."[2] That is to say that spiritual evolution, although it transgresses the boundaries of evolution by natural selection, cannot be sufficiently explained without reference to biological evolution and development.

In this context it is worthwhile to mention that already Charles Darwin in his The Descent of Man (1871) and The Expression of Emotions in Man and Animals (1872) adopted the view of evolutionary psychology and, therefore, anticipated some of the most important assertions of evolutionary epistemology. Evolutionary psychology and epistemology coincide with a host of empirical results in the fields of neurobiology, sensory physiology, ethology and evolutionary research -- but they do not coincide with any dualistic view of the mind-body problem. Actually "a consistent evolutionist ... need not postulate immaterial minds and will postulate instead that mental functions, no matter how exquisite, are neurophysiological activities."[3]

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2 F.M. Wuketits, "Evolutionary Epistemology – A Challenge to Science and Philosophy", in: F.M. Wuketits (ed.), Concepts and Approaches in Evolutionary Epistemology, D. Reidel Publishing Company, Dordrecht-Boston-Lancaster 1984, p. 8.

3 M. Bunge, The Mind-Body Problem – A Psychobiological Approach, Pergamon Press, Oxford-New York-Toronto 1980, p. 18.

Well, if mind is an activity of the (human) brain, why we should not, then, reduce all mental phenomena to biological structures? And why psychology should not be reduced to biology? Löwenhard in his paper (on p. 1) states that, after all, "since the brain and nervous system are part of a biological organism, their psychological manifestations may be treated within a biological context. In this sense 'psychology', at least partially, may be viewed as a biological discipline." Nevertheless, one cannot simply state that brain and mind are one and the same and that psychology is nothing else but biology. One rather must admit that mind is a special function or manifestation of brain processes. To do so means to avoid the old "category-mistake" which is described by Gilbert Ryle in his excellent The Concept of Mind. Let me give here a brief quotation:

> A foreigner visiting Oxford or Cambridge for the first time is shown a number of colleges, libraries, ... , scientific departments and administrative offices. He then asks 'But where is the University? I have seen where the members of the Colleges live, where the Registrar works, where the scientists experiment ... But I have not yet seen the University in which reside and work the members of your University.' It has then to be explained to him that the University is just the way in which all that he has already seen is organized. When they are seen and when their coordination is understood, the University has been seen.[4]

Now, in this example the foreigner has made a category-mistake: He has expected that "University" is just a thing to be seen; but a University is rather the outcome of specific human activities.

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4 G. Ryle, The Concept of Mind, Penguin Books, Harmondsworth-New York 1976, p. 17.

Likewise the terms "mind" and "consciousness" do not describe ontological categories, but certain states and/or activities of the brain and central nervous system; and these states and/or activities have emerged in the course of evolution of living systems. Evolution itself can be described as a process of emerging systems. Emergence, e.g. in Bunge's terminology, means "the appearence of a new quality or of a thing possesing qualitatively new traits. In particular, the emergent properties of a system are those possessed by the system as a whole and lacking in every component of it."[5] So it would be absurd to say that a single nerve cell possesses mind or consciousness; it is the whole system of the brain and nervous system which shows mental activities.

Many positions on the mind-body problem suffer from the false questions, for example "In which way mind and brain are interacting?" -- they do not interact, because the one (mind) is a systems property of the other (brain). In order to come to a consistent theory of the mind-body problem we must, therefore, first of all abandon some of the many old-fashioned approaches to the problem; above all, this means to abandon the dualistic world view, which has bewitched up to now many philosophers. Evolutionary epistemology seems to be a viable proposition to handle the question, how does mind (and consciousness) come into existence as systems property of the brain.

I think that Löwenhard is on the right track when he postulates that

(i) psychic and mental phenomena are specific manifestations of very complexly organized and structured biological systems and

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5 M. Bunge, op. cit., p. 224. (My italics.)

(ii) that – according to his model – consciousness may be viewed as a phenomenon which emerges due to intrinsic properties of the (central) nervous system.

Furthermore, in order to understand brain processes and their specific manifestations, we have, without doubt, to replace the models of classical psychophysics by multi-staged interactive models of information processing. Here again Löwenhard's postulates coincide with basic postulates of evolutionary epistemology which boils down to a model of life as an information processing system.

Yet we cannot say that we are able to understand all aspects of our brain and its manifestations. Löwenhard concludes that "the brain is a marvellous instrument. The understanding of its most salient manifestation, the mind, is still outside the range of contemporary science" (p. 34). Unfortunately, up to now many of the theories and speculations on brain and mind have been chapters of a "brain-mythology" or something like that. So how things could be done better?

Perhaps we have reason to be more optimistic, like Charles J. Lumsden and Edward O. Wilson: "If and when we are able to characterize the organization of these various processes [brain processes] and identify their physical basis in some detail, it will be possible to define in a declarative and unambiguous manner the urgent but still elusive phenomenon of mind, as well as self and consciousness. The evolutionary reconstruction of the mind should be pressed to the limit of this understanding."[6]

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6 Ch.J. Lumsden and E.O. Wilson, Promethean Fire – Reflections on the Origin of Mind, Harvard University Press, Cambridge, Mass.-London 1983, p. 3.

In any case it is important to bring together interdisciplinary research, from paleobiology to molecular biology, and to try to fit the results into a conceptual scheme. However, for the time being it seems to be clear that the mind-body problem neither has been solved by dualistic world conceptions, nor by mechanical ("mechanistic") approaches to life and mind. It is, therefore, of great importance to adopt a much broader view. Such a view is indicated in Löwenhard's paper as an evolutionary, emergentist view showing that both principles, reduction and correlation coexist in a complementary manner. What is still lacking, however, is a comprehensive model demonstrating how these principles coexist. Löwenhard's reflections are a decisive step in this direction -- but there is still much work to be done. In my opinion it would be necessary that disciplines like neurobiology and psychology take into consideration the "evolutionary dimensions" of brain and brain activities -- this was suggested by Darwin's program of an evolutionary psychology, but the program has not yet been completed.