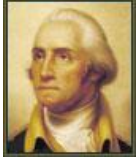


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Quantum Bios

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Time series generated by Schrödinger's equation for describing the behavior of quantum dynamic systems display biotic features, namely diversification (increase standard deviation with embedding or length of the series), novelty (less recurrence than surrogate copies randomized by shuffling), high proportion of consecutive recurrence (indicative of nonrandom causation), arrangement (a measure of nonrandom complexity), and asymmetric statistical distribution. Bios is an expanding aperiodic pattern with higher sensitivity to initial conditions than chaos, generated non-randomly by recursions of bipolar feedback (positive and negative opposition) and by physiological processes such as cardiac rhythms driven by neural opposites. The defining characteristics of bios are the features expected from a creative process, and are absent in chaos. Finding bios in Schrödinger's series suggests that quantum processes may be causal and creative, satisfying Einstein's demand for rationalism, epistemological realism, and mathematical certainty. Universal mathematical forms such as Bourbaki's three "mother structures" of mathematics (lattice asymmetry, group opposition, and topological transformation), which are necessary to create bios, may be the mathematical generators of primordial physical processes. The potential for creative evolution is already present in causal processes at the quantum level.

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