

I. Space: Opportunity for Progress and Peace

ADDRESS TO SPACE RENAISSANCE FESTIVAL

The Actuality of Krafft Ehrlicke's Vision

by Helga Zepp-LaRouche

This is the edited transcript of Helga Zepp-LaRouche's [address](#) to the Space Renaissance Art and Science Festival held at the Archenhold Observatory in Berlin, Germany, July 7-9, 2022. The event was co-sponsored by the Stiftung Planetarium Berlin and Space Renaissance International. Mrs. Zepp-LaRouche is the founder of the international Schiller Institutes.

The moderator for the presentation was Bernard Foing, former Chief Project Scientist for the European Space Agency's SMART mission to the Moon. He is cur-

rently Executive Director of the International Lunar Exploration Working Group (ILEWG), and President of Space Renaissance International.

A video of Zepp-LaRouche's presentation and the discussion session is available [here](#).

What makes a life rich, is when one has the good fortune to meet and work with a number of the outstanding great minds of one's time. One such person in my life was the great German-American space pioneer,



“Space travel holds perhaps the greatest general appeal for our complex and divided world.” —Krafft Ehrlicke. Here Ehrlicke addresses a meeting of the European Workers' Party (EAP), a German political party for nuclear power headed by Helga Zepp-LaRouche, who is seated at the table. November 1981.

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Krafft Ehrlicke, whom I accompanied on a lecture tour through Germany in 1981 and who was on the advisory board of the Schiller Institute during the last years of his life. He was one of the great visionaries concerning man's identity as a space-species, and he expressed that limitless optimism about the future of mankind that only the great geniuses of human history portray. Given his extraordinary prescience of the fundamental challenges in space science, which are only becoming obvious today, he deserves to be more recognized by several orders of magnitude.

Krafft Ehrlicke was born in Berlin on March 24, 1917. When 12 years old, he saw the movie by Fritz Lang, *Woman in the Moon* (*Frau im Mond*) which, together with the work of Hermann Oberth, was the inspiring experience that would shape his entire life. From that moment on, he would immerse himself in books about astronomy, flight mechanics, and power technologies; and soon he started to design models of spacecraft, and then became a prolific writer for technical journals. In 1938, he founded the Society for Space Research e.V., together with Franz Kaiser, studied at the Technical University in Berlin, listened to Hans Geiger and Werner Heisenberg, and acquired a very broad knowledge in the natural sciences, the evolution of life, and the biosphere. From the standpoint of the evolution of life on planet Earth, it was evident to him that the next natural phase of human evolution would be the settlement of the human species first in nearby space and then, eventually, in the entire Solar System and beyond.

Interrupted by conscription to the army during the war in 1940, he was ordered from the Eastern front to Peenemünde, because some of his patents concerning rocket design drew the attention of army services. There he worked together with Dr. Walter Thiel and Wernher von Braun. He was tasked to investigate the application of the newly discovered nuclear fission technology to rocket propulsion. After the war he was one of the

German scientists who moved, per the initial Operation Paperclip, to the U.S., where he worked with rocket specialists, first in Fort Bliss in New Mexico, then in Huntsville, Alabama. There he became the chief of the department for gas dynamics, before moving to the private aviation firm Bell Aircraft.

Space Firsts, Ideas of Space Travel

Later, [while working] for General Dynamics, Krafft developed a number of applications for the Atlas rocket. His most revolutionary technical development was the Centaur rocket, an upper stage, the first hydrogen-fueled vehicle, for which he earned the nickname "Father of the Centaur rocket." This energetic addition to any other rocket opened up the Solar System to mankind, and it has carried everything from unmanned Surveyor crafts to the manned Apollo missions to the Moon, from the Mariner missions to Mars to the Voyager spacecraft.

