Conservative and dynamic structures in the organization of the mind

THESES

1. The concept of representation. Many theories in the philosophy of mind and in cognitive science use the concept of representation with very different meanings. The debates on cognitive mechanisms, sensory and motor skills and on the nature of the conscious mind often originate in dissimilar views on the characteristics of representations. This is not surprising: the initially philosophical question has gradually been transformed into an interdisciplinary problem – hence many disciplines adapt this concept for their own theoretical demands and purposes. In light of current researches the representations in mind have transformed from mental entity into physical phenomena. Representations cannot be identified by point-like atomistic entities, rather by some kind of dynamically changing neural activation patterns. The classical concepts that were classified by philosophy under these representations – like ideas, images, notions or conceptions – mark continually changing physical representations which cannot be (or can hardly be) locally circumscribed.

2. Naturalism. Due to the conceptual problems of representations the demand for their naturalisation arises. Based on the thesis that the systems which are applying representations are biological organisms, a theory of representations needs to take the features of these organisms into consideration; otherwise the theory remains a mere speculation. The term 'mental' as it is used in the philosophy of mind can be translated into biological terms in view of the experimental findings of cognitive science and by means of the resulting terminology the cognitive processes can be described in a manner that closely links the traits of the neural structure to the characteristics of the representational system.

3. Evolutional approach. The adoption of evolutionary psychology in addressing the issue offers an appropriate solution for the naturalization of cognitive mechanisms. Investigations into the evolutionary history of representational systems shed light on the demand, that in order to understand representations their developmental aspects also need to be taken into account, both from the philogenetic and ontogenetic viewpoint. The adaptive mechanisms of neural structures develop and consolidate through selective processes. Throughout philogenesis adaptive informational patterns are integrated into the organism's genetic material and determine the formation of representational mechanisms during ontogenesis. But the use of the evolutionary approach must not mean the unconditional acceptance of adaptationism; other factors can contribute to the development of individual traits that are often masked by a forced adaptationist explanational strategy.

4. The context of perception and memory. Theories that can put perception and memory into a more or less unified framework explain the structural traits of representations originating in cognitive processes. The perception-memory continuum is provided by representations that dynamically relate to the organism's environment on each and every level of processing. Schemes, frames, scripts and other structurally specified representations can be adequately implemented into network systems like PDP or other connectionist models. A representational theory based on perception puts the cognitive processes into an integrated framework yet does not deny the existence of domain-specific processes in cognition. The specific processes can be explained by neural wiring and the innate nature of cognitive modules.

5. Selectionary epistemology. Evolutionary epistemology puts the cognitive processes into an integrated framework from perception to scientific analysis. According to the theory representations are developed in selective manner by the interaction between the organism and its environment. Based on the system theory approach this interaction is distinguished in both perception and scientific cognition. The organic structure, the characteristics of neural networks or the theoretic

framework represent equally important constraints in the cognitive processes. The critical analysis and selection of hypotheses, the paradigms as structural leaders of cognition and the critical scientific approach are equally significant manifestations of evolutionary precedents of cognition.

6. The representational theory of the conscious mind. Certain debatable aspects of the philosophy of mind can be placed in an alternative context within the framework of a naturalized representational theory. Traditionally difficult problems of the conscious mind like intentionality or qualia become more comprehensible when the conscious mind is regarded as a structured complex of neural phenomena. In this case the representations of the organism's internal and external physical environment and the dynamic re-writing of these representations play a significant role. Deriving from the above hypothesis the conscious mind can be regarded not as an 'all-or-nothing' property but more as a polimorphous, dynamic phenomena founded in selective evolutional processes and significantly partitioned through neural structures.

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