March 10, 2001

THE SCIENCE-DRIVER PRINCIPLE IN ECONOMICS

The Gravity of Economic Intentions

by Lyndon H. LaRouche, Jr.

The presently ongoing crash of the world's present financial system, defines a breaking-point in the century of the preceding, post-McKinley-assassination, cultural and political history of our planet as a whole.[1] The fact, that the present financial system is beyond saving, requires our acceptance of the available new system waiting in the wings. In that new system, economic policy is no longer controlled by the financial system, but is coming under the influence of an axiomatic change, in which financial systems become merely useful, and dutiful appendages of a new quality of a global system of national economies, economies modelled upon the precedent of that American System of political-economy, as Hamilton, List, and Carey defined the notion of national economy.

Either the world accepts that proposed, admittedly radical change, and very soon, or, the likely alternative is the plunge of the planet into a spiral of economic and demographic collapse, what is fairly described as a new dark age. Any effort to defend the present financial system, as opposed to the needed, sudden change, will only make the present world economic situation catastrophically worse than if no such rescue operation had been attempted.

Under the needed new system, which must be adopted suddenly and soon, the emphasis will be on physical economy, as I have defined today's applicable meaning of what Gottfried Leibniz named physical economy. That definition shall be the new point of reference for thinking about all matters of both public policy and private economic practice. Money and financial systems will no longer have any self-evident axiomatic authority, but will be subordinated to perform their necessary functions as the disposable tissues of real economy, physical economy.

Most of the elements of that new and far better world society already exist, waiting to be rescued and nourished to strength, once they begin to arise out from amid the rubble of the hopelessly doomed present financial system.

In all really important developments in history, things are never really what traditional ways of thinking have been able to recognize up to that point. The popular mind clings desperately to its old ways of thinking, up to the proverbial last minute, or even beyond that, and attempts, desperately, even hysterically, to interpret the existence of the crisis-elements of a radically changed, new situation, as a continuation of the doomed old, habitual ways.

Yet, recognized or not, the new reality is lurking, waiting to be called on stage, and will rule a new and happier phase in world history, on condition that the threatened dark age is prevented.

If a successful emergence of the new, from the carcass of the old, is to occur, it will emerge as a new form of a society becoming self-conscious of its distinctive nature, its people smiling wryly at the habits of thinking of the virtually illiterate cultural savages they still were at the time the relevant, most recent existential crisis erupted. Those U.S. citizens old enough

1. On the significance of the McKinley assassination, see Lyndon H. LaRouche, Jr., on this subject, in, among other locations, "As Seen and Said by the Salton Sea," ***EIR***, Feb. 16, 2001, pp. 29-30.

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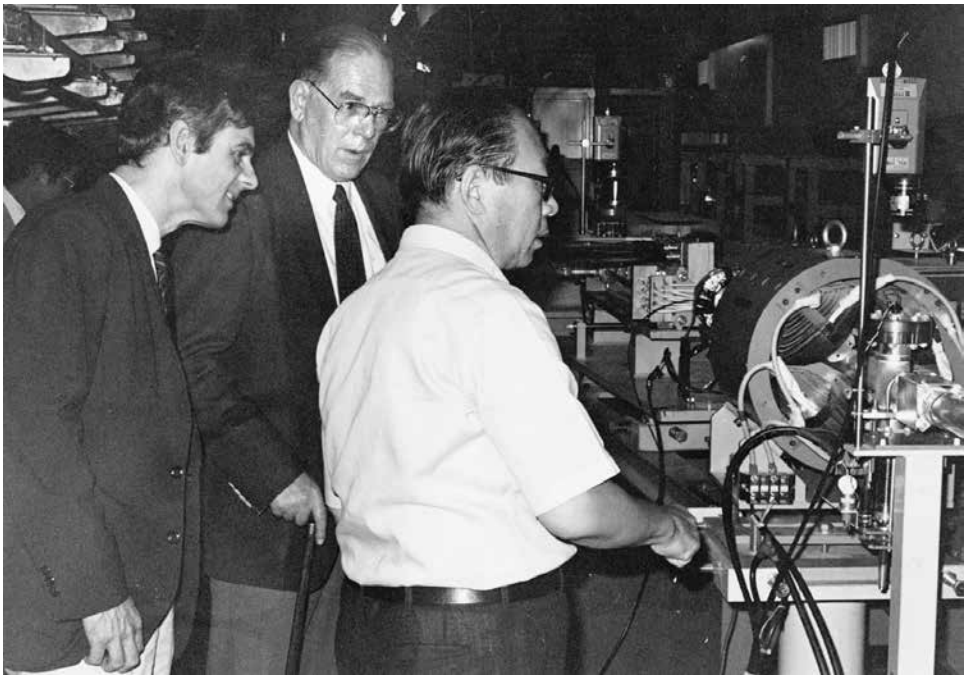


Lyndon LaRouche (center) visits a high-energy physics laboratory in Japan, in 1984. The central feature of any effective long-term economic-recovery program for the world today, LaRouche writes, will be a series of "crash" science-driver programs, of accelerated scientific discovery and technological change.

to recall the profound change in generally accepted "values," which occurred as the Roosevelt recovery superseded the Coolidge depression, may recognize the type of social change in values I have just identified.

The developments of the most recent weeks, since the abortive U.S. Presidential election events of November 7, 2000, have changed the world. The things I have been saying for decades, are not merely demonstrated to have been true, but the entry of the world's financial crisis into its present terminal phase, during the recent sixty- odd days, has created a new situation, in which a number of those things which I have stated earlier, and which remain true, must be now, once again, restated, this time in light of the present moments' radically changed world situation. The world is now gripped by a fundamental phase-shift, in which, as is usual for such a situation, things which remain true, must be restated in a qualitatively new context, and, therefore, a correspondingly new way.

Some of those things which need be restated so, include the contents of a recently published book, ***Now, Are You Ready To Learn Economics,*** which contains some crucially important reports on the background to the current situation, which I presented during the course of the last year.[2] What I have said in those and other locations during the recent months and years, not only remain true, but present events have made them more relevant than ever before. Nonetheless, as you will find in these present pages, last year's concepts must be presented today in a fresh way, as the profoundly more critical immediate situation of the past sixty-odd days demands.

That said, the subject of this report, is a crucial feature of those radical revisions in U.S. financial and economic policies, which are required, not only to overcome the presently accelerating plunge toward a deep world-wide economic depression, but to lay the foundations for the new renaissance of America, in which economics rules over finance, a new type of thinking, which must replace the presently collapsing system. The issue on which I concentrate here, is the unfortunately little understood, but *presently crucial dependency of short-term recovery measures upon an immediate issue of long-term credits for building up basic economic infrastructure and capital-intensive increase of the productive powers of labor.*

Any successful attack upon those problems, whose outcome will determine the future of mankind, must focus clearly upon certain matters of which most economists, journalists, and related policy-influencers are ignorant at this moment. Now, since world events have shown that my long-range forecasts have been consistently correct, and all those of opposing views profoundly misguided, there is a correspondingly increased

2. (Washington, D.C.: EIR News Service, Inc., 2000) ***EIR*** has never been produced to be something thrown away, like yesterday's newsweekly; it has been designed to be kept on file, as a living record of the crucial conceptual developments of the decades, since March 1974, when it was founded. My own featured contributions to those pages, during the recent half-dozen years, are of outstanding relevance to the present situation, on that account.

likelihood, that among those who have previously refused to listen, some will now not only pay more careful attention to what I say on these matters, but actually go through the cognitive processes of knowing what I say, rather than displaying a common gossip's Pavlovian conditioned-reflex reactions to, perhaps, the mere mention of my name.

The citizen must now finally face and accept the fact, that the presently ongoing, general collapse of the present world financial and monetary systems, is the product of more than thirty years of widespread professional and popular acceptance of beliefs which are fundamentally contrary to scientific principle. For example, as a matter of principle, Jean-Baptiste Colbert and Alexander Hamilton were right, and Dr. François Quesnay, Bernard de Mandeville, and Adam Smith, typify those perniciously false, but popularized ideas, whose influence on both high places and popular opinion, has misled the world into the present global catastrophe. In these pages, I concentrate attention on that issue of principles first, and turn, in the concluding portion of this report, to the techniques for those principles' application.

The point which I shall bring into focus, in the conclusion of this report, is that, the central feature of any effective long-term economic-recovery program for today, will be the role which *a series of "crash program" types of science-driver programs, of accelerated scientific discovery and technological change,* must contribute, if the world's population is to escape *a long-term economic catastrophe already built into the current state, of combined technological underdevelopment and attrition, of the world at large.*

This poses a profound, and most unsettling intellectual challenge to the present generations of the world's economists and related policy-shapers. The question thus posed is: What intentions must be adopted now, to guide the world's day-to-day policy-shaping in those new directions, which will foster achieving the needed growth in the world's productive powers of labor, ten, twenty, thirty years ahead?[3] What choices of medium- to long-term effects must we project, more or less reliably, from the decisions we make today?

The most important choice, is to know those principles. After that, it is most important to know the methods by which our nation will be able to forecast those types of reasonably estimated orders of magnitude of medium-term to long-term improvement in per-capita productivity, which may be the best result of the adopted use of those principles. As a necessary, preliminary step, begin here with a review of the role of the calculus in estimating economic progress.

1. Actually Knowing the Calculus

The mathematical conception of that problem of economic policy which I have just identified, depends upon competent understanding of the actual nature of Gottfried Leibniz's discovery of the differential and integral calculus, not only in contrast to the pseudo-calculus of Isaac Newton, but also the rejection of that linear perversion of the Leibniz calculus itself, which has been passed down to today's typical modern classrooms, from the hateful work of such fanatical empiricists as Leonhard Euler and Augustin Cauchy.

The crucial point at issue, in defining the calculus to such effect, is the quality of *intention,* which the founder of modern mathematical physics, Johannes Kepler, embodied as the centrally underlying universal physical principle of astrophysics.[4] It is that quality of *intention,* which Euler, Cauchy, et al., removed from the calculus, to produce, thus, their mutilated version of it.

The contemporary economist who has not mastered the rudiments of this issue, is not yet qualified to judge what might, or might not be competent economic-recovery policies for today's situation.

The awful truth to bear in mind, is that the Americas and Europe would not have fallen into the present catastrophe, which has been building up over the recent

3. On the subject of "intention," compare Lyndon H. LaRouche, Jr., "The FDR Economic Recovery: Precedent and Practice," Berlin address, March 5, 2001, published in ***EIR,*** March 16, 2001.

4. It will be made implicitly clear, in the course of this present report, that the effect of the adoption of those "ivory tower" delusions of Aristotle's system which motivated Claudius Ptolemy's hoax, and the impact of both Paolo Sarpi's neo-Ockhamite empiricist dogma and the even more demented practices of the positivists, all have the common effect, of banning the consideration of the causal function of universal physical principles from their systems. Linearization of the Leibniz calculus, as by Euler's dogma, or Cauchy, eliminates the consideration of actual physical cause, *intention,* from the calculations. For example, Galileo made no original discovery, but simply followed the empiricist dogma created by his master, Paolo Sarpi. Thus, the fraud of the modern defense of Galileo from the inquisition, is that Galileo used the same method as the Aristotelean Ptolemy, to reach a conclusion, as an empiricist, which was arbitrarily opposite to that of Ptolemy's dupes, but based on the same violation of truthfulness as that of the Aristotelean defenders of Ptolemy's hoax.

thirty-odd years, had the varieties of doctrines of economics taught in universities not been, chiefly, systemically incompetent ones. Which among them warned of the present crisis, and described its unfolding, consistently, over more than three decades, in precisely the way it has occurred? Which knew what they were doing? Which foresaw the now painfully manifest effects of what they were doing? Let that record of the economy's presently wretched performance be finally heard, speaking for itself.

The explanation of the causes for today's general, systemic failure in the performance of the economists, bankers, and governments generally, must, of necessity, lie in study of those generally accepted beliefs, which were taught in the universities which graduated the relevant professionals. These are the same beliefs also purveyed, as contemporary, credulous popular opinion, by the so-called "Establishment's "customarily lying, mass media. The ideological source of most of the systemic errors, in the teaching of many subjects, is those same sets of axiomatic beliefs, respecting mathematics, which underlie today's commonplace teaching and professional practice in accounting and economics, among many other topics.

The most crippling root-error in the prevalent, contemporary teaching and practice of mathematics, not only among students of economics, but in physical science in general, has been a literally hysterical refusal to acknowledge that basis, in the combined work of Johannes Kepler and Pierre Fermat, most immediately, upon which Gottfried Leibniz's development of the calculus was developed. Had those students taken the opportunity to study the relevant primary sources in the history of modern science, rather than swallowing the generally accepted classroom and textbook gossip, they would have already known the key point I make here.

This lack of this indispensable knowledge, even among many of the most senior physical scientists of today, is chiefly a reflection of pure ideological stubbornness, often veering into hysteria, among the relevant educational institutions and the Babylonian-like peer-review priesthood of the tradecraft's journals. The way in which most university graduates, and others, have been induced to believe the popularly taught errors on this account, is through the cultivation of their fear of that perceived risk to their careers, or simply their reputations among their neighbors and friends, or with the local newspaper editor, if they were overhead saying anything which deviates from what they consider it advantageous to be overheard saying.

Fortunately, the core-problem being addressed at this immediate point in my report, is one within the intellectual reach of any of recent generations of secondary-school students who have been exposed to even a semblance of competent methods of classroom instruction. We focus on that issue of scientific method here, only insofar as that is indispensable for understanding the economic-policy issues immediately at hand. Broader treatment of that scientific question, is left to relevant occasions.

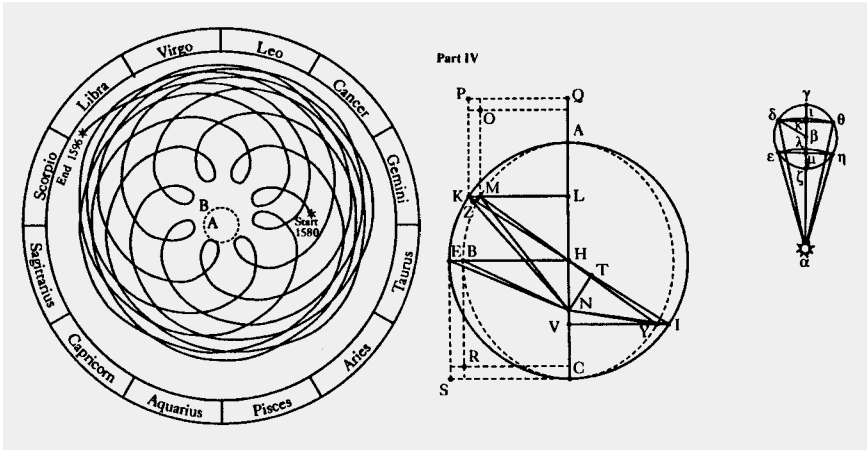
On this account, I encouraged my associate Bruce Director to present an approximately one-hour, video-recorded presentation of the core of Kepler's discovery, as delivered to a recent national conference held in Reston, Virginia.[5] Although this issue had been rather thoroughly addressed, by me and by my collaborators, over earlier decades, to get the same point across to a broader audience, it was pedagogically necessary, given the victimization of recent generations by prevalent, poor standards of contemporary public and higher education, to present the experimental material in the form of animated illustrations, rather than only the otherwise adequate, literary description of the motion to be associated with static images.

A video recording of that approximately one-hour session has been produced. I have proposed that an updated version of that be produced, adding about a quarter-hour, to include a clearer demonstration of that common principle which led to Leibniz's original development of a calculus, and underlay both Kepler's discovery of the principle of universal gravitation, and Fermat's discovery of the concept of a physical principle of "quickest time." I have requested, that an expanded series of such pedagogical exercises be developed and circulated as a much-needed, standard tactic of education in the elementary principles of both physical science and economic policy-shaping.

