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## Lunar Landing in 2024 To Prepare for Mars Mission





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P.O. Box 17390, Washington, D.C. 20041-0390.

(571) 293-0935

**European Headquarters:** E.I.R. GmbH, Postfach

Bahnstrasse 9a, D-65205, Wiesbaden, Germany

Tel: 49-611-73650

Homepage: <http://www.eir.de>

e-mail: [info@eir.de](mailto:info@eir.de)

Director: Georg Neudecker

**Montreal, Canada:** 514-461-1557

[eir@eircanada.ca](mailto:eir@eircanada.ca)

**Denmark:** EIR - Danmark, Sankt Knuds Vej 11,

basement left, DK-1903 Frederiksberg, Denmark.

Tel.: +45 35 43 60 40, Fax: +45 35 43 87 57. e-mail:

[eirdk@hotmail.com](mailto:eirdk@hotmail.com).

**Mexico City:** EIR, Sor Juana Inés de la Cruz 242-2

Col. Agricultura C.P. 11360

Delegación M. Hidalgo, México D.F.

Tel. (5525) 5318-2301

[eirmexico@gmail.com](mailto:eirmexico@gmail.com)

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# Lunar Landing in 2024 To Prepare for Mars Mission

# Moon to Mars: Bridenstine Tells the Senate NASA's Plan for Deep Space Exploration

by Kesha Rogers

July 22—Just three days before the 50th Anniversary of the first American astronauts, the Apollo 11 astronauts, walking on the Moon, NASA Administrator Jim Bridenstine testified before a hearing of the Senate Committee on Commerce, Science and Technology.

The hearing was introduced by Committee Chair, Roger Wicker (R-MS):

Saturday will mark the 50th Anniversary of the Apollo 11 mission. The Moon landing still unites and inspires Americans, like few events in our nation's history. It's hard to believe that a half century has passed since the United States won the space race. Although it's fitting to celebrate such past achievements, we are pleased that NASA Administrator Jim Bridenstine is here to discuss the *future* of American space exploration. In December of 2017 President Trump outlined a bold vision to reinvigorate America's space leadership. Space Policy Directive 1 calls for returning humans to the Moon for the first time since 1972, but this time it will be for long term exploration and use and will be followed by manned missions to Mars.

Bridenstine responded:

We are indeed celebrating 50 years of Apollo, and in that era we had this great contest of great powers and we were trying to demonstrate our technological prowess, our ability to lead the world. In that era it wasn't just about technological prowess, we were trying to demonstrate that our political and economic system was, in fact, superior to that of the former Soviet Union. And, of course, we are also proud of what NASA did in those days when our Astronauts Buzz Aldrin and Neil Armstrong walked on the surface of the Moon for the first time in human history. And here we are fifty years later still celebrating that monumental, absolutely stunning achievement.

Committee Ranking Member Maria Cantwell (D-WA) reminded that after five additional missions following Apollo 11, and a total of 12 people walking on the surface of the Moon, the Apollo program simply ended. Bridenstine took the point. "I think that's kind of been a letdown for NASA for the last 50 years. We want to continue doing these stunning achievements and go further, and explore more."

## 'Cost and Schedule'

Conducting numerous media interviews July 14-15 as the anniversary approached, Bridenstine had described the difficult fight NASA is engaged in to return to the Moon within five years, as the test ground and base for travel to Mars. He had also expressed his confidence that the agency would carry out the mission, and inspire millions of Americans in the process, as Project Apollo did a half-century ago. Apollo is still celebrated 50 years later and still generates widespread public support and optimism about space exploration, he told C-SPAN's "Newsmakers" interviewers July 14, because of the feats of human progress it accomplished. "What will we do that will be celebrated 50 years from now?"

With difficulties posed by both "cost and schedule"—by the problems of Boeing, SpaceX and other contractors in testing and perfecting their rockets and capsules, and by NASA's slowly rising but still inadequate budget—Bridenstine showed that the administration is making the path more difficult, by rejecting cooperation with China, being still barred from doing so by the Wolf Amendment. He was asked on CBS News' "Face the Nation" July 14 whether China might beat the United States to the Moon, or whether there might be cooperation with China in this. He answered "I can tell you as of right now, 'No' to both. . . . We do not need to cooperate with China; we are so far ahead"; and described the number of times the United States has carried out soft landings on Mars.

While the United States is working with the European and Japanese space agencies to its benefit, its holding aloof from lunar exploration cooperation with both

China and Russia is a policy which does not fit the current great moment, and must change.

On the July 20 anniversary, NASA announced that the new crew launch vehicle Orion was tested and ready to be launched by the huge Space Launch System of Lockheed and Boeing, which remains behind schedule and to be tested. Two days later NASA announced that the future orbital path of its next element, the Moon-orbiting space station known as Gateway, had been determined—a “halo orbit” around the Moon. The European Space Agency has been in collaboration with NASA on both Gateway and Orion—it has provided the “European Service Module” for the Orion crew capsule.

During the July 17 hearing of the Senate Committee, Bridenstine placed crucial emphasis on the point, that if Congress fails to adopt a budget for Fiscal Year 2020, and merely enacts a Continuing Resolution which holds spending at current levels for another year, the effect on the Moon-to-Mars program, Project Artemis, will be “devastating.” He explained that such an outcome would not only deny funds for what Artemis needs to do, it would also require continued—wasted—spending on what NASA does not need to do. He said that NASA will not repurpose funds internally for Artemis. In particular, NASA would be left with *no means* to design and develop a Moon landing vehicle or module; the “lander” is the final element in the Artemis design, whose task is to take astronauts down to the Moon’s surface from the orbiting Gateway space station, and back up again for return to Earth in the Orion capsule.

This setback appeared to be avoided on July 22, when President Trump announced that a two-year overall budget agreement had been reached between the White House (with Treasury Secretary Steven Mnuchin negotiating) and Congressional negotiators led by House Speaker Nancy Pelosi. That deal would avoid a Continuing Resolution and “sequestering” of additional funds. It is likely to have included the \$1.6 billion in additional FY2020 funds for NASA, which Administrator Bridenstine considered crucial to keeping Project Artemis in an accelerating mode.

### **Twin Sister of Apollo**

But again, Senator Cantwell told Bridenstine that the overall estimated cost of Artemis meant that NASA would have to request \$4-6 billion per year from FY2021 to 2024 for the project, and the Administrator agreed. NASA’s overall budget has risen roughly from

\$18 billion to \$21 billion during the Trump Administration, after years of stagnation, and is requested to rise in this budget to \$22.6 billion for FY2020. For comparison, the peak NASA budget during the Apollo “crash program,” reached in 1967, would be about \$160 billion in today’s dollars!

Bridenstine told the Senate that the new Moon project is named for the twin sister of Apollo, Artemis, the goddess of the Moon. “This time, under the Artemis program, when we go forward to the Moon sustainably, we go with a very diverse, highly qualified astronaut core that includes women,” he added. “In the next five years we will land the next man and the first woman, on the South Pole of the Moon.”

He also explained:

Discoveries in recent years have shown us that our belief for so many years that the Moon was bone dry, has been proven false. Now we know that there are hundreds of millions of tons of water ice on the South Pole of the Moon. Water ice represents air to breathe. It represents water to drink, and hydrogen and oxygen that can be put into cryogenic liquid form to create rocket fuel. We are going back to the Moon sustainably. We want to have access to all parts of the Moon and we want to use the Moon as the proving ground. It is how we learn to live and work on another world using the resources of that world, so we can . . . take that technology, and take that capability to Mars.

The cancellation of the Apollo Project from 1972 was not only a letdown for NASA, but for the American people and the rest of the world, because the optimism of those remarkable achievements created the inspired expectation of discoveries to come, which were denied. When American leaders effectively abandoned the Space program, a true visionary, economist and statesman, Lyndon LaRouche, stepped forward and dedicated himself to advancing the Extraterrestrial Imperative of mankind to explore and terraform the solar system. LaRouche’s 1988 nationally televised video, *The Woman on Mars*, is still the most inspiring and optimistic vision for space exploration as a science-driver crash program. As LaRouche said in his *Woman on Mars* presentation, “We must pick up where we left off with the old Apollo program.”

This time it cannot be stopped.

## Cover This Week

Artist's rendering of an ascent vehicle separating from a descent vehicle as it departs from the lunar surface.



NASA

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October 21, 1988

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# I. Conference: After Apollo—Our Mission Today

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## Apollo + 50

### Mankind's Future Must Determine Our Present

#### A Dialogue of Cultures on How to Develop the Population and Productive Workforce for Earth's Next 50 Years

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### Being Happy About Each Other's Creativity Is Necessary If Human Civilization Is to Survive

by Dennis Speed

I think that the significance of today, of the celebration of the 50th anniversary of the Apollo 11 landing, of the future perspective of having international cooperation in space, is a synonym of what the New Paradigm of international relations among nations must be, if human civilization is to survive. I'm absolutely convinced that we are very, very close to a new epoch of mankind, where the relations among nations, will be like the relations between the members of a family, a good family, a loving relationship, where everybody is happy about the creativity of the other because it serves the common good.

— Helga Zepp-LaRouche

July 22—In advancing this evaluation the day after her participation in the Schiller Institute's New York City-based international conference, "Apollo + 50: Mankind's Future Must Determine Our Present," Schiller Institute founder Helga Zepp-LaRouche expressed the way forward, beyond the swamp of geopolitics, to a new future. For the moment, the danger of war, of world

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The full conference video is available [here](#).

financial destabilization, instigated by British Intelligence-led provocations in many areas, and of trans-Atlantic cultural decline, took a back seat.

An infectious optimism, a renewed focus on the vastness of the universe and excitement about investigating it, through what NASA has termed Project Artemis, to take human beings to the Moon and Mars, is now being expressed worldwide by new generations not even born when Apollo 11 carried out its successful Moon mission.

This space-driven mission could very well wipe away the toxic effects of the Green ideology presently sweeping Germany, Europe, and other parts of the trans-Atlantic world. Zepp-LaRouche added:

And for me it is the most beautiful refutation of this insane, Green ideology which is all based on the idea that we are in an earthbound system where the resources are limited. And the fact that man can go to the Moon, mine helium-3 for second-generation thermonuclear fusion reactors, just as one example, proves that the incredibly huge universe—the Hubble Space Telescope has now identified that we have, at least, 2 *trillion* galaxies—is practically unlimited.

## Chinese Space Program Lauded

Even the usual attempts to pit the United States against China were momentarily derailed. In a July 19 Fox News interview with former NASA astronaut Buzz Aldrin, the second human being to walk on the Moon, Aldrin refused to take the bait when he was told that a recent Harris Poll survey of 3,000 children ages 8-12 in China, the United Kingdom and the United States found that in China today, 56%, when asked “What do you want to be when you grow up?” said that they wanted to be astronauts, compared to about the same percentage of American youth saying that they wanted to be YouTube personalities.

Aldrin replied:

I think it’s a tribute to the imagination of the people in China, wanting to do that. And if we’ve lost that, that’s why this “five decades of Apollo” is trying to inspire, [with] what this nation did 50 years ago, and we’ll get caught up again in being able to do things of that inspirational nature.

The previous night at a Washington event, Aldrin had said that America, Russia, China, India, Japan and the European Space Agency should form a “united space alliance” to return to the Moon; use “power—say, nuclear power?” to exploit the resources there; and send human beings to Mars.

Dennis Speed, the Schiller Institute’s conference moderator, highlighted that space exploration has now erected a new standard for determining what must be meant by the term, “human civilization.” He referred specifically to the idea of a new economic platform, as Lyndon LaRouche had proposed decades earlier, that could be established for humanity through space exploration, emphasizing discovery itself as the true purpose as well as basis of mankind’s durable survival:

You’ve just seen the opening moments of a 1988 nationally broadcast [television show](#), *The Woman*

*on Mars*, conceived and written by the physical economist Lyndon LaRouche.

Thirty-two years after it was originally broadcast, *The Woman on Mars* is still the most visionary as well as the most feasible approach ever designed to incorporate all of humanity into the single mission for which it was created—to discover the purpose and meaning of life, by reproducing intelligent life throughout the Solar System, the galaxy, and the universal system of galaxies. This is a mission that requires the entirety of humanity.

The more than perhaps two trillion galaxies, along with, in some cases, the trillions of stars within individual galaxies, require people; they



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*Krista Deer, daughter of Krafft Ehrlicke, addresses the Schiller Institute’s “Mankind’s Future Must Determine Our Present” conference in New York City on July 20, 2019.*

require intelligent life. It is this conception of *physical* economy which is the only true human conception. For most of the time that humanity has been on Earth, it has not been civilized; because a civilized humanity would incorporate all of the members of that humanity into that mission for which it was divined.

The 130 persons in the New York audience included diplomats, science researchers, historians, teachers, and space enthusiasts of all ages, including a few veterans of NASA’s Apollo program itself. The event was live-streamed, with real-time international audiences assembled in several locations in the United States and abroad. Importantly, the New York gathering acknowledged the simultaneous involvement of millions throughout the world in celebrating humanity’s 1969 triumph.



## Celebrations Around the World

Spain has a close connection to the commemoration. Fifty years earlier, the now-famous words from astronaut Neil Armstrong that day in 1969—“One small step for man, one giant leap for mankind”—were actually first transmitted to the NASA space center in Fresnedillo, near Madrid, Spain and then relayed to the Mission Control Center in Houston! Spain’s current Minister of Science, Innovation and Universities, Pedro Duque, is an astronaut himself.

In a July 19 Council of Ministers meeting led by Duque, the astronaut championed the role of the international space program in inspiring young people to become scientists and engineers. “My generation grew up with the space race, and all children wanted to be astronauts. That was my dream when I was barely six years old,” the year of the Moon-walk. Duque was Mission Specialist on the Discovery Shuttle in 1998. Five years later, he returned to space for a ten-day Cervantes Mission on the International Space Station. He trained in Russia at Star City before the mission, and has since promoted joint university studies and double science majors between Russian and Spanish universities.

As part of the July 20, 2019 worldwide commemoration of the first Moon landing, three men—Soyuz Russian Commander Alexander Skvortsov, Italian flight engineer Luca Parmitano, and NASA astronaut-physician Andrew Morgan—blasted off from the Baikonur Cosmodrome in Kazakhstan and docked at the International Space Station. They joined three others already there—Expedition 60 Commander Alexey Ovchinin, and NASA flight engineers Nick Hague and Christina Koch. The six now have a busy summer and fall ahead of them of space walks, handling arrivals and departures of multiple visiting vehicles, and scientific research.

The Schiller Institute conference included presentations from several speakers including:

**Andrea Jones**, NASA planetary geologist and education specialist, addressed the New York City audi-



NASA/Bill Ingalls

*Pedro Duque, Spanish Minister of Science, Innovation and Universities, who was a European Space Agency astronaut, served on the International Space Station in 2003.*

ence via a live teleconference connection from the National Mall in Washington D.C., where over 150,000 people had visited various NASA exhibits over the previous days, and answered their questions, as summarized below.

**Dr. Xing Jijun**, Counsellor and Head of the Science and Technology Section for the Consulate General of the People’s Republic of China in New York, was particularly warmly greeted by the audience. He seconded Jones’ enthusiasm.

**Ben Deniston** of the LaRouche science team presented an outline for the creation of over 2 billion advanced technology jobs throughout the world in the next fifty years, a design that generated considerable discussion among the participants, both in the questions and answers session immediately following the

event’s array of presentations, and in the hotel corridors afterward. Deniston’s presentation also stressed the necessity of incorporating young researchers and scientists into the Artemis effort.

A surprise announcement was also made by **Daniel Burke** of New Jersey, who informed the assembly that in order to directly campaign, particularly to reach college age and younger generations, speaking out against the idea of “limits to growth” and the “Green New Deal,” he would run as an independent candidate for the office of U.S. Senator in the 2020 elections.

## The Extraterrestrial Imperative

Space pioneer **Krafft Ehrlicke** (1917-1984), a Schiller Institute Board Member, the creator of the Centaur rocket, and the author of the concept of “[the extraterrestrial imperative](#),” was recalled in his role of both scientist and father by his daughter, **Krista Deer**. More than nearly anyone else, Ehrlicke had thought through each step of successive missions to the Moon, and beyond. The work of many, including Lyndon LaRouche’s 1988 *The Woman on Mars*, was extensively influenced by Ehrlicke.

Krafft Ehrlicke stated it thus:

The Extraterrestrial Imperative is a driving force in the natural growth of terrestrial life beyond its planetary limits. As such, it is an integral part of the obviously expansionistic and growth-oriented pattern of life's evolution. This drive caused life to grow from infinitesimal beginnings into a force that encompasses and transforms an entire planet through its biosphere. More basically, the Extraterrestrial Imperative expresses a "first message," a primordial imperative, bred into the very essence of the universe, driving the evolution of matter from simplest forms (elementary particles) to highly complex structures (e.g., the intelligent brain)...

The Extraterrestrial Imperative is of concrete significance to us. . . .

The evolutionary road on this planet is paved with many crises. In fact, every major advance was preceded by, triggered by, and made possible by crisis. However, not every crisis led to an advance. The penalty of failing the test of crisis is death.

The New York City conference also heard an excerpt from Ehrlicke's last speech, given in 1984 only weeks before he died. Ehrlicke, like LaRouche, enjoyed the practice of "axiom busting." He challenged the assertion, weeks before his death, of the unquestioned authority of Darwinian evolution as a model for study by offering the photosynthetic revolution as the alternative precedent for the human race.

In drawing the meeting to a conclusion, moderator Dennis Speed remarked:

Let me point out that seven years from now this country will be 250 years old. The American Revolution took place over seven years, in the period 1776-1783. The past 50 years have not shown America in its best light. It's clear to those of us who were around at the time that man walked on the Moon, that we have lost tremendous ground, and lost tremendous self-respect.

Were a revolution to be made, now, using the revolutionary idea of a Moon-Mars mission and the ideas that you've heard today, and were that revolution to be carried the same way that it was in 1776 by a brigade of youth such as the Marquis de Lafayette, who was about 18 years old; Alexander Hamilton who was about 19 years

old; John Lawrence who was about 27 years old; and most of the other people that actually fought the Revolution—James Monroe, who was 25, or John Jay, and so on—if that's what we do now, then, humanity will join the people of the United States, in working together with the United States to cause the United States to remember itself, and act accordingly as it was founded and as it truly is.

### **Respecting the Creativity of the Other**

In her concluding remarks, **Helga Zepp-LaRouche** said:

Parts of the world are in a New Paradigm: 126 countries have joined the Belt and Road Initiative. Even 22 of the 28 European Union countries are cooperating with the Belt and Road Initiative. I am absolutely convinced that we have to go away from geopolitics. . . .

