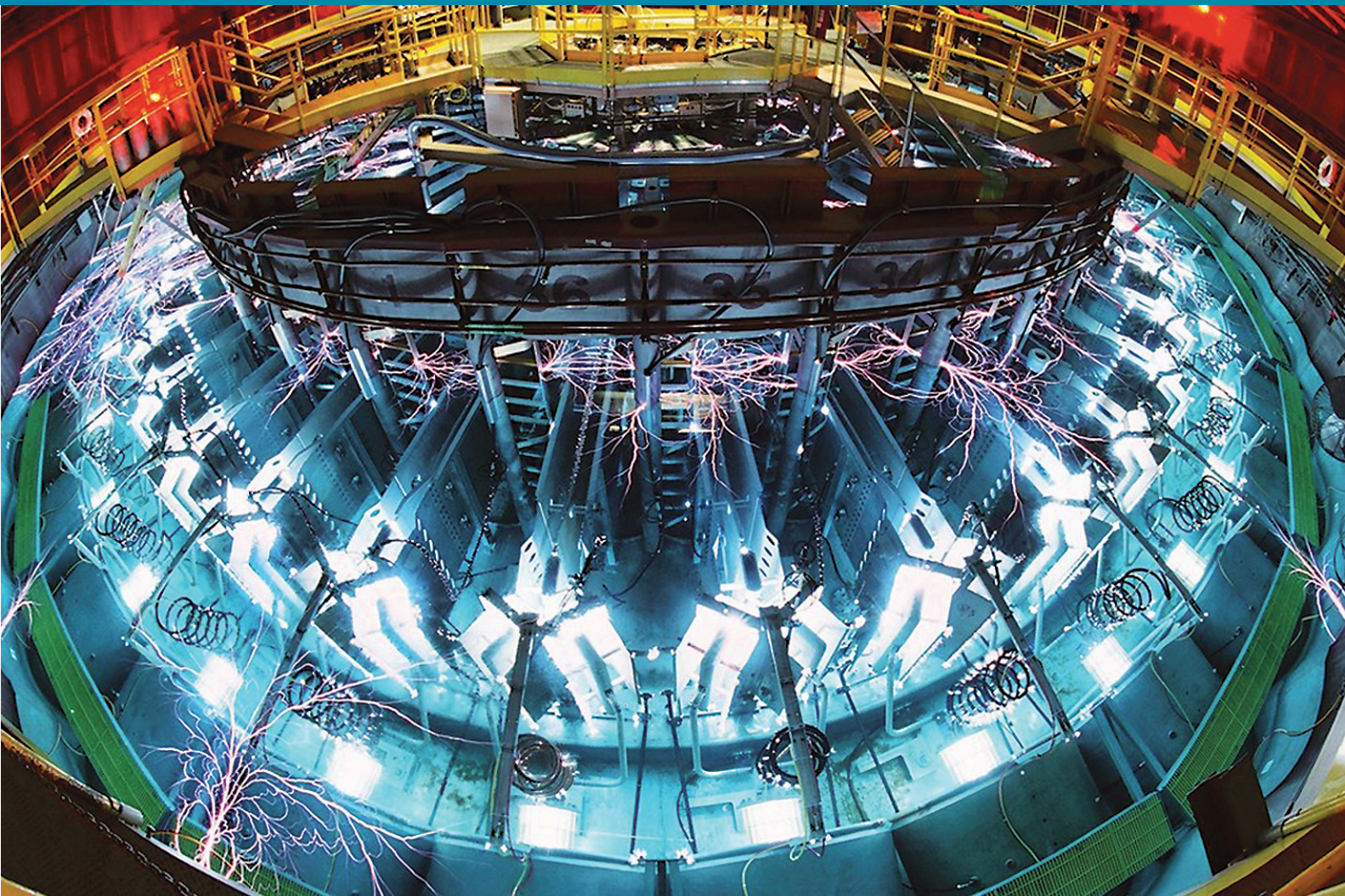


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Revolutionary Science-Driver Programs Are the Answer



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Revolutionary Science-Driver Programs Are the Answer

EDITORIAL

The Alternative to a Catastrophic Crash

Aug. 22—If a new financial crash, worse than 2008, strikes, say, this Fall or during 2020, the President will have to rely on an energetic mobilization of the U.S. citizenry, to stampede the Congress into immediate passage of emergency recovery legislation rather than bank bailouts. Congressmen will have to taste the fear of God, to the point that they will just forget about their Wall Street campaign contributions and special interests. Our Congressmen must be forced to vote up the use of Federal credit for loans directed exclusively into the real, physical economy, to crank up productive jobs in infrastructure and industry. No more bailouts for speculators' losses, like the \$23 trillion that was dumped down that sinkhole in 2008, with the results that we see today.

How will we deal with the problem of contagion—the danger that speculators' losses will shut down the commercial banking system upon which our economy depends? Not by bank bailouts, but by hiving off the dens of the Wall Street gambler's speculation from the commercial banking system, using a revival of Franklin Roosevelt's Glass-Steagall law. (A law that President Trump campaigned to revive.) Then their dubious gambling assets will not be eligible for Federal taxpayer support, and can be written down or written off over time, as those dubious assets are sorted out. Only legitimate commercial banking functions will be protected, not speculation.

The issuance of low-interest Federal credit exclusively for productive employment of unemployed or unproductive labor and capital, is not inflationary. If it is vectored towards science-driver programs like the Trump Administration's international Moon-Mars program, or the international effort to harness controlled fusion energy, it will be counter-inflationary, increasing the productivity of all labor, as scientific and technological breakthroughs filter through the economy. In the

United States, this policy is as old as the George Washington Administration, and lies behind the economic success of the Abraham Lincoln and Franklin Roosevelt administrations.

The late economist Lyndon LaRouche (1922-2019) developed and fought for these policies for decades and summed them up in his "[Four New Laws](#)" of 2014.

Internationally, at the first sign of a new crash or earlier, President Trump should invite the leaders of Russia, India, and China for what will amount to a wartime alliance with the United States against a common enemy—namely a devastating world depression. Together, these four great nations have the power to supplant the current London-Wall Street speculative monetary system that is collapsing, with a new world credit system based on the lessons of Franklin Roosevelt's design for the post World War II, Bretton Woods system. (Despite the post-Roosevelt problems, the longest period of world economic growth occurred under Bretton Woods, especially in Western Europe and the U.S.)

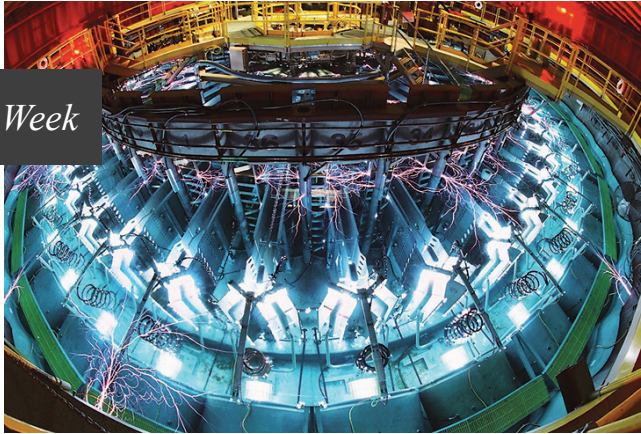
The new system will facilitate massive, long-term, low-interest development credits to the developing nations of Africa, Asia, Central and South America, and Eastern Europe. With the help of the space program and a cultural renaissance, the United States will cast off the rot of the past decades and surpass Japan and Germany as a great exporter of high-technology capital goods into such areas as China's "Belt and Road." As in Roosevelt's conception, this New Bretton Woods System will be a dollar-based gold-reserve system of relatively fixed exchange rates—without which such long-term, low-interest loans are impossible.

Lyndon LaRouche [designed](#) this system and fought for it for decades.

This can be done. Americans must join with their Presidency to make it happen.

Cover This Week

The Saturn Accelerator, one of Sandia National Laboratory's pulsed-power machines, Albuquerque, New Mexico.



SandiaLabNews/Randy Montoya

REVOLUTIONARY SCIENCE-DRIVER PROGRAMS ARE THE ANSWER

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June 16, 2002

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

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at lpac.co/exonerate

I. The Extraterrestrial Imperative

TO THE MOON AND MARS

The B&O and the M&Ms

by Michael James Carr

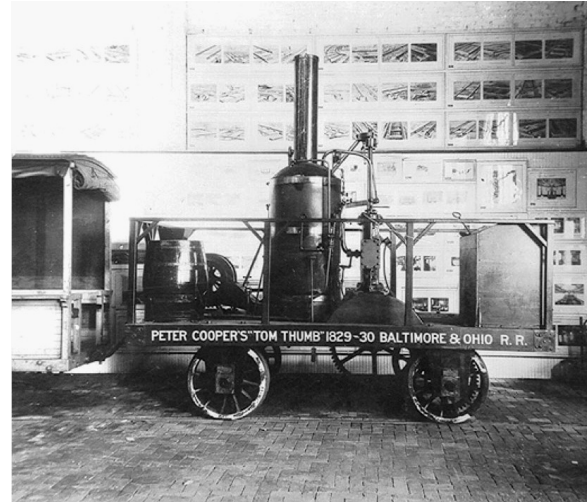
Aug. 24—During the science-and-technology oriented administration of President John Quincy Adams, and in the wake of the opening of the Erie Canal, a group of leading people from Baltimore met in 1827 to discuss what to do about the tendency of the new canal to draw traffic away from the Port of Baltimore and towards the Port of New York.

A decision was made: Pooling the resources and powers of the State of Maryland, the City of Baltimore, and private citizens, a road would be built from Baltimore out towards the Ohio River valley. This Baltimore & Ohio Railroad would be a road of wooden rails topped by straps of cast iron set across granite ties—and wagons would be pulled by teams of horses. But horse-drawn cars on iron strap rails could be faster than steamboats up the Hudson and mule-drawn canal boats through the Erie Canal.

The first 26 miles opened in 1830. That same year, Peter Cooper built a primitive prototype steam locomotive, the *Tom Thumb*, to convince the B&O leadership of the superiority of steam power over horseflesh. The demonstration of Peter Cooper's creation convinced the B&O to pursue development of operational engines, and thus began the railroad-vectored development of America. Soon the success of the B&O steam railroad technology caught the national attention. Cities, states, the federal government, private investors were all involved in a race to build rails to open the West.

Sixth National Space Council Meeting

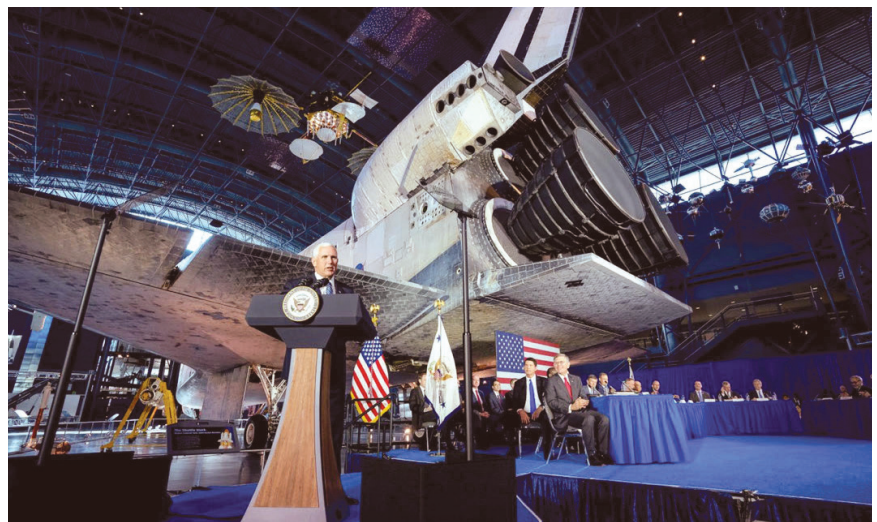
A similar process began this week at the sixth meeting of the National Space Council, held on August 20,



Public Domain

A 1926 reproduction of Peter Cooper's Tom Thumb.

2019 beneath NASA's Space Shuttle *Discovery* in the McDonnell Space Hangar, at the National Air and Space Museum's Udvar-Hazy Center in Chantilly, Virginia.



White House: Tia Dufour

Vice President Mike Pence chairs the 6th meeting of the National Space Council on August 20, 2019.

At the fifth meeting of the Space Council in March 2019, Vice President Mike Pence announced President Trump’s intention to accelerate NASA’s plans to return humans to the Moon. President Trump’s new target of “boots on the Moon” by 2024 put NASA into a scramble to reorganize. All ongoing and medium-term Lunar plans were sped up. The Obama-banned Lunar Lander plans had to be quickly pulled out of deep-freeze. The nearness of the target date has forced a focus on acceleration of all of the known and planned systems.

In the historical parallel, the B&O leadership knew that they could build a railroad using proven technologies. But using those technologies to reach all the way to the Ohio River was a big stretch. Similarly, NASA has been concentrating upon the perfection and improvements of known technologies to begin the process of human settlement and development of the Moon. But the tried and true will not do for Mars.



M&M candy.

Then, in came the M&Ms! NASA Administrator Jim Bridenstine tells the story: “I was at the White House, briefing members of the National Security Council on our plans. . . . And while I was there, Victoria Coates brought in a box of M&Ms. . . . These are not just *any* M&Ms. These are President Trump’s M&Ms. I said, ‘Now what’s it all about?’ She said, ‘M&M—Moon & Mars. . . .’ The President has been very clear: We will put an American flag on Mars.”

New Technologies and Procedures

Yes, we are going to use lots of improved versions of known technologies, but at this sixth meeting of the National Space Council in August, for the first time, the focus was upon the development of the *new* technologies and procedures without which sending people to Mars is impossible. Foremost among those new tech-

nologies are fission and fusion technologies for power and propulsion—the indispensable, politically incorrect technologies long pushed by Krafft Ehrlicke, Lyndon LaRouche, and any serious person contemplating the [spread](#) of civilization to the [planets](#) and beyond.

Of course there were the various reports by members and guests on progress towards streamlining regulations for space companies; opening up commercial opportunities on, and possible expansion of, the International Space Station; progress made in NASA’s Commercial Crew and Artemis Projects; the modernization of GPS; and the formation of the United States Space Force to defend orbital assets from Russian, Chinese and other powers’ space force capabilities, and so forth.

But the discussion kept coming back to the revolutionary technologies needed to create the future.

It was significant that the Office of Science and Technology Policy presented its recommendations for a regulatory framework to facilitate the launch of nuclear reactors, nuclear engines, and other space nuclear systems. The results were released at this meeting as the draft “[Presidential Memorandum](#) on Launch of Spacecraft Containing Space Nuclear Systems.”

The Department of Energy reported on its space Kilowatt Reactor project and its history of nuclear space efforts.

Reports from a Panel of Experts

Finally, testimony from a panel of experts was presented. The panelists concentrated upon many of the ways in which the Moon and Mars project will be far different from the Apollo project and other previous exploration projects.

First was Rex Geveden, Chairman of BWX Technologies (formerly Babcock and Wilcox), who spoke about his company’s work on compact fission reactors as the technology that will make impossible efforts possible—from nuclear thermal rockets which can halve travel times around the solar system, to reactors to power spacecraft or industrial processes on the Moon and Mars. He noted that new technologies in development, including additive manufacturing, can radically cut delivery times for these reactors.

Dr. Clive Neal, Professor of Civil and Environmental Engineering and Earth Sciences at Notre Dame University, spoke about *in situ* development of Lunar resources. He said,

Apollo shows how *not* to conduct human exploration, because such a program, based upon in-



NASA

NASA Administrator, James Bridenstine, addressing the 6th meeting of the National Space Council. To his right is Joseph Maguire, Acting Director of National Intelligence, and to his left is Vice President Mike Pence.

ternational competition, is not sustainable. . . . In order to have an enduring and a sustainable, multi-decade space exploration program, two things are required . . . cooperation . . . and taxpayer investments.

He spoke of the metals, water, Helium-3, and other resources on the Moon. He said that NASA must do the prospecting and testing to demonstrate the economic production of Lunar resources. Once resources are demonstrated to be *economically* extractable, the resources become classified as “reserves.” Once NASA can prove the viability of economic extraction of valuable materials on the Moon, the materials—having achieved the status of reserves—will attract private investment in mining and industrialization.

Dr. Saralyn Mark, founder and President of iGiant, testified that the differences between men and women must be taken into account in every aspect of NASA’s deep space planning. If these differences are taken into consideration from the beginning, superior teamwork and accomplishment will result in the end.

Dr. Elizabeth Turtle, lead investigator for NASA’s Dragonfly quadcopter mission to Saturn’s Moon Titan, spoke about the interplay of defense, governmental, commercial, academic, and international initiatives, leading to innovative solutions to problems and the progress of civilization in general.

In response to several questions from Bridenstine, Rex Geveden outlined how nuclear-powered spacecraft could maneuver against threats, power directed energy weapons to defend orbital assets, defend Earth from asteroids, or de-orbit space debris.

In response to a question, Dr. Neal said that the big-

gest challenge for human operations on Mars, as opposed to operations on the Moon, is “getting there.” We must have a [breakthrough propulsion system](#).

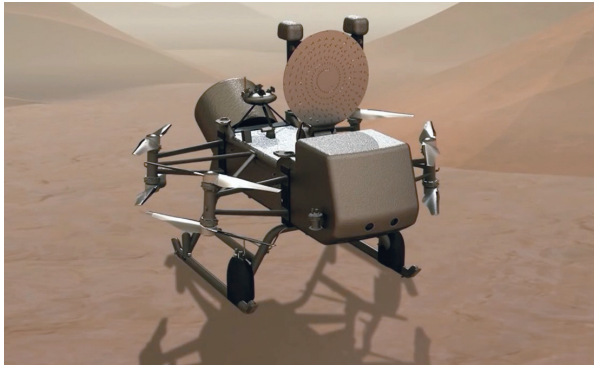
To a question about how the United States can maintain its leadership position, and collaborate with allies and their private sector partners, while safeguarding our intellectual property and know-how, Dr. Turtle responded:

There is so much to be gained from these partnerships, and at the same time to balance that with sharing information. That is an area we take very seriously in these international partnerships, and something we need to coordinate very carefully as we move forward. So many of these international missions demonstrated the poten-



NASA

Dr. Elizabeth Turtle, lead investigator for NASA’s Dragonfly mission.



