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Unleashing the New Age of Discovery



Founder: *Lyndon H. LaRouche, Jr. (1922–2019)*
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ON THE WEB

e-mail: eirms@larouchepub.com
www.larouchepub.com
www.executiveintelligencecencereview.com
www.larouchepub.com/eiw
Webmaster: *John Sigerson*
Assistant Webmaster: *George Hollis*
Editor, Arabic-language edition: *Hussein Askary*

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(571) 293-0935

European Headquarters: E.I.R. GmbH,
Bahnstrasse 4, 65205, Wiesbaden, Germany
Tel: 49-611-73650
Homepage: <http://www.eir.de>
e-mail: info@eir.de
Director: Georg Neudecker

Montreal, Canada: 514-461-1557
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.

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

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Unleashing the New Age of Discovery

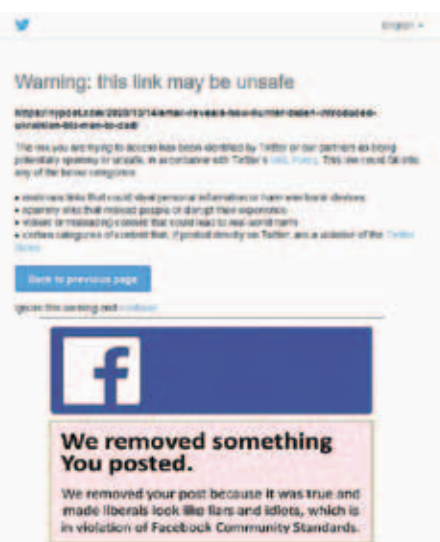
EDITORIAL

Censoring the *New York Post* Crossed a Red Line: The Constitution Is Imperiled

by Barbara Boyd

Oct. 15—A red line was crossed on October 14, 2020, in the ongoing coup being conducted by Democrats, and Never-Trump Republicans, joined by deep-state military and intelligence officials, against the President of the United States and the Republic for which we stand. They are acting at the behest of the world's new imperial financial oligarchy, the modern British Empire, which rose to power in the wake of August 15, 1971, when George Shultz, then director of the Office of Management and Budget, who would go on to be Nixon's Treasury Secretary, destroyed the post-war Bretton Woods monetary system, substituting a casino economy in its stead.

They are determined to prevent a Trump second term by any means necessary, taking much of the Constitution out in the process. Former MSNBC host Keith Olbermann echoed the prevalent sentiment this week by stating that the “terrorist Trump, his enablers and supporters must be removed from our society.” On October 15, Steve Scully, who was supposed to moderate the second presidential debate, was suspended from C-SPAN, after admitting that he lied that his Twitter account was hacked when it revealed him communicating with an anti-Trump jihadist, Anthony



Note: the Facebook warning above is just a joke, but the Twitter warning above was not. Users on Twitter originally weren't even allowed to post the story at all. Eventually Twitter allowed users to post the story, but with the warning above added.

Scaramucci, to rig that debate.

On October 14, the *New York Post*, the fourth largest newspaper by circulation in the country, was censored by social media monopolies Facebook and Twitter. Twitter censored the accounts of the President of the United States and the White House Press Secretary. The Republican House Judiciary Committee website was censored when it tried to post the *New York Post* story. The list goes on. As many pointed out today, Thursday, this is blatant and unprecedented.

For months LaRouche PAC has been warning that the full-spectrum information warfare operation being run against Donald Trump by the Five Eyes intelligence



What they didn't want the public to know: the New York Post breaks open the scandal of Hunter Biden's corrupt business deals, that his Vice-President dad knew all about.



CSIS/CC BY 3.0

ings (hidden, due to a previous round of censorship) was Eric Ciaramella, a key Biden Ukraine staffer who stayed behind in the Trump Administration's National Security Council. There is much documentary evidence pointing to the conclusion that the cocaine-addled Hunter was the bagman for the Biden family enterprise, a corrupt enterprise which included Joe Biden's brother, James.

Previous to the *Post* story, Joe Biden had managed to dodge the clear import of this story by insisting that he knew nothing—absolutely nothing—about his son's business dealings. This preposterous claim is only possible because the national news media has been in the bag for Biden, attacking any coverage of the actual facts as Russian “disinformation.”

Even before the *Post* stories, it was known that two Obama State Department officials, George Kent and Amos Hochstein, briefed Biden's office or Biden himself in 2015 that Hunter's involvement with the notoriously corrupt Burisma energy company represented a significant conflict of interest because Joe Biden was supposed to be leading U.S. anti-corruption

The Alleged Trigger

At issue is a *Post* [story](#) involving Hunter Biden's computer, which he left at a repair store and never picked up. The computer's contents appear to corroborate mounds of other available documentary evidence showing that Hunter Biden garnered millions of dollars from the wife of the former mayor of Moscow; from a defunct Chinese energy firm, CEFC China Energy Fund; and from the corrupt Ukrainian energy company, Burisma—all of it premised on the selling point that his name was “Biden” and that he had obvious juice with his father, the then Vice President of the United States.

If you recall, President Trump was impeached by the mad House Democrats for even mentioning, to Ukraine's new President, that the Ukraine side of this corruption saga was worthy of investigation. The unnamable classified leaker in the impeachment proceed-



DoS



DoD

State Department officials Amos Hochstein (left) and George Kent (right).

efforts in Ukraine. The national press widely reported that Hunter's connection to Burisma stunk, way back when Hunter first joined the board in 2014. Despite State Department policy calling out corrupt Ukrainian oligarchs by name, Joe Biden refused to call out Burisma. Hunter Biden has himself admitted that he dis-

cussed his business dealings with his father.

While Hunter sat on its board, Burisma paid a \$7 million bribe to shut down investigations of it. Hunter and his business partner, the now convicted fraudster Devon Archer, received \$4 million for legal consulting aimed at clearing Burisma's "reputation." In January 2018, Joe Biden bragged at the Council on Foreign Relations that he threatened to withhold military aid to Ukraine while Vice President, extorting the firing of a Ukrainian prosecutor investigating Burisma.

The new part of the story, which set off the round of unprecedented censorship, is that Hunter's computer appears to show Joe Biden himself meeting with Vadym Pozharski, the Number 3 at Burisma, at Hunter's instigation. Boom go all the cover stories and years of media manipulation. In addition, the computer contains details of Hunter's multimillion-dollar haul from CEFC China Energy.

LaRouche PAC has also repeatedly emphasized that Joe Biden's personal corruption is only one aspect of his [perfidies](#) in Ukraine. Obama and Biden deliberately deposed Ukraine's duly elected President in a cold coup, installing actual neo-Nazis in the Ukrainian government, and then conducting an ethnic cleansing genocide aimed at the historically Russian populations of Ukraine's South and East. This is the civil war, triggered by Joe Biden and the Obama State Department and the British, which has devastated Ukraine ever since. The Ukrainian intelligence operations which they installed played a significant role in the spying operations against the Trump campaign, and the information warfare operation hatched against both candidate and President Trump. This is also why any story about Ukraine results in hysterical panic by the Washington establishment and their media lackies.



CC/Bella Bellini

A Burisma pipeline facility.

The Real Stakes

In the United States, the First Amendment to the United States Constitution protects freedom of speech and freedom of press. It is essential to freedom of thought. The founders argued, and the nation has held ever since, that thoughts or facts may be wrong, but the best means to determine that is through free, transparent, and public debate. Censorship is condemned in the courts and, until recently, drew a visceral response from educated citizens.

This idea has been under continuous attack, especially since September 11, 2001, and the rise of the national security surveillance state. During the Obama Administration, "bad thoughts" began to be punished by corporate firings, social ostracism, education focused on using only approved words, and the so-called "cancel" culture. Internet users were subjected to sophisticated mental pro-

filming techniques and chatrooms were invaded by minders seeking to "neutralize" anyone expressing deviant ideas. In the media itself, corporate profits, "entertainment," and intelligence agency narratives took over. Those investigating real or controversial stories could no longer get published. This was a deliberate Obama Administration policy.



Gage Skidmore

Democratic Party Presidential candidate Joe Biden.

Trump and his allies blew that up in the 2016 presidential campaign, effectively using social media to target and tell their story while receiving millions of dollars in “free” mainstream media coverage because Trump deliberately created color and controversy, while showing an obvious love of, and connection with his supporters. It blew his stiff, boring, and intellectually bankrupt establishment opponents out of the water.

When Barack Obama, Hillary Clinton, and their British intelligence allies, here and in London, decided to run a “color revolution” in the United States against Donald Trump through Russiagate, their first post-election attacks were designed to take out any media in the United States which might effectively question them or continue to educate the “deplorables” who voted for Trump. In November 2016, the Atlantic Council—deeply implicated in both the Ukraine coup and the coup against Trump—and State Department networks published, anonymously, in the *Washington Post*, PropOrNot, a list of more than 200 websites falsely deemed “Russian propaganda.” Many of them did not survive this onslaught. Most were nominally on the left. It is an interesting side note that Burisma became a significant contributor to the Atlantic Council as part of the Hunter Biden-connected PR campaign to clean up its image.

Since then, a full-spectrum information war has been waged against Trump through the news media, depriving many in the population of any possible positive view of Trump. Conservative outlets have been subject to advertising boycotts, shaming, denial of service attacks, and shadow banning by Google, Facebook, and Twitter, driving down traffic. To the extent the Russiagate myth was debunked by honest journalists, of any political stripe, they were smeared as Russian propagandists. Now, big social media has taken the next step, attacking and censoring deviant “facts,” facts which do not fit the “narrative.”

The man who wrote the book on law which legiti-

mizes the outcome of fascist coups was the Nazi Crown Jurist, Carl Schmitt. That is the “law” to which those conducting this coup have already resorted, consciously or not, because they are making the Constitution and its norms into so many historical relics, replacing them with the law of the mob and alleged pure democracy. Schmitt taught that dictatorships could be legally imposed most fruitfully under conditions of declared emergency, such as the present COVID crisis or the escalated civil unrest being planned if Trump wins the election. While the immediate transition planned by the Democrats in all prob-

ability envisions a national unity one-party dictatorship of technocrats—since neither Biden nor Harris are actually capable of governing—the course has already been set by Carl Schmitt.

Following the staged burning of the Reichstag on February 28, 1933, Hitler used Article 48 in the Weimar Constitution, governing emergencies, to suspend the rights of his opponents, labelling them as terrorists.

A frightened Parliament, believing that Germany was under attack by the Bolshevik hordes, then passed enabling legislation legitimizing the dictatorship on March 23. The new law, which Schmitt wrote, was, he said, the expression of a “triumphant national revolution.” According to Schmitt, “The present government wants to be the expression of a unified national po-

litical will which seeks to put to an end the methods of the plural party state which were destructive of the state and the Constitution.” Schmitt promptly rewrote the entirety of the criminal code to punish subjective thought crimes, replacing its prior emphasis on objective acts. Hitler’s early government also allowed for plebiscites, or full democratic votes on certain measures, claiming popular consent.

A red line was crossed October 14. This is a turning point. The means for ending this coup lie in an overwhelming mandate for this President, and that is what you must organize your fellow citizens to bring about now. This transgression must not stand.



Nazi Crown Jurist, Carl Schmitt, who wrote the enabling legislation legitimizing Chancellor Hitler’s dictatorship.

Cover This Week

Left: Portrait of a Man, said to be Christopher Columbus. Right: A SpaceX Falcon Heavy rocket is launched on February 6, 2018.



Sebastiano del Piombo, 1519

CC/SpaceX

UNLEASHING THE NEW AGE OF DISCOVERY

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I. Science, not Superstition

FRONTIERS OF HEALTH AND SPACE

Trump Follows the Science, Biden Follows Fear and Superstition

by Brian Lantz

Oct. 13—It is right here, plain for all to see: President Donald Trump is leading a mobilization of our nation's scientific and productive capacities in a way that is unprecedented since President John F. Kennedy. Our government has been in the forefront, and President Trump has harnessed the true entrepreneurial spirit in the process. The growing success of President Trump's national emergency mobilization to defeat COVID-19, including Operation Warp Speed, is complemented by the equally remarkable revival of the U.S. space program with NASA's Artemis program and SpaceX. President Trump is defeating the virus and taking the U.S. back to the frontiers of space.



White House, Shealah Craighead

President Donald J. Trump tours the viral pathogenesis laboratory Tuesday, March 3, 2020, at the National Institutes of Health in Bethesda, Md.

Trump's 'Warp Speed' Science vs. Flat-Earthers

On March 2, 2020, President Trump [met](#) with pharmaceutical executives at the White House during

the global outbreak of the coronavirus, and said:

Today, we are meeting with the pharmaceutical and biotechnology companies—the biggest in the world, most prestigious, the ones that get down to the bottom line very quickly—to discuss how the Federal Government can accelerate the development of vaccines and therapeutic treatments for the coronavirus.

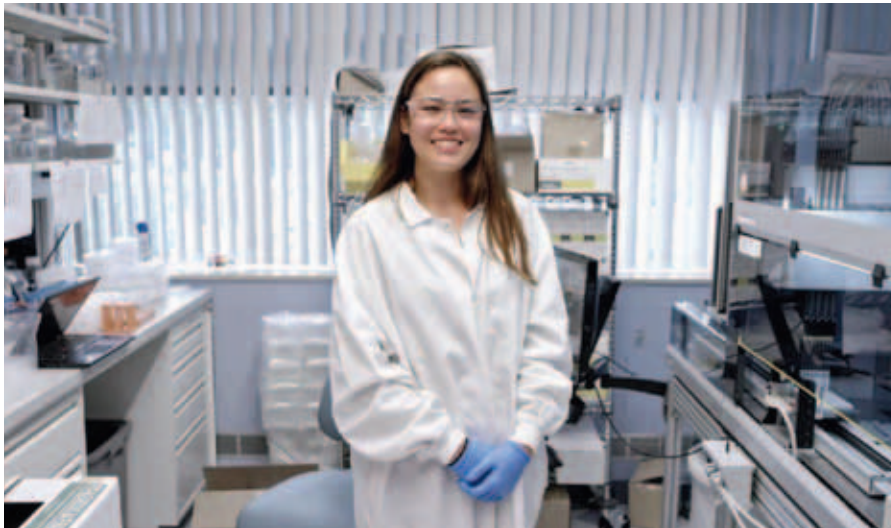


WhiteHouse.gov

Leonard S. Schleifer, Regeneron's founder, president, and CEO, is seen on the left at the meeting in the White House, March 2, 2020.

Breakthroughs had to be made.

To encapsulate the result—a virtual miracle—over the course of the past seven to nine months, take the example of Regeneron Pharmaceuticals of Tarrytown, New York and its REGN-COV2 double monoclonal antibody cocktail. This antibody



Regeneron.com

A Regeneron employee in a lab.

treatment was taken into late-stage clinical trials in late July at some 150 sites in the United States, Mexico, Chile, and Brazil, and Operation Warp Speed has invested \$450 million to build up manufacturing capacity. By October, the President was receiving the Regeneron antibody cocktail as part of his COVID-19 treatment regimen prescribed by his doctors at Walter Reed Hospital.

Today, President Trump is back at the White House, and he promises to make Regeneron's antibody treatment available as rapidly as possible to all Americans at no cost. On October 8, 2020, Regeneron Pharmaceuticals announced it has applied for an emergency use authorization for REGN-COV2, a temporary approval by the Food and Drug Administration (FDA) that would allow wide, non-trial access to the drug.

Howls, of course, are now being heard from all the usual suspects, the same media and political mouthpieces that screamed and lied about "Russia, Russia, Russia!" None of these voices are research scientists; rather, they are media scribblers, newspaper editors, and facile politicians. In Orwellian newspeak, Kamala Harris proclaims, "We will follow the science," of which she knows *nada*. Some now write that it is time to "de-fund Walter Reed Hospital"! Harris, intent on spreading hysteria, has gone so far as to state that she will not take a Trump Administration vaccine.

Regardless, as President Trump and Operation Warp Speed drive firmly forward, a vaccine or vac-

cines will soon be available to all Americans, and to the world. Operation Warp Speed has rapidly accelerated the development, manufacture, and distribution of COVID-19 vaccines, therapeutics, and diagnostics, showing up the ignorant and superstitious naysayers. Operation Warp Speed is usually mentioned only in the context of vaccines, but it is much broader. Every citizen has a right to understand this process of scientific discovery. Thank God and President Trump that scientists are being allowed to use their brains.

The President's far-reaching Operation Warp Speed team now [coordinates](#) a unique public-private partnership, called Accelerating COVID-19 Therapeutic Interventions and Vaccines (ACTIV), as well as the ongoing work of the Biomedical Advanced Research and Development Authority (BARDA) of the Department of Health and Human Services and that of the National Institutes of Health. ACTIV's April 17 founding press release characterizes the effort as—

a collaborative framework for prioritizing vaccine and drug candidates, streamlining clinical trials, coordinating regulatory processes and/or leveraging assets among all partners to rapidly respond to the COVID-19 and future pandemics. This is part of the whole-of-government, whole-of-America response the Administration has led to beat COVID-19.

Developing and bringing to market a vaccine for any novel virus costs billions of dollars, with normally little assurance of success or ultimate markets. President Trump and his team boldly stepped in to cut through radical free market ideology and technocrats and "de-risk" the vaccine development process. President Trump, working with his assembled task force of medical specialists, and drawing on the deep experience of the U.S. military in bio-warfare and global logistics, crafted "one of the most ambitious scientific endeavors in modern U.S. history."

Similarly, Trump's gutsy personal leadership, including making judicious use of the Defense Production Act, led the mobilization of the nation's producers to manufacture and deploy personal protective equipment (PPE) and high-tech respirators across the nation.

Contrary to the sophists' refrain, "we will follow the science," coming now from the mouths of flat-earthers, "the science" does not exist. Scientific discovery is a uniquely human process, going beyond newspaper "factoids" and textbooks. Every citizen has a right to understand this process.

Operation Warp Speed has to date spent about \$10 billion in collaboration with vaccine makers, most of it to build up dedicated production capacity to commercial scale. Vetted vaccine makers are already producing doses while trials are still underway. Further, the U.S. military with its enormous logistical capabilities is standing by to deliver vaccines to every corner of the country for mass vaccination. If a vaccine is found to be effective, it should be used immediately, and a stockpile of hundreds of thousands of potential doses is already being built for distribution as soon as that determination is made.

There are contracts with six manufacturers, with one or two additional contracts still possible, according to Operation Warp Speed's scientific head Moncef Slaoui, Ph.D. Born in Morocco, Dr. Slaoui trained as an immunologist and microbiologist before joining a GlaxoSmithKline predecessor company as a bench scientist in 1988. Dr. Slaoui has overseen the development of 14 vaccines for GlaxoSmithKline.

Regeneron Pharmaceuticals, in its 32 years, has already brought six ground-breaking therapies to market, based on the most advanced uses of genome sequencing, research, and laboratory work. Regeneron scientists have evaluated thousands of fully-human antibodies produced by the company's proprietary VelocImmune mice, genetically modified to have a human immune system, as well as antibodies



White House Shealah Craighead

President Donald Trump talks with (l. to r.) Capt. Mark Kobelja, Director of Walter Reed National Military Medical Center; Dr. Ronny Jackson, Physician to the President; and Dr. James Jones, Physician to the President and Medical Director of the Medical Evaluation and Treatment Unit, following the President's annual physical at the medical facility in Bethesda, MD, January 12, 2018.

isolated from humans who have recovered from COVID-19. They are now manufacturing REGN-COV2 antibody combination therapy and providing it to the Biomedical Advanced Research and Development Authority (BARDA) and the U.S. Department of Defense.

Regeneron is also collaborating with Roche, the Swiss-based pharmaceutical company,

to significantly increase the global supply of REGN-COV2, with both companies dedicating a certain manufacturing capacity to REGN-COV2 each year. This is expected to increase existing capacity by at least three and a half times, with the potential for even further expansion. If approved, Regeneron will distribute REGN-COV2 in the U.S. (beyond the initial U.S. Government supply) and Roche will be responsible for distribution outside the U.S.

President Trump has also announced that Abbot Labs' BinaxNOW COVID-19 test, an antigen test, was authorized by the FDA in late August. Involving

a simple nasal swab, with results in 15 minutes, readily trained technicians can provide rapid, reliable testing on a massive scale. Abbot will also offer a mobile app to check results. Abbot Labs manufactured and shipped 50 million tests a month beginning in October, and the U.S. Government has purchased the first 150 million tests to distribute in hope of re-opening schools, opening up nursing homes, and securing safe workplaces. The Abbot test will allow regular, repeat testing in these and other locations.

Many of the companies that are now producing these breakthroughs to crush the coronavirus first began quietly putting teams together back in January when the world learned from China of the new novel virus and its genome sequence. Importantly, these companies and their highly trained researchers brought decades of scientific research experience to bear. A similar process got underway in Russia, China, and elsewhere. Breakthroughs being made now are creating revolutions in science. This is indeed a whole-of-government, whole-of-America response that President Trump has led, to beat COVID-19.

Moon-Mars Mission—The Artemis Program and SpaceX

President Trump is providing similar leadership in taking us back into space, to make new breakthroughs in space science for our nation and mankind.

We make things happen. That is what America does. In 2017 President Trump signed Space Policy Directive 1, calling for the return of American astronauts to the surface of the Moon, and in 2019 he declared that this should be accomplished by 2024 (before the end of his prospective second term).

This bold plan, Artemis, is named after the twin sister of the ancient Greek god Apollo (of whom the first Moon-landing program was the namesake). It is a fitting name because this mission will bring the first woman to the Moon.



NASA/Aubrey Gemignani

Representatives of Congress and the National Space Council joined President Donald Trump, Apollo astronaut Jack Schmitt, and current NASA astronaut Peggy Whitson, December 11, 2017, to witness the President's signing of Space Policy Directive 1, a change in national space policy that provides for a U.S.-led program with private sector partners for a human return mission to the Moon, followed by human missions to Mars and beyond.

President Trump and NASA Administrator Jim Bridenstine are making it plain that Artemis will land astronauts on the Moon in 2024, for the first time in more than 50 years—this time at the Moon's South Pole. This landing will be followed by the establishment of a sustained presence on the Moon by 2028—focussed on new scientific investigations, learning how to use the resources of the Moon, and demonstrating technological advances needed for human exploration of Mars. Lyndon LaRouche and LaRouche PAC emphasize that a 50-year, international crash program for lunar industrialization, the development of fusion-powered spaceflight, and Mars colonization will be the most important driver for the U.S. and global economies.

The Obama-Biden Administration, in which Joe Biden was Vice President for eight years, attempted to kill human space exploration, including its cancellation of the Constellation program. There was no replacement for the Space Shuttle to take our astronauts to the International Space Station (ISS), or beyond.

It was then only through SpaceX, a private company but fully encouraged and supported by the Trump Administration and NASA, that a new rocket and crew capsule were developed, ending an eight-year drought of U.S. manned launch capability. NASA's initial investment in SpaceX was \$278 million to develop the Falcon 9 and Dragon rockets—a success accomplished during a period of economic crisis for our nation. Now, American astronauts no longer rely solely on Russian Soyuz rockets to get to the ISS.

The candidate-in-the-basement Joe Biden, and the presidential platform of the Democratic Party, now lie about their intent. As reported on Space.com on July 24, they lie outright in claiming to support NASA's space exploration objectives. Specifically, the platform claims Democrats have supported “our continued presence on the International Space Station,” and says, “We support NASA's work to return Americans to the Moon and go beyond to Mars, taking the next step in exploring our Solar System.” As Space.com reports,

The document, however, does not explicitly reference the agency's goal of landing a crewed mission on the Moon by 2024 (the goal of NASA's current Artemis program) and lists no timeline or deadline for these moonshots.

As informed observers know, even slowing the pace of missions often leads to mission failure.

Trump's Team: Government and Entrepreneurs

When Trump arrived at the White House, decades of underfunding and lack of a national mission orientation had undermined the spirit of NASA. As Lyndon LaRouche had emphasized, to revive the U.S. space program you had to set a national mission orientation, cut through the bureaucracy and red tape, and engage the private sector.

As to the private sector, consider SpaceX, for example. At SpaceX, engineers who design the rockets have an office in the same building in which the rockets are being manufactured, maintaining a close relationship between design and build. The production floor and engineering are situated next to each other in the company's factory for faster turnaround and better communication. SpaceX drew on rocket engine builder

Tom Mueller, one of its first employees, and his 30 years of experience at TRW.

From scratch, but with NASA collaboration, Elon Musk and SpaceX built most of its entire supply chain, from rocket engines to the electronics components used in its rockets. There is an iterative design process. Writing on Twitter February 20, Musk elaborates:

Building many rockets allows for successive approximation, [with the additional goal of reusability]. Hardest problem by far is building the production system of something this big. 2nd hardest is achieving full & rapid reuse with payload to orbit of ~2%. These problems are fundamentally intertwined. Building many rockets allows for successive approximation. Progress in any given technology is simply # of iterations [times] progress between iterations.

Economic Payback

An international Moon-Mars 50-year crash program, as detailed by the late economist Lyndon LaRouche, will ensure the high rates of economic payback on Earth which can only be reached by developing new space and fusion technologies, and sharing those technologies internationally as the basis for durable peace on this planet.

A Moon-Mars crash effort to develop the technologies required for lunar industrialization, fusion-powered space travel at one-gravity acceleration, and Mars colonization is the most important program for generating economic growth today. To understand this, simply look at the precedent of President John F. Kennedy's Apollo lunar landing program. For every \$1 the U.S. Government spent on the 1960s Apollo program, the U.S. economy generated more than \$10 in payback within the next decade—a pretty good investment.

However, despite the resounding economic success of the Apollo program, most economists and politicians today understand very little about how and why crash programs work as economic drivers—or, what even qualifies as a crash program. After 50 years, President Donald Trump has revived precisely this Apollo spirit in science, both to crush COVID-19 and to take mankind back to the Moon and beyond.