It is my wish, that the reader should have available a copy of that referenced videotape, either in the form presented at that conference, or the amended version scheduled for later presentation.[6] Here, I limit myself,

5. Presidents' Day Conference of the Schiller Institute and International Caucus of Labor Committees (ICLC), Reston, Virginia, Feb. 17-18, 2001.

6. Call 1-703 297-8434 for ordering information.



Johannes Kepler, with illustrations from his The New Astronomy. On the left, Kepler's depiction of the "pretzel-like" motions of Mars from 1580 until 1596, as they would have to be drawn, from the unscientific geocentric conception of Ptolemy and Tycho Brahe. On the right, two of Kepler's working diagrams, through which he demonstrated the actual ellipticity of the Martian orbit.

as much as is tolerable, to summarizing those selected, crucial issues of immediate relevance to the subject of economics. To situate the discussion, I summarize the immediately relevant historical background as follows.

Kepler and the Orbit of Mars

The scientific knowledge, that the Earth orbits the Sun, was already well established knowledge within Plato's Academy, prior to the ideologically motivated hoax crafted by the Roman Empire's Claudius Ptolemy. Blind faith in the so-called Ptolemaic system, persisted even in modern European civilization, as recently as the Seventeenth Century, willfully misrepresenting Earth as a fixed point in the universe. This Ptolemaic doctrine was a purely ideological concoction, introduced to bring the teaching of astronomy into conformity with Aristotle. The characteristic feature of that hoax by Ptolemy, is the assumption that science must be limited to abstract deductive concoctions, such as formal mathematical schemes, with no effort to discover the physical causes for action in the universe.[7] That same error has been continued, in an even more vicious version, and pervasively, by the modern empiricists and logical positivists.

In modern times, the evidence that the Earth moves with respect to the Sun, had been shown by the Fifteenth-Century founder of modern experimental science, Cardinal Nicholas of Cusa.[8] It was a follower of the work of Cusa and Leonardo da Vinci, Johannes Kepler, who settled the issues scientifically, with his original discovery of a principle of universal gravitation, as detailed in his ***New Astronomy,***[9] and also the general law for configuration of the Solar System, in his ***The Harmony of the World.***[10] Kepler's crucial accomplishment in this matter, was his empirical demonstration of the incompetence of the statistical method employed for mapping observations of the orbits, by Ptolemy, Copernicus, and Tycho Brahe.

The proof of Copernicus' and Brahe's error, subsumed Kepler's discovery of both a universal principle of gravitation, and also, the related harmonic composition of the Solar System's planetary orbits. The relevance of this to a physical science of economics, is that which I have underlined in a previous publication.[11] As

7. Modern empiricism, such as that of Galileo, Hobbes, and Newton, is Ockham follower Paolo Sarpi's vulgarization of Aristotelean method; logical positivism, is simply empiricism vulgarized in the extreme. Notably, the exact same "ivory tower" foolishness of the Aristoteleans and empiricists, underlies the argument of the followers of Thomas Hobbes, John Locke, François Quesnay (*laissez-faire*), the pro-satanic Bernard de Mandeville, and Adam Smith, in social theory and economics.

8. E.g., ***De Docta Ignorantia.***

9. Johannes Kepler, ***New Astronomy*** (1609), William Donahue, trans. (Cambridge: Cambridge University Press, 1992).

10. ***The Harmony of the World***, E.J. Eiton, A.M. Duncan, and J.V. Field, trans. (The American Philosophical Society: 1997).

11. Lyndon H. LaRouche, Jr., "A Philosophy for Victory: Can We Change the Universe?" ***EIR***, March 2, 2001.

I stressed in that earlier publication, as in my Berlin Address of March 5th, the common feature of the physical sciences of astronomy and economics, is the principle of *intention.*

Kepler's solution for defining an elliptical, or approximately elliptical, orbital pathway of Mars (and other planets), was, in first approximation, his adducing the controlling feature determining the combined position and change of velocity of such a non-uniform curvature, according to equality of the area of the angle swept from the relevant focus of the ellipse. That ratio implies the integral value of the orbit as a whole. By adducing the musical-harmonic values of the orbit so defined, and comparing those values for the principal planets considered, Kepler also defined the planetary system, including the specification of a required former planet occupying a harmonic position later shown to correspond to the mass of planetary fragments known, since the work of Gauss, as the asteroid belt.

Thus, in first approximation, the combination of the equal-areas principle respecting each planet, and the harmonic characteristics among those orbits, defined a controlling intention of both the planet individually, and the relative pathways of each orbit within the system as a whole. This combination of conditions which the planetary orbit must satisfy, to reach the next position in a pathway of non-uniform curvature, represented the *intention* which controls such an orbit, as a regular mathematical trajectory could not, prior to Kepler's work.

Such controlling intentions are also called *universal physical principles.* The planet acts as if it were governed by a conscious intention to satisfy those conditions; that intention is otherwise to be recognized as an efficient principle, which acts constantly upon the entire domain in which the action is occurring. That is the simplest of the truthful definitions of a universal physical principle.

From these considerations, Kepler adduced his discovery of a such a principle, known as *universal gravitation,* including what are mistakenly identified by empiricists as "Kepler's three laws."[12] Kepler's relative success on these accounts, implied the need to supersede what were then generally taught ideas about mathematics, by a new kind of mathematics, one suited for dealing with those physical processes which, like the Solar System, could only be described mathematically as pathways of action with non-uniform curvature. Kepler's relegation of the task of addressing that problem to "future mathematicians," prompted the discovery and initial development of the calculus by Gottfried Leibniz.

This Leibniz calculus employed the concept of the smallest interval of action, as *not* reducible to a straight-line pathway between dots, but a trajectory of categorically non-uniform curvature.[13] It is that view of the calculus, as situated within the context of the Leibniz monadology, which was lost to most modern classrooms, lost through the intervention of empiricists working in the vein of Euler, Lagrange, Cauchy, Clausius, Grassmann, et al.[14] It is the quality of intention, as Kepler defines the notion, which distinguishes Leibniz's related notions of a principle of least action and a monadology, from the reductionist fantasies of an Aristotle, or the empiricists and positivists.

The significance of the Leibniz calculus were better appreciated, when we consider how much the progress of modern experimental science owes to the application of intense rigor to the treatment of what are *relatively tiny, but also globally significant, measurably characteristic differences in long-range effects.* This is the *universally characteristic* feature of the work leading to the founding of modern astrophysics, and the discovery of universal gravitation by Kepler. This, as I shall emphasize in this report, is the key to forecasting the long-range effects of current economic policy.

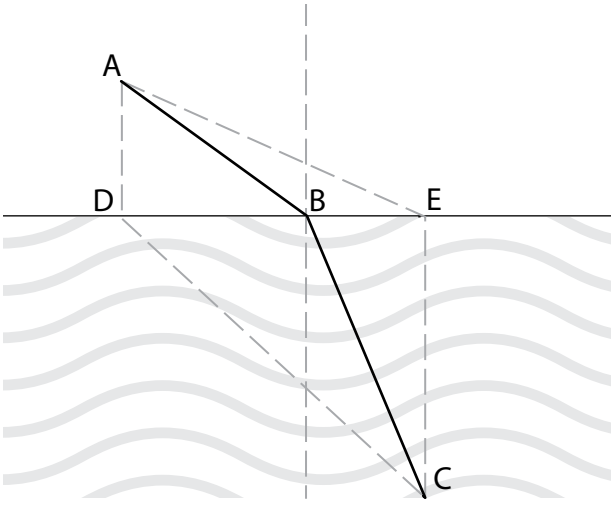
This focus of experimental method, on seemingly tiny, but persistent margins of deviation from the predictions of some preexisting standard theory, is the history of the development of the notion of the relativity of physical time, from the discovery of a principle of "quickest time," by Fermat, through the development of this notion through the combined work of Huyghens, Leibniz, and Bernoulli. Similarly, we have the case of the proof of the folly of Isaac Newton's doctrine on

12. The attempt to reduce Kepler's discovery of universal gravitation, as by the followers of Newton, to the so-called "Three Laws," must be recognized for what it is. In order to detour around the crucial issue posed by non-uniform orbital curvatures, the attempt was made to represent the notion of a universal physical principle as an empirically manifest *intention*. To that latter purpose, the effect of intention was described, by a true believer in the reductionist schemes of Aristotle and Galileo's master Paolo Sarpi. It is that fraudulent description which is responsible for the three-body paradox of Newton et al.

13. Thus, explicitly contrary to the argument against the monadology by Leonhard Euler, and contrary to the vulgarization of the Leibniz calculus by Augustin Cauchy.

14. LaRouche, op. cit.

Fermat's Principle of Least Time



When a ray of light passes from air into water, the light ray is bent. In the illustration, AB is the light ray in air, BC, the new direction of the ray after it enters the water. When the ray passes from a less dense to a more dense medium, it always bends towards the normal (perpendicular) to the surface, but the angle depends upon the density of the medium it is entering.

In 1661, a French philosopher and mathematician, Pierre de Fermat, proved that the light bends at such an angle that it always traverses the path from A to C in the least time. This is Fermat's celebrated *Principle of Least Time,* which he hypothesized to be a universal law of nature ("Nature always acts by the shortest course.")

The following consideration might aid in understanding it. Suppose a lifeguard, standing at A, must rescue a drowning swimmer at C. What is his fastest path? As he can run faster than he can swim, to run directly to the water at D, and swim to C would maximize the time spent in the water; it would thus be the slowest path. However, to run all the way to E, and then plunge into the water, while giving him the shortest path through water, would not minimize his time. The path of least time, is to run to an intermediate point B, and then swim a slightly diagonal course to C. To calculate where the precise point B lies, which will minimize his time, might require a course in optics followed by some calculations, which we hope the lifeguard does not pause to carry out.

Now, consider the light beam, aimed at the point A. When it enters into the water, it will bend at precisely the correct angle, such that, when it reaches C, its total path from A to C will have been completed in the least time. How could the light ray "know" to do that? If Fermat's principle is correct, it is *as if he were attributing a will* to the light ray. So, argued the opponents of Fermat, including the prominent Cartesian, Clerselier, who concluded on this basis that Fermat's Principle must be wrong. But it is not! In this way Fermat's Principle elegantly illustrates the concept of *intent* in nature.—*Laurence Hecht*

light, as Arago's experimental apparatus proved the case for Fresnel's argument.

In partial, first approximation, Kepler's measured trajectory of the Mars orbit, defines the intention of that planet's motion, by the notion that equal areas are swept, in equal time, by the radius of one of the two focii of the ellipse. In Leibniz's hands, that expressed intention of the orbit assumes the form of the non-linear differential of the Leibniz calculus, the form of *non-uniform curvature.* To locate the orbits among the planets, one must refine the differential, in accord with the tuning of the orbital harmonics. Thus, the case of Kepler's determination of the existence of a missing orbit of a planet, later discovered to be the asteroid belt, which must have formerly existed, is crucial experimental physical proof of the validity of both the Kepler conception as a whole, and also the implications which Leibniz adduced for mathematics from Kepler's challenge to "future mathematicians."

In the same vein, the successive contributions to the mathematics of a multiply-connected manifold, by Carl Gauss and Bernard Riemann, provide us today the needed framework of conceptual reference to deal with the evidence showing that life is itself a universal physical principle, existing independently of principles adduced from only non-living processes. Finally, in this same vein, my own original work, in the science of physical economy, enables us today to subsume the

notion of a noösphere, as that was defined by Vladimir Vernadsky, within a generalized macroeconomic conception.[15]

These immediately preceding observations bring us to defining the physical significance of a notion of intention, as Kepler employs that for his principal discoveries in astrophysics (and also other cases), and as I emphasize the same notion, as key for long-range forecasting, in the science of physical economy.

The significance of very small margins of difference, is shown most dramatically, by the argument of Vernadsky for the biosphere. The development of the atmosphere, oceans, and so on, by the action of life, over billions of years, corresponds to a major change in the non-living planet, through the cumulative, marginally small, momentary action of life as a universal physical principle. To make clear the significance of the term "universal physical principle," as the empirical evidence of biogeochemistry attests, we must recognize that life, as a category of universal physical principle, is characterized by its expression of an intention which we recognize as making the difference between living and non-living forms of organization.

"My own original work, in the science of physical economy, enables us today to subsume the notion of a noösphere, as that was defined by Vladimir Vernadsky, within a generalized macroeconomic conception."

The actions of human cognition, over millions of years, resulting in the emergence of major changes in the biosphere, include the development of the biosphere to a degree not possible without the cumulative, momentarily tiny, but nonetheless efficient effects of cognitive action. The principle of cognition, like the categorical principle of life, similarly, expressed an intention, an intention which is otherwise identified by a strict use of the term reason.

In each of the three key instances referenced, Kepler's discovery of universal gravitation, and Vernadsky's definitions of the biosphere and of the noösphere, we have often a relatively very small margin of deviation from what would otherwise be defined as mathematically uniform curvature. This difference is identified by Kepler as corresponding to a margin of *intention,* intention in the sense of action directed by a cognitive mind. In the practice of physical science, experimental physical science as distinct from mere mathematics, such demonstrated cases of *intention* always identify the proof on which the discovery of some universal physical principle depends. The term *intention,* so employed in the sense of Kepler's argument, is equivalent to all proper use of the term *universal physical principle.*

With Bernhard Riemann's 1854 habilitation dissertation, all arbitrary definitions, axioms, and postulates of a formal mathematics, such as customary classroom teaching of Euclidean geometry, are banned from science.[16] They are replaced only by experimentally validated universal physical principles. Each such principle, expressed as an efficient intention, corresponds to a "dimension" of a Riemannian multiply-connected manifold.

In Vernadsky's noösphere, as in the Platonic universe known to the experimental work of Kepler, there are three multiply-connected categories of universal physical principle: a.) non-living; b.) living (biosphere); and, c.) cognitive (noëtic). All three, taken together, are multiply-connected, in Riemann's usage of that notion; all three are equally existent "from the beginning" of the universe so defined.[17] The three, combined as a Riemannian-style multiply-connected manifold, represent a noösphere. My contribution to this configuration, is defining the composition of the sub-manifold of universal cognitive principles. That latter sub-manifold constitutes a category of universal physical principles, so

15. It was from the standpoint of this view of living processes, that I developed my original discoveries in the science of physical economy, during the course of work of the 1948-1952 interval. The explicit adoption of Vernadsky's conception of the noösphere, occurred first in my letter of March 1973, leading to the subsequent founding of the Fusion Energy Foundation. See LaRouche, op. cit.

16. LaRouche, op. cit.

17. This is not to argue that human consciousness existed as if "from the beginning," but only that the principle expressed for us as cognition, did.

defined experimentally because its efficient existence is expressed as physical effects which are *intentionally* products of its action. The noösphere subsumed by cognitive action, is the experimental domain corresponding, as subject, to the science of physical economy.

To complete the outline of the point made, concerning scientific method, thus far, I must restate the argument, respecting this use of *intention,* made in an earlier location.

When we today, following Kepler, use the term *intention* as a synonym for the concept of the Leibniz calculus, we are using *intention* as synonymous with *Mind.* Does a planet, then, have a "mind"? Or, is "mind" a metaphor for what Kepler reads as a controlling intention embedded into the planetary orbit by the Creator of the universe? Why should that metaphor be considered as necessary?

In Kepler's work, *Mind* and *intention* are qualities which the cognitive powers of the human mind are able to recognize, as what we may rightly term *universal physical principles.* Man recognizes that distinct quality of Mind, and that corresponding *intention,* as underlying certain distinctive qualities of trajectories. The scientist employs such use of the terms *Mind, intention,* and *universal physical principles,* as of the same set of metaphorical notions, because *the cognitive power of the human is able to recognize the Mind and intention expressed by a Keplerian orbit, as the intention of a universal Being of a nature It shares with the individual human cognitive personality.* That image, of the Creator as made in the cognitive image of man, is the mirror-reflection, for the scientist, of man as developed by the universe, uniquely, in the image of the Creator, that according to the intention of that Creator.