NASA

The Dragonfly quadcopter.

tial of those collaborations, something that is worth investing the effort in.

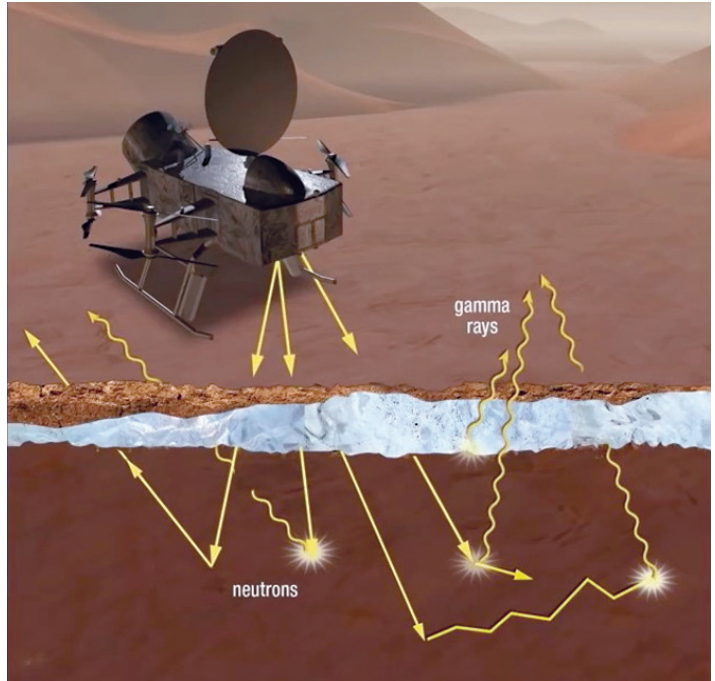
The ‘Elephant in the Room’

It was a good day for civilization. We could stop there, but that would ignore the elephant in the room. As long as the London-centered predatory financial system continues to dominate America, the innate American inclination to dream, experiment, and build, is undermined. Under the domination of “cost-benefit” or “efficiency experts,” bold ideas will not be tested (not to mention developed, if practicable), because the unknown cannot be calculated. Therefore it is automatically excluded from consideration.

Of course the Moon-Mars project will benefit from the private investments made by companies such as BWX, but that investment will be constrained in comparison to what it would and could be under Lyndon LaRouche’s complete “Four Laws” [program](#). As long as Federal investments are treated as money down the drain, instead of the future source of wealth that they can be, NASA will be unable to make the really big investments required. Without regulated banking and a federal credit system to allow dreams to become physical reality, the country, like the B&O, is looted to the point of collapse.

Henry Ford, who was not known for his knowledge of history, did very well understand how industry could be sucked dry by a predatory financial system:

Our railway managers have been practically forced to borrow, for since the very inception of the railways they have not been free agents. The guiding hand of the railway has been, not the railroad man, but the banker. When railroad credit was high, more money was to be made out of



NASA

Dragonfly will explore and investigate Saturn’s moon Titan.

floating bond issues and speculating in the securities than out of service to the public. A very small fraction of the money earned by the railways has gone back into the rehabilitation of the properties.

When by skilled management the net revenue became large enough to pay a considerable dividend upon the stock, then that dividend was used first by the speculators on the inside and controlling the railroad fiscal policy, to boom the stock and unload their holdings, and then to float a bond issue on the strength of the credit gained through the earnings. When the earnings dropped or were artificially depressed, then the speculators bought back the stock and in the course of time staged another advance and unloading.¹

If this description by Henry Ford from almost a century ago sounds familiar, it is because the methods of empire have not changed much. It is high time to finally shut down the Empire by exonerating LaRouche and fully implementing all of his Four Laws. Without imperial machinations, the entirety of civilization will be able to happily work together in the daunting task of spreading itself into the cosmos.

1. Henry Ford in collaboration with Samuel Crowther, *My Life and Work*, Garden City Publishing, Garden City, NY, 1922. p. 223.

‘When We Were Apollo’: A Movie about Mission and a Culture of Creativity

by Barbara Boyd

Aug. 22—The movie, “When We Were Apollo,” manages to capture, almost physically, the change in human personality induced by a mission orientation to conquer the unknown and unexplored, shared entirely by 450,000 people, as the result of the challenge by the President of the United States, and the crash scientific effort—with management techniques being innovated as the project moved along.

Unlike other productions, this film does not focus on the story as told by astronauts or chief scientists, but rather by Apollo’s engineers, technicians, builders, and contractors, describing their roles in the project and the roles of others at key stages, against the backdrop of the social turmoil that engulfed the United States as Apollo proceeded.

One very poignant note introduced in the film, states simply, “Thank you Apollo, for saving 1968.” Another particularly telling moment is the description, by those interviewed, of the end of the Apollo program, which the interviewees described as a limitation caused by the program being a race with the Russians to get to the Moon, and also caused by the failure of vision and will to continue to inhabit the Moon and move on to Mars.

What is remarkable about the film, at least to this writer, is the artistry of these young filmmakers in capturing a different generation, and conveying the depth of what it was like to be fully engaged in a highly productive and completely intellectually challenging enterprise. The workers they interviewed were white and black. Many trained for the mission in place, thanks to many educational and skills training opportunities attached to the Apollo program. The film features Wernher von Braun reading NASA’s order against any form of racial discrimination to his team of scientists and engineers.

The film was released during the recent Apollo 11



A prize-winning student in a photo from the movie.

celebrations and was shown on PBS in July. Here is how the film’s creators describe its mission:

Half a century later, the Apollo Space Program remains the single greatest initiative in peacetime the world has ever known. Its story speaks to the most beautiful characteristics of our humanity: A metaphor for our ability to rise to challenges once

thought insurmountable and push past them with even bigger and bolder solutions. Behind every astronaut who set foot on the Moon and every figurehead who inspired us to get there was Apollo’s massive workforce: A team of men and women over 400,000 strong—spanning race, socio-economics, culture, company and country—who came to understand that the overall Program was only as good as the effort they put into it.

This dedication and the can-do attitude behind it—the Spirit of Apollo—carry invaluable lessons about our potential as a species as we chart a course into the 21st century. Like Apollo, our world is too big, diverse and complex for any one person, group or nation to tackle. Only by working together—by taking a truly cooperative approach and empowering one another to become the best versions of ourselves—will we truly be able to overcome the seemingly insurmountable challenges of our day. Such a future is within our grasp. The story of Apollo can help us get there . . . if we listen.

This is an invaluable experience for all of us as we seek to demonstrate just what a national and international mobilization for Moon-Mars looks like in terms of its impact on the human spirit and society. The movie, produced by Contact Light Films, is [available](#) on Amazon.

II. The Billionaires' Green Genocide Club

ZEPP-LAROCHE WEBCAST

A Financial Crash Is Coming— A Great Tsunami

This is the edited transcript of the Schiller Institute's August 21, 2019 New Paradigm interview with the founder of the Schiller Institutes, Helga Zepp-LaRouche, by Harley Schlanger. A [video](#) of the webcast is available.

Harley Schlanger: Hello, I'm Harley Schlanger from the Schiller Institute. Welcome to our webcast today with our founder and President Helga Zepp-LaRouche. It's August 21, 2019.

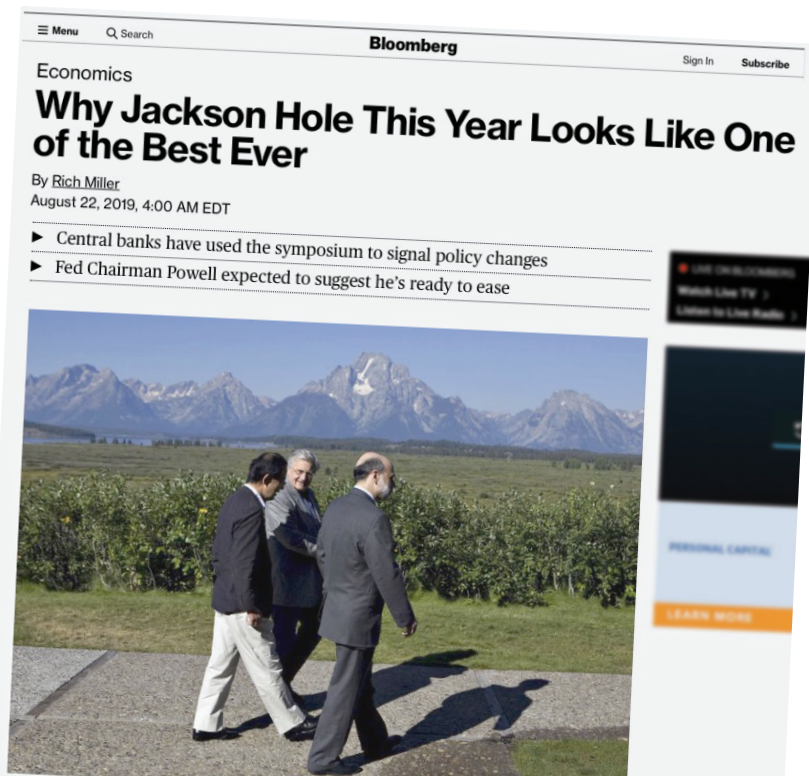
We're in the midst of an extremely turbulent world, with things flying all over the place, events taking place, some surprising developments. Let's start with the financial situation. There are some completely crazy proposals being floated, indicating a crash is coming.

Helga Zepp-LaRouche: I think the next financial crash is coming with absolute certainty. It's coming on like a big tsunami. The only question not yet decided is: Will it be this year, which could very well happen, or will the measures proposed by the central banks and the G7 governments, be sufficient to stop a blowout this year and bring it into the next year—but for sure, before the Presidential election in the United States 2020.

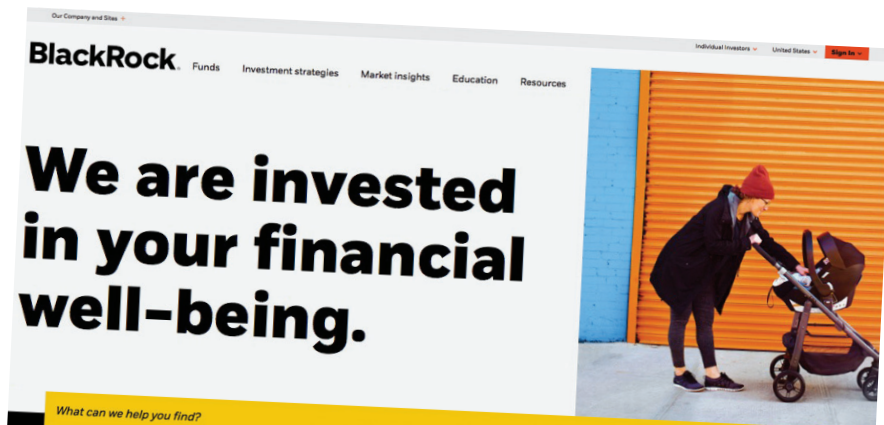
The signs are manifold, but I think one of the more telling proposals put out quite openly, is that of “helicopter money” in the form of a paper proposed by BlackRock, the largest private equity

firm in the world, involved in all kinds of things. It has produced a paper for the August 22-24 Jackson Hole Economic Symposium, where all the top bankers and government financial officials of the world gather once a year.

BlackRock's proposal for a “Standing Emergency Fiscal Facility” calls for a financial “regime change” to abandon the so-called “independence” of the central banks. Now, if you think this is sounding like what we say, that we should go back to a national banking system, let me assure you, it's quite the opposite, because what they propose is to sort of merge the govern-



ments and the central banks, and go to what they call “direct investment” or direct delivery of money to anybody who needs it. And when they talk about meeting the inflation requirements, they don’t mean physical goods, or anything like that, but what they’re talking about is to keep the altogether, estimated \$1.5 quadrillion derivative bubble going.



LaRouche’s ‘Triple Curve’

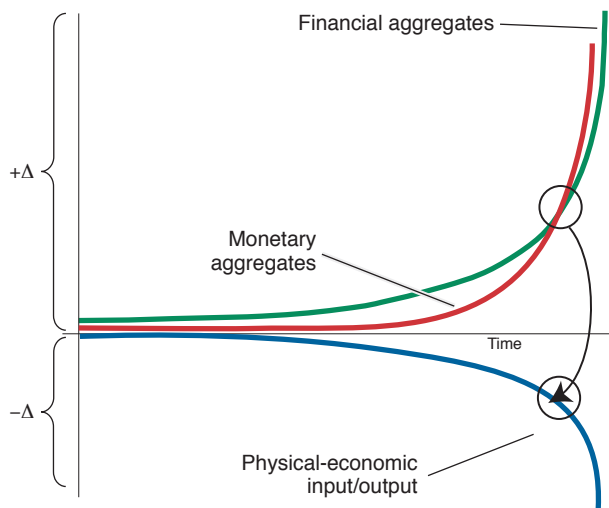
Our viewers and readers may remember my husband’s “Triple Curve,” a pedagogical device he developed in 1995 for a conference at the Vatican in Rome. In a very astounding but simple and convincing way, he showed how the financial and the monetary aggregates are moving in a hyperbolic direction upwards to a certain point, while the physical-economic input/output is moving hyperbolically downwards.

We have now reached the point of instability where no amount of liquidity pumping will be sufficient to maintain this bubble. So, we are heading toward *the* storm of storms, and there is absolutely not going to be any solution, except those which were proposed by Lyndon LaRouche: Glass-Steagall; nationalize the central bank [the Federal Reserve System], making it a National Bank in the tradition of

Alexander Hamilton or for that matter the Kreditanstalt für Wiederaufbau in the postwar reconstruction of Germany; and then establish a new, international credit system, a New Bretton Woods system; and then go into a crash program for fusion, for space research cooperation, and cooperation with China on the New Silk Road.

Unless all of this package is being put on the table, quickly and simultaneously, nothing will stop this crisis. But I’m optimistic that things are actually moving in a direction that the implementation of the LaRouche solution is not impossible at all.

LaRouche’s Triple Curve



Schlanger: Helga, just to make it clear to our viewers: The proposal being made by BlackRock does not deal with the debt situation in any sane way, but in fact allows the debt to continue to be carried, by creating more debt, by pumping in more money. Is that what the BlackRock proposal ultimately boils down to?

Negative Interest Rates Coming?

Zepp-LaRouche: Yes. The trans-Atlantic nations’ central bankers are already doing everything they can imagine. Since 2008, they’ve tried massive quantitative easing, pumping money; then they went for zero interest rates; now it’s *negative* interest rates, and not only for the larger accounts, but there is now a move to even go to negative interest rates for savings and loans banks—in which cash deposits incur a recurring charge rather than receive interest income. That’s pure and simple stealing from the wallet of the so-called “little people.”

If you have any savings for your retirement, they’re just going to take that away, step by step.

Even the Bavarian Minister-President Markus Söder is now proposing legislation prohibiting negative interest rates for accounts below EU 100,000. So, he obviously knows this is an issue where the population really gets completely mad, because it affects them in the most direct way.

I think that the central bankers have lost all ability to actually intervene. They have used up all the fiscal and monetary tools available to them, none of which have worked to stabilize the physical economy, much less improve it. This is why we are promoting the LaRouche Solution, as the only way to solve this problem.

Schlanger: The situation is worsening. We've talked before on this webcast about Deutsche Bank. Now there's new evidence that Commerzbank is following in the same path.

Failing to Learn the Lessons

Zepp-LaRouche: Yes, at Commerzbank they are talking about closing 400 of their 1,000 branches, laying off 9,500 employees—almost 20% of their workforce—and their stock has dropped in the last several months, from EU 24 to around EU 6. So this is really another case, just like Deutsche Bank, of the absolute inability of the present liberal system to solve these problems, and Commerzbank is 15 percent owned by the German government, so this is also a sign of the times. And these are not the only banks that are in this condition: This is merely what is out in the news in Germany, but that is the condition of more or less the entire Western banking system.



Markus Söder, Minister-President of Bavaria.

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Schlanger: Another example of failing to learn the lessons is Argentina, where the present government of Mauricio Macri followed the IMF policies—austerity, bailouts. After getting completely crushed in the recent primary elections, he then announced he was going to continue doing the same thing. This could be a trigger for the crash, couldn't it?

Zepp-LaRouche: Yes. Because this is highly contagious. I think the inflation, the collapse of production, all the result of Macri's poli-

cies, is throwing Argentina into a bond crisis that could spread to any country—Turkey, Brazil, for example. It could even take down larger countries. So, it's really one more element of this pending blow-out.

Black Propaganda and Destabilizations

Schlanger: As the financial crisis approaches, the same people who created the financial crisis—the City



A local Commerzbank branch office in Leer, Germany.

CC/Donald Trung

of London and other—have escalated destabilizations. The situation in Hong Kong, China, as we covered it last week, has continued to worsen, with other aspects of encirclement of China. Where does that stand now?

Zepp-LaRouche: I think there is an enormous amount of black propaganda, transmitted by the media in Europe and in the United States, all of whom claim that the demonstrations in Hong Kong are “all so peaceful,” and demonstrators are “all so freedom loving,” and so forth.

I’m not saying there are not some serious local issues; if you have a liberal society, which Hong Kong was, under British governorship for 154 years, from 1843-1997, it is quite natural that you would have such a reaction. But these demonstrations have been *far* from peaceful: There have been acts of violence, which have been documented in videos; police stations have been attacked, the airport occupied, the local parliament violently attacked.

Not that peaceful at all. There is British manipulation, which the Chinese media have exposed quite a bit, going back to the British role in creating and executing the Opium Wars, when British troops occupied the island of Hong Kong in 1841, to use as a military staging point.