INTERNATIONAL ASTRONAUTICAL CONGRESS

20 Years of Cooperation in Space: Realizing Humanity's Noblest Dreams

by Kesha Rogers

I believe that the true goal of Man's space capability is not destination Moon or Mars or any other point in the space-time continuum of the universe. The goal is destination mankind—the realization of its noblest dreams and aspirations. In dedication to this goal we will go anywhere, consistent with the laws of nature. Without this dedication, we will go nowhere.

—Krafft Ehricke, “Space Stations, Tools of New Growth in an Open World”

Oct. 18—Space exploration is having an impact on humanity in ways you wouldn't believe. This week, on the 71st anniversary of the founding of the International Astronautical Federation (IAF)—it was founded in 1951 to bring together space agencies and industries around the world—the IAF hosted its annual International Astronautical Congress (IAC), covering a wide array of scientific and technological advances that nations around the world are pursuing through space exploration.

Over the years, many great space visionaries and pioneers have addressed the IAC. On its 25th anniversary in 1974, Krafft Ehricke gave the fifth invited lecture of the IAF. His speech was on the topic, “Space Stations, Tools of New Growth in an Open World.” There he developed what he declared to be the true goal of humanity's space capabilities, and developed three points relating to the role of space stations and international cooperation in space. He stressed first, that the goal of space exploration is

“destination mankind” and the realization of its noblest dreams and aspirations. The second point was that we couldn't pursue the goal of destination mankind without new industrial and scientific growth. Third, he discussed the goal of new growth—the Open World—meaning the joint expansion of our productivity base to

meet our present and future needs through the free cooperation of the nations of the world.

On November 2, 2020, nations will have cooperated in microgravity on the International Space

Addressing the International Astronautical Congress in 1974, space visionary Krafft Ehricke said that the goal of space exploration is “destination mankind.”



IAC



San Diego Air and Space Museum



NASA

NASA's Atlantis was the first U.S. space shuttle to dock with the Russian Mir space station, June 29, 1995. Shown: Russian cosmonauts welcoming NASA astronauts aboard.

Station (ISS) for 20 years. Humanity has certainly extended its reach beyond the confines of Earth, and is developing the understanding of what is required to live and work on other worlds.

International Astronautical Congress 2020

In the opening plenary session of this year's IAC, NASA Administrator James Bridenstine responded to a question on the importance of international space collaboration to NASA as it embarks on the Artemis program, stating, "We can all do more when we work together." Bridenstine went on to outline areas of cooperation among nations in space, referencing the partnerships on the ISS. "If you think about cooperation in space and how important it is to the future of space exploration, I would say it's more important now than ever before, and I think that's perfectly exemplified in the International Space Station."

In referencing the 15

countries cooperating on the International Space Station for 20 years, Bridenstine named key contributions, such as the European Space Agency's (ESA) Columbus module; Russia's space agency's (Roscosmos) ability to launch astronauts and cargo to the ISS, and the entire Russian segment of the spacecraft; Canada's (CSA) contributions in robotics for the space shuttle, the ISS, and eventually the Gateway for sustainable access to the Moon with reusable human landers; and the Japanese Aerospace Exploration Agency's (JAXA) KIBO module on the ISS, with all of its research and life support capabilities. Bridenstine concluded by repeating, "We can all do so much more when we work together. The International Space Station is a perfect example of that," and stressing that when we return to the Moon and go on

to Mars, we will build on that cooperative framework. We can have more cooperation than ever before, with new space agencies from new countries that want to participate in that great adventure.

Russia's Plans

The head of Roscosmos, Dmitry Rogozin, then described Russia's plans for future space exploration beyond the ISS. Russia is discussing options with partners on the ISS for keeping it operational until 2028 or even 2030, instead of allowing it to be decommissioned and destroyed. Rogozin said, "Roscosmos is determined to maintain cosmonauts at low Earth orbit no matter which decision is finally taken regarding the ISS."

Rogozin reported that in 2021, Russia plans to launch a multipurpose laboratory module for running scientific experiments in key research areas such as biotech, microelectronics, optical electronics, and lasers, as well as



NASA/Bill Ingalls

Jim Bridenstine, NASA Administrator, at the International Astronautical Congress in Washington: "We can all do more when we work together."

other fields of study. Six months after this multipurpose laboratory is launched, Russia plans to integrate a multi-docking hub into the mission segment of the ISS.

During his remarks to the plenary session, Rogozin expressed concern over cooperation on the Lunar Gateway. He stated, “Our American partners are actually promoting it,” and Russia believes that “Lunar Gateway in its current form is too U.S.-centric. Russia is likely to refrain from participating in it on a large scale.” He also stressed that Russia is interested in making sure that the design of the Gateway’s docking module will enable its next generation of crewed spacecraft, called Orel (“Eagle”) to dock with it.

In an interview with TASS that followed, NASA Administrator Bridenstine responded to Rogozin’s concerns, saying,

We would welcome the opportunity to receive what Russia might be willing to contribute to the program, and certainly invite them to share with us what their thoughts are, because we do value them as a partner, and we hope they value us as a partner, as has been perfectly exemplified now for 20 years on the International Space Station.

He also said the United States was working to design the Deep Space Gateway docking hatches to be compatible with Russia’s Orel spacecraft.

Rogozin concluded his remarks during the open plenary session by discussing further cooperation with international partners in all areas and the need to share research data during exploration of the Moon. Finally, he praised the open and friendly relations with China and its National Space Administration (CNSA). He said, “We believe there is more to come in these relations.”



RBC

Dmitry Rogozin, Director General of Russia's Roscosmos State Corporation for Space Activities.



IAEA

Kejian Zhang, Administrator of China's National Space Administration.

China's Plans

During his comments, Kejian Zhang, Administrator of China's CNSA, commented that the IAF is connecting all spacefaring nations, and suggested, “If the whole world can unite together in the space endeavor, we can achieve greater success.” After summarizing how China has cooperated with Russia, ESA, France, Italy, Brazil, and other countries and organizations, Zhang offered,

I invite my colleagues to think about how to make our world a better place, how space tech-

nology can actually contribute to a harmonious world. ... We would also like to use the platform of the IAF to actually develop the cooperation with our peers from other countries including the U.S., Russia, and Europe.

He called for building the outer space community with a “shared destiny for mankind” in mind.

Some key components of China's space plans were later elaborated. China is looking at how space technology can tackle the COVID-19 pandemic with the use of mass spectrometers and laser spectrometers to detect viruses. Zhang outlined the success of China's Long March 5 rocket launches this year, and discussed plans to enter Mars orbit in February 2021 with its Tianwen-1 Mars mission. China won't be the only

nation preparing to enter Mars orbit at that time. NASA's Perseverance Mission, and the joint mission of the United Arab Emirates and Japan (named “Hope”) will be doing the same.

Japan, India, and Europe

Japan highlighted its space initiatives as well. JAXA is building the Smart Lunar Lander (to be launched in 2022), to demonstrate pinpoint landing. Japan will also

participate in the Lunar Gateway in developing habitat functions. JAXA will join the Indian Space Research Organisation (ISRO) in lunar polar exploration missions, to be followed by the development of manned, pressurized rovers, which will contribute to full-scale lunar exploration.

India's space program is currently cooperating with Russia on human spaceflight; ISRO astronauts are undergoing training in Russia. India is also cooperating with NASA, sharing space transportation and satellite data, and in many other areas. The ISRO and ESA are working together on deep space propulsion systems. India stated its commitment to supporting space-aspiring nations in capacity building, report-

anic and Atmospheric Administration) to develop a better understanding of space weather. ESA will continue the development of space launch systems and its Digital Twin Earth program.

The Artemis Program

During this year's IAF conference there was great interest in, and numerous panels held on the bold vision the United States has outlined with its Artemis program. NASA, working with international partners and commercial industry, has been commissioned to develop the capabilities needed to meet the goals of returning American astronauts to the Moon in 2024 with the first woman and next man, for learning to live, work, and develop resources on the lunar surface in preparation for going forward to Mars.

The introduction to NASA's recently released Artemis Plan [outline](#) begins,

America has entered a new era of exploration. NASA's Artemis program will lead humanity forward to the Moon and prepare us for the next giant leap, the exploration of Mars. It has been almost 50 years since astronauts last walked on the lunar surface during the Apollo program, and since then the robotic exploration of deep space has seen decades of

technological advancement and scientific discoveries. For the last 20 years, humans have continuously lived and worked aboard the International Space Station 250 miles above Earth, preparing for the day we move farther into the solar system.

The LaRouche Political Action Committee recently released a [video](#), "Apollo to Artemis: The Fight for the Future," which demonstrates the amazing possibilities that the Artemis mission and cooperation among nations in space represent for unleashing astonishingly great achievements and optimism for all of humanity.



ESA/ATG

ESA, in partnership with Japan's JAXA, launched the BepiColombo mission to study the magnetosphere, outer atmosphere, and poles of Mercury, and to conduct a test of Einstein's general relativity theory. Shown is an artist's impression of the spacecraft flying past Earth.

ing how last year, ISRO held two months of hands-on training for 30 countries, on how to build nano-satellites.

The ESA, in partnership with JAXA, launched the BepiColombo mission, which is on its way to Mercury. It is expected to arrive in 2025, where Europe's first mission to Mercury will make several flybys before entering orbit to study its magnetosphere, outer atmosphere, its poles, and conduct a test of Albert Einstein's general relativity theory. ESA is also currently working on gravity well measurements, space debris removal, and artificial intelligence to avoid future collisions of spacecraft. ESA is going to L-5 (Lagrange Point 5) to work with NASA and NOAA (the U.S. National Oce-

The True Story of Columbus: The Apollo Project of the Renaissance

by Timothy Rush

The following has been adapted by the author for publication in EIR from his October 10, 2020 presentation to the weekly LPAC Manhattan Town Hall Meeting. He had contributed to the Schiller Institute symposium on the 500th anniversary of the rediscovery of America, and of the advances in technology that made it possible. The video of his October 10 presentation is available [here](#). And the video of the full three-hour meeting is also [available](#).

I want to provide some substance to the depth of collaboration, the extraordinary connections, particularly between the Florentine Renaissance, and the Iberian countries, largely Portugal, which is where Columbus was trained. This collaboration is one of the hidden gems of history that people must relive. It launches the core ideas of particularly the Florentine Renaissance, but also reaches broader circles—for instance, the invention of a nation-state devoted to the idea of the general welfare in the case of Cardinal Nicolas of Cusa, when he said you have to have a government that operates with the “consent of the governed.” These fundamental principles are joined to the science of building Brunelleschi’s Dome of Florence and the science of astronomy that Paolo dal Pozzo Toscanelli, the greatest astronomer and mathematician of that entire century, represented—a very close circle of people.

How would that become transferred? How does that become universal? And what I want to convey to you in just a few minutes is that the Florentine Renaissance

gave birth to the *means* to carry these great inventions and this great rebuilding of the image of man, all around the world.

There were all kinds of fits and starts in how that actually took hold, and at the end I’ll have a couple of words on that, but the forging of that instrument was a three-generation systematic program we identify with

Henry the Navigator in Portugal, in one way, and absolutely with this core of the Florentine Renaissance at the same time. This is the Apollo Project of almost the entirety of the 15th century. And people should recognize that it’s a density of development, in the science, in the statecraft, in the conception of mankind, that made it possible.

Lyndon LaRouche, in an October 14, 1996 [piece](#) called, “Why We Must Colonize Mars” (republished in the August 21, 2020 issue of *EIR*), beautifully captures the effect:

What is the economic principle which defines a science-driver, space-exploration program as key to a successful near-term recovery from the presently deepening, global economic depression? Let us

name this topic, “The Christopher Columbus Principle of Economic Science.” [emphasis in original]

First Voyages

Prince Henry the Navigator, third son of King João I of Portugal, started voyaging—not himself personally, but recruiting crews and sponsoring voyages—around



Photo by Jiuguang Wang

The dome of the Basilica di Santa Maria del Fiore in Florence, an engineering marvel, designed and built by Filippo Brunelleschi, a crowning glory of the spirit of the Renaissance.

1416. At the time, people have to realize, even though there were efforts to go on deep sea voyages, sailing capabilities didn't have the logistical depth to be sustained or be successful. The closest was the remarkable fleet of the Chinese admiral Zheng He in the early 1400's. But his fleet did not venture far from coasts, and an insular cultural reflex in China aborted further exploration. In Europe, it was solely coast-wise travel by sea: You had galleys. You had wide-bottomed trading vessels that were unmaneuverable in tough weather or adverse winds. There was really no way to go out into the high seas, far from land.

Henry sent one mission per year, starting down the Atlantic coast of Africa. And he was pulling together efforts around the island of Madeira, which he recolonized. His captains went out, and about 10 years later they got to the Azores, which are 850 miles out in the middle of the Atlantic—that's not a small, little hop. So there was a good deal that they were probing to get around the part of northwest Africa where the Sahara Desert reaches the ocean; it's a very inhospitable, 1,200- to 1,500-mile stretch. And for about 15 years they were barely making any great advances, but the *intention* was to master deep-sea sailing.

To Florence

Now, where it really takes its full dimension is with Henry's brother, Pedro. The older brother, Duarte, is being groomed to succeed his father as king, which he does in 1432. Pedro goes on a trip throughout Europe from 1425 to 1428, and the high point was when he goes to Florence in April-May 1428. In Florence Pedro for two months has nonstop meetings with a circle of Florentine notables headed by Paolo dal Pozzo Toscanelli



Photo by Rodw

Statue of Prince Henry the Navigator, map in hand, pointing westward across the sea, in Sagres, Portugal.

and another leading light of the Florentine Renaissance, Ambrogio Traversari.

Traversari, together with Cusa, is the father of the great Council of Florence (1438-1441). Traversari is the most renowned Greek scholar of the age, and is general of the Camaldolese Order, a suborder of the Benedictines. His study group, meeting in Traversari's rooms in the Santa Maria degli Angeli religious house, interacts with the Medici family, with Filippo Brunelleschi, architect of the Florence cathedral Dome, and so forth. The group hosts Pedro for these two months; they have deep discussions.

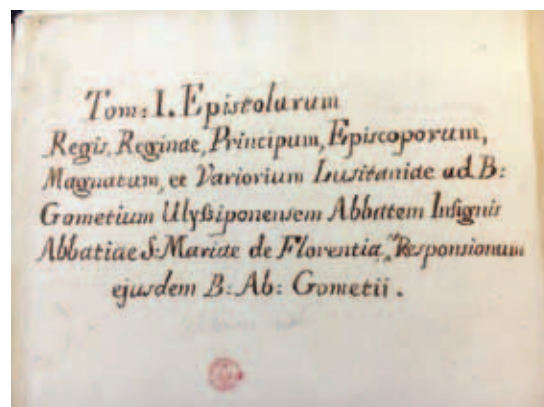
The money for this is provided by a special fund that had been set up by Henry's father, King João I, just to foster the connections of Florence with Portugal. The key figure making the arrangements was Abbot Gomes Eanes, who administered the fund. He was number two to Ambrogio Traversari in the Camaldolese Order in creating the Council of Florence. He was transmitting all of the learned material from the Council back to Portugal, and when Traversari died in the year of the signing of the pact that brought the Eastern and Western Churches together in 1439 (his

signature joins Traversari's on the Decree of Union), the person who replaced Traversari as head of the Camaldolese Order, was Abbot Gomes Eanes of Portugal.

When Nicolas of Cusa travels to Constantinople in 1437 to recruit the Eastern Orthodox delegation to the Council of Florence, with him is Antão Martins of Portugal.

On a visit to Florence three years ago, I had the great fortune of being given access to the Laurentian Library founded by Lorenzo the Mag-

FIGURE 1



EIRNS/Tim Rush

Title page of a volume of correspondence of Abbot Gomes Eanes, a principal figure in the Florentine-Portuguese cultural and scientific collaboration.

nificent, where all the documents and relevant correspondence between the Portuguese and Florentine Renaissance figures are archived. Very little of it has actually been studied systematically. In **Figure 1** you see the title page of just one of the manuscript volumes. You can see “*Tom: I. Epistolarum*”—Volume I of the Letters—of the King, the Queen, the officials, bishops, magnates, and various others from Lusitania—that is, Portugal—to and from Abbot Gomes of Santa Maria Abbey, Florence.

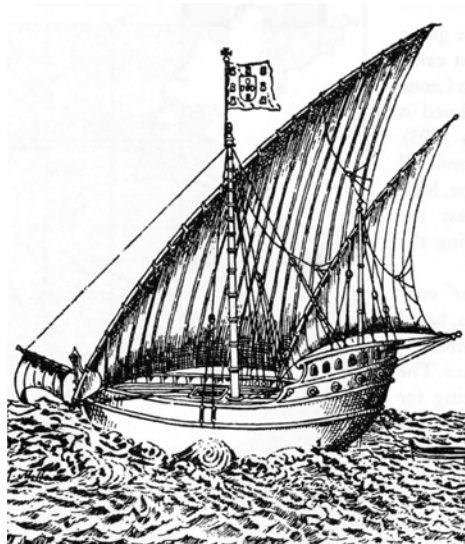
So when Pedro gets back to Portugal after this, and he summons Abbot Gomes Eanes to come also a little after 1440, there was a tremendous expansion of the exploration project, the Atlantic Enterprise. Where there had been one voyage per year before, it was now three or four voyages per year. Around 1434, Henry’s navigators get around what’s called Cape Bojador, which was a little promontory on the Mauritanian coast. It is insignificant on the maps today, but it’s where winds from the Sahara Desert drive so much sand out into the Atlantic Ocean that it was thought to be the end of the world. And psychologically, the sailors simply refused to go beyond that.

Three Fundamental Breakthroughs

Finally, they get around that, they get past the desert; they get to the verdant lands of the Senegal River, and then they get to the Bight of Benin.

They make three fundamental breakthroughs to be able to extend their explorations, and these are crucial, as

FIGURE 2



One of the three great breakthroughs of the Portuguese Atlantic enterprise, the 15th century caravel.

you will see, for Columbus.

Number 1, they develop the caravel (see **Figure 2**). The caravel—before this, as I mentioned, you had galleys and you had sort of a wallowing type of merchant ship. The caravel was slim, it had a beam-to-length ratio of 1:3 or 1:4, instead of 1:2; it had lateen sails which were on an angle, and therefore they could be maneuvered to sail much closer to the wind when they had to tack. This was a fundamental invention that was indispensable for high seas exploration at that time.

The second great breakthrough that Henry the Navigator and his people put together is what we can call the “Long Ocean Tack.” The point is, the prevailing winds and

the currents, which are mirrors of each other, in the northern hemisphere move clockwise; on the left-hand side of the map you see that, the Northeast Trades; in

the southern hemisphere, they’re counter-clockwise (see **Figure 3**). It’s called the Coriolis Effect, for both the currents and the winds. It means that if you leave Portugal and head down along the coast of Africa, until you get to about Senegal or what today is Sierra Leone, you have the winds behind you, and you can go very efficiently. Coming back is hell. It could be 20 days out and 3 months back.

The tacking and so forth is very difficult. They started what they called a “long ocean tack” where, for the return trip, they would go all the way out to the Azores, which is 850 miles west of Portugal, and hitch a ride back to Portugal on the return of these clockwise wind and

FIGURE 3

Currents and Winds in the North and South Atlantic



current patterns. Even though it was twice the distance, it was much less the time, so you have a least-action principle embedded in this, which is really quite a discovery.

Later on, this is reproduced on an even larger scale. As the Portuguese get much farther south along the African coast, they go out—and this is what Vasco da Gama does in 1498 when he goes all the way around Africa to India—they leave Portugal (see **Figure 4** for the routes), he goes down along Africa, and then he shoots across the Atlantic on the clockwise winds to basically the coast of Brazil. Then he hitches the counter-clockwise flow of the *Southeast Trades* all the way across the South Atlantic and reaches the Cape of Good Hope.

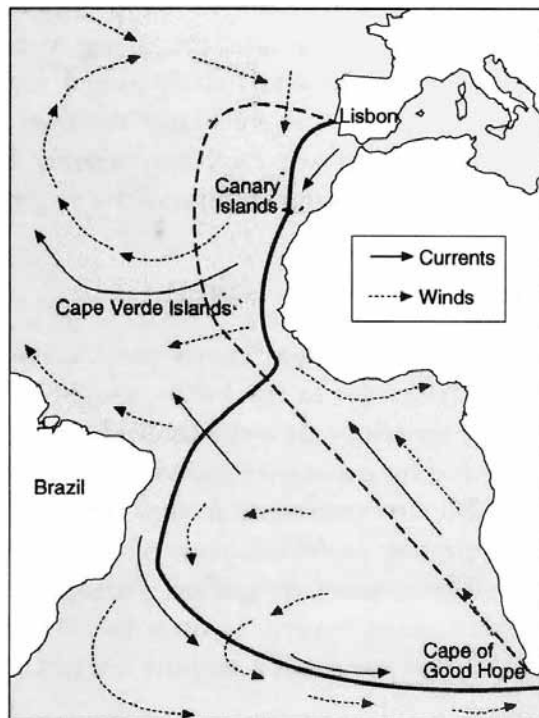
This is a voyage in open seas, almost three times longer in time than Columbus's, and two times longer in distance; and yet, it got him to the Cape of Good Hope much faster than if he had tried to go down along the African coast. When he comes back, he takes the inverted long ocean tack, out to the Azores and then heads east to Portugal.

So these are the long ocean tack ways of harnessing the vast assembly of currents and winds. And you can imagine the amount of research and the amount of work that Henry had to pull together at his headquarters in an Atlantic promontory called Sagres, to be able to integrate all this.

Navigation

The third element of Portugal's Atlantic breakout is advances in celestial navigation, involving the quadrant, the astrolabe, the ways to be able to take

FIGURE 4
The 'Long Ocean Tack'



Solid line: Portugal to the Cape of Good Hope.
Dashed line: From the Cape to Portugal.

part of the Dome of Florence complex. They were actually done by the Pisano brothers in the 1330s. It's a beautiful evocation of the genius of the Florentine Renaissance; this is 100 years before it flowered, but it was already there in germ form.



Museum of the History of Science, Oxford, England
The astrolabe, a key navigational device
deployed on Henry's ships.

your readings from the heavens. This was not only finding latitude by measuring the Pole Star in the northern hemisphere. As the Portuguese were going down the coast of Africa, they began to lose the Pole Star, and by the Equator, you didn't have it at all. The southern skies didn't have any Pole Star. They had to take readings of their latitude by the Sun, and they completed a fantastic compendium of all the knowledge of the altitude of the Sun at different times of the year in different latitudes, in a 1480 work called the *Regimento do Astrolabio e do Quadrante*, the *Astrolabe Manual*. This set the pattern for 400 years of sailing guides.

The breakthrough involved is illustrated in two medallions embedded in the base of the Campanile di Giotto which is part of the Dome of Florence complex. They were actually done by the Pisano brothers in the 1330s. It's a beautiful evocation of the genius of the Florentine Renaissance; this is 100 years before it flowered, but it was already there in germ form.

These medallions are set almost at eye level, and they illustrate in 26 of these hexagonal reliefs all the spheres of the applications of man's creative powers to economy, the arts, the sciences. That says something about the idea of man and the image of God that the Florentine Renaissance represented. **Figure 5** shows the panel illustrating Navigation; the fellow in the back is using a compass, and the other two are rowing. **Figure 6** illustrates Astronomy, and the fellow is using a quadrant; he's taking a sighting of the stars.

Notice what was going on in the courts, in the various ways

FIGURE 5



Two of 26 relief medallions by Andrea Pisano from Giotto's Campanile, depicting Man's creative powers. These two are Navigation and Astronomy.

FIGURE 6



photos by EIRNS/Tim Rush

that astrology as well as astronomy were practiced—where they needed people who could take fixings of the stars and all kinds of predictions of occultations and so forth, positions of planets—that was done in the courts, and then you had the seafarers who were going by very rudimentary charts and compasses. The two worlds did not intersect.

What Henry did is, he put it all together, so ordinary seamen and great captains like Columbus took the quadrants and a redesigned astrolabe out to sea and were able to get a much, much better quality of navigation than before. And if you think of Brunelleschi training the bricklayers of the Dome of Florence in techniques that had never existed before—training ordinary bricklayers to become part of the set of breakthroughs embedded in the Dome of Florence—well, this is the equivalent in terms of the navigation of the seas.

‘Prove Devotion to God by Making the Seas Navigable’

Now, take another snapshot, 1455: Nicholas V, who was the first of three great Renaissance Popes of that time, very intimate with Cusa and Toscanelli (they were even closer to a later one, Aeneas Silvius Piccolomini, Pius II). Nicholas issues a papal bull stating that the Christian world is looking to the Portuguese and to Henry particularly—he calls Henry the Navigator “my dear son, apostle and soldier of Christ.” He says, I want to particularly cite your “efforts to prove devotion to God by making the seas navigable.” Now, this is two years after the cataclysmic event of that period, the fall of Constantinople to the Ottoman Turks in 1453, with

Venetian connivance.

Therefore, you have the Renaissance popes, the figures coming out of the Renaissance in Florence, directly addressing Portugal, saying, we are in effect deputizing you, to carry out flanking actions to take our ideas out to the world, now that we find the Eastern Mediterranean closed off, and we’re bottled up.

Over the following nine years, Cusa, Toscanelli, and a canon and physician from Portugal named Fernão Martins were intimate friends. Fernão Martins was the cousin of the Antão Martins who accompanied Cusa to Constantinople

in 1437. In these years Cusa became the Vicar General of the Catholic Church, the right-hand man to Pope Pius II in Rome. They’re such intimate collaborators in philosophy, in science, in these exploration projects, that Cusa writes Fernão Martins into one of his greatest late dialogues, *On the Non-Other*. Toscanelli and Martins are the executors of Cusa’s will when Cusa dies in 1464. And there are tantalizing indications that Toscanelli was already writing friends in the 1450s about the idea of going west as well as east, to try to deal with the post-1453 crisis after the Fall of Constantinople.

