

A Sequel to 'The Historical Individual'

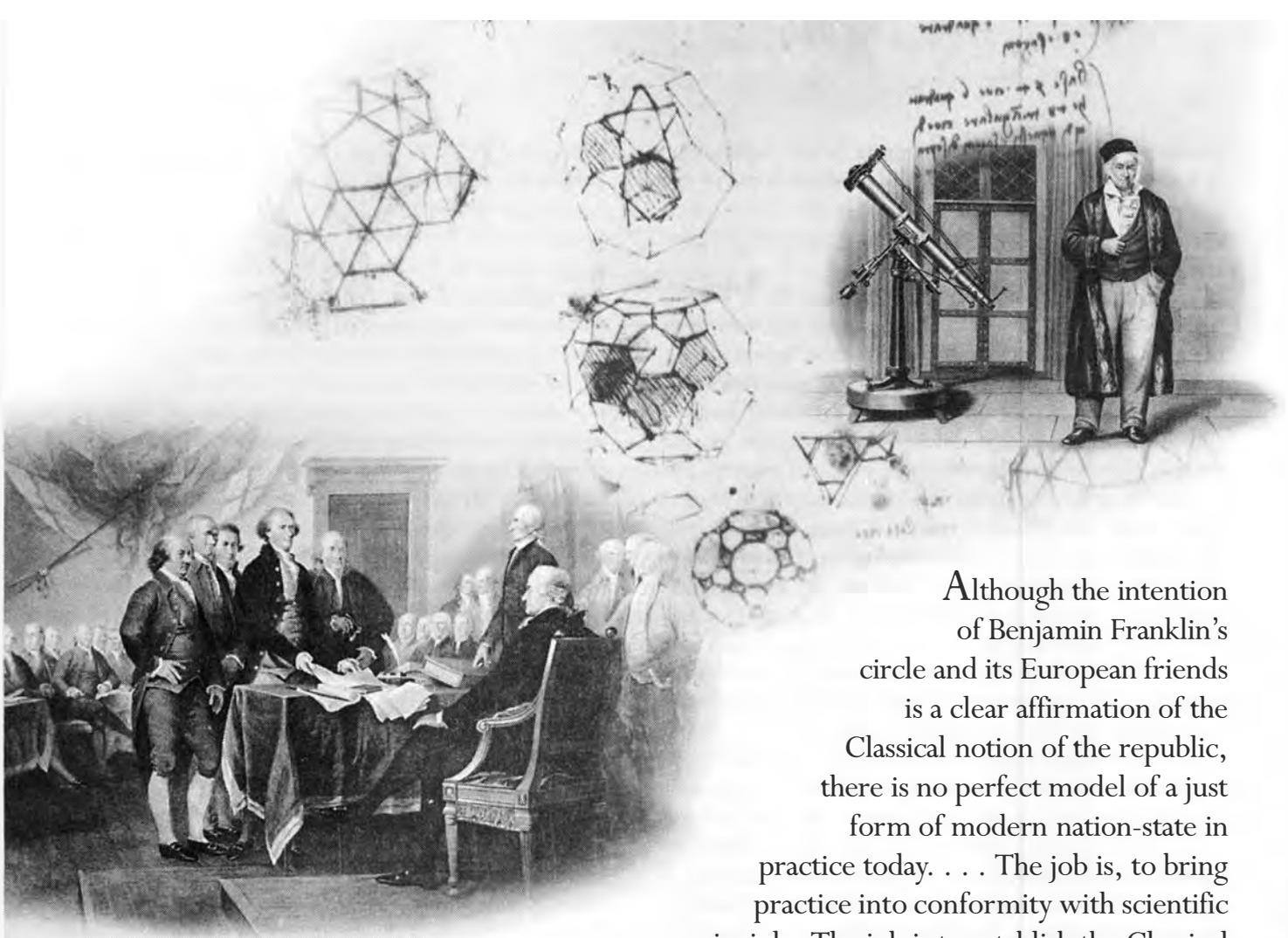
The Next Generations

by Lyndon H. LaRouche, Jr.

October 20, 2002



Credits: Leonardo, Biblioteca Ambrosiana, Milan; Declaration, Library of Congress; Gauss, courtesy AIP Niels Bohr Library.



Although the intention of Benjamin Franklin's circle and its European friends is a clear affirmation of the Classical notion of the republic, there is no perfect model of a just form of modern nation-state in practice today. . . . The job is, to bring practice into conformity with scientific principle. The job is to establish the Classical principle securely in power, at last.

The world is presently gripped by the most deadly economic crisis in the experience of any person living on this planet today. *This economic disaster is a systemic (implicitly terminal) collapse of the present economy, not a statistical-cyclical phenomenon within the bounds of an existing economic system.* This ongoing collapse of both the world's present monetary-financial system, and of the physical economy itself, is the result of a post-1964 shift, *away from* a producers' economy, within which cyclical patterns had been somewhat irregularly recurring phenomena, *into* a shift to a dead-end form of existence as an intrinsically terminal, consumer culture. This process is now in its terminal phase.

This present disintegration has been the direct result

of willful adoption of unnecessary, foolish policies of many nations, especially bad policies adopted, and imposed upon other nations, by the overreaching influence of the United States of America, over the course of now nearly four decades.

So, it happened, that the U.S. economy, and that of the Americas and western Europe, is presently grasping hysterically at the slippery rope's end of the present, doomed world monetary-financial system.

Admittedly, much of the error which has caused this global crisis was formally institutionalized, top down, by our government and its leading political parties. However, as in the decline and fall of the Roman Empire, our society's willingness to submit to such folly, reflects the

Dome of the Cathedral of Florence, 1420-1436; Leonardo da Vinci, investigation of regular solids, Codex Atlanticus 272v-b (details); Declaration of Independence, July 4, 1776; C.F. Gauss (1777-1855).

"The Next Generations" was first published in Executive Intelligence Review, Nov. 22, 2002. "The Historical Individual" appeared in Executive Intelligence Review, Nov. 1, 2002.

combined foolishness of the majority of the populations of many nations, especially the recent foolishness of the U.S. electorate's popular, frequently self-destructive choices of election and appointment of members of government and its policies.

U.S. populists could blame government for allowing such disasters, and usually do; history itself will now, as in the past, blame the people for such a failed government, placing the blame chiefly on the present generations of U.S. populists. As all of the stage's greatest Classical tragedies of ancient and modern times warned us, the typical cause for the systemic doom of actual empires and nations from the past, is the lack of that quality of chosen leader who, like Solon of ancient Athens, seeks to lead the people, once again, to free themselves from the folly of previously prevalent popular opinion. So, a rampage of populism, over the period from July 14, 1789 through 1815, led France into the first modern fascist tyranny, that of Napoleon Bonaparte; so, populist fervor within the young U.S.A. led our nation to the brink of self-destruction, repeatedly, during the same period.

It is not sufficient merely to shun poor choices of leaders; it is indispensable, especially in times of crisis, to turn to intellectual leaders of a rare quality, who will lead the nation and its people to uproot the blunders adopted by popular opinion. In any time of great crisis, without such exceptional leaders, such as our own Benjamin Franklin, George Washington, Abraham Lincoln, and Franklin Roosevelt, the people will fail.

Today, this function of a new leadership is, as I shall explain here in due course, the pivot on which the survival of our republic, including our aberrant populists, now depends absolutely.

In the instance of the present crisis of Europe and the Americas, the principal cause was policy-changes introduced in the aftermath of the combined effects of such crucial developments as the 1962 missiles-crisis, the assassination of President John F. Kennedy, and the deadly folly of the U.S. war in Indo-China. The aftermath of the Kennedy assassination was the shift of the U.S.A. from the role of the world's leading producer nation, into a 1964-2002 plunge toward a hopelessly decadent form of popular culture called, variously, a "post-industrial," "consumer," or "new economy" society. The growing popular support for that change in cultural paradigm, over that interval, is the continuing cause of the popularly self-inflicted shift from a successful producer society, to that self-doomed consumer society which the U.S. has become.

If you wish this nation to survive, that popularized folly is what you must change, a change in popular opinion which you must not merely accept, but help to bring about. It must be a change in the population's presently

habituated culture, away from those leading acquired beliefs adopted during the course of the recent four decades. In these pages, I show how our nation might be saved, even at this late date. It were therefore inevitable, in the nature of the problem, that much of what I write now will astonish you, even, perhaps, anger some of you, all because it runs against those prejudices by means of which you have been complicit in our republic's attempted self-destruction; but, nonetheless, our nation's continued existence, and your own, may depend upon your accepting my warning now. *The chief cause of the suffering of most of our people today, was made possible by the repeated refusal of the overwhelming majority to accept my repeated, now fully proven warnings during each of the U.S. Presidential campaigns of the 1976-2000 interval.* To escape the present crisis, the majority of our people must choose a different quality of President than they had during recent decades; to make that improvement in their political behavior, the people must bring about a corresponding change in the way they choose their opinions, especially their choice of national leadership. They really have no sane choice, but to make that change in habits now, even two years before the 2004 election.

Therefore, the following goes to the core of the subject of the standard of moral fitness to be met by past, present, and future Presidents of the United States. It poses a series of intermeshed issues of economic science, issues defined by that field of economics in which my extraordinary professional authority is certified by such included types of crucial evidence as my published successes as a long-range forecaster, which remain unparalleled successes over a recent period of more than three decades. Fortunately, the issues I address are elementary in form; but, unfortunately for our now virtually bankrupt nation, these issues involve principles which have usually been neglected, even among most varieties of either physical scientists or economists practicing today.

In these immediate, prefatory remarks, I feature a few indispensable observations, which set the stage for the discussion of those issues which follows. These initial observations pose the question to be answered. In the sections which follow that, the set of required answers is then introduced and supplied, as a series. At the end, the definition of moral fitness of a President should be reasonably clear.

Why the Accounting Profession Has Failed Us

The central thesis of the following report is this.

For reasons I shall show, no competent economist would offer an assessment of today's policies without

looking at the effect of those policies on the condition of both that nation, and also the world, over a period of not less than approximately two generations ahead. In other words, he or she must think of the trajectory of human development, as the original discoverer of gravitation, Johannes Kepler, defined the annual orbit of the planet Earth. For that reason, the morality of each adult generation, is to be measured by its attitude toward its own adolescent or young-adult children, an attitude which must be measured, at each point in time, as the effect of that attitude on the world of that generation of young adults who will enter adulthood a half-century ahead.

That is, therefore, that practical moral standard, no other, and nothing less, by which prospective candidates for nomination to become the President of the United States must presently be judged, as fulfilling, or failing to meet that long-term, forward accountability to posterity implicit in the Preamble of our Federal Constitution. That is the lesson of history to be adopted, as we reflect on the present, cumulatively awful net outcome of the accumulated systemic errors in trends of prevalent popular opinion, during the recent thirty-seven years.

Morality is not a commodity, which might be measured in dollars-and-cents. It is a value which can be measured only as Kepler, writing in his 1609 *The New Astronomy*, defined the orbit of the planet in non-financial, physical terms. Therefore, no accountant who adheres to today's characteristically anti-scientific, *post hoc, ergo propter hoc* standards of accounting practice, is capable, *professionally*, of an intelligent assessment of the following, most crucial question of scientific practice in economics: *Whether those practices which appear to be profitable by current standards of accounting-practice, are actually beneficial, or not, to a particular enterprise, or to our republic, over the medium to long term.*¹ The proper

1. Some accountants, because they are intelligent and mature persons, make competent shows of insight into problems, despite the influence of their training as accounting professionals. A truly intelligent and experienced accountant looks at accounting systems with the psychological distance which any sane entomologist brings to a discussion of bugs. Meanwhile, on the subject of crooked accounting firms, President Bush is being deluded, if he actually believes that the problem of Enron *et al.* is "bad apples." The root of the problem is a pervasive, systemic corruption in the "accounting industry" as a whole, a corruption which was virtually acted into Federal law by members of the U.S. Congress such as "Enron Wendy's" husband, Senator Phil Gramm. It is the present corporate system as a whole which is corrupt beyond self-redemption. The relevant fault with the general practice of accounting is, that accounting standards today are intrinsically amoral, and therefore blind to the evidence of the intrinsic immorality typified by the Enron case.

question, which today's typical practice of accounting and "market analysis" evades, is: *by what universal physical principle could we determine which multi-generational orbit the present short term's events are travelling?* What experimentally demonstrable, universal physical principle, does the orbit of these measured events follow? Where will a continuation of that orbital pathway, so defined, bring our society, one, two, or more generations to come?

The pivotal cultural problem of today's civilization, in Europe and the Americas, is the fact that those currently in a controlling position, in government and private institutions today, belong, predominantly, to the so-called "Baby Boomer" generation. Most of them reached adolescence somewhere between the retirement of U.S. President Dwight Eisenhower and that early 1970's when the so-called "ecology movement" was launched on a mass scale. This 1964-1972 "cultural-paradigm shift," reflected a transformation of the economies of Harold Wilson's United Kingdom and the post-Kennedy U.S.A., from the U.S.A.'s role as the world's leading producer society, into what may be fairly described, like ancient imperial Rome, as an increasingly parasitical "consumer culture," fairly described in retrospect, today, as the imperial triumph of the wastrels.

The United States has been transformed, for the worse, under the adult phases of metagenesis of the "Baby Boomers." The decadence which began with the "Baby Boomers'" parents, the majority of the generation which had capitulated to the post-war, 1946-1953 atmosphere of "witch hunt" had induced in the freshly hatched "Baby Boomer" generation, under the reign of President Truman and the notorious team of Roy M. Cohn and his puppet-Senator "Pepsi Joe" McCarthy. The effects of 1946-1953 "witch-hunt" practices produced the immorality within my own generation, a generation which, in turn, corrupted much of the "Baby Boomer" generation, who, in turn, drove society to the degree of degeneration expressed by the conditions menacing the 18-25 generation in Europe and the Americas today.

Today, so-called "middle-class Baby Boomers" rebuke their sons and daughters: "You ungrateful creatures! We saved and sacrificed to give you everything!" They gave them, in fact, the opportunity to enter a world with no future. They gave them, in fact, the decadent, doomed world of an utopianism-ridden, "post-industrial," "consumer" society, with the present, galloping decadence of our schools, universities, mass homelessness, and loss of former standards of health-care to match.

I recall, and slightly rephrase the old slogan which used to be broadcast nightly by the New York Times radio-station back when the voice began: "It is now

eleven o'clock” When I hear the memory of that radio voice, I think, “Where are the fantasies of today’s ‘Baby Boomer’ parents wandering tonight?”