Now, in that light, this is really absolutely scandalous, that two anti-government students were given the floor of the British Parliament, to demand the reinstatement of the Treaty of Nanjing and the Treaty of Tientsin. These were the infamous British-imposed treaties after the Opium War, which made Hong Kong a British Crown Colony and allowed the sale of opium in China. So if you have students demanding the reinstatement of these treaties, if that’s not giving the show away, I don’t know what is.

An article recently in the American paper *The Hill*, pointed to the fact that everybody in the United States supports these “freedom-loving people” of Hong Kong—Congress, Lindsey Graham, Nancy Pelosi, John Bolton—but that one voice is missing in the chorus: that of Donald Trump.

So I think this is important, because you have otherwise an enormous effort to escalate against the rise of China with many operations, Taiwan being another, and unfortunately, Trump seems not to be in control of all of



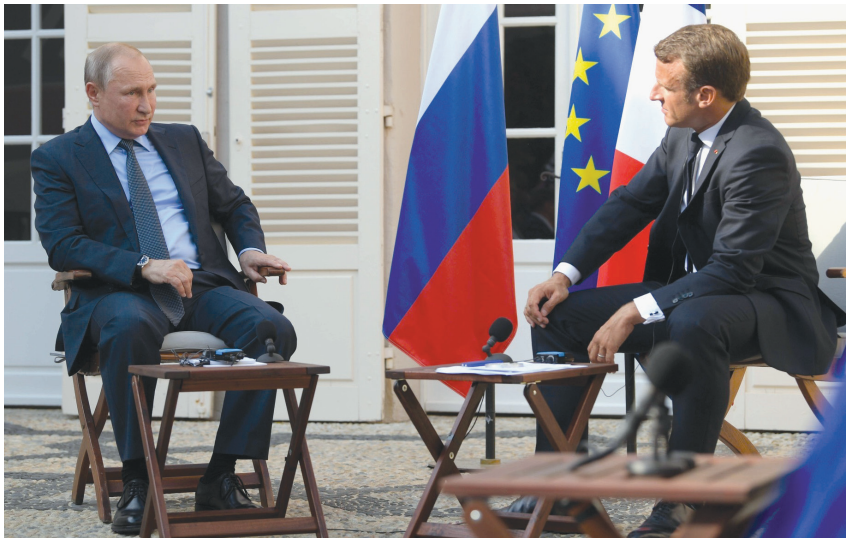
Hong Kong police disperse an anti-extradition bill demonstration on June 12, 2019.

VoA

what is happening in the name of the U.S. administration around the world. There was just the sale of \$2.2 billion worth of military equipment to Taiwan. The Taiwan government has offered asylum to protesters from Hong Kong, and the Chinese Foreign Ministry basically said Hong Kong and Taiwan touch the “core interests” of China, and therefore there will be absolutely no capitulation on the side of mainland China on these two points.

Then, there is the orchestration of fraudulent allegations of human rights violations of Uighurs in Xinjiang, and the Huawei “surveillance” case. Secretary of State Mike Pompeo is continuing his bellicose anti-China statements, despite the President’s desire to get the deal with China, for sure, before next year’s election. I forgot to mention the continuing tensions in the South China Sea. The overall atmosphere is really very, very negative.

China, which is on a pathway of changing world policy in the direction of a new paradigm of international relations, is being bombarded right now with a very significant assault. This is very dangerous, because there is no solution to the present world crisis without China. And that’s a fact. So, we have to see, but I think the record of who is responsible for the geopolitical manipulation has to be published. Doing so will hopefully help to stop it.



Russian President Vladimir Putin (left) and French President Emmanuel Macron meet in Bormes-les-Mimosas, France on August 19, 2019 before the G7 Summit.

French and Russian Presidents Meet

Schlanger: Sticking with this strategic picture, the Russians and the Chinese have issued a couple of statements, including warnings against attempts to work regime changes against them. Then, there was a very significant meeting between President Putin and President Macron, which just took place, leading up to the G7 meeting. How do you assess that meeting, Helga?

Zepp-LaRouche: I think the Macron-Putin meeting was quite good. It was in preparing the August 24-26 G7 meeting in Biarritz, France, which Putin is not attending, because Russia was previously kicked out of the G8. But I think it very positive that Putin and Macron met in France at the summer residence of Macron, and Macron basically said that France wants to play a role to reopen ties between the European Union and Russia, because there would be no solution to the world's problems without Russia.

Putin on his part, said some very interesting things also: They obviously discussed Syria, Ukraine, Libya, and so forth. But then somebody mentioned the idea of a Europe from Lisbon to Vladivostok. And then Putin responded, "Well, this is not an idea which comes from us. This is actually an idea which comes from Charles de Gaulle, who talked about "Europe from the Atlantic to the Urals." But Russia is much larger, it goes to the Pacific; it's a European civilization and culture, and this idea of a "Europe from Lisbon to Vladivostok" may sound impossible today, but sometimes the im-

possible becomes the inevitable very quickly.

And I think that is very interesting, because I think—I don't know, I didn't talk to Putin—but I think this is a prophetic foresight, that once you go into an absolute upheaval and a collapse of the present order, then naturally, one resorts to the only concepts available. So I think this idea is quite interesting. I don't want to comment on it any further, but it's for sure, food for thought.

Schlanger: Macron, and then joined by Trump, emphasized that Russia should be brought back into the group of what the IMF describes as the largest advanced economies, to make it the G8 again.

The other situation in Europe that's really quite explosive is Italy, where the government was brought down yesterday. What do you think is going to happen there?

Italian Goings-On

Zepp-LaRouche: First of all, there is a wide discussion that this is the result of "Ursula," referring to EU Commission President Ursula von der Leyen, because she recently met with Prime Minister Giuseppe Conte, and people really think that the idea was to cause a *fait accompli* so that Deputy Prime Minister Matteo Salvini was basically forced into this crisis. That remains to be seen.

Yesterday, Conte spoke to the Senate, accusing Salvini of not obeying the rules of the EU. Salvini responded with something even more interesting. He talked about his vision for Italy for 2050, in the same way that Lyndon LaRouche spoke and wrote about the next 30, 40, 50 years, the same idea the Chinese have in thinking in terms of 2050. It's good if politicians start to have a little longer vision than the next election for their own post. Salvini, among other things, talked about infrastructure, and the American Constitution, that the people have a right to "the pursuit of happiness." So this is quite good.

Where all this will go is completely open. Conte offered his resignation to State President Sergio Mattarella, who will now see if another combination can be formed for a government, and if that doesn't func-

tion, there will be new elections.

On some other combination, the only way the Five Star Movement party (M5S) could form a government with the Democratic Party (PD) would be with the help of Silvio Berlusconi's Forza Italia party (FI) which is completely split. So it's impossible at this point to say how this will turn out—will it be a short-lived new government, with many factors in it? Or will it be new elections? We will see.

But the Italian government crisis is just one more sign that Europe is in a complete turmoil. Another is the withdrawal of the United Kingdom from the European Union (Brexit) in October, and another is the outcome of the German local elections September 8, which for sure will change the landscape, because of the expected rise of the Alternative for Germany (AfD) party. So Europe is in a turmoil and it definitely needs a completely different unifying principle, such as that of cooperating with the New Silk Road.

'Ecofascism' and Media Attacks Against the LaRouche Movement

Schlanger: Shift to the United States, I think it's impossible to talk about the U.S. situation without talking about the work of the LaRouche movement, and this became clear in two ways: One was a *Washington Times* [attack](#) on Lyndon LaRouche and his organization which came out Aug. 19. And the other was insinuated in a page-one exposure of "ecofascism" in the August 18 *Washington Post*. What do you make of this, Helga?

Zepp-LaRouche: Well, first of all, there have been quite a number of attacks on our international movement, which in one sense means we're succeeding at doing something good, because if we wouldn't be doing important things, they wouldn't find it necessary to attack us: *The Times* of London slanderous [obituary](#) of Lyndon on March 29; a one-hour slander August 18 on Swedish radio; and now, as you just mentioned, the piece in the *Washington Times*, com-



Matteo Salvini during the consultations at the Palazzo del Quirinale on August 22, 2019. [quirinale.it](#)

plaining that despite my husband's death, we are still moving. I think that is a very good sign.

Now that is quite an admission. And then, some of these articles go at quite some length into the eugenics movement of the '20s and '30s, which we have documented in large part—that out of the eugenics movement, which was the basis of the race policy of the National Socialists in Germany, discredited with the collapse of the Nazi government, but continued by Julian Huxley in his position as UNESCO's first director from 1946-48, who proclaimed it quite openly: He said, now this eugenics is discredited for many years, so we

have to basically rename it, conservation movement, protection of nature.

Also mentioned is the role of something called "Federation for American Immigration Reform" (FAIR), whose founder is John Tanton—whom we attacked 30-40 years ago, as part of the so-called [William] Paddock Plan of the '70s, the idea to halve the population of Mexico. So this evil is really coming out very, very openly, making the connection, even saying "ecofascism"—that already is a major important characterization, because that is what it is; then these his-



torical ties are also covered. Everyone should really look at our documentation, because we have published a lot of this over the years.

The Sad Case of Greta Thunberg

Schlanger: I encourage everyone to go to our [website](#). There you'll find a large number of in-depth articles discussing the fascist eugenics and fascist ecology origins of today's Green New Deal, the FridaysForFuture, Extinction Rebellion, and related outfits.

You have this publicity stunt now with 16-year-old Swedish "climate activist" Greta Thunberg coming over to the United States in a millionaire's yacht. But this is being exposed: In fact, Helga, you brought up the craziness of Gail Bradbrook, the woman who founded the Extinction Rebellion. It's hard to believe that she's openly calling for use of psychotropic mushrooms to discover how to save the planet. This is probably some of the reason people are publishing this, because it's so hard to believe.

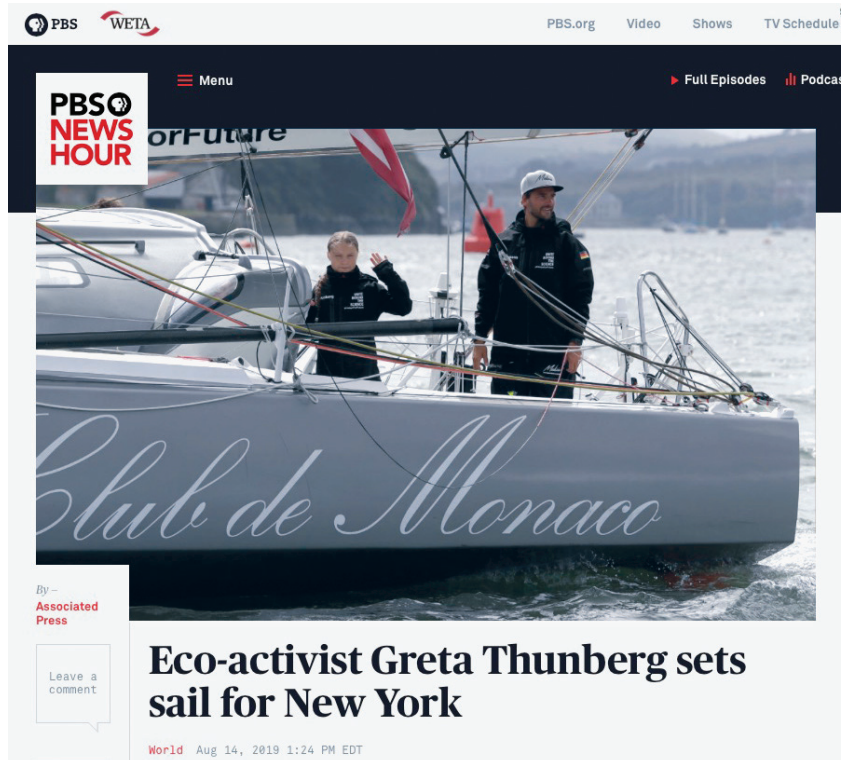
But it does bring up the bigger question, which is science versus fascist ideology. We see this dichotomy on many fronts, but I think it's important for you to lay out why this is the real fight.

Zepp-LaRouche: Well, before I say something on that, I should mention that there was an amazing [article](#) in the *Sunday Times* of London on August 18, illustrating another aspect of Greta Thunberg, basically saying that this is designed to cause the biggest bonanza for the financiers. That coming from *The Times*, I find quite interesting. The article first recounts one narrative, that of Greta, the teenager, sitting for a year in front of the Swedish parliament, until somehow innocently inspiring "climate strike" demonstrations throughout Europe.

But then, the authors reveal a quite different story, namely, that a guy named Ingmar Rentzhog, who has become Thunberg's manager, so to speak, was trained by Al Gore, and is connected to the top think-tank in Sweden, the Global Challenges Foundation, which in

turn, has as its Executive Director Jens Orback, a former Swedish government minister who is absolutely identical with the Swedish oil and energy industry, and that their intention is to make the biggest bonanza ever by getting everybody to invest in green financing.

Now, that is really, absolutely the case, and I think the real narrative of Greta Thunberg—she may not even know all of this, maybe she does, maybe she doesn't—but this really shows that this poor girl is completely being played. And that the idea to go now for green fi-



The image is a screenshot of a PBS News Hour article. At the top, there are logos for PBS and WETA, along with navigation links for PBS.org, Video, Shows, and TV Schedule. Below the logos is a menu icon and a 'Full Episodes' link. The main content area features a large photograph of Greta Thunberg and another person on a white yacht named 'Club de Monaco'. The yacht is on the water, and the text 'Club de Monaco' is written in cursive on its side. To the left of the photo is a 'PBS NEWS HOUR' logo. Below the photo, the article title 'Eco-activist Greta Thunberg sets sail for New York' is displayed in a large, bold font. Underneath the title, it says 'By Associated Press' and 'World Aug 14, 2019 1:24 PM EDT'. There is also a 'Leave a comment' button.

ancing, is the last effort to prevent, or at least postpone the collapse of the financial system by causing a last-phase boom. Were this plan allowed to be carried out, it would completely destroy the physical economy, and therefore it's very good that these stories are now coming out, because maybe there is a return to reason in time, before disaster is complete.

Schlanger: And as you pointed out in a discussion with our colleagues yesterday, this makes the issue very clear: real science versus fascist ideology.

Zepp-LaRouche: Yes. The *Sunday Times* article

also reports on a [Climate Emergency Plan](#) recently published by the Club of Rome, and that Thunberg's so-called "talking points" are identical to the Call to Action points of the Club of Rome! This is really incredible, because the Club of Rome is not an organization of scientists; they are quacks, they are fraudsters, who in 1972 programmed a computer to "confirm" as an end result, what they wanted to say, namely that human civilization's limits to growth had been reached, that the Earth is finite. The whole ecology movement grew out of this wrong conception.

Scientists Say CO₂ Not Responsible for Changes in Climate

So, I think the future is not decided at all. On the other side, now, a growing number of scientists, in 20 countries already, have picked up on the initiative of 90 Italian scientists, who on July 4, 2019 signed a [petition](#) stating that the thesis of an anthropogenic origin of global warming is an unproven hypothesis, that there is no connection between CO₂ emission and climate change, and therefore, they are calling on the Italian government not to take the costly and completely ineffective measures being urged by the climate extremists.

If you want to change the climate, well, first of all, man can probably not do that at all, because the causes of changes in the Earth's climate are not the result of human activities, but have their origin in long cycles of the Solar System in the Milky Way, the galaxy, Solar processes, and cosmic radiation.

So, it is very important that there is now a growing movement of scientists challenging the claim of man-made climate change. They are appealing to the governments, especially in Europe—and perhaps also President Trump—to re-establish a scientific debate on this issue. President has proposed a Presidential Committee on Climate Security to do just that.

I think people should spread this idea, and contact scientists and get them to get in touch with their colleagues on this. The resolution being circulated internationally for additional signatures, is supposed to be published in a few weeks.

Help support our campaign, if you agree that humanity should really not descend into a New Dark Age, which would extinguish civilization altogether, but not the way the Extinction Rebellion people are talking about it, but due to a lack of physical production: food,

water, and all of the other things for a growing, advancing civilization.

Schlanger: It would seem that the Extinction Rebellion is actually for extinction: They just want it through a New Dark Age, through phony attacks on science.

Return to Real Science and Classical Art

Zepp-LaRouche: I think we are in an incredible process, where many, many people realize that this system is not working. It's not working in Europe; it's not working in the United States. Our colleagues in the United States report a very interesting pattern, that many people there don't want to hear about political parties anymore. I find that healthy, because party politics is really evil, because it has completely degenerated into lobbyism for particular interests. Going after the common interest, the common aims of mankind, the common good of nations is a much better approach.

And we will fight to have a return to the scientific ideas of the physical universe, of natural science, of great Classical art, basically the ideas of Lyndon LaRouche which I can only encourage people to study. If you go to our archives, you will find an enormous quantity of articles by Lyndon LaRouche. Contained in those articles are the most profound conceptions which have developed by anybody to the present time.

And therefore, I again ask you to join the fight for the exoneration of my husband, and join our effort to, in time, get the European nations and the United States to cooperate with Russia and China, in a New Paradigm. Because if we do not change the present lunacy of geopolitical confrontation, the world can actually end up in catastrophe. The crisis points are many, seemingly minor incidents under these conditions can easily trigger larger conflicts. So we have to have a new cooperation between the United States, Russia, China, and India; and we should not give up on the European nations, for they, too, can be brought back to reason. So join our effort.

Schlanger: Helga, on behalf of our viewers and readers, thank you for once again making the world's current situation coherent and understandable. And now it's up to people to act. See you again next week!

British Central Banker Launches ‘Green’ Attack on the United States and on the Dollar

by Paul Gallagher

Aug. 26—The head of the Bank of England came to the Federal Reserve’s bankers conference in Jackson Hole, Wyoming last week and said the U.S. dollar should be replaced, in trade and investment, by a digital world currency. Mark Carney spoke highly of the “Libra” digital currency proposed to be issued by Facebook — which the U.S. Congress is trying to stop. But Mr. Carney said the global digital money would better be controlled by the Bank of England and other big central banks. He thus made Facebook’s “Zuck bucks” into his stalking horse.

The value of the dollar, Carney complained, is making it harder and harder for his Bank of England, the Fed and other central banks to keep bailing out London and Wall Street and Tokyo megabanks, as

they’ve done for more than ten years since the 2008 global financial crash. Even “quantitative easing,” even negative interest rates, don’t work any more, and another financial crash is looming.

