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# Phenomenology and Cognitive Science: A Diverse Look at the Issues

## **Naturalizing Phenomenology: Issues in Contemporary Phenomenology and Cognitive Science**

by Jean Petitot, Francisco J. Varela, Bernard Pachoud, and Jean-Michel Roy (Eds.)

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Today, cognitive science offers a theory of what goes on inside an organism with cognitive capacities when it engages in cognitive behavior. More specifically, an organism with cognitive capacities is an information-processing system that can be explained at different levels and varying degrees of abstraction. At the most concrete level the explanation is biological, whereas at the most abstract level information processes are characterized as abstract entities, functionally defined.

This functional level of explanation is assimilated with a psychological one. Today, cognitive science maintains that there is no substantial difference between giving a functional explanation of the information-processing activity responsible for the cognitive behavior of the organism and explaining this behavior in mental terms. By interpreting cognitive mental concepts functionally, cogni-

tive science provides a solution to the mind-body problem. Because they are purely functional in character, mental entities postulated at the upper level of explanation do not have to be seen as ontologically different from the biological ones postulated at the lower level. They are exactly the

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vestigations cannot be naturalized because they are about something different from cognitive science. According to the latter view, the purpose of Husserl's phenomenology is epistemology, which is partly incompatible with empirical psychology.

Assuming that Husserl's work can be naturalized, other papers are concerned with that naturalization. Because, according to Roy et al., mathematical modeling plays a key role in their attempt to naturalize phenomenological data, a third set of papers is devoted to formalization and mathematical issues. Three papers attempt to link Husserlian phenomenology with visual science through formalization. Barry Smith presents a general theory of the segmentation of spatially extended entities that links Husserl with the ecological viewpoint of J. J. Gibson. Jean Petitot uses modern differential geometry to create a geometrization of the relationship between the visual field and kinesthetic control. Also, Robert Casati provides an axiomatization of the phenomenology of motion. The section also contains a contribution by Dagfinn Føllesdal about Husserl's influence on Gödel and a contribution by Giuseppe Longo on creating a mathematical description of our intuition of a continuum. Both of these are fine papers by distinguished scholars that bear no discernable relationship to the topic of the volume.

Finally, eight essays deal with how specific kinds of intentionality in the philosophical sense can be naturalized into mental representations in the cognitive science sense. The topic is considered generally in three essays by David Woodruff Smith, Jean-Michel Roy, and Elisabeth Pacherie. Smith is skeptical, concluding that the mind cannot be "naturalized" by reducing consciousness or intentionality to a causal or computational process. Roy deals with the central question of how a representation can be defined at the mental level. He concludes that Husserl's concept of mental representation includes the symbolic relationship in addition to another relationship. In his contribution, Salanskis also concludes that

Husserl's concept of representation is multifaceted, though he differs with Roy and Petitot on its prospects for naturalization.

An extremely interesting essay by Evan Thompson, Alva Noe, and Luis Pessoa replies to Dennett (1991), who would exclude phenomenology from a theory of perception. They point out that Dennett's philosophical commitments cause him to elevate the empirical prediction of perceptual filling in made by some theories of perception to the level of a philosophical error. But this will not do because there are empirical data supporting filling in. By excluding phenomenology, Dennett has construed the problem of perception too

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narrowly and excluded data that must be explained in order for a theory of perception to succeed.

Essays by Bernard Pachoud and by Jean-Luc Petit discuss how visual information must be integrated over time and must be correlated with movement to be meaningful. Finally, essays by Tim Van Gelder and by Francisco J. Varella, discuss the temporal aspect of phenomenological data. We may delude ourselves that a complete visual perceptual experience occurs in an instant. But this will not work for auditory perception. The awareness of a melody is not of a single note but certainly includes some notes that have gone before it and possibly some that will follow it.

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## References

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eral question by exploring the neuro-anatomy of emotion in a variety of

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