

Fusion/Christopher Sloan

Selenopolis, Krafft Ehrlicke's city on the Moon, will establish mankind's first polyglobal civilization. Not an austere outpost, but a modern urban city, housing thousands, Selenopolis will be powered by fusion power plants, seen under construction on the right. It will represent a critical step in the economic integration of cislunar space with the Earth.

Why Mankind Has An Extraterrestrial Imperative

by Marsha Freeman

At the current moment, mankind is facing a series of existential threats. Some are immediate, including the absolute devolution of the human species, where policies that have created a lack of food, of medical intervention, of energy resources, and the other basic necessities of life, threaten to bestialize the world's citizens, and could propel us toward nuclear war. Others are intermittent, to include extreme weather, volcanic eruptions, and other natural catastrophes. Some are unavoidable, such as the eventual depletion of the Earth's currently-defined stock of natural resources. And some could, at

any time, threaten the survival of the entire planet's population, as we travel through the Solar System's minefield of asteroids and comets. Ultimately, the Sun itself will evolve so as to make life impossible on the Earth.

German-born visionary, Krafft Ehrlicke, proposed decades ago that mankind, unlike any other species, using his "power of reason" and "the moral law within himself," could meet and overcome these challenges. Life on Earth, he stated, was not "local," but a cosmic phenomenon, enabled, most directly, by the largesse of our Sun. Life on Earth will grow and develop, he explained, only if man-

kind's theater of activity is also cosmic.

To Krafft Ehrlicke, space was not a place, a program, or a specific set of missions, but rather, the pathway to the future, created by man's intervention into, and development of, nature.

Over the past century, various visionary thinkers have put forward imaginative plans for what mankind could do in space. But Krafft Ehrlicke described this thrust in to space as an "imperative," because for mankind to grow and develop, there is no alternative.

An "Open" Versus A "Closed" World

Krafft Ehrlicke was present at the opening of the space age, on October 3, 1942, when a German A-4 rocket, for the first time in human history, pierced the upper boundary of the atmosphere, and skimmed the edge of space. By the 1950s, he had no doubt that the technology for space flight would be successfully developed. What concerned Krafft Ehrlicke was whether the level of cultural maturity of mankind would meet the challenge of the extraterrestrial imperative. He recognized that throughout history, an opposing view to his, and that of the Renaissance, periodically gained dominance in the affairs of men. In 1957, just months before the Soviet launch of Sputnik would signal the true start of the Space Age, Krafft Ehrlicke formulated his Three Laws of Astronautics (see box) to set the philosophical guidelines for this next age in mankind's evolution.

By the mid-1960s, he warned that "no-growth" policies, being massively promoted by London's Tavistock Institute, what would become the Club of Rome, and their "environmentalist" off-shoots, would pose a threat to the very existence of mankind.

A schematic summary of Krafft Ehrlicke's conception of the pathways open to mankind, is presented in his 1971 graphic, seen in Figure 1. Philosophically growth-oriented world policies, based on the view that the Earth is not a "closed" system, but part of an "open world" encompassing most immediately the Solar System and eventually, all of the cosmos, would lead to overcoming limitations through the application of science and technology. The lower half of the diagram, the "no-growth" pathway,

Three Fundamental Laws of Astronautics

First Law

Nobody and nothing under the natural laws of this universe impose any limitations on man except man himself.

Second Law

No only the Earth, but the entire Solar System, and as much of the universe as he can reach under the laws of nature, are man's rightful field of activity.

Third Law

By expanding through the universe, man fulfills his destiny as an element of life, endowed with the power of reason and the wisdom of the moral law within himself.

leads to stagnation and regression, geo-economic and geopolitical power politics, extreme poverty, mass starvation, epidemic mortality waves, wars, nuclear war, revolutions, and ecological crises. Or just about what we have come to today, after suffering four decades of the anti-human, anti-growth policies about which Krafft Ehrlicke had warned.

