

Dyson Shell Supercomputers As The Dominant “Life Form” In Galaxies

Robert J. Bradbury; Aeiveos Corporation

The progress of technological civilizations should enable their development of both biotechnology and molecular nanotechnology. Biotechnology engineering (replacement parts, genome program manipulation, etc.) should produce societies of individuals that do not age. Such civilizations will emphasize self-evolution toward information processing limits and the minimization of their long term hazard function. Molecular nanotechnology enables the rapid construction of nested Dyson shell supercomputers (“Matrioshka Brains”) that fully utilize the energy and matter resources of solar systems and operate at the limits of intelligence and longevity given known physical laws. Over long time scales, galactic hazards eliminate civilizations that fail to follow these paths.

Acceleration of technology trends allows civilizations to evolve from primitive stages, lacking an understanding of most laws of physics, to full Matrioshka Brain levels in ~ 200 years. Communicating civilizations, as we typically envision them, will thus have a short longevity (the Drake Equation “L” parameter). The intellectual capacity and observational capabilities of these integrated superintelligences are the reason for the historic failure of SETI. Their physical characteristics determines why they are difficult to observe and explain the Fermi Paradox. Current astronomical observations which include the missing mass of the galaxies, gravitational microlensing reports and galactic infrared observations (*e.g.* NGC 5907), suggest that many galaxies, including the Milky Way, may be Kardashev Type III civilizations composed of Matrioshka Brains.