This use of *metaphor* in physical science so-called, is not literary decoration, not optional usage. As I have made the elaborated argument in sundry locations published earlier, any physical principle occurs only in a form which is *not directly representable* in terms of sense-perception.

To represent a principle, using languages which are commonly employed for reporting sense-perceptual types of imageries, we are obliged to resort to ironical juxtapositions of terms, phrases, and clauses, in a language otherwise used for pedestrian sorts of communications. This objective is accomplished in the only way possible, by forcing the mind to recognize a paradoxical expression, which is not explicable in simply sense-perceptual terms. These paradoxical expressions are identified in scholarly usage, as forms of irony, of which the most perfect type is *metaphor.*

In physical science, as usually considered to be distinct from Classical forms of artistic composition, these paradoxes occur in exactly the type of form confronted by Kepler in the matter of the non-uniformity of the curvature of the Mars orbit, and by Fermat in the instance of "quickest time" in refraction of light. The hypothetical intuition of a solution for such a paradox, if that hypothesis is validated experimentally, becomes an addition to the repertoire of known universal physical principles. This discovery of principle then exists as an *efficient idea.* This idea, is not reducible to a form in sense-perception, but rather exists as the unseen object which causes what Plato describes, allegorically, as the perceptible shadows cast on the irregular surface of the wall of a dimly firelit cave.[18]

The recognition of such an experimentally rooted paradox, is an act of cognition, of *Mind.* The paradox, if experimentally validated, corresponds to an efficient *intention,* whose efficiency as a principle exists externally to any object of sense-perception, but whose efficiency as a principle, as an intention, is experimentally demonstrable. Such notions, such as experimentally validated universal physical principles, are ideas in the strictest sense of the term; they exist as objects of thought only within the domain of cognition, but they are rooted in the paradoxes of sense-perception, and are demonstrated to be efficiently existing principles of physical action by their experimentally demonstrable, crucial quality of effects upon the domain of sense-perception.

That connection, once shown, is a subject in its own right; but, one qualification must be made here, and at this point in my account.

As typified by the discoveries which Kepler elaborates in his ***New Astronomy*** and ***Harmony of the World,*** and as Riemann's 1854 habilitation dissertation implicitly defines this notion, the discovery of an experimentally validatable universal physical principle, corresponds to a paradox within the preestablished representation of the universe.[19] Relative to a formal mathematical physics, this paradox is always expressed in terms of what Leibniz named *Analysis Situs,* or paradoxical geometries of position.[20] The first-approximation determination of the Mars orbit, in terms of inten-

18. Plato, ***The Republic***, Book 6.
19. LaRouche, op. cit.
20. Ibid.

tion expressed as equal areas in equal time, by Kepler, typifies this, and, as Fermat's experimental case for a principle of quickest time, also expresses this.

In such matters, the use of *Mind* and *intention* in respect to physical principles, thus signifies the question: "To whose Mind are we referring?"

In the general case, of the universe as merely observed by man, "Who?" is the Creator. In the case of man's efficient intervention into the order of the universe, "Who?" signifies man acting, by nature, as a creature made in the image of the Creator, who, like the Creator, and subject to the limitations the Creator has imposed, acts to impose the intervention of the qualities of Mind and intention into the consequences of mankind's willful interventions.

It is there, and nowhere else, that the subject of a science of economics is situated.

2. Long-Term Investment

There are two currently popular delusions, respecting economies, without which the presently onrushing form of global financial collapse would not have occurred. The name for one of these delusions is "money," as in "monetarism." The name for the other is "the market." Once the student is liberated from that pair of delusions, the true nature of an economy can begin to be brought into focus.

The rational notion of paper money, found its origins as a constitutional idea, early in the history of the English colonies of North America. This idea was first practiced as a successful use of the issue of paper money by the pre-1688 Commonwealth of Massachusetts. That success was referenced in a crucial proposal by Cotton Mather, and echoed afresh by a follower of Mather, Benjamin Franklin.[21] Nonetheless, although the issue and circulation of paper money, as an expression of public credit, by a government, can be a very beneficial practice, paper money itself remains forever "only paper," as the leaders of the Massachusetts Bay Colony made very clear in issuing such currency. Money is sometimes worth less even than the paper on which it is printed, as we ought to be reminded by events such as Germany's 1923 hyperinflation, and both the 1929-1932 and today's collapsing financial markets.

The happier leaders within the Massachusetts Bay Colony already recognized, during the Seventeenth Century, that we must make a categorical distinction between the issue of money by a nation's government, and the use of the form of money circulated from foreign agencies, such as that of the Seventeenth Century's Stuart monarchy of the Massachusetts colonists' time. That difference lies, essentially, in the fact, that our nation is sovereign (or, should be) in the case of a domestic issue of paper currency, and not in the case of our use of a foreign currency. Otherwise, that said, paper money remains "only paper"; neither it, nor so-called "shareholder value," has any intrinsic economic value. Any contrary opinion about money or shareholder value, is to be recognized as a delusion, and, under the circumstances of the world's present financial crisis, a very dangerous delusion, often even, perhaps, a morally criminal, as much as a painful one.[22]

To understand any economic process, an elementary distinction must be made between the two principal sets of relations which define a real economy, which is to say a *physical economy,* as distinct from a mere money-economy. On the one side, we have mankind's physical relationship to nature, as this is measurable in physical terms, per capita and per square kilometer of "macro-economic" area. In the other aspect of physical economy, there are the sets of social relations within society, which affect, and largely govern the willful evolution of society's practiced relationship to nature, per capita and per square kilometer. In relationship to a purely physical economy, money, paper or otherwise, comes into play, as a sometimes useful, as a necessary *political fiction,* in the physical organizing of the social relations within the economy. Paper money, issued as public credit, by a sovereign (or, worse, anyone else), remains always a mere political fiction.[23]

To understand all of those crucial issues of policy-making posed by the present global financial collapse, the most efficient approach is to look at Vernadsky's view of the physical universe as I look at the work of Vernadsky.[24]

21. H. Graham Lowry, ***How The Nation Was Won: America's Untold Story*** (Washington, D.C.: Executive Intelligence Review, 1988).

22. Typical of such delusions is the argument that there exists a category of "honest money," as an alternative to paper money.

23. A monetarist is like the man who took only the shadow cast by his bridge on his honeymoon, while leaving the bride herself, for the rest of eternity, gathering dust at the altar.

24. This also means, to look at the distinction between living and non-living processes as Kepler did, and as Kepler relied on the work of Plato before him. We must include the view of man, as distinct from other

Contrary to the views of the fascist economist Milton Friedman, paper money remains "only paper"; neither it, nor so-called "shareholder value," has any intrinsic economic value.

The first step toward understanding how a real economy works, therefore, is to sort out those connections. All taken together, any economy is essentially a physical economy, and is an expression of a complex of *intentions,* as I have just previously described the use of the term "intentions" in the preceding pages.

On the matter of what might be called a "theory of money," we must, as I shall indicate, derive the function to be assigned to money in a rational way. That is to say, that, in a sane society, it is the physical economy which defines the meaning and value of money; this is in opposition to those foolish people who attempt to derive economic processes as a secretion from one of those "ivory tower" concoctions called "monetary theory."

However, before coming to the matter of the real economy, we must dispense with the second of the two distracting delusions which I referenced above, the delusion called "the market." I shall summarize the relevant argument by, first, quoting once again, as on some earlier occasions, a relevant passage from Adam Smith's 1759 ***Theory of the Moral Sentiments,*** and then use that citation as the pivot on which to make, once again, my general observation on the heathen doctrine of "little green men under the floorboards," which is the essence of the laissez-faire argument commonly used by such ideologues as François Quesnay, Bernard de Mandeville, Adam Smith, and Jeremy Bentham.[25]

That adversary of civilized life, Adam Smith, wrote:

> "The administration of the great system of the universe … the care of the universal happiness of all sensible and rational beings, is the business of God and not of man. To man is allotted a much humbler department, but one much more suitable to the weakness of his powers, and to the narrowness of his comprehension; the care of his own happiness, of that of his family, his friends, his country … But though we are … endowed with a very strong desire of those ends, it has been intrusted to the slow and uncertain determinations of our reason to find out the proper means of bringing them about. *Nature has directed us to the greater part of these by original and immediate instincts. Hunger, thirst, the passion which unites the two sexes, the love of pleasure, and the dread of pain, prompt us to apply those means for their own sakes, and without any consideration of their tendency to those beneficent ends which the great Director of nature intended to produce by them.*" (italics added).

Decades prior to Smith's writing those lines, the "mephistopholean" Mandeville had already insisted that evil must not be banned, since, according to his argument, it is by allowing both good and evil to have free play in man's affairs, that good will be ultimately brought about. Mandeville's Faustian sophistry is the

living creatures, as Vernadsky did, a view which is implicitly pervasive throughout Kepler's work, as in such locations as Plato's ***Timaeus.***

25. As cited in Lyndon H. LaRouche, Jr. and David P. Goldman, ***The Ugly Truth about Milton Friedman*** (New York: Benjamin Franklin House, 1980), p. 107. Mandeville sets forth his pro-satanic doctrine in his ***The Fable of the Bees*** (1714); the late Friedrich von Hayek designated Mandeville as the virtual "patron anti-saint" of von Hayek's Mont Pelerin Society; Adam Smith was a lackey of Britain's Lord Shelburne from 1763 on; the British Foreign Office's Bentham, another Shelburne lackey, is the putative founder of the utilitarian current in economics.

model imitated by those, such as his devotees of the Mont Pelerin Society, who condemn, invidiously, as "corrupt," adversaries of the "free market" principle, such as governments or persons who oppose legalizing the trade in so-called "recreational" drugs.[26]

Pro-feudalist Quesnay argued that the profit of the aristocrat's estate, was brought into being as a predicate of the aristocrat's mere hereditary title to the estate (e.g., "shareholder value"), on which the role of the serfs was defined, by Quesnay, as essentially that of human cattle.[27] The doctrine of English and British empiricism, introduced to the English-speaking world by Venice's Mephisto-like Paolo Sarpi, defines social processes, including economic processes, as like percussive interactions among Hobbesian particles floating in Euclidean space-time; empiricism defines history, including economy, as a kind of statistical result of those amassed kinematic interactions.

Hence we have in today's U.S., the frankly corrupt doctrine of the "free market" upheld by the Mont Pelerin Society, the American Enterprise Institute, and like-spirited followers of Britain's nastiest nanny, Margaret Thatcher. It is truly a lunatic doctrine, as also a modern parody of the medieval bogomil cult of "the chosen ones."

On the one side, the economists of that curious persuasion insist, that mankind must not interfere with the magical statistical processes of the so-called "free market." At the same time, those brainwashed doctrinaires insist, that that perfectly anarchical market, like a crooked gambling table, is mysteriously rigged, as if by an invisible hand, to ensure that the prices will ultimately be "right," and that privileged people will be rewarded by the influence of some magical taint of bias, a bias in favor of the "chosen ones," built into that crooked gambling-table which that market is in fact.[28]

Neither Mandeville, Smith, nor Bentham, ever claimed to have rational knowledge of why this allegedly perfectly democratic statistical process assured such a statistically consistent, corrupt result. As Smith spoke for himself, blind faith in the "free market" principle, "*prompt[s] us to apply those means for their own sakes, and without any consideration of their tendency to those beneficent ends which the great Director of nature intended to produce by them.*" Although they admit they have no knowledge of what the efficient principle is, or how it operates, they insist that it would be morally wrong of anyone, to attempt to interfere with the unfathomable logic of that wonderful underworld domain where such little green men, often disguised as investment bankers, dwell and reign.

If society legalizes crime, it adds criminal proceeds to its official gross national product accounts; if it counts the proceeds of crime as part of the nation's wealth, it thus legalizes crime. If the state intervenes to legalize the international traffic in recreational drugs, the state becomes a drug-pusher, as Secretary of State and H.G. Wells devotee Madeleine Albright's reign did; if it accounts the income of prostitution as part of the taxable gross national product, the President becomes a pimp. In short, leave it up to whatever little green men, whoever or whatever they might be, controlling the universe from under the floorboards of the universal gambling hall. Smith's economics is not science, it is a religion of heathen crap-shooters, probably a tradition of the Babylonian or kindred origins which economist J.M. Keynes attributed to the content of the chest of collected scientific papers of Sir Isaac Newton.[29]

The most insane variety of that English-speaking empiricist tradition, are those monetarist models concocted in the spirit of John Law, in his time, or, in ours, such as John von Neumann's and Oskar Morgenstern's

26. This has been the argument in favor of legalization of the cocaine and heroin traffic by such devotees of the Mont Pelerin cult as Professor Milton Friedman. See LaRouche and Goldman, op. cit., pp. 305-322.

27. To situate the role of the strange Dr. Quesnay in the history of political-economy, it is essential to locate the opposition to the policies of France's nation-builders, Cardinal Mazarin and Jean-Baptiste Colbert, by the alliance of the feudalist *Fronde* with that pagan monster Louis XIV. This alliance overlapped the Europe-wide network of salons, operating under the direction of Venice's Abbé Antonio Conti. From the relatively momentary period of a few years, that the possibility existed, that Gottfried Leibniz might become the future Prime Minister for the British monarchy, Conti played the leading role, until his 1749 death, in organizing both the Newton myth, and the anti-Colbert and anti-Leibniz campaign throughout Europe. The position of the disgusting mere tinkler Rameau, and the use of the Rameau myth against Johann Sebastian Bach, were, like the creation of the figure of Voltaire and the role of Quesnay, expressions of the early Eighteenth-century campaigns coordinated by Conti from the Paris of the pagan Sun-King Louis XIV, and of the minority of Louis XV.

28. The type referenced here as "the chosen ones" suggest the cases of two U.S. Presidents Bush, neither of which showed my talent for actually earning money by their own independent skills, but had wealth bestowed upon them by the relevant little green men under the floorboards. See Anton Chaitkin and Webster Tarpley, ***George Bush: The Unauthorized Biography*** (Washington, D.C.: Executive Intelligence Review, 1992).

29. John Maynard Keynes, "Newton the Man," in ***Essays in Biography*** (New York: The Norton Library, 1951).

radically positivist concoction, ***The Theory of Games & Economic Behavior.***[30] Von Neumann, like "information theory" hoaxster Norbert Wiener, was a former acolyte of Bertrand Russell, whose work reflects the wildly ivory-tower rantings of Russell's ***Principia Mathematica.***[31]

At their least worst, all of those beliefs associated with today's fashionable varieties of monetarist teaching, are derived from the same "ivory tower" fantasizing which Kepler pointed out as the root of the fallacies of the astronomical systems of Ptolemy, Copernicus, and Brahe. Each fantasist of that collection, begins, as von Neumann and Morgenstern did, with a made-up, arbitrary set of assumptions: the logical positivist's equivalent of a set of arbitrarily chosen definitions, axioms, and postulates. That set of assumptions, like some game just made up by mischievous children, then defines what they are willing to take into account as the acknowledged variety of social facts which they select as belonging to their scheme, their whimsically chosen, childish "rules of the game." That scheme becomes, for them, as for Claudius Ptolemy and his modern dupes, the substitute for a "universe," as represented by the specific mathematical fantasy which they construct.

Other evidence, for which no place is provided in the set of definitions, axioms, and postulates of their system, they ignore, as irrelevant to their system. No physical principles, as I have defined physical principles above, are allowed to intervene in their analysis. On this account, they imitate exactly the willful fraud against physical science perpetrated by Claudius Ptolemy and his modern devotees. The devotees of those constructs then insist upon explaining everything they choose to notice in a real economy, according to the ivory tower model they have constructed.

We shall define a completely different, much happier notion of a market, at a later point in this report.