To take this message to a broad, and non-technical audience, in 1972, Krafft Ehrlicke

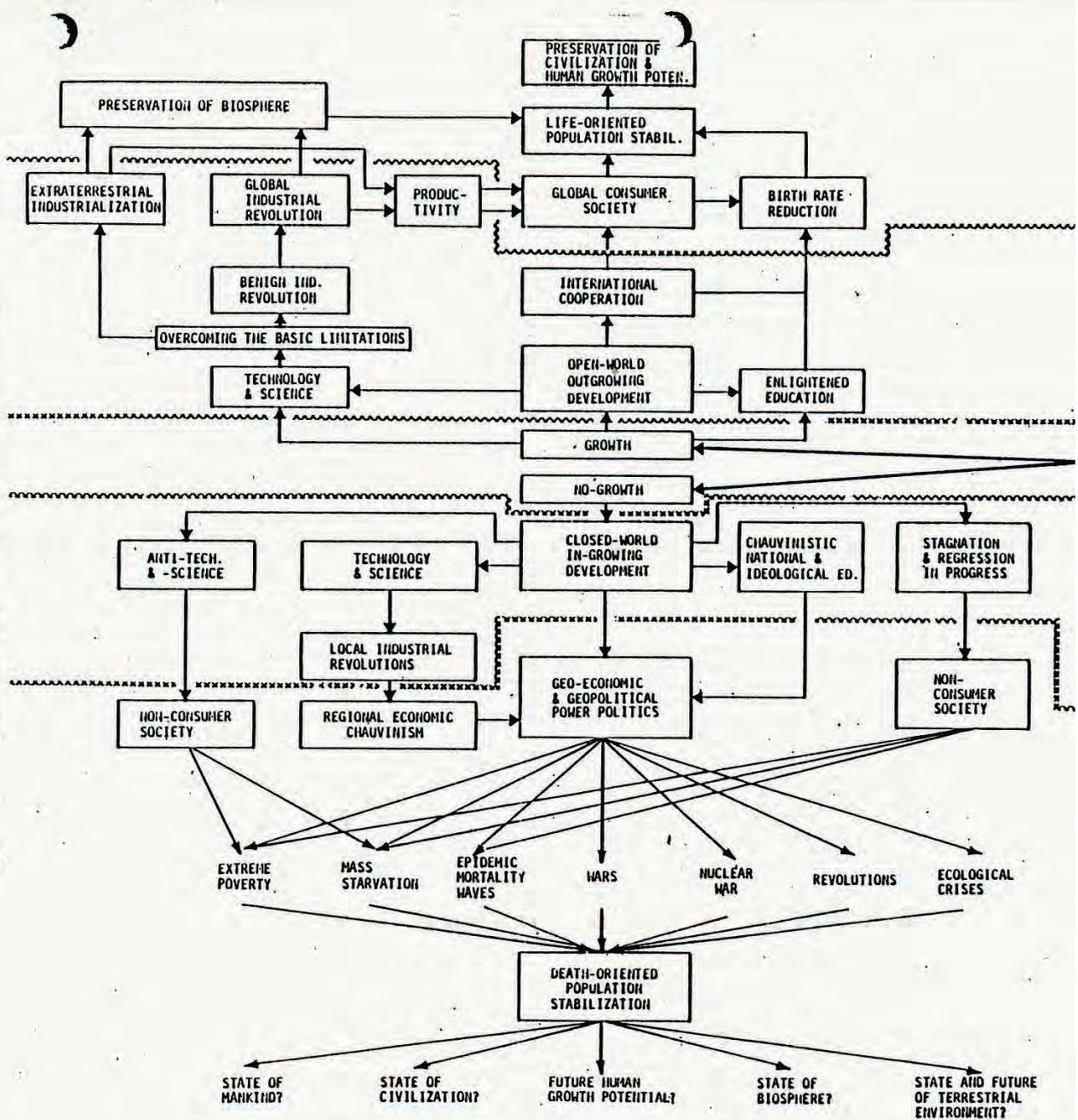
composed an opinion piece for the *New York Times*, in which he states: "If we value what has been achieved since the Renaissance, technology must advance. Technology yields industry and production, providing more than [a] minimum-survival standard. Technology gives us access to nature, the infinitesimal and the infinite, stretching the human mind and making it grow in a million dimensions. Renouncing this means to cease growing. To cease growing means to make a grim past the future's only option."

Until now, Krafft Ehrlicke explained, mankind has been limited to a two-dimensional existence-- philosophically, as well as physically, chained to the surface of the Earth. He must progress to create a three-dimensional civilization, to encompass all that he can reach, as technological advances extend our access to the cosmos. With the Solar System at our fingertips, how could one claim that there are "limits to growth?"