Carney blamed this on governments, and especially the U.S. dollar. He got support for his British imperial arrogance from the huge (\$6.5 trillion) Wall Street private equity fund BlackRock LLP, which went to the Wyoming meeting with a proposal to transfer control of government *budgets* to the central banks such as the Bank of England and the Federal Reserve. These would simply print the money and have their “experts” tell governments how to spend it, proposed BlackRock.

And the spending would be “green,” throwing trillions at backward “green” technologies like huge solar farms, while shutting down coal and oil power with heavy “carbon taxes.”

The screenshot shows the top portion of a news article on the Guardian website. The header includes the Guardian logo, navigation links (News, Opinion, Sport, Culture, Lifestyle, More), and a search bar. The article title is "Mark Carney: dollar is too dominant and could be replaced by digital currency". Below the title is a sub-headline: "Bank of England governor says stockpiling dollars has become a barrier to global trade". A photograph shows Mark Carney and Jerome Powell walking together. A caption below the photo reads: "▲ Mark Carney (left) with the Federal Reserve chair Jerome Powell at Jackson Hole, Wyoming. Photograph: Jonathan Crosby/Reuters".



CC/Policy Exchange

Mark Carney, Governor of the Bank of England.

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The future of money

BTC	ETH	XRP	BCH	LTC	EOS
\$10,341	\$189	\$0.27	\$309	\$73	\$3.60
+2.76%	+0.33%	+0.04%	+1.17%	+0.71%	+0.22%

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By Ana Alexandre
AUG 23, 2019

Bank of England Governor: Libra-Like Currency Could Replace US Dollar

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That would finish off what remains of American industrial strength, already dragged down by decades of British free trade agreements, “deindustrialization,” drug epidemics. . . .

It should be understood that the American System economist and statesman Lyndon LaRouche would not have stood for Mark Carney’s arrogant imperial demands for one minute. He was the great adversary of British imperialism—financial *and* geopolitical—for half a century. If President Donald Trump would open the way to posthumous exoneration of the falsely prosecuted Lyndon LaRouche, the Bank of England’s Carney and BlackRock would have to eat their words.

In fact, the dominant role of the U.S. dollar in international trade and investment—such an obstacle in Mr. Carney’s view, to central banks running the world with their digital world currency—is today the only remnant left, of President Franklin Roosevelt’s successful Bretton Woods credit and monetary system. Bretton Woods allowed stable currencies and strong growth in productivity and production in the United States and Europe for 30 years after World War II.

Richard Nixon abandoned the Bretton Woods system in 1971 under pressure from London banks,

giving them the speculative casino of “floating currency rates” they wanted, with \$5.5 trillion *per day* in currency trading, 99% of it just speculation.

LaRouche proposed to restore a Bretton Woods system, this time with credit for developing countries as well, for basic infrastructure and industrialization—much as China is providing Asia and Africa under its Belt and Road Initiative. He said this new Bretton Woods could be launched by the four powers which today don’t kowtow to “green new deals”—the United States, China, Russia and India.

Leading with Moon and Mars space missions and new nuclear and fusion technologies, those nations and others that join them can revolutionize the powers of the human species and the creative vistas of human beings. Let Mr. Carney turn green.

BlackRock’s Scheme Is Radical Keynesianism

BlackRock’s scheme is not new in fact; it is radical Keynesianism now given the name “modern monetary theory” (MMT), and traces back to the leading post-war Keynesian, Abba Lerner. In December 1971, Lerner was defeated in a notable debate with Lyndon LaRouche about the end of Bretton Woods, when an agitated Lerner shockingly blurted out that he supported Hitler’s Finance Minister Hjalmar Schacht’s financial policies, only wishing Schacht could have implemented them without Hitler: “But if Germany had accepted Schacht’s policies, Hitler would not have been necessary.”

MMT claims that currency printed by central banks is not debt, and has no limit, so long as they simultaneously hold the banking system’s discount interest rate at roughly zero—sounds familiar. In Schacht’s case, the printing was used to build up the Nazi war machine under continuing German World War I reparations debt.

A Pro-Nuclear Policy Calling for CO₂ Reduction Still Has Genocidal Effects

by Benjamin Deniston

Aug. 22—With the recent escalation of the “man-made climate change catastrophe” propaganda campaign, there is a growing emphasis on nuclear fission—and even fusion—as the basis of a CO₂ reduction policy.

The development and mass implementation of advanced nuclear fission and fusion power is urgently required, but any attempt to pair nuclear expansion with a CO₂ reduction policy would condemn hundreds of millions of people to unnecessary suffering and premature death.

Present global nuclear fission production capacity is woefully inadequate, and mass production of fusion power will take significant time to develop (even with a crash program).

Coal and natural gas consumption must be increased to support a more rapid gear-up of the needed manufacturing capacity for fission and fusion plant mass production.

Any CO₂ reduction program—even one that supports nuclear—would be devastating to the growth requirements of the planet.



The Bellefonte Nuclear Generating Station in Hollywood, Alabama.

TVA

The Present Global Picture

In 2012 the global electricity consumption rate was 2,500 gigawatts (GW). Coal and natural gas provided the majority, roughly 60% of global power (1,500 GW). Hydro provided 15% (375 GW), nuclear fission provided 10% (250 GW), and “non-hydro renewables” provided 8% (200 GW).

According to a 2018 [assessment](#) published in *EIR*, “Mass Production of Modular Nuclear Reactors to Industrialize Developing Countries Until Fusion Power Comes Online,” by Ramtanu Maitra, the total global manufacturing capacity for producing nuclear power plants can only add 30 GW of nuclear power per year. That means, with present capacity, it would take 50 years to replace all existing coal and natural gas with nuclear.

A massive ramping up of nuclear power production capacity is clearly



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The Salem Harbor Natural Gas Power Station in Salem, Massachusetts.

needed. However, it would be devastating to dedicate that expanded nuclear production capacity to an accelerated replacement of CO₂-emitting power sources (coal and natural gas), rather than keeping existing coal and natural gas policies (including expansion) and adding new nuclear power on top of CO₂-emitting power sources.

The Realities of Energy Poverty

According to the International Energy Agency, one-seventh of the world's population—1.1 billion people—don't have access to electricity. If we examine this by nation, there are currently 3 billion people in 34 nations with catastrophically low levels of electricity consumption—averaging less than 100 watts per capita. By 2045 those 34 nations will have 4.5 billion people.

What will be required to lift these nations out of energy poverty?

In 1990 China's energy-flux density, by this measure, was 60 watts per capita. By 2015 (25 years later), China had increased its energy-flux density nearly eightfold, to 450 watts per capita (while its population also grew by 20%). Presently 65% of China's electricity comes from coal and 20% from hydro (with 5% from wind and 4% from nuclear).

For these 34 energy-starved nations to go through the same rate of growth in electricity consumption per capita (energy-flux density) that China went through from 1990 to 2015, would require an additional 2,000 GW of electricity production by 2045.

What's more important over the next 25 years? Using nuclear to replace 1,500 GW of existing coal and natural gas plants, or using nuclear to provide 2,000 GW of new, additional power generation for the poorest countries on the planet? We presently don't have the production capacity to do either, let alone both. Further, the 2,000 GW of power required for these 34 energy-starved nations to go through a China-comparable 25-year growth in energy-flux density, is far from what's needed globally.

A Planetary Perspective

A minimum goal for global electricity consumption by 2045 is 10,000 GW, four times 2012 levels (2,500 GW)—although that's probably far below what Lyndon



The Qianxi Power Station, a coal-fired power plant near Gantang, Guizhou Province, China.

CC

LaRouche would be calling for under a Moon-Mars program. For comparison, the World Energy Council projects global electricity consumption to be 6,000 GW by 2050 (rather than 10,000 GW). That gap of 4,000 GW would ensure premature death and unnecessary suffering for hundreds of millions (if not billions) of people.

For example, since infant mortality rates correlate with a nation's energy-flux density (power per capita), we can estimate that 90 million infants will die unnecessarily by 2045 if these 34 energy-starved nations aren't able to go through a China-comparable 25-year growth in energy-flux density.

This is a clear example of the cost of CO₂ reduction, 90 million human lives ended, before these people even have a chance to speak.

The reality is coal and natural gas consumption must increase to support a more rapid gear-up of the needed manufacturing capacity for fission and fusion mass production. In a few generations, coal and natural gas use will naturally decline in the context of a fission- and fusion-driven global energy program. However, any policy mandate to unnaturally accelerate CO₂ reduction (even if it's premised on expanded nuclear power) is tantamount to genocide.

III. LaRouche on the Divine Spark

June 16, 2002

The Challenge of Peace

For the Christian, for Example

by Lyndon H. LaRouche, Jr.

My subject here, is the possible basis for a peace among faiths, despite the presently accelerating threat, of a plunge of this planet into a prolonged new dark age of all humanity.

For the Christian, for example, the center of his, or her sense of a timeless existence as a personality, is centered, as for Johann Sebastian Bach, in a reliving of the **New Testament** account of the Passion and Crucifixion of Jesus. The persistence of that experience, typifies the unique meaning of *Christianity*.¹

The sense of the efficient meaning of that moment from our past, for our present and future, alike, evokes within the Christian a sense of what that great philosopher, historian, poet, and dramatist Friedrich Schiller, portrays as “The Sublime.” His treatment of the functionally essential features of actual history, as a subject of his dramas, as in the case of Jeanne d’Arc, is extraordinarily inspiring on this specific account. For reasons I shall present during the course of this report, that reference to Schiller, points us toward the true meaning of *spirituality*.

This emphasis upon Schiller is needed to situate the modern notion of *spirituality* inside the same, real universe inhabited by the Creator of our universe, rather than as some different universe, the latter outside that in which we experience mortal life. Until the sense of the *Sublime* is also located as the central, underlying feature of Plato’s method in physical science, we in modern, now globally extended European civilization, would remain unable to bridge the apparent gap between, on the one hand, what Christian Apostolic tradi-

tion, for example, knows as *spirituality*, and, on the other hand, *the universality of the physical domain*.

The stubborn persistence of this gap, between spirituality and physical science, confronts us all, Christians and others, with the fact of the exceptional historical importance of Europe’s Fifteenth-Century “Golden Renaissance.” The rebirth, in Europe, of a competent form of scientific method, by such followers of Cardinal Nicholas of Cusa as Johannes Kepler, after nearly fourteen centuries of hegemony of the corrupting Roman imperial tradition throughout the Mediterranean region, has demonstrated the perseverance of that method of thought, by means of which the gap between spirituality and physical science could be bridged.²

Therefore, it is for such excellent reasons, that the method of Plato’s Socratic dialogues, is sometimes identified as a method of “spiritual exercises.” This connection is implied, if we recognize the significance of the interrupted, but nonetheless persisting continuity of the physical scientific method of Plato, and of his collaborators and followers, during the period concluding with the work of Eratosthenes and Archimedes, through the rebirth of that method as the Platonic hegemony of that Golden Renaissance which has been the wellspring of all modern Classical culture.

Our comprehension of the quality of perseverance of the active principle of that ancient-to-modern connection, is helped, if we take into account the fact, that

1. Cf. Plato, **Phaedo**, and Moses Mendelssohn, **Phaedon** (first edition: 1767).

2. This is not to overlook such notable cases as the direct contribution of the Baghdad Caliphate to Christian civilization, the indirect contribution of India to both, and the cultural debt of civilization generally to past achievements in China. The exceptional quality of the Fifteenth-Century, “Golden Renaissance,” is that it is the watershed from which the existence of the modern sovereign form of nation-state is derived.

the method of the **Gospel of John** and the *Epistles* of Paul, reflects some exceptional continuations of the Platonic heritage's unique contribution to the practice of communication of notions of universal principle, even under the conditions of Roman imperial rule during the First Century A.D. Similarly, St. Augustine also typifies such a perseverance.

This needed connection, between spirituality and physical science, was always implied in the relatively happier moments of what became today's anti-Romantic, Classical tradition of Plato, Gottfried Leibniz, Moses Mendelssohn, et al. Despite those happier moments, the needed, explicit connection between those two, was apparently never pinpointed, until my own original discoveries in the science of physical economy, as first developed over the interval 1948-1953.³

Therefore, with that latter connection in view, I outline here both the case of the needed recognition of such connections, and of their bearing upon the achievement of an urgently required peace among faiths.

1. The Threat to Peace

The present, crucial, and immediate practical importance of exploring the matters just outlined, is shown by considering today's deadly threat of generalized religious and related types of warfare. At the present moment, this threat is best typified by the military-utopian doctrine

3. As I demonstrate at a later point in this report, although Vladimir I. Vernadsky's definition of the *Noösphere* locates an aspect of spirituality within the terms of physical science, the cultural implications were not explicitly addressed efficiently in any known source prior to my own.

best known as Brzezinski-Huntington-Bernard Lewis "Clash of Civilizations" strategy. Therefore, now, as for the 1648 Treaty of Westphalia, it is of more than collateral importance, that an ecumenical "peace among

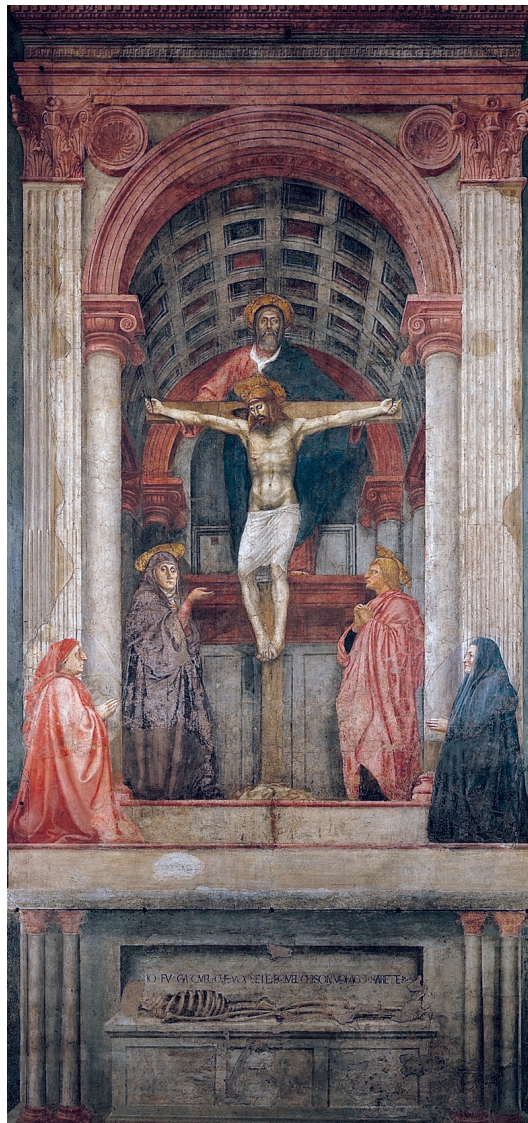
faiths" policy be nourished, first and foremost, among those religions which accept the notion of man and woman as made equally in the likeness of the Creator of the universe. We must proceed from that starting-point, to explore a still-deeper basis for a broader, more universal accord. This basis can be found only in a rigorous conception of the coherence of a provable universal principle of spirituality with the universality of the physical domain.

Therefore, today, the avoidance of the now-threatened new dark age of religious and kindred forms of "ethnic" warfare, must focus our attention, chiefly, on the spiritual connections of European to Asian cultures. For this purpose, a merely negative achievement, a self-deluded utopians' state of non-warfare, does not provide a positive basis in method for achieving an actually durable peace.

True peace rests always on a positive basis, never a merely negative one. Peace is never either the mere absence of war, nor some silly construct such as the "perpetual peace" which Immanuel Kant proposed might be the negation of the negation

of war. The source of durable peace, is knowledge of the importance to both oneself and others, and to one's most essential nature, of mutual benefits which could not exist without active measures of cooperation, one with the other.

The success of the search for a positive basis for durable peace, depends upon two general requirements of an axiomatic authority. The first of these, is that *the*



"The Trinity," by Masaccio. Christ's Passion and Crucifixion express Schiller's principle of the Sublime.

mode of cooperation which peaceful intention requires, must be feasible in the physical universe. Second, the actions which are intended must be coherent with certain universal principles which are specific to human nature per se.

Resistance to the combined authority of those two classes of prerequisites, is the root of the mass-murderous follies so often spawned by the utopian schemes of those pacifists who seek to subdue the world to an enforced peace. Those bloody-handed utopian dreamers have been either recklessly ignorant of what I have just written here this far, or, in the alternative, have intentionally disregarded those considerations.

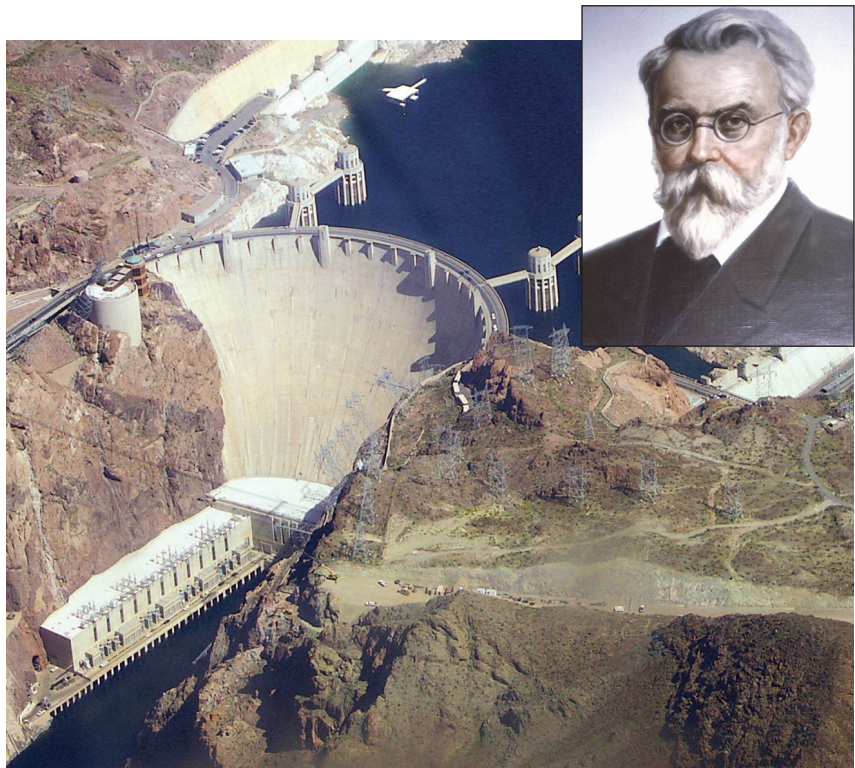
Let the Stones Speak!