I think that the significance of today, of the Apollo landing celebration, of the future perspective of having international cooperation in space, is a synonym of what the New Paradigm of international relations among nations must be, if human civilization is to survive. . . .

Benjamin Franklin modeled his moral theory on Confucianism. I think there was a long history of collaboration between Americans and China during the time of Sun Yat-sen and the time of President Abraham Lincoln. We should not be afraid of the other culture, but study the beauty of Chinese culture, of Indian culture, of Russian traditions. We must make a cultural Renaissance where each of us has the idea that the question of aesthetical education is not some abstract thing for students, but it starts with us.

The issue of Space and the extraterrestrial imperative, of having the idea that each of us as a human being has to have a daily improvement, so that we better a human being every day. There is nothing which stops us from creating a beautiful, new epoch of civilization, where we put the danger of war, poverty, and disease, all behind us, because we will be on a path of problem-solving and respecting the creativity of each nation and each other individual on this planet. That will be the kind of future Lyndon LaRouche and Krafft Ehrlicke were absolutely committed to. [applause]

## KEYNOTE

# *Homo sapiens extraterrestriis:* Man Is the Man in Space

by Helga Zepp-LaRouche

July 20—Ladies and gentlemen, dear friends of the Schiller Institute, today we celebrate a very joyous moment, the 50th anniversary of the first Moon landing. This is a truly universal event, an event which unites all of humanity. In 1969, 500 million people watched that Moon landing. It caused incredible inspiration and excitement at the time. You can be sure that today, when communication is so much better, where already in the last several weeks, there were millions of people watching programs from the past, documentaries, so it will again be hundreds of millions of people, who will unite and celebrate this incredible event. In 1969, it was every seventh human being on the planet [who watched the Moon landing].



*Helga Zepp-LaRouche* EIRNS

The reason space exploration is so absolutely important is because it has everything to do with mankind's identity. As my late, beloved husband Lyndon LaRouche said, space travel is the proof that the humans are not Earthlings; we are spacefaring, we all have the divine spark of reason which makes sure that each of us is capable of limitless self-perfection to study and discover, ever better, the laws of the physical universe. Or, as our dear friend, the great space pioneer Krafft Ehrlicke said, it's the

*Homo sapiens extraterrestriis*; Man is the man in space.

### The Extraterrestrial Imperative

The joyous thing is that today, after five decades of a hiatus, of cutting back in funding for NASA, and the very poor funding of the European Space Agency, the perspective of the industrialization of the Moon and a colony on Mars is fully back on the agenda. President Trump announced the United States will put a man and a woman on the Moon by 2024.

The Chinese, for the occasion of this 50th anniversary, just re-activated their *Chang'e-4* lunar mission rover and *Yutu-2* lander on the far side of the Moon.

Today, also postponed until this date, a *Soyuz MS-13* launcher has lifted off from the Baikonur Cosmodrome in Kazakhstan, carrying a Russian, an American, and an Italian to go to the International Space Station for the next period. The Italian—Luca Parmitano—will be commander on the ISS in the second part of this mission. He said, “What we do on the ISS is for the Earth, it's for all of humanity.”



White House/Shealah Craighead

*NASA Administrator Jim Bridenstine briefs President Trump and Vice President Pence on the Moon-Mars mission, at the commemoration of the 50th anniversary of the Apollo 11 Moon Landing, in the Oval Office at the White House on July 19, 2019.*

Also for this occasion, the Indian *Chandrayaan-2* mission to the South Pole of the Moon, which will investigate the ice in the craters of the South Pole on the Moon, was slightly postponed, but it's supposed to land on the Moon in September.

Also from Russia, Dmitry Rogozin, the head of Roscosmos, sent his congratulations to NASA head Jim Bridenstine, praising the three original NASA astronauts—Neil Armstrong, Buzz Aldrin, and Michael Collins—and all the great space pioneers before them, because they “dared to set off on a journey to the unknown in order to push the boundaries of the reachable world for all of humanity.”

If one thinks about the vastness of the universe, what is known so far through the pictures of the Hubble Space Telescope, is that there are at least two *trillion* galaxies. Recently, the proof was found that Einstein's assumption about gravitational waves is, indeed, the reality. And also that it has now been proven that Einstein's assumption that black holes indeed are at the center of each galaxy, which means we are living in a relativistic universe. It is very clear, and this last example is the final proof if you needed one, because the imaging of the horizons of these black holes could only be accomplished because eight countries from across the globe put their radio telescopes together, to be able to make such an image.

The most important message, therefore, is that space research and travel require international cooperation, cooperation and not confrontation. Therefore, we should not be involved in a “race” to the Moon or “race” to Mars. This is the unique chance for progress beyond the geopolitical competition among countries. We have to look at the future in space from the standpoint of the common interest of all of humanity.

There are several reasons for the absolute necessity of space research and travel and colonization. From the negative side,—well, one single large asteroid would be enough to eliminate all of civilization and everything beautiful mankind has ever produced, from the

great dramas of Shakespeare to the great compositions of Beethoven. Therefore, we need the Strategic Defense of Earth, the international cooperation of all nations.

But the positive side is that if you look at the long arc of human evolution, how man—in a relatively short period of time, compared with the years of the universe—has developed from a cave dweller using stone axes to kill his fellow man, to the kind of reasonable international cooperation which we have seen on the ISS for a long time. It is in international cooperation in space—which is also therefore the next phase in the evolution of mankind,—where we as the human species develop from rowdy teenagers to beautiful souls in the sense of Friedrich Schiller, that freedom and necessity, duty and passion, are one and the same thing. Or as Krafft Ehrlicke said, man is guided by the extraterrestrial imperative.



### The True Image of Man

Now, space research and travel, and colonization, has everything to do with the image of man and the cultural optimism which is the basis for his creativity and true freedom. It is the most powerful proof that we are not living in an Earth-bound system, with limited resources. This idea of an Earth-bound system is the entire basis for the existence of the so-called ecology movement, which recently has turned into an extinction hysteria movement, causing complete cultural pessimism and despair.

Let's look back to 90 years ago. In 1929, the German film director Fritz Lang made this incredible movie, *Frau im Mond* (*The Woman in the Moon*), which was a beautiful, polemical argument against all backwardness and anti-technological sentiment. The scientific advisor of this film was Hermann Oberth, one of the outstanding pioneers of rocketry, and space and astronautics. This movie was the inspiration of many of the space pioneers to follow. One of them was the outstanding Krafft Ehrlicke, who himself



NASA

*Apollo 11 astronauts (left to right): Neil A. Armstrong, Commander; Michael Collins, Command Module Pilot; and Edwin E. "Buzz" Aldrin, Lunar Module Pilot. May 1969.*

became an important contributor to the Atlas rocket. He was the director of the Centaur program, which delivered the first rocket stage to fly using liquid hydrogen and liquid oxygen as propellants. Already in the 1950s and 1960s, he developed an incredibly far-sighted vision of the Moon as the stepping-stone to the colonization of Mars, and then finally, the entire Solar System.

Forty years after *The Woman in the Moon*, the event took place which we celebrate today—the landing of Apollo 11 on the Moon, which indeed marked a great leap for mankind. But interestingly, yesterday, Mike Collins—the astronaut who did not get to walk on the Moon, but remained in the Apollo 11 command module in lunar orbit—made the point that for him, an even bigger turning point was the flight of Apollo 8, in which for the first time a human being had completely escaped Earth’s gravity into space. This is something worth reflecting on, because the fact that man was able to leave the surface of the Earth and get out into space, is not a self-evident question. Already that is the absolute proof that we are not living in an Earth-bound system.

## The Oligarchy Strikes Back

That first human being walking on the Moon caused, at the time in 1969, a great explosion of optimism throughout the world. But it was also very clear that the international oligarchy was not amused, because their power is based on the idea that the masses of population must think of themselves as underlings, pessimistic about their future. So already in 1964, various studies and polls started to investigate “the impact of space programs” on the different sections of the population.

One famous such report originally under the direction of Robert N. Rapaport, an anthropologist from Northwestern University and the Committee on Space, was “Second-Order Consequences: A Methodological Essay on the Impact of Technology.” Rapaport’s thesis was that the space program had produced a dangerous outbreak of cultural optimism—the belief that creative scientific thinking could solve any problem on the planet.

The oligarchy immediately launched the Club of Rome against this optimism, and their fraudulent book, *Limits to Growth*, with the idea that man is bound by the Earth, that resources are limited, and we have to go into a zero-growth mode. At the same time, Harris and Gallup produced polls supposedly showing that Americans opposed the continued expenditures of



SDASM/Atlas Collection

*Krafft Ehricke with a model of the Atlas Manned Space Station in 1958.*



Lyndon LaRouche addressing the Krafft Ehrlicke Memorial Conference in Reston, Virginia on June 16, 1985.

manned space flight. These polls influenced the election campaign between 1970 and 1972. The scaling back of the funding of the space program became an election issue.

That all led to a relative standstill, at least concerning the American space program. In June of 1985 the Fusion Energy Foundation and the Schiller Institute co-sponsored a [Memorial Conference](#) in honor of Krafft Ehrlicke, who had just passed away, who had become in the meantime a very close friend and collaborator of the Schiller Institute. My husband and some of the conference participants discussed picking up on Krafft Ehrlicke's idea of a permanent colony on Mars, which Lyndon LaRouche then presented in an absolutely incredible [movie](#) 1988. This conference began with the beautiful opening minutes of that movie, *The Woman on Mars*. The script was first drafted in 1987. One year later, after the Krafft Ehrlicke Memorial Conference, the National Commission on Space adopted a plan to develop a decade-long program for the colonization of Mars, which was then endorsed by President Reagan.

Lyndon LaRouche said that the Mars colonization project would—and this was a hopeful prediction—would be part of the State of the Union address of the next President of the United States in 1989. But as it turned out, it was George Bush, Sr. who was that President, so no such thing occurred. Instead, Bush was very

instrumental in not only putting Lyndon LaRouche in jail, but with him, the entire body of ideas he represented.

### A Colony on Mars

Lyndon LaRouche developed in many writings including *The Woman on Mars*, the beautiful vision of having a colony on Mars by 2027. He also said, had the NASA program after the Apollo landing not been scaled down, a colony on the Moon would have been possible by 1986. Then he defined the next 40-year perspective of how to step-by-step get the necessary breakthroughs for this plan.

That perspective required a breakthrough in thermonuclear fusion, because to get to the Moon takes three days, but by conventional means, to get to Mars is eight months, which the human body cannot withstand. To decrease the travel time to a manageable limit, requires continuous acceleration until the halfway point of the journey, and then continuous deceleration for the second part. It requires a breakthrough in lasers and other directed electromagnetic pulses as a basic tool; the development of optical biophysics and more powerful computer systems; higher energy-density on Mars itself for terraforming; the creation of domes; an artificial atmosphere; and the second generation for thermonuclear fusion.

He outlined six phases: the industrialization of the Moon; self-sustaining supplies of foodstuffs and materials from the Moon; agricultural and industrial development; linked satellites in the orbit around Mars; a complete astrophysical observation complex; a Mars orbit space terminal for delivery of materials for the construction of a permanent habitation on the surface of Mars.

Lyndon LaRouche was thinking two to three generations ahead, with the idea that this project would require eventually tens of thousands of scientists and engineers to build such a colony. And eventually, to build colonies on the scale of important cities on Earth, millions of people.

News Science

## China builds Mars base in Gobi desert to show citizens future in space



That is, in principle, where we are now—what President Trump has announced to soon raise the American flag on Mars. He also promised international cooperation. This is what China is about to launch next year, testing if terraforming is possible on Mars. The Chinese already have a model of this Mars colony in the Gobi Desert, where the Chinese astronauts had “landed.” It’s called the Mars Base #1. It’s a model space station which has living quarters, recycling, growing of plants for food. Nearby training centers are being erected, and hotels, because Chinese young people are tremendously excited about this and about getting involved in space research and travel.

### The Great Optimism in Space Collaboration

Lyndon LaRouche had a vision of international space cooperation; it develops the spark of reason, like no other activity, the idea that each

useful idea is for the benefit of all of humanity. He also was absolutely optimistic about the idea that space travel increases goodness in people and improves moral character. Krafft Ehricke was so fond of the Schiller Institute, because he recognized that aesthetic education was absolutely crucial to accompany technological and scientific progress for the ennoblement of the human being. In numerous writings, Lyndon LaRouche was very optimistic that through space, the moral development and intellectual development of our grandchildren and great-grandchildren would be of a much better quality than the people living today. It is only through the colonization of the Moon, Mars, the Solar System, that man can become an im-

mortal species.

There are two important lessons from the last 50 or even 90 years of space research and development. First, we absolutely must have the sufficient continuous fund-

ing to never have again such setbacks as we have experienced over the last 40 years. And, we must absolutely have a united space alliance, international cooperation, and overcome confrontation forever.

Let us take this moment to celebrate the optimistic image of mankind, the only creative species known to us in the universe so far; that it is our task to multiply and subdue—no, not the Earth—but the entire Solar System, and maybe beyond. Why should we do that? Because we are human: We have in us an innate goodness, a capacity for *agapē*, and all the evil in the world is only the result of a lack of development, which we will remedy through space travel. Thank you.



White House/Andrea Hanks

*Apollo 11 astronaut Michael Collins shakes hands with President Trump in the Oval Office of the White House on July 19, 2019.*

# The Solar System's Next 50 Years

by Benjamin Deniston

*The following is an edited presentation of Deniston's remarks as prepared.*

July 20—I am happy to be here today, not only to celebrate mankind's remarkable achievement 50 years ago of landing on the Moon, but to look 50 years into the future, with Lyndon LaRouche's Moon-Mars colonization program.



EIRNS/Sylvia Spaniolo  
*Benjamin Deniston*

Let's start with Mr. LaRouche's own words. We have a short clip from ten years ago, from a presentation Mr. LaRouche gave on August 1, 2009 on one of his international webcasts. Following the major global, financial collapse, there was a surge of interest in Mr. LaRouche's views because he was one of the few people who had forecast it, said this was coming; and that had caught a lot of people's attention. When there were many eyes upon him, he used the opportunity to relaunch his long-standing campaign for a Moon-Mars program.

So, I'd like to start with Mr. LaRouche from an Aug. 1, 2009 webcast. The full transcript is available [here](#).

**Lyndon LaRouche:** What do you do, when you want to develop a society? Do you build from the bottom up? Not really. Animals build from the bottom up, like beavers. And beavers are good for beavers—but I'm not a beaver. I don't do this underwater thing, too well. I get cold.

Anyway, what we do, is we simply take, and go to a space program. Why? Because if you want to accomplish something, you want to accomplish something in progress, you have to mobilize yourself, by going to a higher platform than you're standing on, now. Go in the imagination, beyond what you think you should be doing now, and go to a higher level. Because, remem-

ber: Progress is building something for the future.

So, to build for the future, you have to define the future. You have to define your destination. Building for the future, you're talking about generations, generally, at least two generations. You're talking about 50 years ahead.

So, look at the horizon, where do we want to be 50 years from now? In terms of technology, in terms of effects for humanity? People can understand 50 years, it's a short time. Some people live 50 years; even these days, it's a short time. So, look 50 years ahead.

Well, I say, 50 years ahead, we're going to be on Mars. And we define where we are today, by defining the objectives we have to fulfill to get to Mars, 50 years from now. . . .

We have people, left over from 40 years ago, who are thinking in this direction, and even some people who were still thinking in that direction in the early 1980s, as I was, and before. Now, 40 years later, a younger generation has no knowledge of this, or virtually no knowledge of this, and yet, this younger generation, people who are now in their 20s and 30s, young 30s, are the people who are going to have to decide on this, because they are the adult generation which is going to decide on this thing.

We, therefore, as a nation, and a people, and among nations, have to see this objective that we are going to reach within 50 years, now. We're going to then think about the technologies that will get us there, and we're going to think about the technologies that we are going to need when we arrive!

So, that is the theme for this presentation: looking at the present requirements for mankind as defined by a future mission, two generations, fifty years, from now.

President Trump's program to put mankind back on the Moon by 2024 to stay—including the first woman on the Moon—is an excellent first step, and should be done in collaboration with China, Russia, Europe, and



other leading space nations.

In the United States, after decades of devastating underfunding (and two presidencies of total disorientation), we are finally getting back on the right track. However, succeeding in returning to the Moon by 2024 will be a huge political fight within the United States—not only a fight against those who refuse to fund this, but against two generations of cultural pessimism—pessimism about basic notions of human progress, as typified by the space program.

Let's review the basic elements of LaRouche's two-generation Moon-Mars mission.

### **Basic Elements of LaRouche's Moon-Mars Mission**

In 50 years, we want to have mankind on Mars, developing a colony for advanced scientific research and exploration.

As Mr. LaRouche originally defined in the 1980s, the Mars outpost is designed to support new scientific capabilities, including revolutionary observation systems which will be required to investigate the most advanced frontiers of fundamental science.

So, what infrastructure is needed to support and sustain a growing human presence on Mars? Fusion-powered spacecraft will be key.

With present technologies, it takes 200 days to get to Mars—a trip time that is very dangerous and damaging to human beings, given the zero-gravity and high radiation environments.

Nuclear fission systems can speed that up a bit, but fusion is required to achieve the real goal: constant acceleration for half the trip, and constant deceleration for the second half—creating an environment on the ship equivalent to  $1g$ —one Earth gravity. This reduces the trip time from half a year or more, to a few days.

For fusion fuel, we want to focus on helium-3, a special isotope of helium, which provides the most efficient thrust.

Although, helium-3 is incredibly rare on Earth, it's relatively abundant on the lunar surface, and for years, leading scientists in the USA, China, Russia, and other nations have promoted the idea of mining helium-3 from the Moon for fusion power on Earth, and in space.

And this takes us to Krafft Ehrlicke's program: the mining and industrial development of the Moon. Not only does the Moon have this unique fusion fuel, helium-3, but once we get mining and manufacturing operations going on the Moon, it becomes far more economical to lift material up off the Moon's surface

(as compared to Earth), because the gravitational field is so much less.

As much as possible, we want to build the systems to go to Mars from material produced with lunar industrial operations. Much of this may sound grand, and perhaps far-fetched. It shouldn't.

We're in fact looking at the basic, next steps in mankind's natural process of self-evolution. It is the most natural state for mankind to constantly be achieving revolutionary changes in mankind's relation to the natural world around us. How are these changes supported? By revolutions in our technologies and in our infrastructure—what Mr. LaRouche called the development of successive economic *platforms*.