The Integration of Cislunar Space

So far, mankind has merely dipped his toes in to what President Kennedy described as "this new ocean" of space, harking back to the first age of exploration. What Krafft Ehrlicke imagined the infrastructure in near-Earth space would encompass is reflected in the Russian IGMAS proposal, described in this issue. But to Krafft Ehrlicke virtually every realm of activity that is carried out in two dimensions on Earth, should be engaged in from the third dimension, exploiting the unique characteristics, first, of Earth-orbital space. In fact, in his view, the extraterrestrial imperative required the integration of life on Earth with the life we place in space. This includes global observations of Earth, navigational aids, global communications, and other familiar applica-

Figure I



**GROWTH VS. NO-GROWTH CONSEQUENCE WORLD
THE EXTRATERRESTRIAL IMPERATIVE [1970]**

Courtesy of Krafft Ehrlicke

If mankind does not see the Earth as an open world, reaching outward to the cosmos, in the final stages, will come starvation, extreme poverty, and wars. This graphic representation of the consequences of a "no-growth" world was developed in 1971 by Krafft Ehrlicke to accompany his manuscript, "The Extraterrestrial Imperative."



Courtesy of Krafft Ehrlicke

On September 26, 1966, Krafft Ehrlicke joined veteran CBS reporter, Walter Cronkite, for a television studio presentation on his future concepts for space exploration. Here, Krafft Ehrlicke (left) is explaining a model of his orbital hospital.

tions, such as weather forecasting. But the expansion of human civilization off planet, also opens the possibilities for a full range of activities, such as orbital hospitals for those who would benefit from the lesser strain of microgravity; recreational facilities, to broaden participation in the scientific observation and study of the cosmos; and science, research, and manufacturing facilities to expand the resource base available to Earth's global economy.

Just as described elsewhere in this issue, the march of technologies along the road of increasing energy flux density, as a measure of man's economic progress, was foundational to Krafft Ehrlicke's plans. His conception of, and lobbying for, the development of an energy-dense liquid hydrogen rocket upper stage, allowed the creation of the Centaur, which opened exploration of the entire Solar System to the probing spacecraft of mankind.

In the 1960s, Krafft Ehrlicke explained that it would be the next step in propulsion, nuclear fission, which would open up cislunar space—meaning, literally, “on this side of the Moon”—beyond the robotic craft and short manned forays (such as Apollo), to the Moon. The purpose of lunar missions was to integrate this nearest body to Earth, which he described as our planet's “seventh

continent,” into our economy: Selenopolis was Krafft Ehrlicke's city on the Moon, engaged in resource development, mining and manufacturing, for use by the city, and export to Earth; the development of entirely new technologies defined by the unique environment of the Moon; astronomical observatories, for scientific studies that could not be done from or near the Earth, all to be powered by fission and then nuclear fusion. The city on the Moon would also be the testing grounds and way station to destinations further out.

But cislunar space, itself, Krafft Ehrlicke stated in 1955, is a critically important region for study. “Of scientific interest in a cislunar research program,” he wrote, “are the distribution of cosmic matter in the Earth-Moon plane, and normal to it; the motion of discharged solar material in the Earth-Moon field, (which also involves a study of the magnetic field between Earth and Moon); cosmic radiation; and measurements of the Earth's albedo

from greater distances.” Krafft Ehrlicke saw the entire region from the surface of the Earth to the surface of the Moon populated with scientific instruments, as extensions of man's senses, in a constantly-upgraded series of scientific studies, and “for the realization of human space flights.”

With the industrial development of the Moon, and families of space transportation vehicles allowing a thriving commerce of people and goods in cislunar space, mankind would be ready to tackle the next major challenge—Mars.

Space visionaries, including Krafft Ehrlicke and Werner von Braun, were already planning mankind's exploration of the planet in the Solar System most like our own, before any rockets had even left the surface of the Earth.

“Expedition Ares,” written by Krafft Ehrlicke in 1948, but published for the first time in the Spring 2003 issue of *21st Century Science & Technology*, begins 400 years in the future, when Solar System space travel is commonplace. From that vantage point, he looks “back” to the year 2050, and first crew to head for Mars. In his work, the first mission is, in fact, a failure, and the crew must return to Earth. But exploration progresses, and the multi-decade development of the technologies to be brought in to play to ex-

plore the red planet, are described in fascinating detail.

But Mars was not the end point of Krafft Ehricke's vision. It extended out 30 billion years!