The customary failure, as by the utopian pacifists, is the error, of failing to start from that evidence which proves the hypothesis, beyond any reasonable doubt, that man is a creature of a certain, unique, spiritual quality, a quality which is not manifest in any other living species. Such a proof has been supplied, for example, by Vladimir I. Vernadsky's definition of the *Noösphere*, as I have reached a congruent conception within the framework of a science of physical economy.⁴

As Vernadsky showed, the universe as a whole is presently known to be divided among three distinct but efficiently interconnected *physical phase-spaces*. These are so distinguished by a mass of elementary, universal physical-experimental evidence.

If we assume, as a matter of universal experimental practice, that the universe were elementarily *abiotic* in its origin, the universe appears to be intrinsically *entropic*, in the sense of Clausius et al. But, then, there exist physical effects, expressed within that universe, which are associated with living processes, or with fossils produced by living processes, the which are intrinsically *anti-entropic* processes. That defines what Vernadsky identifies, from the standpoint of

4. Cf. Lyndon H. LaRouche, Jr., **The Economics of the Noösphere** (Washington, D.C.: EIR News Service, 2001).



The Hoover Dam, a showpiece of the Franklin Roosevelt-era infrastructure projects, dramatically illustrates how human cognitive activity shapes the Biosphere, which in turn changes the ordering of abiotic phase-space. (Inset: Russian biogeochemist V.I. Vernadsky.) "Thus," LaRouche writes, "even the stones have spoken."

biogeochemistry, as the *Biosphere*. Thirdly, there are changes in the ordering of the Biosphere which are intrinsically *anti-entropic relative to that Biosphere*, and are, uniquely, the products of human cognitive action. Among all living species, only the sovereign, voluntaristic, cognitive powers of the human individual, are capable of generating such changes. The latter domain is defined by Vernadsky as the *Noösphere*.

Thus, to the best of our present knowledge, the universe is composed of those three, distinct, but efficiently interconnected phase-spaces.⁵ The interconnection so ordered among those three phase-spaces, expresses the existence of a single, universal principle of Creation, which accounts for the coming into existence of a form of life like no other, the human cognitive individual. Thus, even the stones have spoken, to

5. This is to say that the universe is *Riemannian*. "Über die Hypothesen, welche der Geometrie zu Grunde liegen," **Bernhard Riemanns gesammelte mathematische Werke**, H. Weber, ed. (New York: Dover Publications reprint, 1953).

declare that man and woman are made equally in the living image of that Creator.

The most characteristic quality which thus distinguishes the human species from all others, is that mankind is the only form of life which is capable of willfully increasing its *potential relative population-density*, as this physical effect is measurable per capita and per square kilometer of our planet's surface. This increase occurs through active cooperation in applying universal physical principles originally discovered by what Vernadsky identifies as the *noëtic* powers of individual, *voluntaristic* human minds: *cognition* as Plato's Socratic dialogues define the noëtic process of *cognition*.

In so acting on behalf of the principle of cognition, rather than custom, we not only change our species' physical relationship to the universe; we change the universe, in the same sense that living processes transform the Earth from an ostensibly abiotic manifold, that to the effect of increasing the influence of the Biosphere over the processes and condition of the planet as a whole.

Our species' relationship to the universe at large, is thus defined in terms of a social process of *fostering and transmitting experimentally valid discoveries of universal physical principles over the course of successive generations*. These applied discoveries have the effect which the secondary-school pupil might equate to the introduction, successively, of progressive changes in the array of axioms and postulates of a deductive system. In other words, they correspond, in effect, to an unfolding process of what would be regarded as willful, progressive, *genetic changes* in the species, or variety of a lower form of life.

Thus, the human individual's ability to effect such functionally definable changes in his, or her society's potential relative population-density, is an expression of a distinction of the human species from all others.

Through the transmission of the reenacting of experimentally valid discoveries of universal physical principle, over successive generations, the individual person escapes the bounds of a member of a species acting upon and with nature, to emerge as a creature acting willfully to change the course of his species' willful transformation of *the process of changing nature. Man rises above the beast within creation, to participate in the progressive changing of creation itself*.⁶

6. *Man hypothesizes the higher hypothesis*.

This ability, to generate such changes, imparts to our species an inhering, god-like power, hence showing the individual person to be made in likeness to the Creator of the universe. It implies a universal principle: We must ask, what is the quality of the universe, that it generates within it, not merely a species such as man, but creates the preconditions required for the coming-into-being of our species? This question poses the physical argument for existence of what the Apostle Peter's friend, Philo Judaeus of Alexandria, defended as the continuing efficiency of a Creator of the universe, and of the species of human individual, made in His image, within that universe so composed.

Thus, let the stones speak the truth of this matter, were no other voice to be heard. Such is the principle of *natural law*.

This brings us to the question: Are today's usual approaches to human knowledge, based upon asking the wrong question?

2. Substance and Hypothesis

Contrast my argument so far to what is known as a "Cartesian" view of the universe.

In a "Cartesian" or similar system, objects are regarded as either idle, or wandering in a Euclidean-like space-time of backwards-forwards, up-down, and side-to-side motion. So, a consistent, but flawed mathematics, such as that of Joseph Lagrange, might be derived from a few such utopian (*a priori*) definitions, axioms, and postulates. Experience is then explained, foolishly, within that fantastic framework. Such a systemically flawed, foolish mathematical system, was asserted by the Joseph-Louis Lagrange whose assumptions were exposed as false by Carl Gauss's revolutionary 1799 publication of his fundamental theorem of algebra.⁷

Similarly, still today, the prevalent, pathological tendency in virtually all societies, is to assume that recurring patterns of experience are to be interpreted, more or less mathematically, as if at the classroom blackboard, as belonging to some system which is governed by a more or less permanently fixed set of definitions, axioms, and postulates.

So, most people, in most cultures to date, governments and popular opinion alike, tend to be controlled

7. Carl Friedrich Gauss, *Werke*, III (Hildesheim and New York: Georg Olms Verlag, 1981), pp. 1-103.

by the utopian form of pathological conviction, akin to blind faith in a fictitious Claudius-Ptolemy-universe, that certain current trends are virtually axiomatic, and thus irreversible, or otherwise inevitable. The result of that misguided, usually wishful, blind faith in the fixed character of perceived current trends, causes many people to cling to those beliefs, even when all clear evidence points to an ostensibly axiomatic (*systemic*) change in progress.

The recent blind faith in a recovery of the U.S. economy, on the basis of such superficial evidence as momentary rises in dubious forms of indexes and the like, is typical of mass hysterias premised on blind faith in acquired current habits of behavior. Such commonplace, pathological beliefs, as by most governments and popular opinion today, assume the character of mass delusions. These are expressed as such delusions are widespread among leaders of the U.S. Congress and within the Presidency today, as more or less schizophrenic states of denial of any reality which is implicitly contrary to a prevalent such mass-delusion.

Such crises are already inherent in the nature of any so-called “traditional” form of society. However, there is always an avenue of escape from such delusions. Societies, so confronted, may overcome such delusions, and survive, by means of apparently radical, sweeping changes in ruling sets of axiomatic assumptions. So, in 1932-1933, Franklin Roosevelt’s leadership rescued the United States from the doom to which the legacy of Calvin Coolidge and Andrew Mellon had relegated it.

Scientific and technological progress, is typical of those radical changes in ruling assumptions, by means of which societies not merely survive, but progress, in an upward-evolutionary way, toward better conditions than had been possible earlier. These beneficial, revolutionary changes, are often chosen only when the belated recognition of some terrible threat to society induces it to accept, even if reluctantly, the need to adopt such radical upshifts in technological, or social institutions, or both combined.

Thus, we have the kinds of opposition to scientific progress which have frequently arisen in the form of so-called “traditional cultures,” as among the notable causes of tragedy which entire nations and cultures have brought upon themselves. This, and related matters, were addressed within Plato’s dialogues. He identified two general types of causes for the great catastrophes, up to that time.

The first type was represented by so-called “natural

catastrophes,” expressing forces beyond the ability of existing society to control. The second type were man-made catastrophes, such as the folly of the Peloponnesian war: a people’s own acts of commission, negligence, or both combined. For the moment, consider the second type; we shall reexamine the first type of case at a later point in this report.

Catastrophes of the second type all fall into the category of *Classical tragedy*. All such tragedies describe a terrible consequence of the failure of a people to change its established culture in a timely fashion. On the Classical stage, this failure is often expressed by a leading figure, such as Shakespeare’s Hamlet or Schiller’s Wallenstein, who fails to bring about urgently required, appropriate changes in established institutions and habits of popular response. However, in all Classical tragedy, on the stage, or in real life, it is always the people themselves whose clinging to habituated opinions, brings the disaster which falls upon them.

Hence, the importance of the principle of the *Sublime*, as in Jesus Christ’s *Sublime* sacrifice, for the sake of the need to free mankind from that habituated, tragic folly, which, uncorrected, would doom it. Hence, the Sublime quality of that devotion, by Jeanne d’Arc, which led the way to the establishment of the first modern nation-state, Louis XI’s France. Hence, the Sublime quality of devotion, by Sir Thomas More, which enabled the English Renaissance to survive the folly of Henry VIII.

The needed, systemic examination of the flaw expressed by Classical tragedy, is Plato’s Socratic dialogues. There, the principle of the Sublime is elaborated as reflecting *the principle of hypothesis*. The significance of that latter term, the principle of hypothesis, is best illustrated from the standpoint of the most elementary features of a competent mathematical physics, that of Kepler, Leibniz, Gauss, and Riemann, for example. I develop the relevant argument to that effect, as follows.

The Principle of Hypothesis

The Classical pedagogy which Plato employed, in his **Republic**, was to emphasize, that what the individual perceives with aid of his, or her senses, is comparable to shadows cast upon the irregular surface of the walls of a dimly firelit cave. Reality is the unseen object which casts those shadows.

Even most among those who have working, if imperfect knowledge of scientific method, their interpretation of the relationship between shadow and sub-

stance is fairly described as “inside-out,” or “upside-down.” What is true in their opinion, is that, although we can not see what are experimentally proven as universal physical principles, those principles, such as the principle of gravitation uniquely discovered by Johannes Kepler, do act efficiently upon the world of our sense-perception, and are, thus, subject to experimental verification. To present date, most scientists are, unfortunately, what is called “reductionists,” who have erred, in seeing this role of principle as more or less magical, as mysterious forces acting from under the floorboards of a “real universe” which is misidentified as in one-for-one correspondence with the world of shadows called sense-perception.

That is to say, that, usually, the reductionist and the scientist see the same shadows. The difference is, that the better scientist, such as Plato, Cusa, Kepler, Leibniz, Gauss, and Riemann, sees the shadows as shadows, and thinks of the real, universal principles which cast those shadows; the reductionist is a superstitious fellow, who mistakes shadows for real objects, like the hunter who shoots at shadows, and, therefore, often sends his children to bed hungry.

We are enabled to know that Plato’s argument is true, through those paradoxes of experience which could not be solved within the bounds of sense-certainty. These are termed *ontological paradoxes*.

Typical of such paradoxes, are, from Plato’s lifetime, the problems of doubling the square and the cube.

In modern times, we have the most exemplary case of Kepler’s unique method of discovery of universal gravitation. We have, similarly, the Leibniz-Bernoulli discovery of the way in which the catenary reflects a universal physical principle of least action. So, Gauss’s 1799 refutation of D’Alembert, Euler, and Lagrange, refutes, to the present day, the fundamental error underlying the “ivory tower” follies common to all empiricist and positivist misconception of the elementary principles of a mathematical physics.⁸

Gauss’s exposure of that empiricist folly, on the matter of quadratic, cubic, and biquadratic functions, is to be recognized as a modern treatment of the same conception, respecting the doubling of the square and cube, solved in large degree by the method of Plato, through successive work of Plato and his followers, through the summation of this by Archimedes’ contemporary Eratosthenes. Consider, similarly, Plato’s em-

8. Ibid.

phasis on those matters of universal physical principle which Plato adduced from examination of the proof of the construction of the Platonic solids.

All of these cases, especially the matter of cubic and biquadratic functions, and the Platonic solids, are typical of the way in which the seemingly impossible paradoxes of sense-certainty expose the world of imagined sense-certainty, as a universe of mere shadows.

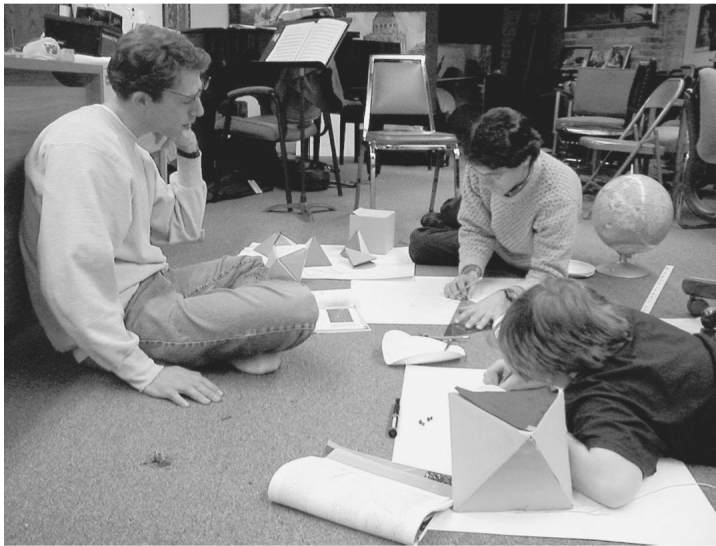
There is nothing mystical in this distinction. Our senses are organs of our body. They do not show us the world outside our skins directly, but only the reactions of our senses to that world. What we see, is what our mind interprets those sense-perceptions to be. Knowledge is not derived from sense-perceptions as such; knowledge is acquired through the way in which we are able to bring about willful changes in the behavior of that world which the mere shadows of sense-perception reflect.

The distinctive feature of the human mind, is its unique ability to deal with ontological paradoxes of the type which arise in that way. This unique capacity is what Vernadsky preferred to term *noësis*, thus avoiding that commonplace, often misleading habit of references to the act of *knowing* (*cognition*): the habit of saying “knowing” when the speaker intends to signify merely learning, merely *understanding* in Immanuel Kant’s sense.⁹

What Vernadsky signifies by *noësis*, is most strictly defined as the act of *hypothesizing*. The prototype of a valid *hypothesis*, is an experimentally valid discovery of a universal physical principle. On this account, Kepler’s unique discovery of a principle of universal gravitation, is, for reasons we shall encounter here, the leading example of the establishment of a true modern mathematical physics.¹⁰ By “mathematical physics,” I mean, as Gauss and Riemann make this point explicitly, a mathematics which is derived from successful physical hypotheses, rather than a supposed physics derived at the mathematician’s, generally accepted, reduction-

9. Kant’s *Critiques* were each and all written as attempts to eradicate the influences of Plato, Leibniz, Lessing, and Moses Mendelssohn, for once and all. The basis which Kant adopted for this was, chiefly, the argument made by Leonhard Euler’s fraudulent attack on his spiritual grandfather, Leibniz, in Euler’s 1761 **Letters to a German Princess**. The kernel of what Kant attempted was not only to outlaw the concept of hypothesis, but, as Kant’s existentialist followers insisted, to eliminate truth, in favor of arbitrary mere opinion.

10. Johannes Kepler, **The New Astronomy** (1609), William H. Donahue, trans. (Cambridge, U.K.: Cambridge University Press, 1992).



Construction of the Platonic solids at the Schiller Institute in Chicago. The cubic and biquadratic functions, and the Platonic solids, LaRouche writes, "are typical of the way in which the seemingly impossible paradoxes of sense-certainty expose the world of imagined sense-certainty, as a universe of mere shadows."

ist's classroom blackboard.¹¹

By universal physical principle, we should understand a class of physical effects which can not be produced in any other way, but as the expression of that specific intention which, when proven to be truly universal, becomes thus an experimentally proven universal principle. Vernadsky's definition of the *Biosphere*, is an example of this point. Physical effects which are attributable only to an *anti-entropic principle of life*, is an example of this. Physical effects which are attributable solely to the willful impact of *anti-entropic cognition (noësis)*, Vernadsky's *Noösphere*, is also an example of this.

Therefore, it would be foolish to imagine that human intelligence can be adduced from a principle also specific to lower species, such as apes. The increase of the human species' potential relative population-density, from the level of the several millions conceivable for a species of ape, to billions today, is a distinct physical effect which is not only unique to mankind, but is traced solely to the specific cognitive function which is lacking in the apes. Proceeding from the apes, toward man, we can go no further than to recognize, that the human biological organization is, in some way, an extraordi-

11. This leads, most notably from Gauss, to Riemann's referenced, revolutionary, 1854 habilitation dissertation.

narily appropriate setting for the existence of an efficient cognitive (*noëtic*) function. In some way, the existence of a seemingly ape-like creature, man, was the biological precondition for the appearance of this quality in a living species. However, this leads us to a still deeper consideration: the meaning of substance.

The Composer

The notion of a universal physical principle reaches backward, as much as forward. Thus, since the existence of a universal cognitive phase-space is shown by the indicated evidence, the principle of human existence was not born with human existence, but was always present and active. Restated: there was always a biotic potential (i.e., phase-space) acting upon the abiotic domain; similarly, there was always a phase-space corresponding to the cognitive principle, operating upon, and interacting with the same domain as the combined abiotic and Biosphere.