The next snapshot is 1474: There’s a crushing shock, which is that the Portuguese have been successfully going along the coast—if you look at those maps again. After the Portuguese get around Senegal and the area around what today is Ghana and over toward what’s now Nigeria, the Bight of Benin, they think they’ve made it; they’re heading straight east and think they are about to circumnavigate Africa, emerge into the Indian Ocean. And then suddenly, the coast begins to tail south and south—people should realize it’s 8,000 miles to go from Portugal down to the Cape of Good Hope!

It’s precisely in that year that Fernão Martins, the canon of Lisbon—the intimate of Toscanelli, the intimate of Cusa—back in Portugal, writes to Toscanelli and says, we need to bring you in on devising another stage of what we’re going to do. And so Toscanelli sends the famous map that was later passed on to Columbus (see **Figure 7**), sends letters back and forth to Martins, exploring the idea of “sailing West to reach the East.”

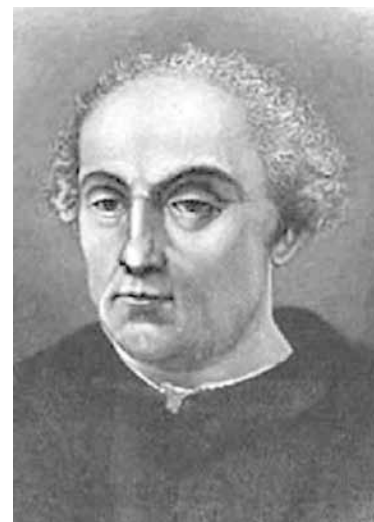
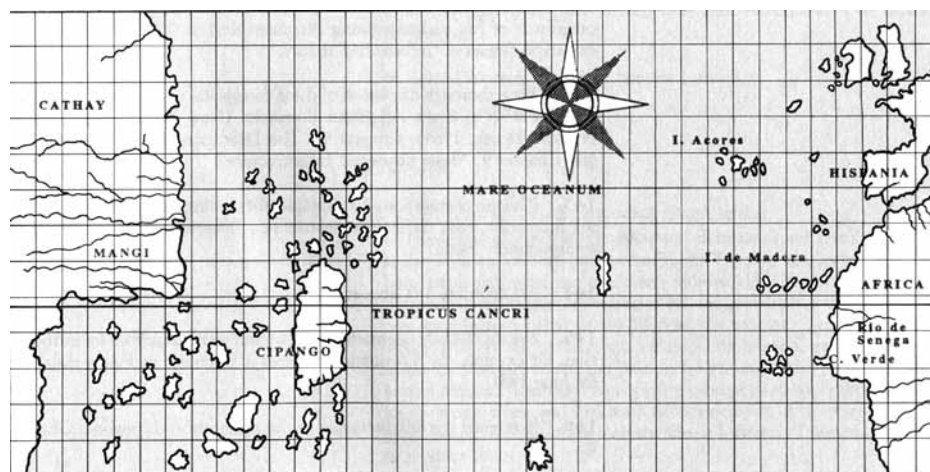
Enter Columbus

Enter Columbus in 1476. He's shipwrecked. He's a Genoese sailor, he's shipwrecked off the coast of Portugal, and he walks ashore in 1476, into the middle of an unbelievable hotbed of the expansion of the Atlantic Project of the Luso-Florentine collaboration. He travels down to Guinea, south of Senegal, on a Portuguese voyage; he goes north on some Portuguese voyages; he marries the daughter of Bartolomeo Perestrello, the first governor-general of the island of Madeira when Henry ordered it re-colonized in 1420, in the initial phase of Henry's expansion. And he gets an archive of materials from that liaison.

Columbus later actually did. They clearly were not rejecting it. But what happened is, in 1488, Bartolomeo Dias, one of the great Portuguese captains, comes back to Lisbon with the news that he's reached the Cape of Good Hope. He's rounded Africa! And so, for the Portuguese, they've got a certain way to reach the Indies by going all the way around Africa; so even though they never discounted the option to go west, they decided to stick with what they now had in their hands.

And that's the point at which Columbus springs into action. Since the Portuguese will not now sponsor westward voyages of his daring and imagination, he goes to Spain.

FIGURE 7



A reconstruction of the map prepared by Paolo dal Pozzo Toscanelli (right), passed to Columbus during his time in Portugal.

So he's thrown into the middle of this ferment, with the Portuguese very seriously considering going west as well as continuing around Africa. Whether on his own initiative or being selected by the Portuguese for the task, Columbus is shown the Toscanelli map, and there are indications that Columbus entered into direct correspondence with Toscanelli. (What a blessing for the future that Toscanelli, born in 1397, lived until 1482—outliving Henry the Navigator, Cusa, and Pope Pius II, by almost 20 years, and being able to directly shape a whole new generation that, besides Columbus, included Amerigo Vespucci and Leonardo da Vinci.)

The Portuguese didn't know which way they were going to go. They had, actually, in the 1480s licensed about eight small efforts to do the kind of thing that Co-

But one of the key secrets of this time—and I've got to thank my colleague, Robert Ingraham, for writing this up in a beautiful [article](#) four years ago, called "The Agony of Confrontation of Old and New: The New World Imperative," in *EIR* of August 5, 2016—is that in Seville, it isn't the Spanish Crown that bears the largest part of the financing of his voyages—it gave the political approval—but it is the branches of the Florentine banks, particularly the Medici bank in Seville, and in particular, Amerigo Vespucci, who was the resident manager of the Medici bank for a number of years, leading into and after Columbus's voyages—they were the ones that put up the money.

So you have a total continuity of the role of these Florentine Renaissance giants in intimate, hands-on sponsorship, with the brilliant, three-generation mis-

sion assignment that the Portuguese had adopted.

The 1492 Voyage

Now the Columbus voyage used all of the three big breakthroughs that had occurred in these previous 75 years: Two of the three ships were caravels. He used a variant on the long ocean tack: He went down the coast of Africa, past the Canary Islands, then caught the winds on the southern part—and you should look at the map again, Figure 3—so he takes the Northeast Trades on the southern side, takes them out to the Caribbean. For the return trip, he shoots north—he doesn't just retrace his steps—shoots north and picks up the corresponding winds and currents that lead him back to Portugal through the Azores at the higher latitudes. And he uses the astrolabe and the quadrant, and he makes some extraordinary discoveries in terms of the difference between the magnetic north and geographic north.

Bringing this forerunner of the Apollo project into focus, the former deputy director of NASA, Hans Mark, in February 1992, the year of the 500th anniversary of Columbus's landing, spoke to a meeting of the American Association for the Advancement of Science (AAAS) on the topic of Henry the Navigator and the early days of exploration:

For someone who has been involved in space exploration for 20 years, as I have, Prince Henry of Portugal has always occupied a special place. Henry was the instigator and sponsor of the first long overseas voyages by Europeans that resulted in sustained and systematic exploration of the world. ...

I have to confess that I always felt that the ghost of Prince Henry was standing behind successive NASA administrators in Washington as I worked for them. I'm sure that he guided their



Christopher Columbus, aboard La Santa Maria.

thinking, consciously or unconsciously.

Those of us who carried out NASA's work in the field were like the captains, who 500 years ago, sailed down the coast of Africa and in doing so, opened the most important vista that European culture has provided for the world.

Many of you are probably wondering, because of all the muck thrown at Columbus, how this Apollo Project of the 15th Century squares with later exploitation and slavery. This is a large subject, and I can only give a few sightlines. It's a very messy history of how you could really get vehicles in the Americas for expressing the intention that the

Florentine Renaissance figures like Cusa had. The Church by and large opposed efforts to enslave the Indians. There were notable efforts such as that of Bishop Vasco de Quiroga in Michoacan, Mexico, and the valiant 70-year effort by a humanist Portuguese administration in the Kongo, to impart the best of European agricultural and craft knowledge to the Kingdom of the Kongo.

That these efforts were exceptions rather than the rule for many years, illuminates a crucial truth: The problem wasn't exploration, it was oligarchism—oligarchism besetting Europe in the form of 160 years of religious war that crippled consolidation of the Renaissance breakthroughs, and reached into factions settling the Americas. That, and new pillars of trade such as sugar, which tilted internal battles toward slave interests in the courts of Spain and Portugal.

It is in the Plymouth landing and then the Massachusetts Bay Colony that the path leading into the eventual founding of a republic representing the Renaissance aspirations is taken up again. Look at the beautiful, 12-minute [video](#) called simply "1620," which LaRouche PAC produced on that subject, and from there it's such a rich history that we must celebrate. Colum-



John Vanderlyn, 1847

Culminating three generations of scientific advances and explorations, Columbus's voyage was the Apollo Project of the 15th Century. Shown: The Landing of Columbus on the island of Guanahani (San Salvador), October 14, 1492.

bus is an entry point to celebrate it.

In that same paper, "Why We Must Colonize Mars," LaRouche summarized the lessons for today:

Drive the rate of realization of scientific discoveries of principle to the limit, and mobilize the material, educational, and health resources needed, to enable modern "Christopher Colum-buses" to succeed in their voyages of discovery beyond new frontiers.

As a coda, just a personal anecdote that I think is quite ironic, given the current assault on the legacy of the 75-year "Apollo project" that led to these explorations and discoveries: In the late '60s and early '70s, I spent a number of summers as an anthropology student in southern Mexico, among a modern Mayan Indian group called the Zinacantecos. On July 20th, 1969, the Moon landing afternoon, my cohort of anthropology students, already infected by distrust of science, and alienated from a sense of national purpose by the combination of the Vietnam war and the surging rock-drug-sex counterculture—well, many of us, myself included—didn't pay any attention, and I say it with shame. But a number of the Indians from these villages in the highlands of Chiapas traveled to the nearby market town, San Cristóbal de la Casas, crowded in front of the display window of the only television store

in town, which had its set tuned to the Moon landing, and marveled at this accomplishment of mankind.

I say this because we really have to recognize the arc of the cultural erosion of the United States. But we have a magnificent moment, now, to bring back a culturally optimistic outlook, with the Artemis program of returning to the Moon and going on to Mars, and the prospect of a new surge in fundamental scientific upshifts led by the development of nuclear fusion. What I hope I was able to present here—this question of celebrating what Columbus represented—is a template of the tasks before us now.

Columbus brought forward a "proof of principle"—that the joint mission of Toscanelli's Florence and Henry the Navigator's Portugal, of "showing devotion to God by making the seas navigable," had succeeded. From that time on, implicitly, the whole world could become a field for the application of the science, principles of statecraft, and image of Man embedded in the Renaissance, and its inhabitants could emerge as one Humanity.



NASA

Hans Mark, former NASA Deputy Administrator, at a 500th Anniversary celebration of Columbus's voyage: "I have always felt the ghost of Prince Henry the Navigator was standing behind successive NASA administrators, guiding their thinking."



Leon A. Perskie

Franklin D. Roosevelt



John Trumbull

Alexander Hamilton

‘Then and Now: Why Roosevelt’s Explosive 1933-45 Recovery Worked’

by Richard Freeman

Oct. 17—*EIR* first published the groundbreaking article, “Then and Now: Why Roosevelt’s Explosive 1933-45 Recovery Worked,” on President Franklin Roosevelt’s economic recovery from the Great Depression, in 2002, in a special report which featured Lyndon LaRouche’s warning of the then-coming global financial crash and what some called the Great Recession. LaRouche’s contribution to the report, “Economics: At the End of a Delusion,” is available [here](#).

Richard Freeman’s description still gives you the most complete overview of how FDR used “American System” credit policies to build and rebuild U.S. electric power and industrial muscle, and employed scientific breakthroughs to drive the mobilization for World War II. Freeman discovered and proved, for the first time, the direct connection of FDR’s policy thinking to that of the first U.S. Treasury Secretary, Alexander Hamilton, through both Roosevelt’s own studies and through his own family’s history. He also brought to life the amazingly wide range of credit-supplying activities of the Reconstruction Finance Corporation (RFC)—the closest approximation to Hamilton’s national bank that the Congress would allow Roosevelt to create.

FDR justified the expansive power of the U.S. Constitution’s general welfare clause, as it was laid out by Hamilton in his 1790 *Report on the Constitutionality of the National Bank*, and as it was employed before Roosevelt, by Abraham Lincoln in Lincoln’s launch of the United States to become the world’s leading industrial nation. In Freeman’s report you are actually seeing the reindustrializing potential of a second Trump Administration, if Lyndon LaRouche’s basic credit and science policies were to drive it.

Freeman’s article was serialized in the April 26, May 3, and May 10, 2002 issues of *EIR*. That series can be found through the following links:

https://larouchepub.com/eiw/public/2002/eirv29n16-20020426/eirv29n16-20020426_022-then_and_now_why_roosevelts_expl.pdf

https://larouchepub.com/eiw/public/2002/eirv29n17-20020503/eirv29n17-20020503_020-then_and_now_why_roosevelts_expl.pdf

https://larouchepub.com/eiw/public/2002/eirv29n18-20020510/eirv29n18-20020510_011-then_and_now_why_roosevelts_expl.pdf

II. Famine in Africa

Stopping Hunger in Africa Is a Moral Test for Americans

by Helga Zepp-LaRouche

This is the edited transcript of the Schiller Institute's October 10, 2020 dialogue with Helga Zepp-LaRouche and Harley Schlanger. The video of that [interview](#) is available.

Harley Schlanger: Welcome to our weekly interview with Helga Zepp-LaRouche. It's October 14th, 2020. We're going to begin today by talking about something that does not receive a lot of coverage in the United States or internationally, and that's the international food crisis.

Last week the Nobel Peace Prize was given to the World Food Programme; its Executive Director, David Beasley, said that this gives us an opportunity to bring this food crisis to people's attention. But it's not getting much attention, and Helga, this is a crisis that has already killed, according to Beasley, 7 million people from hunger this year. But another 30 million or more are threatened in the weeks ahead. Why don't we pick up on this and talk about this emergency appeal?

Helga Zepp-LaRouche: I think this requires an urgent mobilization around the world, because as David Beasley said yesterday at a conference of the Food and Agriculture Organization (FAO) in Rome, this is the worst humanitarian crisis since the Second World War. And the situation is completely out of control. The worst-affected continent is Africa, but Ibero-America and some Asian countries are also affected.

This is a crisis that was clearly coming—it's not a surprise. Mr. Beasley warned of it many months ago. As a matter of fact, I think the first warning he made was more than a year ago, and nothing was done. He



David Beasley, Executive Director of the UN World Food Programme.

said that the World Food Programme needed \$6.8 billion to get the food to the places where it is needed, and his organization was only able to get \$1.6 billion! Now, he made the point that in a world where you have more than 2,000 billionaires, who own more than \$8 trillion in assets, it could be easily solved. If they would all put in a little share, it could be solved. They won't do that. They wouldn't be sitting on this kind of money if they were not enjoying the benefits of the system responsible for this crisis.

So, it does require an urgent mobilization. Beasley warned that if it is not reversed very quickly, it will lead to mass famine, "of biblical dimensions." In earlier speeches he warned that it could soon be a situation where every single day 300,000 people are dying of hunger! Then, the second consequence he is warning of

is a tremendous political destabilization, chaos—entire continents plunging into a completely uncontrollable situation. And then, third, a mass migration of the people trying to flee from hunger.

This is really a big crisis. Let me read you part of a letter from Ramasimong Phillip Tsokolibane, the leader of the LaRouche movement in South Africa, who has made an urgent appeal. He called it “A Matter of Life and Death.” In his appeal, he says that he’s not just speaking for himself, but he’s speaking as a spokesman for all of the people who soon face starvation and who cannot speak on their own behalf.

He writes:

Right now, many millions of my fellow Africans are starving. They are starving thanks to a combination of deliberately enforced underdevelopment of my continent. ...

He quotes these words from David Beasley, spoken on September 17:

Humanity is facing the greatest crisis any of us have ever seen. It’s time for those who have the most to step up, to help those who have the least. Thirty million people are now in danger of dying from starvation.

And then he says:

I want to stress that this is not a matter of what will happen—it *is already happening*. And unless something is done and done soon, millions and millions of people will die in the immediate weeks and months ahead, as David Beasley warned. He had already addressed the UN Security Council in April, warning that *300,000 people could die every day*.

I think you should look at his entire letter, which is [posted](#) on the Schiller Institute website, and really distribute it widely.

Tsokolibane then says that the problem is so big that it needs large food-producing nations to use the military to bring the food into the areas where it is needed, because it’s not just the big cities, but the rural areas, remote areas where not even infrastructure is developed and where the delivery will be extremely difficult.

And then he appeals directly to President Trump to respond to that, reminding that this is a situation comparable to the U.S. helping Europe with an airlift program after the destruction of World War II. I think that’s exactly the right approach.

Now, obviously, this is not very likely to happen right now, because we are in the middle of the last weeks of the U.S. election campaign—people there are only looking at the election, for the most part.

But that is one of the reasons why we have been talking about the need to have a committee to address these crises. I call it the Committee for the Coincidence of Opposites, whereby health officials, retired doctors, nurses, police officers, universities, should make partnerships with the respective countries in, first, Africa, and then hopefully also elsewhere, to train young people to help out as medical aides in the tradition of the Civilian Conservation Corps program of President Franklin Roosevelt: training people on the job and starting health deliveries, teaming up in partnerships in Africa, but also at the same time organizing the delivery of food.

There is an agricultural crisis in the United States and in Europe; many farmers are losing their farms. They want to produce, but the cartels have created conditions that have ruined them, and when the COVID-19 pandemic broke out, many of the meat-packing plants immediately were infected because of the *de facto* slave-labor conditions in them.

So this initiative is meant to team up health workers and farmers—and double food production! The only way you can combat this famine is to double food production and start a tremendous shipment process to help the starving people, but at the same time, start building infrastructure and a world health system. Start to develop modern agriculture in cooperation between Africans and such partnerships.

And I really would like you to look at the [proposal](#) we put out at the end of May, “The LaRouche Plan to Reopen the U.S. Economy: The World Needs 1.5 Billion New, Productive Jobs,” and get it around.

The moral character of humanity is being tested if we can mobilize in such an unprecedented humanitarian crisis to help. As Beasley said in his speech yesterday, there is enough wealth in the world that not one single child would have to die or even go hungry, if only there were a change in attitude and politics. And that’s exactly what we have to accomplish!

Call to Action: Emergency Food for Africa Now!

by Marcia Merry Baker

The following is adapted from Mrs. Baker's presentation October 17, 2020 to the LaRouche PAC Town Hall National Meeting, "Emergency Food Aid to Africa Now! President Trump Can Make All the Difference." The full video is available [here](#).

Oct. 20—This week the Executive Director of the UN's World Food Programme, David Beasley, said that seven million people have died already this year from starvation, and millions more—it could be 30 million—will die in the coming months, if we don't take action. Add in the COVID-19 deaths—officially over a million now—which are undercounted, and we face the holocaust of 2020. To stop it, Beasley called for funding of \$6.8 billion through early 2021.

Beasley spoke in Rome October 13, at the opening of a 3-day conference of the UN's Food and Agriculture Organization (FAO). Then October 16, World Food Day, he spoke out again, focusing on the Sahel—where he was in person last week—saying that in his view, the world today has a "hunger for cooperation," as well as a hunger for food.

His own and his agency's actions amount to a special intervention right now—to save lives, and to promote collaborative action. On October 9, the World Food Programme won the Nobel Peace Prize for its work. His first words on hearing the news, while in Niger, was: "Wow—many Wows!" Then, he said, "this is a call to action." We now "have the world's attention."

This is of strategic importance, given that Beasley is an associate of President Trump, who nominated him for his position in early 2017, which was then approved at the UN. Beasley was a Republican governor in South Carolina (1995-1999). The U.S. is the biggest backer of the World Food Programme in contributions and in other ways. The impact of the Presidency of the United States moving on this crisis can make all the difference in the world, literally—just as President Trump is moving for space science, bioscience, and agro-industrial strength. You can imagine:

One phone call from the White House to President Putin, or President Xi, or Chancellor Merkel and others, to act on the hunger pandemic holocaust, and things will happen.

The death toll now mounting from both COVID-19 and the hunger pandemic comes from the breakdown of the economic system. Regarding the virus itself, the science and technology exist to contain such pathogens—in human, animal, or plant life. But we're not implementing them. In the case of food, the science and technology likewise exist to produce it, but we're not doing it. (The notable exception is China.) It is a policy and morality



WFP

David Beasley, Executive Director of the UN's World Food Programme (left), and José Graziano da Silva, former Director General of the UN's Food and Agriculture Organization, in South Sudan, an extreme hotspot of war and severe hunger.

crisis, not a resources limitation. This is what must change in the spirit of responding to the emergency.

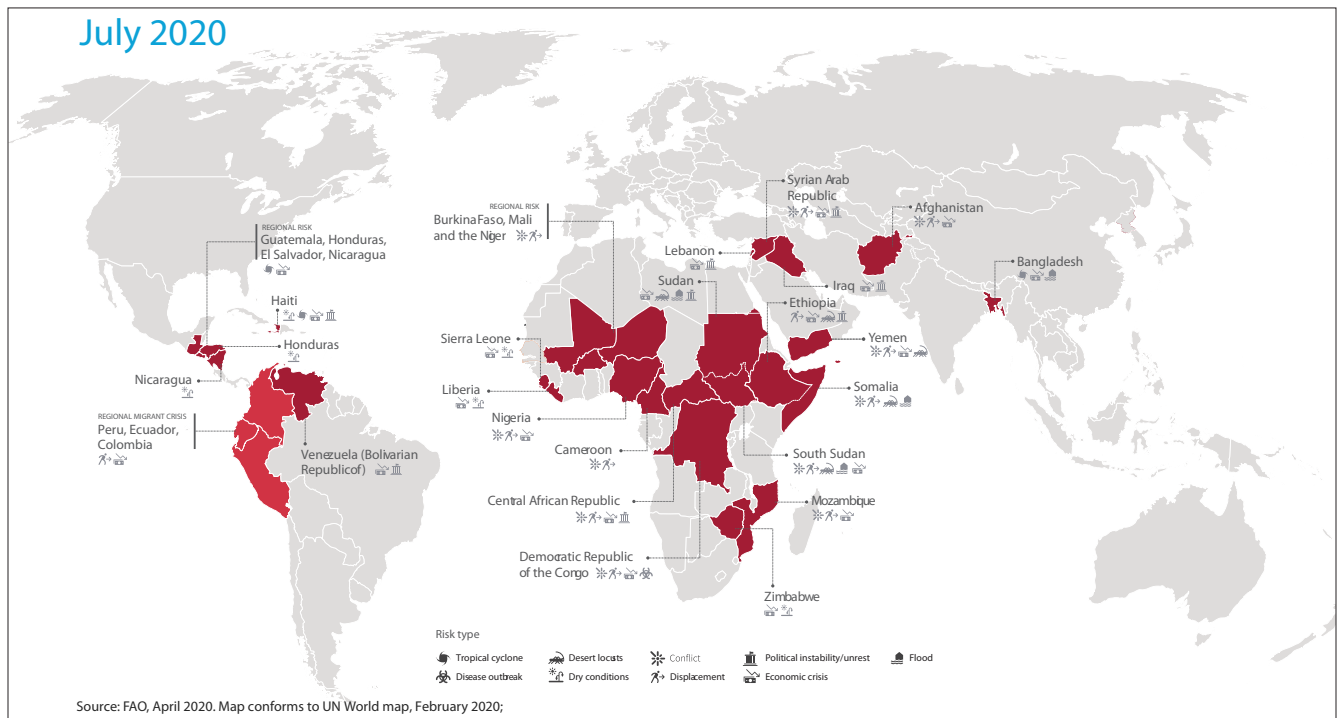
A Matter of Life and Death

An emergency [appeal](#) was issued Oct. 13 from South Africa, from Ramasimong Phillip Tsokolibane, the leader of the LaRouche movement there. His statement is titled, "A Matter of Life or Death—Call for International Mobilization of Food Resources to Fight Starvation in Africa."

Mr. Tsokolibane states:

FIGURE 1

FAO-WFP Early Warning Analysis of Acute Food Insecurity Hotspots



...[T]he issue we face, if we want to save lives, is securing massive amounts of food, as soon as possible, to hungry and starving people. Given the state of infrastructure on the continent, and the fact that much of this starvation is occurring in isolated, rural areas, the distribution that must take place is well beyond the means of individual governments and those of relief agencies.

I believe we must mobilize the logistical capacities of the world's most capable military forces and design a strategy to bring food supplies from such food-producing nations as the United States and Canada, and bring them directly to those who need them. Let allies and adversaries alike, join forces, in this greatest of all humanitarian efforts.

Mr. Tsokolibane appealed directly to President Trump:

Take up this challenge. Give America's farmers the mission to produce the food to feed the starving, while deploying the vast resources of the U.S. military on this mission of mercy to

bring food to those who need it on my continent.

He made appreciative reference to First Lady Melania,

who pledged to help Africa and especially its children in any and every way possible, while visiting the continent in October 2018. By emergency action, take whatever steps are necessary to make this happen.

What should come out of this initiative, he said, would be the kind of international great power summit that has been called for by Helga Zepp-LaRouche, Chairwoman of the Schiller Institute.

The Map of Hunger

Here is a snapshot (see **Figure 1**) of the extent of hunger in Africa and elsewhere, as of July. The total number of people identified in the 30 nations shown, add up to 230 million, and with some in other locations. Today, there are some 270 million people at present in need of food aid, according to the World Food Programme yesterday.



CGTN

East Africa is witnessing its worst swarms of locusts in many decades, devastating crops and collapsing food production.



CGTN

The COVID-19 virus is disrupting all aspects of African economic and social life.

In Africa, there are 155 million people in urgent need of food. They are in 14 nations (and others). In numbers: (in millions) Burkina Faso (4.8); Cameroon (5.2); Central African Republic (3.1); Democratic Republic of the Congo (21.0); Ethiopia (18.0); Liberia (0.84); Mali (3.5); Mozambique (3.3); Niger (5.9); Nigeria (23.8); Sierra Leone (2.9); Somalia (6.3); South Sudan (10.2); Sudan (17.7); Zimbabwe (6.3).