1.

The Little Matter of ‘Human Rights’: Society, Economy, Science, and ‘Super-Genes’

To understand the problem, go directly to those symptoms which reflect the roots of today’s popular moral disorientation.

The lack of a prevalent, efficient form of morality in today’s popular and official opinion, is best demonstrated by the pompous way in which the phrase “human rights” is tossed about by people who have no apparent conception of a principled, moral distinction between man and monkey. Typical of the relatively extreme cases of this widespread moral disorder, are, on the one side, the modern followers of those who share Thomas Huxley’s and Frederick Engels’ opinion, that man is merely another ape, and, on the other, those even more degraded followers of Bertrand Russell’s devotees, such as the late Norbert Wiener and John von Neumann, as at the Massachusetts Institute of Technology, and elsewhere, who propose that the future lies in constructing a robotic superhuman “artificial intelligence” from electronic spare parts, without benefit of even Huxley’s or Engels’ notions of biology.

If you are a scientist, before defining “human rights,” you must first define a “human being” as a great physical scientist, such as Plato, Kepler, Leibniz, or Russia’s Vladimir Vernadsky would. You must define “human,” and, therefore, “human rights,” as a matter of experi-

mentally validated discovery of a universal physical principle, as a matter of *natural law*.

Vernadsky, for example, defined the physical universe as a process of efficient interaction among three kinds of experimentally demonstrable universal physical principles: (a) a sub-universe of the type called a “phase space,” in which all universally true physical (“natural”) effects are based on the experimental assumption of physical chemistry, that that universal phase-space operates entirely on the basis of non-living principles; (b) a phase-space of those anti-entropic² physical effects on physical chemistry which could not be produced by the first phase-space (the “Biosphere”), but which affect the first, “abiotic” phase-space; and, (c) a phase-space of those anti-entropic physical effects which could not be produced by either of the first two phase-spaces, but which efficiently affects both (the “Noosphere”).³ Among all known living processes, the experimental evidence shows, that only the human mind, or some superior, universal intelligence copied by the individual human mind, is capable of generating those physical effects associated with the *Noosphere*.⁴

What, therefore, is “human nature”; what, therefore, are “human rights”? What is the difference between life confined within the Biosphere—such as life among the higher apes—and a higher, human form of life, which is characteristic of a higher phase-space, the Noosphere? This is the first among the principled considerations upon which both morality, and a competent economic science are premised.

The animal ecologist, such as the circles of the late Julian Huxley, would propose that every species of animal within the Biosphere has a specific (or, varietal) relative potential population-density. That is, as a measure of potential rate, *per capita* and *per square kilometer*, measured relative to the total environment and changes with-

2. Although “negative entropy” was used by biologists to signify the ordering principle which distinguished living from non-living processes, the followers of radical positivist Ludwig Boltzmann, such as Bertrand Russell acolyte Norbert Wiener, attempted to explain this notion away, by using the term “negative entropy” for phenomena within the phase-space of abiotic statistical thermodynamics. To preserve the intention of sane biologists, I have introduced the termed “anti-entropy,” a term which connotes anti-Euclidean mathematical-physics geometries, such as that of Bernhard Riemann.

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

4. Vernadsky was extraordinarily useful in defining the domain of the Noosphere according to a universal experimental principle of physical effects. A medieval and modern European civilization polluted by simple-minded reductionism, had equated real, or physical, with objects of simple sense-certainty. Vernadsky’s scientific method, on the contrary, followed the anti-reductionist,

Classical tradition of both ancient Greece and the Fifteenth-century Renaissance science of Cardinal Nicholas of Cusa: we know the reality which exists beyond the mere shadow-world of sense-perception, by proof that certain, discovered universal physical principles consistently generate effects upon the shadow-world of mere sense-perception. Microphysical science, is an example of this.

Thus, in first approximation, he divided such physical effects among the three phase-spaces indicated. So, in the simple-minded reductionism of such Bertrand Russell devotees as Norbert Wiener and John von Neumann, the idea of life was rejected as “meta-physical.” Similarly, the ability of the human mind to discover and apply experimentally validated universal physical principles to increase the human species’ power to exist, is a physical effect specific to that cause. For a scientist such as Vernadsky, life is a meta-physical principle, and the human power of valid hypothesizing, is not merely metaphysical, but provides the physical-science definition of *spiritual*.

Our republic was created, chiefly, by Europeans, both as immigrants and as sponsors from across the Atlantic. These leading founders of our republic, such as scientist Benjamin Franklin, acted, chiefly, in that Christian tradition which incorporated that alternative to imperial Rome which we have inherited from the revived, Classical Greek heritage of Solon and Plato.



Raphael Sanzio, "The School of Athens" (1509).

in that environment. By that archeological standard, higher apes would never have enjoyed a global potential population of living individuals above some millions, under any reasonably estimable condition on this planet during the recent two-odd millions years of the recent ice-age cycles. However, mankind has achieved a population in the order of billions of living individuals. Higher apes are animals; human beings, except when men behave as beasts, are not.

Human beings each have the potential to generate experimentally valid discoveries of universal physical principle, as Kepler's uniquely original discovery of universal gravitation typifies a universal physical principle. No ape can do this.⁵ Not only are individual persons capable of making such original discoveries; they are capable of replicating the act of discovery made by another

individual, even reaching back thousands of years, as a student today might reenact the discoveries of physical principle by such ancient Classical figures as Pythagoras, Archytas, Plato, Eratosthenes, and Archimedes.

Through such discoveries of universal physical principle, the average person's power in, and over the universe is increased potentially. Through the transmission of such discoveries, from individuals to entire cultures, and that over successive generations, man as a species expresses a willful power which no animal commands, the power to increase willfully his species' relative potential population-density, *per capita* and *per square kilometer* of the Earth's surface.

It is the human individual's ability to do what no monkey can do—discover, or rediscover a universal physical principle—which defines human nature. This ability to change the culture of society for the better, in any part of past or future history, is the power which sets mankind apart from, and above the beasts. That power, which is a product of *the combination* of both the discovery of a universal principle by a sovereign individual mind, and the

5. The distinction between fossil evidence of ape or man depends upon correlation of the specimen as such with evidence of artifacts which are characteristic of human intellectual manufacture, such as well-crafted throwing-spears.

transmission of that act of hypothesis, to others, through replication, is the active principle of *human nature*.⁶

This is the simplest of the demonstrations of the nature of the human species, as absolutely distinct from the lower forms of life. This is Vernadsky's distinction of what is merely a *Biosphere*, from a higher form of existence, a *Noösphere*. This is the elementary definition of human nature under natural law. It is from this, and only from this, that a lawful principle of human rights can be derived. Any different notion of man and his rights, is foolish, unscientific gibberish, as by monkeys acting out their confusion over this matter, as creatures imprisoned within their species' genetic cage.

This scientific definition of human nature, and of human rights, poses the most important of all crises in mankind's differing notions of law of society and religious beliefs, in sundry times and places.

Ancient, medieval, and modern cultures, such as those of ancient Mesopotamia, Sparta, Tyre, Rome, Byzantium; medieval forms of imperial and ultramontane imperial maritime power, such as Venice; and the modern neo-Venetian, imperial maritime power of Anglo-Dutch liberalism, have been intrinsically predatory cultures, which violated that principle of human nature which I have referenced above, by degrading most of humanity to the virtual status of herded, or hunted human cattle. So, the Physiocrats Dr. François Quesnay and Turgot defined men and women as did the Adam Smith who plagiarized their writings. They defined the producers in society as axiomatically human cattle, and defined economy as the herding and culling of human cattle: the unspeakable predators, so to speak, preying liberally upon their inedible victims.

Therefore, the creation of our U.S.A. as a Federal constitutional republic, has been among the most notable historical exceptions to the predatory legacies of ancient Mesopotamia, Sparta, Rome, Venice, the Habsburg tyrannies, and Anglo-Dutch financier oligarchs' imperial liberalism.

Our republic was created, chiefly, by Europeans, both as immigrants and as sponsors from across the Atlantic. These leading founders of our republic, such as scientist Benjamin Franklin, acted, chiefly, in that Christian tradition which incorporated that alternative to imperial

Rome which we have inherited from the revived, Classical Greek heritage of Solon and Plato.

The first clear precedent for that later founding of our republic, was that Italy-centered Fifteenth-century, Classical Renaissance which produced the first attempts at true modern nation-states, Louis XI's France and Henry VII's England. Unfortunately, the imperial ultramontane forces mobilized by Venice struck back against civilization, attempting to exterminate the Renaissance's achievements, through launching the awful period of religious warfare, 1511-1648. The emerging, post-1648 domination of Europe by the combination of the predatory Habsburg and Anglo-Dutch liberal successors to the former power of the Venetian state, reduced the Eighteenth-century options for launching a true constitutional republic meeting Classical Greek standards, to the English-speaking colonies in North America.

The intent expressed by Benjamin Franklin's circles, in the 1776 U.S. Declaration of Independence and the Preamble and general outline of the 1787-1789 draft of the U.S. Federal Constitution, is clear. However, the perilous situation created by the French revolution, Napoleonic wars, and domination of Europe by the rival, anti-American forces of the Anglo-Dutch liberals and post-1815 Habsburg relics such as the lunatic "Carlists," left our so-imperilled republic divided and thus corrupted to the present day.

Therefore, although the intention of Franklin's circle and its European friends is a clear affirmation of the Classical notion of the republic, there is no perfect model of a just form of modern nation-state in practice today. The principle is clear; but, the practice is contested and usually contradictory. The job is, to bring practice into conformity with scientific principle. The job is to establish the Classical principle securely in power, at last; the horrifying situation which grips our nation, its culture, and the world today, warns us not to postpone attainment of our historic objective.

Principle must rule practice. The nature of man is, in principle, clear. The principled notion of human rights, under natural law, follows from that.

How I Was Educated

My focus in this report, is upon an audience of active-minded young adults, chiefly in the university-age range of eighteen to twenty-five years of age. This is the age-interval typical of those today, who are old enough to think emotionally as adults, but younger than that stratum of university graduates which have tended to become cognitively sterile, at about some time as early as between their securing their M.A. or Ph.D. degree, and securing their first tenured position in a university or

6. This relationship between powers and hypothesis is typified by the attack on the relevant errors of d'Alembert, Euler, and Lagrange, in Carl Gauss's 1799 report of his own original discovery of the fundamental theorem of algebra. This work of Gauss is the root of Bernhard Riemann's 1854 definition of an anti-Euclidean universal physical geometry, in the latter's celebrated habilitation dissertation. The power to discover and employ such powers, is a power of the human mind, a power which, as indicated in a note above, is *spiritual* in nature.

analogous professional status.⁷ My own youthful rejection of that popular pathway to intellectual sterility should help today's active mind of university-student age—and, also, their parents—to recognize certain issues which are crucial for their understanding of the challenge confronting their generation today.

As a child, even of pre-school years, I had begun to see myself as an “ugly duckling.” I had come to recognize that my parents and, later, teachers and classmates, most adults, including religious figures, and adolescents and children, alike, lied most of the time. It is much worse in the U.S. today. My resulting frustration was, that I had not become sufficiently matured to be positioned to induce these slippery fellows to depart those erring ways.

Sometimes the prevalent moral corruption which I witnessed then, was called “company manners”: swapping lies with the guests against whom one's parents gossiped as soon as the visitors were safely out of the door. “I had to say it!” or “You forced me to tell that lie!” “Lying for a good cause,” is typical of the immorality encountered, not only among government officials still today, but the population generally. Such observations then, were, and remain typical reflections of the way in which most people, including actually observed Federal judges, university professors, and whatnot, usually lie today. Most such lying took the form of the liar's sense of a need to come up on the side favored by either “popular opinion” in general, or some special in-group variety of generally accepted common assumptions. For example, by using a certain ritual patter of terms and phrases as if they were Masonic handshakes, one attempts to show oneself as an insider to the particular brand of cant common to a certain sort of “in-group.”

So, our universities and learned professions today, are chiefly the tyrannized victims of the power of agencies akin to some ancient Babylonian priesthood, who exercise the virtually capricious power of professional life-and-death over what is accepted as learned opinion. The fact that the

reductionist folly of Lagrange and his followers is hegemonic in official physical science today, even after Carl Gauss's 1799 publication of the discovery of the fundamental theorem of algebra, only typifies the scope and depth of the currently reigning corruption of professional conduct.

That same tendency to lie, is the root of that rampant, popular psychopathology called “other-directedness,” which is epidemic within society today.

Knowing that such behavior was a form of lying, indicated the existence, somewhere, of an alternative to such lying, an alternative which is at least an approximation of something which might be treated as pointing toward knowledge of truth. Reflecting today upon the points of my exceptional personal intellectual accomplishments in later life, I was more fortunate than most of my childhood, adolescent, and young-adult peers, in resisting the heavy social pressures to submit to what I doubted to be truth.

Fortunately, in my search for truth, there came a time, beginning at the age of twelve, when I relied, increasingly, upon my parents' and other available libraries, for an intensive study (in English translations) of leading English, French, and German philosophers of the Seventeenth and Eighteenth centuries. This included my rejection of taught classroom geometry, on the basis of rather obvious evidence that real-world geometry is defined by consideration of physical principles which point to real-life facts contrary to an abstract classroom geometry. This led me, eventually, to my early 1950's adoption of Bernhard Riemann's notion of relativistic physical geometry.

That unfolding search for truth, led me, by mid-adolescence, to adopt Gottfried Leibniz as my mentor in such matters, and to focus upon exposing the axiomatic frauds in the *Critiques* of Immanuel Kant. For me, aided by the adolescent philosophical reflections on the Classical notion called epistemology, this showed that the pathway to truthfulness was an accessible one. Whatever is notable in what I have accomplished since, is the outcome of that parting of the philosophical ways, from populism, which occurred during my adolescence.

A related challenge confronts each future leader of society from among the 18-25 age-interval today. The crossroads at which the young person's choice of direction must be made, is the point at which that person will decide to rely only on actual knowledge, rather than submitting to social pressures merely to learn (i.e., “conform”).