When The Sun Dies

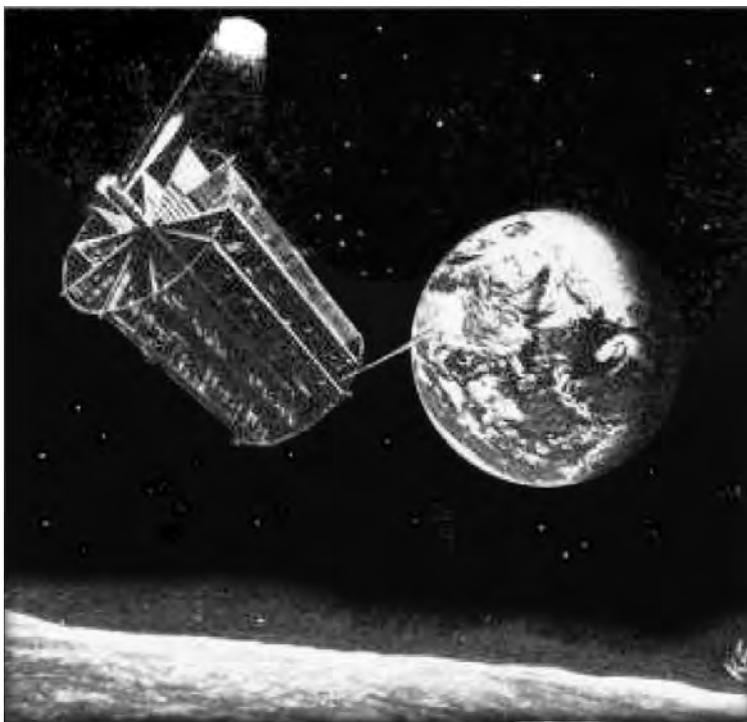
In Krafft Ehricke's plan, the move of mankind into space would be enabled by a series of increasingly sophisticated, large, and complex infrastructural elements, to include living and working facilities, such as space stations, in near-Earth orbit and cislunar space. The stations would be steps toward creating the Androsphere—the integration of Earth and space. But these stations would not be merely bare-bones, temporary way-stations, but the build-up to the creation of new civilizations in the future.

The largest of his Earth-orbiting stations, Krafft Ehricke would name "Astropolis," a city looking to the stars, housing thousands of people. Much of its resources would come from the already ongoing industrial development of the Moon. It is described as the first step toward "extraterrestrialization;" an urban space facility in near-Earth space. Its purpose would be not only to provide economic integration with the Earth, but to begin to create a space-faring civilization, organized by the principle of the "moral imperative" that is unique to mankind.

To prepare mankind for his ultimate exploration, Astropolis would include a Space University. Artificial gravity, from three-quarters to one full Earth gravity equivalent would be created by slowing spinning the city-sized station. This would accommodate living units, hydroponic farms, farm animals, industry, the University, medical, and leisure activities. Crews would undergo training, in preparation for more distant destinations.

But Krafft Ehricke was well aware that our Sun-centered neighborhood, and the Earth itself, will become a very dangerous place further in the future. Therefore, Astropolis, would spin off Androcells. These would be self-sufficient societies, no longer tied to the Earth, or even to the Moon. Androcells would be self-propelled, with a fusion power system, and free to travel throughout the Solar System. Krafft Ehricke further describes them as "man-made planetallas," with all of the facilities needed for an advanced society. He credited Konstantin Tsiolkovsky with a similar early concept, in which manmade planets were like a "string of pearls," in orbit around the Sun. Krafft Ehricke indicates his location of first-generation Androcells, at Mars, the asteroid belt, and Jupiter.

In a speech in Los Angeles in 1978, Krafft Ehricke described the future of Homo Extraterrestris—the population



Krafft Ehricke

Three dimensional civilization will be achieved when mankind can create his own planets, or "planetallas," in orbit around the Sun. In this early drawing, an androcell, is near the Moon. With their own propulsion systems, such new worlds will be able to leave our Solar System when the Sun can no longer enable the Earth to be an abode for life.

of the Androcell. The process of extraterrestrialization means that "the new place becomes the frame of reference, 'home;' the former place becomes foreign." The Androcells will form a network of "roaming, self-sufficient 'worlds;'" a process of an "outlook for the evolution of the universe in the next 30 billion years."

Using the plasma, which is ubiquitous in the universe, for fusion fuel, and the anti-matter which will similarly be available, mankind's new worlds will be able to start the journey to find more amicable environments for life, in preparation for when our Sun makes our Solar System uninhabitable.

More than one person who knew Krafft Ehricke, who died in 1984, has remarked that he lived in a sometimes lonely place—the future.

It is only that quality of thought and imagination that will equip mankind to meet the challenges we all face.