The point to be made is underlined by stating that "universal" signifies that nothing exists "before," "after," or "outside" that which is universal. The existence of the universe is perfectly self-contained. Einstein's celebrated quip, that the universe is finite but unbounded, is appropriate. Therefore, the notion of time itself must be regarded as of a relative, not a tick-tock nature. We must assume that time itself evolves as the universe undergoes a Riemannian-like process of development. In other words, the Gauss-Riemann "curvature" of physical space-time evolves to the effect that characteristic measurements become relative, rather than *a priori* "Cartesian" absolutes.

In that Riemannian universe, principles are "eternal," that in the Riemannian sense of relative permanence. Once the implications of that are taken into account, suddenly, our attention is thrust back to Heraclitus' and Plato's insistence, that nothing is permanent, but the kinds of change associated with the efficient action of universal principles. Our attention is returned to Plato's *Timaeus* dialogue, and the subject of the Creator of the universe as *The Composer*, composer in the sense of Kepler's argument, and of J.S. Bach's *bel canto*-derived concept of well-tempered polyphony.

Therefore, I shall now add certain remarks which bear upon the axiomatic quality of the make-up of our physical universe. However, since my subject here, is

the way in which the human individual finds his morally functional place in the universe, rather than the subject of astrophysics per se, I limit my remarks here, to *showing how we must imagine* our social relationship to that universe, rather than matters of putatively abiotic astrophysics as such.

The lack of any possibility of existence “before,” “after,” or otherwise “outside of” the bounds of universal physical principle, eliminates the existence of “absolute time” in the “Cartesian” sense of that term. Everything which unbridled fancy might suggest as existing, such as an “invisible hand,” independently of such limits, is simply a delusion.

That point brings our attention to that notion of a specific quality of “relativity” of time, which I introduced above. This focuses attention upon the problematic features of our knowledge of things. I emphasize our access to actual knowledge of the certainty of the non-existence of those shadows merely imagined to exist as self-evidently efficient objects, to exist “outside” the bounds of cognitively knowable universal physical principles.

The evidence is that our universe is Riemannian, a self-expanding universe. I mean Riemannian in the special sense of an unfolding of the known existence of that universe, as discovered in ways befitting the notion of known relations among three general types of phase-spaces (abiotic, living, cognitive). This unfolding is not presently defined in terms of particular events, but, rather, those changes in the physical geometry of the universe which correspond to the emergence of a significant role played by newly expressed “dimensions.”

Under those conditions of the permanence of change, the curvature of the universe is altered in effect. With such changes, the practical meaning of time is altered. The idea of a “clock time” independent of those changes, must be rejected. A notion of relative values of physical space-time, and of physical-space-time curvature, must replace ignorant persons’ fantastic notions of *a priori* clock-time. In effect, time may be shortened, perhaps defining the universe as relatively much, much younger today than most astronomers estimate.¹²

12. Never be duped into accepting what is presented as statistical evidence, simply because a mathematical case has been made for such a proffer. The assumption that there exist universally constant values for clock time of certain types of events, is an assumption which has never been proven. What if the universe has been speeding up, that in relative orders of magnitude, as a result of its Riemannian mode of self-development? In other words, the “density” of action within the universe has

As I shall show, a few moments ahead, it is the way in which social relations are defined by cognition, which defines the manner of expression of relative physical-space-time within the universe as a whole.

The notion of a Creator of the universe, is of an active principle of continuing creation, always, everywhere. Contrary to silly Isaac Newton, the universe is not a clock, which must be periodically rewound. At no time did an abiotic principle exist, without the active, superior presence of the universal principle of life, nor without the active presence of that still higher principle of cognition, which is expressed as a sovereign quality of the individual human mind. Thus, man is made in the likeness of the Creator, a fact which affords the creative sovereign mind of the human individual the power to know the personal existence of the Creator with the same degree of certainty as Kepler’s unique act of discovery of universal gravitation.

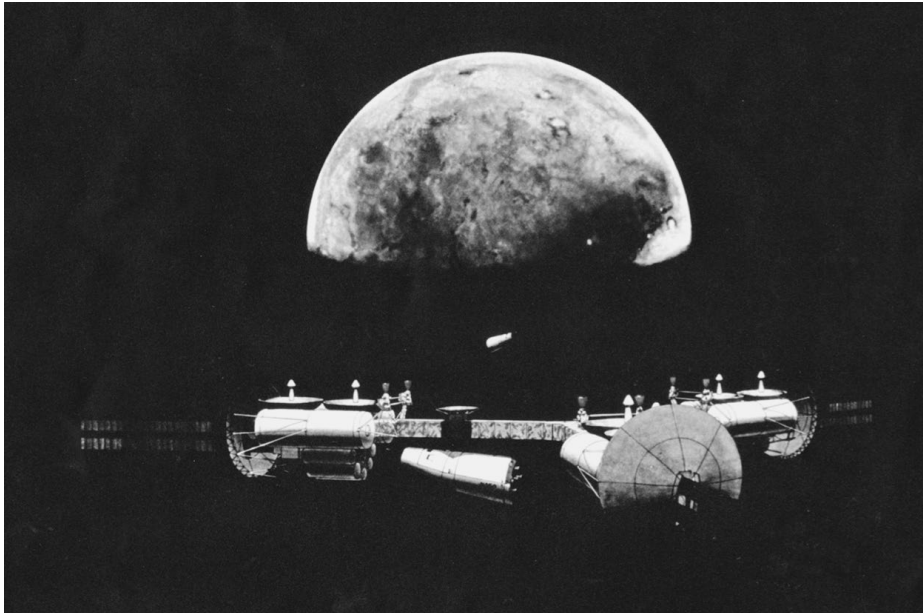
So, the stones themselves have spoken.

The Mars Colony Example

To illustrate the practical significance of what I have just written, above, consider the implications of planting a functional “science city”—a Mars “Los Alamos”—life-support system under the surface of Mars, and also manned exploration in other parts of the Solar System. Look at the implications of this from the standpoint of the **Timaeus** dialogue. Return to the discussion of the principle of Classical tragedy.

As I stated above, Plato distinguished between what are usually classed, respectively, as natural and man-made catastrophes. Yet, if we consider negligence as also a source of a catastrophe, the failure of mankind to develop its powers over nature, such as the failure to continue the U.S. Corps of Engineers’ program for the northerly regions of the Mississippi river-system, may be the relevant, man-made cause of what might have been misclassified as a natural catastrophe. The failure to continue the Hill-Burton policy for U.S. national health-care, leaves the nation vulnerable, by willful negligence, to relevant future catastrophes. Might it not

been increasing? What then is the clock you are using to edify the credulous in the matter of the age of the universe? Taught science has always been riddled with “solid facts” resting mathematically upon hidden axiomatic assumptions of an arbitrary character. The entire mathematics of Euler and Lagrange, for example, rests upon unstated, axiomatic assumptions respecting the self-evidently “Euclidean” nature of universal physical-space-time. These were the assumptions which Gauss and Riemann showed to have been absurdities.



the Moon, to overcome the otherwise seemingly impossible burden of producing the greater part of the components of the bill of materials needed for manned travel to and from our first interplanetary target, Mars. Use, and processing of the raw materials, including helium-3 isotope, available on the Moon, would enable us to assemble flotillas of spacecraft at locations such as Earth's geostationary orbit, for continuously powered flight to the orbit of Mars. From a place above Mars, we could then accumulate and deploy the systems needed for implanting a life-support system under that planet's surface.

To reach Mars by means of continuously powered acceleration-deceleration, and beyond,

An artist's rendition of a space station approaching Mars, in a future colonization effort. "Manned exploration to more distant locations, begs the discovery of processes of still greater characteristic 'energy-flux density.' Ostensibly, the general rule is, that the ever-deeper cognitive penetration of the microphysical domain, is the pathway toward the power to master the astrophysical."

be likely, that scientific progress could enable us to exert relevant degrees of control over effects of certain seismic processes? What of the Solar-System processes which now determine the Earth's ice-age cycles? Are the cosmic forces within our Solar System beyond the reach of our species' cognitive powers?

Controlled thermonuclear fusion is within our reach. That change will increase our power in the universe by relative orders of magnitude beyond present levels of practice. The potentiality of becoming able to control qualitatively denser "matter-antimatter" reactions, teases the imagination. How shall we seek and find the power to control, more and more, "the forces of cosmic catastrophe"?

Mars is the principal immediate challenge in that direction.

Consider the proposal which I developed, during 1985-1986, in memory of space-pioneer Krafft Ehrlicke's proposal for colonization of the Moon. He had been among those who were committed to reaching the stars on our horizon. I had come to share that outlook. He had emphasized the irony, that if we did not have the Moon as a stepping-stone to Solar space beyond, there were no visible pathway for mankind's travel to the planets and stars beyond. The physical effort of going beyond Earth-orbit, required the "industrialization" of

would require mastery of controlled thermonuclear fusion as a primary source of power. Manned exploration to more distant locations, begs the discovery of processes of still greater characteristic "energy-flux density." Ostensibly, the general rule is, that the ever-deeper cognitive penetration of the microphysical domain, is the pathway toward the power to master the astrophysical.

Against such a general background as that, the crucial issue for our focussed attention here, is the challenge of defining those "microphysical" changes in the general characteristics of "pre-human" living processes, which correspond, in terms of microphysics, to the demonstrable difference between human cognitive processes and the qualitatively inferior organization of the mental-perceptual powers of sub-human living creatures. On that account, we already know, as Plato's dialogues typify this, the physical effect expressed as the successful act of cognition (*noësis*). We have yet to define the microphysical expression of those processes which *noësis* represents as a presently known physical effect, microphysical processes which lie, necessarily, beyond the scope of today's reductionists' notion of a genetic heritage.

As in the exploration of astronomically cosmic processes, so, in the search of the remotest regions of mi-

crophysics, the rule must be an ordering of discovery of universal physical principles which corresponds to man's increasing power to control natural and man-made catastrophes, a power obtained solely through newly discovered universal principles.

In summary of the point illustrated by the Mars-colonization case, we have the following.

What we presently know, with certainty, is the nature of the successful act of cognition. We know this in two aspects. We know this, firstly, in terms of the modern Platonic mathematical physics developed by such followers of Nicholas of Cusa and Leonardo da Vinci as Kepler, Leibniz, Gauss, and Riemann.

We also know this in such matters as the distinction of Classical artistic composition from such degenerate forms of art as those developed by empiricists and existentialists, such as the decadent parodies of artistic composition and performance known as self-styled "Romantic" and "modern" practices. I shall return to the matter of Classical art, as a form of universal physical principle, below. First, we must prepare the way for that, by continuing to define the meaning of hypothesis and substance as to be viewed within the axiomatic framework of a Gauss-Riemann mathematical physics.

3. The Higher Hypothesis

The usual error in generally taught in today's physical-science classrooms, and elsewhere, is, that even to the degree that the fact of discovery of experimentally provable universal physical principles, is recognized, such discoveries are usually treated as essentially actions of individuals, without considering the manner in which such discovered principles are actually transmitted through the larger social processes, from past, through present, into the future of society. That problem has persisted despite modern access to knowledge of Plato's argument respecting the soul.¹³

This transmission of knowledge of universal prin-

13. Cf. Moses Mendelssohn, **Phaedon**. In addition to the usual literature on this work, I reference M. Kayserling, **Moses Mendelssohn: Sein Leben und seine Werke** (Leipzig: Hermann Mendelssohn, 1862), Book VI, pp. 148-183. Note the reference to Mendelssohn's friend and admirer Graf Wilhelm Schaumburg-Lippe on p. 151. It was at Schaumburg-Lippe's military school that Gerhard Scharnhorst was trained, under a program crafted for Schaumburg-Lippe by "The German Socrates," Mendelssohn. Such was typical of the role of the collaborators Mendelssohn and Lessing in launching the revival of Leibniz and J.S. Bach, which was the German Classic of Abraham Kästner, Goethe, Schiller, Mozart, Beethoven, the Humboldts, et al.

ciples, which sets society absolutely apart from and above a species of apes, does not occur through textbook or kindred forms of mere learning. It does not occur through transformation of "information" by the Internet. *Transmission occurs solely through replication of the original (noëtic) act of discovery.*

A typical reflection of such replication, is the so-called Classical humanist method of education, as successively defined by Friedrich Schiller and Wilhelm von Humboldt. By replicating the experience of the act of discovery, as it had occurred in preceding generations, the young undergo a growth of true knowledge, and also benefit from a development of their moral character. The student must not learn from the textbook, but come to know discoveries, by replicating the act of the original discovery within the sovereign cognitive processes of his, or her own mind. The student must replicate the actual experience of the act of discovery of experimentally valid universal principles, as made by original discoverers. As Vernadsky recognized, the replication of the cognitive act of discovery is *an action to a physical effect of changing the characteristic physical effect of the behavior of the individual who has made or actually replicated such a discovery.* That act is, therefore, as much a subject of a universal physical principle as any topic in what it otherwise recognized as experimental physical-scientific knowledge.

This notion of the physical principle expressed by generation and transmission of valid discoveries of universal physical principle, as I developed that over the 1948-1953 interval, was the kernel of my original contribution to the science of physical economy, and thus the origin of my unique success as the world's leading, published long-range economic forecaster today.

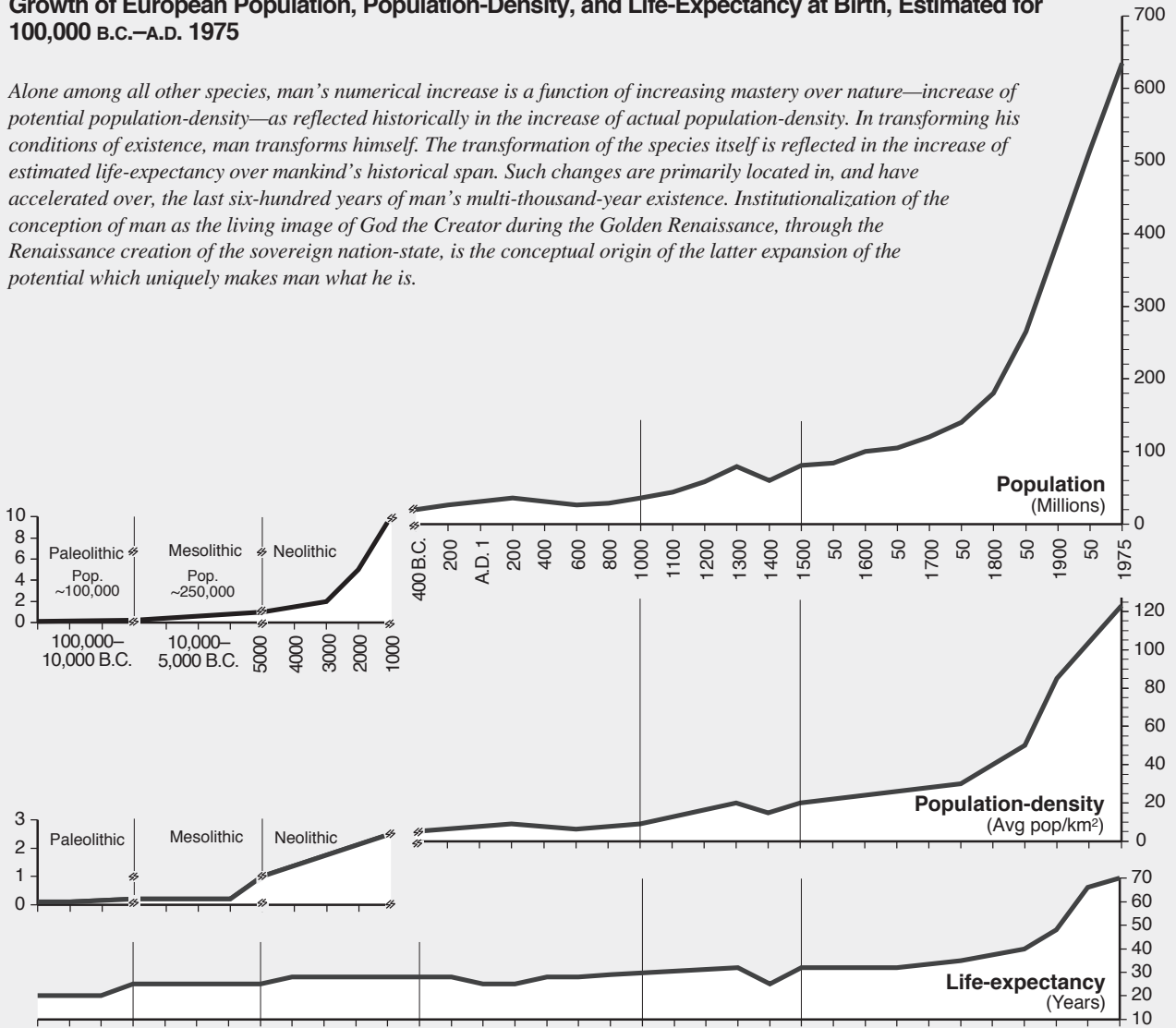
The class of universal social principles so typified, is known to European civilization's retrospective view of the time of Thales, Pythagoras, Solon, and Plato, as the principles of Classical artistic composition, as exemplified by Plato's Socratic dialogues. These social principles are expressed in the Classical-humanist teaching of physical science, in terms of the social relationship between the mind of the original discoverer and the students who have replicated the mental-cognitive experience of the original discoverer.

It is through that transmission, as across many successive generations, that the efficient accumulation of knowledge of universal principles, produces the increase in man's power over nature, a transmission whose effect is expressed as increase of the characteristic potential relative population-density of the human

FIGURE 1

Growth of European Population, Population-Density, and Life-Expectancy at Birth, Estimated for 100,000 B.C.—A.D. 1975

Alone among all other species, man's numerical increase is a function of increasing mastery over nature—increase of potential population-density—as reflected historically in the increase of actual population-density. In transforming his conditions of existence, man transforms himself. The transformation of the species itself is reflected in the increase of estimated life-expectancy over mankind's historical span. Such changes are primarily located in, and have accelerated over, the last six-hundred years of man's multi-thousand-year existence. Institutionalization of the conception of man as the living image of God the Creator during the Golden Renaissance, through the Renaissance creation of the sovereign nation-state, is the conceptual origin of the latter expansion of the potential which uniquely makes man what he is.



