

GOLDSCHMIDT REAFFIRMED: A POSITIVE STEP TOWARDS A NEW SYNTHESIS?

Sam R. Telford III
 P.O. Box 61
 Winter Haven, Florida 33880

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A modification of the present formulation of the Modern Synthesis is necessary to generate parsimonious explanations of six evolutionary phenomena. These are: 1) the extinction of successful clades; 2) the Ghost Moth paradigm -- nonspeciation when speciation is predicted; 3) the origin of evolutionary novelties; 4) the integrity of the species (stasis); 5) sub-optimality in species morphology; and 6) species flocks -- differential radiation of an archetypal genome with respect to locality. There is heuristic value in recognising "special" variation, producing natural discontinuities, contrasted with continuous variation due to the accepted processes of mutation, recombination, gene flow, genetic drift, and allelic substitution. Thus, macroevolution is due primarily to "discontinuous" variation, and microevolution to "continuous" variation.

Discontinuous variation is due to a genetic catalyst which causes a substantial alteration of bauplan during ontogeny, as Goldschmidt recognised in his concept of systemic mutation. The major source of this variation may be the pre- or postzygotic transposition of mobile genetic elements. Transposition is random, infrequent, heritable when incorporated into the germ line, and may occur simultaneously in a number of individuals, as in a viral infection. The molecular mechanism of this genetic revolution is postulated to be similar to that of oncogenesis by viral activation of oncogenes, effected at critical developmental bifurcations. Reproductive isolation may be conferred within a single generation by pleiotropic effects, or gradually by intrinsic effects of transposition such as hybrid dysgenesis.

Hopeful monsters are then plausible in terms of the synthetic theory. Macroevolution is predicted to be sporadic, and for the most part absent in lieu of this special variation, conforming to the pattern of punctuated equilibrium. Note, however, that the essence of the Neo-Darwinian theory is left intact: evolution occurs through the differential reproductive success of variant populations over time and space.

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