Biosphere and Noösphere

The principle of production is, that, *through the realization of scientific and technological progress, the average member of the human species, is able to improve the longevity and other demographic characteristics of his or her society's entire population, and to increase its per-capita useful output within a diminishing amount of required, average land-area per capita.* The performance of an economy, is to be measured as the increased production of people, people who are of increased per-capita power to exist and reign, that within what Vernadsky identifies as the noösphere.

The increase of the physical-economic potential associated with the individual can be defined in two distinct, functional ways. Most simply, it implies the individual's potential *for society* within the bounds of the specific state of development of the society/economy within which the individual is functionally situated. However, we have other significant cases, in which we must assess what the individual would have as the more or less immediate potential to become, were he, with his existing personal capabilities, situated in, for example, a less underdeveloped society/economy. To similar effect, we must sometimes emphasize what a present labor-force, or some part of it, has the potential to become merely by virtue of being situated in more favorable sorts of relevant conditions; as for example, the increased potential for society represented by a trained engineer transferred from crude manual labor, to an occupation consistent with his, or her potential.

Such an increase of power, is to be considered as analogous to a trajectory, in the sense that a specific planetary orbit is *a trajectory of constant, if not uniform change,* a trajectory defined by intention. That signifies a quality of trajectory which is distinguished from what is still, today, an ordinary classroom-mathematical type of trajectory, in that it expresses an *intention,* rather than a mechanically predetermined outcome, such as the latter might be implied by the application of conventional methods of today's financial accounting.

We are not defining the individual as, thus, fixed in quality, or of fixed absolute needs. In the language of Heraclitus and Plato, the trajectory of development of the individual in society, and of the society per individual, is *the trajectory of becoming:* of bringing both the individual and the society continually to a higher state, per capita and per average unit of relevant area.

In first approximation, this distinction connotes Kepler's use of the terms *Mind* and *intention.* It signifies, thus, the validation of *a universal physical principle,* as I have defined the correspondence of intention and universal physical principle, in the preceding section of this report. In the case of economy, such intentions include all the connotations associated with the general

30. John von Neumann and Oskar Morgenstern, ***Theory of Games and Economic Behavior***, 3rd ed. (Princeton: Princeton University Press, 1953).

31. Alfred N. Whitehead and Bertrand Russell, ***Principia Mathematica*** (Cambridge: Cambridge University Press, 1994, reprint of 1927 edition).

category of regular non-living and living processes; but, in addition to that, there is also a qualitative change included in the connotation. Man's intentions are *cognitively willful,* in a sense that the *quality of intention* associated with either non-living processes, or lower forms of life, is not.

Thus, physical economy represents a category of universal physical principle, but a principle of a different specific quality than either non-living or living processes otherwise defined.

We come now, to the point where we must state and address the crucial paradox upon whose solution all long-range economic forecasting depends. This paradox presents us, at this stage of the report, with an interim result, which I shall now summarize, and address more adequately at a later point in the report as a whole.

At first, perhaps, the argument which I shall introduce in a paragraph a short space below, will not be an easy one for many readers, at their first reading of it. It is paradoxical, but it is essential that it be made; otherwise some essential facts are overlooked. As all important statements of principle, this must be stated in the form of *Analysis Situs,* and must, therefore, assume the quality of metaphor. It is necessary to pose the issue in such a paradoxical way, that the solution to the paradox can be provoked, and then discovered. The secret of knowledge is never to turn one's back on a well-formulated paradox; to turn away from such a paradox, is to turn away from the possibility of gaining what Socrates' principles would recognize as being actually knowledge.

Besides, you should not balk at being challenged to make a serious mental effort. Making discoveries is *fun!* It is fun in the sense connoted by our mind's hearing Archimedes' shout of "Eureka!" People labor greatly to make discoveries of principle, because, as it was for Archimedes, it is great fun to do so. Such fun is a way of life, a way of practicing being alive. It is the quality of playfulness of the great scientific discoverer, the greatest Classical composers and performers. One does it, because it is good to do it.

Having fun, in the sense of Archimedes' cry of "Eureka!" expresses the joy of doing good, and it therefore is the essence of morality. It is the quality of *agapē* of Plato's Socrates, and of the anti-pharisaical (anti-"single issue") Apostle Paul's ***I Corinthians*** 13.

Science and great Classical artistic compositions are not entertainments; they are a way of life; all progress in the human condition depends upon individual personalities which have such fun in doing good for mankind. *Fun,* as I have implicitly defined a special meaning for that term here, is that special quality of playfulness which sets the happy human child, and the greatest scientist, a Mozart or a Beethoven, apart from, and above the happy playfulness of the boy's companion, that puppy. Thus, I rarely say "Bless you!" to my friends; I deliver a much happier injunction, "Have *fun!*" Or, I enjoin them, "Be careful; don't behave yourself. (Don't be another miserable Kantian!) Have *fun!*" Or, in the terms of Friedrich Schiller, reach upward, from the tragic to the *sublime.*[32]

The result of making such a necessary distinction as I have made here so far, between a universe which includes mankind, and another, which, at least conjecturally, might not, is to imply that the universe in which the universal physical principle known as economy exists, is of the general form of a Riemannian manifold. That universe incorporates three categories of universal physical principle: non-living, living, and cognitive. These specific categories of principles, are multiply-connected, in Riemann's sense. The characteristic of the manifold, is the universal physical principle of physical economy. Such is the nature of the universe in which the sheer fun of human cognition is the dominant consideration, the end-result toward which all multiply-connected features are rightly aimed.

Therefore, now, let us have some *fun!* Start a run of such fun, by noting, that, from this point on, you will be considering a physical economy in its role as a *macroeconomic noösphere.* In other words, we are defining the noösphere as "under the management of" a macroeconomy defined in the language, and by the methods of physical economy. That means, that we are restating everything Vernadsky has stated for the noösphere and its subsumed biosphere, but, this time, restated, and amplified in the language of my approach to the science of physical economy.

From this standpoint, the functional relationship of the noösphere to the biosphere, is expressed chiefly as

32. Friedrich Schiller, "On the Sublime," in ***Friedrich Schiller, Poet of Freedom,*** Vol. III, 1990, Schiller Institute, Washington, D.C., p. 255. The sublime is the point of difference between Plato and the Classical Greek tragedians, as Plato's Socratic dialogues epitomize that distinction. In modern Classical drama, the notion of the sublime is typified by both Schiller's Joan of Arc and the real-life Jeanne d'Arc whose essential historical reality is captured by Schiller. She died horribly, but not tragically; she spent her life for a mission of great outcome for European civilization as a whole. So, the truly sublime Christ, no tragic figure, died for the benefit of all mankind.

what macroeconomics views as *basic economic infrastructure.* This means, chiefly, *the development of the land-area of a national physical economy as an indivisible unit of action, that over a relatively long-term period of not less than approximately a quarter-century, or even much longer.* This apparently paradoxical principle of national-income accounting, is crucial; therefore, I elaborate the point I have just made.[33]

The most general of the inherent fallacies of today's conventional financial accounting and national-income accounting practice, is of the same type as those who, unlike Kepler, tried to explain astronomical processes in terms of simple mathematical connections among observed point-positions of celestial objects. Just as Kepler recognized the importance of adducing the moment-to-moment principle governing an orbit, from the study of the paradoxes posed by the orbit as a whole, so we must judge the significance of localized, relatively short-term economic developments from the vantage-point of both the whole process within which those developments are situated, and over a time-span sufficiently long to expose the long-term major effects of what seem small, even insignificant variations within a small portion of the short-term developments.

Generally, the minimum interval of time, during which the relationship between short-term aberrations and their large-scale long-term effects, becomes empirically clear, is in the order of not less than a quarter-century, approximately the span of development of a newborn childhood into a fully defined-as-functional adult individual. How, then, can we know results of today's actions, a quarter-century or more hence? How do we know the orbit of the planetary body on which we discover ourselves travelling at this immediate moment?

Since infrastructural development, and long-term capital improvements, or the lack of either or both, define the net outcome of an entire generation of an economy's unfolding, we must never attempt to define the policies properly governing so-called microeconomical functions, except in an axiomatically well-defined macroeconomical setting.

FIGURE 1
The South Korea Won Collapses Under Speculative Attack

Why the U.S. Is Bankrupt

Take as an example, the trillions of U.S.- dollars-equivalent of unremedied attrition of basic economic infrastructure since the Nixon Administration. See similar trends in continental western Europe, and the worse state of affairs similarly induced within the United Kingdom, as in the brutish looting and ruin of the economies of New Zealand and Australia. Under existing, post-1965-1972 trends in policies, that damage to those economies could never be reversed, but, in fact, would become ever worse, and inevitably so.

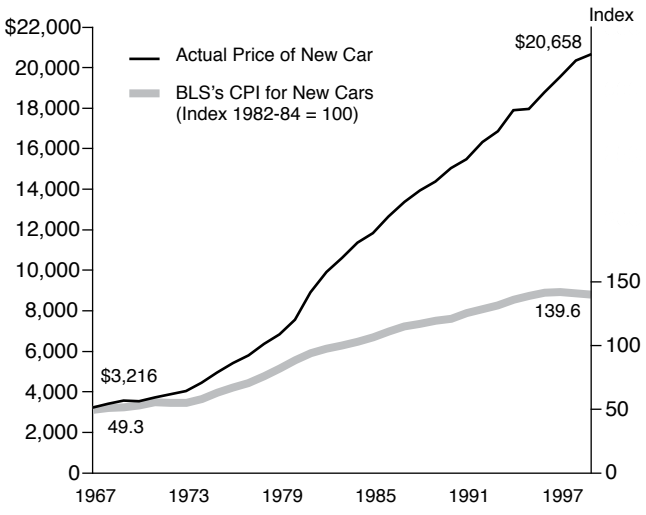
There have been several ways, which, combined in effects, have contributed to the ability of governments and others, to concoct fraudulently optimistic reports on overall national economic performance of these nations' economies.

One way has been to conceal the increased degree of looting of nations outside the U.S.A., western continental Europe, and the so-called "developed" nations of the British Commonwealth, by collusion among the world's London financial center, the IMF and World Bank, in organizing runs on national currencies [**Figure 1**], and against specific commodities. By aid of these measures, national currencies were, repeatedly, arbitrarily depressed, and the foreign indebtedness, including debt to the IMF added, as a way of deflationary looting of the

33. This is the paragraph of which I forewarned you a bit earlier.

FIGURE 2

Increase of Actual New Car Price Compared to BLS Computation of CPI for New Cars



Sources: Department of Commerce's Bureau of Economic Analysis; Department of Labor's Bureau of Labor Statistics; *EIR*.

continents of South and Central America, Africa, and so on, under the so-called "floating exchange-rate" monetary system. This latter was called the "liberal system," because it enabled predator nations to loot victimized nations and continents so liberally. The prosperity of the U.S. and the British monarchy's reign, and also western Europe, such as it has been, has depended increasingly on this specific method for post-1971 looting of the nations of South and Central America, Africa, the former Comecon bloc, Southeast Asia, and so on, under the so-called "floating exchange-rate system."

Another way of perpetrating the fraudulent appearance of net profitability of the predator nations' economies, was to understate the rate of inflation in those economies. One of the most naked of such frauds perpetrated by the U.S. government, was a practice which I denounced in a national TV network broadcast, early in 1984: the hoax called the Quality Adjustment factor [**Figure 2**][34]. That hoax continues to be perpetrated, to the present time.

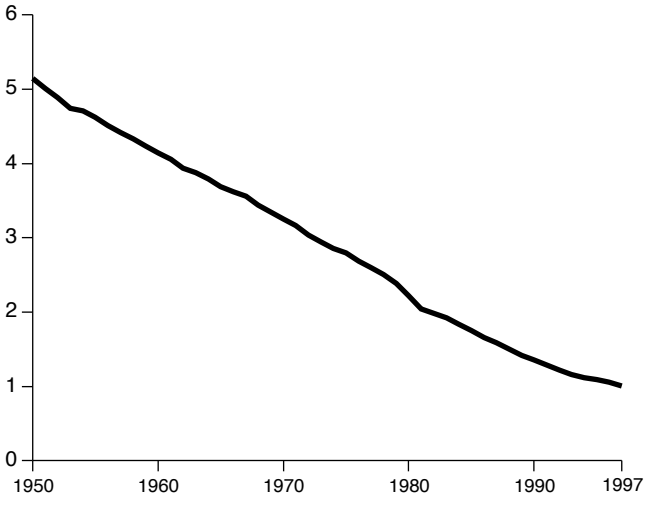
Another accounting swindle to kindred effect, was simply ignoring the material loss to the national economy from depreciation and depletion of basic economic infrastructure [**Figures 3** and **4**]. By failing to take the current cost of replenishment of this margin of depreciation and depletion into account, in national income and product accounting, the irreversible loss to the future of the economy, caused by abandoning essential infrastructure, was fraudulently suppressed for sake of

34. The broadcast was aired on ABC-TV on Feb. 4, 1984, during LaRouche's campaign for the Presidency.

FIGURE 3

U.S. Railroad Mileage

(Miles per 1,000 Households)



Sources: Association of American Railroads; U.S. Department of Commerce, Bureau of the Census, *Population Surveys*, various years.

FIGURE 4

Hospital Beds per 1,000 U.S. Population Overall, and in Community Hospitals

(Beds per 1,000 People)

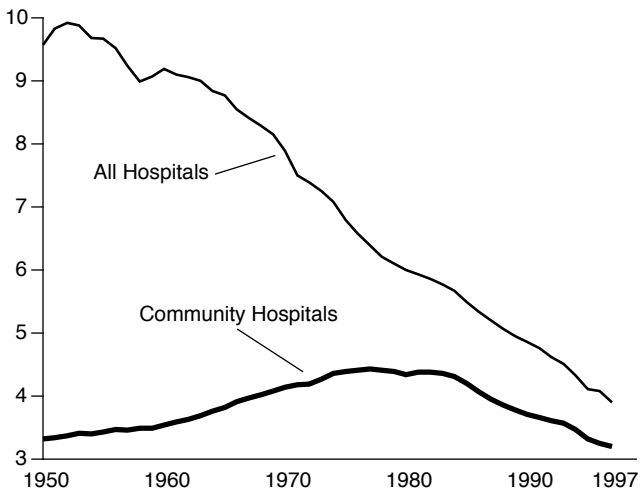
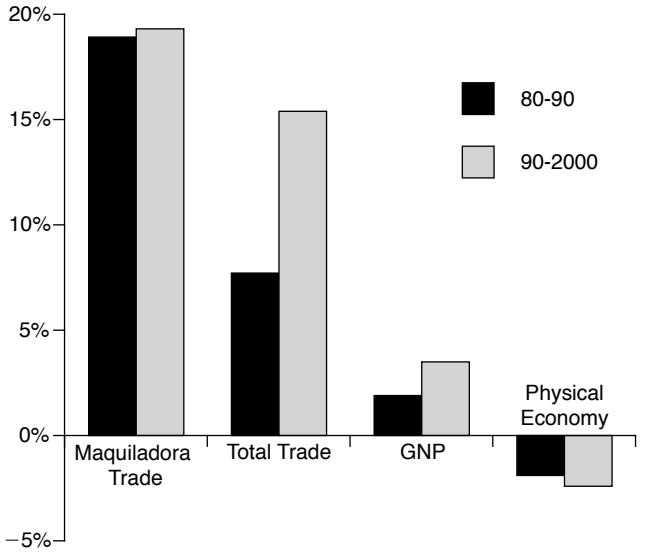


FIGURE 5

Mexico: Comparative Growth Rates

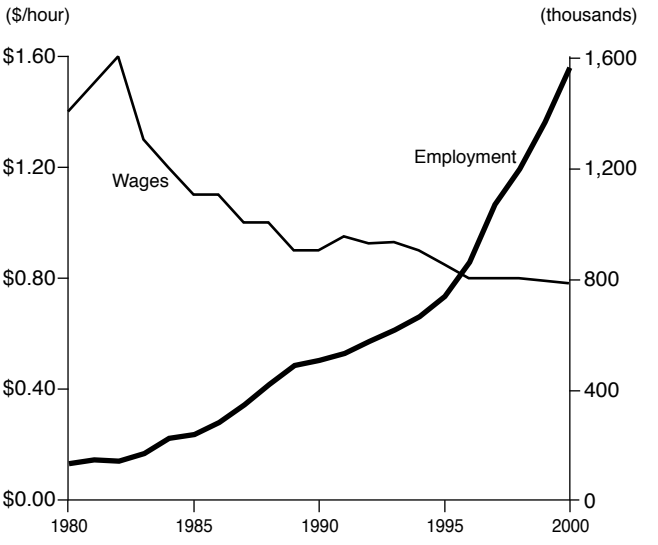
(Annual Averages)



Sources: Banco de México, INEGI; *EIR*.