All charts are based on standard estimates compiled by existing schools of demography. None claim any more precision than the indicative; however, the scaling flattens out what might otherwise be locally, or even temporally, significant variation, reducing all thereby to the set of changes which is significant, independent of the quality of estimates and scaling of the graphs. Sources: For population and population-density, Colin McEvedy and Richard Jones, *Atlas of World Population History*; for life-expectancy, various studies in historical demography.

Note breaks and changes in scales.

species. Most typical of this connection, is the sudden explosion of the potential relative population-density achieved within globally extended European civilization, through the revival of the Classical Greek tradition of Plato et al., by the Italy-pivotted, Fifteenth-Century Golden Renaissance.¹⁴

14. See **Figure 1**. The Fifteenth-Century, Florence-centered Renaissance, generated a rate of improvement in human demographic potential qualitatively beyond anything in the known existence of the human species earlier. All failures of globally extended European culture since that time, have been explicitly the outcome of attempts, as by the reli-

Similarly, given the prevalent decline in civilization of the Mediterranean region, since about 200 B.C., following the emergence of Rome as an imperial Mediterranean power, the ebbs and flows in the culture of Europe as a whole, reflect the outcomes of continuing conflict between the Christian and Classical cultural in-

gious warfare of the 1511-1648 interval, to reverse the Renaissance's commitment to a perfectly sovereign nation-state, governed by the principle of scientific progress in fostering the general welfare of all of the people and their posterity, that also for the benefit (common good) of all mankind, past as well as present and future.

fluence, on the one side, and the Roman legacy of Augustus, Tiberius, Diocletian, et al., on the opposing side. The significance of the Islamic renaissance's contributions to European civilization, as typified by the Abassid Caliphate's relations to Charlemagne, and the Stauffer Emperor Frederick II, are to be compared with the case of the Fifteenth-Century Renaissance on that account.

Principles, such as those of physical science, which had been prevalent in Classical Greek culture prior to 200 B.C., existed, but the benefit of those principles was not expressed in society's development, except as the reenactment of those discoveries was transmitted through the kind of social process which a Classical humanist mode of education typifies.

Conversely, today, the uprooting of Classical humanist principles of education and general social practice, during the 1966-2002 interval, corresponds, in effect, to an accelerating moral and economic degeneration of globally extended European civilization, such that, with certain exceptions, the typical individuals in the U.S. and Europe who reached maturity during the recent thirty-odd years, are morally and technologically inferior to their predecessors. This decadence can be largely, although not entirely attributed to programs consistent with the 1963 Paris OECD report on educational policy presented by Britain's same Dr. Alexander King who subsequently co-founded the malthusian Club of Rome.

On this account, that shortfall of Vladimir Vernadsky's definition of the Noosphere, to which I have referred earlier here, is twofold.

First, his otherwise eminently valid, experimental distinction among abiotic, living, and cognitive phase-spaces, can be comprehended efficiently only from the exemplary standpoint of Riemann's 1854 habilitation dissertation. Unfortunately, Vernadsky's work does not show that he had occasion to work through that matter, to come to the point of recognizing the crucial point of functional difference between a non-Euclidean geometry, such as that of Jonas Bolyai, N. Lobatchevsky, and Hermann Minkowski, and the anti-Euclidean conceptions of Gauss and Riemann.

Second, for related reasons, he does not take into account the fact, that the sovereign act of discovery of an experimentally valid universal physical principle, defines a distinct phase-space, that to such an effect that social relations organized on the basis of replication of

such sovereign individual discoveries of principle, also express a distinct *cultural* principle, a principle which defines a sub-phase-space of the cognitive process characteristic of our species.

Classical Culture

These Classical principles of social relations, to be adduced from such studies, are sub-classed, as to types, by principles of a.) *Classical humanist scientific education and practice* as typified by reenacting the discoveries of such as Kepler, Leibniz, Gauss, and Riemann; b.) *Classical artistic composition*; and c.) *Classical notions of history, natural law, and related statecraft*. I have introduced the first of these three. I must now add the remaining two.

For the student, the most immediately accessible of these types, is that of a Classical approach to the so-called physical sciences. In this aspect of Classical approaches to education, the student, for example, not only replicates the sovereign act of discovery of the original, or analogous discoverer, but addresses the abiotic and living domains as objects of action by human individuals, or by relatively small groups of individuals. Thus, ostensibly, the immediate subject of physical science is the history of mankind's increase of the power of the individual, or small working groups of individuals, over the abiotic and living processes of the Biosphere.

That subject is not quite as simple as that description might suggest. For example, the relative scale of historical time, is located within the process, over thousands of years, of successive cognitive experiences, among successive individuals and successive cultures. The present-day student's relationship to Plato, Eratosthenes, and Archimedes, for example, is an immediate relationship, but the relationship of those ancients to today's pupil, is through the successive steps of progress, forward through history, up to the moment of the student's study.

Apparently, the oldest-known physical science is the combination of astronomy with transoceanic navigation. For example, European and Indian Subcontinent studies of ancient Vedic calendars, date these, from internal evidence, to dates as early as a period between 6000 and 4000 B.C., in Central Asia, when the vernal equinox was in Orion. The astrophysical implications of the great pyramids of Egypt, point toward a much more ancient antiquity of astronomy and trans-

oceanic navigation. The founding of known civilization within Mesopotamia was done by a transoceanic culture of the Dravidian language-group. By physical necessity, human culture did not develop inland, toward the rivers and seas, but developed as transoceanic cultures of “peoples of the sea,” who developed culture along principal inland waterways, toward the development of cultures in regions more remote from the coasts.

We know that a developed human genotype existed on this planet much earlier than 400,000-600,000 years ago. We know these predecessors were human, rather than higher apes, because of our discovery of tools of a type which no ape could design. During a span of human existence which could have been as great as, or greater than two millions years, the longest cycles determined by the organization of Solar System itself, are counted in either ice-age cycles of hundreds of thousands of years of glaciation, or equinoctial cycles of approximately 25,000 years. The Zodiac, which fascinates astrologers, expresses mankind’s preoccupation with the importance of changes in the Solar System’s cyclical behavior, as the great pyramids of Egypt typify this concern.

Generations of lower forms of life, each come and go. *Man alone has a history, a history of the effects of the transmission of ideas, especially notions of universal physical principle, transmitted and retransmitted over successive generations.* It is not only the discovery, but also the transmission of those principles which expresses the *noëtic* principle of cognition, which define the true clock of history. Science is as close, and as distant from me today, as Archytas and Archimedes of ancient Syracuse. Such is the distinction and relative time-scale by which those processes of change known as culture are to be measured.

The crucial topic of this review of the principles of



Statue of Friedrich Schiller in Frankfurt, Germany. “This emphasis upon Schiller is needed to situate the modern notion of spirituality inside the same, real universe inhabited by the Creator of our universe, rather than as some different universe, the latter outside that in which we experience mortal life.”

a Classical culture, is, first of all, the fact, that the successful transmission and use of discovered universal physical principles, produces an effect within society which is comparable to the effect of a successful genetic evolution among lower species. This effect is expressed most immediately as an increase of the potential relative population-density of the societies which adopt such an heritage of progress, and, also the relative misery of those cultures which do not.

Thus, the transmission of adopted valid discoveries of universal physical principles, as from Kepler, causes ideas of that type to function as what might be fairly termed “super-genes.” The replication of the valid universal physical principles, as the knowledge for practice of successive generations,

has the effect of the virtual biological evolutionary species-upshift of the society which adopts those principles.

“Evolutionary” changes of such a quality, define the appropriate, *anti-Kantian* meaning of *truth*. This principle of truth, as it applies within physical science, also applies with full force in setting Classical artistic composition into opposition to the decadent parodies produced by the Romantic or modernist composer or performer. Classical art produces nothing but truthful statements; Romantic or modernist parodies merely produce, sometimes as “art for art’s sake,” sensual or intellectual effects not intended to be subjected to a standard of scientific truthfulness.

Classical Drama and Truth

In the Classical tradition, the definition of “truth” for both physical science and art, reflects the conception of Heraclitus and Plato, that nothing is permanent (universal) but change. Truth lies not in a series of perceived events; truth lies in the power to change the ordering of a series of perceived events, that in a way

which solves an otherwise unconquerable ontological paradox of perception. That reflects that distinction between sense-perception and knowledge, which I have emphasized here. The recurring ontological paradoxes of sense-perception, shows that what we experience as sense-perception, is often false. It is those valid discoveries of principle which increase man's power in and over the universe, which are true.

Thus, for the literate mind, sense-perception becomes a perpetual puzzle, challenging the individual to discover those new solutions of the type known as valid universal principles. It is our ability to demonstrate the validity of proposed solutions, through forms of practice which increase mankind's power in and over the universe, which is the test required. It is our ability to *change* our relationship to reality, to increase man's power in and over the experienced universe, through such discovered principles, which serves us thus as a provable standard of truth.

All valid expressions of Classical artistic composition, meet that Heraclitus-Plato standard of truth. The problem posed to us, in looking at Vernadsky's view of the Noösphere from the standpoint of Classical principles, is to locate the efficient connection between the function of artistic truth, and a genetic-like quality of evolutionary upshift of a society's potential relative population-density.

Schiller's dramas are exceptionally notable for the intensity of their fidelity to the actual history of the matter addressed within the drama. On this account, von Wolzogen's studies of Schiller's treatments of the Netherlands and Thirty Years wars, pointed to the specific doctrine of strategic defense, for defeat of Napoleon, which the Prussian military presented to Czar Alexander I. Even Schiller's use of some limited dramatic license, in dramas such as **Don Carlos** and the case of Jeanne d'Arc (**The Maid of Orleans**), was not allowed to lead the audiences to views contrary to the essential features of the actual history. Even where great dramatists, such as Shakespeare, used legends as thematic material, the tragedy portrayed was a reliable, and therefore truthful lesson in statecraft. As Schiller argued, the function of the theater is to transform the audiences into better people leaving the theater than



The Battle of Agincourt in Kenneth Branagh's film of Shakespeare's Henry V. By leaving nothing to the imagination of the audience, Hollywood's version "prefers to embalm it for display, making it a lifeless relic of the composer's living intention, returning from the standard of Greek Classical sculpture to the tombstones of the Archaic."

had entered it. The latter result is not accomplished by "moralizing," but only by providing the audience a sense of the cognitive experience of truthfulness in matters of statecraft.

The relationship of the intended audience and the composition of the Classical drama, especially Classical tragedy and related modes, is the same as that of a student in a Classical humanist educational program to the re-experiencing of an original valid discovery of a universal physical principle. The art of composition and authentic performance of a great Classical drama, such as those of Shakespeare or Schiller, lies in the establishing of a cognitive relationship between the drama and the audience.

It is the same with Classical poetry. The essence of poetry is those forms of Classical irony which reach their peak of intensity with true metaphor, without any inclusion of symbolism intended by the composer. All such irony and metaphor tease the cognitive powers of the individual mind, by appealing to a sense of ontological paradox, as through irony, metaphor, and the subjunctive mode. The test of the quality of a Classical poem is the degree to which the available resolution of the irony is a truthful one. The basis for that content of the poem, lies in the composer's recognition of the falseness of sense-certainty: the progress of humanity in the world is not managed by reaction to objects of sense-certainty, but by discovering the efficiently existing, real objects lurking, unseen, behind the illusory shadows of sense-perception.

Compare the great dramatist and actors, from the time of the Classical Greek tragedies, to the present-day Classical professionally developed actor.

One famous fool, asked why he had pursued a stage career, replied, “Look at me!” He desired to be admired as an object, like a “Hollywood star,” on stage. The competent professional actor would never desire to do such a thing. He would speak through the mask. His, or her stage, is the stage described by Shakespeare’s Chorus, at the opening of **Henry V**. He would not be that which the audience sees with its eyes, but a figure on the stage of the audience’s imagination. He, or she, on stage, is but the shadow of the object to be found within the imagination of the member of the audience. Some call this an illusion; contrary to that opinion, it is the truth which the senses attempt to falsify.

Nothing good were accomplished by staging **Henry V** as a Hollywood screen’s attempt at sense-certainty. Quite the contrary: seek to show the actual horses, the wide fields, and so forth, and the purpose of the drama is more or less lost. The focus is shifted from the stage of the imagination. Put the play on a box stage, within the auditorium of a seated audience, and you bring the drama to life; Hollywood prefers to embalm it for display, making it a lifeless relic of the composer’s living intention, returning from the standard of Greek Classical sculpture to the tombstones of the Archaic.

It is the mind, not the eyes and ears, that can see and hear that principle of universal gravitation discovered by Kepler. With the mind, the power of gravitation is actually experienced as an efficient principle; with the eyes and ears, is it only the delusory impression of a symbolism. To seek to make matters of principle sense-perceptible, does not enhance comprehension, but destroys it, as the charlatan’s magic numbs the comprehension.

Classical poetry works thus. Classical drama and poetry, are not fiction, but instruments of truth, devices by means of which the power of posing and imparting truth is cultivated in the minds of the people, thus equipping them to communicate the most important subjects worthy of their attention. Thus, great Classical art produces better people than could otherwise be made, from among their audiences.

Compare this case, with that for Classical music.



Bel canto singers, sculpted by Luca della Robbia. The bel canto method of Classical singing is indispensable for the communication of real musical ideas.

Classical Music and Truth

Since the victims of recent generations’ exposure to contemporary education and culture, have, only rarely, experience and less knowledge of any music which is not more or less dionysiac rant, it is essential that I begin my treatment of this topic with a few preliminary points of orientation.

Classical music has very ancient roots, which are, by their nature, characteristic of the specific mental-physiological characteristics of the human individual. Our ancient evidence to that specific effect, comes from traces of the impact of ancient languages, especially polyphonic poetry. The modern Classical European musical culture traces its origins chiefly from the Classical Greeks, including the work of Plato, through such Arab thinkers as Al-Farabi, into the clear definition of the characteristics of the human singing voice by the Fifteenth-Century Florentine school of *bel canto* voice-training, and the pioneering work in defining the scientific basis for this by Leonardo da Vinci and the related work of Johannes Kepler.

These adducible characteristics have been recognized by relevant specialists, as embedded in the characteristics of languages in general

However, what may be strictly defined as the Classical European musical tradition, emerged around an intersection of the continuing influence of the Fifteenth-

Century Italian *bel canto* school with the circles of Handel and J.S. Bach. It was Bach's rigorous development of *bel canto*-based, well-tempered polyphony, which defines all that which can be rationally identified as Classical standards of musical composition and performance, from the work of Bach himself through Johannes Brahms and his circles. The relationship of Classical composition to the setting of Classical poetry and drama, as by Handel, Bach, Mozart, Beethoven, Schubert, Schuman, Verdi, and Brahms, expresses the deepest and broadest significance of the spiritual principles involved: that in the sense I have defined spirituality, above.

The contrary, Romantic school of Rameau and Fux, appeared afresh in the early Nineteenth Century, with Czerny, Liszt, Berlioz, Wagner, et al. The latter were, largely, contemporaries of strictly Classical polyphonists such as Haydn, Mozart, Beethoven, Schubert, Mendelssohn, Schumann, Verdi, and Brahms; the distinction of these Romantics is that they parodied those Classical composers' palette of Classical polyphony eclectically, while rejecting the principles of reason on which Classical composition and performance depended. What followed the Romantics down the pathway of continuing cultural decadence, under the rubric of modernism, has been increasingly arbitrary, usually insolent, and artistically sterile, especially since the influence of Theodor Adorno's Frankfurt School.

The principal significance of modern Classical musical culture, from J.S. Bach, most notably, to the present, is located in two, central physical characteristics. First, it excludes any so-called theory of purely "instrumental music," and locates the evolution, function, and standards for performance of the non-vocal instruments, in their role as imitators of the qualities of the *bel canto* singing voice. Second, is, as I have emphasized repeatedly on other occasions, the qualitative enhancement of the Classical poetry reworked as a Classical musical composition. These two considerations must be examined to understand the proper role of the characteristics of the *bel canto* speaking/singing voice, in the communication of those kinds of ideas which pertain to the process of generation and proliferation of valid universal physical principles.

This kind of importance of sung prosody did not begin with Bach; Bach, following an approach consis-

tent with the successive work on musical principles by Leonardo da Vinci and Kepler, solved a fundamental problem of principle with his discovery of the principles of well-tempered counterpoint already inhering, implicitly, in the physical characteristics of the *bel canto* singing/speaking voice. One should be able to recognize the relevant distinctions in hearing the way in which an ostensibly educated person delivers, or ruins a Classical English poem, such as one of those of Shakespeare, Keats, or Shelley. Instead of speaking or singing on the stage of the audience's cognitive imagination, they are Sweet Little Miss Midget, curtsying to the audience assembled for the children's recital: "Look at me!"

As I have written, above, the goal of the literate speaker is to speak as Franz Schubert intended the sung poem to be heard, as the relatively simple **Erlkönig** or **Gretchen am Spinnrade** implicitly demands.¹⁵ Put on the Classical mask of music, speak to the stage of the cognitive imagination, and see the surprise on the audience's face, when they are startled to recognize, at the end of the performance, that it is you, the mere performer, standing there on stage, rather than the grand personality you had been in their imagination a moment earlier.

The significance of Bach's work to this effect, can be shown by superimposing the relevant, voice-specific set of singing-voice registrations, relative to C=256, upon the score of Bach's celebrated **The Well-Tempered Clavier**. A comparison of the second, C-minor fugue of the First Book, with the content of his later **A Musical Offering**, opens the gateway to all

15. See reference to Gustav Jenner on Brahms, in **A Manual on the Rudiments of Tuning and Registration, Book I**, John Sigerson and Kathy Wolfe, eds. (Washington, D.C.: Schiller Institute, 1992), Chapter 12. Like Brahms, Beethoven also emphasized that poets inferior in ideas and sense of musicality to Friedrich Schiller afforded composers the most generous opportunities for improving the poem through a musical setting. Schiller's sometime collaborator Goethe, was fortunate in his richly ironical sense of musicality and the treatment his poetry received at the hands of such great composers as Mozart, Beethoven, and Schubert. Passionately anti-Romantic Heinrich Heine enjoyed the favors of Schubert and, emphatically, Robert Schumann. The greatness of art lies not in the medium as such, but in the nested ironies which the medium is used to convey. It is the ironies which generate the ideas. A great composer has often transformed a little poem, presenting the song as heard by the composer, rather than the relevant poet. So, in drama, a great actor and director can infuse the beauty of ideas into a drama otherwise of mediocre relevance.