Perhaps, a monkey could be trained to learn to pass a multiple-choice questionnaire designed to be scored by computer; I fear that present programs of public and higher education would tend toward fostering such an anomalous outcome. Would you wish to choose a successful graduate of such an education as your physician or President? What kind of person are you? Are you some

7. Cf. Dr. Lawrence S. Kubie, *The Neurotic Distortion of The Creative Process* (Lawrence: University of Kansas, 1958) and “The Fostering of Scientific Creative Productivity,” *Daedalus*, Spring 1962. I have observed typical such cases of once-fertile minds gone sterile some time after 25 or even earlier. The extreme case of combined intellectual and moral sterility, is typified among the radically empiricist mathematical formalists, such as the followers of Bertrand Russell. I have compared the onset of this type of neurotic disorder, as I observed it first among members of my own generation, and, since the mid-1960's, among the “Baby Boomer” generation. Typical onset in both cases, occurred some time between the mid-twenties and mid-thirties. The typical difference between those two generations on this account, is the effect of the mid-1960's transition from a production-oriented culture, to a “consumer society,” and, later, the hedonistic depths of a “credit-card-with-sex culture.”

pathetic creature who has learned to be socially accepted in a society like that of George Orwell's *Animal Farm*, or Aldous Huxley's *Brave New World* of cannabis, ergotamine, and LSD? You must choose between truthful knowledge and learning, or, under present conditions of global crisis, be prepared to give in to a curious impulse to swarm over the edge of the now waiting cliff, squeaking in gregarious ecstasy on the way to doom, as the fabled lemmings would.

All that which is of singular importance among what I know today, is the outcome of a youthful process of adopting a certain form of the Socratic dialectic as a standard of truthful knowledge. Although my youthful contempt for Francis Bacon, Thomas Hobbes, John Locke, and David Hume was an important, if negative part of this process, it was adopting the standpoint of a relative handful of the most widely circulated of the works of Gottfried Leibniz, which led me to focus my principal attack on the central thesis of Immanuel Kant's series of *Critiques*. The focus on Plato came later. It was from Leibniz that I first learned Plato's method, second-hand.

All of my intellectual and related achievements, have emerged as, principally, an outgrowth of that adolescent experience with epistemology. This experience equipped me with the means for insight into the popular varieties of mental disorders in my society. It equips me to present young people with the means for understanding the mass psychological disorder which dominates popular opinion-making today.

I begin with a few crucial observations, on background, which are needed to make clear the challenge which confronts our present young generation of future leaders today.

My own original discoveries in the branch of science known as physical economy, were all generated by my attention to the interdependence of effect between two principles. On the first account, I adopted my own reconstruction of the principle of the Socratic dialectic from my wrestling against Kant. I distinguished between conceptions, such as experimentally verifiable universal physical principles, generated in that Socratic way, and those contrary types of notions which are learned in the way a lower form of life might learn. This is my strict definition of *cognition*, as distinct from mere learning. Then came the second count, as follows.

These points of distinction led to a new, deep problem: the evidence that *the individual's cognitive mental processes are of a specifically sovereign quality*. This topic was: How are discoveries of universal physical principles, which can not be described as objects of sense-perception, transmitted from the interior of the mind of an original, individual discoverer, into the interior of the mind of another person? That is the central issue of epistemological

method throughout Plato's work. Plato's Allegory of the Cave is typical. This problem is the foundation of all competent work in science still today. How does the development, or lack of development, of the mind of the children, affect the potential adult performance of the grandchildren's generation? It was from my focus on this second aspect of scientific discovery that all of my principled achievements in economic science were generated.

Gauss: Educating Young Americans Today

The first objective in education, is to guide the self-development of the mind of the student to the vantage-point that he or she recognizes truthful knowledge, such as the reenactment of an experimentally validated universal physical principle, as a uniquely human state of mind. For that reason, during the assembling of the present youth movement, I introduced the proposal, that the crucial benchmark of reference for secondary and undergraduate higher education, should be a mastery of the broader implications of Carl Gauss's 1799 report of his discovery of the fundamental theorem of algebra. For crucial historical reasons, as I have explained the significance of this earlier, it must be that 1799 report, in which Gauss attacks the common epistemological follies of d'Alembert, Euler, and Lagrange, which is adopted as the point of reference for launching a well-organized, coherent approach to both the history of physical science and a science of history.

On this account, I must summarize again here, a part of the argument employed in "The Historical Individual."⁸ This time, elements of that argument serve a complementary set of conclusions, respecting the more direct, functional relationship between multi-generational economic analysis and political leadership: the subsuming topic identified in the prefatory observations here. To the degree this includes restatement of arguments featured in the first article of a series on the topic of leadership, that restatement is indispensable for the reader who does not have the preceding article at hand, and perhaps the repetition in a slightly different context may be helpful to those who are still wrestling with the conceptions presented in the preceding piece.

So, at this point, I must state, summarily, a point I have made in many locations. It is a point which must not be evaded; all competent notions of physical science, Classical art-forms, and statecraft depend on this argument. The preliminary form of strict proof of the distinctive characteristics of human nature, lies in a close examination of the

8. Lyndon H. LaRouche, Jr., "The Historical Individual," *Executive Intelligence Review*, Nov. 1, 2002 (Vol. 29, No. 42).

way in which experimentally valid discoveries of universal physical principles are generated and replicated. This argument must always be featured in any contemporary presentation of the nature of scientific knowledge.

To restate the argument supplied in “The Historical Individual”: As Plato illustrates the point by his famous Allegory of the Cave, and as the Apostle Paul wrote in 1 Corinthians 13, what we perceive with our sense-apparatus, are only the shadows of the reality which stimulates those sense-experiences. The sense organs are part of our living bodies, and are incapable of reporting more than the reaction of those organs to the impact of the real world. Sense-perceptions are merely the shadows cast by an unsensed, but efficient reality. On that account, any competent teaching of matters of science makes a fundamental separation between what we adduce, by learning, from sense-certainty as such, and actual knowledge of the reality of the universe beyond the shadow-world of the senses.

Science depends absolutely, therefore, upon a principle known as *hypothesis*, as this is typified by Kepler’s uniquely original discovery of the principle of universal gravitation. I develop this crucial argument as briefly as possible.

The decadent trend in matters of science which had been promoted earlier by the Roman imperial culture’s adoption of Aristotle, is typified in modern teaching, by the common error of Claudius Ptolemy, Copernicus, and Tycho Brahe. The Sixteenth-century revival of various forms of anti-Classical philosophical reductionism, including Aristoteleanism and empiricism, was a correlated feature of the Venice-orchestrated religious warfare of the 1511-1648 interval. This occurred as a pro-feudalist, reactionary attack on the previous century’s great Classical Renaissance, a renaissance based on a Christian reading of pre-Roman Classical Greek science. This Renaissance was typified by the progress of the modern experimental science which was set into motion by the work of Cardinal Nicolaus of Cusa and his follower Leonardo da Vinci. The typically Aristotelean error common to the Roman Ptolemy and the modern Copernicus

and Brahe, was the Romantic reductionist’s radical presumption that the idea of physical lawfulness in the universe must be limited to a form of uniform statistical regularity in sense-perceptual observations as such.

For that reason, the beginning of a competent approach to a comprehensive development of modern mathematical physics, was set into motion by Kepler’s overturning that Aristotelean fallacy, by his discovery of universal gravitation. The fact that the measured orbit of Mars is neither circular—but elliptical—nor of uniform motion, presented Kepler with a Classical, Platonic type of dialectical paradox, akin to the Classical Greek paradox of doubling the cube by construction. This proved the existence of *something outside the range of sense-certainty*, acting efficiently as an efficient agent on the universe. Kepler argued that this paradox showed the existence of an efficient form of (God’s) *intention*, acting upon the universe in such a way as to get around the limitations of mere sense-perception. This approach enables us to reveal the existence of that intention to the human mind: universal gravitation as defined by Kepler.

This discovery posed a Classical form of Platonic *hypothesis*. By suitable experimental tests, Kepler’s hypothesis was proven to be a universal physical principle, susceptible of measurement. The same point was made, subsequently, by Fermat’s insight into the fact that the refraction of light is ordered by a principle of “quickest time,” rather than “shortest distance.” The work on this by Christiaan Huyghens, Leibniz, and others, led to Leibniz’s discovery of the catenary-related principle of universal physical least-action, which the Eighteenth-century Venetian Party’s Euler rejected, incompetently, in an hysterical fit of reductionism. Gauss’s 1799 report of his discovery of the meaning of the complex domain, refuting Euler’s error in his presentation of the fundamental theorem of algebra, opened the highway leading into Riemann’s 1854 habilitation dissertation.⁹

Although Kepler’s discovery of gravitation was a unique event in modern European civilization up to that

9. During the late Fifteenth century, into the Sixteenth, Venice’s original impulse had been to crush the work of the Renaissance with the bludgeons of obscurantism and religious warfare. Later, an added weapon against reason, crafted by a faction led by Galileo’s master Paolo Sarpi, introduced what became known as empiricism. From about the time of tyrant William of Orange’s coup d’état in England, empiricism in the guise of the Anglo-Dutch liberalism of John Locke, Isaac Newton, Bernard Mandeville, David Hume, *et al.*, served as the stock-in-trade of that Europe-wide liberal faction known variously as “the Venetian Party” or “The Enlightenment.” The “Venetian Party’s” influence in philosophy was spread throughout Eighteenth-century Europe by a network of salons, coordinated, until the middle of that century, by a Paris-based Venetian, Abbot Antonio Conti. The mathematicians d’Alembert, Euler, and Lagrange were among the numerous

notable recruits to that network of salons which included the infamous Voltaire. Out of Napoleon Bonaparte’s taking political control over France’s Ecole Polytechnique, and a British-directed continuation of that policy, Lagrange’s followers Laplace, Cauchy, *et al.*, imposed the “mechanics” dogma of the “Enlightenment” on most institutions of science throughout Europe, excepting the Franco-German circles of such Alexander von Humboldt associates as Gauss, Dirichlet, and Riemann. It was this early-Nineteenth-century witch-hunt atmosphere, to which Gauss referred in 1830’s and mid-1840’s references to his self-suppression of his 1790’s discoveries in the anti-Euclidean field defined by his teacher Abraham Kästner. It was not until Riemann’s 1854 habilitation dissertation that the implications of Gauss’s own contributions to defining an anti-Euclidean (rather than non-Euclidean) geometry were made clear.

time, the method Kepler used was not original to modern Europe; it was the same method of Plato shared with Archytas and kindred minds of Classical Greek science through the time of Eratosthenes and Archimedes. The Fifteenth-century Renaissance had retrieved that Classical method from the ruinous influence of feudalism's Roman imperial tradition. That Renaissance, typified by the work of such included notables as Brunelleschi, Cusa, Toscanelli, Pacioli, Leonardo da Vinci, and Raphael Sanzio, had relaunched the work of Classical science on the new social basis provided by the emerging modern nation-state.¹⁰

These ancient and modern cases, combined, illustrate the point, that *science is hypothesis*. The object is to know "what is out there," behind the mere shadows of sense-perception. Thus, Gauss's 1799 attacks on the anti-scientific blunders of d'Alembert, Euler, and Lagrange, including Lagrange's attacks upon Gauss's definition of the complex domain, which those three had each denied to exist, by denying the efficient reality of what they labelled as "imaginary numbers."¹¹ Most simply said: The complex domain reflects that actual physical universe, which generates what is imperfectly reflected as the shadow-world of sense-certainty.

2. Arithmetic, Geometry, And Physics

For the admittedly rare competent economist today, there are two general standards of measure for determining the relative performance of national economies.

10. The difference was the introduction of the Platonic-Christian notion of *agapē* (General Welfare, common good, as in the Preamble of the U.S. nationalist Constitution draft of 1787-1789) as a universal natural-law principle superimposed upon governments. This ended the toleration of imperial and related forms of government which degraded large sections of humanity to that status of wild or herded and culled forms of human cattle, which Adam Smith adopted from the Physiocratic mumbo-jumbo of François Quesnay and Turgot.
11. For the student's reference: This problem had been implicitly solved by Leibniz's recognition of the significance of the catenary as expressing a universal principle of physical least-action, thus curing the blunder of seeking to explain "quickest path" in terms of the cycloid. The catenary function, so viewed, which defined natural logarithms prior to Euler, is situated as the characteristic feature of the complex domain.
12. A notable comparable case, is that of the increased contribution of the Jewish population to the economic and other progress of Germany, over the period from Moses Mendelssohn's departure from Dessau, until the British success of Jan. 30, 1933, in bringing Adolf Hitler to power. This benefit was chiefly a by-product of the Classical renaissance in Europe, led by Lessing's mentor, and one-time

One is accessible without resort to what would be widely regarded as sophisticated scientific techniques. A more reliable standard, required for long-range policy-shaping, compels us to focus on certain underlying implications of the successive work of, most notably, Leibniz, Gauss, and Riemann.

I wrote in my prefatory remarks, above, that the value expressed by a competent form of economic policies of practice for today, can be judged only as the increase in the *per-capita* physical productivity of a subsequent two generations of the population considered as an indivisible whole. In some respects, the justification for that argument is clear even from a study of the patterns of improvement accomplished by successive generations of U.S. immigrants, especially those who arrived as preponderantly illiterate or semi-literate rural or analogous poor. When history takes the proper turn, the cultural development accomplished by the successive work of the grandparents and parents, blossoms in the achievements of the grandchildren's generation.¹² The contrary is also true, as witnessed by the "no future" prospects which today's university-student-aged generation has inherited, with fortunate, but rare exceptions, from the prevalent decadence of the preceding two generations.