For example, in the 1700s, traveling across the North American continent was a terrifying and incredibly difficult process. Then we mastered the steam engine and created the transcontinental railroad—what had been an incredibly difficult, dangerous, and rare endeavor, became a trivial activity, accessible to the average person.

The railroad (and its associated technologies) became central to a new economic platform, which supported an entirely new relation to the interior territories of the Earth's landmasses.

This is typical of normal human progress.

And now we look to the Moon and Mars.

The infrastructure and technologies needed for lunar industrialization, together with fusion propulsion systems, are the basis for a new economic platform—tomorrow's interplanetary railroad—completely transforming mankind's relation to the Solar System.

We've briefly outlined our perspective on relations with the Moon and Mars in two generations, but what about the Earth? What does the world's population require one and two generations from today?

### **Energy-Flux Density Growth Is Vital to Future Wellbeing**

According to the United Nations' population projections, there will be 9.5 billion people on this planet one generation from now, that is, by 2045; and 10.5 billion people in two generations, by 2070. What will all those people require for decent and meaningful lives? What will the world economy need to look like?

According to Mr. LaRouche's physical economic science, a healthy, progressing economy should have roughly half of the labor force employed as productive operatives—specifically capital intensive “agriculture, mining and refining, industrial production of physical

goods, and as operatives developing and maintaining basic economic infrastructure.”

Applying this to the UN population projections, the world will need 1.75 billion productive jobs by 2045, and 2 billion productive jobs by 2070.

Additionally, LaRouche says, about 5% of the labor force should be employed in science and research and development—for example, in the space program, fusion development, etc.

So, by 2045 that would be 90 million, and by 2070, 100 million people around the planet employed in advanced science and high technology.

One of the most critical global requirements will be energy—which should always be approached in terms of LaRouche’s notion of energy-flux density. For brevity, let’s focus on national electricity consumption per capita as a proxy for energy-flux density of a given nation.

In one study we’ve been working on, we looked at 34 sample countries with the lowest levels of energy-flux density. These countries presently have levels similar to what China had a generation ago, in 1990. See **Figure 1**.

If, over the *next* generation, these 34 nations go through the same energy-flux density increase as China has, over the *past* generation, we’ll need an additional 1,900 gigawatts of power just for those countries. That’s nearly 2,000 large nuclear power plants.

That alone is 70% of present global levels of electricity consumption. See **Figure 2**.

And these are life and death issues. National energy-flux density is strongly correlated with many quality-of-life and mortality effects. For example, a nation’s energy-flux-density will strongly predict infant mortality rates. See **Figure 3**.

So, taking the values demonstrated here, we can estimate: if these 34 low-energy-flux-density nations remain at their low levels, in one generation from now 85 million infants will die as a consequence of this lack of development.

That’s the equivalent of a country the size of the Democratic Republic of Congo, or Turkey, or Iran, or

FIGURE 1

### Nations Consuming Less than 200 W of Electricity per capita

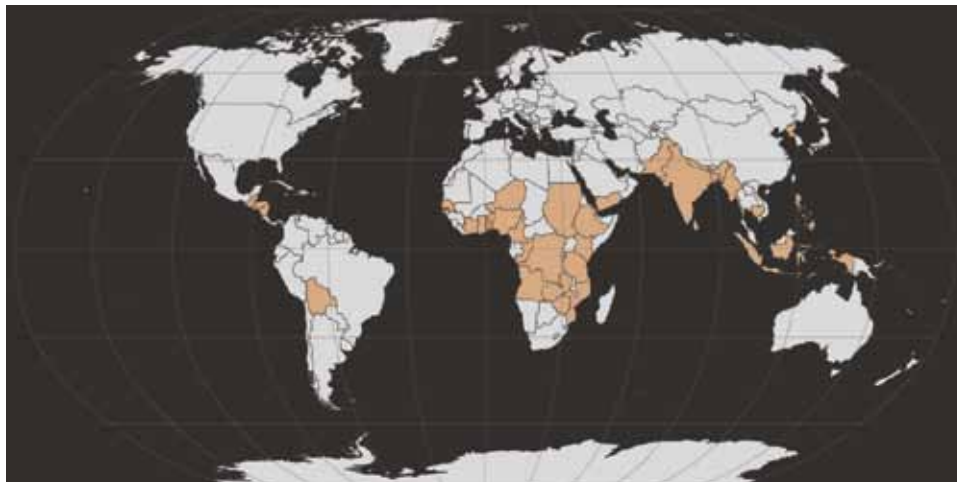
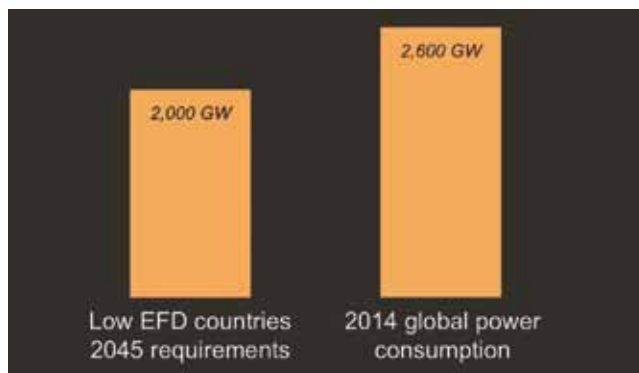


FIGURE 2

### Energy Flux Density



Germany, ceasing to exist.

Energy-flux density growth is vital to the future wellbeing of the people on this planet.

### Needed Growth Levels for Nations

If we look at the needed growth levels for other nations as well—including the perspective that so-called developed nations should continue to develop and progress—we’re easily talking about 10,000 gigawatts of total power required globally by 2045. See **Figure 4**.

Additionally, we can look at the requirements for high-speed rail. See **Figure 5**. Again, we can use China’s remarkable achievements as a reference. China already has the largest high-speed rail network of any country and is on pace to have completed 45,000 kilometers by 2030—the culmination of a roughly 25-year process.

Using China’s development as a benchmark, the

global requirements would be in the range of 600,000 kilometers of high-speed rail.

And we have similar challenges providing global water needs for the 9.5 and then 10.5 billion people one and two generations from now. Presently 35% of global water use comes from groundwater supplies, most of which are being depleted faster than replenished, many at rates approaching crisis conditions.

Water transfer megaprojects, such as China's South Water North project, and the proposal to transfer water from the Congo River tributaries to Lake Chad in Africa, will be critical, along with large-scale nuclear desalination and advanced weather modification technologies.

When we take this multigenerational perspective, the global development requirements are immense, just to cover the basic physical infrastructure elements of power, water, and transportation:

- Thousands of gigawatts of electrical power
- Hundreds of thousands of kilometers of high-speed rail
- Massive freshwater development projects throughout the planet.

FIGURE 3  
**Infant Mortality vs. Electricity Consumption Per Capita**

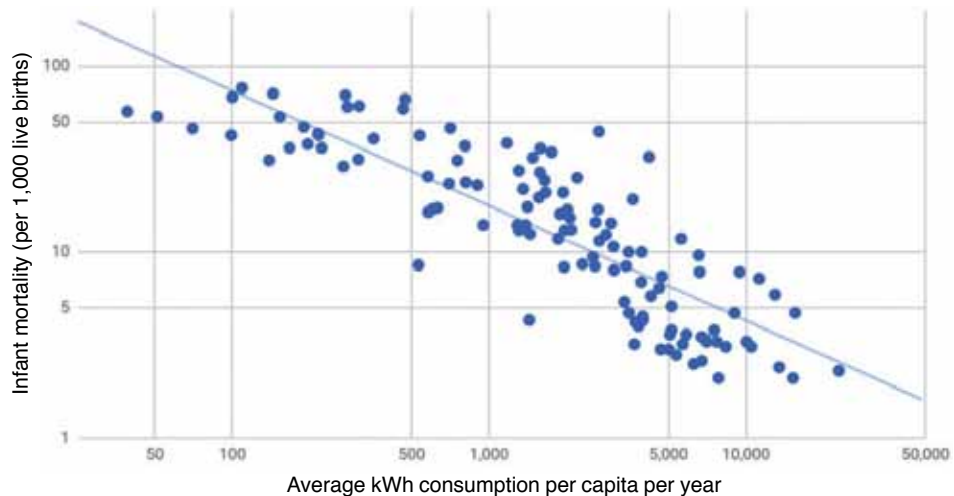


FIGURE 4  
**Energy Flux Density**

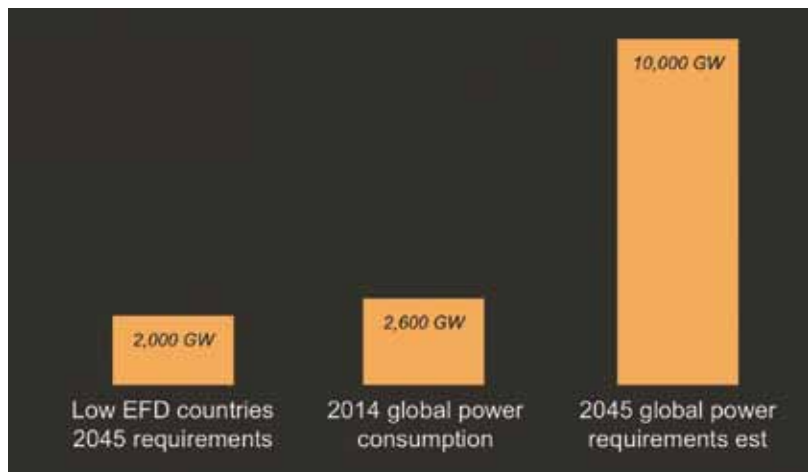


FIGURE 5  
**Global Requirements for High Speed Rail**



## Why a Moon-Mars Mission Is Required

Foolish people will say, we can't afford a space program, given all these requirements. They couldn't be more wrong. We can't afford *not* to have a space program—exactly because of these requirements. And not just a small-scale operation. Mankind *requires* a program that will:

- Push the frontiers of mankind's productive capabilities
- Push the frontiers of science
- Push the frontiers of technology
- Push the frontiers of the creative imagination.

LaRouche's Moon-Mars mission is a required program. It does not compete with the requirements on Earth, it accelerates their development.

Let's return to Mr. LaRouche, with an excerpt from his keynote to the Schiller Institute's September 2, 2000 conference, in which he summarizes his earlier, 1980s, argument for the space program as a joint driver for the then-Soviet and U.S. economies. The full speech is available [here](#).

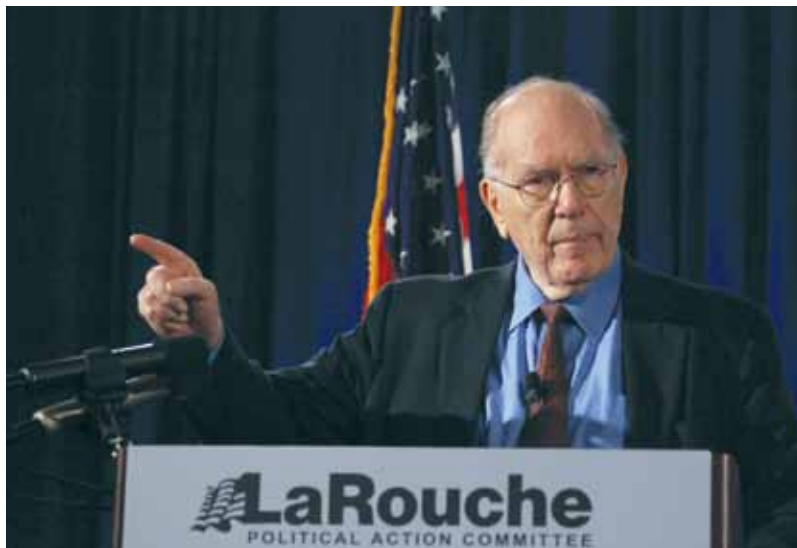
**Lyndon LaRouche:** Why don't we go back to the space program of Kennedy, and let's do what we proved with Kennedy? Remember, according to the estimates that were made in the middle of the 1970s, the United States got more than a dime of additional GNP out of every penny the United States invested in the space program, the Kennedy space program. The point is, that since increases in productivity come directly, only, from improvements in technology derived from fundamental scientific discoveries, the higher the rate you convert fundamental physical discoveries into practice, the greater the rate of increase of productivity per capita of population, and per square kilometer of area.

The problem of both the Soviet system and our own, although in different degrees, I said at the time, was that the United States was not generating a rate of net growth in physical productivity, sufficient to maintain the economy. Therefore, we needed a program for forced draft, science-driven technological progress, with some mission, like the Moon mission, but as a by-product of that mission, such as the Moon

mission, we would generate spillovers in terms of technological progress, by such a crash program, to put the United States economy back on the plus side, in terms of net growth.

More details could be provided, but I think Mr. LaRouche made the point pretty clearly.

There were economic studies in the 1970s which showed that the technologies developed by the Apollo program, when implemented throughout other sectors of the economy, increased the total productivity of the economy dramatically—ensuring that the U.S. economy gained, simply through increased productivity, far



NSIPS

*Lyndon H. LaRouche, Jr.*

more than it spent on Apollo.

Additionally, our own studies have demonstrated that capital goods development incorporating higher technologies grew at a faster rate in non-aerospace and non-defense parts of the economy—thus illustrating the profound and far-reaching impact of the Apollo program throughout the entire economy.

Today, the mission isn't simply to return to the Moon, but to commit to this 50-year Moon-Mars colonization perspective—forcing breakthroughs in the key areas of frontier science and technology needed over the next two generations and beyond.

In broad terms this includes:

- Advanced and compact nuclear fission power, for space propulsion and electric power
- Fusion for propulsion and for electric power
- Opening up the entire fusion economy and broader directed energy domain

- Advanced mining, processing, and manufacturing on the Moon and other extraterrestrial locations
- Sustaining life in extraterrestrial environments, both human life and space agriculture for food production
- Advanced space launch technologies, hypersonic space planes, and scramjet technologies; vacuum tube magnetic levitation space launch systems.

## A Realistic Goal for Mankind in the Solar System

This is our perspective: to define a realistic goal for mankind in the Solar System two generations from now—and tracking from there, backwards, to the present; mapping what needs to be done, step by step, to achieve this mission.

And this emphatically includes the development of both the productive powers and also the creative imagination of the younger generations. Just as President Franklin Roosevelt created his Civilian Conservation Corps program in the 1930s to train and develop the youth at that time—today we need to be looking at reviving those types of programs, asking: What do we need to do to upgrade the skills, capabilities, and creative passion of the younger generations to complete this mission?

With that, I would like to conclude with one last excerpt from Mr. LaRouche, from August 1, 2009. The full presentation is available [here](#).

**Lyndon LaRouche:** Let’s take the space program. We need to get at the heart of these matters, in an exemplary way, and an exemplary way should also be a highly practicable way. I think the objective— see, it involves a concept, of a change in the image of what man is. When you go to constant acceleration, as a required modality, in flight of a human being from one planet to another, you’re operating in a completely new kind of domain, the domain of the relativistic relations, relativistic transport. And this is a great challenge: Because you have to think about when you’re getting out of a 1-gravity situation on Earth, into this kind of artificial gravity, you are in a relativistic environment. Your definition, your terms of thinking about the same old things you knew before, are now presented in a new way.

The human race, eventually, has to live in the

universe; we have to live in the Solar System; we have to live in the galaxy, in the longer term. We have to face the challenge that that represents. See, you have to think like an immortal person: that is, to think in such terms that you are thinking about mankind in the distant future, and you’re thinking about your place in relationship to mankind, in the distant future, and even distant planets. Because you’re looking for something in yourself, which has permanent value. We’re all mortal. We’re born and we die. But we’re not animals. We’re creatively thinking creatures. And the meaning of our life does not lie in our biological existence as such. It lies in the meaning for humanity, before us and after us, in what our lives have contributed to the existence of humanity as a whole. We have to see ourselves as human, in that way. And therefore, the best way, the practical way, is always to look ahead, to look as far ahead as you can look, into the future, and see what it is you must do for the future, so that your hand is at the tiller, long after you’re dead, in that way.

And obviously, if you’re going to chart a course, you have to chart a good choice of course. So, pick one! Pick a destiny! Pick a destiny, two generations, three generations, four generations beyond your life today! Try to reach that far. Try to make something, that you do something, that contributes to the *future* of humanity! Find your identity in the future of humanity, after death; commit the kind of acts and kind of development that mean that. And act accordingly: Because *that is the secret of true happiness. That is the “pursuit of happiness,” as understood by Leibniz*, as recorded in his second reply to Locke, which became the cornerstone of our Constitution, though, first, the Declaration of Independence, where it is the meaning of our existence as a nation, and was reflected again, in the Preamble of the Constitution, in its own way.

We have to be immortal. We have to be immortal, by assuming immortal responsibilities. Reach beyond our own life, to what we can do now, which will touch in a beneficial way, generations of people after we’re dead. In that way, you know, you’re immortal. If you *think like that*, you know you are immortal. If you can *act like that*, you do even better.

# Five More Conference Presentations

*The following are edited transcripts of five more presentations at the Schiller Institute Conference on July 20, 2019.*

## ‘My Favorite Part is Getting People Excited about Science’

by Andrea Jones

*Speaking via a live feed from the Apollo 50th anniversary celebration on the National Mall in Washington, D.C., Andrea Jones—Planetary Geologist & Education Specialist, NASA Solar System Exploration Division—reported on the celebration in the nation’s capital. She also fielded several questions on the continuing progress in U.S. space exploration, and its importance for awakening that which is best in people.*



Andrea Jones

NASA

It is my sincere pleasure to be there with you in spirit from the National Mall. I’m the Solar System Exploration Division public engagement lead, so I work with all of our planetary science missions and research teams and try to share the science that we’re doing at NASA with people like you. Here on the National Mall, behind me, there’s a giant Moon map where people can walk on the Moon on the National Mall. We have guided tours of lunar sites with NASA scientists. We have Legos out here, we have [Ready Jet Go!](#) and we have people from all over the entire agency here celebrating this great anniversary. Because it is a human triumph, and it is a triumph internationally for everyone, and also for all of NASA.

The lunar landing began it all, and it’s wonderful to be here on the Mall where we can show people how the distance that they’re walking across the grassy area is

about the distance that we first were able to go on the Moon. But with more technology and more confidence as we explored the Moon further, by Apollo 17 we were able to land in a canyon deeper than the Grand Canyon, and with our lunar rovers explore even more of the surface.

