
Variation in a world with multiple levels, mechanisms, and units of evolution: The Applied Evolutionary Epistemology Approach

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Abstract

Session: Understanding variation beyond the Modern Synthesis (Gontier, Serrelli, Razeto-Barry & Vecchi) Scholars working within the units and levels of selection debate have been developing more and more refined heuristics of how evolution by means of natural selection works. A motivation of such endeavor has been the question whether individual organisms are the only, or the most appropriate, units of natural selection, or whether groups, traits, a (set of) genes or behaviors, developmental systems, population, species can also be considered as units of selection. Heuristics based on natural selection have also been applied in order to assess whether evolution by natural selection can occur within phenomena that are traditionally understood to be extra-biological, such as cultural units, artifacts, neural maps, cognitive traits, altruistic rules etc. This abstraction and extension of natural selection to the sociocultural domain, provides a unified scientific methodology that enables scholars to study the evolution of life as well as the evolution of cognition, science, culture and any other phenomenon displayed by living organisms by means of natural selection theory. Today, with the several pleas there exist to extend the Modern Synthesis, evolutionary biologists are acknowledging the importance of mechanisms such as lateral gene transfer, symbiogenesis, drift, etc. Applied Evolutionary epistemology is a methodology that provides more open heuristics to assess how these mechanisms associated with an extended synthesis work, what their units and levels, and where they are active. Associated with this endeavour is not only the recognition of multiple units, levels and mechanisms of evolution, but also to acknowledgement that there are different kinds of evolution (the evolution of the brain, of languages, of culture, of niches, etc). This talk takes the debate a step further, asking how important inter-unit, inter-level and inter-mechanism variation is for a general understanding of evolution.

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