FIGURE 6

Mexico: Maquiladora Wages and Employment

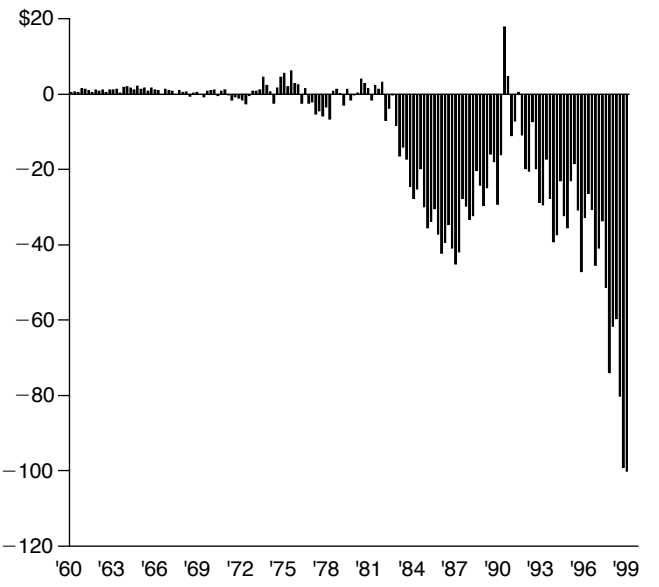


Sources: Banco de México, INEGI, CTM; *Twin Plant News*; AFL-CIO.

FIGURE 7

The United States Is Living Off the Rest of the World: Current Account Balance, 1960-99

(Billions $)



Source: U.S. Department of Commerce.

presenting a success-story, where ruin was actually in progress.

NAFTA and "globalization" generally, have looted most of the world in a two-fold way. The production of more and more of the commodities used in so-called industrialized economies, was "outsourced" to cheap-labor markets abroad [**Figures 5, 6,** and **7**]. The included results, were the accelerated collapse of the earned real income of the U.S., for example, the vanishing of essential production capacities and productive skills from the thus-depleted, importing former agro-industrial powers, and the devastating collapse in the real income-rates of the lower eighty percentile of U.S. family households, for example.

Typical of one of the relevant greatest accounting swindles of them all, was the 1995-2001 hoax called "Y2K." Under the pretext, that a computer-accounting disaster threatened the world economy on Dec. 31, 1999, a vast financial bubble was generated in the area of what was called, variously, "information technology," or the "Third Wave" [**Figure 8**]. While some part of the computer and related technologies involved are intrinsically potentially useful, especially for administrative functions, the "new economy" bundle was, predominantly, a vast swindle, with about the same benefit to national income as might be reflected in IRS estimates, that by legalizing prostitution, legalized supermarket sales of heroin and cocaine, and legalization of all forms of crime generally, the national income might be increased.

Virtually all of those factors on which net rates of sustained real physical-economic growth depend, were buried under an avalanche of bubbling swindles of one variety or another.

Thus, we have come to the point today, that the outstanding financial debt of the world at large, could never be paid by a world economy attempting to meet those presently required, cancerously multiplying demands for payments. The reason we have entered the worst, greatest financial collapse in all human existence, now, is that the reported economic growth of the world's economy, especially of Europe, the British Commonwealth, and the U.S.A., of the past thirty years, has been one gigantic swindle. The cupboard is bare, because it has been emptied, not by ordinary burglars, but by the lunatic, Thatcher-like greed of the London-centered shareholder-proprietors themselves.

By the standard I have specified above, and taking related facts into account, the so-called developed sector of western Europe, the Americas, and the British Commonwealth, has not actually earned a net profit, as national economies, since the tragic trends set into motion over the 1964-1972 period, by that pestilence typified by Wilson in Britain and Nixon and his "Southern Strategy" in the U.S.A. All reports of net growth in national incomes of these nations over the period since, have been a gigantic accounting fraud. It was my recognition of, and understanding of that *systemic* fraud and its nature, which was essential to my becoming the most successful long-range economic forecaster known to the public in the world at large today.

Basic Economic Infrastructure

From the standpoint of Vernadsky's outline, this development of basic economic infrastructure is expressed in two clearly distinguishable ways. In some actions, mankind's action simply improves the development of the biosphere as man finds it, as through the transformation of arid regions into biologically rich farmlands.

In the second class of actions, man improves the variety of content of the biosphere, qualitatively, by adding to it new kinds of what Vernadsky calls "natural objects,"[35] adding to the repertoire of natural objects already produced by forms of life inferior to mankind. Such "natural objects" introduced to the biosphere as products of cognition, include transportation and power systems. Water management systems represent the combined effect of human promotion of the kind of natural objects already produced by the biosphere as such, combined with added elements which are natural objects of a type unique to the products of cognition. Urban development is chiefly an example of natural objects of cognition.

The development of educational systems, like the role of principles of Classical artistic composition, is a part of the essential infrastructure of the biosphere; but that is a matter to be taken up in the more suitable setting of review, conducted in the immediately following section of this report, of physical economy as a social process, rather than as simply the measurable relations as defined, in effect, per capita and per square kilometer.

For reasons which I shall clarify at a suitable later point in this report, it is necessary to make a certain functional distinction between what is usefully designated as basic economic infrastructure, and other qualities of specifically economic activities.

Broadly, the distinction is, that basic economic infrastructure's development and maintenance, reflects a society's conscious sense of its government's unique responsibility for the economic and related potential embodied in the improvement of *the land-area as a whole,* and *the population considered immediately in its entirety.* Thus, these represent the accountability of the government for the promotion of the interest of the cause of the general welfare, as represented, inclusively, by the entirety of the land-area, per se, and the entirety of the population, per se. Thus, basic economic infrastructure is distinguished from that which, under the American System, usually falls within the province of private entrepreneurship, such as agriculture and manufacturing industry. There is, as I shall show in due course, a deeper distinction, but what I have just stated will suffice as a working observation at this juncture.

Usually, areas other than basic economic infrastructure, are associated with the application of man-made discoveries of universal physical principles and their derived technologies, to the design of products and pro-

35. "Natural products" is employed here in the sense of Vernadsky's argument. As cited in Lyndon H. LaRouche, Jr., "A Philosophy for Victory: Can We Change the Universe?" ***EIR***, March 2, 2001, see footnote 11. Also see Vladimir I. Vernadsky, "On the Fundamental Material-Energetic Difference Between Living and Non-Living Natural Bodies in the Biosphere" (1938), Jonathan Tennenbaum and Rachel Douglas, trans., ***21st Century Science & Technology***, Winter 2000-2001.

ductive processes. This is usually associated with an entrepreneurship of one or a number of persons, acting within the bounds of general law for the society as a whole, but on their own initiative.

In general, functionally, the existence of the latter entrepreneurships is situated on the basis provided by the development of the society's basic economic infrastructure. Their potential is delimited by the quality of environment which the development of the basic economic infrastructure represents. In general, an enterprise situated in an area with relatively poor development of basic economic infrastructure, has a lower potential than the same enterprise would represent, if situated in an area of better development and maintenance of basic economic infrastructure. The latter is typified as among the ultimately terrible errors in the recent decades' resort to "outsourcing" and "globalization."

Thus, in modern society, roughly forty to sixty percent of the total investment in development and maintenance of a healthy national economy, will be situated within the domain of basic economic infrastructure. Such development and maintenance of basic economic infrastructure will always be conducted under regulation by the society as a whole, and may be largely, even entirely an economic function of government. This is necessary, since only government has responsibility for, and authority over all of the land-area of the nation. Only the government of a truly sovereign nation-state has the competence to assume responsibility for the assured payment of debt-obligations incurred on the kinds of long-term accounts which the development of basic economic infrastructure incurs.[36]

However, since the development and maintenance of basic economic infrastructure depends largely upon its own consumption of the products of production, both directly and indirectly, the investment in the development and maintenance of basic economic infrastructure, is a principal stimulant for the growth and maintenance of the level of output and productivity of the population and its production as a whole.

In the general form of the functional relationship between the noösphere and biosphere, we are presented with two kinds of expression of qualitative change which the macroeconomic development of the physical economy introduces into the development of the biosphere and noösphere alike. One kind of qualitative change is associated with extension of scale of development, without the additional introduction of new kinds of "natural products" of the noösphere; the other, with the introduction of new qualities of "natural products" of the noösphere.

For example, the simple extension of large-scale water management, extended development of agriculture, and of managed forests, increases the amount and effective energy-flux-density throughput of "biomass" over large areas, with associated qualitative effects on the weather systems within entire regions. Such transformations complement, but are distinct from the transformations caused by introduction of new kinds of natural products of the noösphere to the biosphere. Thus, we must distinguish between qualitative effects of increase of scale and intensity of use of existing programs and technologies, and the qualitative effects of introducing new kinds of technologies, or even new, virtually man-made physical principles of practice.

In the longer run, it is the role of the introduction of new kinds of "natural products" of cognition (discoveries of universal physical principle and their technological derivatives) to become an integral part of the functioning of basic economic infrastructure, which is determining. Despite that, the qualitative improvement in the characteristics of land-area, as biosphere, and as infrastructure, through extended application of already existing principles, is extremely significant.

Functions of Physical Economy

So far, as a matter of emphasis, I have confined the development of my argument to the first aspect of scientific and technological progress: our species' increase of its power over nature, as measured per capita and per square kilometer. I have referenced the cultural factors, but have not integrated their role. For the remainder of this section, I shall continue to maintain that emphasis. That limitation should be taken for granted by the reader, until we come to the following section of the report.

The essential feature of the process by which man-

36. On this account, the development of the principle of Chapter XI bankruptcy, during the 1930s, remains indispensable policy for any area of long-term commitment to the development and maintenance of basic economic infrastructure, such as a public-health system for a nation, a region of a nation, a region of the planet, or the world as a whole. The claims of debtors' creditors, in such bankruptcy proceedings, must be subordinated to the public interest, that according to the U.S. Constitutional principle of the general welfare. Thus, government meets its responsibilities for honorable treatment of debt incurred in an honorable way to an honorable purpose. This obviously conflicts with any claims presented on the account of a predatory form of "shareholder interest."

kind increases its species' power to exist, in and over the universe, is the discovery and application of additional, validated discoveries of universal physical principle. In the experimental validation of such a discovered principle, the design of that experiment includes willful features which express the new principle being tested. Those features of a successful such experiment, then become, in turn, the model for applying the validated principle to man's willful control over nature. The class of derivatives of successful such proof-of-principle experiments, is called *technologies.*

These technologies appear in various guises. They appear in a somewhat different form in their application to different kinds of materials. They also appear in the testing and measurement of the functional relationships among varying combinations of materials and technologies.

For example, the fact that a technology works in its direct application to one choice of material, does not mean that it will work in the same way in another. Nor, can we assume that a technology will work to the same effect when a change is made in the combinations of technologies employed for a common function, or when a different material is substituted.

All these and related challenges require the ministrations of a class of specialists expert in the matter of designing the apparatus appropriate to, and conducting proof-of-principle experiments. The attempt to substitute computerized "benchmarking" for such traditional engineering abilities, invites catastrophes. *The universe is not linear.*

With those and related kinds of considerations taken into account, the immediate relationship of human action to the universe, is a function of the accumulation of valid new discoveries of universal physical principle. This includes the categories of universal physical principles specific to living processes, and also to cognitive ones. For the moment, the argument is made only for the case of non-living and living processes, not cognitive relations among persons. With that restriction, man's power in and over the universe, per capita and per square kilometer, is bounded by the accumulation of valid discoveries of universal physical principles.

This signifies, that man's per-capita power in and over the universe, as the universe is defined in terms of mankind's per-capita relationship to it, is to be seen as a function of the accumulation of valid discoveries of universal physical principle. It is the application of that accumulation, in whole, or in part, which delimits man's potential power in the universe.

In that sense, the universe, as defined in terms of mankind's relationship to it, is Riemannian. By Riemannian, I mean, in first approximation, the then-revolutionary implications for mathematical physics, of Riemann's 1854 habilitation dissertation.[37] Each validated *intention,* otherwise known as a *universal physical principle,* functions as a "dimension" of a physical geometry from which all so-called Euclidean and related sets of arbitrary definitions, axioms, and postulates have been excluded.

Such a geometry of "n" such dimensions, differs from a kindred geometry of "n+1"dimensions, by an experimentally defined change in "curvature" in passing from one to the other. In physical economy, this is expressed as a change in the characteristic curvature of an economic action occurring within the system as a whole.

So, to illustrate that point in the relatively simplest terms, the introduction of large-scale application of electrical motive-power for individual machinery, replacing reliance on belt-driven-shaft systems used for entire factories, represented a qualitative change in the characteristics of the actions performed by the relevant operatives of machinery, even when the skills and techniques of the operatives were not changed in other respects.

In first approximation, a Riemannian geometry premised upon that habilitation dissertation, would be presumed to include only one class of universal physical principles. In the case at hand, the noösphere as a physical geometry, we have three distinct, but multiply-connected classes of principles: non-living, life, cognition. There is no inherent objection to treating this case as a Riemannian geometry in the conventional sense of Riemann's own intentions.

To the degree such a Riemannian geometry is embodied efficiently in the macroeconomic noösphere in which the members of a society exist and act, a change from a geometry of designation "n" to one of designation "n+1," signifies an increase of the net power of the average action taken by the individual existing and acting within the framework of a noösphere of that latter designation. In other words, an increase in the

37. Bernhard Riemann, *Über die Hypothesen, welche der Geometrie zu Grunde liegen*, ***Bernhard Riemanns gesammelte mathematische Werke,*** H. Weber, ed. (New York: Dover Publications reprint, 1953).

relative anti-entropy of the system, and also of the action of virtually every person within that society.

Some brief practical illustration of this principled conception is in order at this moment.

When we increase the availability of usable water, of sources of power of increased energy-flux density, of more rapid, more efficient transport of people and goods, we improve the available performance of each person in that society, even if no other change in their behavior is introduced. If we improve both sanitation and health-care, thus reducing the economic losses attributable to illness, impairments, and death, we increase the productivity of that society as a whole.

If, on the other hand, society's zeal to reduce the cost of goods to the lowest possible price, prompts it to cut back on both public expenditure for basic economic infrastructure, and also to eliminate regulation of this area to the effect of ensuring its development, then the average productivity of the labor-force will collapse, as a result of the lack of meeting the costs to be included in prices of all goods, and of developing and maintaining basic economic infrastructure.

3. Physical Economy as a Social Process

In the opening section of this report, on the subject of the Leibniz discovery of the calculus, I distinguished the notion of processes governed by a universal physical principle, as expressed in the form of *intention,* from that false, mechanical notion of "causality" associated with the work of empiricists such as Isaac Newton and his followers. The latter, mechanical notion, is the false, "Newtonian" notion of "causality" which is still widely accepted in the secondary and university mathematics classroom, today.

As I have also stressed there, in physical systems, we are confronted with two general classifications of intention. In the one case, we have the ordinary *intention* expressed in the non-mechanical determination of a result by a universal physical principle, such that expressed by a Solar orbit, or the consistent difference which may be manifest, between what are otherwise ostensibly identical chemical processes, when one is associated with a living process, and the other not. In the other case, we have the notion of *willful intention,* in the case of an original cognitive discovery, or its reenactment by a second person. It is the social implications of the second type of case, to which this report turns your attention now.