We’re getting ready to do that again as we’re heading towards the Moon with Artemis. We’re going to be doing future explorations, and we’re using our current assets like the Lunar Reconnaissance Orbiter, which is a mission at the Moon right now, today, to build on the legacy of Apollo, use our current exploration assets to prepare for future exploration of the Moon. We view the Moon as a place to really test out our boots and check the leaks in our tents before we head on to Mars. It all starts here on Earth, and it all starts with the people in your room, the people here on the Mall who get excited about space and science and exploration, and then share it through forms of art, through music, through cultural expressions.

*Following her presentation, there were several questions; we present two of those interchanges here.*

**Question:** My question is, from our last visit to the Moon to now, what have we learned as a nation, as scientists moving forward to return?

**Jones:** What a good question! There are so many things, but I’ll just choose a few to highlight, because I really think that this could take forever. Some of the things we have learned most recently are with our Lunar Reconnaissance Orbiter (LRO). That is at the Moon right now; we just celebrated ten years at the Moon in June. Fifty years of Apollo, ten years of the Lunar Reconnaissance Orbiter. With that mission, we are rewriting the textbooks of lunar science.

Before LRO launched, we had thought that the Moon was essentially a geologically inactive place. We thought most things had happened on the Moon a long time ago, and we were just going to go read those records. But what we have found is that the Moon is still an active place today. We are watching new

impact craters form on the lunar surface all the time. We keep monitoring that, and it turns out the lunar surface is turning faster than we thought, which has implications for future exploration, because you have to build to maintain structures that will last through a heavier bombardment of especially micro-meteor impacts than we had anticipated. So that was really important.

We've also found evidence of recent volcanism; recent being again on the scale of millions of years. But given that the Moon is billions of years old, finding volcanism that's millions of years old may mean that it could even continue to happen today as well.

We're also finding more evidence of water on the Moon. From the Apollo samples, we actually did have water in them; but our technology at the time was not able to identify that water, or at least not definitively. Now we have new technology that allows us to do better analyses of the samples that we brought back 50 years ago. We have evidence from remote sensing from radio telescopes from, again, our Lunar Reconnaissance Orbiter, from the Moon Mineralogy Mapper on the Chandrayaan-1, that has helped us understand that there is water all over the surface, especially at the poles. Which is one of the reasons that we're driving towards the poles, especially the South Pole, with our next lunar missions with people. So, *so many things*; but those are some of the highlights from recent days.

**Moderator:** Andrea, could you tell us why you got interested in space? How it happened, and why you do what you do?

**Jones:** Well, I'm a scientist, that's my calling. But I grew up camping and hiking and learning about the world at the beaches, in the mountains; wondering why are the oceans where they are, and why are the mountains getting taller in some places and getting shorter in others. Then my parents took me out West, and I got to see the night sky in a way I had never experienced. I was just awed and inspired and amazed that there were worlds outside in this huge galaxy that I had never even really thought about. So, I got into geology; I wanted to study the Earth, and then I really wanted to study the stars as well. I found this field called planetary geology, where you can combine your love of the Earth with your love of space and put them together.

I went back to graduate school and did my graduate

work in planetary geology and with the HiRISE Camera, the High Resolution Imaging Science Experiment on the Mars Reconnaissance Orbiter. From there, I just couldn't get away from space missions, so that ultimately led me to NASA Goddard. It has been a great ride, but really the story is that I love science, but my favorite part is getting other people excited about science. So now I get to stay informed with the science, but really what I get to do is get other people excited, and that is just the best job I can possibly imagine.

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**'There are Things We Have To Do Together'**  
by Dr. Xing Jijun

*Dr. Xing is a Counselor and Head of the Science and Technology Section of the Consulate General of the People's Republic of China in New York. He spoke about the progress in China's space program and the economic transformation of China over recent decades—but transcending these specifics, he emphasized the change in thinking, in human identity, which is now required from people all over the world—such that we can all live together, cooperate, and progress into the future. The following are edited excerpts from his presentation.*



EIRNS/Sylvia Spaniolo

Dr. Xing Jijun

A half-century ago, a great moment was accomplished by three astronauts from NASA. Their action created a great moment, which of course belongs to the three of them, and to the American people—but not only. It also belongs to all human beings. Our Chinese people belong to this, and even today, this week, also in China, we are having a lot of activities and events to celebrate, and to commemorate this great moment. It's a great pleasure for me and my colleagues from the Chinese Consulate General to be present here today. We were asked to provide some remarks about China's space program. And later, we will share with you a very short video to introduce the Chinese space program and activities.

Before that, I would like to say a few words: As

human beings we really want to share with everyone a lot of things that we have already done, and what we need to do and have to do in the future together. People talk about a “space race”—and of course, whenever you’re talking about a “race,” you think about competition. Well, competition is very important, for the market, for many things, but *cooperation* is also important. Especially for space exploration; without *cooperation*, success will not be possible.

These three American astronauts were supported by many thousands of people, in NASA and in other fields. They did their pioneering job, but for further exploration of space, we should mobilize all peoples to join in. We face a lot of challenges, many challenges. The first challenge is that we have to change our mindset—that’s my understanding. I have three points to bring up. The first: We should be friendly to all people on this Earth, on our planet. We should be friendly to nearby people and to the people far away. Simply by doing that, you make people happy, because no matter where you go, when you are friendly to people, people are then, likewise, friendly to you. This is mutual benefit.

Secondly, we should respect knowledge, science, and research, because without knowledge, without research and innovation, it will be impossible for us to go into space, to go to the Moon, or to go to Mars.

The third point is: it’s very important to be optimistic about the future. People have already mentioned this many times in our discussion today. With people working together, with people-to-people discussion of their scientific advances and technological developments, we are all sure to have a great future.

Taking these three points together, we see that as human beings, we are all the same. If someone from outer space were to come here, they wouldn’t care about your color, or whether you’re tall or you’re short. We are all human beings to them. If a problem arose, they wouldn’t care whether you were from China or from the U.S.A. So, only when we work together, can we can strengthen the capacity to conquer any challenges that come from anywhere.

There is a dream in force in China, a space dream: We want to work together with our international colleagues, especially with our colleagues in the U.S.A., to explore things outside our Earth, even beyond the Moon. We have already sent our rover to the far side of the Moon, and this year, there are some more initia-

tives, and in a few years, hopefully, we’ll go from Earth to Mars.

So when I talk about the Chinese dream of space, that dream goes back long, long ago. We have stories, fairy tales, a lot of stories about a beautiful girl who wants to find a lover, who longs to go somewhere else to have a better life, to go to the Moon or beyond. There are so many stories. We have learned much from such stories. That is the driving force for China to work together with other people, and to do many more such things.

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### Human Technological Progress, Like Photosynthesis, is a Principle of the Universe by Krafft Ehrlicke

*Krafft Ehrlicke presented “Lunar Industrialization and Settlement—Birth of Polyglobal Civilization,” to the conference on “Lunar Bases and Space Activities of the 21st Century,” Conference of the National Academy of Sciences, Oct. 29-31, Washington, D.C., 1984. A video segment was played at the conference.*

Technology is not the solution to our own shortcomings. To do that, we have to grow, we have to mature. But technology often can make it easier. If you have a no-growth philosophy and if you regress into the Middle Ages, then you create an environment in which that, what you are asking the human being to do—namely to live with less, to exist very modestly, and be this and that and the other thing, and not to grow—is impossible, because a dog-eat-dog fight is bound to break out under those conditions. We’ve come too far. We have to go on. Life shows us that technological advances are the road to go. But based on those technology advances, have to come the advances of the species and the advances of our civilization.

In the first formation, in the light of the young Sun, there was no control, by anybody, over the generation of inorganic matter. Earth was like a gigantic flower, which soaked up solar energy and also utilized other energy to establish basic organic compounds, and amino acids. When life began to stir here, there lived, made of those fossil assets, Haldane’s famous “soup that ate itself up,” or something similar to that. Eventually those resources ran out. The first great crisis of life on this planet occurred, because those compounds were living off previously generated organic substances—





Courtesy of Krista Deer

*Krafft Ehricke speaking on “Lunar Industrialization and Settlement—Birth of Polyglobal Civilization” at a 1984 conference.*

and eventually off each other. Heterotrophic cells living off the autotrophic cells. The forerunners of the plant-eating animals were the heterotrophs and the autotrophs were the forerunners of the plants.

It was then, that we saw for the first time, two things: That what seemed to be an absolute limit to growth, was no limit to growth. It was a hindrance that had to be overcome and was overcome by technological advance—incredible technological advance, namely photosynthesis. And secondly, that life, and metabolism—if it is to have endurance, has to endure over long periods of time, and cannot rely on the results of the preceding sphere, of the preceding generation of materials.

### **Industrial Revolutions by Life and Mankind**

And so, we cannot rely on fossil fuels forever, obviously. That’s a very analogous situation. We have to start going to the primordial energy resources, which are so abundantly all around us, and in the atom. Technological advance occurred by the generation of an enzyme in the photoautotroph, which ultimately led to the chlorophyll molecule, and the chlorophyll molecule and photosynthesis inaugurated the first industrial revolution on this planet.

This industrial revolution did what we are doing now: It realized that it cannot be totally planetogenic. It had to go to space resources. It went to the solar resource. Since it couldn’t go out into space—biological technology does not lend itself to going out into space—

it took that resource from space that came to Earth, solar radiation. Solar radiation became the fourth element, so to speak, of the new environment of life: water, land, and air, and radiation.

With photosynthesis, life developed control over the basic staples of life. Life created out of primordial materials—CO<sub>2</sub>, and water. With the aid of solar radiation, life changed solar radiation to chemical energy. And with that, the basis on which everything else relied was created, including the parasitic oxygen metabolism, which replenishes the only primordial resource in short supply, namely, CO<sub>2</sub>.

So, in the womb of what was created here—the highly negentropic biosphere, an immensely complex system of ecological niches that developed, over time, to encompass an entire planet, and industrialize it, and process its energy and its materials—in the womb of this biosphere arose then the human being as the seed of the next higher metabolism.

Each sphere, each large environmental sphere (some of which took on planetary proportions, and others had subplanetary proportions), has to have one umbilical metabolism: I call it an umbilical metabolism, because it is that kind of metabolism that interacts between the negentropic sphere, and the entropic wilderness on the outside. It was photosynthesis that did this. Oxygen metabolism is not an umbilical metabolism. It’s parasitic. It eats other animals, and it consumes plants. Animals and humans, being in this respect the same, rely on the umbilical metabolism of photosynthesis, and some other fermentation metabolism such as nitrogen fixation, but the primary one is photosynthesis.

In that respect, the human being is not so much a descendant of the ape or proto-ape; the human being is actually the descendant of photosynthesis, because information metabolism is the first metabolism that actually can interact with inorganic matter and therefore is an umbilical metabolism; and is broader, even, than photosynthesis, because we can interact with nuclear matter, we can build a chemical industry of vast proportions, although chemosynthesis has done that, too; we will in the next century, I’m sure, build up an atomic industry of enormous proportions—and a subatomic industry; and a quark industry.

This goes far beyond that. And for this, and some other reasons, information metabolism transcends planetary limitations, and is *the* metabolism on which life moves now over into space itself.

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## A Space and Science Policy is the Alternative to War

by Krista Ehricke Deer

*Krafft Ehricke's eldest daughter, Krista Deer, was challenged by the conference moderator, Dennis Speed, to describe for the conference what it's like to be part of the family of a genius.*



EIRNS/Sylvia Spaniolo  
Krista Deer

This is quite an intriguing subject. Having my dad around on a daily basis, there was never a moment that was not an opportunity to learn something. We grew up with relief maps in the family room, so if we had a question about anything geological or geographical, my father would say, “There’s the map, go up there and look for it.” It helped me with school. I got there and I already knew where India was, where somebody may not have known that.

My dad was like a mentor to me. He was a very easy person to grow up with, very even tempered, and available. We would go for a walk at night, his eyesight was failing, he couldn’t look up and see everything in the sky any longer; but whatever time of year it was, he would tell me everything that was in the sky as we walked. Our walks turned into learning about the stars and the constellations. He never even looked up, he just knew. “It’s August, so look for this.” I enjoyed that a lot. It made us go for more walks.

We did not waste time. My mother had to go to Germany to help a friend get out of East Berlin. During that time, my dad and I drove together in the summer from Buffalo to San Diego, where he had been working. I was between third and fourth grade, and I learned my multiplication tables on that trip. He worked with me on that trip, it was fun. I got into fourth grade and I knew everything about multiplication.

We had to be very quiet in the house. I have two sisters and we were not allowed to make any noise around the house when he was working in his study. My solu-

tion was to go into the study with him and lie on the floor—I got to be with him that way—and I don’t know how many times I read *The Rise and Fall of the Roman Empire* in his study.

My dad definitely believed in no limitations: Man has no limitations except those he imposes on himself. It is not just the Earth that belongs to mankind, it is all of space. He believed that it was your rightful field of endeavor and activity to go to space. By expanding life through the universe man does fulfill his destiny, man is programmed for exploration, rather than being glued to Earth forever until we run out of everything and everyone’s looking for resources, going to war. So you better get going.

In 1971, he compared mankind that stayed closed, and had no growth, with space-exploration vectored growth. No growth leads to poverty, competition for resources, and ends in war. We’re seeing some of the things already that are on that chart.

But he not only presents a problem, he always has a solution to what he tells you. Always.

Ten years later, in 1981, he toured Germany with Helga Zepp-LaRouche. He was attacked for his progressive positions on what needed to happen. Very militant, even violent environmentalists, came into a hall where he was speaking and verbally attacked him. The police had to be called and have them removed. It was horrible. When he came back from the trip to Germany, he said it reminded him of Germany in the 1930s. He was very disappointed.

After that, he kept talking about the solutions to our problems. He presented a comprehensive solution to environmental and other problems caused by no-growth policy. Unfortunately, we’re following the no-growth policy right to the letter. The result doesn’t look so good.

The solution is the open policy of utilization of space. This means bringing life to the Moon, the industrialization of the Moon. He envisioned fusion power plants to power a city on the Moon, called Selenopolis, a fully functional city, large enough for tens of thousands of people.

It’s critical to continue this fight to advance the evolution of mankind. If we don’t want to just go to war all the time in resource wars. We just need to get going. We need to convince the right people; and make it part of our economic plan, not an extra piece, but the driving force of it.

## Genius Lights the Way by Wade Gorla

*Wade Gorla is an expert on Alexander Hamilton, published author, and principal lecturer at the National Lighthouse Museum.*



EIRNS/Sylvia Spaniolo  
Wade Gorla

It's the job of good government to harness the energies, the entrepreneurship, the intellect of great people in order to achieve great things. Going to the Moon, going to Mars—what does this have to do with lighthouses? It's not because they look like rockets. It's because lighthouses light the way to the sea.

Let's look at two great geniuses. First, Alexander Hamilton, a guiding light of American commerce. Alexander Hamilton is one of those great people who was able to fashion one of the greatest countries in the history of the planet. Hamilton grew up on the island of Nevis and would later live on St. Croix. He was a very sensitive, very engaging child. Most people who knew him as a young boy described him as a very kind and understanding young man. He did not come from the poor struggling background that a lot of people would like to fashion that he did. He had difficulties, but had an extraordinarily gifted mother, who came from a French Huguenot background, who taught him fluent French.

The Marquis de Lafayette was very complimentary of Hamilton's French. Hamilton learned all about French culture, the French economy, and he learned all about the business of Beekman and Cruger. At 14 he was literally running an accounting house involved in every imaginable activity. There is no founding father that had this kind of background. He had intimate knowledge of the business of rope, lime, cattle, timber, bread, flour, rice, pork, black-eyed peas, corn, porter, cider, pine, oak, hops, shingles and lampblack, which is a resin that was used in ink. He knew all about these products, where they came from, what they did in the economy.

As Secretary of Treasury, he issued a series of reports that I'll briefly summarize here. One was his

report on credit. The others were on banking and manufacturing. One of the things he understood is that credit is one of the most important things not only for a person but for a nation. And unless we had good credit, we would not be able to borrow money at low prices, there would not be trust, there would not be the kind of conditions that would create entrepreneurship and trade and commerce. So he wanted to make sure he restored our credit, he wanted to give the country a solid banking foundation. He created a mint so that we could have a unified currency. And his Report on Manufactures is really a very important thing.

Hamilton also became the Superintendent of the U.S. Lighthouse Establishment created on August 7, 1789, a full month and a half before he became Secretary of Treasury.

The lighthouse bill created the first infrastructure in America. At the same time, Hamilton's creation of the Society for Establishing Useful Manufactures was critical to the establishment of Paterson, New Jersey, which became the embodiment of manufacturing and industry that Hamilton brought forward in the United States.

### **Fresnel's Revolutionary Lights, 1841**

Members of the Navy and Coast Guard were constantly complaining in the early 18th century, "We can't see those lights, they're invisible, what are you going to do about it?" The solution came from French genius Augustin Fresnel, a true embodiment of the Renaissance. Fresnel recognized that improvements could be made. Isaac Newton had relied on a particle theory of light. It was Fresnel's wave theory of light that revolutionized our concept of light, and his breakthrough—and the invention of the Fresnel lens—made possible the power of the lighthouse in Navesink, New Jersey.

It produced a light equivalent of 900,000 candles, and can be seen 75 miles away. It made nautical entry into New York Harbor safe and very operational. The Fresnel light would open up new sea lanes never before used. The concomitant invention of steam technology, along with the screw propeller, saved the Union in the Civil war. These developments created a global system of tremendous wealth and power, and it is that wealth and power that would eventually allow a man to land on the moon 50 years ago, which is why we're here today.

So I think we all owe a great debt of gratitude to Alexander Hamilton and to Augustin Fresnel, because they were true geniuses who helped to make all this all happen.

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## II. British Empire Games

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# Frantic British Censors Strike YouTube and Google —Exposing Themselves Yet Again

by Barbara Boyd

July 18—YouTube permanently removed the video, “The Special Relationship is for Traitors,” from LaRouche PAC’s YouTube channel on June 5, 2019. The video presents historical fact about the British Empire’s colonial atrocities and its role in sparking two world wars. It documents the prevalent American belief, following these catastrophes, that the British Empire (not the British people) was and is our sworn enemy. YouTube says the video violated its ever expanding “community standards.” You can view the video which offended YouTube’s censors [here](#).