In Asia, there are 60 million, in nine nations: (in millions) Afghanistan (20.8); Bangladesh (1.3); Iraq (1.8); Lebanon (2.9 before the explosion of the grain elevators); Pakistan (4.5); Palestine (2); Syria (9.2); Turkey (2.1); Ukraine (0.5); Yemen (24.8).

In the Americas, there are 34 million, in nine nations: (in millions) Colombia (1.6); Ecuador (0.5); El Salvador (0.5); Guatemala (3.6); Haiti (6.9); Honduras (2.8); Nicaragua (0.1); Peru (0.8); Venezuela (18.2).

What gives rise to this picture, you can well imagine. There are specific factors, such as the locust plague, livestock diseases and bad weather. But secondly, the whole low-technology platform of production, with low-yield crops and precarious conditions, figures in. Tsokolibane:

This deliberate under-development [has been] deliberately enforced by the neo-colonial power of the British Empire, acting through their financial power in the City of London and Wall Street.

Then, comes the SARS-COV-2 virus, with all its disruptions. Trucks can't cross borders to deliver pesticides, or harvests. Farmers can't get to their fields. Extension agents can't move around. And there are terri-

ble situations of people with no means to buy food, even if it is in the markets.

Productive Farm Regions in Crisis

Now to fill out this picture, you have to go back to the view of the whole world. In recent decades, Africa has become more, not less, dependent on imports for basic foods. It is 40 percent dependent on imports for staples—grains—rice, wheat, sorghum, and other basics. These supplies come from the high-tech farm regions in the U.S., Canada, Europe, Australia, Argentina, Brazil—and also Russia, Ukraine, Kazakhstan. The transnational commodity and trade firms of the Wall Street/London syndicate dominate most all of the trade, and they set it up this way through the World Trade Organization and related enforcement operations.

So, for example, take sorghum—the U.S. producers are paid nothing, and the African consumers must pay more than they can afford. In addition, enclaves of for-export agriculture are all over Africa, Central and South America, and parts of Asia, where flowers, produce, fish, and other specialties are produced for export to Europe and the U.S., to the detriment of capacity for basic food supplies in the exporting nations—from Kenya to Ecuador.

This was all getting so bad before COVID-19, that in the last few years, world hunger was rising, not falling, apart from China. The food cartels in recent decades have racked up huge profits—including year-to-date during the pandemic—for example, Cargill. But profiteering isn't the worst of it. Add to this the "green" food fascism.

On top of low prices to the farmers in the U.S.,



WFP/Paul Mboshya, Jr.

Emergency food delivery: Beneficiaries receive corn meal and dried beans from the World Food Programme at a distribution point in Gwembe, Zambia.



WFP/Ziad Rizkallah

Prepositioning supplies: Workers unloading sacks of food aid provided by the World Food Programme, at the Karagehussian Center in Beirut, Lebanon.

Europe, South America and elsewhere, the green side of Wall Street/London comes in, and dictates how to restrict the functioning of independent, family-scale farming, by restrictions on the use of water, chemicals, land, and how they raise animals—you name it. This onslaught, on top of the low prices to farmers, has resulted in the spike of suicide rates in the U.S. farmbelt. In Europe, farmers have taken to the streets with tractorcade protests.

Breakdown Crisis, Urgency for New Paradigm

This whole system—which never should have been allowed to happen—is itself now in breakdown. The Schiller Institute has provided a forum to farmers and representatives of Africa and elsewhere to discuss the food and agriculture crises in four conferences held over April to September, and in many other side discussions.

In April, the World Food Programme Director warned the UN Security Council that COVID-19, on top of what was already worsening hunger before the virus, was creating a situation worse than after World War II. He warned at an FAO meeting that by fall we could reach a point where 300,000 people a day would be dying, for three months, unless we took action. He called it, “a crisis of Biblical proportions.”

In May the Schiller Institute issued an international call for action, “Stop the Hunger Pandemic! Save Farmers, Deliver the Food.” Over the Summer, Schiller Institute President Helga Zepp-LaRouche initiated a new global health initiative. Former Surgeon General Dr. Joycelyn Elders, in her efforts for an international health mobilization, has stressed adequate food and nutrition as preconditions for a healthy population.

At the same time have come programs for the needed new economic system. In May, the LaRouche PAC issued a [report](#), “The LaRouche Plan to Reopen the U.S. Economy; The World Needs 1.5 Billion New, Productive Jobs,” (*EIR*, May 3, 2020). In France, the LaRouche movement issued a “Roadmap” for establishing a productive economy. This month, a blueprint has been issued in Germany.

Now new impetus for moving on these designs comes from the “Call to Action” on emergency food for Africa, from the World Food Programme Executive Director Beasley, and from the South African voice of Tsokolibane, speaking for his whole continent. These both pose the critical role for President Trump to move on this, and to resume the strategic relationships he cultivated successfully at the beginning of his Presidency, which then were sabotaged by the enemies of humanity.

What To Do

1. Emergency Food Delivery. The quantities and types of food needed—grains, proteins, oils, sugars, including fortified relief products—can be mustered, through a drastically expanded WFP requisitioning process, for direct delivery, along with direct disbursements of money for local purchasing by people in need, where food is at hand. For this to happen, the funding must start flowing towards the \$6.8 billion requested. The policy is to “clean the cupboard bare” to meet immediate need.

The logistics of delivering the supplies has two aspects, which must be met for the emergency:

First, the WFP transportation system itself—which delivers most all of the UN non-food humanitarian aid (medicines, disaster relief, education materials) as well



USDA

Double world food production! Nations with established, high-tech agriculture can produce more food, beginning with the next harvest.

as food, must be augmented. This has already been done to a degree by nations lending planes and crews, e.g., the U.A.E. and Canada. The WFP/UNHRD (UN Humanitarian Response Depot) has a network of six depots for pre-positioning food and aid, with airfields, warehouses, transit housing, decontamination facilities, etc. Some 90 aircraft are in its fleet, in the UNHAS (UN Humanitarian Air Service), operated by the WFP. Especially important for Africa right now are the UNHRD hubs in Accra, Ghana, in Brindisi, Italy, in Las Palmas, Spain, and in Dubai. There are also hubs in Panama and Kuala Lumpur, Malaysia.

Second, U.S. and other collaborating military logistics capabilities must be deployed not only for the heavy lifting, but at the receiving end, for building or preparing to build, infrastructure—roads, port facilities, airfields, warehouses, contingency electricity and water provision—for permanent benefit.

2. Commission and Pre-Position More Food. To maintain supplies over the coming months, needed volumes of relief foods must be lined up well in advance, and capacity stood up to supply it. Pre-positioning at key locations, near to delivery regions, must be carried out, as well as warehousing in the supply chain. The food processing capability is short in several areas. For example, in the U.S. the capacity to produce milk powder is very restricted, and must be increased. The capacity to can meat products is limited and can be increased. Any limitations must be ended on milling and special baking of fortified relief foods, etc. The National Defense Production Act can be invoked wherever needed. It has been used this year for producing ventilators and per-



USDA NRCS/Jeff Vanuga

Develop Africa's infrastructure for full-scale modern agriculture. Here, fertilizer is being applied directly into an irrigation lateral, in Yuma, Arizona.

sonal protection equipment to combat COVID-19.

3. Commission Increased Food Production. In the U.S., Canada, and collaborating nations with established, high-tech agriculture, the goal is more food, beginning in the next harvest period, and continuing in the harvest cycles over the next few years. This requires intervention with decent pricing to the farmers—parity-based, and related measures.

In places of low-tech agriculture, and lack of infrastructure, all that can be done in the short term—better seeds, fertilizer, pesticides, fuel, equipment, etc.—must be done, to at least get the benefit of what is possible. Concretely, this means that the many token programs of aid to production, e.g., the donations of fertilizers to places in Africa, Asia, and the Americas, should be scaled up rapidly.

Special aid must be given to entirely beat back the locust disaster in Africa and South Asia, and to also deal with outbreaks of crop and livestock diseases, especially the African swine fever epidemic among hogs.

To add to supply in the short term, redirect flows of basic foods going out of Africa, e.g., fruits, vegetables, and fish to Europe, which are from the trade patterns imposed by the transnational cartels. Instead, make use of this food, and capacity to produce it, to meet needs within Africa now, in the hunger emergency.

4. Agriculture Infrastructure Development must now be launched in Africa and in other places where high-tech farming has been suppressed, or confined to transnational-run plantations. Initiate all needed measures for full-scale modern agriculture. As a continent, intra-Africa trade in staples is very restricted, compared to



National Farmers Union

No long-term improvement in agriculture and food production in any nation can take place without ending the transnational cartel system.

what would benefit its 54 nations. The programs needed include the major water projects—such as Transaqua, the West-of-the-Nile farming project, cross-continental and regional rail—such as the new East-West Egypt rail initiative, and other priorities.

Unleashing science for advances in crop and livestock systems is essential, which means ending the patent-control over biotechnology research by the cartels.

5. End the Transnational Cartel Food Control System. No long-term improvements in agriculture and food production in any nation can take place without ending the transnational cartel system that is now behind the famine and is ruining farmers in the trans-Atlantic nations and elsewhere. This includes such priority measures as busting up the conglomerates, from Walmart to the infamous meatpackers—JBS, Cargill, Marfrig, Smithfield, Tyson Foods, and the others. Credit and sound banking must be provided through reorganizing the financial system on the principles of the U.S. Glass-Steagall Act, and a new Bretton Woods-style system of stable currencies and regulation must be inaugurated.

Lyndon LaRouche spelled out the principle involved in emergency food relief many times in recent decades—provide relief while simultaneously preparing for future development. In 1981 he wrote about this in “The Economic Need for Increasing the Human Population.” (See accompanying excerpt.)

Double Food Production: Mission, Not ‘Markets’

We need to double world food production as soon as possible. Use grain as the metric. At present the world is producing less than 3 billion tons a year, when 5 billion is in the range of what is needed. And for a growing population, more must be produced soon and as we go along. Follow it through, starting per capita. You can figure on the total volume of grain or equivalent you need per year, for direct eating as basic staples—bread, noodles—and add on the grain for indirect consumption through the animal protein chain, as your dietary preference may be—milk, eggs, meat. Then add more for food reserves, wastage (even if minimal), and that totals up to the 5 billion tons for 7.5 billion people, and keep adding on as our population grows.

There are no natural resources constraints to this. Once the cartelized, financialized looting is ended, the potential is vast. Look at Africa. The combination of advances in science with the building out of the infrastructure projects for the productive platform will give fabulous productivities in food production. The over-



EIRNS

Lyndon LaRouche spelled out the principle involved in emergency food relief many times over decades: Provide relief while simultaneously paving the way for future development. Here, Mr. LaRouche is addressing a Food for Peace conference in Chicago, Illinois on December 20, 1988.

view and details on this are given in the 2017 Schiller Institute [Special Report](#), “Extending the New Silk Road to West Asia and Africa—A Vision of an Economic Renaissance,” by Hussein Askary and Jason Ross.

“Give the U.S. farmers a mission,” is what our South African friend and associate said in his appeal to President Trump this week. Taking up this mission, is what applies to us all.

DO YOU WANT TO SAVE LIVES?

Extraordinary Starvation Crisis Demands Extraordinary Response

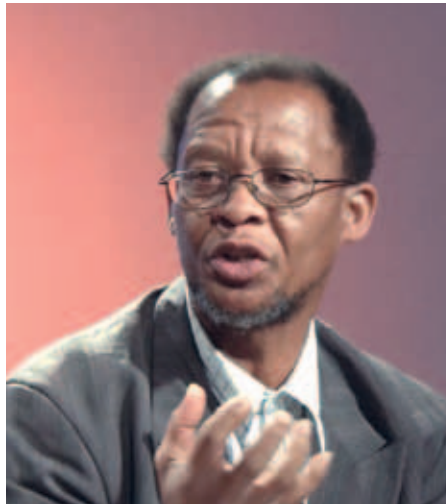
by Ramasimong Phillip Tsokolibane,
Leader of LaRouche South Africa

Oct. 17—Earlier this week, speaking on behalf of millions of starving Africans, I demanded a full global mobilization to save their lives and the lives of hundreds of millions of others around the globe who are also facing near-term death from starvation.

I urged Donald Trump, in his capacity as the most powerful person on the planet, by virtue of his office as President of the United States, to take up the responsibility demanded of him by the U.S. Constitution, and mobilize the full resources of his nation—including the food-producing power of the great farmers of America and the logistical capabilities of the U.S. military—to produce the food and get it to where it is needed.

I stated that he must be joined in this effort by the forces of the other great powers, including Russia and China, and I endorsed the call by the great lady, Helga Zepp-LaRouche, the chairwoman of the Schiller Institute, for a summit to discuss the means to resolve the great crises facing humanity, including the global pandemic and this hunger and starvation crisis, which are related.

I want to restate my conviction, which I know to be shared by Mrs. Zepp-LaRouche: These crises require an extraordinary global response, in which our full resources, including those of the powerful militaries of great powers, are used, not to maim and kill people, but



Ramasimong Phillip Tsokolibane EIRNS

to save their lives. The time has come for such a radical reexamination and repurposing of the capabilities of the human race, if it is to survive this great crisis.

This is not a debatable point. People are dying by the millions, and many more millions will soon die, and we—all of us, our leaders, such as President Trump, and all our citizens—must make the decision to save them and take the steps, as nations and individuals, to save them.

I wish to underscore the warning of David Beasley of the UN World Food Programme (WFP), that more than 300,000 people a day could die from starvation, unless immediate action is taken. I do not know David Beasley, but I believe he would agree with me that even the WFP, which currently has the best food distribution capacity in the world, cannot meet this crisis, even if all the monies he has requested were immediately forthcoming.

STATEMENT

Decades of underdevelopment, enforced by the financial power of the British Empire and its globalist institutions, including the murderous International Monetary Fund, have left the world without even the basic infrastructure, such as roads, to get food to many rural areas where people are already starving.

Certainly the WFP must play a role in any solution, but the WFP is not the solution, nor has the WFP ever

asked for the kind of mobilization I am calling for. That is because even well-meaning people have been trapped in a paradigm in which they have been forced by ‘circumstances’ to accept the death of many people, from causes such as starvation or disease, as painful but unavoidable. I for one, and Mrs. LaRouche for another, refuse to accept this flawed way of thinking.

We must mobilize from the standpoint that every human life matters, including millions upon millions of black lives in Africa, that each life is precious; that each must be cherished and nurtured. Those millions of souls cannot thrive and pursue the happiness that comes with productive lives, much less even exist, without the material, cultural, and spiritual support of a growing economy.

They must first have enough to eat. The right to eat must become generally understood as a basic human right, as is the right to adequate medical care. As citizens of our nations, but as members of the human race, we must fight to transform this moral understanding into public policy, holding our leaders responsible to the principle of the General Welfare, as enshrined in that glorious document, the U.S. Constitution, and in the UN’s Universal Declaration of Human Rights, as

written by Mrs. Eleanor Roosevelt in 1947.

I repeat my call to President Donald Trump, in response to the warning from his friend, David Beasley: Mobilize the full resources of your great American nation to save Africa from starvation and death. Give your American farmers the mission to feed the world. I am sure they will rise to the challenge. Order the American military, which has the greatest logistical capability of any nation or combination of nations in the world, to figure out how to get food from the producers to those who need it. I am sure that they can do this. Call on the rest of the world to join you in this moral endeavor. Mr. Trump, the times demand that you be the leader that we need. Do it now!

I also urge that these matters be brought up for discussion by the Committee for the Coincidence of Opposites, recently established by Mrs. Zepp-LaRouche, especially to address issues such as these. I fully support her call for an extraordinary mobilization to create a system of global health security to meet the pandemic crisis. Africa needs the army of health volunteers that she has urged be created.

These things we must do. Save millions of lives, whose deaths can and must be prevented!

Stop Famine and Increase Africa's Power To Sustain its Own Existence

by Lyndon LaRouche

We reprint here a short excerpt from Mr. LaRouche's December 1981 report, "The Economic Need for Increasing the Human Population," prepared for a Bishops' Conference in Rome, which offers a succinct summary of the principles which must guide the urgently-needed delivery of massive food aid to famine-stricken regions of Africa. The argument is a brief section situated within his larger elaboration of the rigorous scientific proof that an increasing human population is required to maintain the human species. The [full report](#) is available in EIR, Vol. 47, No. 8, February 21, 2020, pp. 7-30.

During the period beginning August 1980, the author and his collaborators attempted to mobilize needed U.S. governmental action for aid of starving populations in Africa—over the wicked opposition of the Carter Administration. Assembling a task-force of experienced leading U.S. farmers and with counsel from logistical specialists, we proposed the following approach.

We proposed that the logistical methods which would be recommended by the U.S. Corps of Engineers under war-time conditions be deployed to effect both delivery and means of distribution of food into regions of Africa in which the imperiled portions of the population are located. If we commit our will to such emergency undertakings, we can make a peaceful use of the logistical policy employed for warfare to construct simultaneously ports, airfields, rail systems, highway systems and functioning transportation networks, through which to deliver food-supplies and other aid needed directly to or close to the areas in which the needy population resides.

The transportation network established for the efficient initial distribution of aid becomes the network through which basic development aid, to aid the populations in increasing their self-sustaining powers for the

next year's crops, is also delivered. This same transportation network permits agriculture to begin efficient specialization in production of an above-subsistence surplus for urban markets. If the development of water-management systems, and supplies of pesticides, soil-treatment materials, and fertilizers is introduced by way of the transportation network, a modest but marginally decisive improvement in the self-sustaining capacities of populations can be affected.

If food aid is distributed, instead, to relief camps, and the population invited to move toward those relief-camps in search of food, a hideous destruction of the society results. The villages and households are destroyed, the affected population reduced to an utterly helpless state of dependency upon aid, promoting vagabondage among males, and rendering the relief-camps virtual death-camps and the trek to the camps a gruesome death-march. Under such circumstances, food aid, whether intended to have such effects or not, becomes an instrument for promoting genocide.

To repeat the important point: Assistance must be directed to increasing the potential relative population-density of the population, to increasing the population's power to sustain its own existence by means of its own productive labor.

Continuing beyond emergency measures of the kinds we have indicated to be needed, we must aid the nations affected in producing themselves the most crucial among the agricultural capital-goods initially supplied from abroad. In general, such investments will not mature to become financially self-sustaining during a period of less than seven to fifteen years. Low-cost, long-term credit amortized after an initial period of grace over a total span of fifteen to twenty-five years, is the general policy required to supply nations of the most-afflicted categories with the transformations by which they will become truly self-sustaining.

III. Build, Build, Build!

KNITTING THE NATION TOGETHER—

From Portland to Minneapolis: Build It, Don't Burn It

by Brian Lantz

I think ... that the wild lands of the country should be distributed so that every man should have the means and opportunity of benefitting his condition.

—Abraham Lincoln,
reflecting on the proposed
Homestead Act

Oct. 16—*Consider the terror that has been orchestrated in Minneapolis and then the similar horror show in Seattle and Portland. Then consider the vast tracts of farmland and also vacant land in between these “book-ends.” How shall we transform this entire northwestern portion of our United States, to aid in integrating our nation once again into a productive whole?*

Hint: We walk in the footsteps of such as John Quincy Adams and William Tecumseh Sherman.

The answer: With rail, energy, water, man-made climate change, new cities—and more people! Such an approach will most definitely Make America Great again in a second Trump Term.

During 16 years of *deindustrialization* under George W. Bush and Barack Obama, tens of thousands of U.S. factories closed. Family farms were lost. Industrial jobs were lost. Millions of Americans were left to suffer and die. Whole areas of the country that should long ago have been developed with modern industry, infrastructure, and farming were left to decay.

Part of this horrific nightmare is that U.S. transportation routes and logistics became obsessively focused on projects that served the new era of *globalization*. This included the north-south NAFTA transportation route, as well as projects associated with imports, such

as Coastal Ports of Entry and the movement of goods into the interior along truck and rail routes.

What became lost, what was discarded and deliberately allowed to decay and disappear was any notion of the *development of the nation*. The concept of *corridors of development* completely dropped from the picture, with the exception of a few transcontinental freight routes and the orphaned AMTRAK. The national development commitment of Abraham Lincoln's Transcontinental Railroad was jettisoned.

A 2002 *EIR* Special Report, featuring Lyndon LaRouche's paper, “Special Report: U.S. Science and Infrastructure,” documents the take-down of much of the U.S. national rail system, including regional railroads, during the 1980s and 1990s. As a consequence, we have been left with the infamous “fly-over states,” occupied by Hillary Clinton's so-called “deplorables.” “Fly-over” indeed, as there is relatively little in between the Pacific and Atlantic Coasts, except what's hugging the Great Lakes, and the Third Coast, the Gulf Coast.

Of course, the “West-North Central States” are regarded as constituting the core of the nation's “Farm Belt.” Formally, seven states compose the division: Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, and South Dakota. Here, however, let us allow our eyes to shift a little further westward, and let us consider what we might call the “Northern-Western” states as a whole, roughly that “empty” space lying between the railroad hubs of Minneapolis/Chicago and the West Coast dystopia of “Cascadia”—Seattle/Portland/Vancouver, British Columbia.

These are sometimes called the “Northern Plains States,” but that term does not usually include Montana and Idaho. These “empty” states were originally linked

FIGURE 1

The Nine Nations of North America

CC BY 3.0

by J.J. Hill's Northern Pacific Railroad, and much of it historically was known as "The Dakota Territory," stretching down into Wyoming. There is not even a name for this region. *The Nine Nations of North America* (1981) simply terms it "The Empty Quarter," as shown in **Figure 1**, a region extending up through Canada and including Alaska. As regarding this region of the United States and North America, the message is, "Nothing to see here; just move on."

Any time we, as a nation, really thought about the development of the United States, we thought about developing the country as a whole, as in the construction of East-West development corridors, or FDR's "Four Corners Project." In the last 75 years the only relatively recent example of this thinking that comes to mind is the building of the Interstate Highway System under President Eisenhower, God bless his soul.

A National Academy of Sciences report (2002) stated:

The most striking demographic feature of the basin is the twentieth-century exodus from rural to urban areas. Populations are declining in much of the region, in some cases dramatically.

During the 1990s, eastern Montana, for example, experienced a net population loss. Small net population gains in the Dakotas mask the fact that nearly all the population growth has been in the states' cities; most rural areas are experiencing population declines. Many areas in the upper basin are populated by fewer than six

people per square mile. North Dakota's and South Dakota's 1990-2000 population gains were among the smallest in the nation and eastern Montana experienced a net population loss. Population densities decrease as one moves upstream along the Missouri River. Montana, North and South Dakota, and Wyoming are the four least densely populated states in the contiguous United States. North Dakota's population growth of 0.5 percent in the 1990s was the lowest of any U.S. state.¹

Here we jump off from Lyndon LaRouche's 2002 *EIR* report, the second half of which is reprinted in this issue of *EIR*. To develop that "empty space" between Minneapolis/St. Paul and Seattle/Portland is a national security priority for these United States, and to thus envelop and transform those metropolitan "bookends," now dominated by synarchist (anarchist/communist/fascist) oligarchic powers intent on tearing the nation apart.

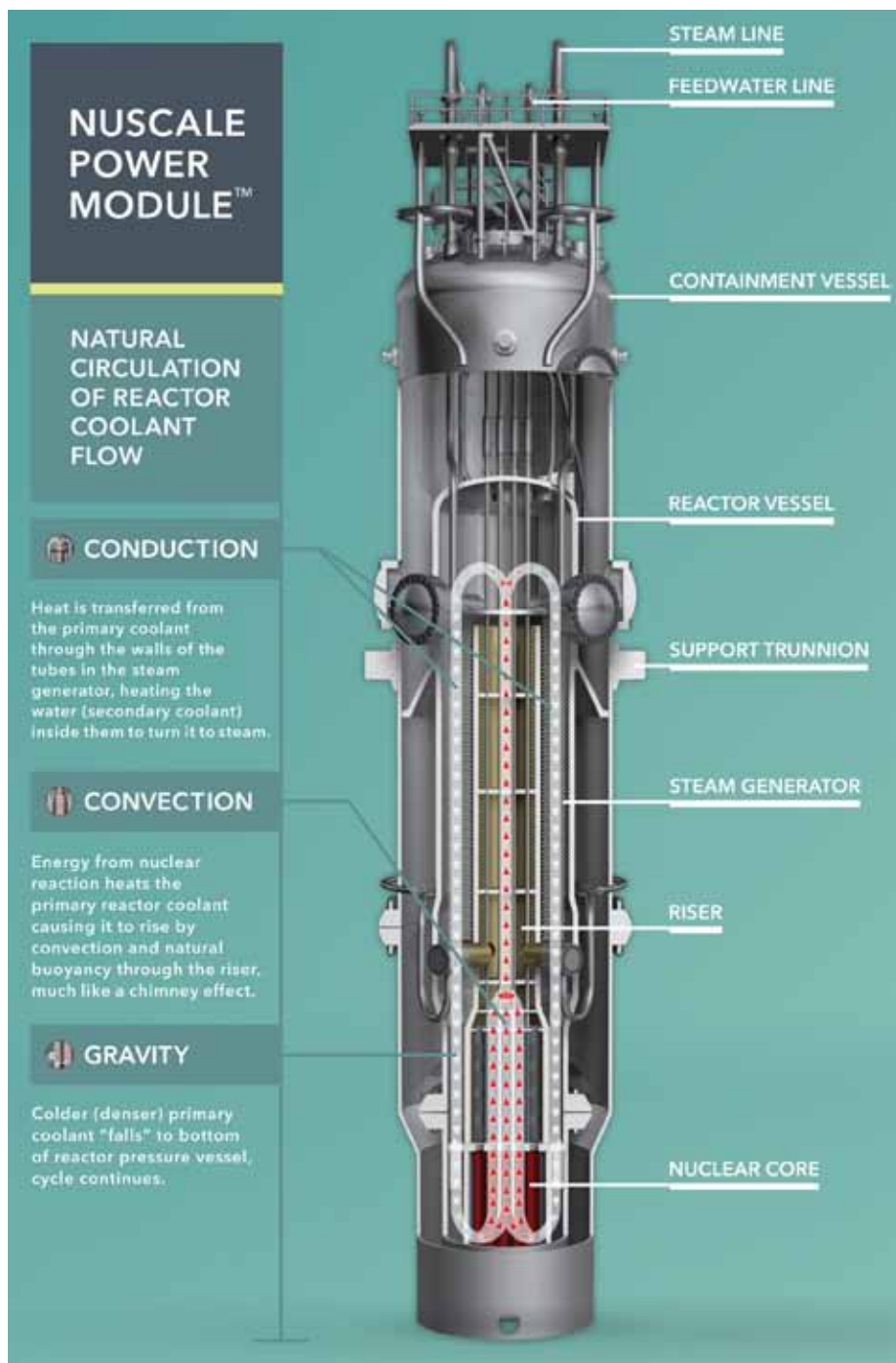
We point out five features—levers—for the development for the region that we identify here: Energy, Rail, the great Missouri River Basin, the Central Corridor, NAWAPA—and New Cities for more productive, creative people!