In 1957, Krafft published [a paper], "The Anthropology of Astronautics," which pointed to the extraordinary significance of space research and travel for the sense of identity of the human species, and therefore as a concept to find solutions to seemingly

unsolvable problems in the political and strategic situation. He wrote:

The concept of space travel carries with it enormous impact, because it challenges man on practically all fronts of his physical and spiritual existence. The idea of traveling to other celestial bodies reflects to the highest degree the independence and agility of the human mind. It lends ultimate dignity to man's technical and scientific endeavors. Above all, it touches on the philosophy of his very existence. As a result, the concept of space travel disregards national borders, refuses to recognize differences of historical or ethnological origin, and penetrates the fiber of



Courtesy of Krafft Ehrlicke

Space visionary and pioneer Krafft Ehrlicke, 1917–1984.

one sociological or political creed as fast as that of the next. As a technical concept, astronautics is all-embracing, and more revolutionary than anything conceived so far, including even atomic technology. As a scientific concept, it is bound to stimulate and rejuvenate practically all fields from astronomy to zoology. Its sociological and political implications are such that future generations may well describe as “cautious” even the boldest predictions of our time.

Because of this, space travel holds perhaps the greatest general appeal for our complex and divided world. It seems to promise less immediate material gain than atomic technology. Yet, or perhaps therefore, its spiritual appeal is extremely powerful, symbolizing as it does that man, after all, has not yet lost his capability of cutting the Gordian knot, of exploding old notions which retard his development, and of overcoming seemingly invincible physical obstacles. If it can be done here, it can eventually also be done in other segments of our life today, where man seems to be hopelessly and perpetually deadlocked. A feeling of enthusiasm and genuine interest seems to prevail among all those who deal with space flight and astronautics: school children learning about it; Congressmen allotting money for it; political leaders of the East and West praising their nations’ contributions to its progress; and last, but not least, scientists and engineers blazing the trail toward its eventual accomplishment.

While present-day realities like the Wolf Amendment in the United States or recent accusations that China is about “to take over the Moon,” seem to contradict such an optimistic perspective, it is also a fact that, if one leaves the space scientists and astronauts to themselves, that feeling of enthusiasm and genuine interest that Krafft Ehrlicke speaks about, clearly prevails and



NASA/Pat Rawlings

Artist's concept of the lander and ascent vehicle components of the Artemis mission that will take a human crew to the Moon and return it safely to Earth.

gives a foretaste of what will be a natural cooperation of representatives of the one human species of the future. Just think a couple of hundreds, thousands, or millions years ahead—and that is what we should be thinking about—do you really think that we will be still squabbling with each other, like a bunch of snotty-nosed children fighting over their toys?

This is why the lofty principles laid out by Krafft Ehrlicke are a useful reminder, that humanity is the unique species capable of reason, and from that follows the ability to again and again come up with solutions, which are on a higher level than that on which the problems arose. He stated beautifully in what he called the “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. Not 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.

The Right To Expand and Develop

He calls the first law a “Declaration of Independence” from uncritically accepted conditions, from a past and principally different pre-technological world clinging to humanity; and he explicitly cites the U.S. Declaration of Independence, which represented the rejection of Empire for the sake of a Republic, as a proof that such an axiomatic break with flawed thinking is actually possible.

The way Krafft situates the Third Law, in that space operations have an anthropological character, puts him in total cohesion with the Platonic humanist tradition of Nikolaus von Kues [Cusa], Johannes Kepler, Gottfried Wilhelm Leibniz, and Vladimir Vernadsky—namely, the idea of the inner coherence of the laws of the macrocosm and the microcosm, and the increasing dominance of the Noösphere over the Biosphere. The fact that man is the only source of intelligent life known to us so far, Krafft said, gives him “the right to expand, to develop and to enrich the foundations of his existence to the limits of his capability,” and it is the continuous problem-solving of living elsewhere in the Solar System, or even in interstellar space, that gives “space flight its ultimate anthropological meaning.”

While it is totally normal today to talk about lunar industrialization, he was one of the most original and far-sighted pioneers in this endeavor. In the development of the Moon, he saw the first step of the extraterrestrialization of mankind, which will change and develop mankind to a more advanced stage. He describes how, on Earth, the biosphere came first, and then, through evolution, mankind developed. On the Moon, it will be the reverse: Man will arrive first, and only then the conditions are created for life to exist there. (This was beautifully demonstrated with China’s Chang’e-4 lunar lander mission, which got the first plant ever to germinate and sprout on another world, inaugurating a new era for life in space.)