According to various news reports, YouTube’s community standards were updated on June 4 to cover what YouTube’s machine algorithms and “Trusted Flaggers” (the name for its outside censors), consider “borderline hate speech.” According to YouTube’s insiders, videos expressing what the YouTube censors call “conspiracy theories” are the targets of the new standards. Numerous mainstream academic and history sites were censored or disabled in the June purge, and it scooped up journalists nominally on the left, such as [Max Blumenthal](#), as the machine algorithm and YouTube’s “Trusted Flaggers” marched on.

As this article goes to press, word emerges that Twitter has suspended the main twitter account for Julian Assange supporters and that the popular [Consortium News](#) website, which has reported on the Assange case among other atrocities by our ruling elites,



C-SPAN  
*Special Counsel Robert S. Mueller issuing statement on his Russia Investigation on May 29, 2019.*

has been subject to a malware attack.

Taking out these voices occurs just as CNN has published another fact-less piece of hate propaganda claiming that Assange and WikiLeaks were working with the Russians to swing the 2016 U.S. elections. According to CNN’s fabricators, Assange did this from a “command post” in the Ecuadorian Embassy, in London. CNN of course,

fails to reference the 24-hour-a-day surveillance then operating against Assange in the very capital of the imperial oligarchy, the City of London.



**Exclusive: Security reports reveal how Assange turned an embassy into a command post for election meddling**

By Marshall Cohen, Ilya Shkarevic and Aron Torres, CNN

Apparently, as we head into hitman Robert Mueller’s scheduled July 24 testimony before Congress, the Russiagate narrative, having completely flopped with the American people, requires hands on cyberwarfare for its attempted resurrection. More and more people have realized that they have been fooled, not by the Russians, but by all of those “authoritative” and “trusted” corporate media who have been caught lying to them, outright and brazenly, for full on three years now. The public has either tuned out, because of the gargantuan nature of the fraud, or become incredibly angry and await leadership as to how to respond. Now, the flipside of this fraud is becoming the most prominent dynamic. The enemy went all in and exposed themselves, including the long-time instruments of social control resident in the individual laptop. The time has become ripe for taking both the nation and your mind back.

We have repeatedly demonstrated, that the British intelligence services, their vassals in the then government of Ukraine, and the Obama Administration intervened to swing the 2016 presidential election to Hillary



Clinton, and then to nullify Donald Trump’s election. They thought Hillary Clinton was going to win the election and their actions would never be known. As of November 8, having acted criminally, their choice was either to continue that course in the hopes of overturning the election, or to await inevitable discovery given the number of people they employed in their grand conspiracy. Pursuing the former course, however, has now publicly exposed even more of their operations. Similarly, the frantic censorship measures now being undertaken invite inquiry into all that these companies have been doing previously, further exposing those who formerly lived behind the classified curtain.

This article intends to trace the wholly British evolution of the present campaign and reference its primary fallacy—that artificial intelligence or machine learning can ever account for, or control truly human behavior. Donald Trump’s election proved that. He

used Silicon Valley as a tool—rather than being used by them. Hillary Clinton’s total reliance on deep data, making electoral decisions based on computer models of social media behavior, also proved that, albeit negatively. The reason Hillary Clinton did not visit the Rust Belt states—the states that sealed Trump’s victory—is that a computer, called Ada by her deep data team, told her not to.

As Lyndon LaRouche urged throughout his lifetime, no artificial intelligence regime can defeat a mobilized and creative human mind consciously seeking a higher form of human existence. They can, however, inflame fixed, linear, and irrational modes of behavior, into a force of destruction—witness the violence caused by killer video games and the cognitive passivity engendered by both drug and pornography addictions.

### The Present Purge

Since November of 2016, Facebook and Google, which owns YouTube, have been relentlessly attacked by the U.S. Senate Intelligence Committee, numerous Parliamentary big wigs in Britain, and the mainstream

corporate media, for fostering allegedly fake Russian posts, conspiracy theories, and other “disinformation” through their news feeds, resulting, according to them, in Brexit and Donald Trump’s election in the United States. Not incidental to the media’s outrage was the fact that major mainstream media were shutting down in the United States, at record rates, as bored and disgusted readers and viewers migrated to the internet, hoping to find websites and blogs more reflective of their outlook.

In response to these attacks, and the surprise changes to its business model demanded by its former enthusiasts turned critics, in April of 2017, Google announced that it was going to promote and boost traffic to “authoritative” viewpoints, namely, corporate media, over those it dubbed “alternative” viewpoints. In May of 2018, Google cemented a formal alliance with the *New York Times*, the *Washington Post*, the *Fi-*

nancial Times, and other corporate media to promote their products. Facebook announced a similar promotion of “trusted sources” on its news feeds. In other words, the nation’s major social media platforms were being brought under control by the fake news media. All of these steps were in addition to 2016 announcements altering machine learning algorithms and content policies in order to prevent traffic from reaching certain sites designated as extremist, discriminatory, or, simply, “controversial.”

Even these perverse steps by Google and Facebook, however, failed to satisfy the aspiring ministers of truth. At its annual developers’ conference in April 2019, Facebook announced that it was completely changing its algorithms to favor posts within groups rather than favoring reposting or boosting of news feeds. Mark Zuckerberg, Facebook’s CEO, noted that the change was made to eliminate the “town square” type of debates about ideas taking place on the platform as the result of the former emphasis on news feeds.

As the result of all of these steps, there has been a huge drop in engagement on independent internet “news” sites, silencing independent voices who depended on Facebook advertising and YouTube views for revenue. In addition, Facebook’s private group format is intended to foster the type of small group dynamics which favor identity politics, small bore tribalism, and cult-like group think and brainwashing—dynamics which prevent the development of universal human identities and values required for effective political action, while encouraging outright fascism. Facebook has now also assigned censors to these groups to make sure that they are appropriately policing their own speech. The pornography, violent killer video games, and other platforms for mass popular derangement are obviously not a target of this censorship effort. Silicon Valley intends for this income stream to continue.

It is unclear how Google and Facebook’s algorithms and machine learning will be impacted by the current



The New York Times

The Washington Post

FINANCIAL TIMES

purge. For years, astute analysts have pointed out that social network engagement algorithms drive people into siloed behaviors and the extremes of identity politics. Once a teenager, for example, questions politically correct ideas of behavior, he or she is very often presented with a menu of successively extreme videos and messages prompting a deep dive into racial, sexual, or other forms of identity dynamics in order to sustain “engagement.”

It is a well-known psychological and sociological fact that propaganda has a

limited if visceral impact on targeted populations. The impact of any single wave of lies wears off quickly and requires constant repetition under closed conditions to have an impact. What is being proposed here, by Facebook, is the type of closed system which shrinks heads and produces the type of irrational hysteria now dominating entire sections of the American population as the result of being saturated with “trusted” “authoritative” mainstream media feeds for the last three years in the hoax called Russiagate.

### Empire’s ‘Trusted Flaggers’

YouTube, owned by Google, and Facebook, get away with this censorship because they have thus far successfully argued that their social media platforms are “privately” owned and hence not subject to the free speech provisions of the First Amendment to the U.S. Constitution. Their argument, of course, ignores the inconvenient fact that all of these platforms were developed by the Defense Department’s DARPA program and, as demonstrated by Edward Snowden’s revelations, have been open government spying platforms for years. On July 9, by contrast, the U.S. Court of Appeals for the Second Circuit in New York City ruled that President Trump’s Twitter account, is a “public forum” subject to the First Amendment and, as a result, the President may not block the hate speech directed at him by trolls, many of whom are paid to attack the President 24/7.

This, of course, degrades the platform this President

has chosen as his primary communication mechanism with the American people.

The Trusted Flagger censors employed by YouTube, and in a similar program at Facebook, include the Anti-Defamation League of B’Nai B’rith (ADL), exposed in a 1990s scandal as working with the CIA, FBI, and elements of Israeli intelligence, to spy on perceived opponents of Israeli policies, the widely discredited Southern Poverty Law Center, the British government, the Institute for Strategic Dialogue (also British), a host of British and Israeli private companies and NGOs, various U.S. intelligence and military components, and the Atlantic Council’s Digital Research Lab—a font of NATO and home to CrowdStrike’s Dmitri Alperovitch and the British Integrity Initiative’s Ben Nimmo.

Dmitri Alperovitch played an essential role in fabricating the myth that the files published by WikiLeaks documenting how Hillary Clinton and the DNC were rigging the 2016 Democratic Presidential primaries, were stolen by the Russian GRU (Russian military intelligence) via a hack of servers at the Democratic National Committee. Nimmo has played a major role in the Integrity Initiative, a British military intelligence operation squarely aimed at smearing Trump and his supporters and those dissenting from globalist policies. Prior to its Facebook gig, the Digital Research Lab had been retained by the British government to identify al-



Donald Trump, campaigning in Charlotte, North Carolina in 2016.

leged Russian disinformation agents using Twitter, resulting in a long casualty list of false claims involving ordinary British people expressing their views.

### Brits Declare War on Trump’s Base

In December of 2018, the British House of Lords published a [report](#), “UK Foreign Policy in a Shifting World Order,” discussing, in no uncertain terms, the Trump Presidency and the British imperative to prevent a second term for this President. The unhinged Report targeted Trump’s use of social media as a communications tool—creating a base of popular support completely outside established population control mechanisms, like the mainstream media. This, according to the Lords, provided the average citizen with impermissible power:

Digital communications tools have also intensified public pressure on governments, and increased the audience for foreign policy making. . . . The foundations of British foreign policy—the construction and maintenance of a rules-based international order, the relationship with the U.S. and EU membership—are being challenged as a direct consequence of political and social waves caused by people’s access to information, boosted by instant connectivity on an unprecedented scale and speed. Governments are responding to short-term demands of their citizens, who have been empowered by their access to information and



Dmitri Alperovitch, co-founder and CTO of CrowdStrike.

opinion... Sir Tony Brenton called cyber a 'poor man's weapon'; it had lowered the 'barrier to entry' into international relations. Mr. [Paul] Maidment [Director of Analysis, Oxford Analytica], said 'International relations have not been immune to the cheap digital revolution that the commercial and business world has experienced. That also means now that very small numbers of people can become international actors in international affairs in a way they never could in the past.'



CC/Gage Skidmore  
 Hillary Clinton, campaigning in 2016.

In 2016, "poor" men and women, the people Hillary Clinton called "the deplorables," used Facebook to form the types of affinity groups which turned out newly registered, unpolled, and formerly inactive voters (those who had given up hope of change) to vote, in droves, for Trump. It was a genuine revolt against the economic carnage of globalization, and the endless war policy dictated by the "rules based international order." According to the Trump Campaign, the Facebook ads which actually worked in 2016 and which were endlessly recapitulated by them and shared by their supporters, all involved building infrastructure across the formerly industrial Rustbelt states which delivered the President's victory.

In shell shock and panic from that victory, the elites created a hoax, falsely blaming Trump's victory on Russian social media trickery and cyberwarfare, and the alleged racial and conspiracy theories advocated by those they view as his unwashed plebeian supporters. They realized that they not only had to take out Trump, they also had to demoralize, fragment, and eliminate the political force which had elected him. That effort is now about to totally backfire as the American population searches out the people and policies which they recognize have almost destroyed them. Americans are now seeking a leadership that will put into place the types of economic and scientific policies that will ensure a prosperous future. Those ideas and policies reside uniquely in the published works of Lyndon La-

Rouche and are there for their taking.

### Obama Administration's Information Warfare Machine

The current censorship campaign revealed itself in the United States on November 24, 2016, soon after President Trump's election, when the *Washington Post* gave a section of its front page to anonymous authors branding themselves "PropOrNot," or "Propaganda Or Not." PropOrNot, boosted by the *Post*,

blacklisted hundreds of websites, from conspiracy sites to libertarian and progressive publications, as witting or unwitting Russian propaganda agents who should be prosecuted under the Espionage Act because of Trump's election.

Included in the Post/Prop blacklist were Truthdig, Consortium News, Antiwar.com, David Stockman's blog, Paul Craig Roberts, the Ron Paul Institute, Jeff Rense, the Drudge Report, Truthout.org, nakedcapitalism.com, CounterPunch.org, zero hedge.com, Infowars.com, and numerous libertarian and conspiracy sites. In short, it was a list of many of the dissenting media voices in the U.S., particularly those opposing war with Russia or with those deemed its proxies, like Syria. The document claimed Russia was the author of the 9/11



CC BY 3.0  
 Mikhail Khodorkovsky, speaking at the Maidan in Kiev, Ukraine on March 9, 2014.



truth movement and all websites favorable to Syria and Crimea.

Subsequent investigations of PropOrNot by journalist George Eliason, among others, have traced its genesis, literally in screen shots, to *The Interpreter* magazine, formerly the flagship publication of the exiled anti-Putin oligarch Mikhail Khodorkovsky's Institute for Modern Russia. Khodorkovsky, a City of London agent who criminally looted Russia and owes billions of dollars in taxes, has used his ill-gotten gains to service a variety of intelligence operations against the Putin government.

In naming those behind PropOrNot, Eliason focuses on Michael Weiss, *The Interpreter*'s editor and a hyper-aggressive product of Britain's Henry Jackson Society, and the deceased journalist Christopher Hitchens, who was Weiss' mentor. While at the Henry Jackson Society, Britain's premier neo-con intelligence pod, Weiss branded himself as an expert in Russian disinformation without once studying that nation's language, culture, or history. It is not incidental to our story that the Henry Jackson Society is largely run by Sir Richard Dearlove, the head of Britain's Secret Intelligence Service, MI6 (1999-2004), and his friends—fathers of the Iraq War and mentors to MI6's Christopher Steele in his dirty dossier full-spectrum information warfare campaign against candidate Donald Trump.

Additionally, PropOrNot involved Radio Free Europe and Radio Free Liberty, the publishers of *The Interpreter* magazine at the time, and the organization StopFake of Ukrainian intelligence pedigree. It also appears to have involved at least one of the Ukrainian-American Chalupa sisters—Irene Chalupa—if not others.

Alexandra Chalupa worked for the DNC on opposition research against Trump; was the key Clinton liaison with Ukrainian intelligence in the campaign against Trump Campaign Chairman Paul Manafort and Donald Trump; and was celebrated by none other than Yahoo News' Michael Isikoff as a key orchestrator of



Alexandra Chalupa



CC/Eóin Noonan

Michael Isikoff, chief investigative correspondent, Yahoo News.

the Trump/Russia hoax. Irene Chalupa is a longtime employee of Radio Free Europe and Radio Free Liberty, and an anchor for the webcasts of StopFake. Andrea Chalupa ran essential digital operations for the Ukraine coup. All the Chalupas have deep relationships with the neo-Nazi Banderist grouping that played the enforcer role for the United States and London in the 2014 Ukraine coup. This grouping includes the hacking and information warfare operation known as Shaltai Boltai.

In 2014, Michael Weiss and his British colleague Peter Pomerantsev published a [paper](#), widely hailed in Britain, and a signal piece elsewhere, announcing that Russia had established a vast propaganda apparatus in Western countries dedicated to promulgating conspiracy theories in order to produce confusion and inflame existing social divisions. Pomerantsev's "credentials" include official Russian ex-pat opposition status and a previous tour flacking the Magnitsky Act for British intelligence thief and fraudster Bill Browder. The Weiss/Pomerantsev paper wholly depends on claims about Russian disinformation prowess made by Mark Galeotti of the British military intelligence operation known as the Integrity Initiative. Galeotti's claims about a super-potent Russian hybrid warfare machine have since been retracted as utterly false.

### **British Lords to Protect Us from Putin**

Nonetheless, the paper was the opening salvo in the British intelligence campaign against alleged Russian disinformation founded on the realities of west-



CC BY-SA 4.0/Vogler

*Peter Pomerantsev*

ern decadence and decline. It argues that to shield American and British citizens from Putin injecting them with deadly Russian disinformation poisons, media and social media platforms should employ “counter-disinformation editors” who “would pick apart what might be called all the news that is unfit to print.” According to Weiss and Pomerantsev, the Kremlin is able to “exploit systemic weak spots in the Western system, providing a sort of X-ray of the underbelly of liberal democracy.” Information guides would, presumably, blind the public to such “weak spots.”

While PropOrNot provoked outrage when it was published, its lies about super-potent Russian influence operations have been repeatedly fed to the American public for three years now, muting the necessary protest. We have documented the roles of NATO’s Strategic Communications Center, the British military’s 77th Brigade, the British Integrity Initiative, and a host of newly minted Washington think tanks, featuring overlapping personnel with these British entities in regime change operations directed at Russia in a series of articles including [Part I](#): “The British Role in the Coup Against the President Is Now Exposed. Will

You Act Now to Save the Nation?” [Part II](#): “The Integrity Initiative’s Foreign Agents of Influence Invade the United States,” and [Part III](#): “A British Intelligence Fraud Creates the Coup Against Donald Trump.”

These think tanks include the Center for European Policy Analysis, the Alliance for Securing Democracies, the U.S. State Department’s Global Engagement Center, the Center for Naval Analysis, and the Atlantic Council.

Each of these Washington, D.C. outposts hosted the traveling British Lords when they came to Washington while concocting their 2018 British foreign policy manifesto against a second Presidential term for Trump. Of particular note is the Atlantic Council, home to Facebook censor, the Digital Research Lab. Funded to the tune of millions by the British Foreign Office, the United Arab Emirates, Saudi billionaire Bahaa R. Hariri, and now Facebook, the Atlantic Council is the U.S. public relations front for NATO and the British government, and, in the recent period, the center for regime change operations directed at Russia.

Prior to its exposure in December 2018 and January 2019 by a hacking group calling itself Anonymous, the Integrity Initiative was already implementing the House of Lords Report, recruiting opposition to a Trump second term here in the United States, while working closely with the Global Engagement Center at Mike Pompeo’s State Department.

Barack Obama, of course, pioneered the use of social media, “big data mining,” and micro-targeting in political campaigns in 2008 with his allies in Silicon Valley. Obama and friends knew that controlling these internet tools was essential to future political survival. In January of 2008, Cass Sunstein, the husband of Obama’s UN Ambassador Samantha Power, penned a University of Chicago Law School review [article](#), “Conspiracy Theories,” calling for a program to censor and disrupt those advocating “conspiracy



CC/Matthew W. Hutchins

*Cass Sunstein*

theories” online.

The chief concern at the time was those who refused to believe the various myths surrounding 9/11 or acquiesce in the police state measures which followed in its wake, and the looming financial collapse which occurred in 2008. Sunstein proposed various solutions including, forbidding conspiracy theories outright, taxing those who promote them, and/or the government engaging “third parties” in counter-discussion, and “cognitive infiltration” and neutralization of groups advocating these theories.