Modular Nuclear Energy—A Public-Private Partnership

First, we must take happy note that the Idaho National Laboratory, one of the premier U.S. national science laboratories managed by the Department of Energy, will soon be the site of the first NuScale Power modular nuclear reactor module, tagged JUMP (Joint Use Modular Plant). The Trump Administration and NASA have made major commitments to developing small modular reactors (SMRs) for domestic use and international export, as well as for use in NASA's Artemis space program. The JUMP program itself will be dedicated to wide-ranging nuclear energy research, to improve the efficiency and reduce the time required for subsequent module deployments.

Think of the implications for the Plains States and beyond. Any review of state-by-state electricity con-

1. National Academy of Sciences. *The Missouri River Ecosystem: Exploring the Prospects for Recovery* (2002). The study was conducted at the request of the U.S. Environmental Protection Agency and the U.S. Army Corps of Engineers. The [report](#) has all the faults that such a shotgun wedding can be expected to produce.



NuScale's small modular reactor. The containment vessel is 76 feet tall and 15 feet in diameter. The reactor and containment vessel operate inside a water-filled pool below ground level.

sumption shows the “West-North Central” and “Mountain” States are among the lowest, in terms of [energy consumption](#), for industrial and even just commercial and residential purposes. Assembly-line production of SMR’s could be developed as a major high-tech indus-

try for powering industry and city-building in this vast region and for global export markets.

The NuScale/INL JUMP reactor module is only part of the “Carbon Free Power Project (CFPP),” a full nuclear power plant that NuScale Power and Utah Associated Municipal Power Systems (UAMPS) are committed to building in the mid-2020s, in conjunction with the Idaho National Laboratory (INL). INL is the nation’s leading center for nuclear energy research and development. See the [report](#), “Nation’s First Small Modular Reactor Plant to Power Nuclear Research at Idaho National Laboratory.”

Ironically, the state of Idaho has no commercial-scale nuclear power plant. In fact, the entire region is almost devoid of nuclear plants. There are none in Montana, Wyoming (coal states), the Dakotas, or even Colorado. The sole plant in Kansas is Wolf Creek. Nebraska is down to one plant, at Brownville, after the shutdown in 2016 of the Ft. Calhoun nuclear station in Omaha. Iowa also has one nuclear plant, the Duane Arnold Energy Center, as does Missouri at the Callaway Energy Center. In contrast, further East, Illinois has 11 plants—a great industrial potential. To the West, Washington State still has a nuclear plant, in Richland, and plentiful hydroelectric power, from the FDR era.

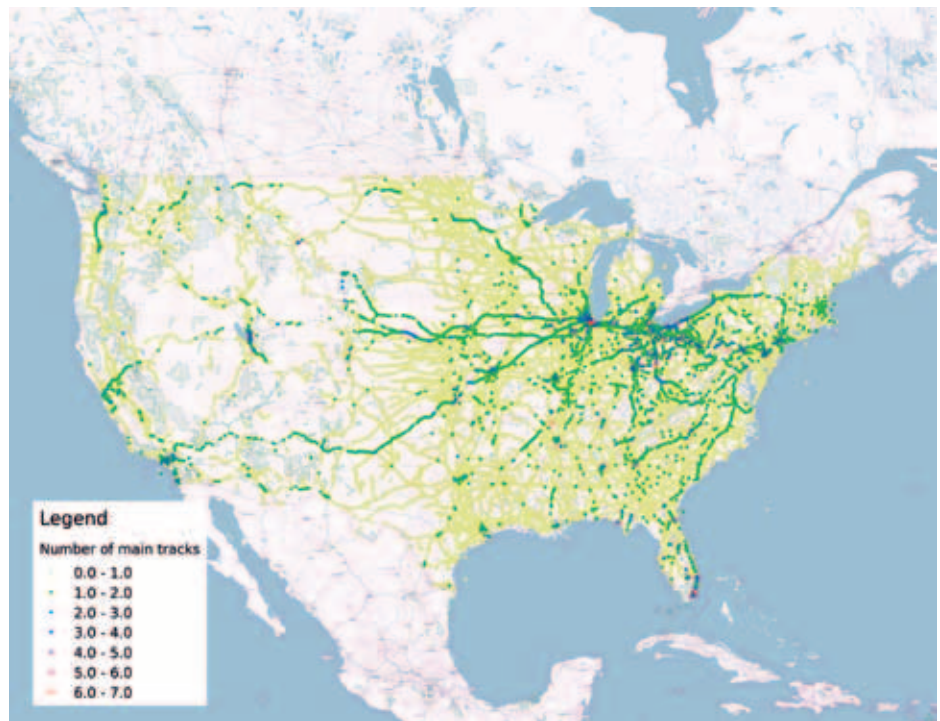
Under the JUMP program, twelve SMRs—60 megawatts electric each—will be constructed offsite and shipped to the plant located in the desert west of Idaho Falls. That is 720 megawatts total, including the first research module. Most Americans don’t know that in the past, at the Idaho National

Laboratory, various organizations have built more than 50 reactors at what is commonly called “the Site,” including those that gave America its first usable electricity from nuclear power, as well as the power plant for the world’s first nuclear submarine. Although many are now decommissioned, these facilities are the largest concentration of reactors in the world.²

In addition to existing shale and coal, nuclear energy is required to up-shift energy-flux densities for city-building. We are also going to need a lot of electricity to power a national electrified rail, which is long overdue. Modular nuclear reactors, such as those built by NuScale, create new flexibility. In addition, new large nuclear power plants can be constructed utilizing the existing “brown-field” sites, where nuclear plants are already located, and which are already partially prepared for the siting of additional reactors. We can rationally phase out the extensive, wasteful wind energy throughout the entire Midwest, and likewise, phase out the completely wasteful ethanol production system that ties up so much productive agricultural land.

Rail—To Knit the Nation Together

Planning for the next fifty years, and with the intent of knitting together our nation, a dense, modern rail grid is necessary for and through this central region of the nation. Extended from the existing Minneapolis/St. Paul rail yards and those of Chicago, expansive rail de-



DoT/FRA

To adequately serve and develop the central region of the U.S., a dense, modern rail grid will have to be built. The so-called “empty quarter” is starkly revealed in this map of at-grade crossings of main railroad tracks, taken from the Highway-Rail Crossing Inventory in 2015.

velopment for passengers and freight through the Dakotas, Nebraska, Montana, and Idaho is a must. There they link to North-South rail lines up and down the West Coast and down the potential Central Corridor (discussed below). This perspective requires selected East-West high-speed rail routes, double- and triple-tracking to separate and expedite both future growing freight and future passenger traffic, and a coherent set of “local” lines fanning out through the region, as once existed.

The 2002 *EIR* Report, part two of which is reprinted in this issue of *EIR*, focuses on rail development, and the rail crisis which had by then emerged in the United States. The Report contains an entire series of maps in part one, reprinted in the October 16, 2020 *EIR*, which show the withering away of rail lines throughout these western states—freight, passenger and local—maps which are just as stunning today as in 2002.

The vast majority of today’s rail infrastructure is single tracked, only allowing trains to travel in one direction at a time on segments of track that don’t have passing sidings. Double and triple tracking are going to be very important to allow upgraded transport. Even

2. In collaboration with the Idaho National Laboratory, Utah’s major utilities, and the Department of Energy, NuScale is going forward with plans for the production of commercial modular reactors. It has opened a London office and has an agreement with Ukraine’s nuclear agency. Note also that Terrapower—Bill Gates’ nuclear power company—wants to locate its first plant at the Idaho National Laboratory as well. Terrapower officially gave up on its partnership with China, given recent U.S. rulings against such technology-sharing. See an article on this [here](#).



Having roughly one-fourth of the nation's agricultural land, the Missouri River watershed demands a Missouri River Basin Authority to fully realize the full potential of the 1944 Pick-Sloan Plan for flood control, irrigation, and hydroelectric power generation.

short of projected high-speed rail or maglev, such double and triple tracking is a necessity.³

The Missouri River—Vital Resource and East-West Linkage

The Missouri River is the longest river in North America and the longest river valley. *This is a powerful, completely underutilized river!* Rising in the Rocky Mountains of western Montana, the Missouri flows east, a little bit north and then south-southeast to link to the Mississippi at St. Louis, Missouri.

The Missouri River was one of the main routes for the westward expansion of the United States during the 19th century. Covering over 500,000 square miles, extending across ten U.S. states, reaching into two Canadian provinces, and encompassing 29 Native American Reservations, the Missouri River Basin holds a wealth

of natural resources, provides nearly half of U.S. wheat, a quarter of its corn, and holds a third of its cattle with an annual value of more than \$100 billion. With more than 170,000 square miles being farmed, the Missouri River watershed includes roughly one-fourth of all the agricultural land in the United States. *However, only some 23,000 square miles of farmland in the basin is irrigated, largely by drawing on groundwater, so the potential for agricultural and development is enormous.*⁴

Even Montana's irrigation water storage and distribution infrastructure is in many cases nearly a century old, and has become increasingly inefficient in storing spring runoff and delivering it to crops during the ir-

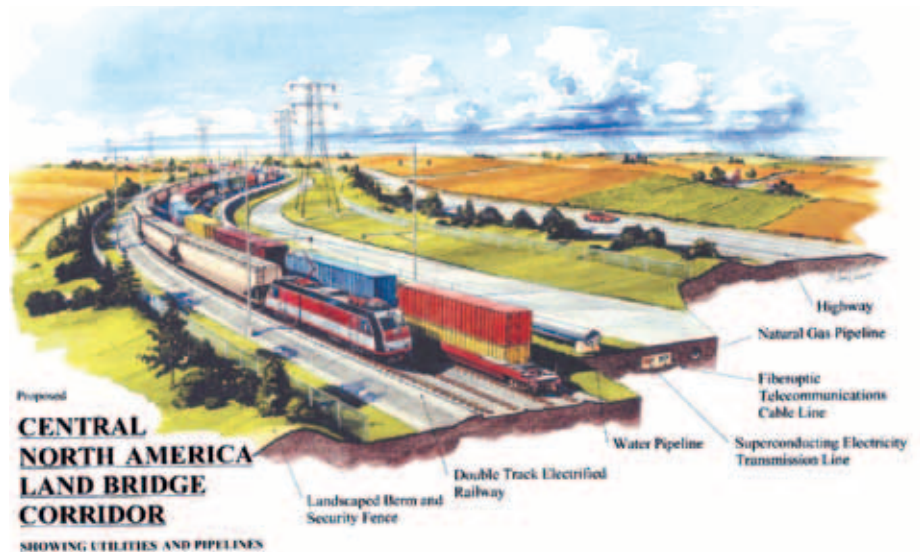
rigation season. The cost of maintaining and/or altering water storage and delivery infrastructure there is too high to be paid by local water users alone. In North Dakota, only 300,000 acres of land are actively irrigated, which is slightly more than 1.1 percent of the total cultivated land in the state. Irrigated land is only one percent of farmland acres in South Dakota. Downstream, in Mis-

4. More information on the irrigation needs of the region, is available from the Bureau of Reclamation [here](#). Nebraska would seem to be the exception. By the end of 2007, Nebraska had a reported 8.5 million acres under irrigation, or approximately 13,281 square miles, the most in the nation. Today, 25 percent of Nebraska's harvested acres are irrigated. However, Nebraska is one of eight states that have access to portions of the High Plains Aquifer that extends from Texas to South Dakota. A set of [maps](#) and graphics show the saturated thickness of the aquifer, with Nebraska having a substantial area of more than 600 feet of saturated thickness. In total, over 65 percent of the water stored in the aquifer is located inside the Nebraska borders.

The Platte River is otherwise a major source of water for Nebraska agriculture, but overall use exceeds availability, and the use of ground water, or pumped water from the aquifer, depends on weather conditions. In a giant step backwards, the Nebraska State Department of Natural Resources and a number of local natural resource districts are engaged in programs to "bring consumption back to native supplies," which means retiring water uses, including irrigation. See [Section H](#), "Nebraska Agriculture Water Management Network," published by the University of Nebraska's Institute of Agriculture and Natural Resources.

3. The U.S. Freight Rail Network. Running on almost 140,000 [route miles](#), the U.S. freight rail network is widely considered the largest and most cost-efficient freight system in the world. The nearly \$80 billion freight rail industry is operated by seven Class I railroads (railroads with operating revenues of \$490 million or more) and 22 regional and 584 local/short line railroads. See the Federal Railroad Administration's report, "The Freight Rail Network" [here](#). A map of single-tracking is available [here](#).

FIGURE 2



Hal B.H. Cooper Jr./Craig Thorpe

A multi-modal concept showing an integrated highway, railway, and utility corridor, proposed by transportation engineer Hal B.H. Cooper, Jr.

souri, a majority of the water currently used for irrigation comes from groundwater sources. Kansas farmers are casting their gaze at the Missouri River, and have proposed the “Missouri River Aqueduct” which would extend 360 miles—about three-fourth the width of Kansas—to bring water to their dry counties.

However, the sustainability of irrigation in the Great Plains is otherwise threatened by soil salination and groundwater depletion.

Now is the time for a Missouri River Basin Authority! drawing on the never fully realized Pick-Sloan Plan of 1944. We have brought this to the fore again and again, most recently following the disastrous 2019 flooding of the Missouri River.

Irrigation and flood control: *The Missouri River reservoir system is the largest in the United States*, with a storage capacity of 74 million acre-feet and a surface area exceeding one million acres. From 1946 through the 1970s, important features of the Pick-Sloan plan were carried out, including five new “main stem” dams completed by 1966—Garrison, Oahe, Big Bend, Fort Randall, and Gavins Point. The six dams, built in Montana, Nebraska, North Dakota, and South Dakota, transformed one-third of the Missouri River ecosystem into “lake environments.” In its entirety, the Pick-Sloan Plan planned for some 107 dams, 1,500 miles of protective levees, 4.7 million acres of irrigation systems, and 1.6 million kilowatts of electric

power. However, the irrigation and flood control systems envisioned under a “Missouri Valley Authority” or by the Pick-Sloan compromise were never developed.

The result has been, along with a lack of rational irrigation development, repeated and absolutely devastating floods. After the terrible 1993 Missouri Basin/Upper Mississippi flood, EIR News Service published a definitive report on the Pick-Sloan Plan titled, “No More Floods! Build the Missouri River Development Project,” by Anthony DeFranco. After the terrible 2011 flooding in the same region, *EIR* reprinted the article in June 2011,—and again, a third time, in

2019. It is long overdue for national action.⁵

The Central Corridor

Onto a map of this region, overlay the proposal by transportation engineer Hal B.H. Cooper, Jr., PhD, P.E. He delineated a proposed Central Corridor Route as part of the World Land-Bridge. Coming down from Alaska and the Bering Strait, a U.S. route, integrating roadway, pipeline and utility lines into a single corridor, would come down through the Dakotas, skirting the Black Hills, going southward through Nebraska via Valentine and North Platte, proceeding into the Oklahoma Panhandle through Liberal, Kansas, thence into the Texas Panhandle and onward to Mexico. Cooper commissioned an artist’s rendering of this “Central North America Land Bridge Corridor” (see **Figure 2**) as part of the World Land-Bridge.

Dr. Cooper was not talking through his hat. On September 28, 2020, *a private-sector proposal was endorsed by U.S. President Donald Trump to build a railway from Canada’s oil sands to ports in Alaska*. President Trump wrote on Twitter over that weekend that he would issue a permit for the “Alaska-Alberta Railway Devel-

5. The full *EIR* report is available [here](#). Also see “Midwest Flooding Is National Emergency: Space-Age Mobilization Required,” in *EIR*, Vol. 46, No. 16, April 26, 2019.

For the Missouri Valley Authority (1949), see [Senate Remarks](#). [Here](#) is a map of Missouri “Main Stem” Dams.

FIGURE 3

Mid-Continental Trade and Transportation Corridor



NASCO

opment Corporation (A2A Rail),” a project to move Alberta crude 1,600 miles (2,570 km) to the Alaskan coast, as well as freight in the other direction.⁶ In the 2002 *EIR* Special Report, “LaRouche’s Emergency Infrastructure Program for the U.S.,” the natural “Central Corridor,” down through U.S. is shown. The regional maps of that corridor are available in *EIR*, October 25, 2002, page 23, which were part of the late Hal Cooper’s presentation in the full 2002 report. Cooper’s plans included a number of possible water transfer projects.

By way of further background, see the schematic, **Figure 3**, of the national “Mid-Continental Trade and Transportation Corridor” (rail is in green), proposed in the context of the NAFTA heyday and still

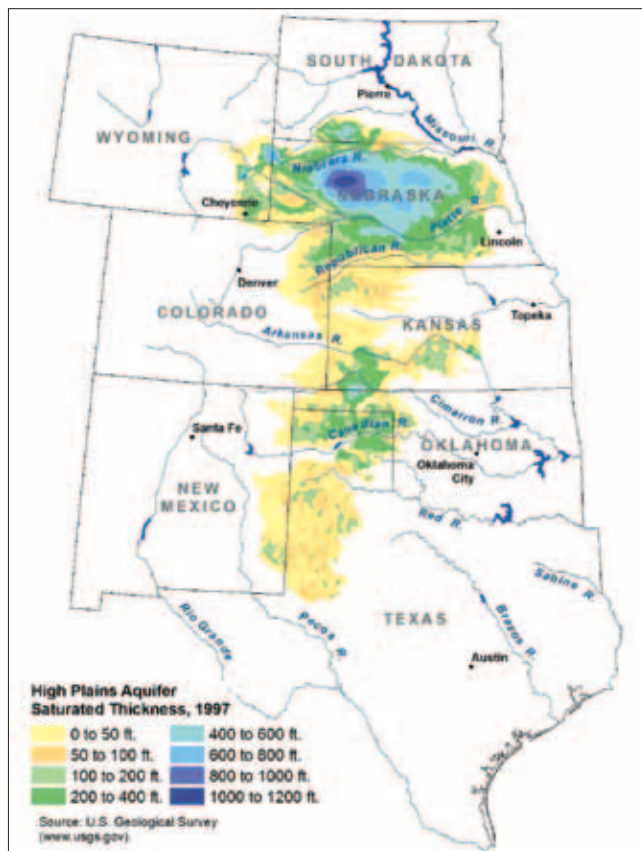
only partially built. As Lyndon LaRouche and Dr. Cooper recognized, a World Land-Bridge will ultimately link all of the Americas from North to South, making a major contribution to the United States.

NAWAPA

Now overlay NAWAPA, right over energy, rail, the Central Corridor, and the regional water development of the great Missouri River Basin, including tributaries. One can begin to see the outlines for the rich development of this entire “empty” western region of the U.S. One begins to grasp how such a vast upgrading of physical-economic development will impact and transform the beleaguered “bookends” of St. Paul/Minneapolis and Seattle/Portland.

What was done to create California is a relatively small case study for what can be done throughout the entire western half of the North American continent with the North American Water and Power Alliance (NAWAPA).⁷

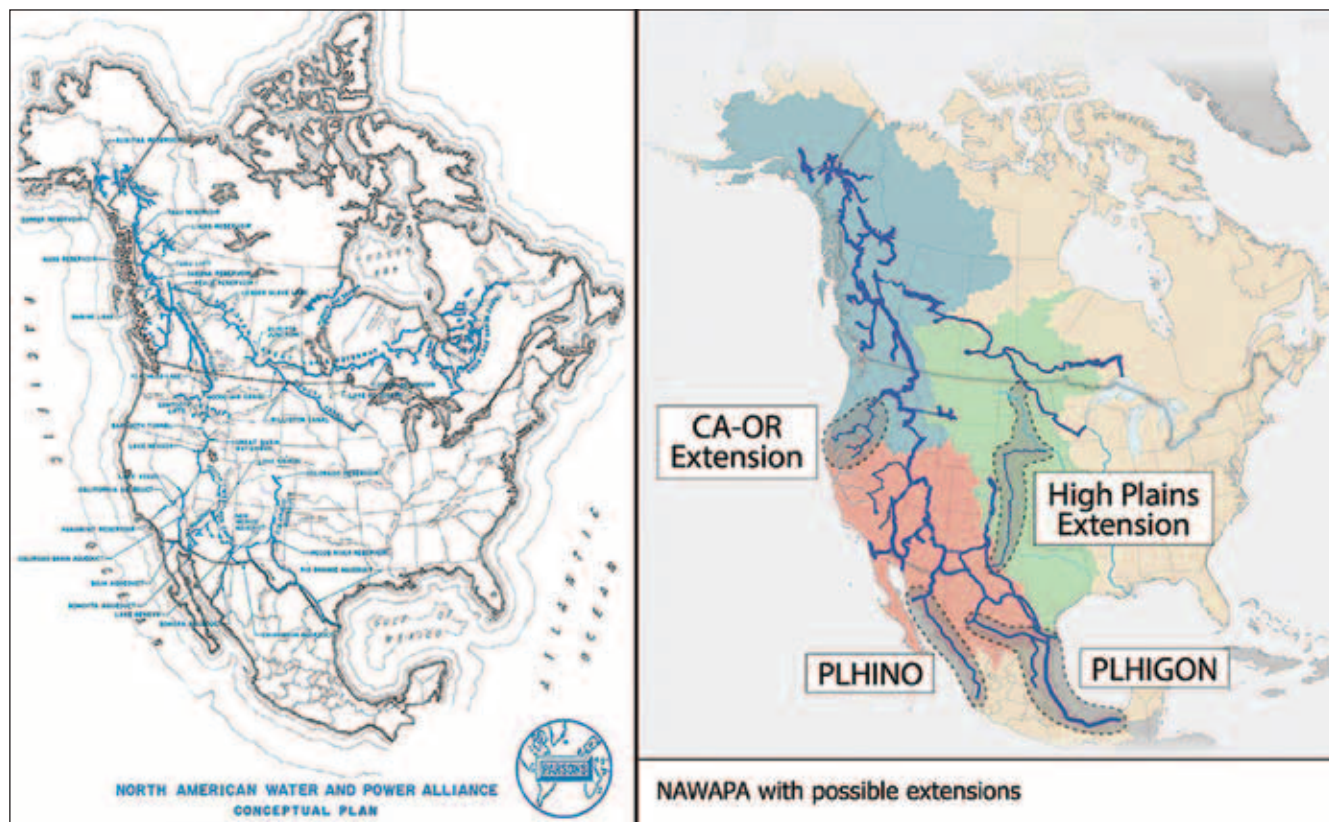
About 10 times larger than the California projects in terms of water delivered and land area affected, the original 1960s design of NAWAPA done by the Parsons Corporation would have diverted a fraction, in the



Mankind’s future water supply depends on creating new sources of freshwater, through large-scale, inter-basin water transfers, desalination, managing precipitation, and less dependence on subsurface aquifers such as the High Plains Aquifer.

6. See [here](#) and [here](#).

7. See the [article](#), “The Nuclear-Thermonuclear NAWAPA XXI” in *EIR* Vol. 40, No. 34, August 30, 2013, pp. 4-15.



At left, the original 1960s conceptual plan for the North American Water and Power Alliance (NAWAPA). Adding nuclear power for pumping, makes possible a number of extensions to the original plan.

range of 10-20 percent, of the massive freshwater runoff from the Northwest to the south as far as Mexico, and to the east as far as the Great Lakes. Over decades, Lyndon LaRouche and our movement have improved upon and campaigned for the implementation of an upgraded NAWAPA program, utilizing nuclear power, and featuring extensions to bring additional water to California, the Great Plains states, and Mexico.

With the use of nuclear power for pumping, additional extensions to NAWAPA are more feasible, including bringing water east, into the central region of the continent with the Great Plains Canal, feeding most of Nebraska, the western regions of Kansas, and down into Oklahoma, and Texas (where the Ogallala Aquifer has long been overdrawn). For more on this, see Benjamin Deniston's 2013 [article](#) in *EIR*.

Hydrologists have studied how to make the core NAWAPA plan coherent with the Missouri-Mississippi basins—to augment the flow in these rivers during drought and to divert the flow westward when the rivers are flooding, as has been a continuing problem.

As to management of the Water Cycle, beyond building these large-scale, inter-basin water transfer projects, the necessary future of mankind's water supply is the management of the water cycle in general, which depends on creating new sources of freshwater through desalination, and managing the precipitation of water in the atmosphere through ionization techniques. These are truly space-age endeavors, but they will utterly transform the harsh climate of the Plains region.

New Cities!

There are no big cities in the entire region. Billings, Montana, is the largest and has about 110,000 people. Bismarck (about 73,000) is North Dakota's capital and the largest city in the middle of that state.

Given the smaller population of the region's existing cities, and given their existing locations along rivers, and existing railways and highways, it might be wise to consider taking two or three of these "cities" and transforming them into New Cities, such as "science cities."