While such observations on multi-generational long-wave effects are well-founded, and relatively obvious in themselves, those observations are not sufficient to show the exact way in which such connections are to be adduced correctly from study of the physical-economic process as such. The problem so posed, is not merely a matter of measurement as such. Before pulling out a tape-measure and scales, we must first discover what it

Benjamin Franklin host, Abraham Kästner, based on Kästner's explicit defense of the work of Gottfried Leibniz and Johann Sebastian Bach, and the Kästner-Lessing rescue of Shakespeare's work. As John Keats and Percy Shelley could have explained it, without the influence of Kästner, Lessing, and Moses Mendelssohn, the success of the American Revolution led by Kästner's one-time Göttingen University guest Benjamin Franklin, would not have been possible. The Germany-centered revival of Classical science and art radiated throughout Europe, until those catastrophic, pro-populist effects of the Paris events of July 14, 1789, on both Europe and the young U.S.A., which led to the 1803-1806 unleashing of the new wave of wild-eyed Romanticism typified by G.W.F. Hegel's almost sexual enthusiasm for the Napoleon Bonaparte of Jena-Auerstadt, and Hegel's later systemization, as Prussia's official state philosopher, of the doctrine premised upon the model of Emperor Napoleon's fascist state. Few realize, when hearing modern faithful expressions of Classical string-instrument performances, that they are enjoying the legacy of a conception of performance developed to a large degree by those Jewish circles closely allied with Mendelssohn, Haydn, Mozart, Beethoven, Schubert, *et al.* Without the German Jew, one can not speak honestly of the achievements of German Nineteenth-century scientific progress and contributions to the planet as a whole.

is—what universal physical principle—the which must be measured. Such are the challenges addressed by my currently proposed program of emergency infrastructure-rebuilding reforms now desperately needed by our disintegrating national U.S. economy.¹³

In one aspect, the measurable causes for the collapse of the potential relative population-density of Europe and the Americas, over the recent thirty-six years, especially the 1971-2002 interval, can be identified rather simply. The destruction of the physical standard of living of the lower 80 percent of the family-income bracket during the 1977-2002 interval, as accompanied by the savage cannibalization of basic economic infrastructure, including post-1973 looting out of health-care systems, is obvious [SEE Figure 1]. The present standard of literacy, measured according to an often multiple-choice-questionnaire-scored sliding-scale for a competitive standard of increasing popular illiteracy, is a relevant example of the galloping decadence afflicting the minds as the bodies of our population in general. The spread of wildly irrationalist cults, such as the frankly pro-Satanic sex-and-money-god cult of Sun Myung Moon, typifies the effect of the “information society” cult, in promoting the spread of mental and moral disease rotting out the souls and minds of increasing rations of our population.¹⁴

Those rule-of-thumb standards for historical estimates of human progress, point toward those phenomena of progress which may be represented as effects which can be identified within the scope of the facts attributed to the senses. However, when we attempt to go beyond such admittedly indispensable generalities, when we take up the matter of actual economic-policy-planning, competence demands that we focus upon those economic issues which are situated functionally (i.e., *systemically*) within the scope of that seemingly invisible, but efficient complex domain as defined successively by Archytas, Plato, Kepler, Leibniz, Gauss, and Riemann. So, we proceed now.

13. See *EIR Special Report: LaRouche's Emergency Infrastructure Program for the United States* (Washington, D.C.: EIR News Services, Inc., November 2002).

14. Within the U.S. Civil Rights movement, the decay of the movement can be correlated with the popularization of the frankly “anti-intellectual” cult of “information theory.” One does not need to think conceptually any more. It is sufficient to “receive information,” and let “street-wise gut-instinct” do the rest. Increased susceptibility to the influence of the sex-and-money Moon cult and its allies, correlates with increased hostility toward the memories of that noble person of African descent typified by Frederick Douglass and the sublime Rev. Martin Luther King. No one is less free than the man who puts such dumbed-down populist shackles of the mind upon his own arms and legs.

FIGURE 1. *The top 20 percent of the population have more than half of all after-tax income.*



The foundation of the argument here, is that: Since efficient universal principles exist only as powers outside the scope of sense-perception, the mathematical form of representation of their efficient existence lies only within what Gauss defined, in his 1799 report of the fundamental principle of algebra, as that complex domain whose characteristic feature is what Leibniz showed, in collaboration with Jean Bernouilli, to be the expression of *the universal physical principle of least action*, in the generalization of the catenary function. The relevant conflict within contemporary mathematical physics, still today, is, historically, the following.

Lagrange’s fraudulent rebuttal of Gauss’s referenced 1799 paper, made the claim that Gauss had “cheated” in his criticism of Euler and Lagrange, by introducing geometry into a discussion of arithmetic. Under less decadent and repressive general political circumstances than the reductionist Romanticism which dominated most areas of Nineteenth-century culture, the implicit retort by the Gauss of his *Disquisitiones Arithmeticae* would have been the devastating evidence, from number theory itself, that Lagrange’s rebuttal had cheated, by pretending that the issue was anything other than those false, “ivory tower” assumptions respecting geometry, which underlay the arithmetic of d’Alembert, Euler, and Lagrange. Since the relevant Classical Greek history of the doubling of the square and cube was known to leading European mathematicians at that time, the element of fraud in the argument by Bonaparte’s protégé

Lagrange should have been obvious to mathematicians and others, then and since.¹⁵

The relevant ancient Greeks had shown, that the solution to the typical problems of doubling of the square and cube—as also the line—by construction, is systemically paradoxical. As the case of the Tenth through Thirteenth Books of Euclid's *Elements* attests, similarly, this is a type of paradox akin to that of the more sophisticated implications of the construction of the five regular (Platonic) solids.¹⁶ The solution for the square is relatively simple; the cube represents a related problem, but of a higher order of power; the construction of the Platonic solids, a still higher order of the same class of physical paradoxes posed by geometry.

The discovery of any single universal physical principle, as experimental validation of a discovered hypothesis, is sufficient proof of the falseness of the scientifically illiterate, popular assumption that a Euclidean geometry corresponds to the geometry of the physical world. The real universe is one which mere sense-perception does not reveal, but merely reflects in a potentially useful, but also implicitly misleading way.¹⁷ The use of pedagogical devices, such as referring to sense-perception as merely a world of shadows, or reflections seen in a darkened mirror, are each appropriate ways of pointing to this paradox. As Gauss's definition of the complex domain

implies, sense-perception, when combined with the ontological paradoxes which that domain expresses, such as that of doubling the cube, is a projection of the experienced reality, a projection which is often interpreted in a way systemically false to reality. Such false assumptions persist, until knowledge of the complex domain replaces the Aristotelean or empiricist delusions polluting the Euclidean. Riemann's 1854 habilitation dissertation is the generalization, as an anti-Euclidean physical geometry, of the argument on behalf of the complex domain, made by Gauss in 1799.

To restate that crucial point: This fallacy of Euclidean geometry led Gauss's Professor Abraham Kästner to define the root-concept of an *anti-Euclidean*, as distinct from merely "non-Euclidean" geometry such as those of Lobachevsky and Janos Bolyai. Kästner's argument is that we must go to a point prior to Euclid's definitions, and start over from Greek science prior to the writing of Euclid's *Elements*. This, Kästner student Gauss was already on the road to doing, as early as 1792, as reflected in his *Disquisitiones* and 1799 announcement of the fundamental theorem of algebra. Riemannian anti-Euclidean physical geometry, as expressed with audacious clarity by the 1854 habilitation dissertation, is the fulfillment of both Kästner's intention and that of Gauss's 1799 attack on the "ivory tower" empiricism of Euler and Lagrange.

15. The rise of Romanticism, and the accompanying, post-1789 disorientation among U.S. patriots, can not be understood except as an outcome of King Louis XVI's foolish rejection, out of hand, of the constitutional monarchy crafted under Bailly's and Lafayette's leadership. This rejection led to the British Foreign Office's deployment of its assets the Duke of Orleans, Jacques Necker, and Necker's daughter, the notorious Madame de Staël, to orchestrate the bloody farce of the siege of the Bastille, and subsequent imprisonment and decapitation of the foolish pair of Louis XVI and his silly wife, Emperor Joseph II's sister Marie-Antoinette of 1787 "Queen's Necklace" notoriety. Orleans and Necker were rapidly superseded by London-trained and directed agents of the British Foreign Office such as Danton and Marat, leading into the subsequent Jacobin Terror. These developments unleashed waves of populist lunacy among former admirers of the U.S. struggle for independence on both sides of the Atlantic. From July 14, 1789 on, the successive tyrannies of British assets such as Orleans, Necker, Danton, Marat, and of the cabals of Barras and Napoleon Bonaparte, sent shock waves of political and cultural demoralization into motion throughout Europe and the U.S.A. The British, for example, used the always treasonous Essex Junto Federalists to spin the administration of President John Adams into a tizzy, with a fraudulent British Foreign Office-orchestrated publication, Sir John Robison's hoax, *The Roots of the Conspiracy*. Had Adams not resisted that hoax's influence even on some members of his own family, the intent of the British, to recapture the U.S.A. as a British colony, would have succeeded. Only the subsequent emergence of the American Whig current around Mathew Carey and Henry Clay, saved the United States from the ruin of both the Federalists and confused

Jefferson's self-doomed Republican Party. This was the Whig legacy continued and developed, around the theme of U.S. Manifest Destiny, by John Quincy Adams, Abraham Lincoln, and James Blaine, and followed by President Franklin Roosevelt. In this setting, the emergence of the first modern fascist state, France under the tyrant Napoleon Bonaparte, set waves of anti-Classical pro-Bonapartist Romanticism loose throughout Europe, especially following developments of 1803-1806. The same decadence was reflected in the persistence of the fascist potential inhering in populism, within the U.S. itself, to the present day. The political success of Lagrange and his followers, over Gauss, can be understood only in the historical context of that conflict between the Classical current and the opposing legacy of the Caesarism on which Napoleon's fascist tyranny was intentionally modelled.

16. As noted below, this brings into focus the proof of the same *hylezoic* principle central to Vernadsky's definition of the Biosphere. See Johannes Kepler's 1611 *De Nive Sexangula* [(*On the Six-Cornered Snowflake*) trans. by Colin Hardie, Oxford University Press (reproduced by permission, by 21st Century Associates, 1991)]. This argument by Kepler is a continuation of that of Cusa followers Pacioli and Leonardo, and of Plato before them.

17. The relevant empiricist assumption, as of Euler and Lagrange in this instance, is not a matter of "honest academic differences of opinion"; it is an elementary issue of principle, which lies at the ultimate root of the distinction between science and charlatanry. Physical science, as distinct from sometimes extremely clever childish games at the blackboard, lies within the domain whose very existence Euler, Lagrange, Immanuel Kant, and their followers have passionately denied.

The Fundamental Theorem of Algebra: How Gauss Restored the Primacy of Physical Geometry

Gauss's 1799 doctoral dissertation on the fundamental theorem of algebra has its roots in the Classical Greek investigations of the paradoxes arising from doubling the line, square, and cube [Figure I]. As discussed by Plato in the *Meno*, *Theatetus*, and *Timaeus* dialogues, line, square, and cube are visible objects, but are generated by an unseen principle, which he called "power," as evidenced in the incommensurability of the magnitudes which double them.

Through the Arab and later Italian Renaissances, these investigations were continued within the domain of what the Arabs named "algebra," which was a more general investigation of the different powers associated with lines, squares, and cubes. For example, the relationship of combining the areas of squares and rectangles could be expressed by an algebraic equation [Figure II].

In the Eighteenth century, the mathematicians Euler, Lagrange, and D'Alembert, among others, investigated algebraic expressions as a formal set of rules and operations divorced from their original physical basis, giving rise to a paradox in the form of the question, "how many solutions (roots) does an algebraic equation have?" For example, the algebraic equation $x^2=4$ expresses the problem of determining the side of square whose area is 4. In this case, there are two solutions, 2 and -2 , signifying the two diagonals of the square of area 2, which are equal in magnitude but opposite

Continued on next page

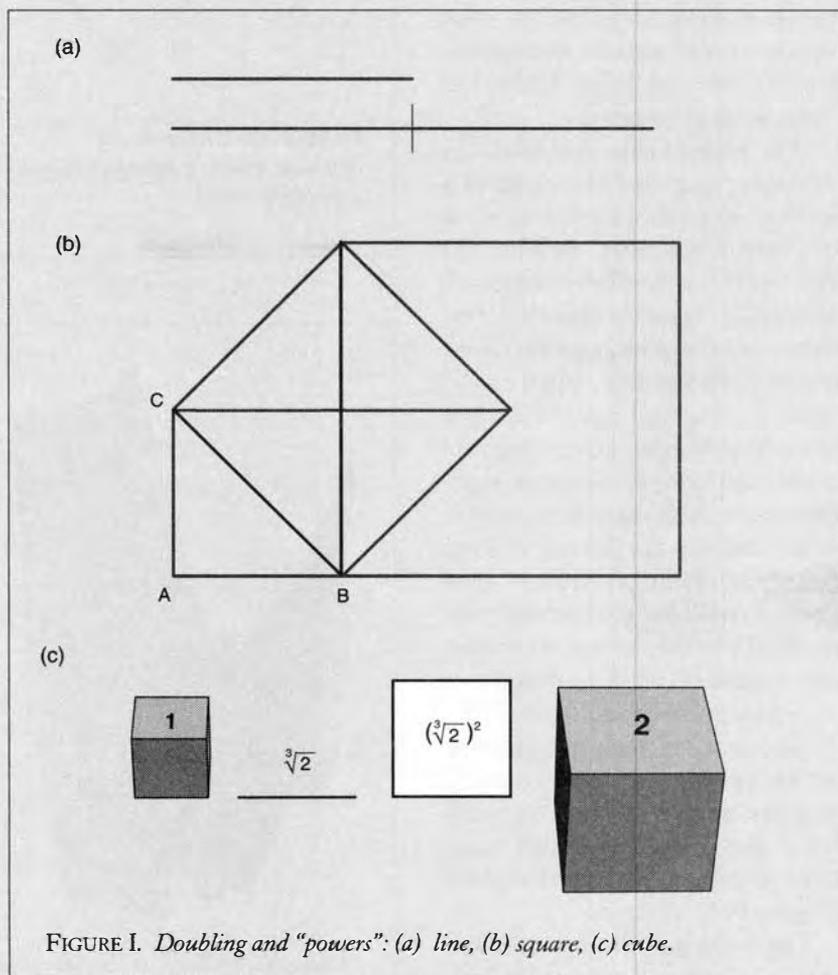


FIGURE I. Doubling and "powers": (a) line, (b) square, (c) cube.

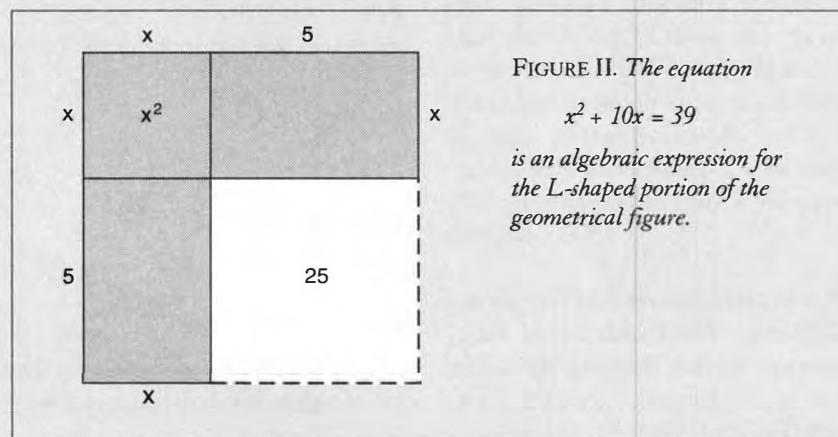


FIGURE II. The equation

$$x^2 + 10x = 39$$

is an algebraic expression for the L-shaped portion of the geometrical figure.