Empiricists, such as empiricist Galileo's mathematics pupil Thomas Hobbes, degraded society into a collection of so-to-speak kinematically interacting individual objects, like the particles of a gas theory. They assumed a set of fixed, built-in definitions, axioms, and postulates, as underlying the possible behavior of these particles. This is the system of John Locke, satanic Bernhard de Mandeville, David Hume, Adam Smith, and utilitarians such as the British Foreign Office's Jeremy Bentham. That is the underlying basis for their definition of what they term "human nature." Empiricist-turned-Aristotelean Immanuel Kant, insisted upon the same underlying notion. The modern logical positivists have carried that notion to extremes, beyond even that of which the depraved old Hobbes might be accused.[38]

Put the point in the following terms. If, as I have shown repeatedly, the distinction between the human being and the beasts, is the power to discover a valid universal physical principle, what is the corresponding, natural expression of human relations? If such a discovery typifies the human individual's characteristic potential, what are "human relations"?

It is the communication of those ideas corresponding to valid universal physical principles, from one mind to another, which enables the human species to behave as a human species, rather than a mere interacting collection of particle-like human individualities. It is the accumulation of the transmission of such discoveries of principle, over successive generations, which distinguishes the human species, as a species, from the beasts which Hobbes and his admirers aspired to become. Thus, how does this communication of such notions of principle occur? How therefore, does mankind develop as mankind?

The pivotal question, so posed, is: How does the transmission of the idea of the actual discovery of a

38. Kant makes clear, most emphatically so in his ***Critique of Judgment***, that the empiricist principle, which he defends from a quasi-Aristotelean standpoint, is a principle of pure irrationalism. He makes the point most explicitly in respect to aesthetics, in which he shows himself a pure romanticist, in the literally pagan-Roman sense of *vox populi.* The same is true of G.W.F. Hegel's fascistic (i.e., Napoleonic) theory of the state as revolution, as echoed by Carl Schmitt during the Twentieth Century. Similarly, the empiricist, positivist, and existentialist doctrines of "free trade" and "globalization" today, are based upon the pure irrationalism which is axiomatic in the arguments of Hobbes, Locke, Mandeville, Quesnay, Hume, Adam Smith, Bentham, et al. before Kant.

valid universal principle occur? I have covered this in so many previously published locations,[39] that I need only summarize the response, once again, here.

The discovery of an *idea,* a platonic form of idea, as the discovery of any valid universal physical principle typifies this, can not be communicated from one person to another in the medium of sense-perception as such, but only by replicating the act of discovery and validation. This is precisely what does occur in any system of education consistent with Classical humanist principles, such as those of Germany's exemplary, former Humboldt reforms.

The distinction of the human being from mere animals, such as the higher apes, is the ability of the human will to discover the quality of intention which I have associated here with what Kepler called *Mind* or *intention.* By adopting that intention, such as a valid universal physical principle, as our own intention, we are able to exert that idea as an efficient act of the individual human will, as a universal physical principle, upon the universe. The ability to discover, or recognize such a quality of *idea,* depends upon our creating that idea within our own cognitive processes. Typical is such transmission of such platonic forms of ideas from Plato's dialogues to the present-day reader, approximately 2,500 years later. It is sufficient that today's reader relive the drama of the Plato dialogues, thus to find himself, or herself, a living participant today in the dialogue as it occurred then.

To identify the method of such transmission, I describe the process once again, summarily, now.

Ideas come into existence as ontological paradoxes. That is to say, more precisely, ideas come into existence in response to what the conscious mind is able to represent to itself in the form of such a paradox. A well-stated such paradox, is represented in the form known as *Analysis Situs,* or, in Classical artistic composition, as *metaphor.* Given the equivalent of a standard theory, if the experience of an actual event or condition, requires that experience be stated by standard theory in ways which are either simply outside, or represent an impossible inconsistency within that standard theory, the juxtaposition of two or more mutually contradictory statements, each consistent with standard theory for describing events, represents an ontological paradox within the terms of that standard theory.

The paradox of the Mars orbit, as adduced and presented by Kepler, is an example of the way in which a statement in the form of *Analysis Situs* arises within the framework of reference proffered by a prevalent standard theory. If a validated *hypothesis* is discovered, which creates a new standard theory eliminating the ontological paradox, we have the discovery of a new valid universal physical principle.

Thus, we have the three-step method by which valid universal physical principles are made known, and communicated so from one person to another. First, there is the valid statement of an ontological paradox. Second, there is the formation of an *hypothesis,* as a proposed solution for that paradox, in the mind of the individual. Third, there is the demonstration which validates the hypothesis as a universal physical principle.

Although, no such idea can be perceived by sense-perception, the first and third steps so indicated, are rooted in sense-perception. The paradox is demonstrated to be a paradox by the standards of evidence applicable to sense-perception. The validation of the hypothesis is similarly experienced. By aid of those two reference-points, two persons can recognize that they have experienced the same formation of an hypothesis. That validated hypothesis is a Platonic *idea. All valid notions of universal physical principle, of all types, are Platonic ideas,* and, like the ideas of functions within the domain of atomic and nuclear microphysics, could not exist in any different form.

Thus, to enable a student (for example) today, to know what principle Kepler discovered, that student must replicate Kepler's experience in such ways as re-experiencing each step of Kepler's experience, as reported by him in ***New Astronomy*** and related relevant locations. This method, which is the direct opposite of today's customary textbook education or other transmission of mere "information," is the Socratic method, or, what is otherwise known as a Classical humanist mode of education.

In such ways, persons long dead transmit ideas to us from the past, as if they were alive and speaking directly to us today. Similarly, ideas are transmitted in a cognitive mode among contemporaries, sometimes over great distances. So, we speak to the future.

However, we must go a step further at this juncture. We do not know ideas of that sort in isolation from one another. Knowledge is not only the accumulation of in-

39. LaRouche, op. cit.

dividual such ideas; knowledge is a process of integrating an ongoing accumulation of such ideas, into the kind of world-outlook which Riemann's habilitation dissertation implies.

Ideas are produced by the influence of previously extant ideas, in enabling us to define and resolve newly considered paradoxes of an ontological quality. By this process of integrating assimilated, discovered, and rediscovered ideas of universal physical principle, we develop a quality of mind which may be regarded as "hypothesizing in general," as a way of thinking about the universe.[40] So, the process of discovering individual new universal physical principles, and integrating such discoveries of principle with our knowledge of principle in general, becomes a self-developing philosophical world-outlook.

Although two persons who have shared the same experience of an idea, may recognize the commonality of their cognitive experience of the idea's generation, that does not suffice to enable them to recognize that idea as *a distinct idea.* Ideas become distinct for the conscious mind as they are integrated in a process whose implied goal is an unfolding process of hypothesizing-in-general, a process of the form implied by Riemann's habilitation dissertation. It is only as the mind locates each idea within a domain of ideas, and locates their relationship to one another, that the act of cognitive discovery of an individual universal physical principle assumes the quality of a *distinct idea.*

It should be emphasized, as a point of clarification, that most universal principles of physical science are known to us today by the name of the putative discoverer. The student who has relived the original discoverer's experience, has thus reenacted the cognitive generation of the relevant hypothesis, as if that student had been the original discoverer. The student may, thus, reenact the experimental validation of that hypothesis, and thus rightly claim to know, rather than have merely *learned* (like a trained parrot, or a mere dupe of contemporary "information theory") the principle involved.

These features of a moment of Classical humanist education in acquiring knowledge of scientific principles, become generalized through the student's repeating the same kind of reenactment for other discoveries. The social relations among that panoply of discoverers, and the student's personal relationship to them and their work, through cognition (e.g., Classical humanist methods of education), define a multiply-connected manifold of distinct ideas in the cultivated mind of the well-educated graduate.

The essential fallacy of the Hobbesian view of society as a collection of "interacting particles," should be obvious from the standpoint I have just summarized.

Since the progress of the human condition is the distinction of the existence of the human species, the natural relations within society are cognitive relations of the type just illustrated, in the foregoing discussion of transmission of those cognitive qualities of ideas, which correspond to elements of an integrated plenum of valid universal physical principles. It is such ideas, which are transmitted as a living form of idea over even thousands of intervening years, which express the characteristic of the natural form of human relations. It is this quality of relationship, not that of kinematically interacting Hobbesian particles, which defines the reality which the term *society* ought to connote.

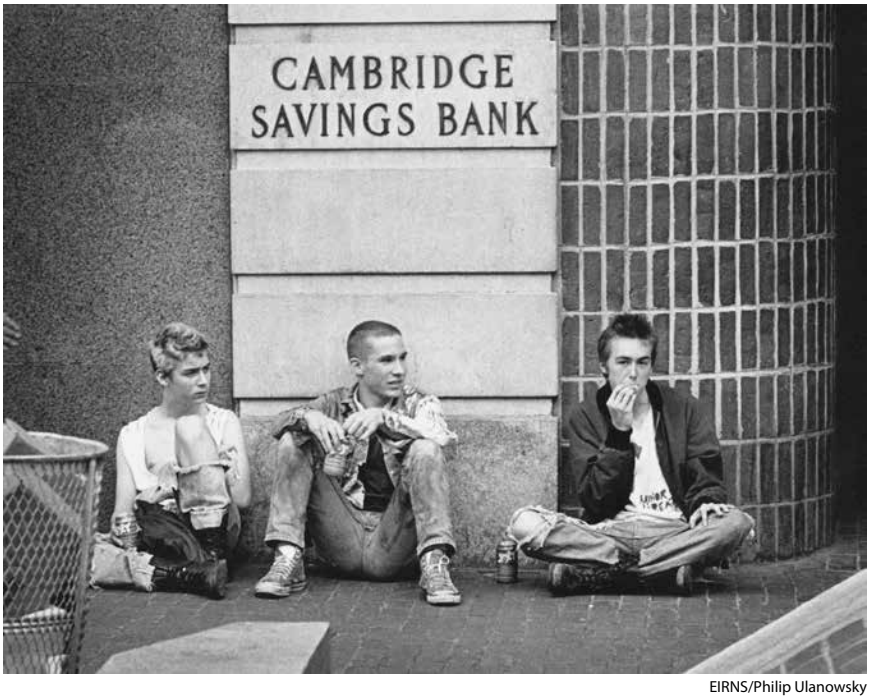
Modern Suburban Savages

The difficulty which the foregoing remarks pose for most people today, should not be considered evidence that what I have just described suffers a fault of abstruseness. Rather, the resistance to my argument reflects the fact, that the existing forms of practice in today's prevalent culture, work to the effort of aborting the natural cognitive powers of the human individual in today's society. To state that point more vividly, but without exaggeration, we should reference the more typical U.S. suburbanite from the upper twenty percentile of the nation's family-income brackets. If not physically, then emotionally and cognitively, an increasing fraction of this stratum today is virtually "brain-damaged," hopefully, not beyond remedy.

Generically, the problem is an old one in type. The causes fall under two headings.

First, there is the need for a certain natural fostering of the cognitive and emotional development of the new individual, through the successive phases of infancy, childhood, adolescence, and young adulthood. This represents a period of approximately a quarter-century, from birth, to a mid-twenties level of potential young-adult maturity. An inadequate, or misdirected approach to the development of the young person during those successive phases, such as an abandonment of principles of Classical humanist education, may cause crippling

40. I.e., in Plato, higher hypothesis.



EIRNS/Philip Ulanowsky

Certain oligarchies have decided not to educate young people "to imagine themselves above the social status to which we intend to degrade them. Promise them everything, but fill them with gin—or marijuana, or cocaine, or non-stop, dumbed-down forms of popular entertainment."

damage to that personality, presenting us the infantile child or adolescent, the childish, or even dangerously, emotionally infantile adolescent or adult, and so on.

Second, there is the factor of the willful damage to the cognitive powers of the maturing individual, imposed by certain oligarchies, and families, as a way of dumbing-down those more numerous members of society, who are intended, by current policy of practice, to be herded, by the methods of George Orwell's "Big Brother," into the status of virtual human cattle. (E.g., "Let us not educate young people above the level of the employment with which we destine them to be occupied." "Let us not educate them to imagine themselves above the social status to which we intend to degrade them. Promise them everything, but fill them with gin—or marijuana, or cocaine, or non-stop, dumbed-down forms of popular entertainment.")

The folly of mankind in general, is chiefly the result of a combination of those two methods, of negligence or willful malice, for aborting the redeemable goodness which exists as innate potential within each newborn individual person.

The orchestration of public opinion, as by the Webbs and others of the British Fabian Society, and by the American Fabian Walter Lippmann's prescription, typify the mechanisms which have been employed in the effort to degrade the U.S.'s so-called "middle class" and others, into a condition which, in effect, degrades them politically, intellectually, into the social status of virtual human cattle. This tactic of "dumbing down" the mass of the human herd, as by aid of today's popular mass-culture, is sometimes praised, by malicious ideologues, as a popular virtue of "other-directedness." One should remember those human cattle, called the citizens of Rome, marching into their seats within the arena, where they, the paragons of *vox populi,* the mass of Roman predators,[41] would drool with pleasure at the sight of lions killing and eating Christians.

That, essentially, was the social doctrine of Francis Bacon, Hobbes, John Locke, Bernard de Mandeville, François Quesnay, David Hume, Adam Smith, Jeremy Bentham, et al. That was the aesthetics of Kant, the doctrine of law of Hegel's confederate Savigny, the principle of the Nazi Nuremberg rally, of the recent motion-picture spectacular "Gladiator," and the Romantic doctrine of law of the Twentieth-Century neo-Hegelian fanatic Carl Schmitt.

The functional significance of what I have just underlined, is shown by comparing a Classical-humanist school room, in which the pupils relive the cognitive experience of original discoveries of valid principle, with the type of classroom in which students rehearse the expression of those opinions which they are instructed to regard as authoritative opinion. In the latter case, the brutish sort of teacher or parent, will warn the student, "When you have graduated from college, then

41. As I have emphasized, repeatedly, in earlier locations, the Latin term *popular* has the intentional connotation of "the predators," the class of Roman subjects whose chief function was to conquer, loot, or even exterminate other cultures, especially superior ones such as Hellenistic culture. The first modern fascist, the Consul and Emperor Napoleon Bonaparte, typifies the conscious use of the pagan Roman tradition in law and other institutions to create the kind of Caesarian society of the predators, which Napoleon established as the model to be imitated by Napoleon III, Mussolini, Hitler, et al.

you should think for yourself; in the meantime, in this classroom, you will learn to think and speak as I tell you." Or, a surly parent menacing his child, "When you grow up, you can think for yourself; in the meantime, you will believe what I tell you to believe!" Not surprisingly, the usual victim of such rearing reaches the age of twenty-five, or so, having successfully lost the greater part of his, or her innate potential to actually think cognitively, creatively.[42]

Thus, wherever the principle of Classical humanist education does not prevail, the student is conditioned to react in ways which conform to generally accepted classroom, or similar standards of social prejudice and teaching.

The case of that fraudulent description of Kepler's discoveries, associated with the admirers of Newton, is typical. Anyone who had actually worked through the documentation of those discoveries, step by step, could not be taken in. Why, then, are so many otherwise more or less distinguished scientists taken in by that Newton hoax? Simply, because it is the generally accepted classroom mathematical outlook, toward which they make fearful obeisance, for the sake of their careers and reputations among their peers. That typifies the way in which the brainwashing works.

That perversion of the all too typical contemporary classroom, is repeated, in most family households, in places of employment, and in the domain of general expression of what passes for opinion. The majority of today's under-fifty-five university graduates, typify the suburbanite fads of substituting perceived authoritative opinion, for thinking. The tyranny of popular opinion, as the lemming-like financial suicide of so many who have plunged into the market, typifies this syndrome.