Modular nuclear reactors will be critical to such a city-building process, as they can “scale up” as requirements grow. The nuclear energy industry and its offshoots can also be an important high-wage and high-skill employer, as briefly discussed in the NAWAPA section, above.

This would have an appeal to the local city boosters and such a collaboration would be beneficial to all. As well, the complexities of laying the underground infrastructure and building of additional educational and cultural complexes, in and around these existing, core city centers, would be generally welcomed and relatively simple compared to a re-do of the “old” and big cities located on the east coast and on the Great Lakes. Much planning could be a matter of “adding onto,” and “surrounding” the existing inner city/town layouts, given their existing small dimensions. Hospitals can be added, research facilities and major schools and training centers. It is to be noted that most cities are located on plains and near water—or where water can be delivered.

Existing city cores would remain integrated as the central cultural, dining and shopping area,—the center of social life and upgraded over time. Industry would be added on the outskirts, and additional residential communities with their K-12 schools and amenities located in-between the city core and the industrial perimeter. This will likely produce a rapid doubling, tripling, or quadrupling of their populations over a period of a few decades. Throughout the region there are multiple Indian Reservations, and so there will be new aspects to economic development and city building here, and new

concepts brought to the table by the Native American Nations and communities.

Urban density is a very positive thing for cities and the world. This is particularly true for medium-sized cities, which are better at generating physical wealth while providing jobs, recreation, relationships, and good services to its citizens.

This is not to rule out totally new cities, but perhaps, starting with the small existing cities in the region would be a good way to get some practice! There are still many, many questions to be answered, but if we cannot answer them, how will we ever manage to colonize the Moon or Mars?

How do we knit—or re-knit—the entire Missouri Basin region together? Consider: today virtually the only “manufacturing” concentrations in the entire Great Plains region are slaughterhouse and meat processing facilities, from North Dakota down through north Texas, most of which is already technologically backward. By building up nuclear-powered energy capacity, the rail network, and water projects, we will call into being new manufacturing and create a 21st century advanced manufacturing sector,—to meet demand over decades to come.

Where will rail lines, including high-speed rail lines, be sited? Billings, Montana is the jumping-off point going west for traveling through the Rocky Mountains. The next major stop for a high-speed rail would be Spokane, Washington, about 500 miles away. From there, Seattle and Portland are but a hop and skip away. How about going east?



The Jan. 27, 1989 Jailing of Lyndon LaRouche Defined an Era, Which Now Must End

[Watch](#) The LaRouche Case video

[Watch](#) the LaRouche Memorial video

[Sign](#) the **Petition** to Exonerate LaRouche
at lpac.co/exonerate

AUGUST 23, 2002

Special Report: Science and Infrastructure

by Lyndon H. LaRouche, Jr.

Note from the editor: *Lyndon LaRouche wrote this report under the totally different circumstances of August 2002, under the presidency of George W. Bush (and at a time when LaRouche had already stepped forward as a candidate for the Democratic presidential nomination of 2004).*

But the reader who studies it taking those differences into account, will gain a rare understanding of physical economy and infrastructure which is no less true today than it was then, and is indispensable now to illuminate the economic policies needed for a second term of President Donald Trump.

The first part of the reprint of this 2002 article was published in EIR last week. We present here the second and concluding section of Mr. LaRouche's report first published on September 27, 2002 in EIR Vol.29 No.37 pp. 14-47.

2.0. Hard and Soft Infrastructure

All competent teaching and practice of economics for today's world conditions incorporates the concept of the *Noösphere* presented by Russia's Vladimir I. Vernadsky, as combined with two corrections borrowed from my own original, parallel contributions to the science of physical economy. This use of Vernadsky's work is crucial for defining global and national infrastructural policies for today's circumstances. I summa-

rize the relevance of this point.

The pivotal feature of Vernadsky's successive definitions of the *Biosphere* and *Noösphere*, is his work in founding the branch of physical science known as *biogeochemistry*. The first phase of his discoveries led to the definition of the *Biosphere*. The same method led subsequently to his definition of the *Noösphere*. The only two crucial shortcomings I find in those published achievements reported to me by relevant specialists, including translations of relevant writings by him, are that he did not live to complete his intended mastery of Riemannian physical geometry, and that his presented conception of the human intervention creating the *Noösphere*, does not include explicit recognition of those elements of Classical principles of artistic composition which provide society the ability, in the words of Shelley, to promote the power "of imparting and receiving profound and impassioned conceptions respecting man and nature."¹²

A very brief summary of relevant features of his development of the conception of the *Biosphere*, will probably be sufficient for the discussion of our present topic, the policy which must underlie a modern notion of basic economic infrastructure.

Since Kepler's successful discovery of gravitation and related matters, Kepler's discovery and proof of that principle has been the standard of reference for

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12. LaRouche, op. cit.

building a competent form of systemic mathematical physics, one based on experimental proofs of discovered universal physical principles.¹³ The discovery of a valid universal scientific principle, begins with evidence which stubbornly defies current methods of systemic interpretation of some aspects of sense-perception. The experimental validation of the hypothesis which overcomes that paradox, defines a working scientific principle. The suitably exhaustive further experimental work may, then, refine and define that as a *universal* physical principle, such as Kepler's definition of universal gravitation.

The work of Louis Pasteur and his followers presented geologist Vernadsky with crucial evidence of mathematical-physical differences of universal physical principle between the chemistries of living and non-living processes. Vernadsky, as a geologist, took into account the evidence of fossils provably products of the activity of living processes. These fossils included the Earth's oceans and atmosphere, and included the outer surface of the planet down to a considerable number of kilometers below sea-level. The resulting picture of the geological evolution of the planet, including its atmosphere, defined a *Biosphere*.

From the vantage-point of that same method, Vernadsky defined a higher state of existence, called the *Noösphere*. In the case of defining the Biosphere, his experimental method focussed upon physical effects *systemically* incongruent with physical chemistry's known classes of abiotic processes. In examining the impact of human activity on the Biosphere, he defined a universal physical principle, which he termed *noësis*, which corresponded to effects beyond the *systemic* capacity of all known living processes excepting human activity. *Noësis* signifies the class of mental activity which generates the discovery of those hypotheses which qualify experimentally as universal physical principles.

So, as the Biosphere presents us with life stubbornly taking over the outer regions of our planet, so the action of *noësis* exhibits itself as, in the longer run, superior to

merely living processes in general. Hence, the *Noösphere*.

The resulting image of our planet, is of an evolving entity, within the Solar System, and, thus, the universe. Three mutually distinct categories of action are constantly transforming this planet, interacting with one another, and who knows what else besides. These processes, the abiotic, the living, and the cognitive (or, *noëtic*), are distinct, but interacting, and, in that sense, also interdependent. Let us say that they are *multiply-connected* processes, or "*multiply-connected phase-spaces*."

Now, since the scale and impact of man's impact on what are called "natural resources," has become relatively large, especially when compared to the situation during earlier centuries, it were inevitable that mankind must now think of giving a helping hand to those planetary abiotic and living processes of our Biosphere. If we presume that we are going to continue, and accelerate, scientific progress in discovery and use of universal principles, we must develop ways in which to assist the Biosphere in producing those preconditions which expanding human life will require, if we are to maintain and also improve the average conditions of life for a growing human population throughout the planet. We must do things in the sense of making the deserts bloom, and must apply principles of public sanitation in a richer sense than during earlier generations.

In this vein, we must consider what has been termed "basic economic infrastructure" as the relatively "hard" form of basic economic infrastructure, as man-made improvements in the Biosphere. This includes nationwide and continental systems of transportation, regional systems of integrated generation of power, national and international systems of water management, extensive systems of land reclamation and maintenance, and the rational design and management of cities and the relationship of urban life to, and integration with countryside of field, mountains, and forests. These are matters which come under the special domain of government; private entrepreneurship may play an important, even indispensable helping role, but the responsibility and authority for the outcome lies primarily with government.

Now, to the matter of "soft infrastructure."

Classical Humanist Education

From the standpoint of even ordinary schoolbook physical science, the provable distinction of the human species from all other forms of life, is expressed by

13. Kepler's scientific method was derived, ultimately, from Plato's Socratic dialogues, but Kepler's immediate predecessors were, as he emphasized, the founder of modern experimental science, Nicholas of Cusa, and Cusa's followers Luca Pacioli and Leonardo da Vinci. It was the challenge of Kepler's work which prompted the work of Fermat, Pascal, Christiaan Huyghens, Leibniz, et al., through the completion of the foundations of mathematical physics by, chiefly, Gauss and Riemann.

comparing the potential relative population-density of the human species, with that of the higher apes. The human potential is expressed in the millennia-long span of an increase from a few millions, to present billions. This is an increase of a type which occurs in other species only through genetic “evolution.” For us, it is a potential for increased potential which occurs equally, and universally, among all branches of the human family; it occurs, for example, in the same degree, among children of what are falsely called “aboriginal” stocks of persons in Australia, as anywhere else.

This point defines the axiomatic quality of difference between a competent form of general education, known historically by such names as “Classical humanist education,” and the monstrously corrupt forms of education prevalent in U.S. practice and doctrine, including that of universities, today. The need for our return to the conception of a Classical mode of humanist education, corresponds to an indispensable element of the improved economic infrastructure which must be built into the U.S.A.’s public life today.

To make this point comprehensible, I must now summarize a crucial scientific argument I have made repeatedly in earlier locations, an argument which is axiomatic in all of my contributions, over five decades, to the development of the science of physical economy.

Famously, Plato emphasized that what human beings experience with their senses, as usually perceived, are merely shadows, as on the walls of a dimly fire-lit cave, as the Apostle Paul warns famously in **I Corinthians 13**. Our sense-apparatus is an integral part of our biology. The world acts upon that sense-apparatus; it is the reactions of those sense-organs, the *shadows* of the real universe, which are immediately conveyed to our consciousness. Plato’s Socratic dialogues, and **Laws**, taken as a whole, are a special quality of outgrowth of Classical Greek drama, a collection of spiritual exercises, by aid of which the human mind is aided to sort out the paradoxical relationship between the shadow-world of sense-certainty, and the real universe which those shadows imperfectly reflect.¹⁴

In modern physical science, the most important opponents of a competently scientific practice include the René Descartes whose misconceptions of space, time, and matter, degrade mathematical practice to the kinds of crudities which polluted the work of such otherwise

able mathematicians as the “ivory-tower” formalists Euler and Lagrange.

On that pivotal point: In my current choice of pedagogy, I emphasize five points of pedagogy as the elementary basis for a comprehension of the way in which the issue of appearance versus reality arises: a.) Kepler’s actual process of discovery of universal gravitation, as elaborated in his 1609 **New Astronomy**; b.) the comparison of Classical Greek treatment of such problems as the doubling of the square and cube, with Gauss’s 1799 publication of his discovery of the fundamental theorem of algebra, in which he exposes the relevant axiomatic follies of d’Alembert, Euler, and Lagrange; c.) the Leibniz-Bernouilli proof of the coordinate principles of the infinitesimal calculus and universal least action, in their exploration of the implications of the catenary; d.) the emergence of Riemann’s 1854 definition of physical geometry on the basis of Gauss’s earlier development of the notion of general principles of curvature, a notion of curvature emergent from Gauss’s 1799 report on the fundamental theorem as point of departure.

The typical fallacy in contemporary discussion of the paradoxical character of sense-certainty, is most efficiently shown by indicating the intrinsic incompetence of efforts to derive a physics from either a Cartesian view of geometry, or the even cruder basis of a counting arithmetic. Since the Classical Greece of Archytas and Plato, the essential progress of scientific thinking has been premised on defining and solving those ontological paradoxes which arise in the misguided effort to degrade physical science to the status of a mere hod-carrier for an “ivory tower” mathematics of the type presented by Descartes.

Back to Kepler.

During the Sixteenth Century, doctrines on the subject of astronomy had reverted from the Solar hypothesis of both Aristarchus and founder of modern science Cardinal Nicholas of Cusa, to the medieval dark-age’s mysticism of Aristotle, as typified by common features of the work of the ancient Claudius Ptolemy, and also Copernicus and Tycho Brahe. All three were in accord with the gnostic, ivory-tower dogma of Aristotle, insisting that man could not know the efficient causes of action, but must accept the appearances judged in terms of presumably unchanging principles expressed by what was assumed to be “perfect” uniform motion.

Kepler’s more precise calculations showed not only that the orbit of Mars was elliptical, but that motion

14. Plato’s method is reflected in the work of Leibniz, from whose writings I was originally educated in these matters.

along the orbital pathway was never uniform. This signified what Kepler defined as a controlling “intention,” embedded in the universe, evidence which discredited Aristotle’s dogma absolutely. Thus, Kepler defined that efficient intention as a principle operating on the universe from outside Aristotle’s dogma. This intention was identified as a universal principle whose effect is observed as gravitation.

One can not perceive gravitation as an object; yet it is an efficiently acting universal physical principle. Gravitation is *real*, and perceived evidence of its effect is the shadow of reality. With Riemann’s announcement at the outset of his 1854 habilitation dissertation, all ivory-tower conceptions of space, time, and matter, were, speaking figuratively, thrown into the wastebasket, as unwanted relics of a superstition-ridden past. Among literate and honest scientific opinion, only experimentally proven, universal physical principles could be accepted as the geometric “dimensions” of a universal physical geometry.

This was not entirely a new discovery. Already, during the interval from Archytas and Plato, through the work of Eratosthenes and Archimedes, Plato and his associates had recognized that the physical differences among the notions of line, surface, and solid, were not consistent with a naive conception of linearly extended space and time; the difference among these species of physical existence represented the action of specific *powers*, as Plato emphasized in his **Theaetetus** dialogue.

This notion of powers, is that employed by Leibniz for defining a science of physical economy; it is the use of the notion of powers employed by Gauss in defining the fundamental theorem of algebra, the same notion Gauss employed in number theory, in defining the significance of residues. The appearance of the falsely named “imaginary numbers” in number theory and geometry, is a reflection of the efficient existence of such physical powers for defining all mathematics suited for the practical requirements of physical science.¹⁵

Science does proceed from a critical attitude toward pre-existing notions of the organization of action in physical space-time. Thus, it does proceed, in fact, from describing, from an historical perspective, a naive con-

ception of space, time, and matter, a conception more or less consistent with sense-certainty. It is by uncovering the fallacies of sense-certainty, by discovering the principles required by encounter with ontological paradoxes, that mankind overcomes a childish faith in the shadow world of sense-certainty, to discover those universal principles, by means of which we act to increase man’s power in and over the real universe.

Examples of the pathway of scientific progress, include: the ancient discovery of the doubling of the cube, like Gauss’s similar discovery of the fundamental theorem of algebra, and Leibniz’s and Bernoulli’s kindred discovery of the meaning of that curvature—the catenary—known as expressing both the principle of the infinitesimal calculus and universal least action. The catenary, so understood, is a specifically physical-geometric existence, and is the most typical expression of the physical reality of the complex domain’s universality.

The term *knowledge* were, therefore, rightly restricted to the cumulative progress away from the merely learned crudities of sense-certainty, through successive discoveries of universal physical principles. These discoveries have the form of that principle of *hypothesis* typical of Plato’s Socratic dialogues. Thus, as illustrated by the successes of nuclear microphysics, we become able to act efficiently upon the unseeable reality beyond the reach of the senses; we become able to manipulate the unseen reality which controls the shadows.

So, experimentally valid physical science assumes the form of a special quality of latticework. The unfolding of that lattice of increasing knowledge of reality, describes the freeing of mankind from the darkness of sense-certainty. Discovery by discovery, as typified by ancient Greek science’s still durable discoveries, the light of reason guides our hands into the real universe, beyond the shadows of perception. Man’s power in the universe increases. The study of the cumulative benefits of this process of discovery of such knowledge, a process leading upward and away from simple sense-certainty’s systems, is called the *epistemology* of what is recognized today as the subject-matter of physical science.

Vernadsky’s distinction among the powers of the respectively abiotic, living, and cognitive domains, is an example of the way in which physical science has, in fact, applied the principles of epistemology to itself. He applies the Classical method of experimental hypothesis and proof of principle, to the subject of physical science in general, including the generality of mankind’s

15. Hence, Riemannian geometry is not a non-Euclidean geometry, such as those of Lobatchevsky and Bolyai, but as Gauss’s teacher Abraham Kästner had argued, an anti-Euclidean geometry, which scrapped the axiomatic ontological assumptions of Euclid respecting space, and replaced these with nothing but a physical geometry of physical-space-time.

process of discovery of universal physical principles.

However, that experience of the progress of science, from the Classical Greek of Archytas, Plato, et al., through modern times, demonstrates the existence of a still higher principle than any of those I have referenced here thus far. No lower form of life is capable of effecting the progress from an ontological paradox, to an hypothesis, to the proof of that hypothesis as a principle; this can be accomplished only by the sovereign cognitive powers of the individual human mind. This is the principle, the power, which distinguishes humanity absolutely from all lower forms of life.

The proper function of education, is to afford the developing young individual the means to become assured of his or her command of that higher principle which sets the human being above all other species, the principle of hypothesis as I have just described it. This is accomplished by creating the circumstances, including education, in which the developing individual reenacts important discoveries originally made in the past. This includes physical principles of the type I have just illustrated, above. It also includes principles which belong to the category of principles of Classical artistic composition.

Classical Artistic Composition

As indicated above, the two crucial omissions in Vernadsky's definition of the Noösphere, were the absence of reflection on that anti-Euclidean quality characteristic of all competent representation of modern European science since the work of Leibniz, Gauss, Riemann, et al.; and lack of attention to those social processes, on which society depends for the transmission of valid discoveries of principle as actual knowledge. I mean knowledge, rather than forms of classroom learning associated with rehearsals for the monkey-see-monkey-do performances known as responding to computer-scored multiple-choice questionnaires.¹⁶

The history of the transmission of valid discoveries of universal physical principle, provides a relatively obvious, more readily understood approach to the principled feature of social relations which must be taken into account. The significance of the principles of artistic composition in both plastic and non-plastic art-forms is rarely recognized today. On the latter account,

16. Compare education keyed to multiple-choice questionnaires with the educational practices described in the "Voyage to Laputa," from Jonathan Swift's *Gulliver's Travels*.

the reader might reference C.P. Snow's *Two Cultures*.¹⁷ The relevant issue of education is: Is there a principle of *truthfulness* in Classical artistic composition, as experimental method provides a standard of truthfulness in assessment of proposed universal physical principles of science? Classical humanist education is premised on the evidence that such a principle of truthfulness applies.¹⁸ Actually, the same principle of truthfulness applies to principles of Classical artistic composition, as to the history of knowledge in physical science, as I shall indicate summarily here.

For such reasons, the study of the principles of Classical humanist education properly begins with focus on the way in which valid original discoveries of universal physical principles are to become experiences replicated by present-day students and others. The picture is then broadened, to show the same "mechanisms" at work in transmission of ideas by methods of Classical artistic composition. The picture is completed, by indicating the relevance of Classical artistic composition, as for scientific knowledge, for the understanding of history, and for the practice of statecraft by leaders and others alike.

Like all physical reality, the act of discovering a universal physical principle, is not an object of sensory perception. Like the discovery of any physical principle, we are able to prove the presence of such an act of discovery by the efficiency of that action. Thus, the central problem of communicating what are actually ideas, rather than merely opinions, is that such acts of cognition (noësis) are products of a perfectly sovereign process within an individual mind.

As Plato's Socratic dialogues illustrate this fact, such an act of discovery has three principled phases:

1. The recognition of what is called an ontological

17. C.P. Snow, *Two Cultures and the Scientific Revolution*, Cambridge University Press, London and New York. Reprint 1993.

18. The most extreme opponents of a principle of truthfulness include the radical positivists, including the devotees of Bertrand Russell and the existentialists as typified by Theodor Adorno, Hannah Arendt, et al., in *The Authoritarian Personality*, Harper, New York, New York, 1950. Notably, Arendt traced her defense of the position, that there is no truth, but only opinion, from the reading of Immanuel Kant's *Critiques* by fellow-existentialist Karl Jaspers. She reads Kant's intent correctly. The neo-Aristotelean reformers of empiricism, such as Kant, the ideologue of the fascist state G.W.F. Hegel, and Hegel's crony Savigny, used a neo-Aristotelean denial of any comprehensive principle of knowable truth to, so to speak, bring their burglar friends in to loot the house. She makes one think of the Pokémon addict who responded to his mother's detecting his hand in the cookie jar by killing her with an axe. Before the court, the addict explained to the judge: "It was her fault. She peeked!"

paradox, a paradox which threatens one's confidence in previously accepted ways of thinking; 2. An hypothesis, which, if proven true, might overcome that paradox; and 3. A proof-of-principle test, such as an astrophysical observation or a crafted experiment, which disproves, or proves the hypothesis.

If an individual who believes he has discovered a universal principle wishes to communicate that discovery to another person, he must rely on the immediate fact that he can communicate two elements of that three-step discovery to a qualified second person. These two evidences are the paradox and the experimental or equivalent evidence. This, of course, is exactly what should be the characteristic teacher-student relationship. Then, if the posing of the paradox by the first person produces a kindred hypothesis in the second, and if the empirical test bears that out, the generation of the hypothesis by the first has been replicated in the second. If the empirical tests do not substantiate the hypothesis, new tests must be made, and, possibly, more appropriate hypotheses.

That is the only way a valid hypothesis can be replicated in the mind of another. It can not be seen with the senses; its generation must be replicated. That may seem to be unfair; but, after all, to see the unseeable beyond the shadow-world of sense-perception, requires the help of an unseeable agency. That is the continuing importance of Plato's Socratic dialogues. The method of those dialogues is needed, to educate the cognitive powers specific to human individuals, which means to make the individual conscious of such activity within his or her own, sovereign mental processes.

A creative personality is one who has developed the ability to conceptualize his or her own cognitive processes as objects of intentional thought. The practice of epistemology is an example of such looking at the cognitive generation of hypothesis as an object of conscious attention. The development of such a capacity in the student, is the principal continuing objective of a Classical humanist curriculum. It is that self-development within the student, which fosters the moral development of the child and adolescent. That is the Classical humanist principle of education, if only in first approximation.

Look first at plastic, and then non-plastic art-forms, as I have now described an epistemological overview of physical science.

Classical sculpture. Classical Greece freed itself from the archaic practice of tombstone art, to produce

off-balance figures with such refinement that the mind of the viewer saw not a static figure, but figures frozen in an infinitesimal instant of motion. This was applied not only to images of living figures, but to designs of products, architectures, even cities. I illustrate the importance of this Classical form of sculpture by an example from my personal experience.

During the middle to late 1980s, I was concerned with saving the famous cupola of the Cathedral of Florence from the effects of some ill-advised modifications brought about by a local government. I became involved with the work of an outstanding specialist in the matter. The crucial issue to be addressed was: what was Brunelleschi's physical principle of design of the construction of that cupola? I looked, and looked. It struck me: The hanging-chain principle, the catenary! Suddenly, it was all obvious; I looked at images of the cupola, and had the occasion to observe it again directly. I could see it all so clearly! My relevant scientist friend confirmed my discovery.

Brunelleschi had used the hanging-chain principle, explicitly, as his method of constructing the cupola. This was more than two and a half centuries before Leibniz and Bernoulli had settled the role of the catenary in defining both the proof of the infinitesimal principle of the calculus and the principle of universal least action. How was this possible? Look to the effect of such developments as the revival of Classical Greek culture, at the beginning of the Fifteenth Century, at Padua prior to the Aristotelean reaction there.

A Classical humanist education produces an enriched state of the individual human mind, by means of which the principles of creative discovery common to physical science and Classical artistic composition, are reflected in a genius such as Brunelleschi, Nicholas of Cusa, and Leonardo da Vinci. Leibniz's unrivalled genius reflects the post-1648 Classical renaissance which followed the awful "little dark age" of religious warfare, just as the developments around Padua at the beginning of the Fifteenth Century produced that florescence of genius largely crushed during the subsequent 1511-1648 little dark age.

The case of Classical sculpture and architecture shows the relatively obvious connection between Classical forms of plastic artistic composition and genius expressed in physical science. What of the non-plastic arts: Classical drama, Classical poetry, Classical musical composition—all in opposition to the Romantic and modernist?

In all poetry and prose deserving of those names, the function performed by paradoxes in mathematical physics, are accomplished by irony, including metaphor, and conjunction of moods. In spoken poetry and prose, meter, voice-registration, voice-coloration, and rubato effects, blended with gestures, transform a mere flow of words from recitation of mere text, into the prompting of intended idea in the mind of the hearer. In written prose and poetry, the spoken intent is conveyed by marks of punctuation, such as commas, which warn the reader of an intended prosodic change of spoken utterance, to be heard in the mind of the reader.

In music, J.S. Bach's development of a system of well-tempered counterpoint, employs the natural prosody and registration of the *bel canto*-trained singing voice, to define ideas and the interaction among ideas, with an ability far beyond even customary Classical poetry. Classical instrumental music is performed by instruments singing *bel canto* under the control of the capable performing musician.

Classical drama is never arbitrary fiction, but is always a medium for use of paradox to bring into focus some principle of actual history. As for Classical Greece, the dramas of important writers, such as Shakespeare or Schiller, were never fiction, but were historical studies of principles of statecraft referenced to actually known history, or to legends, such as the Homeric, which expressed a reflection on some period of history in a way relevant to current problems of statecraft.

As Shakespeare's Chorus steps forward to describe the play, **Henry V**, about to begin, he says:

For 'tis your thoughts that now must deck
our kings,
Carry them here and there; jumping o'er times,
Turning the accomplishment of many years
Into an hour-glass....

In successful Classical drama, the matters on stage fade, like the smile of the fabled Cheshire Cat, and the parts being performed on stage give way to the reality being enacted on the stage of your imagination. And if the play were well performed, you are astonished at the close, to see the actors standing still on that other stage before your eyes. If you are wise, and the play were well composed by author and the company, what you have experienced in your imagination, is not a fiction, but a true insight. The fiction is the illusion which ap-

pears on stage when the play has ended; those actors there, are not now what they seem to be. Such, are matters of cognitive substance and sensory shadow.

