

**ASSESSING THE ROBUSTNESS OF THE EMERGENCE OF INTELLIGENCE:  
TESTING THE SELFISH BIOCOSM HYPOTHESIS**

James N. Gardner

Task Force on Science and Technology; The Conference of World Regions  
Pacific Northwest Office, Portland, Oregon, USA

In “The Selfish Biocosm: Complexity as Cosmology” (forthcoming in the January/February, 2000, issue of *Complexity*, the journal of the Santa Fe Institute), I advance the hypothesis that the anthropic qualities which the universe exhibits can be explained as incidental consequences of a cosmological replication cycle in which a cosmologically extended biosphere supplies two of the essential elements of self-replication identified by John von Neumann in his 1948 lecture “On the General and Logical Theory of Automata.”

A falsifiable implication of my hypothesis is that the emergence of increasingly intelligent life is a robust phenomenon, strongly favored by the natural processes of biological evolution.

A proposed project now under consideration by NIAC and other funding agencies will test this implication by (1) offering falsifiable predictions about the likelihood of success of the ongoing SETI research endeavor, (2) analyzing convergent animal evolution toward sentience in non-primate species, (3) investigating emergent phenomena that resemble intelligent behavior on the part of software artifacts which incorporate evolutionary programming and are coaxed to evolve toward sentience in artificial life/artificial society software environments, and (4) developing strategies for exploring the possibility that the process of emergence of ever-higher levels of intelligence on Earth is ongoing and accelerating, tending toward the emergence of transhuman machine intelligence (the Kurzweil/Moravec scenario) and/or the aggregation of human/machine communities into one or more planetary superorganisms (the “metaman” scenario).