## GCHQ

On February 24, 2014, Glenn Greenwald published [documents](#) in the *Intercept* demonstrating exactly how Sunstein’s program had been implemented by the surveillance state of the British GCHQ and the Five Eyes—an intelligence-sharing alliance among Australia, Canada, New Zealand, the United Kingdom, and the United States.

The Edward Snowden trove of documents demonstrated that GCHQ dramatically expanded its internet surveillance and intervention activities between 2009 and 2012, President Barack Obama’s first term. Getting into the act, the U.S. Congress in 2012 repealed the U.S. Information and Educational Exchange Act of 1948 (the Smith-Mundt Act), which for 64 years had outlawed propaganda and psychological warfare operations created by U.S. intelligence and military agencies for purposes of foreign wars and interventions from being used against the U.S. population. The “modernized” version of the bill was incorporated into the 2013 National Defense Authorization [Act](#) and allows for propaganda and other active measures to be targeted at U.S. citizens.

The documents Greenwald released showed a



OGL v1.0

*An aerial view of the Government Communications Headquarters (GCHQ) facility in Cheltenham, England.*

wide-ranging COINTELPRO (COunter INTELLIGENCE PROGRAM) type of operation against political targets by Five Eyes. Greenwald concluded, based on the trove of classified GCHQ documents he released on February 14, that:

These agencies are attempting to control, infiltrate, manipulate and warp online discourse, and in doing so, are compromising the integrity of the internet itself. Among the core self-identified purposes of [GCHQ’s Joint Threat Research and Intelligence Group, JTRIG] are two tactics: (1) to inject all sorts of false information into the internet in order to destroy the reputation of its targets; and (2) to use social sciences and other techniques to manipulate online discourse and activism to generate outcomes it considers desirable....

They boast of using, false flag operations, fake victim blog posts, and posting “negative information” on various forums, ... and other tactics aimed at ... “discrediting a target.”

I urge those reading this article to pull down this February 24 *Intercept* piece, by Greenwald, and the one cited immediately below, and read them. The documents presented there will show you how the British imperial state and its U.S. assets think they can control you by manipulating your fixed or irrational and animal-like behaviors and the dynamics which occur in all small group contexts. Self-conscious change, a human activity, provides the basis for utterly defeating all their “systems.”

Glenn Greenwald followed up his researches on GCHQ’s JTRIG by releasing [more documents](#) on June 22, 2015, demonstrating that JTRIG was involved in

domestic operations against “extremist groups,” deployed sexual honey traps to discredit targets, launched denial-of-service attacks to shutdown internet forums, pushed counter-propaganda into various internet sites, and conducted economic and judicial espionage for its “customers.” The documents brag that JTRIG is conducting online “HUMINT” (HUMAN INTelligence) in all areas of the globe. Particular targets were those it deemed politically “radical.” JTRIG used such criteria as visits to WikiLeaks to specify who was a “radical.” These operations are psychologically designed to foster “obedience” and “conformity.” “Obedience” and “Conformity” are JTRIG’s words, not Greenwald’s. The *Intercept* releases included JTRIG’s customer list. The Bank of England is listed as the first customer.

### **British Ad Boycott to Enforce Blacklist**

While all of this surveillance and intervention was taking place, the social media platforms were profiting, hugely, through their data mining operations. They sold the data gathered daily about the internet habits and searches of those using their platforms, to corporate interests trolling for sales. This was, in fact, their business model. Cambridge Analytica, the Steve Bannon/Robert Mercer subdivision of the British military defense firm SCL, whose vile practices were exposed in the aftermath of Russiagate and Brexit, was really no different than other firms existing in the twilight zone created by the intersection of British, NATO and Israeli intelligence; Wall Street and London privateers; and politician retainers needing election throughout the world.

While the Trump Campaign inherited Cambridge when Bannon and other staffers supporting Ted Cruz came over for the general election, Facebook itself embedded with the Trump Campaign, showing the campaign’s digital director Brad Parscale, how to use the Facebook ad platform’s powerful tools. When accompanied by the fact that Trump actually had a powerful message of economic redemption, the results were predictable: Parscale says that Cambridge’s voter profiles did not work. The combination of Facebook’s tools, the Trump Campaign’s messaging, and the President’s personal 24-hour campaigning on behalf of the “forgotten men and women of the country” in the formerly industrialized states, produced the 2016 victory.

Facebook’s “mistake” in actively campaigning with Trump, an opportunity Facebook also offered to the Clinton Campaign to no avail, is the main reason why the company finds itself under such savage attack from those who previously threw it government and Wall Street money like there was no tomorrow.

Like most things in the Clinton Campaign, Hillary’s strategy combined gross intellectual incompetence with amazing arrogance. According to numerous press reports, the Clinton Campaign was entirely data driven, with major decisions being based on algorithms developed by a machine dubbed Ada Countess of Lovelace. The Ada referred to was Lord Byron’s daughter, who is widely credited with inventing the first algorithm in conjunction with her work with Charles Babbage. Ada would not have countenanced this use of her name or her invention. All machine-created algorithms are limited to linear processes and closed systems and, as Kurt Gödel proved, suffer from a systemic incompleteness which can never fully systematize or predict human behavior. Behave in a creative way, break your habits, exploit your human mind and capacity for change, and the spies and censors are left pounding dirt, as they were on November 8, 2016.

According to the Russiagate hoax, however, neither Trump’s message nor the Clinton team’s arguments against the laws of the universe were determinative. Instead, as the fake narrative goes, the evil Russians intervened using an all-powerful social media campaign run through the Internet Research Agency (IRA) troll farm in St. Petersburg and by hacking the DNC’s computers and John Podesta, and gave documents obtained from those hacks to WikiLeaks for publication. The deceased Senator John McCain led the charge, claiming that the hacks and the social media campaign constituted an act of war requiring a new and burgeoning infrastructure of organizations and entities funded to the tune of billions of dollars to prevent any further poisoning of the American mind.

Following the publication of PropOrNot, the British government directly intervened on Google and Facebook to ensure they got the message. They organized an advertising boycott beginning in June of 2017, pulling millions of dollars from the companies because their advertisers’ ads were appearing next to “inappropriate content”—namely, the alternative news sites cited by PropOrNot and others.

## Russiagate Hoax Debunked

In the discussion of the WikiLeaks published documents at the center of the Russiagate hoax, the fact that those documents were *truthful* has all but been forgotten. The documents demonstrated that Hillary Clinton was a craven servant of Wall Street and that the Democratic National Committee was actively subverting Bernie Sanders' campaign.

Now, as the result of discovery in Special Counsel Robert Mueller's criminal case against Roger Stone, we know that Mueller's indictment of 12 Russian GRU agents for the claimed hack of the DNC, relied on incomplete and redacted reports from CrowdStrike, the wildly anti-Russian computer security operation retained by the DNC. The FBI did not do any independent forensics concerning the alleged hack, but instead accepted CrowdStrike's incomplete and redacted analysis wholesale. This is on top of the numerous gaping holes that have already been demonstrated in the Russian hack narrative, the most glaring being the forensic studies conducted by former National Security Agency (NSA) technical director Bill Binney and what Binney says about the capabilities of the NSA.

Binney had demonstrated, well prior to Mueller's [Report on the Investigation into Russian Interference in the 2016 Presidential Election](#) or the GRU indictment, that the most likely source of the WikiLeaks published documents was a thumb drive download, not an internet intrusion. This is based on the calculated file transfer speeds and other metadata for the documents published by WikiLeaks.

Mueller's Report, for the first time, concedes that a thumb drive might have been the transfer route to WikiLeaks. But, the report insists, *without presenting any evidence*, that this must have occurred as a hand-off from the hackers to other Russians who came to the United States to pick up the thumb drives. The Report, at the same time, evinces uncertainty about the hack itself, saying it "appears" to be the case. Nowhere does the Mueller Report definitively tell us how the documents got to WikiLeaks, a hole which even Barack Obama acknowledged when presented with the intelligence community's Russian meddling "evidence."

Bill Binney also insists, based on NSA programs which he helped write, that if there was a Russian hack over the internet, the NSA would have been able to trace it and demonstrate its existence. Neither the Mueller Report nor the GRU indictment include any such

NSA evidence. Further, the Mueller Report timeline has WikiLeaks founder Julian Assange announcing the publication of the Democratic Party emails not only before he received the documents but before he even communicated with the source that provided them!

Thanks to the [work](#) of Aaron Mate and Gareth Porter, it has also been repeatedly demonstrated that the IRA's social media campaign was minuscule and juvenile, with most of their ads appearing *after* the election and/or never mentioning the candidates!

Then, on July 1, U.S. District Judge Dabney Friedrich ordered prosecutors to stop referring to the IRA as connected to the Russian government in any way, because so far the evidence in Robert Mueller's case against the IRA simply does not show that. Friedrich's ruling follows numerous *ex parte*, *in camera* submissions of classified information to her by Mueller's team. The IRA contends that it is a for-profit internet marketing firm—profiting by producing clickbait.

In addition, the entire IRA legend is just another warmed-over British intelligence yarn, imported wholesale into the United States. The entire weight of Britain's intelligence and propaganda programs, such as JTRIG, have focused since 2014, on the alleged prowess of the Russian trolls at the IRA in St. Petersburg, even claiming that Putin has succeeded in "weaponizing" jokes. Please note, once again, dear reader, that jokes, are uniquely human, paradoxical, and ironical, and cannot be "weaponized" by algorithm, despite the wild claims of British intelligence.

## The Flim-Flam Censors

Finally, a short note concerning two of the newly minted social media censors, as they are representative of the whole. The ADL is now headed by former Obama White House advisor Jonathan Greenblatt. Greenblatt has persistently characterized President Trump as a racist and sought and received huge grants from Silicon Valley for the ADL's new role in censoring and policing so-called internet hate speech. Chief among those funders is Pierre Omidyar, the founder of eBay, who is building a command center for the ADL censors in Silicon Valley. Omidyar, with his buddies Tom Steyer and George Soros, provided millions to finance private spy efforts to remove the President, including funding MI6's Christopher Steele after he was fired by the FBI. The same Silicon Valley billionaires are the key funders of RESIST.

The Southern Poverty Law Center fired its founder,



*Anti-Defamation League billionaire funders Pierre Omidyar, founder and former chairman of eBay (left); and hedge fund manager Thomas Steyer.*

Morris Dees, back in March, amidst charges of sexual harassment and racial discrimination. An [article](#) by a former staffer at the time in the *New Yorker* magazine states that staffers often joked over drinks about what should have been the Center’s slogan, “The SPLC, Making Hate Pay.”

Endowed to the tune of \$430 million by guilt-ridden northern liberals, the Center has repeatedly smeared conservative figures and is now making money off its campaign against Donald Trump. It has called HUD Secretary Ben Carson an “extremist,” and branded the Family Research Council a “hate group.” Recently, it had to pay \$3.375 million to Maajid Nawaz, a British citizen fighting Muslim extremism, who it falsely claimed was an anti-Muslim extremist.

### The Policy Answers

I hope this article has demonstrated the sorry state of our British imperial adversary. They simply don’t know how to create a functioning economy that can reproduce itself at a higher level, something Lyndon LaRouche knew all about and fully developed. Their system is about to crash. Their coup is failing as they have exposed more and more of the measures they have employed repeatedly to dupe and control this population.

As the result of both the coup and the censorship, there are moves afoot to break up Google, Facebook, Amazon, and other Big Tech monopolies under the

Anti-Trust laws. This should be fully supported. But the discussion and investigations, which must accompany the anti-trust drive, must focus on a full examination of the intended nature of these entities, and their collaboration with this anti-American, Anglo-American intelligence apparatus to control and shape public discourse and behavior. It must expose their collaboration in imposing the regimes of violent video games, pornography, identity politics, and other forms of extreme and degraded behavior on this

population, consciously—as they censor rational inquiry—and exposure of the hands that guide them.

As Lyndon LaRouche [noted](#), Silicon Valley’s artificial intelligence and algorithms are designed with an end in mind:

The systemic effect of such types of habituation, is a diseased moral and formal-intellectual state of mind which echoes the criminalized state of mind which impelled Pericles’ Athens into its Peloponnesian War. Athens never regained, to the present day, what it had lost through that folly, then. We, fortunately, have inherited the advantage of the greatness which the tradition of Solon of Athens expressed as the heritage of the Pythagoreans and Plato’s other circles.

That inheritance is the actual font of the American Revolution, which, now, in the process of being freed, can be set loose upon the land. The Moon-to-Mars space program, a crash program for fusion energy, new international agreements with China, Russia, and India to finally fully develop this world, are currently under quiet discussion in various provinces of the Trump Administration and elsewhere. They require an actual national mission orientation and human creativity for their success, something the humans amongst us must now, willfully, bring into existence. The internet can be a powerful tool supporting that mission.

# The British Factor in U.S. Confrontations with Syria and Iran

by Carl Osgood

July 17—One characteristic common to both the U.S. involvement in the Syrian war and the U.S. confrontation with Iran, is the pressure applied by the British government to escalate tensions. In the Syrian case, the British pressured the Trump Administration to launch two military strikes on Syria in response to alleged chemical weapons attacks, both of which have since been shown to have been staged. The British clearly tried to stage a provocation, to force a U.S. confrontation with Iran by seizing an Iranian tanker and then trying to stage a provocation against a British tanker—an effort that so far has failed. The British role in these dangerous events is no different, in essence, than the British role in the ongoing effort to overthrow the duly elected President of the United States, Donald Trump.

## Syria Chemical Weapons Hoax

On April 7, 2017, President Donald Trump ordered a series of cruise missile strikes on a Syrian airbase claimed to have been the launching point for a chemical weapons attack allegedly carried out on April 4 in the village of Khan Sheikhoun in Idlib province. The claim of a Syrian chemical bombing was made by the White Helmets, originally a British intelligence creation, with a record of supportive presence at, or participation in, jihadi terrorist acts in Syria. A week earlier, on March 31, then U.S. Secretary of Defense James Mattis had been in London, meeting with his then British counterpart, Michael Fallon. Throughout their joint press conference, Mattis toed the British line on Russia as an aggressor state while Fallon called, in effect, for the ouster of Syrian President Bashar al Assad.

On April 11—at the time of a G7 foreign ministers meeting and a phone call between President Donald Trump and British Prime Minister Theresa May—the



*Guardian* reported, “Whitehall sources say Britain has been instrumental in helping to persuade the U.S. to support the idea that Assad and his family must be removed from power before progress can be made.” Trump and May “agreed that a window of opportunity



U.S. Embassy/London  
*U.S. Secretary of Defense James Mattis (l.) and UK Defence Secretary Michael Fallon holding a joint press conference in London on March 31, 2017.*



*Victims of an alleged chemical weapons attack in Ghouta, Syria.*

now exists in which to persuade Russia that its alliance with Assad is no longer in its strategic interest,” a spokeswoman for 10 Downing Street said.

Almost exactly one year later, on April 7, 2018—just as the resistance of the jihadis occupying the Damascus suburban area of Eastern Ghouta was about to collapse, and when President Trump was talking about withdrawing U.S. troops from Syria—another alleged chemical weapons attack took place in the Eastern Ghouta town of Douma. One week later, Trump was once again goaded into launching cruise missile and air strikes, which this time saw the involvement of British and French forces as well. According to an April 10 Associated Press report, British Foreign Secretary Boris Johnson was agitating heavily to “punish” the Assad government for yet another chemical attack.

In a statement after the April 14 strikes, Theresa May issued a statement claiming that British intelligence had determined that Assad was responsible for the April 7 chemical attacks, and declared, “This persistent pattern of behavior must be stopped.” Just weeks before, in two reports dated March 13 and March 23, 2018, Fernando Arias, the Director-General of the Organisation for the Prohibition of Chemical Weapons (OPCW), had reported to the agency’s executive board that inspectors had found no evidence of banned chemical agents in inspections of Syrian facilities, including those of the Scientific Studies and Research Center, one of the targets of the April 14 strikes.

We now know, from the June 26, 2019 [report](#) of OPCW’s Working Group on Syria, Media and

Propaganda, that the investigators only spent a few hours in Douma and interviewed no witnesses, while the bulk of the investigation was devoted to interviewing opposition sources in Turkey. That report also noted biases on the part of certain individuals associated with the investigation against any evidence that tended to contradict the official narrative that the Syrian government was responsible for the attack. One particular member of the investigative team, a British national, was shown to have close ties to both the White Helmets organization and its founder, British mercenary James Le Mesurier. Among the manifestations of the team’s biases was the suppression of an [engineering](#)

[report](#), leaked in late May that showed that the gas cylinders allegedly used in the attack, were placed at the site manually rather than dropped from aircraft. That same Working Group report also extensively documented the explicit role played by the British government in promoting the false chemical weapons narrative.

### **Failed Iran Tanker Provocation**

On June 13, 2019, two oil tankers, one owned by a Norwegian company, the other Japanese-owned, were attacked in the Gulf of Oman, just after transiting the Strait of Hormuz. The United States immediately blamed Iran for the attacks, but have to date failed to provide convincing evidence. One week later, on June



U.S. Navy/Robert S. Price

*Guided Missile Destroyer USS Ross fires a Tomahawk land attack missile during 6th Fleet operations in the Mediterranean Sea on April 7, 2017.*





CC 4.0/Tasnim News Agency

The remnants of a U.S. RQ-4A Global Hawk surveillance drone shot down by Iran's Revolutionary Guard Corps, June 21, 2019.

20, Iranian forces shot down a U.S. RQ-4 reconnaissance drone that they claimed had been flying in Iranian airspace just outside the Strait of Hormuz. That same night, President Trump rejected cruise missile and air strikes in retaliation for the shoot-down, reportedly just 10 minutes before the strikes were to be launched. On June 24, British Foreign Secretary Jeremy Hunt declared that if the U.S. launched strikes on Iran, British forces would participate. That same day, Andrew Murrison, a British Foreign Office minister and member of the Privy Council, was in Tehran and said the U.K. believed Iran “almost certainly bears responsibility for the [June 13] attacks.”

On July 4, Royal Marines seized the *Grace I* supertanker in the waters off Gibraltar, an action which was quickly welcomed by U.S. National Security Adviser John Bolton. The Royal Marines claimed that Gibraltar authorities had said the ship was carrying crude oil to Syria in violation of EU sanctions. The Russian Foreign Ministry called the seizure a deliberate British provocation. Even former Swedish Prime Minister Carl Bildt, the current chairman of the

European Council on Foreign Relations, questioned the application of EU sanctions to the *Grace I*. “One refers to EU sanctions against Syria, but Iran is not a member of the EU. And the EU as a principle doesn’t impose its sanctions on others,” he tweeted. “That’s what the U.S. does.”