Rembrandt's "St. Paul." Johannes Brahms drew on St. Paul's conception of "agapē," in I Corinthians 13, for his "Four Serious Songs"—in effect, Brahms' last will and testament.

subsequent Classical composition. **The Art of the Fugue**, studied from that vantage-point, clarifies matters still further.

In such pioneering work by Bach, we are presented with a key for understanding the way in which a Classical form of Platonic ontological paradox works. The contradiction implicitly embedded in a single contrapuntal statement by Bach, demands a cognitive resolution according to a set of variously stated, or potentially implied principles of development. For a quick introduction of the student of music to this point, extend the subject of the second fugue from the First Book through and beyond the examples provided by **A Musical Offering** and **The Art of the Fugue**, through the treatments of the same germ musical idea by Mozart, Beethoven, Schubert, Schumann, and Brahms, among others. This, taken together with the related role of a series of Lydian intervals in works as simple as Mozart's **Ave Verum Corpus**, is to be recognized as a central point of reference to Bach throughout the greatest part of all Classical musical

composition through Brahms.¹⁶

In those relations among Classical composers, we are confronted by the same kind of dialogue characteristic among the greatest scientific discoverers, as from Plato and his Academy, through Cusa, Leonardo, Kepler, Leibniz, Gauss, and Riemann. Each and all employ the method of hypothesis to solve strictly defined ontological paradoxes. Most of them reference, more or less explicitly, the work of predecessors, even across millennia. The same principle of truth, which is demanded of Classical scientific minds, is demanded of all Classical composers and performers, just as John Keats' famous emphasis upon truth and beauty attests.

In both Classical science and Classical musical composition and performance, the relations among the generations of experimentally valid universal principles, are the characteristic feature of each, and of both, as a social process. Just as Kepler's and Gauss's most crucial discoveries appear as a dialogue with the Classical Greek circles of Plato and his Academy, so the principles expressed by modern European civilization's development of the well-tempered polyphony of Bach through Brahms, assume the dynamic form of a dialogue among the discoverers and developers of universal physical principles.

The same appears in Classical plastic art. In the best examples of Classical Greek sculpture, the earlier "tombstone-like" sculpture is superseded by the capture of a figure in the mid-motion expressing both the principle of life and the permanence of nothing but change. The principles involved are made explicitly clear by Leonardo da Vinci's revolution in perspective, and the continuation of that by Raphael Sanzio and Rembrandt.

In Classical artistic composition, as in Classical science, the essence of humanity, as a species of creative individuals, is made a subject of human consciousness. Reality lies between the cracks in the shadow-world of sense-perception. It is the active connection among the transmissions of valid universal principles, as from one generation to another, which expresses the quality of

16. A related case is found in the way in which a remarkable development, in measures 76-87 of the second, Adagio Sostenuto movement of Beethoven's Opus 106, reappears in Brahms' Fourth Symphony. Compare this with the Coda of the last movement of Beethoven's Opus 111, in which Beethoven references Mozart's K. 475 reference to Bach's **A Musical Offering**.

humanity as a species, rather than isolated individuals. It is the ability of the individual, to locate himself or herself as an efficiently acting individual in that process, which imparts to the mortal individual a well-defined sense of a permanent quality for the individual's mortal existence.

Classical History

To the degree the individual's motives, as a mortal actor, are premised upon devotion to causing the progress of the condition of future humanity to move forward, and to adopt, also, a sense of obligation to bring into actuality the unrealized worthy accomplishments of persons from earlier times, the mortal individual gains not only a sense of fully efficient permanence of mortal existence, but a sense of a sublime purpose in the mortal individual's existence.

What we should recognize as Classical art, is thus to be recognized not only as the expression of spirituality, but as an efficient intention, the appropriate expression of an efficient force without which the willful achievement of human progress would not exist. Lacking that commitment to progress, man would cease to be a species above the beasts, and would tend to behave as a beast, not as made in the image of the Creator. The idea of a mission to further progress, an idea of the beauty of progress, is the most powerful force within our universe.

The combined study of Classical science and principles of Classical artistic composition, represents the foundation for a comprehension of a science of history. This means *history* as distinct from mere chronicles, or the mere interpretative commentaries on chronicles of human existence. History, in the Classical sense of the term, combines the notions of scientific and technological progress with the lessons of the Classically defined cognitively truthful notions of the tragic and the beautifully sublime. For reasons I have already given here, a Classical science of history signifies the subjunctive view of the historical process, history as essentially matters of irony and metaphor.

The history of mankind, and of the societies of which the whole of mankind is composed, is defined as the relationship of the cognitively defined individual to an intentional process of development of all human existence, past, future, and present. History is man either acting to affect all past, future, and present society's progress, or failing to act so. It is the principled intention of that individual toward all mankind, which must

be the focus of attention, as the Apostle Paul argues the principle of *agapē* to that effect in the **I Corinthians 13** which Johannes Brahms referenced in the **Four Serious Songs** which are, in effect, Brahms' essential statement of his last will and testament.

This brings us to a deeper conception, to which I turn your attention now: the implications of Plato's treatment of the subject of the five regular (Platonic) solids, as emphasized by Leonardo da Vinci, and as this argument was elaborated for the founding of mathematical physics by Kepler.¹⁷ The purpose of this needed intellectual excursion, is to define the meaning of *intention*, as I have, once again, applied that term immediately above.

4. The 'Golden Section'

The original development of an actual mathematical physics, by Kepler, featured the measurement of an harmonic ordering among the Solar orbits, according to the ratio of the differences between the values of each orbit when it is, respectively, relatively nearest and most distant from the Sun. The relative values of these ratios defined a musical scale. These measured values corresponded in their principled form to Plato's treatment of the musical scale and related matters.

Plato's treatment of the matter, as in the **Timaeus** dialogue, references the fact that only five kinds of regular solids can exist within what passes for a Euclidean solid geometry. The characteristic feature of the geometrical construction of these solids, as a series, is an apparent *geometric* ratio termed "the Golden Section." Kepler addressed this issue in a celebrated, shorter work on the subject of the snowflake.¹⁸ Kepler showed a pattern, in which the Golden Section was a geometrical characteristic of living processes, as distinct from non-living (abiotic) processes such as the snowflake. This was consistent with Plato's argument to similar effect.

Now, for the purpose of the discussion of the meaning of historical *intention*, look at those matters from

17. **Harmonices Mundi** (1619). For an English translation, see **The Harmony of the World by Johannes Kepler**, E.J. Aiton, A.M. Duncan, and J.V. Field, trans., (Philadelphia: American Philosophical Society, 1997).

18. **De Nive Sexangula** (1611). For an English translation, see **The Six-Cornered Snowflake**, Colin Hardie, trans. (Oxford, U.K.: Oxford University Press, 1966).

the history of science from the reference-point of my earlier, summary description of a three-phase-space Vernadsky universe. The crucial point, as Plato and Kepler emphasized, is that a universe, or phase-space characterized by the appearance of the Golden Section in “Euclidean space” terms of reference, is found only among living processes, not abiotic ones. The first question to be posed by us at this moment is, what does this mean in the language of mathematics?

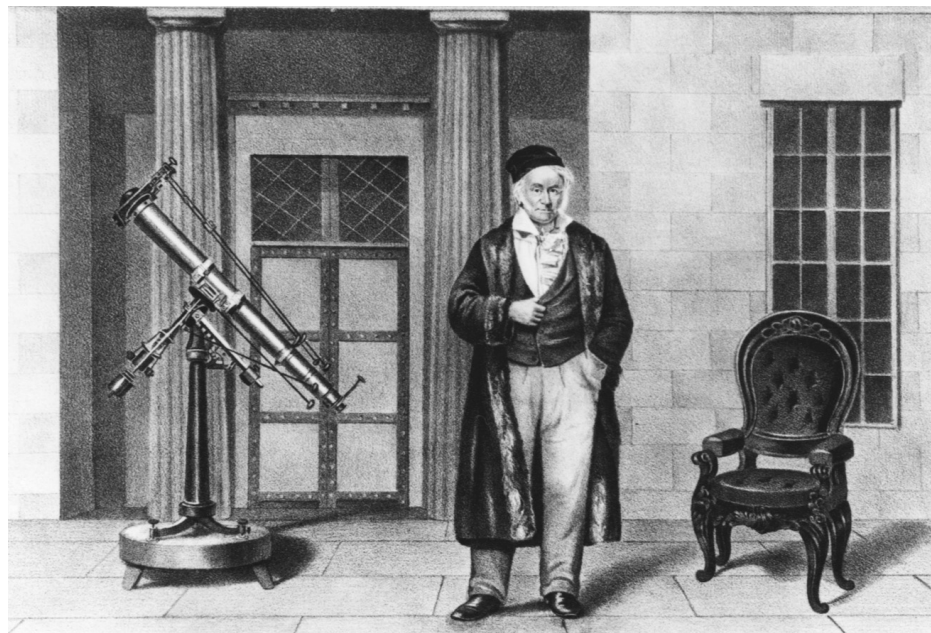
As indicated earlier, the most important issue debated within mathematical physics, is whether physics is a branch of mathematics, as Lagrange implied, or mathematics a branch of physics, as Plato, Kepler, Leibniz, Gauss, Riemann, and others insisted.

For the case of geometry, the case for physics was proven by Plato and others of the ancient, pre-Roman Empire, Classical period, who demonstrated the case for the squaring of the circle, the cube, and the Platonic solids.

In modern times, the ivory-tower mathematicians, such as the Aristoteleans and empiricists, argued that the line defined by the counting numbers, was not only independent of geometry, but, that since measurement must be made in a way consistent with the notion of the counting numbers, the geometric line could contain no properties which were inconsistent with the concept of the counting numbers.

The elementary case against that argument based on the notion of counting numbers, was made by the famous student of Kästner and Zimmerman, Carl Gauss. Most notable were Gauss’s **Disquisitiones Arithmeticae** in general, but also his 1799 fundamental theorem of algebra, and his second paper on biquadratic residues.

In the case of the 1799 report on the fundamental theorem, Gauss refuted the empiricist argument of D’Alembert, Euler, and Euler’s follower Lagrange, by demonstrating the reality of what he defined as the complex domain. Gauss’s case for quadratic and cubic



Eduard Ritmüller

Carl Friedrich Gauss on the terrace of the Göttingen University Observatory. His 1799 refutation of D’Alembert, Euler, and Lagrange, addresses the fundamental error underlying the “ivory tower” follies common to all empiricist and positivist misconception of the elementary principles of a mathematical physics.

functions, amounted to a restatement of the ancient Classical case for the geometric doubling of the square and cube, but from the standpoint of arithmetic. Plato and his Academy had emphasized that no line can generate a surface, or a surface a solid; thus, the surface is a physical existence of a higher *power* than a line, and a solid of a higher *power* than a surface. This notion of *power*, introduced to such cases by Plato, was carried over directly by Gauss into the distinction in *powers* of line, surface, solid, and so forth, in algebraic functions.

The action which defines the functional relations among elements of such powers, is a quality of existence which is reflected in the complex domain, as the doubling of the cube, and the extraction of cube roots, demonstrates that point with relatively greatest simplicity and elegance. The case of the biquadratic residues provides a kind of generalization of that point. These powers express the efficient role of *change*, in the sense of Heraclitus-Plato as the characteristic form of the real action controlling changes in the behavior of the shadows in Plato’s Cave. They represent the relatively most rudimentary mathematical-physics notion of a universal physical principle.

Such a principle, so conceptualized points to the meaning of *intention* as Kepler equated intention, the

Creator's intention, in defining his own discovery of a universal physical principle of gravitation.

All of those considerations just indicated for the elementary notion of the generalized complex domain, must be applied to the seemingly anomalous implications of the five Platonic solids. A close scrutiny of the implications of Gauss's **Disquisitiones Arithmeticae**, gives important hints.

Anomalies of the number field pointed toward the fact, that the integers were not generated by counting, but in a way consistent with modularity, and consistent also with the notion of the division of the circle in defining circular action. The point is, that Gauss's treatment of the fundamental theorem of algebra, showed not only that geometric considerations so located, defined the universal properties of the number field, but that these geometric considerations were rooted in physical considerations of the same elementary type as Kepler's equation of intention and gravity.

Similarly, the universality of the case for the five Platonic solids, and related implications of the Archimedean solids, reflects the following general set of principles.

First, since living and non-living processes have functionally and mathematically distinct geometries, but occupy the same universe, this reflects the fact that the universe is composed of distinct, but interacting phase-spaces, as Kepler repeats that point in his paper on the snowflake. Two points follow. That the two geometries interact physically, as distinct powers (in Plato's sense), but that the living is superior to the abiotic, as Vernadsky shows in his argument, based in biogeochemistry, for the Biosphere. The fact that, among particular species within the known universe, only the human mind is capable of the higher form of efficient anti-entropic intentions, defines a third phase-space.

That outline of the argument given, now let us return our attention to the matter of the *intention* of the human individual and of that individual's society.

Leibniz and Constitutional Law

The U.S. Constitution of 1787-1789 is unique among all known constitutions, in the respect that the entire document is subsumed by a universal principle, as expressed in its Preamble. Other documents described as "constitutions," were better described, not as constitutions, but as "basic law," being essentially a form of the merely positive law, but a portion which has been as-

signed a superior place in the hierarchy of law in general. What may give a body of "basic law" some of the appearances of a true constitution, is the fact that special considerations and procedures are required to modify it.

The U.S. Preamble has three leading characteristics, two stated, and one implicit in the role of the Preamble as the intention to which all other aspects of the Constitution are forever subject. The first two principles are, first, the principle of the perfect sovereignty of the nation and its Constitution, and, second, the obligation of government and its actions to promote the general welfare of all the living and their posterity. The third characteristic is implicit, that no subsidiary part of the Constitution may be defined in a way contrary to the requirements of the Preamble.

There is a fourth principle, neither within the Preamble, nor implicit, but one of the greatest general importance for the nation: the notion that the goal of the existence of the perfectly sovereign nation-state depends upon the establishment of a certain ecumenical order among a community of respectively perfectly sovereign nation-states. Secretary of State John Quincy Adams' commitment to a future community of principle among the respectively perfectly sovereign nation-state republics of the Americas, illustrates the point.

The U.S. had the advantage of being established by aid of the intention of influential and other persons from many European states. In addition, the leading influence among Benjamin Franklin and others was, first, that of Leibniz, whose unique conception of "life, liberty, and the pursuit of happiness" is central to the 1776 Declaration of Independence. Additionally, the interval 1763-1783, during which the U.S. struggle for sovereign independence was conducted, was a period of a great resurgence of the Classical scientific and cultural ferment within Europe. This combination of exceptional advantages and situation enabled the young U.S.A. to craft a form of true nation-state republic, whereas the progress of freedom in Europe, for example, tended to follow the pathway of least resistance, the transformation of the feudal parliamentary institutions into more or less fair approximations of true governments.

The preservation and strengthening of the Constitution under the leadership of President Abraham Lincoln, and the rescue of the U.S.A. by President Franklin Roosevelt, reflect, in large degree, the exceptional ad-



Painting by Junius Brutus Stearns

The U.S. Constitutional Convention. Under the exceptional Eighteenth-Century conditions of the development of the U.S. republic, "the influence of Leibniz was most crucial in many respects, including that American System of political-economy as described by, among others, Treasury Secretary Alexander Hamilton."

vantages which history gave to our creation.

Under those referenced, exceptional Eighteenth-Century conditions of the development of the U.S. republic, the influence of Leibniz was most crucial in many respects, including that American System of political-economy as described by, among others, Treasury Secretary Alexander Hamilton.

The immediately preceding set of observations seems to bear chiefly on the U.S.'s potential role in efforts at ecumenical fraternity among peoples. I have raised them here with a somewhat different problem in view. I have cited the preceding points to illustrate actual historical developments which illustrate certain principles of general importance to the ecumenical cause in general.

Among such points is the fact, that although it should be possible now, that no new general wars among nations should be fought, the conditions for the outlawing of war do not yet exist among prudent and sane men and women. Rather, were just warfare unavoidable, the policy for conduct of such warfare, must be establishing the necessary preconditions for a just and enduring peace. On that account, *it should be considered obligatory among Christians, as among*

others, that an ecumenical peace of faiths be established. Such a peace will be a serious proposition, only if certain of its implications are recognized and accepted.

The crucial point illustrated by the case of the U.S. Constitution of 1787-89, was and is the issue of defining a functional conception of *intention*. The Preamble of the U.S. Constitution premises the lawful existence of the U.S. Republic upon a lawful intention underlying the existence of the sovereign nation-state republic. This intention, when observed, has the effect of a universal physical principle, one no less awesome in quality than universal gravitation.

However, it is not simply a personal intention to do good. It is the intention that succeeding generations after you, shall be committed to an intention to create good. This is an intention of the second order, as a commitment to promote scientific progress is of a higher power than a commitment to a specific set of universal physical principles. It is an *intention* to embed a passion for the promotion of endless scientific progress in succeeding generations. Such an intention must have the quality of a passion, a passion called *agapē* by Plato and the Apostle Paul. It is a love of mankind, as mankind, a love for that quality of human nature which sets our species absolutely above the beasts, as a creature made in the likeness of the Creator of the universe.

This quality of intention, this quality of love, has a name. That name is the *natural law*, as the Leibniz-informed crafting of U.S. constitutional law defined the natural law as intention for practice.

We must not seek too much, all at once, in our ecumenical efforts. We must aim to accomplish much, in due time, but to enjoy one another's company in the journey to that common goal. Such must be our intention.

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