

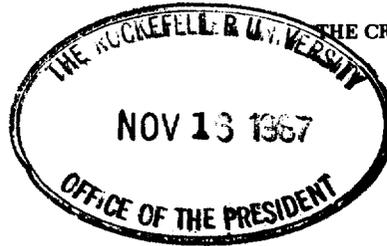


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ref. #459

Dr. Joshua Lederberg
President
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Dear Josh:

At the end of your last note, transmitting to me a copy of "The Defense Science Board Task Force Report on Computing", you added a postscript to the effect that you were willing to consider other possibilities for the origin of life, than those provided by the primordial terrestrial atmosphere. I was somewhat startled by this. I had read Crick's "Life..." and had some years ago talked with Leslie Orgel about the panspermia hypothesis, but I assumed that they were writing and talking tongue-in-cheek, reminding the rest of us of how little we know about this seeming miracle. Then I realized that you, as a charter member of the Exobiology Club, and possessor of one of the freest scientific intellects of our time, were likely to be very serious about the possibility of extraterrestrial origins. By coincidence I just then happened to read Sagan's "Contact" which I had bought when it came out several years ago, but put off, not being a science fiction fan (though I may have unwittingly contributed to that genre during my career). I read Contact to its end (page 434) where Sagan credits you with the key idea that powered his whole story - that a high form of intelligence might live with the center of the Milky Way Galaxy. (You'll recall that he then goes on to wonder if Thomas Wright wasn't thinking the same thing in 1750.) I suspect that any reflective scientist is likely to discover, as he matures, that his belief stems from or leads to an almost mystical sense of wonder and awe concerning nature, life and creation. Sagan's book gives powerful expression of just those issues. *But, he makes the Great Intelligence out to be largely mathematical, & doesn't.*

I have always felt that in some deep sense physics is prior to mathematics. I could line up some (probably phony) historical arguments in favor of that view, but that's irrelevant - I mean to say only that the notion that "god" is a mathematician seems to me less fitting than that god is an engineer whose creative style is far more that of applied physics than pure mathematics. But as I have read about the struggles with the interpretations of what has come to be called "quantum reality", and as I have heard people like Murray Gell-Mann grow almost poetic over the coming together of everything in super-symmetry and grand unified theory neatly tied up with strings, I realize that (as I once heard from Phil Anderson) "we're leaving physics behind". Even so, if god is indeed a pure mathematician, I can't believe he's a numerologist (pi to the 10^{20} place containing his signature).

Cordially,

Gene