On July 9, it emerged that a British tanker, the *British Heritage*, owned by BP, had been on its way to Basra, Iraq to pick up a million tonnes of crude oil, but that the order was canceled and the ship, still empty, went to waters just off the Saudi port of Dammam. The next day, CNN reported, the tanker “turned off its transponders for almost 24 hours” while travelling through the Strait of Hormuz.

On July 11, the British Ministry of Defense claimed that speed boats from Iran’s Islamic Revolutionary Guard Corps (IRGC) navy had targeted the *British Heritage* as it passed through the Strait of Hormuz. A source in the Ministry claimed that the IRGC had intended to divert the *British Heritage* into Iranian waters and seize it in retaliation for the seizure of the *Grace I*. The interposition of the *HMS Montrose*, a British Royal Navy frigate, supposedly prevented the Iranian operation to seize the *British Heritage*.



According to news reports, there are 15 to 30 British-flagged commercial vessels in the Persian Gulf on any given day, but only one Royal Navy warship, and yet the (empty) *British Heritage* was being escorted by the *Montrose* on that particular day.

By July 12, it had become clear that this staged “attack” was not provoking the United States into attacking Iran. Hunt then called for

“cooler heads” and on July 13 “exited” the original provocation, offering Iran the release of the *Grace I* for a guarantee that its oil would not be delivered to Syria. Iran officially rejected the offer as the Iranians regard Britain’s seizure of the *Grace I* as an act of piracy.

That is where the matter stands as of this writing.

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## III. Crash Program for Mars

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First published in *EIR* on  
October 21, 1988

# Big Payback From Mars Colony Mission

by Lyndon H. LaRouche, Jr.

*What follows is the first part of this 1988 article. Part 2 will be published in the next issue of EIR.*

If the United States follows the approach I have proposed, we shall have our first permanent colony on Mars by the year A.D. 2027. During a few years following that, that colony will grow into an increasingly self-sustained community, the size of a medium-sized city on Earth. Long before A.D. 2027, the average U.S. taxpayer will have gained an enormous personal profit from the earlier, preparatory stages of the program as a whole.

Once the colony is operating, the benefits sent back to Earth will be many times greater than the cost of building and operating the colony; but, that profit will not come back as manufactured products, nor shipments of ores from the asteroid belt. There are presently no natives out there in the Solar System, waiting for the door-to-door salesman coming out from Earth.

This payback will come, even long before the colony on Mars is established. It will come, beginning the next 10 years, as increased income from the use of space technologies right here. Average income will be increased as a direct result of U.S. industrial, and other investments of new space technologies in production here on Earth. During the course of the first 10 years, the federal taxable portion of this increased average income could become larger than the government's annual space-budget. The space program's benefit to the average household and business should average four to five times the increased federal tax revenues generated.

During the second and third decades, this profitable tax investment in spacedevelopment will grow to an enormous amount. Over the course of the first 10-odd years, average productivity in the United States should

increase at the more modest rate, of between 3% and 5% per year. However, the rate of growth will climb, at ever faster rates, during the second, third, and fourth decades.

The following are only rough estimates, but our estimates are on the conservative side, and they are good enough for purposes of illustration. By the end of the 1990s, under this 40-year space program, the increases in operatives' productivity caused chiefly by industries' investments in use of space program-stimulated technology, should bring productivity to about 50% higher than today. By the year A.D. 2010, more than four times today's productivity. By the year 2020, 15 to 20 times today's productivity. By the scheduled year for establishing the permanent colony on Mars, operatives' productivity should average more than 40 times higher than the average productivity in the United States today.

We should stress the obvious fact, that all this will occur during the average working-life of the students who graduated during the year 1988.

Pipe-dream? Not at all; those estimates are cautiously conservative. We have allowed for much of the usual slippage, between what could have been achieved, and the delays and errors inherent to political, managerial, and other sources of lost opportunities. This report will indicate some of the facts which justify such an optimistic view of our nation's options for the future.

True, compared to our experience of the past 20-odd years, these may seem to be spectacular rates of growth. Yet, we have had periods in our national history, and periods in the economic history of other nations, during which more or less comparable rises in productivity have occurred, Reaching annual rates of 3-5% increase of operative's productivity, with 50% cumulative increases over a 10-year period, is a commonplace for vigorous economic recoveries. If the recovery is con-



NASA

*Regular manned flight to Mars will require the industrialization of the Moon, to construct the space vehicles used to transport freight and persons to the Mars orbit. Here, an artist's conception of a manned base near the lunar South Pole. Power stations and processors are in the background, and the astronaut's landing capsule in the right foreground.*

tinued through a second 10 years, with increasing rates of capital formation, the increase of productivity accelerates. So, our projections for the first 20 years are in line with lessons of past experience. If the nature of the technologies being used is considered, the estimates given are cautiously conservative.

Neither the federal budget, nor the U.S. Bureau of Labor Statistics sees space exploration as such. For them, "Space" is merely a statistical category in accounting procedures. Under "Space," the budget sees tax revenues spent, on the one side, and the increase of the nation's taxable income, on the other. Under "Space," the Bureau of Labor Statistics sees employment, incomes, and productivity in industries affected by the technologies developed for space exploration.

From the standpoint of Washington's federal statisticians, they see government funds going into the development of objects. To them, these objects have something to do with space exploration, but no revenue comes flowing into Earth from outer space as a result of shipping these objects up into orbit or beyond. In other words, we obtain no revenues from sales or the export of these objects to persons or companies in that foreign

land called Outer Space. These are simply objects, which the federal government is spending considerable sums to develop and produce.

Lo, and behold! By investing in the development and production of these objects, U.S. employment and productivity are increased. Incomes of businesses and households increase. As a result of the increase of incomes, the government obtains its share as tax revenues at standard rates. After a while, the government is obtaining more tax revenue from the margin of increased national income generated by the investment in space technology than government is investing. In the meantime, total national income is increasing by a margin of expansion four to five times as great as the increase of federal tax receipts.

The Washington federal accountants' reaction to all this? "Who cares what happens to those objects once they are shipped out to space; this investment is the best money-maker in modern history." What Washington's groundling bureaucrat sees, is a large and growing research and development project, which more than pays for itself in terms of tax returns, and which is on the way to increasing average U.S. (real, physical) productivity

about 10 times over the coming 20 years, and in sight of 10 times more than that during the second 20 years.

There is no hocus-pocus. It works, but there is nothing magical in the principles which cause this success. It is all very sound, and relatively very basic economic science. George Washington's U.S. Treasury Secretary, Alexander Hamilton, would have comprehended quickly, and would have nodded enthusiastic agreement. He would have pointed out to this writer that he, Hamilton, explained these principles for increasing the productive powers of labor in his December 1791 report to the Congress, *On the Subject of Manufactures*. So, if a bright fellow from 200 years ago could understand these principles, any intelligent fellow today could, too.

The politician who says, we can not afford a major space program, reminds us of the sly character who argues, "Look at the amount of money I'm saving on commuting costs," as an excuse to turn down a high-paid job, to take a low-paid, unskilled job, within walking-distance, at a nearby fast-food stand.

Why a Mars Colonization program? Would not some other project, closer to Earth, provide the same kind of economic stimulant? For the short run, there are several possible, large-scale research and development programs which would have somewhat similar effects. The difference is: The Mars project gives a higher rate of payback to the taxpayer, and over a much longer period of sustained economic growth, than any alternative in sight.

There are other, compelling motives and reasons for assigning priority to such a space program, We shall list some of these, turning first to the simplest, most easily understood of all of these motives, that of the ordinary citizen raising a family.

### **It Is Your Life, After All**

What does the taxpayer gain from the U. S. government's decision to proceed with a 40-year space mission? His or her income is increased, of course; but, what are some of the deeper feelings the taxpayer ought to have when he or she thinks of the effect of this program on the future security and happiness of the family?

If "taxpayer" refers to the family household, family interest is centered around the future of the children and grandchildren. Why not be personal about the space program, in that way? It is your taxes the government must put up as investment. Apart from the pleasant fact that it increases your income level, what does such a



wikipedia

*Alexander Hamilton*

40-year project do for you, the taxpayer? How does it benefit your personal, family interest in the deepest, most personal ways?

Once your children complete their education, we hope they have a life-expectancy, in good health, of about 60-odd years beyond graduation day. About 40 or more of those 60-odd years will be spent, either working for an income, or maintaining the home for the partner who does (a job in itself). As your children of today choose their educational preparation for a future working profession, those children and you, their parents, should make some rather important decisions.

Obviously, we must think of the need of every graduate to have opportunities for economic security during the coming half-century or so. There are some other, rather obvious questions to be asked.

On the subject of these other questions, the first thing which comes to mind is the fact that most of the adult life of an income earner is used up in the daily routine of work. The standard work-year now, is approximately 2,000 hours; if we allow a minimal average commuting time, and time out for lunch, typical employment uses up more than 50 hours a week, or about 2,500 hours a year. Times 40 years, that is 100,000 hours. Put the same facts another way: During the average 40 years of adult working-life, a person will expend not less than 45% of his or her waking hours on work plus commuting, often even more than 50%.

That makes a very persuasive argument for choos-

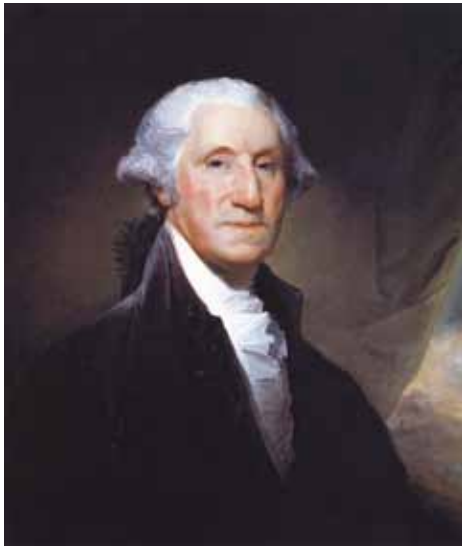
ing the right kind of educational and related qualifications. We used to say, “Choose a life that amounts to something.” Forty-odd years later, shall we look back to say, “I spent half the waking hours of my adult life on something in which I take little pride?” Should we not hope that the days are ended, when work was viewed as a kind of punishment, a sacrifice made in order to have the price of bread? Individuals ought to have the right to enjoy work, to know that that for which they are spending half the waking hours of their working-adult life is something important to the society. A person has a right to the opportunity, to walk with pride, to say, “I am spending half my waking hours doing something which not only feeds my family, but which is so important for society around me, that I am entitled to respect for the importance of the kind of work I do.”

Parents and students have a right to ask, will the kind of career for which a student is becoming qualified continue to be a meaningful career opportunity, 10 or more years ahead? It is not pleasant to be told, “You have become obsolete; why don’t you try for a job washing dishes?” This involves economic security. It involves the right to have an opportunity to do something one can take pride in contributing to society.

Intelligent citizens who look a bit into their own and their family’s future in this way, can see the political side of this problem rather easily. The citizen, the family, the community, are, each by themselves, small and weak, when compared with the forces which determine the markets and the investment climate. Without the right form of government, and without the right governmental policies, there is no way the family can assure satisfactory conditions for itself over the coming 40-odd years.

Admittedly, under our federal Constitution, the economic functions of government are limited.

The Constitution gives the federal government authorities, duties, and responsibilities in the following key areas. U.S. currency and federal banking and other credit policies. Fiscal functions of government. Regulation of foreign and interstate commerce. Providing



Portrait by Gilbert Stuart

*George Washington*

basic economic infrastructure including water management, production and distribution of power, general transportation, communications, and so on.

The federal government has a division of labor with state and local government, for providing such economically essential elements of infrastructure as education, and ensuring that both sanitation and an adequate health-delivery system exist. Government provides needed infrastructure either as an economic undertaking of federal, state, and local governments, or by fostering private investment in regulated public utilities, and by fostering

regulated or self-regulated professional standards in these areas of basic economic infrastructure.

In other words, government’s economic functions are limited to matters in which private entrepreneurs can not meet the general need efficiently, unless they are very large-scale monopolies. Where we think the inefficiencies of government preferable to placing the nation at the mercy of giant monopolies, we rely upon the options of government undertakings, or federal or state regulation of privately owned public utilities.

Implicitly, our Constitution limits government’s undertakings to those we have indicated, and to the right of government to operate arsenals. The rest is left to private enterprise.

That American System of political-economy, established under George Washington’s administration, is the best economic system ever devised, with the best kind of division of labor between government and the private entrepreneur.

In this arrangement, the combined economic weight of monetary policy, government fiscal policy, and basic economic infrastructure are, combined, the largest single component of the national economy as a whole. In these combined areas, what government does, or fails to do when it should, is the largest single factor determining the health or sickness of the economy at large.

In addition to the raw power of government’s economic functions as a whole, there is another factor in which government plays a major role. This “other” oc-

cupies the largest part of our attention to economic factors in this report. The name of this other factor is “technology.”

From the middle of the seventeenth century, in the Massachusetts Bay Colony, Americans have understood that the increase of the standard of living depends upon advances in average productive powers of labor. Until a change came in national policy, about 1966-72, we Americans understood, over the past 350 years, that advances in productivity occur as a result of a policy of investing in advances in technology. If we can maintain the flow of technological progress into production and infrastructure investments at relatively high rates, the average productivity and income of the population will grow accordingly.

Government has no monopoly on technology. Scientific and technological progress begins as scientific discoveries by individual minds. Once the advances leave the laboratories, technology is developed chiefly in the machine-tool sector of the economy. For the most part, the machine-tool sector is made up of small private firms, in which most of the management is composed of scientists, engineers, and other very skilled and innovative technicians. Another important source of technological progress is the suggestion box of the enlightened manufacturing firm, which depends upon the voluntary ingenuity of industrial operatives working in their spare time as individuals or small teams. Then, there are those indispensable mavericks, the lonely, individual inventors.

Government’s own economic roles in military and aero-space development, and in basic economic infrastructure, add to the total flow of technologies through the society as a whole. This is a rather important factor in determining the rate of technological progress generally. However, in terms of those kinds of concerns of the private citizen we described above, government has the responsibility of fostering technological progress in the society as a whole.

Government fosters private technological initiative, by building policies which encourage such private initiative, into its monetary, fiscal, and regulatory functions. For example, investment tax-credit policies have proven very effective. Job-creating investments in production which foster growth of employment, and increase the productivities and incomes of labor may find



*The founding of the Massachusetts Bay Colony was led by the Winthrops and Mathers. Shown: the arrival of the Mayflower at Massachusetts (1629).*

their profits taxed at slightly lower rates than profits which are not reinvested for such purposes. Credit should flow into technologically progressive investments at relatively cheap rates, and in relative abundance. Firms and households should be provided incentives to save, and to steer a goodly portion of those savings into equity and loans for such purposes.

In addition to these things, government plays a leading role, although not an exclusive one, of course, in the way our nation adopts a technological consensus. Some examples from our past history help to make this clearer.

Virginia’s colonial governor Alexander Spotswood gave the nation its first major public postal service, a function taken over by Benjamin Franklin later. This was very important in the fostering of technology, among other benefits. Spotswood’s program of building roads as a way of opening up large regions to development, was another feature of our early development. Government’s responsibility for fostering a system of canals, and then the development of railways, are another example. Developing urban centers in such a way as to provide a desirable climate for certain kinds of technological investments, is another example.

Generally, if government makes a long-term commitment to fostering progress in development of certain technological improvements, and does this well, the economy as a whole is assured this is a field of investment and production which will be sound over the coming 20 or more years. Government says something like the following: “Here is a list of the kinds of technologies which are likely to dominate progress over the

coming generation or two. Government is committed to using these technologies, wherever they are suitable, in its own economic functions, such as infrastructure. Government is building incentives for such investments into its monetary, fiscal, and regulatory policies, and commits itself to maintain these kinds of incentives over 20 or so years to come.”

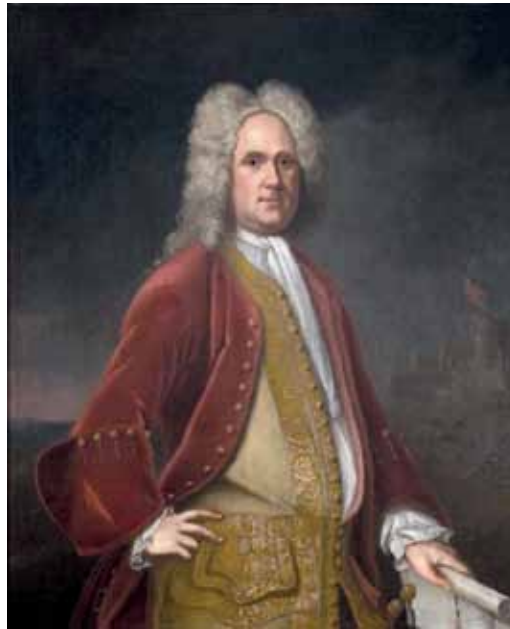
Therefore, the individual citizen is able to control the prospects for the family, in terms of opportunities for economic security, and career perspectives, for more than 20 years ahead. The citizens must work together politically, and in other ways, to ensure that the representatives they elect, and the policies demanded of those representatives, are consistent with that kind of longer-range security.

The Mars Colonization program is a very valuable, very large element of the kind of policy that the citizen’s family will require for the kind of security it has a right to expect over the coming 40-odd years, Government must say to the citizens, in effect, “Here is the space program, and this is the way it provides your children the kind of economic and career-opportunity security they require over the coming 40-odd years,” If the citizens agree to this choice, that must become the policy-commitment of government over the 40-odd years to come.

Through a properly functioning system of representative government, the individual citizen, otherwise too weak to control the vast and powerful forces of the economy as a whole, is able to steer government into choosing those kinds of long-range policy-commitments which ensure the opportunities for the children’s future career and security over 50 years or more to come.

For such reasons, one of the first things citizens should ask of any political candidate, especially for federal office, is, “What is your policy for ensuring technological progress and career-opportunities for us and our children, over the coming 50 years?”

That said, we identify some of the most basic prin-



*Alexander Spotswood*

ciples governing the way the Mars Colonization program will foster security and career opportunities over the coming 40-odd years.

### **Physical Economy**

Before plunging into our explanation of the economic impact of the space program, we must clear up a handful of ABCs of economics. We must do so, because there is much confusion as to the meaning of that term. “Economics,” in the sense the founders of our republic defined it, is no longer taught in our universities, and very few among those professionals called “economists” know the original meaning of the word. Most citi-

zens are confused by what they read about it in the press, or hear from politicians, and from so-called “experts” on the TV screen.