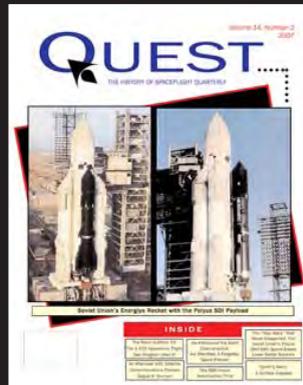
Krafft Ehricke's Extraterrestrial Imperative, by Marsha Freeman, can be purchased from Apogee Books, at or 1-888-557-7223, for \$27.95. It is 302 pages, with an index and bibliography.

QUEST

THE HISTORY OF SPACEFLIGHT QUARTERLY

Quest
 P.O. Box 5752
 Bethesda, MD 20824-5752
 United States
 Tel: +1 (703) 524-2766
 quest@spacebusiness.com
 www.spacehistory101.com

ISSN: 1065-7738



Rediscover space exploration's past through the pages of *Quest*, the world's only peer-reviewed publication dedicated exclusively to the history of spaceflight. Since 1992 *Quest* has featured the people, programs, and politics that made the journey into space possible.

Written by professional and amateur historians along with people who worked in the programs, each quarterly 64-page issue features **articles chronicling the making of the space age**, plus rare photos and

exclusive interviews on human spaceflight, robotic exploration, military programs and policy, international activities, and commercial endeavors.

These are the stories that **fascinate and captivate**; that give **behind-the-scenes insight** into the space program.

From liftoff to splashdown, humankind's quest to explore the final frontier of space has carved a chapter in history that beckons to be retold.

Enter code: 21ST and Save 20%

United States

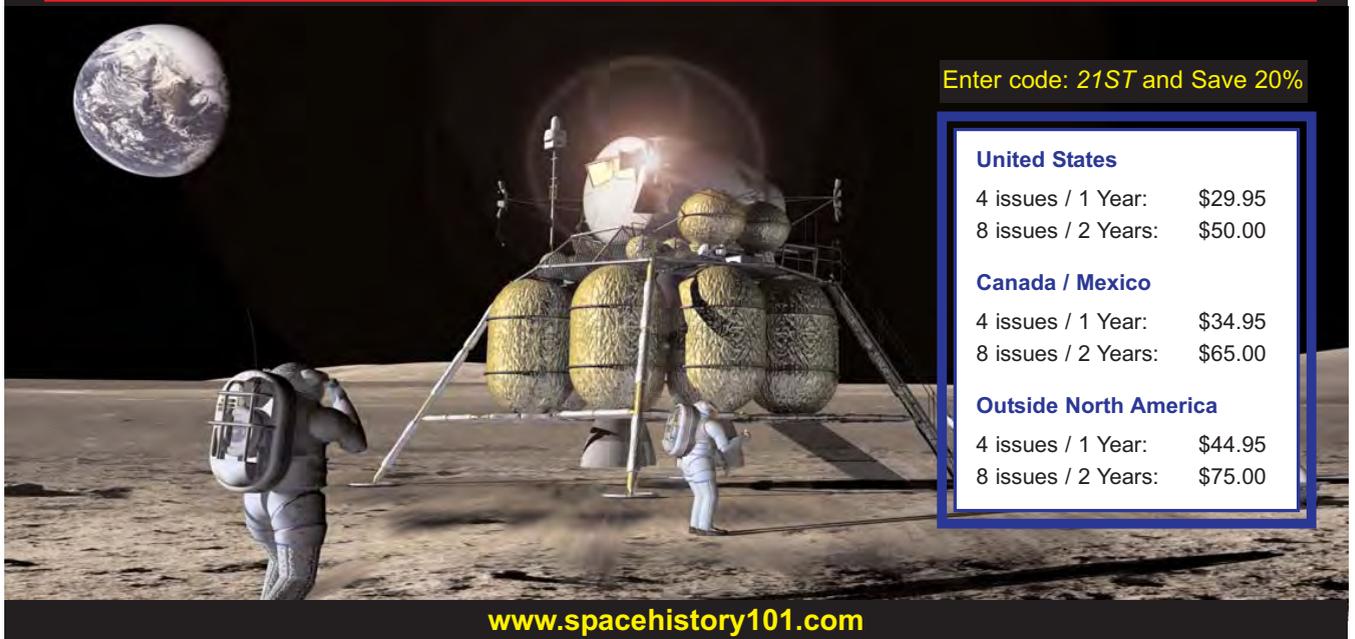
4 issues / 1 Year: \$29.95
 8 issues / 2 Years: \$50.00

Canada / Mexico

4 issues / 1 Year: \$34.95
 8 issues / 2 Years: \$65.00

Outside North America

4 issues / 1 Year: \$44.95
 8 issues / 2 Years: \$75.00



www.spacehistory101.com