Continued from previous page
 in direction. However, the equation $x^2 = -4$ had no solutions, either physical or formal.

Euler, Lagrange, and D'Alembert claimed to "solve" this problem by employing magnitudes—the square roots of negative numbers—which they nonetheless labelled as "impossible or imaginary."

The young Gauss ridiculed this sophistry, and used his attack as a basis to establish the modern form of physical geometry. Building on the work of Leibniz and the Bernoullis, Gauss recognized that the so-called algebraic powers associated with the line, square, and cube, were special cases of a more general principle governing the generation of a succession of higher powers. Although these powers existed outside the domain of sense perception, their principle of generation could be represented geometrically as the actions of rotation and extension; as, for example, in an equiangular spiral [Figure III].

Gauss called such magnitudes, which include the square roots of negative numbers, "complex numbers," and insisted that such numbers be given "full civil rights" [Figure IV].

Gauss devised a means to represent all algebraic powers by such complex numbers, and any algebraic equation by geometric surfaces [Figure V]. The number of solutions to an algebraic equation, Gauss, demonstrated, can be known by the geometrical characteristics of the surfaces [Figure VI].

—Bruce Director

For a full presentation, see Bruce Director, "The Fundamental Theorem of Algebra: Bringing the Invisible to the Surface," *Fidelio*, Summer/Fall 2002 (Vol. XI, No. 3-4).

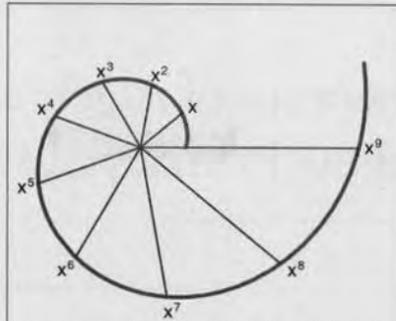


FIGURE III. A succession of algebraic powers is generated by a self-similar spiral.

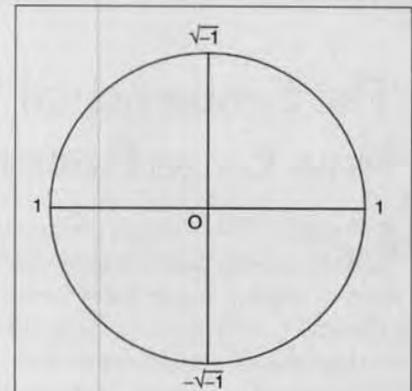


FIGURE IV. The unit of action in Gauss's complex domain.

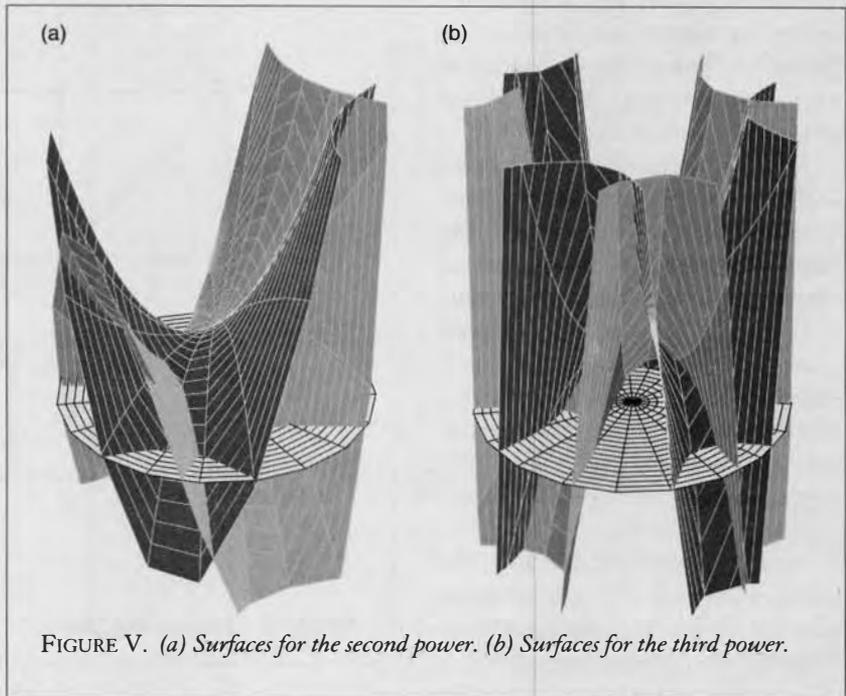


FIGURE V. (a) Surfaces for the second power. (b) Surfaces for the third power.

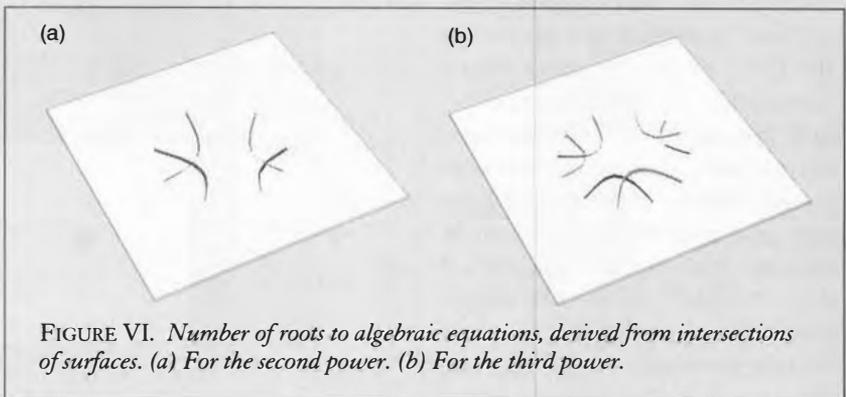


FIGURE VI. Number of roots to algebraic equations, derived from intersections of surfaces. (a) For the second power. (b) For the third power.

Those discovered universal physical principles, typified by Gauss's locating the constructive doubling of the cube within the complex domain, each express a demonstration of universally efficient *physical*, rather than formal-mathematical action. The projected effect of that demonstration can be recognized, paradoxically, by means of sense-perception, but the continuing principle of action which causes that result, can not. Thus, "ivory tower" geometries, such as Euclidean, Cartesian, or counting-number-arithmetic, are false when their images are mistaken for the reality of the domain in which the relevant efficient action, such as gravitation, occurs. Hence, the absurdity of the Galileo-Newton attempts to plagiarize Kepler's discovery of gravitation, and the absurdity of Lagrange's effort to systematize physics as a system of mechanical action located within the Euclidean-Cartesian domain of empiricists such as Abbot Antonio Conti.

Thus, as my relevant associates have emphasized, the crux of the moral crisis of most taught physical science, is the conflict between the *dynamic* universe of Plato, *et al.*, and the pathological, Aristotelean image of *energy*. This pivotal moral crisis of the reductionists, is key to comprehension of Gauss's conclusive exposure of the follies of d'Alembert, Euler, and Lagrange respecting the complex domain. The Platonic conception echoed by Gauss and, later, Riemann, is the only competent basis for an attempted mathematical form of a physical science of economics.

The point is best made, as I have insisted repeatedly, by looking at Gauss's 1799 paper retrospectively from the vantage-point of Riemann's habilitation dissertation. My critical reassessment of Vernadsky's treatment of the subject of the Noosphere, requires situating the discussion of multi-generational economic processes ("trajectories") within a mental framework cohering with Riemann's Gaussian conception of an anti-Euclidean physical geometry. To accomplish that, we must eradicate the presently conventional classroom and related use of the Aristotelean term "energy," and substitute the correct notion, that of "power."

The Conception of Power

We must define "power" from the standpoint of three historical benchmarks in the history of physical science. *First*, the Platonic Classical Greek notion of *power*, in opposition to the pathological concept, *energy*, as employed by Aristotle and the modern empiricists, such as Clausius, Grassmann, Kelvin, Helmholtz, and other followers of Ernst Mach, who ape the reductionist notions of Aristotle on this point. *Second*, we follow Leib-

niz's introduction of that Classical, Platonic concept of power (German: *Kraft*) in the course of his 1671-1716 founding of the science of physical economy. Third, the identical use of the notion of *power*, in Gauss's 1799 definition of the complex domain: the mathematical-physical notion of *power* employed in defining the fundamental theorem of algebra.

In the case of power versus energy, in particular, sane people argue the significance of the usage of terms as if by pointing to an object, or action, or both. There are two most general types of cases for such "pointing" action: to that shadow naively considered as a sense-observable object, or, rigorously, as an object whose physically efficient existence is expressed by its observed or conjectured effect on the domain of sense-perception, such as an object within the bounds of nuclear microphysics.

In Classical science and Classical artistic composition, the most important class of objects, belongs to a sense-invisible domain of universal physical principles. These principles are defined by application of Plato's Socratic principle of hypothesis to the domain of experimental practice, like Kepler's definition of universal gravitation, or the definition of a principle of life by the combined efforts of Pasteur and followers such as Vernadsky, The mapping of the existence of the objects specific to that domain, is to be understood broadly, today, from the standpoint of reference of a Riemannian, anti-Euclidean physical geometry. The principles of modern physical economy can not be identified efficiently, without reference to the specifically topological implications of a Riemannian physical geometry, if not such a mathematics itself.

As for Kepler's discovery of gravitation, or the concept of the related principle of universal physical least action by the successive efforts of Fermat, Huyghens, Leibniz, and Jean Bernouilli, and Leibniz's unique discovery and proof of a notion of infinitesimal calculus contrary to the reductionist apriorism of Euler, Lagrange, Cauchy, *et al.*, the discovery of universal principles pertains to *relationships*, not things as such. Archytas' solution for the challenge of constructing a doubling of the cube, epitomizes the principle otherwise expressed more simply by constructing the doubling of a line *per se*, or Plato's treatments of the solution for doubling the square.¹⁸

Plato's treatment of the implications of the five Platonic Solids, and the late Professor Robert Moon's treatment of the role of a series of Archimedean solids in grasping Mendeleev's Periodic Table from the standpoint of the physical chemist, only typify a crucial issue of the *hylozoic*

18. See "The Historical Individual," *op. cit.*, pp. 28-29.

principle addressed by such avowed followers of Cardinal Nicolaus of Cusa as Luca Pacioli, Leonardo da Vinci, and Kepler. That is the crucial issue of Riemann's 1854 habilitation dissertation, the concept of the universal ordering of relationships among principles as such. This standpoint, of Riemann, is crucial for a competent notion of physical economy.

Think of what are sometimes referenced as "thought-objects." When that reference to "thought-objects," as distinct from mere sense-objects, is made to a competent effect, it is a way of speaking which intends to convey ideas of that distinct class to which Kepler's notion of gravitation belongs. It references not an object of sense-perception; it references an efficient, universal principle of the universal physical-space-time for which sense-perceptual objects are merely, as Plato states, shadows. All members of this class of real, as distinct from shadow-objects, have the common characteristic of referring to *relations*, rather than discrete objects like those attributed to sense-perceptual space.

For example, Kepler locates the mathematical expression of gravitation in the relationship among the harmonic characteristics of planetary and other orbits.¹⁹ Universal gravitation is an objective quality of the ordering of relations among observed objects. Gravitation assumes the character of a "thought-object" when it is the subject of relations to other sets of "thought-object" forms of relations. This point is crucial for grasping Plato's, Leibniz's, and Gauss's referenced use of the notion of powers, as opposed to, and distinct from the Aristotelean hoax of "energy."

A Riemannian physical geometry is, itself, such a thought-object. The subject of that geometry is a relationship among a set of relations, each of which corresponds to a universal physical principle. The crucial characteristic of that geometry, is the effect of introducing a new array of principles. The catenary-cued notion of universal physical least action, is carried over from Leibniz, such that the difference between any among two of the universal phase-spaces so defined, should be expressed as a measurable difference in the way least-action is expressed in those cases. This sort of comparison may be identified as a "higher geodesic," that in the sense of those general principles of curvature which Riemann adopts from Gauss. The type of effect to be expected, includes

the notion of a universe undergoing a speeding-up or slowing-down process as the relevant Riemannian n -fold domain is altered. This, in fact, is, as I shall show here, precisely what does occur in a modern physical economy. This fact, is the underlying feature of any competent science of physical economy.

A Riemannian Reading of Vernadsky

From the outset of his revolutionary, 1854 habilitation dissertation, Riemann follows Gauss's teacher Kästner, in expunging all of the arbitrary, *a priori*, elements, such as definitions, axioms, and postulates, from geometry. Hence, Gauss and Riemann represent *anti-Euclidean*, rather than merely *non-Euclidean* geometries.

In that dissertation Riemann explicitly excludes from mathematical physics the *a priori* elements of both a Euclidean, and non-Euclidean geometry, and also of counting-number arithmetic. For him, there is no purely mathematical proof of principle; matters of principle are matters of physical-experimental tests of hypotheses, not of a so-called "pure mathematics."

