

Record in the Commens Bibliography. Retrieved from http://www.commens.org/bibliography/journal_article/andrade-eugenio-2007-semiotic-framework-evolutionary-and-developmental, 17.07.2024.

Type: Article in Journal
Author: Andrade, Eugenio
Title: A semiotic framework for evolutionary and developmental biology
Year: 2007
Journal: Biosystems
Volume: 90
Issue: 2
Pages: 389-404
Keywords: Evolution

Abstract: This work aims at constructing a semiotic framework for an expanded evolutionary synthesis grounded on Peirce's universal categories and the six space/time/function relations [Taborsky, E., 2004. The nature of the sign as a WFF—a well-formed formula, SEED J. (Semiosis Evol. Energy Dev.) 4 (4), 5-14] that integrate the Lamarckian (internal/external) and Darwinian (individual/population) cuts. According to these guide lines, it is proposed an attempt to formalize developmental systems theory by using the notion of evolving developing agents (EDA) that provides an internalist model of a general transformative tendency driven by organism's need to cope with environmental uncertainty. Development and evolution are conceived as non-programmed open-ended processes of information increase where EDA reach a functional compromise between: (a) increments of phenotype's uniqueness (stability and specificity) and (b) anticipation to environmental changes. Accordingly, changes in mutual information content between the phenotype/environment drag subsequent changes in mutual information content between genotype/phenotype and genotype/environment at two interwoven scales: individual life cycle (ontogeny) and species time (phylogeny), respectively. Developmental terminal additions along with increment minimization of developmental steps must be positively selected.

Language: English