Krafft regarded the Moon as the 7th continent of Earth, and in the 1970s he elaborated a detailed study for the industrialization of the Moon, in five phases. In



Fusion/Christopher Sloan

Selenopolis—Krafft Ehricke’s concept of a fusion-powered city on the surface of the Moon— will establish mankind’s first polyglobal civilization.

the first phase, goods are exclusively transported from Earth to the Moon; in the third phase, goods retrieved back to Earth; in the fifth, life and production on the Moon are not only self-sufficient, but a city, called Selenopolis, becomes the capital of the new Moon civilization, and becomes the support basis for new colonies in the Solar System.

The picture shows the energy supply for the city coming from a tokamak fusion reactor. The design of the city is expandable, so that it can grow with the increase of the population and its activities. The canopies go from 500 meters up to several kilometers and will eventually cover many kilometers of surface on the Moon. Krafft anticipated that the different climates on Earth will be recreated—cold winters, warm agricultural areas, dry or subtropical climates. In the first phase of the industrialization, the energy source would be the high-temperature reactor, followed by thermonuclear fusion.

Ehricke proposed to use first-generation deuterium-tritium fusion reactors to breed the rare isotope helium-3, in order to realize the technically more challenging deuterium-helium fusion, one that could reach a higher energy efficiency. He could not yet know that on the Moon there are significant amounts of helium-3, and that Chinese space scientists are planning to import this back to Earth in order to fuel fusion reactors here.

After Krafft Ehrlicke had died on December 11, 1984, the *Los Angeles Times* wrote about him that he had fascinated his many audiences, when he was featured on TV or radio programs, talking about building swimming pools on the Moon despite the low gravity, or about interstellar spaceships that could make our galaxy the backyard of mankind.

For Krafft, the goal was not a village on the Moon, nor even a city on Mars; rather, he thought in terms of the long-range aspect of interstellar exploration of the universe. In an unpublished book, he considers relativistic interstellar flight, investigating Einstein's Special and General Relativity. Given the fact that, recently, the proof was found that Einstein's assumptions about gravitational waves are correct ... this means that we are living in a relativistic universe. What that will mean for the possibility for interstellar space travel, and possibly even beyond, is mind-boggling—but it is exactly this kind of bold thinking in hypotheses, as outlandish and bold as it might appear to be at the time, which is characteristic of the human species, and which separates us from all other living creatures known so far. Once again, Krafft's far-ahead and unblocked thinking should be an inspiration.

'Nature' Is Not a Closed System

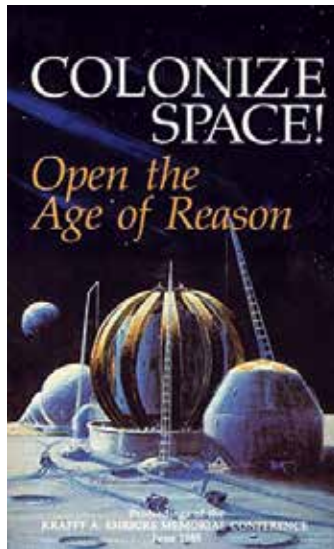
Naturally, from this standpoint of limitless perfectibility of human creativity in an anti-entropically developing universe, Krafft recognized the terrible implications of the emerging zero-growth ideology, as it appeared in the beginning of the 1970s with the Club of Rome and the resulting green ecology movement. He recognized the intellectual fraud of Meadows and Forrester, who in their book, *Limits to Growth*, had completely left out the role of science and technology in the definition of



EIRNS/Stuart Lewis

"It is optimism which is lacking. The last time you had any politician who talked like [Krafft Ehrlicke] it was President Kennedy." Here, Lyndon LaRouche addresses the Schiller Institute's Krafft Ehrlicke Memorial Conference, Reston, Virginia, June 15, 1985.

what a resource is; Krafft pointed to the qualitative difference between propagation and growth, a differentiation which has completely disappeared for the green movement today. Krafft stated:



Proceedings of the Krafft Ehrlicke Memorial Conference of June 1985.

For them, the environment of life of man is a closed system—limited to Earth. Not for me! The field of activity of man is today as little a closed sphere, as it was a flat disk earlier.

The *Global 2000* report is a warmed-up version of the same nonsense, contains obvious misinformation and misjudges, as its notorious predecessor [had], the human ability for limitless growth. Growth is, in contrast to mere propagation, an increase in knowledge, wisdom and capacity to grow in a new way.