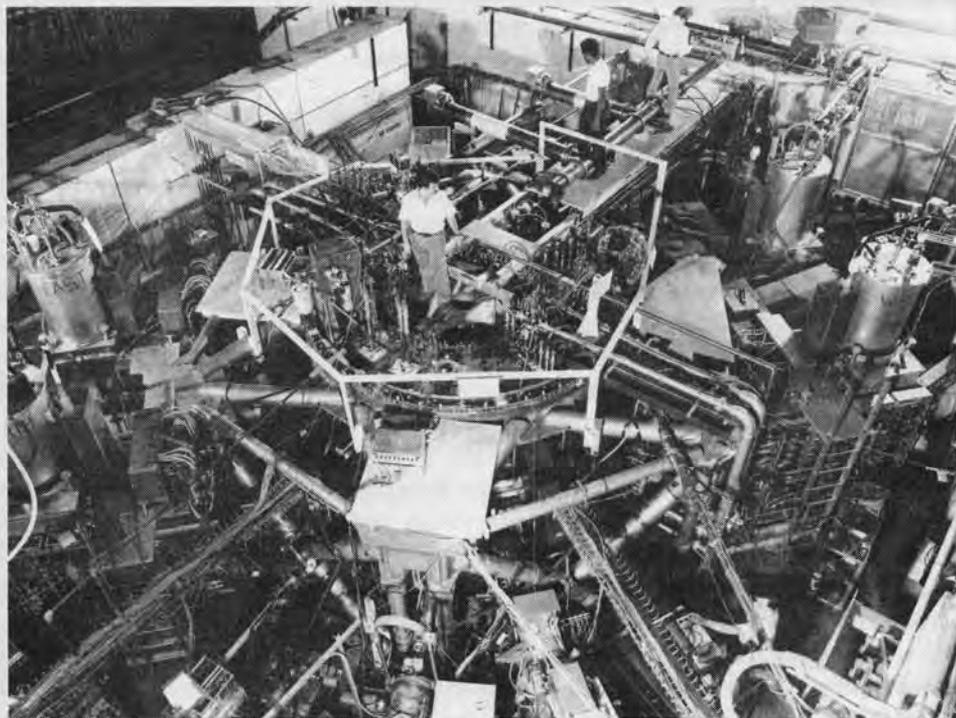
So, earlier, Gauss, in his *Disquisitiones* and later report on the subject of biquadratic residues, had proven that the underlying basis for a competent arithmetic lay in those underlying physical-geometric roots and powers which are expressed by the complex domain. So, Lejeune Dirichlet and Riemann have shown, successively, the fallacy in Euler's efforts to define the prime-number domain. *Scientifically efficient knowledge exists only in experimentally provable, hypothetical, Platonic solutions for evidence of true ontological paradoxes among the relations within the domain of sense-perception.* Such proven hypotheses are universal physical principles which express, not objects *per se*, but relations among either, in the first case, sense-perceptual experiences, or among sets of universal physical principles. These relations replace the reductionist notions of a Euclidean or non-Euclidean geometry. Knowledge of these relations comes only as solutions for a form of irony which is to be recognized as *metaphor* in Classical artistic composition, and as ontological paradoxes in formal epistemology and physical science.²⁰

It is the experimentally demonstrable relations among such relatively universal sets of universal physical principles, which define a Riemannian physical geometry. Such

19. On this basis of harmonics, Kepler indicated the earlier existence of a since-disintegrated planet lying among the inner planets of the solar system, between the orbits of Mars and Jupiter. This was confirmed by Gauss's discovery of the Asteroid Belt, with the latter's harmonic characteristics coinciding with Kepler's values for the exploded former planet.

20. This is also expressed by that Classical Greek principle of sculpture, by means of which a body in mid-motion is conveyed to the mind. The new method of defining perspective, by Leonardo da Vinci, achieves the same effect in painting. The "miraculous" power of Leonardo as artist expresses the same principle as Gauss's notion of the complex domain.

In the science of physical economy which was introduced by Leibniz, the term *power* references, implicitly, the mastery of a relatively higher order in what Gauss was later to define as the complex domain. In Riemannian geometry, it points to a qualitative change in the manifold through incorporation of a new universal physical principle.



Princeton Large Torus (PLT), built for experimental fusion development, 1977.

Princeton Plasma Physics Laboratory

a geometry is not defined as a fixed geometry, as Euclidean and non-Euclidean aprioristic geometries do. It is defined by a process of change, whose expressed characteristic value must be determined, as Riemann insists in the close of his habilitation dissertation, by physical-experimental methods, not by methods of mathematical or other modes of deduction. I have placed this Riemannian principle as the cornerstone of a competent modern mode in the science of physical economy.

In the science of physical economy which was introduced by Leibniz, the term *power* references, implicitly, the mastery of a relatively higher order in what Gauss was later to define as the complex domain. In Riemannian geometry, it points to a qualitative change in the manifold through incorporation (e.g., addition) of a new universal physical principle. In the latter case, the effect whose measure is to be adduced experimentally, is a change in the expressed characteristic curvature of the domain expressed as the effect of that change.²¹

In economy, the reflection of the introduction of a new physical principle to bring about an increase of the effective, cross-sectional “energy-flux density” of a process, changes the characteristic curvature of the economy, without need of any other change applied, to increase the pre-existing productive potential *per capita* and *per square kilometer* of the Earth’s surface area.

The point about economies which that illustrates, is that increases in the productivity of the component productive processes of an economy, may be effected through changes in the infrastructure of the economy, even without any internal changes in the affected individual productive enterprises of that economy. Thus, improvements in the state sector’s generation and maintenance of basic economic infrastructure, such as transportation, power, water-management, health-care, and education, will tend to be most efficient in fostering increases reflected in the productivity of local private enterprises, even without any additional change internal to those enterprises themselves. This kind of functional relationship in the environment of a subsumed local phase-space, is specifically Riemannian. Similarly, it is qualitative changes of princi-

21. Bernhard Riemann, Habilitation dissertation, Sec. 3.

ple in technology introduced to local enterprises, such as in the developmental sector of the machine-tool sector, which will have the relatively greatest beneficial impact on the productivity of the economy as a whole.

Thus, the greatest improvements in the performance of a local enterprise, are indebted to conditions external to them, such as improvements in infrastructure, and also scientific and other cultural changes, supplied from outside them, for the greatest relative improvements in internal performance. For that benefit, the individual enterprise must be directly, or indirectly taxed by government. It is through relevant action by government, or by institutions aided by government, that such indispensable external benefits are supplied to the individual households, local communities, and private economic enterprises.

Take as an illustration of the just-cited paradox, the idiocy implicit in the present model of U.S. National Income and National Product accounting, as, similarly, the childish folly of most of today's generally accepted professionals' interpretation of financial- and cost-accounting reports.

Basic economic infrastructure, such as mass-transport systems, functionally integrated power-generating and distributing systems, national and regional water-management systems, national and regional health-care systems, and educational systems of regions of the nation, or nation as a whole, have beneficial effects on local physical production whose causes can not be located as internal to that production itself, but which determine the relative physical productivity of operations within such individual enterprises. The provision of such systems must be organized by governments, not private enterprises, which must maintain such systems through a repertoire which includes a combination of general tax-revenues and Federal, state, and local regulation of prices and practices of relevant utilities.

In effect, the quality of those public works and their regulation supplies an effective degree of relative (Riemannian) physical-space-time curvature to the domain within which the relevant private enterprises are situated.

Similarly, for related reasons, progress in productivity of agriculture and manufacturing depends chiefly on entrepreneurship in technologically progressive family farms and relatively small manufacturing enterprises, rather than under representatives of absentee "shareholder" ownership. The function of partnership between government initiatives and regulation of basic economic infrastructure, and technologically motivated entrepreneurship, rather than absentee harvesting of extracted financial profits from a looted field of agriculture, is an essential feature of the uniquely American creation, the American System of political-economy. This is the economic system, as defined by Alexander

Hamilton, Mathew Carey, Friedrich List, and the world's greatest Nineteenth-century economist Henry C. Carey.

For similar reasons, the American System demands that European-style central banking, including the similar function of the Federal Reserve System, be banned from the Americas, in favor of national banking as defined by Treasury Secretary Alexander Hamilton. On these and related accounts, the superiority of the American System is rooted in characteristic features which cause it to differ axiomatically from the morally and technically inferior European system of so-called "capitalism," as defined by such followers of the British East India Company's Haileybury School as Karl Marx.

My primary emphasis on the technologically aggressive entrepreneur, as farmer or manufacturer, does not disregard the role of large corporate enterprises. However, we must recognize the danger inherent in the role of a profit-interest which seeks to divorce itself from a sense of primary accountability to the public, rather than merely private (e.g., "shareholder") interest. On the latter account, the state must circumscribe the corporate form of for-profit private enterprise with its own adopted devotion to some adopted mission of benefit for society in general, and also impose governmental regulations which channel its behavior into conformity with that adopted, authorized corporate mission. In this example, as in the role of basic economic infrastructure, in economy in general, the primary site of performance is the economy considered as a coherent unit, rather than a sum-total of parts. The whole must be a source of added benefit to the local function, as the local function must be a contribution to the essential mission-function of the society as a whole.

Restate the immediately preceding series of points in terms of the relationship of Noösphere to Biosphere, as follows.

The Earth without the intervention of those cognitive powers of hypothesis unique to the human individual, were merely a Biosphere, in which human beings, if they existed, merely learned, as apes do, and accomplished virtually nothing which an ape could not achieve, or even, perhaps, surpass. *It is the accumulation of transmitted discoveries of both universal physical, and kindred cultural principles, which is the action which transforms a mere Biosphere into a true Noösphere. It is that specific quality of action which defines the functional presence of the individual human mind, and it is only the effect of actions so accomplished, which defines the transformations which distinguish a Noösphere from a mere Biosphere.* The complex of efficiently employed, accumulated such principled actions, defines the universal phase-space, a Riemannian phase-space, which is economy.

However, that is not all. The social process which defines an economy depends upon an additional principle.

Society and Economy

As I have emphasized earlier in this report, my contributions to the development of a science of physical economy, have depended upon two systemic considerations of a pervasively axiomatic quality. *First*, my studies of the sovereign act of cognition, the role of experimentally validated discovery of a universal hypothesis, as the original source of the power by means of which mankind's power in and over nature is increased. *Second*, the crucial, ostensibly paradoxical challenge of replicating such an hypothesis generated within the "hermetically sovereign" processes of one mind, in another's. On the second count, my recognition of the absolute superiority of Classical culture, as typified by the Schiller-Humboldt model of a Classical humanist education, has been crucial for my unique contributions to a science of economy.

On the second count, I have warned repeatedly against the intrinsic incompetence and bestialization of students subjected to such horrors as education aimed at training victims to achieve satisfactory scores on computer-audited, standardized multiple-choice questionnaires. Only a Classical humanist program of education, of the type virtually banned by Germany's Brandt reforms in education, promotes the actual transmission of knowledge from one generation to the next.²² This process of transmission of the experience of an act of hypothesizing, defines a sub-phase-space. This sub-phase-space is composed of an array of universal physical principles which has the form associated with principles of Classical artistic composition, as distinct from, and opposed to Romantic practices of artistic composition and political statecraft.

The first such principle is, of course, the reenactment

of an experimentally validatable form of hypothesis within the sovereign cognitive processes of a second mind.

The first principle focusses our attention on three distinct phases of such a transmission. First, the Socratic form of ontological paradox which begs the discovery of a validatable hypothesis, as Plato's *Parmenides* dialogue typifies such a challenge to the folly of all reductionists. Second, the generation of the required hypothesis in the mind of a discoverer, or rediscoverer. Third, the experimental validation of the hypothesis as a universal physical principle. The first and third phases are representable in terms of sense-perception; the second, which lies in the complex domain of reality, is not. If, however, the first and third phases are in agreement, the first and second persons know that their respective hypotheses are coincident notions of relationship: *ideas*.

Since such *truthful* ideas have physical effects upon the universe, effects produced by persons acting upon such ideas, the class of artistic principles associated with the experimentally based transmission of such ideas, are universal physical principles. Such ideas, and only such ideas of hypothesis-based social relations qualify as principles of Classical artistic composition, as distinct from Romantic, modernist, existentialist, etc. Such is the difference between the Classical mode of composition of J.S. Bach, Haydn, Wolfgang Mozart, Beethoven, Schubert, Mendelssohn, Schumann, and Brahms, and such malicious, Romantic parodists of the Classical composition of Bach, *et al.*, as Czerny, his pupil Liszt, Berlioz, and Richard Wagner. All Classical artistic composition leads to a specific variety of definition of a unifying universal idea; Romantic composition, leads to a sensual effect instead of an idea; systemic Romantic corruption in the performance of Classical musical compositions degrades the composition from a Classical idea, to a sensual effect, or series of such effects.²³

22. Those "Brandt reforms" were but one instance of the implicitly genocidal, 1963 Paris OECD report on educational policy of Dr. Alexander King. This report's demand for the destruction of European systems of Classical education was an integral part of the same neo-malthusian pestilence otherwise represented by King's, and the Cambridge Systems Analysis group's leading role in founding, and steering the pro-genocidal Club of Rome and Laxenberg, Austria-based International Institute for Applied Systems Analysis (IIASA). These radically empiricist, pro-genocidal programs were outgrowths of the work of the arch-Mephistophelean Bertrand Russell's founding of the Unification of the Sciences project currently linked with the right-wing, pro-Satanic sex-and-money cult of Sun Myung Moon.

23. For reference, consider the emphasis of the leading conductor of the Twentieth century, Wilhelm Furtwängler, upon what he sometimes describes as "performing between the notes." The Classical score is a Classical composer's projection of an intrinsically anti-Euclidean idea upon the pages of Euclidean geometry. The reality of the intended performance of that composition lies, episte-

mologically, within what Gauss defines as the complex domain. The great performer, as typified by Furtwängler, is performing nothing but the entire composition, bringing to bear a higher sense of Bachian contrapuntal integration of the indivisible whole composition upon each part of the performance. The "meaning" of the composition is expressed by those variations from the strict reading of the score which effect the functional integration of each portion of the performance to the whole. These variations are of the same, delimited scope which separates a Euclidean reading of nature from the reality located within the complex domain. The objective is not to hear the interpretation of a score crafted by Beethoven, but to hear Beethoven's voice speaking directly to the performers and audience alike. Hence, "between the notes." Hearing an HMV pressing of a recorded performance of Furtwängler's conducting of a Tchaikovsky symphony, in a U.S. replacement depot in India, in early 1946, changed my life, for precisely this reason. This experience contributed in a crucial way to my discovery, beginning a few years later, of the implications of Classical principles of artistic composition for science.

So, therefore, Classical tragedy is never an expression of mere fiction. It is a study of a referenced page from either actual history, or a legendary account which exerts an effect similar to the impact of actual history upon the members of a culture. Thus, for example, we have Shakespeare's English histories, which reflect the legacy of Sir Thomas More's studies, or the legendary material which Shakespeare used for the cases of Hamlet, Macbeth, and Lear. We have Schiller's Don Carlos and Wallenstein, which are truthful accounts of living history, based upon historical studies of the crucial strategic features of the referenced case. Classical poetry, as Shelley defines in his "In Defence of Poetry," or Keats's "Ode on a Grecian Urn," addresses the subject of those matters which pertain to "the power of imparting and receiving profound and impassioned conceptions respecting man and nature."

Ancient through medieval and modern European history, is essentially a reflection of the ebbs and flows of a continuing conflict between the legacy of ancient Rome (Romanticism and its even more decadent derivatives, such as pragmatism and existentialism) and the Classical Greek culture typified by Solon and Plato (the Classical tradition upon which the U.S. Declaration of Independence and Preamble of the Federal Constitution were premised). The most crucial issue is Plato's Socratic principle of *agapē*, as expressed by 1 Corinthians 13 and the Fifteenth-century Renaissance notions of what was termed, alternately, the general welfare or common good. *Agapē* is a universal physical principle, which separates Roman and medieval ultramontane cultures absolutely from a society based on that Christian doctrine of natural law which defines the modern sovereign form of nation-state (as distinct from the opposing, neo-Venetian Anglo-Dutch liberal model of imperial maritime power, for example).