This problem has been aggravated by the sympathy afforded to such degenerates as the late Theodor Adorno and Hannah Arendt. This exemplary pair of existentialist, anti-civilization fanatics, have been used to popularize their cult of hatred against persons they target as representing "the authoritarian personality."[43] Arendt, for example, premised much of her claim to academic achievement, on her mimicking of both her Nazi friend, Jean-Paul Sartre's Martin Heidegger, and Karl Jaspers, in promoting what was presently explicitly as a pro-Kant denial of the existence of truth. The result is equivalent to the kind of "Big Brother" syndrome of mass lunacy portrayed by George Orwell's ***1984.*** Those who follow such creatures as Adorno and Arendt in their abhorrence of truth, will therefore function in their relations toward other persons as do all true existentialists, as Friedrich Nietzsche did, like hungry rats in a crowded cage.

In the healthy development of the young individual, it is the fostering of the development of the cognitive potential of the infant, child, and adolescent, at every level, which is of paramount importance to family, schools, and society in general. The premium is on development of the child's and adolescent's capacity to discover truthfulness, to develop a sense of truthfulness as a inward source of personal identity and authority in society.

The root from which depraved existentialists such as Adorno, Heidegger, Arendt, Sartre, Frantz Fanon, et al., acquired their tradition, was, most immediately the legacy of pagan Rome, or, what is known in modern European history and culture as *Romanticism.* The denial of truth, in favor of caprices of public opinion, as the mob in the Colosseum typifies this, is characteristic of what is known to history as the oligarchical model, the model adopted by European feudalism, promoted by imperial Venice, and continued by the British monarchy to the present day.

The ugly fact about pre-modern forms of society, is that they were, at least predominantly, oligarchical models, in which the relative few, as a ruling caste or oligarchy, treated the majority of humanity as simply wild prey to be hunted, or as virtual human cattle. This is the predominant cultural feature of all known society prior to Europe's Fifteenth-Century Renaissance, even societies which contributed from within them, some of the most precious contributions humanity today enjoys from earlier times. Do not look for noble savages and their cultures in so-called primitive societies; none are evident, except in the childish fantasies of the credulous. The characteristic faults, moral and otherwise, of present-day, globally extended European culture, are the rotten fruit bequeathed to modern culture by ancient and medieval cultures, all of which were predominantly, viciously examples of the oligarchical model.

The moral and intellectual decadence, on these ac-

42. Psychiatrist Dr. Lawrence S. Kubie studied what he termed "the neurotic distortion of the creative process," and applied that study to the specific case of the pattern of cognitive sterility erupting in formerly gifted students at a point proximate to gaining a terminal degree. Hence, the often ironical implications of the academic term, "terminal degree." Lawrence S. Kubie, "The Fostering of Scientific Creativity," ***Daedalus***, Spring 1962.

43. T.W. Adorno et al., ***The Authoritarian Personality*** (New York: Harper, 1950).

counts, of recent generations of young American victims of these trends, must take into account the moral effects of pattern-shifts in the quality of both employment, and of education for employment, especially during the recent thirty-five years.

During the immediate post-war period, there erupted a tendency for disdain for "blue collar" careers, which was expressed in the coordinated emergence of post-war suburbia and of related fads described, during the 1950s, as "White Collar" and "The Organization Man." Even in the relatively healthy side of this trend, there was a shift away from the identity of the scientist, to that of the engineer, and a related moral degeneration in the quality of engineering training, expressed by hostility to Classical artistic and related studies and concerns.

These and related trends in the national culture transmitted to the post-war generations, represented a shift away from earlier emphasis on the "rugged individual," whose sense of identity in acquiring knowledge and doing work, was one's own "inner-directed" development as a citizen, implicitly equal in moral sense of social status, even to those who held greater relative authority in political and economic life, and so on. The shifts into what I have emphasized as the new-suburbia trends in decadence of the post-war generations experience, represented a political and moral down-shift in the sense of the personal identity, from that of often poorly paid, but proud citizen, to the person whose crippled,"other-directed" sense of identity, is that of the menial lackey, even lackeys, such as our present-day Talleyrands and Fouches, who may have recently risen, if only temporarily, to levels of incomes in the order of millions of dollars.

"Who you are," became less significant, and what your relative status as a lackey might be, took over the world-outlook of the younger generations, more and more, especially during the recent thirty-five years.

The Cost of Mediocrity

All viable human cultures are characterized by growing populations. Only catastrophes, either natural or man-made, produce any different result. Whenever the collapse of life-expectancies or population-growth is caused by the society itself, rather than external interventions, the determining factor is a triumph of a type of mediocrity akin to that which has been spreading, like a cancer, in Europe and the Americas during the recent thirty-odd years.

The typical cause for all the catastrophes which a culture has brought upon itself, is the mass phenomenon known to Europe, since the literature of ancient Greece, as *the oligarchical model.* The recent thirty-five years' increasingly widespread and virulent cultural degeneration of the U.S.A. and European populations, typifies the way in which a culture may drag itself to the brink of even threatened extinction. The referenced example of what has happened to the U.S. suburbanite "Baby Boomer" stratum and its offspring, contains some of the most relevant evidence to this effect.

What we know of principles underlying such patterns, is learned chiefly from study of the evidence of the emergence of historical societies in the aftermath of the last great, cyclical melting of the glaciation of great portions of the Northern Hemisphere, a glaciation now approaching, in its customary timely way, once again, unless our development of science enables us to prevent that calamitous effect. What we know that is relevant to the matter before us here, respecting the emergence of mankind from the post-glacial period to date, is fairly summarized as follows.

The highest levels of development of those cultures known to us, present us with calendars and other products of relatively great transoceanic maritime cultures which developed during the millenia preceding the melting of the last great glaciation of the Northern Hemisphere. The characteristics of the relevant, most developed such calendars, are those which contain crucially significant characteristics of transoceanic maritime cultures. We know that the emergence of post-glaciation civilization, and of the cultures which produced it, were concentrated either in coastal areas, or through penetration inland along the course of principal large river-systems.

Typical is the transoceanic culture which dominated much of the development of the Mediterranean littoral, including its great influence on Egypt, and, the relatively inferior culture which developed in Mesopotamia, through the colonization of southern Mesopotamia by the maritime culture of that Dravidian-speaking set of colonizers, the "black-headed people" who founded Sumer.

As the case of the Egypt of the period of the building of the great pyramids attests, some of these cultures attained a high level of technological achievement, and yet they fell, repeatedly, into what appears to have been cyclical collapses into relative barbarism and collapse of population-levels, even on "dark age" scales.

This pattern is echoed in richer detail of its records

in more recent historical periods of ancient and medieval societies. Most relevant is the fact, the net effect of both Latin Rome's and Byzantium's culture, was a pattern of catastrophic decline in the level of Mediterranean culture, relative to the higher level of culture represented by Classical Greece and its influence on Hellenistic society prior to the crushing of the Greek states of southern Italy.

The general pattern of decay of Latin Rome and Byzantium alike, was reversed by the coincidence of the Abassid Caliphate in the East and Charlemagne in the West, and by the expression of the Augustinian tradition in the great cathedral-builders associated with Chartres, or the developments under Barbarossa, Frederick II, and Alfonso Sabio; but, the legacy of Rome, Byzantium, and the rising imperial maritime power of Venice, imposed recurring disasters, even dark ages, for the culture of medieval Europe and the adjoining Mediterranean littoral.

Even after the founding of the modern sovereign form of nation-state, during the course of the Fifteenth-Century Renaissance, the contest between, on the one side, the oligarchical model, typified today by the British monarchy and its influence over Anglo-American power, and, on the opposing side, the tradition of the American Revolution's model of sovereign nation-state republic, has been the characteristic struggle between the relics of the oligarchical and republican models throughout the recent five centuries.

All of the great tribulations of modern globally extended European civilization, are to be attributed chiefly to the role of the oligarchical model, and the impact of this degeneration within Europe upon other regions of the planet.

Throughout all of the known prehistory and history so just referenced above, the crucially determining feature of society's existence, has been the impact of the persistence of the oligarchical model. By "oligarchical model," we should understand, an arrangement, under which a relatively small portion of mankind, called an oligarchy or a caste, rules over a majority of mankind which is degraded to the condition of wild and hunted, or herded, bred, and culled, always as virtual human cattle. The ruling oligarchy exerts its power through the instruments of associated armed and other lackeys.

Only playful children would track deer, or herd cattle, out of zeal for enjoying conversation with either. Cattle who are more intelligent, saner than their peers, are said by those holding a shareholder interest in cattle, to be too smart for their own good.

Typical of the point, are those provision of the Roman imperial Code of Diocletian, which is fairly described in modern terms as a malthusian population doctrine. Thus, just as the collapse of Latin Rome was chiefly the fruit of slavery's effect on the population, and its fertility as a whole, so Byzantium, which had survived for a time because of the superiority of its demographic characteristics and Greek culture, died for the same reasons of self-depopulation built into such customs as the Code of Diocletian.

In both examples, the combination of population policies like those of modern malthusians, and the dumbing down of the majority retained as virtual human cattle, as has been done by U.S. mass-cultural innovations of the recent thirty-five years, resulted in a lowering of the *potential* demographic and physical economic levels of the population per capita and per square kilometer.

Similarly, it was the anti-nation-state, globalization and usury policies of the Venetian maritime power and its Norman allies which, over a period from shortly after the Fourth Crusade to a hundred years later, plunged Europe into the great economic, cultural, and demographic decline, culminating in the New Dark Age of the Fourteenth Century.

The significance of the panoramic view I have just described, becomes clearer, when we take into account some of the great known contributions to knowledge and technology supplied from within some of the cultures otherwise self-doomed to collapse. That irony points up the fact, that even a culture which produces greatness from within part of itself, may be also self-doomed, that because of its suppression of the cognitive potentials and sense of political identity of the mass of its population. Thus, the recent two generations trends in U.S. policies of public and higher education, typify the contributing causes for both the present global economic collapse in progress and the recently ongoing moral, and intellectual degeneration of the population and its leading political parties and mass media.

The effect of the oligarchical model, in all its manifestations, including the post-World War II "suburbanization" of the U.S. culture, to which I have referred above, is to dehumanize the great majority of the population, actions which suppress the cognitive development of the population at large, and, thus, depress the ability of the economy to continue to meet the requirements of maintaining that culture.

In the typical of past cultures, there is a repression of that cognitive cultural development upon which the maintenance of the potential relative population-density of the culture depends. Thus, even though some parts of the culture's intelligentsia may make fundamental contributions to the perpetuation and improvement of available knowledge, the lack of participation in the acquisition and practice of knowledge by a "zero-growth" form of social culture, brings the continued existence of that culture into conflict with its own self-imposed ecological boundaries.

Thus, to maintain a submissive majority of the population, the cognitive development of that majority must be forcefully suppressed, as the Code of Diocletian specifies relevant measures to this effect, and as feudalism continued that Code's practice in such forms as the systems of serfdom and guilds. It was under such leading policies of Byzantium, Venice, and "globalizing" tendencies within feudalism generally, that the natural impulses toward the emergence of modern nation-states were suppressed, as this is typified by the brutish wars against the Holy Roman Empire's Frederick II and the efforts to eradicate the legacy of Alfonso Sabio in Spain, and the brutish conduct of Richard II, the brutish campaign of the Normans against France's martyred Jeanne d'Arc, and, later, the typically Norman evil of Richard III, in England.

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Jeanne d'Arc walked in the pathway of Christ, losing her life, not through a tragic flaw, but for a sublime higher purpose.

The great net advances in the conditions of life of the human population on this planet, effected within modern European civilization, over the course of the interval circa 1400-1901, have been the result of the impulse supplied by the introduction of the modern sovereign form of nation-state, under France's Louis XI and his follower England's Henry VII. The principled source of this improvement is the introduction of a revolutionary new conception of statecraft, called the principle of the general welfare. Every evil experienced by, or caused by globally extended modern European civilization since, has been caused by the opponents of that constitutional principle.

Notably, the direct forerunners of that great Fifteenth-Century revolution, which is called the Renaissance, were the great educators, such as Abelard of Paris, Dante Alighieri, the Augustinian teaching order, certain Franciscans working to similar effects, the work of Dante's great follower Petrarch, and the exemplary great teaching order known as the Brothers of the Common Life. The characteristic of that great work, as Cardinal Nicholas of Cusa typifies the extension of this into the form of the Fifteenth-Century Renaissance, was the adolescent pupils' reliving the cognitive experience reflected, chiefly, in the great Classical Greek legacy, from which all of the great achievements of European civilization as such have fallen to mankind since. The role of Cusa in founding modern experimental physical science, with his ***De Docta Ignorantia,*** and the role of his self-designated followers, such as Luca Pacioli, Leonardo da Vinci, England's Gilbert, and Kepler, typifies the historical process.

Admittedly, since that time of the great Fifteenth-Century Renaissance, globally extended modern European civilization, has been a battlefield between those forces of the modern sovereign nation-state, and its general-welfare principle, and the oligarchical model most significantly typified, over these centuries, first, by imperial maritime power of financier-oligarchical Venice, and later the transfer of that role of Venice to the global, financier-oligarchical maritime power of Venice's chosen heirs, successively the oligarchs of Portugal, Spain, the Netherlands, and London.

However, that division within modern European civilization only defines the issue of principle the more clearly. The issue is the conflict between the principle of the sovereign nation-state, the principle of

the general welfare, and, its opponent, the infinitely murderous, financier-oligarchical, imperial interest expressed by the Anglo-American financier tyranny of today.

Thus, in history of the U.S.A., all of the important political struggles, including the internal struggle against the slave-system, has been a reflection of this conflict between the principle of the sovereign nation-state and the London-centered international financier oligarchy. The central expression of the issue of principle, has been that established by the Fifteenth-Century revolutionary change in political institutions, the establishment of *a sovereign nation-state whose fundamental law is that the moral authority of government is conditional upon its efficient promotion of the general welfare of all of the people and their posterity.*

The issue of Classical education, as education bears upon political and economic practice, is the central expression of the principle of the general welfare. Do we educate our young as cognitive beings, or do we develop them as virtually human cattle? Do we develop, or suppress the development of the cognitive potential within them, which sets human beings apart from lower forms of life?

The perpetual consequence of the kinds of policies of education, culture, and economic practice, of the U.S. during the recent thirty-five years trend, has been to degrade the cultivation and expression of the cognitive potential of our young, to a state corresponding to a self-doomed culture of virtual human cattle. Such has been the cost of the rampant mediocrity expressed in the economic and financial trends leading into the present systemic crisis of the system as a whole.

The pattern of the recent thirty-five years, since approximately the time of Richard Nixon's 1966 launching of his neo-Confederacy "Southern Strategy" campaign for President, has been the systematic destruction of the productive, educational, and infrastructural basis for a healthy society. Not only have the conditions of life of those in the lower eighty percentile of. family-income brackets been looted; the means for providing such employment, income, and standards of the general welfare, have been ripped up, by measures typified by the Nixon Administration's 1971-1973 campaign to nullify the Hill-Burton health-care law, and replace it with the predatory HMO policy.

Friedrich von Hayek's followers have thus achieved, in correspondingly great degree, the true, never really secret ambition of that co-founder of the Mont Pelerin Society, the return of globally extended European civilization, from civilization to serfdom. The fact that so many fools exist, in addition to Senator Phil Gramm, who admire Britain's Margaret Thatcher, who have embraced Mont Pelerin's neo-feudalist philosophy, is to be considered as one of the costs of the widespread mediocrity. Only mediocre, or very cruel minds could be taken in by von Hayek's perverse use of the term "freedom."

Thus, the U.S., among other modern nation-states of European civilization, has condemned itself to the same kind of oligarchical cycles which are typified by the rise and inevitable doom of the relatively powerful empires of the past. We are being destroyed, by ourselves, because we have allowed our children to adopt the intention that we be destroyed. That intention, is the cultural world-outlook which has prevailed in the U.S., increasingly, during the recent thirty-five years. That intention is most clearly expressed by the way in which we educate, entertain, and employ the future and present members of the labor-force and the members of their households.