For Krafft Ehrlicke, the idea of space travel was the most logical and lofty consequence of the ideal of the Renaissance, which put man in the context—and in an active context—of the Cosmos, building on the most noble traditions of the ancient classics. He showed the way, how by lifting the eyes to the stars and by working to make them the home of humanity, man can realize both his innate dignity and the age of reason.

In the year following Krafft Ehrlicke's death, the Schiller Institute held a memorial in his honor. It would be wonderful if the international space community would do it again.

Thank you. [applause]

Discussion Session

Bernard Foing (moderator): Thank you for your presentation. We want to give you, as a tribute from our event, this book ...

Zepp-LaRouche: Thank you very much.

Foing: But also, we want to address some questions from the audience. Of course we are inspired by Krafft Ehrlicke, and so some of the concepts you mentioned, such as a "space renaissance" (which gives us our name), and also Ehrlicke's positive vision, contracting the idea of a closed world with no technical progress that we are witnessing; that this is the way we can evolve as civilization, socially. That's very important to us. Thank you very much, and for summarizing also some of these areas.

But now, who are the thinkers who are developing beyond the vision of Krafft Ehrlicke? What are the next steps to make progress?

Zepp-LaRouche: I think ITER is underfunded. There is still good cooperation between [The Russian space agency] Roscosmos and NASA, despite the political problems. China has impressed me the most, because although they started very late, they have made breakthroughs. The whole idea that the Chinese are stealing technology has been disproven by putting the [Yutu-2] rover on the far side of the Moon. No nation had done that before, so as the first nation to do this, who could they have stolen the technology from?

China also had a Mars mission last February, together with the UAE and the United States. I was very impressed by the leader of the UAE space program [Sarah Al Amiri, Minister of State for Advanced Technology —ed.], because in only six years, she and her team developed their Mars mission. Now we are at a new frontier because of the possibility of life on Mars being

found in various places. It's a very exciting moment.

Foing: Yes, indeed. It's true that since Krafft Ehrlicke's visionary ideas, our world has changed. You mentioned the emergence of other spacefaring countries like the UAE; the acceleration of the activities in China; the fact that, of course, we have also to keep some of the top-level principles, such as how space extension can provide benefits for all. Now we are talking about sustainable development goals.

Are we ready for this interstellar expansion, or should we do it by consolidating the next steps? The



John F. Kennedy Presidential Library and Museum

President Kennedy believed that man's creativity can solve any challenge. Here, he peers into the Mercury capsule, Friendship 7. Cape Canaveral, FL, Feb. 23, 1962.

Moon we can use it as a continent, so let's use it to take the time to develop activities on the Moon. Then we have Mars. Before we go interstellar, there are a lot of technical challenges.

Zepp-LaRouche: Obviously. But you have to think ahead. It is the vision for the future which inspires the steps for tomorrow and the day after tomorrow. We need thermonuclear fusion as propulsion to even think about interstellar travel. But what is necessary is the idea that man is a space species. Krafft Ehrlicke even thought that it's not just the solar system, but, given technological progress—we don't even know what it will be—that it will be possible even to leave our galaxy. Given the fact that the Hubble Space Telescope has discovered two trillion galaxies for mankind to occupy in space—it bog-

gles your mind. But that's a good thing.

We are not limited—the fantastic thing about Space is that it *completely* rejects the green ideology, because we are not living in a closed system; we are living in a system where, as Krafft correctly said, man's creativity can overcome *any* challenge. It is that optimism which is lacking. The last time you had any politician who talked like that was John F. Kennedy. He had the idea that man's creativity can solve any challenge.

Nowadays, people are so pessimistic and so downtrodden, especially in Europe. I was just talking with the young lady [in the audience] from China. In Asia, it's completely different. The Asian cultures right now have a very optimistic idea, but the Europeans will soon be fossils in the museum of peoples who didn't make it—if we don't go back to the ideas of Krafft Ehrlicke.

Foing: We would agree with that. I see that we have to bring hope. I still have the hope that we can educate the politicians. We can also involve them. [Addressing the audience] Possibly some of our young Space professionals: Please also become politicians, so that you can change the world. I know some colleagues, hello, in the European Parliament, who can also start motivating us, first of all for a knowledge-based society, that is, using facts to make a decision.