For example, the two principles and added key corollary of the Preamble of the U.S. Constitution—sovereignty, general welfare, and posterity—like the incorporation of Leibniz's anti-Locke specification of life, liberty, and the pursuit of happiness in the U.S. Declaration of Independence, represent universal physical principles which set such states absolutely apart from nations not self-ruled by the integrity of those inseparable three principles.

The normal mode of transmission of knowledge of such principles, like the transmission of knowledge of universal physical principles through regeneration, is what is recognizable as Classical humanist education, which is itself a matter of universal physical principles.

That is a method of education in opposition to all decadent modes of mere learning, such as "sharing of information," etc.

This matter of the role of principles of Classical artistic composition as universal physical principles, defines many volumes of exposition, but the essential principle is clear from what is written here thus far.

It is through the addition of universal physical principles to a society's practice, that the manifold of society as a whole may be transformed to the effect of increasing the power to exist expressed by the improvement in the characteristic of the society considered as a manifold. In short, a "zero-technological-growth" culture is a dead man walking, but, in history's long-ranging eyes, not for much longer.

Ideas as Power

Combine the two sub-phase-spaces of discovered universal physical principles: individual discoveries of principle respecting man's action on the Biosphere, and those principles of social cognitive interaction which are typified by Classical artistic composition. Without human intervention within the Noösphere, no man-made profit is generated. If we measure the rate of growth *per capita* and *per square kilometer* over three to four generations, or perhaps longer in pre-modern existence, the margin of net social profit of entire societies is a reflection of the accumulation of new applications of combined such types of universal physical principles.

I explain. In the case of zero-technological growth, the apparent rate of physical-economic growth may appear to be positive over as long as the medium term, after which an entropic attrition sets in. In such cases, the apparent profit of output over acknowledged expenditures may appear to be sustained, up to the point that a marginal decline in *per-capita*, *per-square-kilometer* physical income through technological attrition becomes implicitly measurable. Over the longer term, as now, the evident rate of attrition becomes catastrophic. Depletion of earlier capital improvements in society's basic economic infrastructure, as now, takes over.

When such types of technological and related attrition set in, generally accepted accounting methods can no longer conceal the approaching catastrophe.

Or, when cost-reduction is used to maintain a nominal profit-margin, the claimed "cost-reductions" which are wishfully considered a product of good, tough-minded management, those foolish notions of "cost reduction" build the foundations of a looming catastrophe,

even in the accountant's picture of things, as in today's collapse-wracked U.S. economy and monetary-financial system.

The core of competent economic science, is study of the very long wave of increase of the human species' potential relative population-density. On this account, man is studied from two standpoints. First, as a creature of a relatively fixed range of variations of potential, as a part of what Vernadsky defined as the Biosphere. Second, as a creature of the Noösphere. On the first account, we compare the range of human potential with the ranges found among, or reasonably adduced for the higher apes. On the second account, we treat man as a species which evolves in an upward direction, through the production of what I find it convenient to identify as "super-genes": *culturally transmissible discoveries of universal physical principles*. I describe these as "super-genes," to point out that there is no visible change in the equivalent of an ape-like genotype accompanying the culturally determined increases in potential relative population-density of society. The changes in human potential accomplished through the realization of discoveries of universal physical principles, have the same kind of "ecological effect" as upward genetic development within the bounds of the Biosphere's phase-space, but no known changes in the human-specific genotype account for this effect.

For example, global experience demonstrates that there is no actual racial difference in cultural potential among human beings from any part of the population. If we adopt new-born infants from any part of the world, and develop them in any one choice of culture, the range of potential development will be in the same range of variability as for infants from other family backgrounds. There are no human races; there is only one human species, and one human race. The essential differences to be studied are culturally determined, not biologically pre-determined.

On the first count, looking at the condition of our planet over approximately two millions years to date, and taking into account the changes in the conditions for ape-like or human biologies during cycles of glaciation and other gross environmental values, we must estimate that the pre-cultural "ecological" potentials of our species were reached long prior to any part of historical time. Any increase in human potential relative population-density above those paleontological levels, is due entirely to cultural determinants [SEE Figure 2 and Table I, pp. 27-28].

That category of cultural determinants of variable human potential relative population-density, points to

the topic of what I have identified as "super-genes." At this point, for purposes of approximation, distinguish two functional types (sub-phase-spaces) of universal physical principles. First, discoveries of universal physical principles, respecting the individual's functional relationship to the Biosphere, as those discoveries are effected by the sovereign dialectical-cognitive powers of individual discoverers. Second, those principles which pertain to the willful coordination of social relations within society. Situate the domain of "super-genes" as the Noöspheric phase-space of a Riemannian manifold, accordingly.

For that case, it must appear to be the prevalent tendency that, first, the potential relative population-density of society must tend to increase as a function of the degree of practice of increased accumulation of discovered universal physical principles of the mankind-Biosphere relationship (e.g., "scientific progress"); but, second, the possibility of realizing such a benefit is delimited by progress in discovery and realization of those universal physical principles which are specific to social relations. Therefore, the general rule is, in first approximation, that the potential rate of increase of society's potential relative population-density is a function of the rate of discovery and application of universal physical principles of the first class, but within bounds determined by the realized practice of principles of the second class of sub-phase-space.

Each such discovery of a dialectical-cognitive principle represents a *power*, in the sense of my references to such a notion by Plato, Leibniz, Gauss, *et al.* It is a power expressible mathematically only in terms of Gauss's definition of that complex domain which does not exist within the axiomatically reductionist framework of the mathematics of Euler, Lagrange, Laplace, Cauchy, Clausius, Grassmann, Kelvin, Helmholtz, Felix Klein, *et al.* It is the addition of discovered *powers* of this quality to the repertoire of human practice, which generates the long-ranging increase of the potential relative population-density of a culture. These powers express what I have identified as "super-genes."

The immediately foregoing outline of the argument does provide simply pre-calculable estimates of progress; it does define the way we must think about our subject of potential.

Since all of those principles are situated, epistemologically, within the Gauss-Riemann definition of functions of the complex domain, rather than the domain of deductive (e.g., empiricist) readings of simple sense-perception, the only viable human policy for the practice of economy, is a science-driver policy coherent with the non-capitalist

domain which U.S. Treasury Secretary Alexander Hamilton identified as the American System of political-economy.²⁴ This means a science-driver policy articulated in a manner consistent with a Classical culture, rather than a Romantic one.

3. The Economic Role Of Leadership

The necessary function of the exceptional leader for a time of crisis, is definable against the background of the immediately foregoing discussion.

For such reasons, in modern society until now, during any period nations attempt to settle into a routine of what might be esteemed as “normal” day-to-day, week-to-week, year-to-year life, the nation tends to slide into a pattern of increasing economic, cultural, and moral decadence. Periods of economic, cultural, and moral vitality, appear to coincide with times during which everything notable about a society is subordinated to a “science driver” mission-orientation, or its like, such as the Fifteenth-century Renaissance; or, as during the leading roles of Cardinal Mazarin and Jean-Baptiste Colbert, in leading Europe, for a time, out of the 1511-1648 horror of Habsburg-led religious warfare; or, the Germany-led, anti-Romantic Classical Renaissance of approximately the 1763-1789 interval of trans-Atlantic scientific and Classical cultural developments; or, the role of the Humboldt brothers in keeping European civilization alive during the 1815-1861 interval; or, the world-wide impact of the leadership provided by Henry C. Carey and President Abraham Lincoln; or, the rescue of civilization from a threatened world-wide new dark age under the leadership of President Franklin Roosevelt; or, President Charles de Gaulle’s commitment to “indicative plan-

ning”; or, the space-oriented science-driver program as adopted and boosted by President John F. Kennedy; and so on.

Those aspects of my own experience which have been proximate to leading features of U.S. and other policy-shaping, which gave me insight into the crucial factor determining the choice between economic-cultural “up-ticks” and economic-moral decadence, center around the presence, absence, and fate of powerful “science-driver” programs. The highest rate of long-term economic progress tends to occur only under the impact of major, mission-oriented “science-driver” types of so-called “crash programs,” such as President Kennedy’s sledgehammer acceleration of the Manned Moon Landing program. Franklin Roosevelt’s commitment to rescue the nation from the 1929-1933 Depression caused by the cumulative effects of the policies of the President Theodore Roosevelt, Woodrow Wilson, and Calvin Coolidge Administrations, was such a mission-oriented “crash program” in effect. The most notable feature of that FDR recovery program was the military-logistical aspect set into motion beginning about the time of the 1936 election, when the inevitability of Hitler’s war against civilization became undeniable among thinking political leaders around the world. It was this feature of President Franklin Roosevelt’s leadership which gave the relatively greatest impetus to post-war recovery and new growth world-wide.

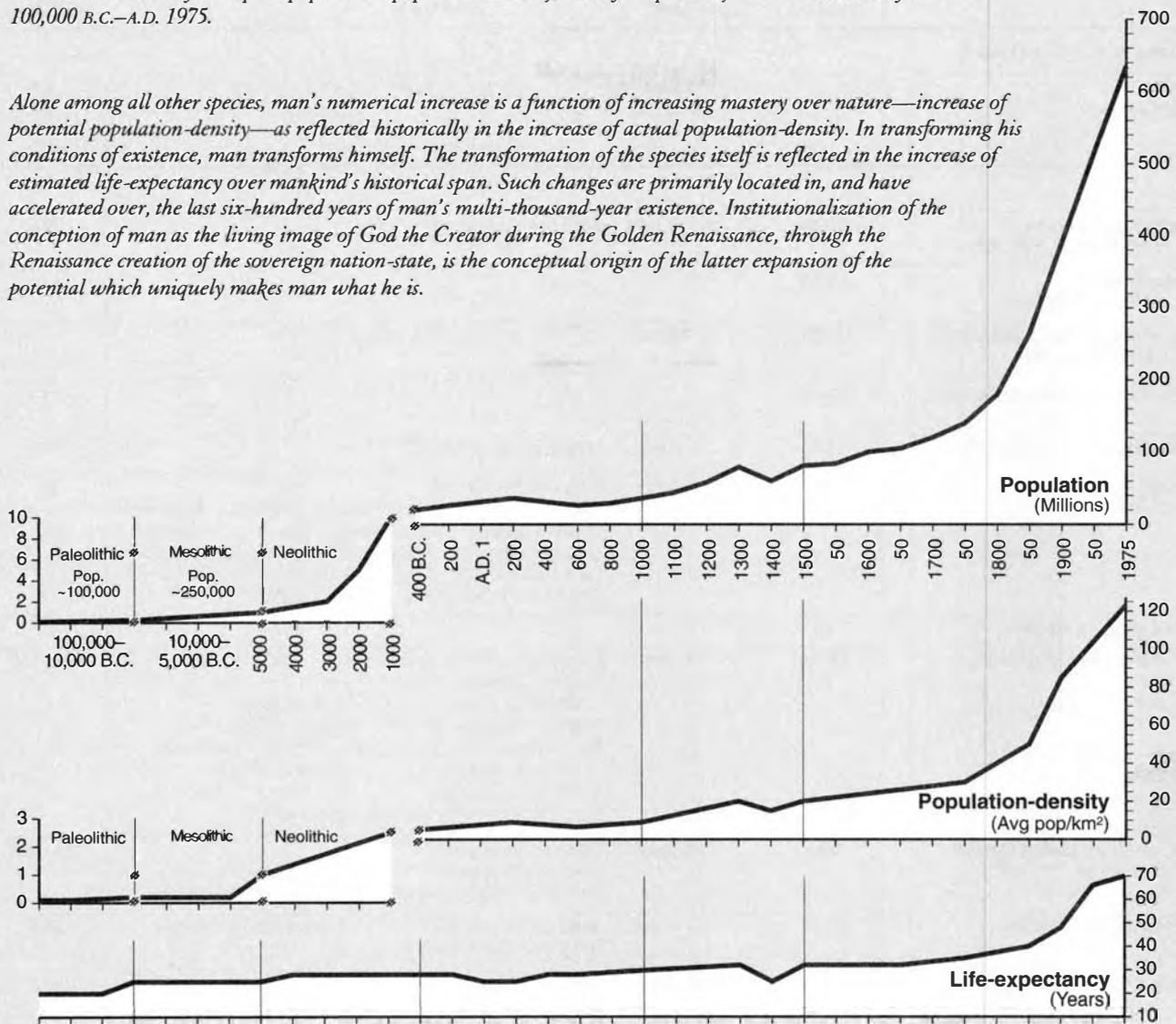
This curious importance of mission-oriented “crash programs” can be understood best by comparing their two principal aspects: the subjective (political) and objective (physical-economic). Objectively, all competent economic policies are based on programs which require one to two generations to bring to completion. Subjectively, since most of the population, including politicians and corporate and banking leaders so far, are so poorly developed intellectually, so pathetically pragmatic, that they do not actually understand the decisive “long-wave” features of real economic processes; usually, it has only been under conditions of pending or actual major war-fighting, that most such strata of society, and also popular opinion, are capable of committing themselves to those broad-based, long-term policies on which the success of modern economies depends absolutely.

So, preparing, beginning the mid-1930’s, for the state of virtually world-wide warfare expected for the 1940’s, was crucial in laying the basis in economic development for U.S. survival and victory in World War II. So, the highest rate of technological progress in the post-1945 U.S.A., was accomplished under the impact of the Kennedy Manned Moon Landing commitment, that

24. “Capitalism” signifies the neo-Venetian, imperial maritime system of financier-oligarchical rule typified by the Anglo-Dutch models of William of Orange and the Eighteenth and Nineteenth centuries’ British monarchy. The doctrine of the British East India Company’s Haileybury school of Bentham, Adam Smith, Thomas Malthus, *et al.*, is typical. The characteristic feature of such a system is the “independent” political reign of a central banking system. Literate U.S. patriots do not refer to the United States as a capitalist economy, except to curse such alien influences among us. Patriots say “American System,” as Hamilton, the Careys, and Friedrich List define a non-capitalist national system of economy. Many U.S. university professors will disagree with me, but never truly literate ones.

FIGURE 2. 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.