All Classical art has the form of play: play in the double sense, of playing and drama. Its function, as play, is to evoke a study of matters of principle, as paradox is used for the teaching and progress of mathematical physics. Discovery of principle, is intense work, as adequate performance of a musical composition is. But it is always dependent upon a spirit of playfulness, and richly exciting to the committed participant. It is always, in that specific sense, *fun*. A person who is not playful in that sense of the term, is going cognitively dead, as too many university graduates do, about the time they pass through the unhappinesses of orals, written examinations, and securing their employment in their chosen career.¹⁹ A man who considers himself already perfected, is already cognitively dead.

The physical progress of humanity is expressed in the form of accumulated discoveries of universal physical principles. The comprehension of history is accessed through science's partnership with progress of discovering and applying the principles of Classical artistic composition to the understanding of the passion on which society's cooperation in use of science depends.

Health-Care as Infrastructure

The fraudulent argument, of Rachel Carson and others, for banning DDT, led to the present situation in which West Nile Virus threatens the U.S. population today. Sanitation and health-care are inseparable partners in the defense of human life. If we do not restore DDT to use now, we as a people, and its government, are morally insane. The overriding authority of the Preamble of the Federal Constitution demands a return to the governmental policies of sanitation and health-care of the 1960s, such as the post-war Hill-Burton law. It demands a return of the legal authority for diagnosis, prescription, and treatment to the medical professional, now. The law of sanitation must be to contribute to preventing the spread of the sickness, and of health-care, to allow the physician to treat the patient.

The policies expressed by National Security Advisor Henry A. Kissinger's mass-murderous 1974 Na-

19. Cf. Dr. Lawrence S. Kubie, **The Neurotic Distortion of the Creative Process**, (University of Kansas Press, Lawrence, Kansas, 1958); and "The Fostering of Scientific Creative Productivity," **Daedalus**, Vol. 91, No. 2, Spring 1962.

tional Security Study Memorandum 200 (NSSM-200), and National Security Advisor Zbigniew Brzezinski's kindred, 1981 *Global Futures* and *Global 2000* policies, must be reversed, on both the grounds of the Preamble, and according to the implied obligations of the post-war Nuremberg Code. Human beings are not human cattle, to be herded and culled at the pleasure of the self-anointed "shareholder" interest.

At about the time Kissinger was issuing NSSM-200, my associates were presenting a research report on the calculable consequences of continuing the global trends resulting from the policies which utopian plotters Kissinger, George Shultz, and Paul Volcker set into motion, as President Nixon's ruinous monetary policy of August 15, 1971.²⁰ In our own report, which was the result of a study-project which I had set into motion during the spring of 1973, we pointed to the likelihood, that if then-current U.S. policy-trends of the 1971-1974 interval were continued, we would witness a massive, early- to middle-1980s, epidemic eruption of then still relatively dormant pests and diseases in areas such as the Sahel region of Africa. During the early 1980s, it happened, as our 1973-1974 work had forecast.

Today, we must not overlook the fact that the evolution of the HMO (Health Maintenance Organization)-dominated system has been significantly shaped by the intent to cull the American "human herd," by means akin to Adolf Hitler's elimination of lives deemed by him "not worthy to be lived." Like the NSSM-200's intent to promote genocide in places such as Africa, we have the promotion of euthanasia in the U.S.A., as in the Netherlands and Belgium. "No code" is a related part of this. The use of "malpractice" suits, creating the pretext for insurance companies' driving physicians, financially, either into restricted practice, or out of the profession, has been part of this. Current trends toward "one standard disease, one standard treatment—and no more!" is part of the process of accelerating mortality rates. Pricing pharmaceuticals out of the range of ever larger portions of our senior citizens, and of others, is part of this. The creation of the pre-conditions for widespread food shortages, is part of this.

Now, under the impact of the floating-exchange-rate monetary system, with legislation such as the predatory

U.S. HMO law, with the rampage of deregulation unleashed under National Security Advisor Brzezinski, by Garn-St. Germain—implemented by the Keating Five—by Kemp-Roth, and by the financial-derivatives bubble, the destruction of those safeguards of sanitation and health-care has already taken on the character of a more or less global mass-murderous effect. The legendary Four Horsemen of the Apocalypse must be prancing triumphantly, when they see the continuing folly of most of our governments and their people.

The central feature model for a national health-care system, is, like the system intended by the Hill-Burton law, the application of the system required for support of a U.S. military at war. Under Hill-Burton, the unit was the county. The private and other physicians were rallied around a set of private, voluntary, university, and public hospitals, which represented what was estimated as an adequate bed-capacity of various classes, representing hospitals and auxiliary facilities for both expected and, to a significant degree, exceptional situations. This array of capabilities was buttressed by the functions of the Corp of Engineers, the Public Health Service, and the reserve which could be drawn from the military medical institutions.

To the degree this development progressed in the respective states and counties, and to the degree in-time access to emergency hospital facilities was built into the public highway and transport systems, it worked; whereas HMO has been increasingly a failure. HMO law is not merely an inevitable failure, now becoming a national catastrophe; it is a predatory medical malpractice performed by shareholder value.

We must reverse the presently continuing, disastrous course.

Among the principal changes to be made, we must end the worsening trend toward basing the financial system of health-care on that usurious illogic, of using case-by-case accounting as an instrument of accountants' financial control of the medical practice, respecting the functions of diagnosis and care for the individual patient. It is ultimately as injurious to the U.S. national interest, to regulate the delivery of medical service on a patient-case by patient-case basis, as it would be to provide public sanitation for the sole benefit of one residence, but not the adjoining ones. My neighbor's disease is a disease of our neighborhood, or like epidemic contagious disease, or pollution, a disease of the nation as a whole. Health-care for a society is a matter of national-security interest.

20. *New Solidarity*, January 9 and 16, 1974, "Rockefeller's Ecological Holocaust."

The delivery of health-care by the medical profession is “entrepreneurial” in respect to its most essential characteristic: the application of the developed creative mental powers of the individual professional; public-health policy is a matter of the interdependency of the universal and particular role of the professional. *The provision of available health-care is universal; the professional care for the patient, is a privileged action by the relevant individual professional’s direct relationship to the patient.* The arrangement under which quacks, guised as financial executives or accountants, engage in the malpractice of medicine, must be ended, and banned from future recurrence.

The leading edge of the process of rebuilding our national health-care system, will be the emphasis of public effort, by the Federal and state governments, on buttressing existing full-service general hospitals, and reestablishing them where closures of essential such institutions have occurred. Full-service general hospitals which function as teaching institutions, are crucial. Such an emphasis on general hospitals, and enhancement of their relations with the related research functions of universities, will provide the technological lever of reconstruction of the nation’s health-care potential as a whole.

On the financing of health-care, we must return to the pre-HMO system. Health-care as a whole, is a bulk-purchase, not a retail sales outlet. The forecast payments from private patients, and from those under insurance or related programs, must be supplemented by the combination of contributions to hospital budget-requirements, and also capital improvements, by fundraising, with contributions from agencies of government as that last-resort amount which enables the institution to meet the requirements of relatively indigent patients.

3.0. A National Infrastructure Policy

Today, under the implied reading of the U.S. Constitution by Treasury Secretary Alexander Hamilton, government-directed building and maintenance of basic national infrastructure, should represent approximately half the economic throughput of the U.S. national economy. To reestablish a healthy national economy, we must understand and accept the functional basis which

defines that relationship between basic economic infrastructure, as primarily the economic function of government, and the particular role of individual, private economic, or related initiative.

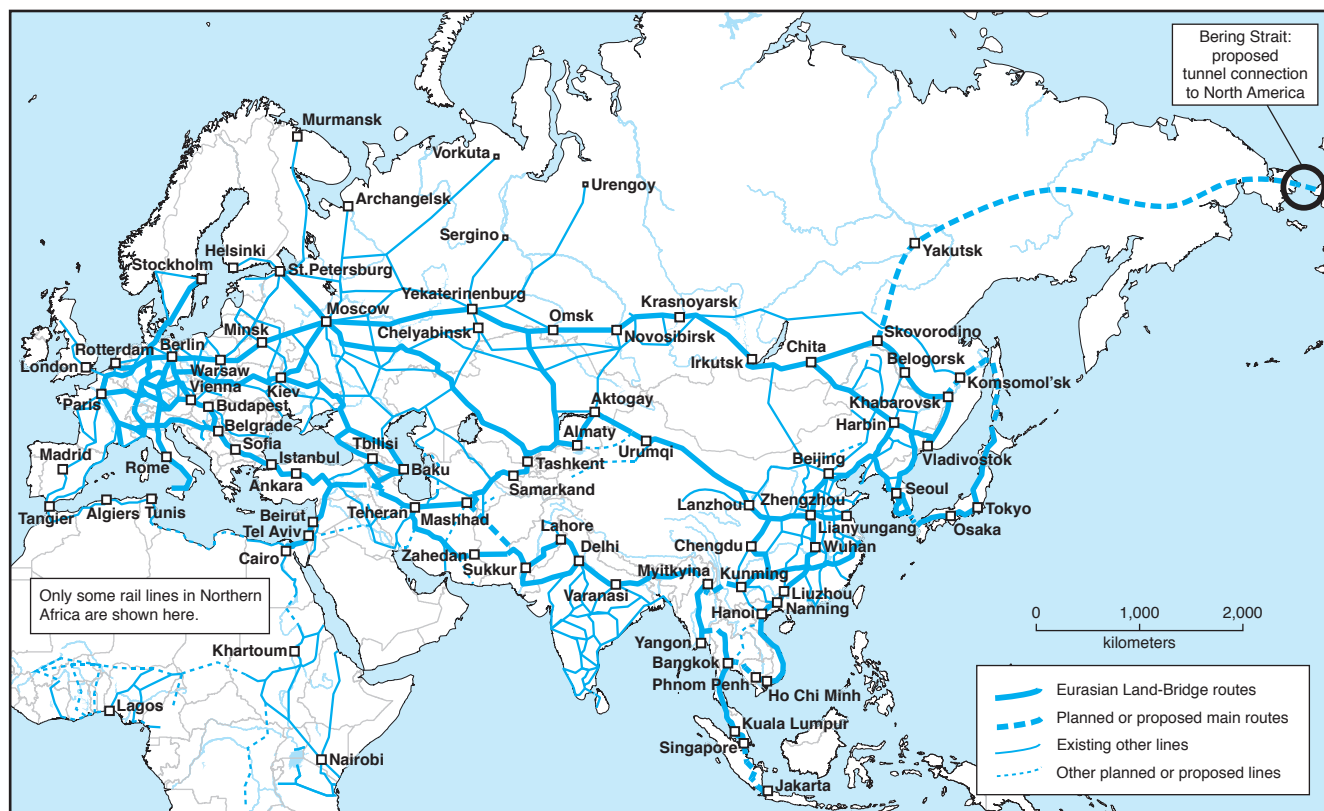
Admittedly, today, to achieve and maintain such goals, we must reverse the past three-decades shift in composition of the U.S. labor-force, to emphasize an increase in the ration of employment in technologically progressive physical output, a shrinking of unemployment, and a curtailing of dubious employment in such make-work activities as unskilled personal services and redundant aggregates of sales employment. This change in composition of employment of the labor-force, must be accomplished through increasing emphasis on increased capital investment in production of physical goods, per capita of the total labor-force. That means increase of physical capital, as distinguished from merely financial capital. To rebuild production, we must, like President Franklin Roosevelt, lay the foundation for that, by a relatively massive concentration on rebuilding basic economic infrastructure. We must build our way out of the current bind, in this twofold manner.

The essence of healthy politics, is the role of the sovereign initiative by the individual personality. As such among our founders as Cotton Mather and Benjamin Franklin emphasized, the essential basis for a healthy republic, is the shared commitment among sovereign individual personalities of *the intention to do good*. To this end, moral individuals create and shape the government of their republic, and entrust to that government the authority and duty to make such laws as are needed to foster cooperative intentions, or to conduct such necessary operations as are beyond the competent authority and scope of private individual economic action. This authority and obligation require us to conduct common and related action to secure the sovereignty of the republic’s powers to promote the common good, and ensure those powers, commitments, and benefits to our posterity.

Individual freedom does not tolerate anarchy, nor anarchy individual freedom. As our Solar System, like the movement of our planet, is governed by those *intentions* defined as universal physical laws, the enduring freedom of the individual, requires that our free choices be governed by adoption of and submission to an appropriate choice of orbital trajectory for our society, as a whole. If we err, we shall correct our error. To this

FIGURE 1

The Northern Rotterdam-Seoul-Tokyo Land-Bridge Corridor



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end, a republic must regulate the economy as a whole, to protect it from the follies of some or more of its own citizens, as from foreign errors which might spoil our national intention.

In addition to those protectionist rules set forth by leading American patriots, such as Benjamin Franklin, Hamilton, Monroe, the American Whigs, Friedrich List, and Franklin Roosevelt, they showed that government must change the environment in ways which enable the common action of individual producers, to increase the productive powers of labor of the republic as a whole.

The primary responsibility of government for basic economic infrastructure, is among the principal vehicles to be used by government for its functions of protectionist and regulatory measures in shaping the direction of the U.S. economy. In the state of affairs associated with today's combined national and world crisis, concern for our nation's own infrastructure must now also figure, to a greater degree than ever before, in our nation's long-range foreign-policy.

U.S. Global Infrastructure Policy Today

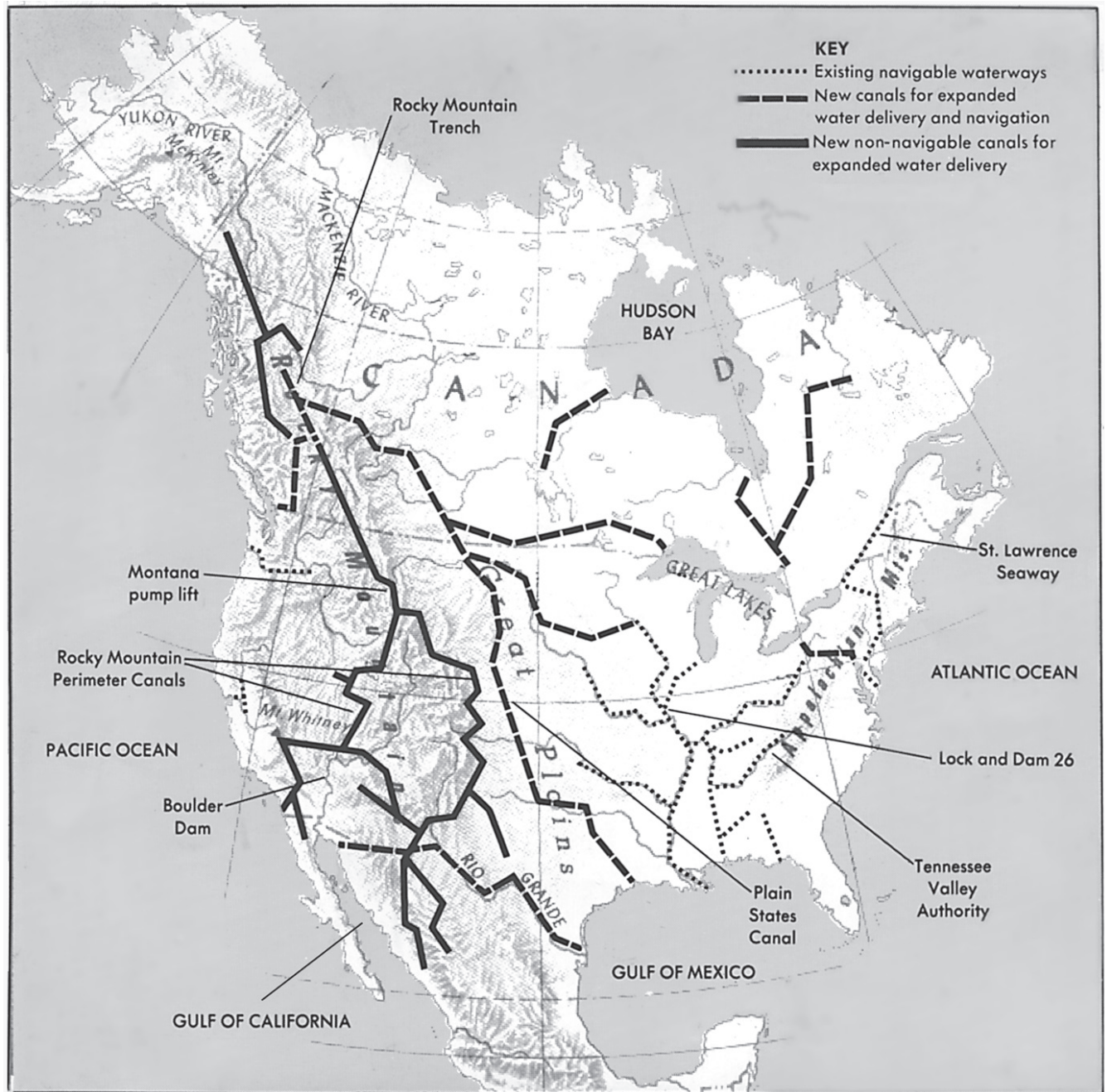
The U.S. system of infrastructure must be assessed as dovetailing with a now emerging global system of multi-continental economic-development corridors.

The spines of these corridors are defined by a combination of continental systems of blended friction-rail and magnetic-levitation transport, and water-corridors used for combined functions of extended inland waterways for transport, and for land-management—as for agriculture and human consumption of water. These corridors parallel the transport-lines with large-scale systems for generation and distribution of power and, often, distribution of water through pipelines. The corridors, which may be in the order of fifty to a hundred kilometers in cross-section, will incorporate presently existing or new urban centers, which will be linked to secondary urban centers within the same beltway.

In the case of one of these corridor-networks, the Eurasian Land-Bridge linking Pusan and Japan to Rotterdam (**Figure 1**), the included mission of these corridors, is to transform corridors running through large

FIGURE 2

The NAWAPA Plan for Bringing Additional Fresh Water to the United States, Canada, and Mexico



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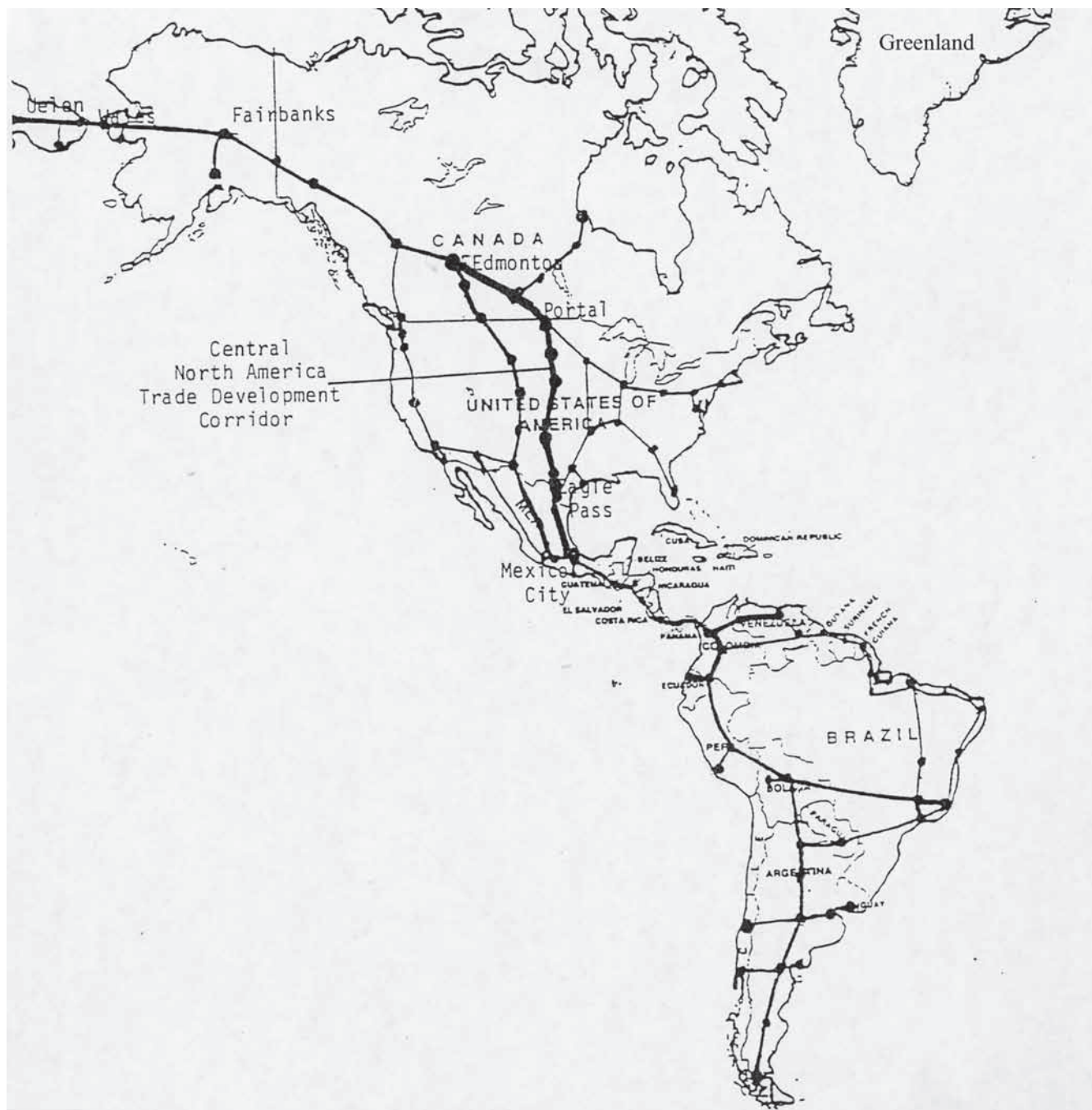
regions of Central and North Asia, into regions of development through which efficient access to the development of mineral and other resources becomes economically feasible. Thus, the transport of technology, from “fountains” of technological progress throughout Eurasia, to regions of Asia which have presently a large deficit in such capacity, defines the principal lines of

future world trade throughout the interior of Eurasia as a whole.

In North America, the need for a nationwide water-management program, such as an expanded North American Power and Water Alliance (NAWAPA), implies a unified rail-water grid-system reaching, through cooperation among sovereign states, into Mexico and

FIGURE 3

Proposed Inter-American Railroad Line



Source: Hal B.H. Cooper, Jr., Cooper Consulting Co., Kirkland, Washington.

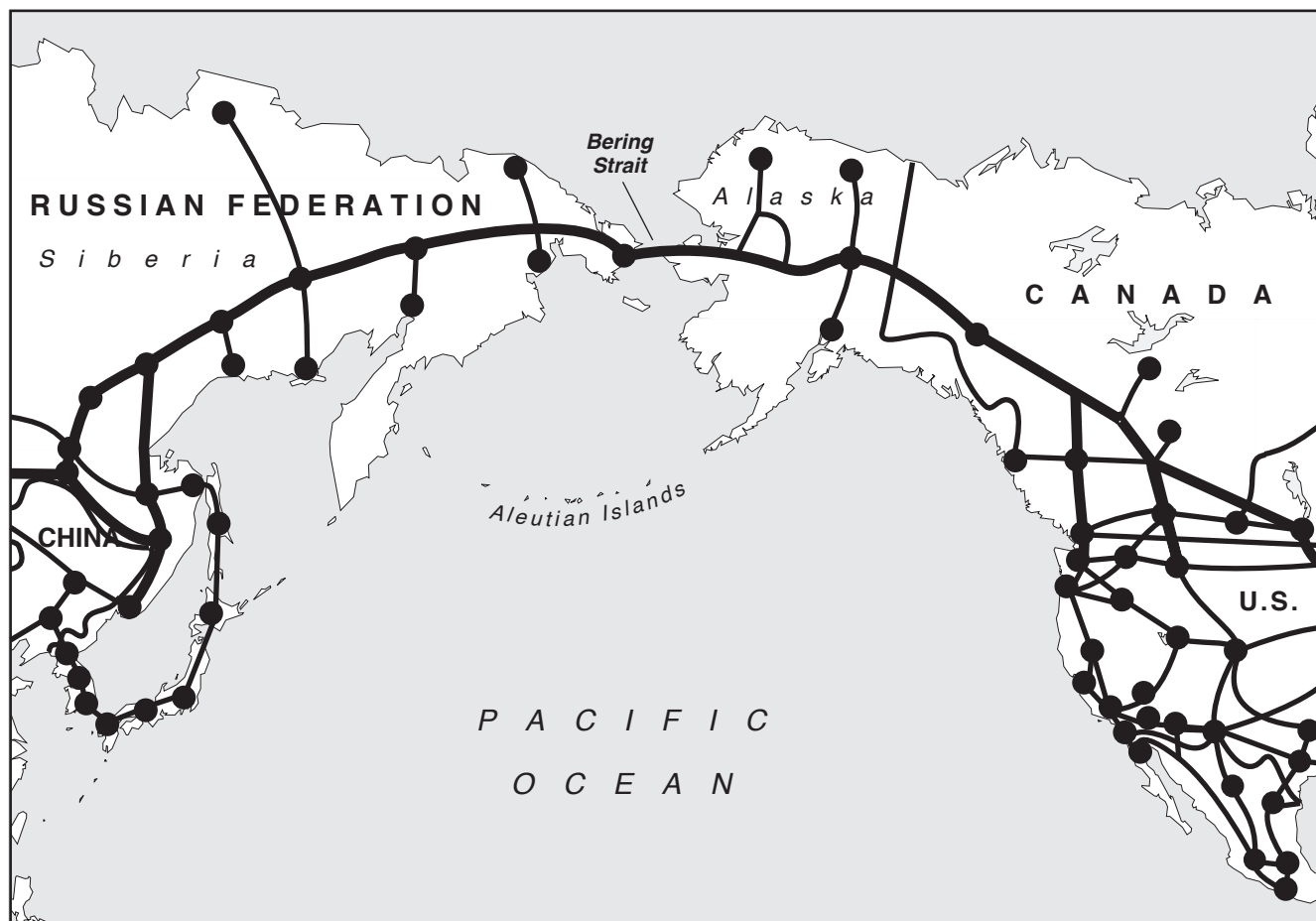
Canada (see **Figures 2 and 3**). Domestic infrastructure policy and related elements of foreign policy must now be seen as of greater importance to us than past practices imply.

