

The Philosophy of Carl Sagan

By Bob Krone, PhD

Carl Sagan searched for worlds “*fabulously unlike Brooklyn*” since at age nine, in 1942, he was fascinated by the adventures on Mars created by Edgar Rice Burroughs.¹ That began his interest, followed by his career as astronomer, astrophysicist, exobiologist, Director of Cornell University’s Laboratory for Planetary Studies, and Professor of Astronomy and Space Sciences. He was a best-selling author – twelve books and 400 journal articles.

In 1979 and 1980 he created *Cosmos: A Personal Voyage*, the thirteen-part television series, and the book, that brought fifteen billion years of the origin of the Earth and the universe to people in understandable language – when Space scientists were talking in a language only known to each other. And Carl’s message that “*something incredible is waiting to be known*”² got the public’s interest in extraterrestrial life and intelligence.

His conviction that “*there must be other starfolk*” and that there must be other planets with something like the processes that led to life on Earth and that there must have been some life form on Mars stayed with him until his death on December 20, 1996. Sagan had an irresistible need to search for life in the universe: “*The most exciting thing we can find in science is life on another planet.*”

I believe the one place that captures Carl Sagan philosophy best is his summary statement, page 333, in *Cosmos*:

There is no other species on Earth that does science. It is, so far, entirely a human invention, evolved by natural selection in the cerebral cortex for one simple reason: It works. It is not perfect. It can be misused. It is only a tool. But it is by far the best tool we have, self-correcting, ongoing, applicable to everything. It has two rules. First: there are no sacred truths, all assumptions must be critically examined; arguments from authority are worthless. Second: whatever is inconsistent with the facts must be discarded or revised. We must understand the Cosmos as it is and not confuse how it is with how we wish it to be. The obvious is sometimes false; the unexpected is sometimes true. Humans everywhere share the same goals when the context is large enough. And the study of the Cosmos provides the largest possible context. Present global culture is a kind of arrogant newcomer. It arrives on the planetary stage following four and a half billion years of other arts, and after looking about for a few thousand years declares itself in possession of eternal truths. But in a world that is changing as fast as ours, this is a prescription for disaster. No nation, no religion, no economic system, no body of knowledge, is likely to

¹ “Seeking Other Worlds,” *Newsweek*, September 5, 1977, 32.

² See the Carl Sagan Web Site and Foundation, www.carlsagan.com.

have all the answers for our survival. There must be social systems that work would work far better than any now in existence. In the scientific tradition, our task is to find them.³

In that half-page, Carl gives us his philosophic thoughts about human uniqueness and human weaknesses; about science and the Cosmos; about inadequate perceptions about the Cosmos; about Earth's human culture arriving so recently in planetary history; about that culture's ability to find answers; and about the need to find better ways to manage and control society.

And his overall message to society:

We are fortunate: we are alive; are powerful; the welfare of our civilization and our species is in our hands. If we do not speak for Earth, who will? If we are not committed to our own survival, who will be?⁴

I have a personal reason for including Carl Sagan's beliefs and thoughts in our *Journal of Space Philosophy*. In 1979, when he was creating *Cosmos*, he was also convincing NASA that its knowledge and applications of computer sciences needed upgrading. Robert A. Frosh, NASA Administrator, decided that a NASA/IEEE 1980 Summer Research, titled "*Advanced Automation for Space Missions*," would occur at the University of Santa Clara in California. The task was to define *Advanced Machine Intelligence* and then four teams of researchers would apply that definition to missions planned for the future of NASA.

The teams were: 1) Terrestrial Applications; 2) Space Exploration; 3) Non-Terrestrial Utilization of Materials; and 4) Replicating Systems Concepts. The research group was composed of fifteen NASA Center Program Engineers and eighteen university professors with advisement by thirty computer industry and aerospace industry experts. I came from the University of Southern California and became chair of the Space Exploration Team. Dr. Joel Isaacson came from the Department of Mathematics and Computer Science at Southern Illinois University. He was the primary scholar to define advanced machine intelligence for the group. The next year, in 1981, he patented his discovery of an *Autonomic String Manipulation System* in nature.⁵ The fundamentals of that discovery are defined in his feature article, "*Nature's Cosmic Intelligence*" in the first *Journal of Space Philosophy*, Fall 2012. Dr. Marc van Duijn's article in this issue, Fall 2013, provides his own cognitive intelligence research consistent with the Recursive Distinguishing (RD) foundation of the Isaacson discovery.

That summer, 1980, NASA research launched me into the Space Community and Dr. Isaacson and I have been colleagues and friends now for thirty-three years. I believe

³ Carl Sagan, *Cosmos: A Personal Voyage* (New York: Random House, 1980), 333.

⁴ *Ibid.*, 320.

⁵ J. D. Isaacson, *Autonomic String-Manipulation System*, US Patent 4,286,330, issued August 25, 1981, <http://www.iss.org/2001meet/2001paper/4286330.pdf>.

history will record that the Isaacson discovery ranks with those of Newton and Einstein. Carl Sagan was the driver for those 1980 beginnings.

Imagination will often carry us to worlds that never were. But without it we go nowhere.... Personally, I would be delighted if there were a life after death, especially if it permitted me to continue to learn about this world and others, if it gave me a chance to discover how history turns out. (Carl Sagan)



Copyright © 2013, Bob Krone. All rights reserved.

About the Author: Dr. Bob Krone is Co-Founder and Provost of Kepler Space Institute and Editor-in-Chief of *The Journal of Space Philosophy*. His 17-page Curriculum Vitae can be found at www.bobkrone.com/node/103.

