

Sagan Looks to Space For Future Salvation

By **Simson L. Garfinkel**

CARL SAGAN is worried about the future of life on Earth, and he wants us to do something before it's too late. Sooner or later, Sagan says, some stray comet from the outskirts of the solar system is going to crash down onto our heads, a madman is going to get access to some planet-destroying technology, or the greenhouse effect and ozone hole are going to permanently ruin our ecosystem.

The only way that we can ensure the survival of our culture, of our civilization, of our very species, Sagan writes in his newest book, "Pale Blue Dot: A Vision of the Human Future in Space," is for us to get off this dot and cast our lot among the stars.

These kinds of pleas for space exploration and colonization have always had the ring of science fiction to them. The last chapter of Sagan's book revels in unbridled speculation in which it is hard to find much in the way of scientific justification. But Sagan doesn't need justification: He *knows* that it is our destiny to establish an outpost on Mars, to "terraform" Saturn's moon Titan, and eventually to spread into interstellar space.

The main purpose of the preceding chapters is apparently to prepare the reader for Sagan's grandiose plans. The solar system is a place of "routine interplanetary violence," Sagan writes. Our own moon, he says, was formed "almost 4.5 billion years ago, when a world the size of Mars struck the Earth. Much of our planet's rocky mantle was reduced to dust and hot gas and blasted into space."

Sagan says that our planet's astrophysical history disproves any notion of an Old Testament-style creator. The early chapters of "Pale Blue Dot" contain his most articulate and venomous attack on the Christian church and organized religion to date.

A "pale blue dot" is what the Voyager spacecraft saw when it turned its camera around and took a "family portrait" of our planet on Feb. 14, 1990. Sagan readily admits that these pictures, taken at his request, weren't science. They were a publicity stunt. His goal: to convince us that our world is too fragile and too vulnerable for us to continue the petty politics of nationalism and the global crime of environmental destruction.

It's a compelling argument, which Sagan peppers by retelling some of most interesting developments of planetary science throughout the last decade. Many of the chapters are based on Sagan's shorter articles published in Parade Magazine. Unfortunately, although his explanations and arguments are crystal clear, he frequently glosses over scientific controversy. When a controversial theory forms the basis of a Sagan argument, the Pulitzer Prize-winning writer has the annoying tendency of presenting that theory as a well-established scientific fact.

The real lasting value of "Pale Blue Dot" isn't Sagan's scientific musings, but the incredible collection of space photography and art that he has assembled. These full-color photographs include the earth rising above the moon, the Galileo spacecraft emerging from a space shuttle's cargo bay, a close-up photograph of Miranda, the strangest moon in the solar system, and an artists' rendition of an ion-powered starship capable of traveling close to the speed of light.

"Pale Blue Dot" makes for reading that is intriguing and sometimes infuriating. Unfortunately, many copies of Sagan's book will probably end up sitting on people's coffee tables, with Sagan's urgent warnings going unread.

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BOOKS



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A VISION OF THE
HUMAN FUTURE
IN SPACE**

By Carl Sagan
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