Space is such an important part of our lives. The economic-social aspect of Space makes it so that we cannot ignore it. "Madam, I'm going to switch off all the spacecraft for one week. Then, let me know how much we need Space."

Any other questions on our model, this vision? Also, on how we can continue, based on the discussion we have had today. We also have Europe. There should also be some good energy for Europe.

Adriano V. Autino: I always try to bring back all the visions to what we have to do today. My recommendation? Agreeing 100% with Krafft Ehrlicke that we are not limited in the universe and we have a right to go there; because we are the only intelligent species. And



NASA/Bill Ingalls

"During the 50th Anniversary of the Apollo Moon landing, there were festivities all over the world; people were optimistic. It's that kind of optimism—that space cooperation is the one area where you can overcome these problems. We have to have a mass movement of people who talk about that." —Helga Zepp-LaRouche. Here, an image of the Moon is projected onto the Washington Monument, Washington, D.C., July 19, 2019.

we have a right to "contaminate" other environments with our life, because we are "contaminated" by the universe. Comets seeded life on Earth. We did not have our birth on Earth. We came from the stars, so why can't we take life back to the stars?

Having said all that, it's a big vision, going outside of the [Milky Way] Galaxy. In your opinion, what should we do before 2030 to avoid civilizational collapse and to take profit from the historical opportunity that we have?

There is a philosophical view, and there is a political view. From the point of view of space policy, what is very urgent to do, before 2030?

Zepp-LaRouche: I think the most important thing is to avoid destroying each other. Because we are very close to World War III, ...

Autino: [Nodding] Yeah.

Zepp-LaRouche: ... much closer than most people want to even contemplate. As I think about that, I have sleepless nights. I wake up in the middle of the night sweating. There are people in the world right now who think you can win a limited nuclear war.

Autino [Shaking his head]: Crazy!

Zepp-LaRouche: That's a completely insane idea! I think that what is necessary is to mobilize young people much more than is being done. Remember, during the 50th Anniversary of the Apollo Moon landing, there were festivities all over the world; people were very optimistic. And I think it's that kind of optimism—that space cooperation is the one area where you can overcome these problems. We have to have a mass movement of people who talk about that.

Autino: Yes.

Zepp-LaRouche: We should mobilize the astronauts and other space scientists to go to schools, to universities, and talk about this.

We need a popular uprising, discussing the importance of space, to make sure that we *become* the immortal species. I believe that in the tradition of the philosophy of Krafft Ehrlicke, mankind is the only immortal species—potentially.



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Autino: Potentially. Yeah. Thank you.

Zepp-LaRouche: Potentially. If we conquer other celestial bodies, even if something terrible happens to Earth, say, two billion years from now, because of developments on the Sun, we will continue to live. But we have to make sure we live the next several weeks, months, years. Therefore, we need a popular discussion about the danger, and how to overcome it.

The vision of the astronauts when they are looking from the ISS [International Space Station] down to Earth—as was mentioned this morning by several speakers—the vision changes. Krafft Ehrlicke would always tell us, there is a change in the identity of people. He told us that when he immigrated with his wife and children from Germany to the United States, he had one mindset; but the children who grew up in the United States had already a mixed mindset—a change—and the children of those children who grew up in the United States, had a completely different paradigm in their thinking.

He used that as a pedagogical way to describe what will happen to the identity of Man when he is on the Moon or on Mars. People will change. It's like infrastructure. In the beginning, people thought that you would die if you went faster than 30 km/hr with a train! But now in China, people are making experiments with maglev trains going 600 km/hr and they are not dying. As a matter of fact, it would make everything more efficient.

Infrastructure changes the identity of man. It is that which we have to evoke.

Autino: OK. Excellent!

Foing: Excellent. Thank you. We are exactly on time. That was a good rocket engineer-scientist, Adriano Autino.

Helga, you mentioned this vocation, but also there is the duty to save all the planet, and to take care of the other species—biodiversity—because we don't want to go alone into Space.

Zepp-LaRouche: No!

Foing: We want to go with a good zoo with us.

Any more important questions? For example, what would be the future? But now the near-term future is that we go for lunch. [laughter]