Yet, almost any literate citizen can understand the ABCs of real economics, once the matter is explained slowly and patiently, by someone who knows. So, we must examine those features of that branch of economic science, “physical economy,” which bear most directly on the way the Mars Colonization program will expand their family’s income. Only those with appropriate qualifications in physics will understand all of it thoroughly, but all readers will be able to follow the general argument, the ABCs; they will get the gist of the rest, and that will be useful to them in following our description of the Mars program itself.

A hundred years ago, and earlier, “economics” was shorthand for “political-economy.” Political-economy had two parts. One involved money and related things; that was the administrative side. The other was the study of the principles of physical economy, in which land, labor, and market-baskets of households’ and entrepreneurs’ goods were the area of concentration. “How may we best increase the fertility of land, increase the physical output of labor per capita, and increase also the standard of living?”

Physical economy as such takes up a large portion of the paper on economic doctrine of President George Washington’s administration, Treasury Secretary Alex-

ander Hamilton's December 1791 [report](#) to the U.S. Congress *On the Subject of Manufactures*. That is still a good textbook in economics, to the present day.

All of the calculations needed, to calculate the estimated impact of the space program upon the American standard of living, are made in terms of physical economy, without taking money calculations as such into account. Instead of money, we use standard market-baskets: Three market-baskets are needed. The first, obviously, is per capita household consumption's requirements; that market-basket must be improved as time passes. The second, also rather obviously, is the market-basket of entrepreneurs' goods required, per operative employed. The third, is the market-basket of basic economic infrastructure; this we measure both in per capita terms, and in units of land-area developed.

Although the development of a science of "physical economy" was well under way by the end of Leonardo da Vinci's life, it was established first as a true branch of physical science over the years 1672-1714 by Gottfried Leibniz. The eighteenth-century founders of the United States took their principles of physical economy from Leibniz, some directly, some indirectly.

If the reader understands the ABCs of physical economy, the rest of political economy is no great intellectual challenge. Money and credit involves processes that are sometimes as complicated as governments, bankers, and accountants, and Harvard Business School can make them confusing, but not much more mental ability is required to understand the principles involved than one needs to plan today's family's household budget. All of the science in political economy, is locked up in the study of physical economy.

Leibniz's discoveries center around two topics. The first is the principle of the heat-powered machine. In this connection, Leibniz examined the relationship between increasing the amount of power supplied to a machine, and the resulting increase of the productivity of the operative. The second, is passed down to us as the term "technology," a term for which Leibniz supplied the original scientific meaning.

So, in the theory of machines and analogous kinds of investments, we distinguish two ways to increase the productivity of society. The first is to increase the effective amount of heat-power, or equivalent power, per machine (per operative). The second is to improve the principles of internal organization of the machine or analogous device; this is *technology*, or *technological progress*.

The simplest kind of illustration of what technology signifies, is sharpening the blade of a knife, or the point of a punch. So, a sharp knife cuts, when a dull knife does not. As these very simple examples suggest, the measurement of technology is a branch of geometry,

the only way in which degrees of organization can be measured intelligibly.

Power and technology are not strictly two separate factors. There are lower and upper limits for the amount of power required per capita for any level of technology. Below that minimum level of power, the technology does not work. At the upper limit, to obtain further net gains, new, improved technologies are required.

The reason for the existence of these lower and upper limits is, that in production we are pitting the organization of the tools (technology), and the power behind them, against the organization of

the material being worked. For example, let us imagine we have increased the average temperature (*energy-flux density*) of a process to a level above the critical temperature at which tungsten ore boils to form not only a gas, but turns that gas into a plasma. This would require us to work this plasma within magnetic confinement. By this, and associated changes in technology, we would achieve a major breakthrough in the kinds of things we could do. We would raise the heights of increased productivity we could achieve in many old and new branches of production.

That example is a real one. That is among the changes in technology we shall develop as part of the Mars Colonization project.

This reporter's professional specialization is the measurement of technology. Technology is measured in



Gottfried Leibniz



terms of what we call “negative entropy,” or simply “negentropy.” This is the only possible way in which to measure an increase in the level of organization of a process. Machines, or analogous designs of processes which have higher states of organization, by this standard of measurement, represent higher levels of technology than processes which are less “negentropic.”

We must put in a few words of caution on the definition of “negentropy.”

In physical economy, we do not measure “negentropy” as one finds in the usual undergraduate physics textbook. We use a different measurement, based, as we have noted, on geometry, rather than statistics. The kind of geometry we must use, especially for the case of modern technologies, is what is called the constructive geometry of the complex domain, as based chiefly on the work of two leading nineteenth-century scientists, Karl Gauss and Bernhard Riemann. This geometric approach enables us to show a direct relationship between the increase of the level of technology represented as investments, and a resulting increase in the average productive powers of labor. That approach permits us to estimate with relatively great precision what the economic benefits of the Mars Colonization program will be.

The essence of physical economy is study of the ways in which increase of power and technology, combined, increases the average productivity of labor. Now that we have introduced the term “technology,” we must define the other side of the equation, “productivity.”

Instead of measuring productivity in terms of money income, our simplest unit of measure is what the leading nineteenth-century U.S. economists termed “economy of labor.” For example, if so much labor is required to build a house or an automobile of a certain kind and quality today, how much labor will be required after 10 years of technological progress? The house should cost less to replace, but how much less? Good estimates can be made on the basis of calculating the “economy of labor” resulting from use of improved technologies. It is a bit more complicated than that, but that gives the general idea.



*Carl-Friedrich Gauss*



*Bernhard Riemann*

We measure this, as we said, in per capita unit-values of market-baskets. Using a standard market-basket for household consumption, for example, for the U.S. year 1968, what percentage of the total labor of society must be employed in producing enough to satisfy that unit-standard of market-basket for the average member of the household? If the amount of labor required to produce such a standard market-basket increases, that is bad; if it decreases, that is good.

However many hours of paid labor are required to buy the house you possess today, fewer hours should be required for a house of at least identical quality 10 years ahead. Fewer hours of paid labor should be required to provide each of the members of your family an improved diet 10 years from now, than today. And so on. That is the general idea of “economy of labor.” That is a good crude sort of measure of the changes in the average productivity of a society over time.

So, when we foresee a 3-5% annual increase in productivity, not too far down the road ahead, that means a more than 3-5% increase in the “economy of labor.”

This is not a matter of being generous for generosity’s sake alone. In order that members of households entering the labor-force may be able to assimilate improved technologies efficiently, they require a higher cultural standard in the home and other aspects of personal life, including educational improvements. To increase the level of potential productivity significantly above 1968 U.S. standards, in later years, we require a better market-basket than we required in 1968.

Therefore, we could not base the measurement of productivity in 1998 on a 1968 standard market-basket.

In terms of quality and quantity, there must be more and better goods in the 1998 basket. So, over successive years, as technological progress increases the number of “widgets” per day produced by the average operative, part of that increase must be diverted into increased real wages. If not, the potential productivity of the operatives will not keep pace efficiently with future technological progress. So, instead of measuring physical productivity in terms of a number of standard physical objects produced per day, we must measure the number of daily average market-baskets of goods being produced, per operative per day. We must do this under conditions that the quality and quantity of goods in the standard market-basket are being increased as technology advances.

Therefore, there is a marginal statistical loss of gains in productivity, because of increased standard market-basket requirements. This margin of loss is not bad; it is necessary to keep economic growth under way.

There are many facets to this sort of study; but these have been covered in published writings. Here, we are limiting our attention to those matters which bear directly upon the impact of the Mars Colonization project. We now concentrate our attention on energy.

Rather than using the term “energy” in the customary sense, let us use the term “power.” “Power” is a more complex magnitude than “energy” is used to signify generally today. In Leibniz’s work, “power” (*Kraft*) signifies a quantity of what Leibniz defines as physical least action. “Physical least action” is the name for the way “power” must be defined for purposes of constructing mathematical functions of technological progress.

“Physical least action” signifies the maximum amount of work accomplished by a minimal quantity of action. This means “work” in the sense we use “work” in physics, not the everyday use of the word. We explain.

The idea of “physical least action” was discovered by Nicolaus of Cusa, as first reported in his *On Learned Ignorance*, and in other published writings and manuscripts. It arose out of the so-called “Maximum Minimum” principle, that the circle is the minimum circumference enclosing the relatively largest area, or that the sphere is the minimum surface enclosing the largest volume. This signifies that the area being generated by circular action is larger than the area generated by any other pathway of action.

From this came scientific studies which showed that the universe as a whole functions on the basis of such a principle of physical least action. The modern meaning of the term was established by Leibniz; it was on this basis that he discovered the proper definition of “technology.” Least action, or power, is analogous to the action of generating the perimeter of a circle, or surface of a sphere; the net work accomplished, is analogous to the area or volume generated by that action. It is more complicated than that, but that is the germ of the idea.

This least action is expressed today in electromagnetic units of action, but the definition of electromagnetic is more complex than one finds in the standard physics undergraduate’s textbook.

Power takes note of several qualities associated with what most people think of as “energy.” This includes the simple quantity of electrical energy, for example, as measured in watts. It includes also the density of that energy, as, for example, how many watts per square centimeter of cross-section of the energy-flow flow onto the work-area considered (e.g., *energy-flux density*). We must measure the relative coherence of the energy-flux density, as we measure the purity of the radiation from a laser.

We must also take into account something most readers have not been exposed to in their earlier studies: the gain in work accomplished (e.g., per square centimeter or cubic centimeter) by what is termed a “nonlinear” form of electromagnetic pulse.

Nonlinear electromagnetic pulses are highly organized packets of power. For the layman, perhaps the most convenient mental image is that of a hologram. “Analytically,” these packets look like holograms, although sometimes very complicated ones. They are more powerful than so-called linear electromagnetic radiation, such as sometimes by a factor of about 1,000, because they operate on the harmonic structure of living and nonliving processes, and this in ways which were wrongly predicted to be impossible in standard electrical-engineering textbooks.

These several aspects of power are a leading feature of many of the space technologies we are now in the process of creating in the laboratories. Future technologies on Earth will make more and more use of these principles.

Now, look at some practical examples of how these principles work together.

## Energy-Density

Look back to about the year 1970, and compare some basic statistics for the economies of the U.S.A., West Germany, and Japan. We choose that year chiefly for two reasons. First, at that time, among the three nations, the levels of productivity of operatives and technology were approximately the same. Second, that is the point at which the productivity of the United States began to collapse. Compare the results with the cases of India and mainland China.

Look at **Table 1**. We have compared the economies listed in terms of 1) land-area of the nation, 2) size of the population, and 3) total energy-consumption, using standard official statistics. We have converted this data into the following derived statistics: 4) energy-density per hectare of land-area, 5) energy-density per capita, 6) population-density, in persons per hectare, and 7) energy-density per per-capita unit of population-density: watts per unit-per-capita area of population-density.

One point about the accuracy of the last data should be considered, so that no reader thinks we are misleading him.

Some readers would recognize, independently, that there is an obvious margin of error in the way the data in the last column is calculated: The calculation assumes that the land-areas of the respective nations are of comparable quality, on the average. There are differences in the quality of the land-area of the nations considered. Japan, for example, is composed of a high percentage of mountainous regions.

The refinement of studies along these lines, is the most basic feature of the day-to-day statistical work of physical economists. Refinements must include assorting the land-area among classes of land-use, such as farmland, pasture, forested areas, mountain areas, deserts, land-area consumed by transportation, and division of urban areas among sectors such as industrial, commercial, and residential.

Not only do we consider various classes of land-use, in that way. We must recognize that, although the type of land-use may be constant from location to location, the quality of the land used varies. It varies in natural quality; it varies as land is improved, has been spoiled, or has been allowed to deteriorate.

Obviously, we must study the population-densities of residence in each land-use area, and the weighted population-densities of operatives in the production to

TABLE 1

### Energy per Per-Capita Unit of Population-Density\*

Year	Country	Teracalories
1970	United States	$1.459 \times 10^7$
	Fed. Rep. Germany	$1.625 \times 10^6$
	India	$1.846 \times 10^3$
	Japan	$1.352 \times 10^6$
	P.R.C.	$2.974 \times 10^3$
1975	United States	$1.442 \times 10^7$
	Fed. Rep. Germany	$1.226 \times 10^6$
	India	$2.322 \times 10^3$
	Japan	$1.896 \times 10^6$
	P.R.C.	$2.263 \times 10^3$

\* Square root of energy per capita x energy per square kilometer

which that area is assigned. We must also adjust for the difference in quality of land-areas used; data not adjusted for this, we call measures of *population-density*; data which has been adjusted for functional differences in quality of land-areas, we call measures of *relative population-density*.

Such corrections would make Table 1 a large and complex one, and would prove little more than the point already nicely illustrated by that table in the form shown. It is obvious that the level of effective use of variations in technology varies according to energy-density per unit-per-capita value of *relative population-density*, but that this fact is illustrated by using the simpler data for average population-density.

Some subsidiary points of explanation to be made on that are as follows.

One of the leading reasons for some of the interesting features of the statistics on the three industrialized nations compared, is the role of basic economic infrastructure. This emphasizes water-management systems, general transportation infrastructure, the generation and distribution of power, and so on. In every industrialized nation, basic economic infrastructure is a major energy-consumer. So, the larger an area for which we must develop basic economic infrastructure per capita, the more energy that economy requires per capita.

Then, compare the cases of India and mainland China. With the very low energy-densities per per-capita unit of population-density, those nations could never

reach anything near 1970 Japan levels of economic development. They might develop a few industrialized areas, almost to the level of competing with industrialized nations; but, the average output—the poverty—of the economy, the society as a whole, will remain at about the level indicated by the very low energy-density per per-capita unit of population-density.

That is the general idea of what we mean when we say that the level of energy-density is a “constraint.” It signifies a condition which must be satisfied, in order to reach a certain level of effective use of improved technologies.

### Energy-Flux Density

We have a second kind of energy-constraint to consider: This is usually identified today by the term *energy-flux density*. Look at **Figure 1**.

EIR researcher Robert Gallagher compiled data on the history of the iron and steel industry. He compared the energy-flux density of each successive general advance in iron and steel production, with the increase of productivity obtained by going to higher levels of *energy-flux density*. The case for iron and steel is true for every class of industry, and for agriculture, too.

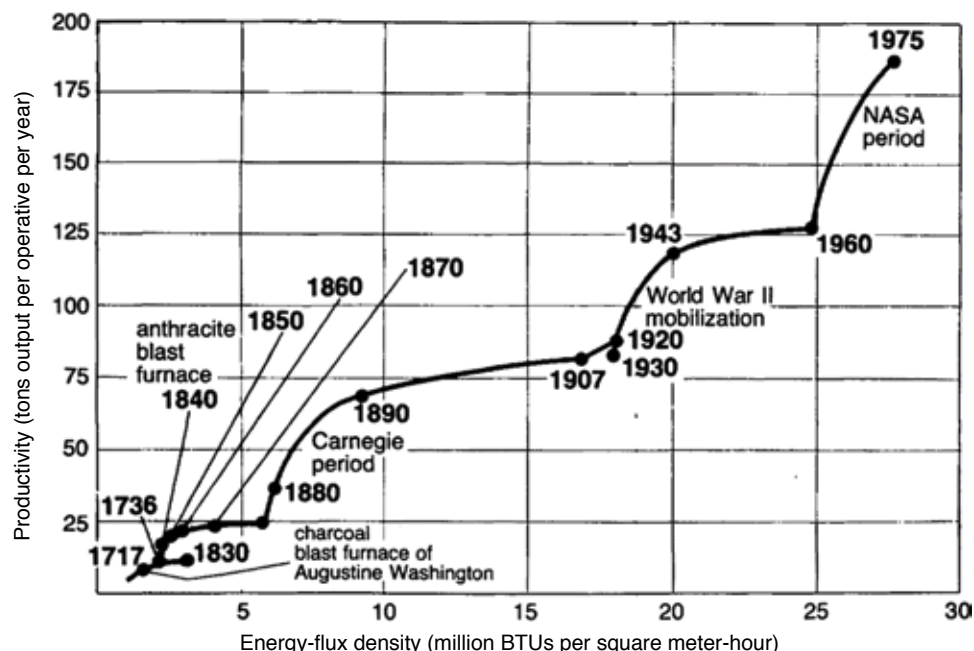
To realize a given level of technology, not only must we have the necessary energy-density available, that power must be available at the required minimal level of energy-flux density.

The example to which we pointed earlier: The critical temperature (energy-flux density) at which tungsten becomes a plasma, falls into the same category as Figure 1’s summary of the correlation between energy-flux density and productivity in the development of the iron and steel industry.

These two constraints are the key to design of the Mars Colonization project. They are key to the effect of those space technologies on productive investments here on Earth. By replacing energy with the appropriate, least-action definition of power, we are able to

FIGURE 1

### How Technology Elevated the Power of Labor in Blast Furnaces (1700-1975)



combine energy-density and energy-flux density constraints into a single constraint in terms of power.<sup>1</sup>

[End of Part 1.]

1. For the reader who insists on having the nature of this power-constraint identified, we summarize. The construction begins as follows. We define the physical space-time of electromagnetic action in terms of conical, rather than linear or simply cylindrical electromagnetic coordinates: electrical moment, magnetic moment, and frequency of each, respectively. The least-action character of each coordinate is expressed as the quality of coherence of frequency of isoperimetric, self-similar-spiral rotation in each coordinate. This situates electromagnetic least action in a constructive-geometric space corresponding to the complex domain of Riemann, et al. This implies the elaboration of the multiple connection among the three conical *self-similar-spiral action* coordinates. Thus, the three-coordinate relationship is elaborated with respect to historical time.

Such a multiply-connected domain is characterized by the generation of increasing cumulative density of geometrically determined mathematical discontinuities (singularities). This generation is *harmonically ordered* within the Gauss-Riemann domain so constructed, in the same spirit that physical space-time is harmonically ordered in the work of Kepler. To this, an elaboration of Georg Cantor’s most crucial theorem applies: the implicit enumerability of the increase of density of mathematical discontinuities per arbitrarily small interval of action of an axiomatically nonlinear form of continuing process.

Such an increase of density of singularities is a measure of negentropy, as we define it in physical economy. So, our definition of power is geometrically conformal with our definition of productivity (potential population-density). Thus, the causal correlation among the technological progress, power-constraints, and increases in productivity, is made susceptible of intelligible representation as a measurable relationship.

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