The Eurasian Land-Bridge system is to be linked

with systems of the Americas through a rail/maglev link across the region of the Bering Strait (**Figure 4**).

The North American rail-water grid is to be extended through Central and South America (**Figure 5**). Within South America, the combination of wide-scale

FIGURE 4

Bering Strait Tunnel Connection for Rail Corridors

Source: Hal B.H. Cooper, Jr., Cooper Consulting Co.

rail/maglev and water management systems, have an outstanding included importance, in doing for inland South America what the Eurasian Land-Bridge makes possible for Central and North Asia.

The Southernmost tier of the Eurasian Land-Bridge system enters Africa at Egypt, through a great railway bridge soaring above, and spanning the Suez Canal (**Figure 6**).

Within such a global grid of development corridors, the nations enter into a new phase of history, in which cooperation in effectively managing the Biosphere becomes as feasible as it is indispensable.

Our Space Program

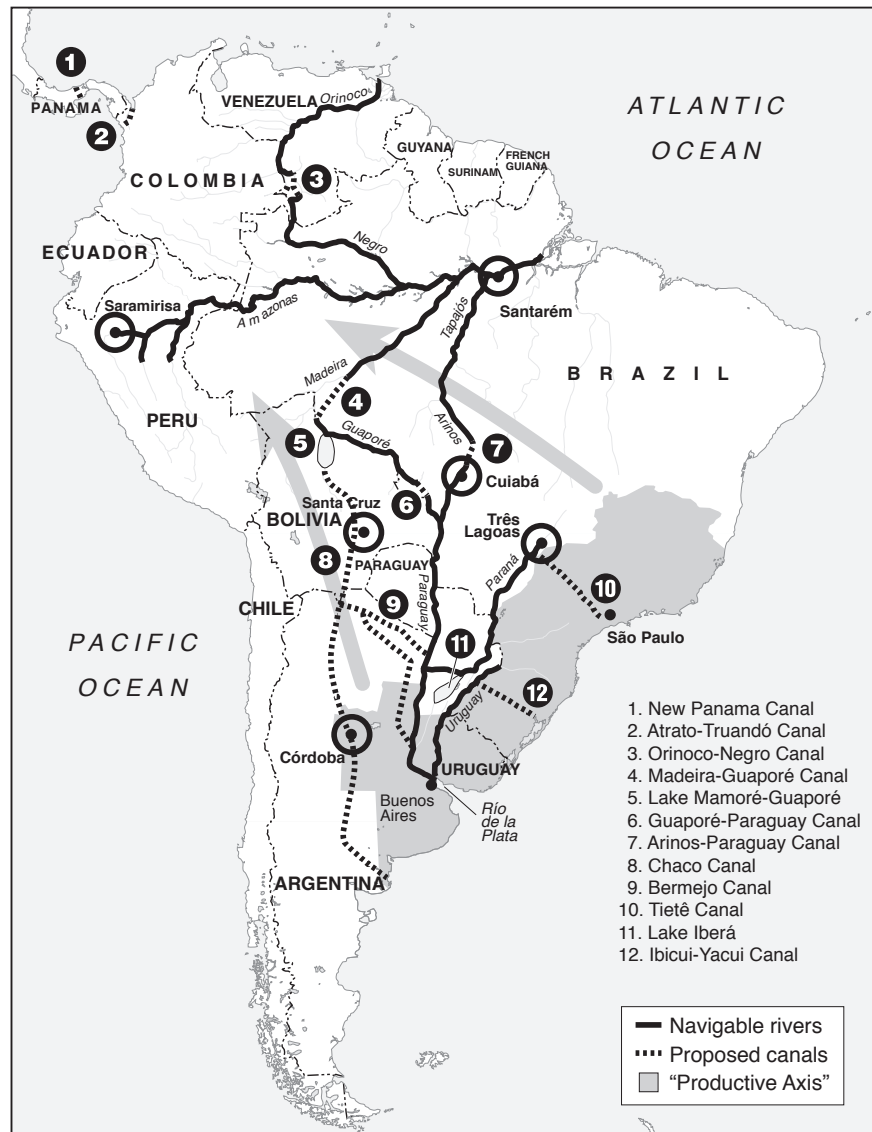
However! The habitable portions of our planet occupy a relatively small, if crucially significant part of the planetary body as a whole. Moreover, the planet as

a whole, including its surface areas, are also subject to powerful influences exerted, not only by patterns of behavior of the Sun itself, but the Solar System as a whole. We have come into a recently new phase of human existence, during which we must now think seriously of space exploration as an essential part of the world's, and, therefore, our nation's essential economic infrastructure.

The known catastrophes heretofore suffered by peoples, have fallen into two classes,²¹ man-made, and from so-called "natural" causes, the latter usually presumed, in earlier times, to be beyond man's power to prevent. As physical science progresses, we begin to imagine that we can either control some of the forces behind so-called "natural" catastrophes, or, in other

21. Cf. Plato, *Timaeus*.

FIGURE 5

South America: Great Water Projects

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cases—such as architecture for earthquake zones—at least mitigate the damage suffered. Also, through scientific progress, we become aware of new kinds of threatening long-wave natural effects built into our Solar System, or perhaps from beyond. The sense of those dangers from natural extra-terrestrial cycles, gives us a fresh sense of the frailty of the system of human life on Earth. Scientific progress provides the grounds for optimism about mankind's emerging power to gain control over these dangers.

Shall we then say to ourselves, "In a few billions

years, or much less, human life on this planet will be crushed"? What of a large asteroid hitting Earth directly? So it goes. Shall we, then, resolve to squat pitifully on the surface of our planet, or shall we get out "there," seeking the knowledge by whose aid future generations might defend our planet from such things?

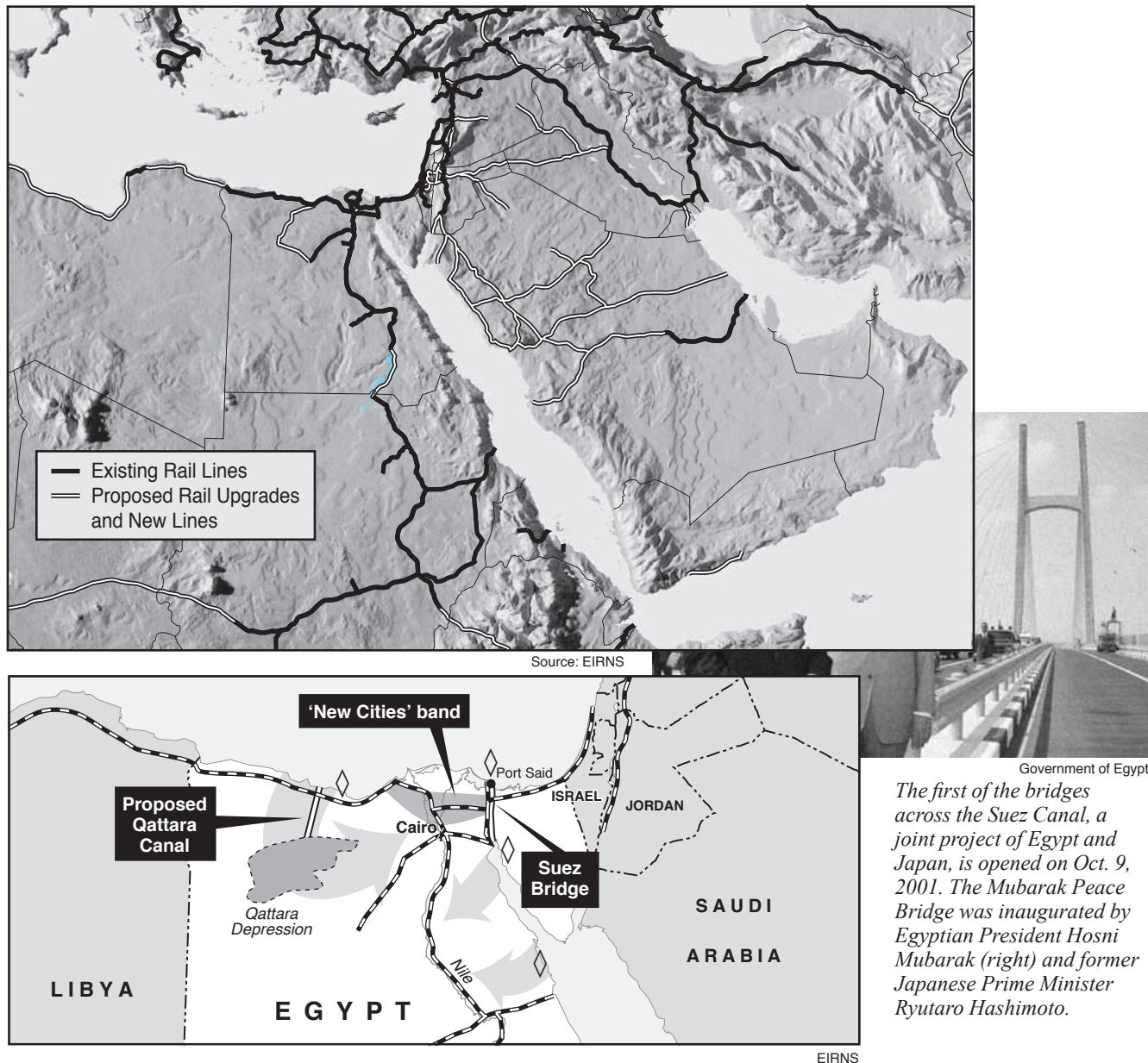
There are other, if related reasons for space exploration. Modern civilization's technological progress has depended upon exploring in three directions: outward, into the astrophysical domain; inward, ever deeper into microphysics; and, toward the extremes of what is loosely termed "energy-flux density." It is sufficient, for the purposes of this report, to offer one illustration of this point, the matter of life.

As I have indicated earlier, the physical proof that life expresses a principle absent from our definition of abiotic processes, argues that the principle which life expresses is universally efficient. Therefore, are there fossils on Mars which attest not only to fossils of earlier life on that planet, but some active form of life today? This requires a multi-planetary experiment. To conduct that experiment in an adequate way, we must use probes, but we must, sooner or later, actually visit it.

Consider this matter from the vantage-point of my earlier, qualified emphasis on the conception of the Noösphere. The requirements of development along the lines indicated by the accompanying figures showing development corridors and waterway developments, represent global undertakings, with global effects. We know enough in advance to be assured we can be successful in the explicitly stated intentions behind such plans. Nevertheless, we must also look ahead to consider the challenge of managing the long-range, global effects of what we are building. We must consider the Earth's own Noösphere within the

FIGURE 6

Greater Middle East, Existing and Proposed Rail Development (Arab League)



Solar System of which it is a part, especially that inner ring of Sun and planets within which the Earth's own Noösphere is functionally situated. For this purpose, we must also look at our Earth from relevant viewpoints in nearby space.

I refer to a proposal for a Mars-oriented space program, which I developed, in memory of Krafft Ehrliche, during 1985-1986. A reflection of that proposal was presented in a half-hour television documentary, *The*

Woman on Mars, which I broadcast in 1988. During those years, I concluded that *such a long-range program*, for placing a permanent science station, exchanging personnel by means of continuously powered flights of flotillas of partially Moon-manufactured spacecraft between Earth-orbit and Mars, should define the mission-orientation of the organizational umbrella of our national science-driver establishment. Implicitly, virtually all of the frontier development and pilot

implementation of scientific discovery would be situated with the greatest efficiency, in an organized effort built around a space-oriented mission of discovery and pioneering development.

Such a space-exploration program is no mere option.

As I have emphasized, once again, within the foregoing pages, man's ability to increase our species' per-capita and per-square-kilometer power on our planet, depends, unconditionally, upon the efficient intention to promote and rely upon progress in discovery and application of valid notions of universal physical principle. As we progress, both the possibility and urgency of accelerating such progress are increased. To that purpose, we must choose one or several possibilities for achieving broad-based breakthroughs, each such loosely describable as a field of scientific breakthroughs.

The space-exploration mission-orientation which I have indicated fits such a requirement for the world's present level of its scientific-technological frontiers. A fuller appreciation of the implications of the concept of the Noösphere, points us in that direction.

As I emphasized in the report sampled by my 1988 nationally televised *The Woman on Mars*, any sensible scheme for man's scientific visits to Mars, must be a long-range effort, for which about forty years of development must be expected. The requirement must be flotillas of spacecraft, whose weightiest components will be produced from materials available on the Moon (including, probably Helium-3 fuel). These journeys will be made as continuously powered (accelerated, decelerated) flight, from a base in Earth's geo-stationary orbit, to a position orbiting above Mars. From materials in the latter position, assemblies will descend to the surface, and subsurface of Mars, thus establishing a station to receive and provide protective housing for working teams. This will require the development of technologies now known to be feasible accomplishments, but not yet available otherwise.

Although, back in 1986, I allowed about forty years for the completion of the initial manned-flight mission of the project, even allowing forty years means attacking the problems as a high-intensity "crash program" roughly broadly comparable to President Kennedy's Moon-landing mission. However, that does not mean that the pay-back begins forty years from now. Each and all of the technologies required for that mission, will be applicable ways of bringing great benefits to life

back here on Earth. We need not wait the forty years for such benefits; we will be able to apply some of them to life on Earth in the years immediately ahead, and others at later stages of the initial program. As I emphasized in 1986, if we can design housing for a scientific station on Mars, we have thus the quality of technology needed to transform the Sahara.

Look at the U.S. Moon-landing program, which brought many times the cost of the program as economic benefits to our national economy. Science-driver modes of "crash programs," have been relatively the greatest source of progress in the productive powers of labor.

I emphasize my warning. In the universe, nothing good simply happens. The notion of universal physical principles can not be competently separated from intention. Without a will, there is no way. In general, it is the efficient intention to do good which creates and maintains a good society; it is persons committed to do good, who protect societies against the doom of decadence. Never trust programs, except as they express the unswerving intention built into the relevant political or other personalities. To save our imperilled nation, our imperilled planet, we must develop the institutions, including science-driver types of "crash programs" which are relevant to an intention for progress as such.

3.1. The American System of Political-Economy

As I have said repeatedly, here and in many earlier locations, *the creation of the U.S.A. as a sovereign republic, is a unique event in the past half-millennium of world history*. During a time when it was still impossible to establish a true republic in Europe, the best minds of Eighteenth-Century Europe rallied to the hope of the establishment of such a republic from among the English-speaking colonies of North America. The exemplary result of that process, was the role of the energetic scientific and political genius of Benjamin Franklin, in steering his followers through the perilous 1763-1789 struggle to establish a Federal constitutional republic premised on the principle of *agapē* (the common good, the general welfare). As our friend, the Marquis de Lafayette expressed it, the newborn U.S. republic was a temple of liberty and beacon of hope, for all mankind.

The celebrated. London-orchestrated events of July 14, 1789 sealed the defeat of the effort of Bailly and Lafayette, to rescue France from its deadly crisis. They created a constitution which they had intended should transform France quickly into a constitutional monarchy echoing the draft U.S. Constitution. A break between the U.S.A. and its former ally France, was accomplished under such influences as British Foreign Office agents Danton and Marat, a break deepened by the London-steered Jacobin Terror, by the Napoleonic tyranny, and, then, by the Devil's own Congress of Vienna.

These ugly events left the young U.S. republic imperilled throughout the ensuing period, until the crucial military victory of 1863 at Gettysburg. Throughout that period, from the Duke of Wellington's successful seating of Britain's puppet, France's disgusting Restoration monarchy on France's throne, France, Britain, and the Habsburgs, and the Spanish monarchy, among others, were our enemies, through and beyond 1865: until those U.S. military victories of 1863-1865 which led to the expulsion of the fascistic puppet-regime of the tyrant Maximilian, which London and Napoleon III had imposed upon Mexico. By the role of leaders such as the American Whigs, such as President Abraham Lincoln, our republic survived, to emerge as a world model of agro-industrial development during the 1861-1876 interval.

During the perilous early decades of the emerging republic, 1763-1865, including the "four score and seven years" preceding the Battle of Gettysburg, the treacherous American Tories enjoyed the sympathies, and also support from our British and other enemies based in Europe. Under these difficult circumstances, the U.S. interior had become a battlefield between two forces: the American Tories, such as bankers Aaron Burr and Martin van Buren, controlled chiefly from London; and the patriotic tradition associated with the Whigs, Lincoln Republicans, and President Franklin Roosevelt's Presidency. That conflict persists to the present day.

As a consequence of that yet-unresolved internal conflict between the forces of good and evil—and, notably, because of the political conditions which developed during the post-Franklin Roosevelt decades—virtually none of our universities' economics, history, and political science departments today acknowledge, or even seem to know of the axiomatic, systemic distinc-

tions between that American System of political-economy implicit in our Federal Constitution, and the model, often called "capitalism," established in Britain under the British East India Company and its Haileybury school of Bentham, Adam Smith, Malthus, Ricardo, et al. Still today, the political processes of our nation are polluted with the incompetence expressed by the often-babbled lie, that the U.S. Constitution is a testament to British Eighteenth- and Nineteenth-Century liberalism.

Again, as I have emphasized in these pages, the economic policy-shaping of today's U.S.A., is divided between two conflicting, axiomatically incompatible systems, the American System and its opponent, that presently extremely decadent form of the British Eighteenth-Century system. The irony is, that we have been invariably brought to the brink of ruin, as now, by the varieties of that British liberalism which President Franklin Roosevelt denounced, and the liberalism from which we were repeatedly rescued, as from the brink, by a turning back to the American System, as the case of President Franklin Roosevelt illustrates that point in practice.

Therefore, the principal intellectual obstacle to saving our republic from ruin, is the lack of competence in the economic opinions of not only most within our government and leading parties, but the citizenry in general. Unfortunately, only the smell of doomsday in the presently accelerating, global monetary-financial collapse-process, could shock parties and constituencies sufficiently to cause them to consider rethinking their recent opinions about the principles of economy. That shock is being delivered with increasing force right now.

To understand that conflict, we must look back to its roots in pre-Treaty of Westphalia Europe, in that period of a post-Renaissance, little dark age of Venice-orchestrated religious warfare in modern Europe's history, from 1511 to 1658.

Out of the Seventeenth-Century developments in England and the Netherlands, two varieties of tyranny emerged as leading powers in Europe. One, was typified by the advocacy of that absolutist, Hitler-like tyranny associated with Paolo Sarpi follower Thomas Hobbes. The other, that pro-slavery form of oligarchical tyranny more reflective of the tradition of Venice's financier oligarchy, was that of the followers of William of Orange and John Locke.

As Irish recollection insists, there is, of course, no genetic difference between the brutishness of Hobbes and the Mephistophelean liberalism of Locke. The two are, like the slime-molds, two seemingly opposite appearances of the same species expressed in the form of what are merely alternating states of organization. In both political systems, the Hobbesian and Lockean, the oligarchy conceives of itself as a Cathar-like “elect,” or “select.” Under Hobbes, there is a dictator. Under Locke, the oligarch’s hedonistic exercise of political and economic power, is typified by the principle of the slime-mold-like central banking system, a collective parasite which herds, loots, and lulls and culls the common herd of human cattle.

The more liberal approach to pillaging the poor, that of the followers of Locke and his like, usually prefers to rely chiefly on a combination of financial power and rigging the game of financial affairs greatly in favor of “the house,” or the squabbling “houses,” which are almost as much predators in their dealing with one another, as with their customary popular prey. They dispense their pillaging *liberally*.

The most concise expression of the axiomatic distinction between the American System and the axiomatic quality of the Eighteenth-Century British East India Company model of imperial financier-oligarchical maritime power, is the difference in policies of education.

The British Eighteenth- and Nineteenth-Century liberal model prefers not to cultivate “excessively” the mental powers of young members of the human herd. It prefers to degrade the mental powers of the many into a condition which the rulers have selected for each victim as his or her destined, future economic role and station in adult life. That tradition, which is an echo of the Roman imperial Code of Diocletian, and its echoes in U.S. educational policy-making today, measures education in terms of estimated fitness of the young for adult employment, as if one were expressing deep moral concern for the production of wool and meat, not human beings.

Our American patriotic model rejects that. The difference is reflected in the relative literacy of the two populations at the beginning of the Nineteenth Century. The level of literacy in Benjamin Franklin’s America, was more than twice that of the British. Our republican education policy, as expressed by Benjamin Franklin’s leadership, was always consistent with what German history should recall as the Schiller-Humboldt mode of Classical humanist education. Our

tradition in education-policy, is the development of human beings, rather than households of employable human cattle.

If we are true republicans, we develop the economy and its opportunities for employment, in directions intended for the needs of human beings, rather than degrading human beings, as if there were wood or bone to be carved into the shape of employees. Since it is natural for human beings to be cognitive beings, we must require our economy to develop in directions of that scientific and related progress which expresses the essential distinction between human nature and the beasts. We must educate all of our young to become makers of a history of progress of the human condition, rather than species of human cattle.

In the great sweep of that European civilization, rooted in Classical Greece, which was originally the child of Egypt, the Classical humanist tradition has always been expressed as a struggle: first, to discover human nature and its requirements less imperfectly; and, second, to steer the process of change within society in directions which are compatible with the natural requirements expressed by the human power to discover, transmit, and apply discoveries of those universal physical principles of art and science, by means of which the human being acts as one made in the image of, and love for, mankind and the Creator alike.

Under such a policy, we do not foster technological progress for the sake of becoming rich; we choose technological progress as the way in which the living individual, caught between the brevities of individual life and death, can find a meaning of an individual life’s work which shall become a necessary, useful part of the future of humanity. The dying man must smile, because he knows his life was not a waste; he must live and die, not as a pet or cattle do, but according to that essential nature of the human being which wise men know as a creature made in the likeness of the Creator.

The great scientist must be paid, but pay is not his motive. Rather, he must be paid because he must be enabled to do that work on which his contribution to future mankind depends. He must be paid such that his family and community will continue an upward course of human development. He must be educated for that role, the all-sided role which every person in a just society must be educated to perform.

The axiomatic root of the difference between the American System and Eighteenth-Century British liberalism, is that.

3.2. Infrastructure and Profit

Competent policy-shaping of a national economy treats the concept of financial capital as a fiction. To understand any of the essential mechanisms of a national, and world economy, we must rely on the notion of physical capital, rather than financial capital. In addition to the physical capital essential to production of products and essential services, we require, absolutely, two other categories of physical capital which are usually overlooked in recent decades of official and other U.S. estimates of national income and product. This defect in U.S. official accounting already existed even before the early introduction of the fraud known as the Quality Adjustment Index, during the early years of Paul Volcker's Chairmanship of the Federal Reserve System.²²

The two accumulations of physical capital which are, most often, either overlooked or greatly under-rated, are governmental contributions to the development and maintenance of basic economic infrastructure, and the development of that artistic and scientific cultural development of the members of society which is to be best assessed by the comparative standards of strictly Classical culture.

Such infrastructure, like the capital development of the facilities of production of physical goods, performs an indispensable, if largely intermediate function in the relationship between the exercise of the individual human will and the Biosphere in general. It is the tool which amplifies the application of the human will and hand. It does this in much the same sense as the investment in essential physical forms of capital goods in manufacturing or agriculture. The connection between such notions of infrastructural and industrial productions' capital, is relatively more immediate, more obvious in the case of modern agriculture. These connections are best understood from the standpoint of the Noösphere, as I have summarized my view of the Noösphere earlier in this report.

The concept is even clearer, at least implicitly so,

22. Recently, the fraud of the early 1980s Quality Adjustment Index has been continued under the accounting fraud of "hedonistic" valuation. This fraudulent notion of a "hedonistic" principle was introduced into late-Eighteenth-Century British practice by Lord Shelburne's Jeremy Bentham, the latter the putative father, and stuffed dummy, of the "utilitarian" school. It persists today as a reflection of the dogmas of John Stuart Mill and the "marginal utilitarians" generally.

when we look at the development of the mind of the individual as a form of stored-up investment in physical capital. The accumulation of cognitive knowledge of valid universal physical principles, as distinguished from mere forms of learning comparable to textbook learning, brings the essential point into better focus.

Thus, the recent three decades of madness, in destroying capital through privatizing public infrastructural institutions; in substituting "blab school" qualities of instruction in mere opinion, in most aspects of public and higher education; in reducing techniques more and more to techniques to be learned by dummies; typifies a vast, systemic process of destruction of physical capital of the landscape and human minds alike, as the case of "The Keating Five" illustrates the point.

If we take those horrors introduced during the recent three decades into account, there is nothing properly mysterious about the fact that our economy is sliding deeply into a physical, as well as monetary-financial collapse.

The complementary point to be stressed, is that production costs far more than present accounting practices allow. By reducing the acknowledged costs of education, for the sake of "the bottom line," accounting practice of the recent decades has contributed much to bringing our economy to the bottom we are now experiencing. The perilous collapse of our capacity for generating electrical power, the decay of our investment in large-scale water-management systems, the intentional looting of the national railway system, and what deregulation of transportation did to our national trucking and air travel industries, illustrate the point.

We must regard standards for minimum wages, pensions, freight-rate schedules, protectionist approaches to defining fair prices of essential produced goods, and maintaining a repertoire of national production of most of the types of essential goods for our own internal use, as, admittedly, increases of the apparent accounting costs of marketed goods; but those price-floors are essential to the formation of essential productive capital, including the basic economic infrastructure, and levels of cognitive mental development of our young.

After more than three decades of qualities of folly often verging upon insanity, or worse, it is time to correct those mistakes, and rebuild.

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