Figure compiled by Kenneth Kronberg

Note breaks and changes in scales.

even despite the 1964-1976 phase of “de-industrialization” of the U.S. economy in general.²⁵ President Reagan’s S.D.I., as I had proposed and worked to build up that policy-conception and its support during the 1977-

1983 interval and beyond, would have given the U.S.A. the greatest rate of growth in its history, had my efforts and those of the President and others not been sabotaged by such fools and worse as the Heritage Founda-

25. The process of wrecking the U.S. space program during fiscal year 1966-1967. Despite the wrecking of the advanced R&D phases beginning that year, the momentum of development was sufficient to make the immediate mission a successful one. The contri-

but ion to technological progress in the economy in general was later estimated to be in excess of ten times what had been spent for it. However, by the end of lunatic Zbigniew Brzezinski’s term as National Security Adviser, the United States had destroyed much of the capacity which had made the 1969 mission a success.

TABLE I. *Development of human population, from recent research estimates.*

	Life expectancy at birth (years)	Population density (per km ²)	Comments	World population (millions)
Primate Comparison				
Gorilla		1/km ²		.07
Chimpanzee		3-4/km ²		1+
Man				
Australopithecines B.C. 4,000,000-1,000,000	14-15	1/ 10 km ²	68% die by age 14	.07-1
Homo Erectus B.C. 900,000-400,000	14-15			1.7
Paleolithic (hunter-gatherers) B.C. 100,000-15,000	18-20+	1/ 10 km ²	55% die by age 14; average age 23	
Mesolithic (proto-agricultural) B.C. 15,000-5,000	20-27			4
Neolithic , B.C. 10,000-3,000	25	1/km ²	"Agricultural revolution"	10
Bronze Age B.C. 3,000-1,000	28	10/km ²	50% die by age 14 Village dry-farming, Baluchistan, 5,000 B.C.: 9.61/km ² Development of cities: Sumer, 2000 B.C.: 19.16/km ² Early Bronze Age: Aegean, 3,000 B.C.: 7.5-13.8/km ² Late Bronze Age: Aegean, 1,000 B.C.: 12.4-31.3/km ² Shang Dynasty China, 1000 B.C.: 5/km ²	50
Iron Age , B.C. 1,000-	28			50
Mediterranean Classical Period B.C. 500-A.D. 500	25-28	15+/km ²	Classical Greece, Peloponnese: 35/km ² Roman Empire: Greece: 11/km ² Italy: 24/km ² Asia: 30/km ² Egypt: 179/km ² * Han Dynasty China, B.C. 200-A.D. 200: 19.27/km ² Shanxi: 28/km ² Shaanxi: 24/km ² Henan: 97/km ² * Shandong: 118/km ² * * Irrigated river-valley intensive agriculture	100-190
European Medieval Period A.D. 800-1300	30+	20+/km ²	40% die by age 14 Italy, 1200: 24/km ² Italy, 1340: 34/km ² Tuscany, 1340: 85/km ² Brabant, 1374: 35/km ²	220-360
Europe, 17th Century	32-36		Italy, 1650: 37/km ² France, 1650: 38/km ² Belgium, 1650: 50/km ²	545
Europe, 18th Century	34-38	30+/km ²	"Industrial Revolution" Italy, 1750: 50/km ² France, 1750: 44/km ² Belgium, 1750: 108/km ²	720
Massachusetts, 1840 United Kingdom, 1861 Guatemala, 1893 European Russia, 1896 Czechoslovakia, 1900 Japan, 1899 United States, 1900 Sweden, 1903 France, 1946 India, 1950 Sweden, 1960	24 32 41	41 43 40 44 48 53 62 73	90+/km ² Life expectancies: "Industrialized," right; "Pre-industrialized," left	1,200 2,500
1970 United States West Germany Japan China India Belgium	 59 48	 71 70 73	1975 26/km ² 248/km ² 297/km ² 180/km² 183/km ² 333/km²	3,900

Table compiled by Kenneth Kronberg

tion's Lt.-Gen. (ret.) Daniel P. Graham.²⁶

As long as the typical intellectual and moral mediocrity of today's leadership of most nations, and the generality of their populations, persists, it will remain the case, that governments and populations can not think rationally about economies, except as a sense of extreme danger or some admired, long-range mission enables them to overcome that miserable, heteronomic littleness of mind and soul gripping most of the U.S. and European population still today. Only through adoption of such unifying special goals, are such populations rendered capable of adopting emotional commitment to sustained development of national economies as a whole.

For reason of that customary, heteronomic irrationality of the overwhelming majority among populations and their customary leaderships, it has been generally the case, that only through inducing a population, and its government, to adopt a long-term mission-orientation of not less than one or two generations' span: such as Fifth Republic President Charles de Gaulle's "indicative planning"; or President Kennedy's Franklin Roosevelt-like Moon-landing mission; that a nation in crisis is capable of avoiding a drift into a desultory, kaleidoscopic array of anarchic short-term goals. It was not war which produced U.S. war-time and post-war growth. War persuaded the nation to accept the adoption of that long-ranging sense of mission-orientation which resulted in the growth, but the same mission without war would have been a better performer. War does not produce prosperity; exactly the opposite. It is a powerful sense of economic mission which produces prosperity. It is not the slaughter, but the growth which produces the meat.

The danger is, that under conditions of crisis, with the lack of, or exclusion of truly rational leadership such as that which President Franklin Roosevelt supplied the United States under the conditions of the Coolidge-Hoover Great Depression, an Adolf Hitler, or the equivalent, will be found and used as a rallying point of pop-

ulist mass-lunacy. Hence, under present conditions, when no other leader capable of rational U.S. leadership out of the present global breakdown-crisis has been yet produced to fill the gap, the survival of our nation requires my present-day role as a successor for the Depression-period role of a Franklin Roosevelt.

This does not signify that a mission-orientation is merely some sort of trick used to prevent the reign of heteronomy. What is required is my specific quality of leading competence, which no other known economist has shown thus far. Even more urgent is a leader with both an impassioned and competent commitment to what must be crafted as the state of the nation and world. Without a sense of mission, the solar system could not have existed.

I explain.

The Exceptional Individual in History

The voluntarist's role supplied by exceptional leaders, in any field, has contributed an indispensable role in human progress so far. All crucial discoveries of Classical forms of universal physical principle, whether in so-called physical science, or artistic composition, have been supplied by exceptional individuals. By "exceptional" we point to the role of dialectical-cognitive creative powers of the individual mind, as an experimental validation of the truthfulness of a discovered hypothesis expressed as a true voluntarist principle. It is a principle otherwise known, in Classical artistic composition, as that quality of the *Sublime* which opposes the *Tragic*. As the opposition of the exceptionally good leader, President Franklin Roosevelt, to the exceptionally bad Adolf Hitler, typifies opposing outcomes of a common, existential world-crisis of the 1923-1945 interval, exceptionally good leaders of a nation are usually of irreplaceable, determining importance in periods akin to the world crisis currently entering its terminal phase.

The obvious question so posed is: Why must we subject ourselves to the choice of exceptional leaders? Two statements should be submitted in response to that common, foolish objection from among populists and others. First, this should not be forever the case; but it is now, as it was in President Franklin Roosevelt's time. Second, the distance between the required quality of exceptional leader and the generality of the population, is essentially a moral one. This is a difference of the type shown by the failure of the leading circle around the Rev. Martin Luther King, once he, like President Abraham Lincoln, the exceptional leader, had been removed by use of the methods typical of our enemies' customary practices of defamation, imprisonment, and assassina-

26. In the mid-1970's, Lt.-Gen. Daniel P. Graham was already seeking to wreck any U.S. development of methods of ballistic-missile defense based upon "new physical principles." Later, in mid-1982, Graham, now retired from active duty, and a Heritage Foundation "double dipper," launched a personal vendetta against me, and, later, also Dr. Edward Teller, in opposition to the policies which President Reagan identified, in a March 23, 1983 televised address, as a Strategic Defense Initiative (S.D.I.). After the Reagan address, Graham listed himself in support of S.D.I., but demanded that only "kinetic energy" systems proven to be incompetent should be employed, keeping the scientists out of the picture, and limiting expenditures to technologically superannuated junk available from the archives of defense contractors.

tion of exceptional leaders whose relatively exceptional moral authority that class of enemies fears. No selected leader of the Civil Rights movement had both the well-earned recognition and the moral qualities of that Reverend King who should have become a President of the U.S.A.

The distinction of the exceptional leader of trans-Atlantic European nations, especially in the political domain, is the way in which the truly exceptional leader more or less consciously defines his self-interest as that crafted in imitation of the Jesus Christ of Gethsemane and the Crucifixion, as Martin Luther King did. *The morally inferior type of individuals in general, and of leading figures, especially, is expressed by the way in which the morally inferior person defines the esteemed "self-interest" of "me, my family, and my community." He prefers too much the sense-experienced, momentary pleasures of mortal life, that, like the deserter under fire, he can not dedicate himself, without qualification, to the outcome of that mortal life, as the image of Christ exemplifies this, and as Plato's Socrates defines the immortality of the human soul. Under conditions of systemic crisis, individuals who can not put themselves willfully at risk for humanity, can never be trusted in the most crucial positions of political authority.*

Notably, that moral flaw is more emphatically characteristic of the present "Baby Boomer" generation, than the generation of veterans of World War II. It is a weakness embedded in the households of the "white collar" culture of the 1950's, which became a rampant moral pathology under the influence of the post-1964 shift into the prevalent immorality of the shift from a productive, to a consumer culture. Even to the degree that members of that generation may be susceptible of redemption, despite the conditioning to decadence to which their generation was subjected, they are not a source of that firmness of quality of immortal personal commitment required among top-ranking leaders of a world teetering at the present brink of self-inflicted doom.

The fault in most failed leaders for a time of systemic crisis, is not simply physical cowardice. Blustering cowards of the ordinary kind are a dime a dozen among the like of Vice President Cheney's "Chickenhawks" these days. Shakespeare's Hamlet was cowardice of a different, less ignoble type. Shakespeare captured the essence of the problem in depicting that kind of cowardice of a swashbuckling butcher-of-men, Hamlet, when confronted with the issue of the immortality of the soul. Hamlet's flight forward to death, embracing the corruption of the self-doomed nation he failed to lead out of its own corruption, typifies what our republic must fear

from an inadequate occupant of the Presidency under presently unfolding conditions of crisis. "For what purpose, with the immortality of the soul before your eyes, would you put your life at jeopardy, without vacillation, were the future of mankind to demand this consummate expenditure of one's mortal talent?" No U.S. President since John F. Kennedy is to be suspected of having such a specific quality of courage which Shakespeare's Hamlet lacked.

It works in the following way, to the following effect.

The term Tragedy, as an object of Classical principles of artistic composition, refers to that pollution of the widespread force of popular culture which carries a nation, including the nation's choice of leaders, to self-inflicted general catastrophe. It is not misleaders who carry an aggrieved people to doom, or the like; it is the absence of a quality of accepted, exceptional, institutionalized leaders, which allows a people to destroy, or nearly destroy itself, as did that majority among the upper 20 percent of family-income brackets, and similar strata of Europeans, which succumbed to the popular culture of "consumer society," "free trade," "deregulation," and the now fallen "new economy" hoax. There was never a sane reason for any person in modern Europe, or the Americas, to accept those hoaxes; popular opinion on these and related accounts was, speaking objectively, a clear-cut case of mass-insanity, just as the "fundamentalist" religious cults allied with the pro-Satanic sex-and-money lunacy of the Moonies and their flagrantly gnostic, right-wing nominally Catholic and Protestant allies, are a dangerous expression of Tragic mass-insanity.

In what is called physical science, it is the scientist whose methods of work generate experimentally valid hypotheses, which typifies the Sublime, as the specific quality of work of the true exceptional individual leader in society. In politics, it is the leader who exposes the hoax of current popular opinion, and presents that appropriate alternative needed to rescue society from its own Tragic follies, who expresses the Sublime, as Friedrich Schiller attributes that quality, the Sublime, to the historical, martyred Jeanne d'Arc.

Two types of expression of the Tragic are to be considered. Both are examples of a general epistemological mental disorder called "fallacy of composition." The most significant of today's commonplace expressions of that pathology are typified, on the one hand, by reductionist interpretations of experienced reality, as typified by empiricism, positivism, and existentialism in general. These are fallacies of systemically methodological misinterpretation of actual experience. On the other hand, we

All crucial discoveries of Classical forms of universal physical principle, whether in so-called physical science, or artistic composition, have been supplied by exceptional individuals. By ‘exceptional’ we point to the role of dialectical-cognitive creative powers of the individual mind, as an experimental validation of the truthfulness of a discovered hypothesis expressed as a true voluntarist principle—a principle otherwise known, in Classical artistic composition, as that quality of the *Sublime* which opposes the *Tragic*.



Dr. Martin Luther King, Jr., press conference, 1960's.

Copyright Washington Post, reprinted by permission of the D.C. Public Library

have those forms of mass, more or less psychotic hysteria typified by beliefs in magic, such as stock-market and other gambling manias, and the “Dungeons and Dragons,” “Harry Potter,” “Moon,” and “Protestant Fundamentalist Armageddon” cults. It is those practices of society which are shaped by either, or a combination of both such delusions, which steer a society toward the brink of self-inflicted destruction such as that gripping the Americas and Europe today. Unless those pathological elements of widely accepted, or merely tolerated popular opinion, are overridden, there will be no future existence of our U.S.A. The trolley-line has broken off at the edge of the cliff just ahead. The conductor of the trolley, popular opinion, would rather go over the cliff than break faith with habituated, if presently illusory senses of progress.

To be the kind of leader who fits today’s crisis-stricken requirements, the actor can not merely act out the appearance of the part; he must, as the best professional actors understand, actually “own the part,” gripped by all the passion that part implies. The exceptional leader for a

time of systemic crisis “owns the real-life part he, or she must play.” He is exceptional, because he is immortal, and owns the part of immortality he must play. He wears no mask; he is the part he plays. His reflection on Christ’s sublime mission in Gethsemane and on the Cross, and the kindred reflection of the sublime Jeanne d’Arc, will help such a leader draw upon himself the specific quality of strength which Hamlet lacked, the strength needed for the immortal mission to be performed by a man of Providence for mankind.

The desire to be such a person is commendable, but not sufficient. He must actually know what needs to be done, and he must be capable of knowing what past and future generations require of him at this moment of juncture of the *Tragic* and the *Sublime*. Without that knowledge of the principles of physical economy, as I have summarized that matter here, the leader who might be otherwise exceptional could not grasp competently that economic mission, without which humanity’s escape from the present crisis were not foreseeable for earlier than a very long time to come.