The Cost of Classical Culture

I have thus indicated the negative features of the process. I conclude this section of the report with a summary of the positive factors to be considered.

Physical economy, as I have addressed that here thus far, is essentially the development of the power of the individual human mind to act in ways which increase mankind's power to exist in the universe. This power is found in the interdependency among chiefly several leading, contributing elements. I list each of those on which attention is concentrated here.

First, there is the quality on which I have already focussed here, the role of the cognitive powers of mind, in generating and communicating validated universal principles as solutions for otherwise insoluble ontological paradoxes of man's relationship to the "physical universe" so-called. So far, in this report, I have emphasized the discovery of those universal physical principles which bear on the per-capita relations of man to the physical universe.

Second, there is the first aspect of the social side of this power of the individual in the universe, the communication of not simply single valid principles, but a manifold of multiply-connected such principles, as Riemann's cited dissertation describes such a manifold: the ability of the individual to impart to and invoke in

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"The issue of Classical education, as education bears upon political and economic practice, is the central expression of the principle of the general welfare." Here: David Heifetz of the Fairfax (Virginia) Symphony Orchestra rehearses with students.

other persons a specific sense of knowledge of distinct ideas.

Third, there is the class of universal principles which pertains to the processes of cognitive interactions among groups of members of society, and within society generally. In this case, we are studying social processes in the same general way we apply cognitive powers to discovering and conquering the ontological paradoxes encountered in our experience of the universe in which mankind exists. A competent study of economics, as from the standpoint of the science of physical economy, illustrates the existence of the same structure of multiply-connected principles, in the domain of social processes, as in man's conception of non-living and living processes.

Fourthly, there is the role of cognitive forms of motivation, as expressed by the sense of cognitive "fun" to which I have referred earlier. This is a quality of passion, as it spills over from the playfulness of the original discovery in science, a cognitive playfulness which is associated most closely with great works of Classical modes of artistic compositions, as in both plastic and non-plastic art-forms. It is this latter quality of passion which motivates us to dedicate ourselves, sometimes with overriding compulsion, to effects as much as a generation or more in the future. It is, therefore, this aspect of the matter which is of special concern to us in the subsuming topic, long-range policy-planning, of this present report.

Although this latter quality of motivation is as characteristic of so-called physical scientific discovery as of great experiences in Classical art, it is in the greatest compositions and performances of Classical art that the significance of the passion is most immediately evident to explicitly social qualities of individual experience. The most relevant illustration of this point, is the Classical stage, as typified for our present purposes by the comparison of the great Classical Greek tragedies with the modern cases of Shakespeare and Friedrich Schiller. What is notable on that account, is the fact that the subject of that drama is politics, as situated historically. This latter connection serves us here, to emphasize both the importance of Classical art for fostering a rational basis for shaping the historical world-outlook of the mind of the statesman and citizen. Thus, as Classical tragedy illustrates most plainly, statecraft, and history, are situated under the reign of principles of Classical forms of artistic composition.

In several locations, within the present report as a whole, and in published writings earlier, I have emphasized the importance of the negative side of Classical drama, as typified by tragedy, and the positive complement to tragedy, which Schiller defined as the *sublime.* There is a point to be made on that account, at this immediate juncture.

Classical tragedy performs the indispensable function for society, of confronting society with its own propensity for bringing disaster upon itself. Through the great works of the Classical stage, tragedy shows us how entire cultures, acting under the influence of their leading institutions, such as a leading political figure, bring the entire society to an avoidable ruin, like the avoidable ruin under discussion in this present report. The positive side of tragedy, is that in a great performance of a well-composed work, the audience becomes

aware of the fact that a willful alternative to doom existed in the case presented; the audience senses, thus, that if such a folly were to be encountered in some coming situation, that insight into the alternative to folly would provide society an escape from the type of calamity enacted on stage.

In the sublime alternative to tragedy as such, as in the case of France's Jeanne d'Arc, the cruel fate of the principal figure is not a subject of failure, but a triumph over evil. Without Jeanne's courageous commitment, to the end, France and the modern nation-state would not have come into actual existence, as it did because she had lived and acted as she had done.

This matter of the sublime, is no mere artistic elegance; it is an issue which confronts every sane person. We knew that we each were born, and shall die, sooner or later. Thus, it would be a tragedy indeed, if ours were such a society of fools as to think that individual self-interest lies in the kinds of hedonistic considerations listed by Adam Smith, as he argues for this in the passage I cited from his ***The Theory of the Moral Sentiments.*** Since we know that we all die, our interest in life is what we take out of it: For what should we spend that coin we call individual life, knowing that the meaning of our having existed will be nothing but what our living has given to the future? The rule of the wise person, is: *You have but one mortal life, spend it well; what you purchase will be the meaning of your existence for future mankind, throughout all eternity.* Only a person who lives so, is not intrinsically corrupt.

There lies the sublime, as the case of Jeanne d'Arc illustrates the point, both the Jeanne of history, and the Jeanne d'Arc as Schiller presents her on the stage. That is the passion which motivates all great Classical compositions, such as that of Johann Sebastian Bach and his anti-Romanticist followers, such as Mozart, Beethoven, Schubert, Mendelssohn, Schumann, and Brahms. It is so, as Brahms sets ***I Corinthians*** 13 to song. The passion so prompted, is that which Plato, and also the Apostle Paul, define as *agapē.*

This was the subject of an important essay, written by a great Massachusetts figure who was also a mentor of young Benjamin Franklin, Cotton Mather. Mather's injunction of the motive "to do good," expresses that passion which motivates the incorruptible ("inner directed") part of the scientific discoverer, the great artist, and the great statesman.

Economics as Classical Art

One of the greatest frauds commonly practiced today is the myth of objectivity. The myth is, that the hallmark of honesty is disinterest in the issue under consideration, and that lack of passion bespeaks a disinterested assessment of the impassioned issue at hand. "Sorry to kill you, fella'. Nothing personal; just doing my job," might the judge have said, when he condemned an entire section of the population to an increased morbidity rate, purely out of dispassionate regard for "shareholder interest." The only truly disinterested man is the "hanging" judge who, in matters of truth and justice, expresses the quality of disinterest otherwise shown by the female praying mantis, eating the head of the mate who is copulating with her.

It is the unfortunate consequences of an action, including actions of negligence, which deserved the passion which might have averted the calamity. Sometimes, it is indispensable not to avoid naming names; sometimes, on important issues, such as the career of Adolf Hitler, it is urgent to be very, very personal. In some cases, such as the genocide actually being willfully practiced throughout most of Africa, by known Anglo-American interests, such as those associated with London's Lynda Chalker, and formerly condoned by Secretary of State Madeleine Albright, the lack of passion is, in itself, an unspeakable crime.

Enough of tragedy; return to the sublime.

Take as an example, President Franklin Roosevelt's injunction respecting the awfulness of the situation produced by former President Coolidge's creation, the 1929-1933 Great Depression. So, today, it must be said: *We have nothing to fear as much as fear itself.*

The remedies exist, but they each and all depend upon predicating present action on confidence in a longer-term perspective. The use of the power of the sovereign nation-state to create national credit, is the indispensable means for organizing a process of general recovery from a catastrophe such as that of 1929-33, or the worse situation erupting today. This course of action depends upon mobilizing a passion in support of feasible programs which will not be self-sustaining in less than the medium to long term. On the basis of confidence in the prospect that such programs will become self-sustaining in their effects, government issues regulated credit to tide the nation and its people over, during the process of building up to a self-sustaining economic recovery.

The mustering of a combination of public and private credit for such medium- to long-term undertakings, requires the corresponding arousal of a passion for the future in a large part of the population, at least. A people will put up with much for quite some time, if three conditions are met. First, that the relative sacrifice is necessary; second, that the goal is credible; and, third, that we shall manage to get along decently, with gradual but significant improvement, in the meantime. Precisely that is required for the situation confronting the U.S. and its people, among others, today.

The great danger today, comes from the corrosive cultural influence of what is sometimes called "the now generation." This is the silly generation which tolerated the obscene delusion, that universities should not compel students to study the works of "dead white European males." The characteristics of the victims of such a mis-education, is that they are hostile to cognitive activity, and have no passion for the realities of either the past or the future. They are not future-oriented. In that sense and degree, they have no future, and the society which adopts their opinion will have no future, either.

This point is best illustrated by contrasting the quality of passion evoked by the qualified performance of a great tragedy, such as that of Shakespeare or Schiller, and the emotional response of the current rash of entertainments which substitute mere succession of sensual effects for a process of development. Even the pedestrian sorts of popular detective-story fiction from the 1930s through 1950s, contrast sharply with the gore-splattered-against-the-windshield sorts of TV crime-story productions today. To describe a film such as ***Gladiator*** as having some "redeeming" quality of plot, insults the imagination of anyone operating above the zombie-like level of an Nintendo-game addict.

It is only through those forms of communication which are best typified by Classical artistic composition, and study of statecraft and history in the same mode, that we muster the ability of a population and its leaders to respond with passion to the cause of bringing the future into being.

It is the great projects of nation-building and space exploration, which will motivate today's imperilled populations into reaching to the future as a way of rising from the otherwise insufferable conditions which grip the present.

4. The Sovereign Nation-State Economy

For anyone who is not ignorant of that revolutionary improvement in the demographic characteristics of human existence which was brought about through the Fifteenth-Century European creation of the modern nation-state, European civilization over the course of the recent six centuries has brought forth a degree of improvement in the human condition without precedent in all human existence before that time [**Figure 9**]. The causes for this success are encapsulated in the creation of a revolutionary form of state, one without actual precedent in any part of all human existence beforehand: the sovereign form of nation-state brought into being in the context defined by the great ecumenical Council of Florence, a Council whose leading organizers included the founder of modern experimental physical science, the later Cardinal, Nicholas of Cusa.[44]

The revolution which produced this new institution, the sovereign nation-state, is the point of origin of all modern economy.

What Cusa proposed in his ***Concordantia Catholica,*** echoing significantly the ***De Monarchia*** of Dante Alighieri,[45] can be fairly summarized by stating, that what he proposed was not a sovereign nation-state as such, but rather a system of sovereign nation-states, a system of the kind referenced later by then-U.S. Secretary of State John Quincy Adams, as a "community of principle." Cusa's grasp of the significance of the same notion of intention later echoed by his follower, Kepler, is of crucial significance for understanding the practical considerations of principle involved.

From the standpoint of the considerations identified in this report thus far, the notion of promoting the general welfare, subsumes the notions of maintaining and improving an existing level of *anti-entropic potential* for the present and future population as a whole, and also the corresponding development of the basic eco-

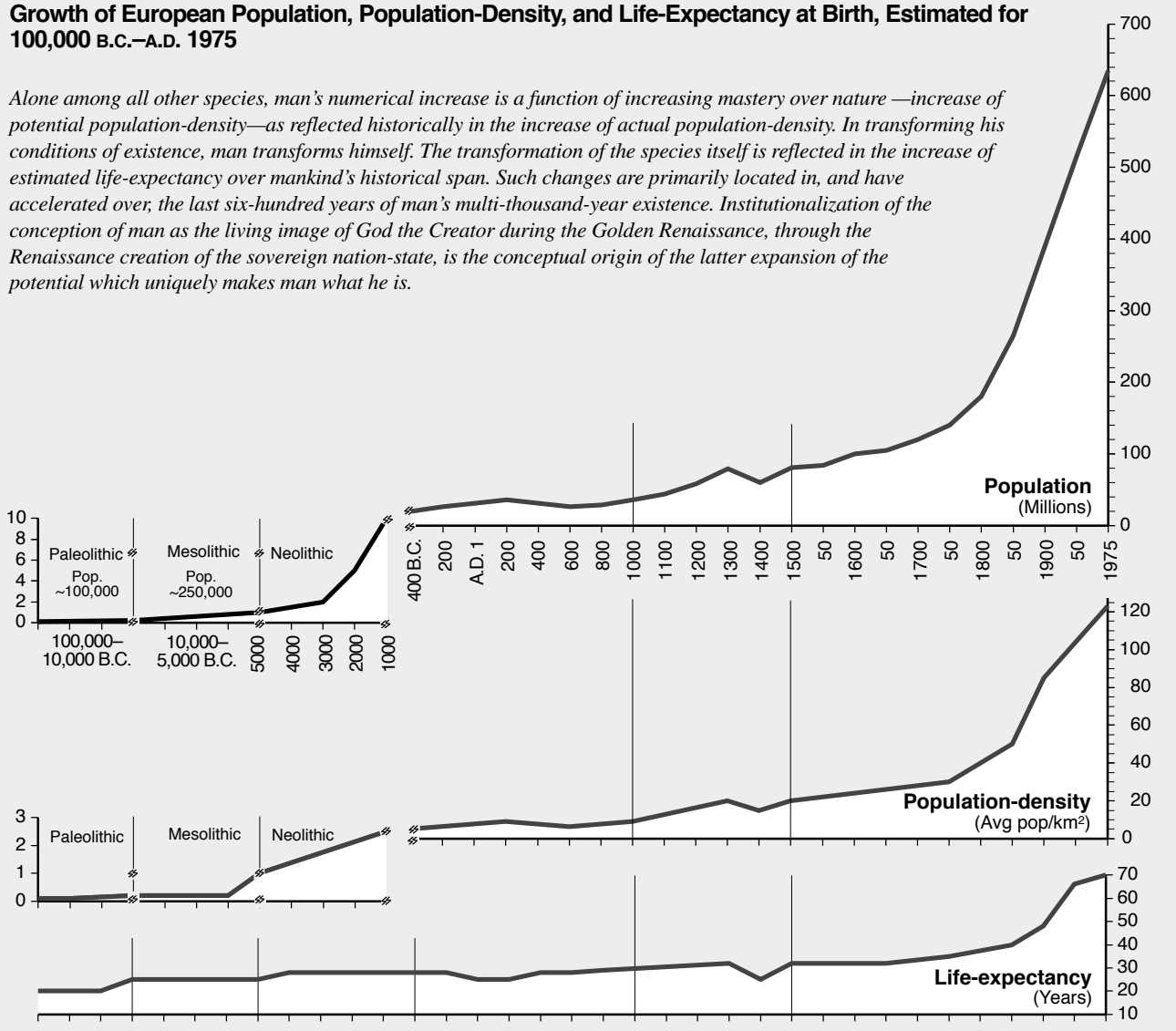
44. For another view of the uniqueness of the Fifteenth-century founding of the modern sovereign nation-state, see Friedrich-August von der Heydte, ***Der Moderne Kleinkrieg als wehrpolitisches und militärisches Phänomen***, 1972 (also published in English translation under the title ***Modern Irregular Warfare in Defense Policy and as a Military Phenomenon*** New York: New Benjamin Franklin House, 1986). For Cusa on science, the reference is, again, to his ***De Docta Ignorantia.***

45. Nicolaus of Cusa, ***The Catholic Concordance***, Paul E. Sigmund, trans. (Cambridge: Cambridge University Press, 1991).

FIGURE 9

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, independant of the quality of estimates and scaling of the graphs. Sources: For population and population-density, Colin McEvedy and Richard Jones, *Atlas of World Population History*; for life-expectancy, various studies in historical demography.

Note breaks and changes in scales.

nomic infrastructure of the society. This includes, prominently, the level of education and related development of the young and others in households. This requires the allocation of physical sources and protected conditions of individual and family life, for that population and the area of its habitation and other uses. These responsibilities imply real costs (as distinct from merely nominal, or money costs).

This means, in turn, setting the equivalent of wages and prices, per capita and per square kilometer, for the existence and functions which must be sustained in the interest of the general welfare. In effect, it becomes the responsibility of the government, under the principle of promotion of the general welfare, to foster protectionist regulation of costs and prices, and also to stipulate allocations for basic eco-

nomic infrastructure, and some other things.

Under such arrangements, what is called the "market" is bounded by the way in which protection affects, chiefly, prices, costs, and certain priorities in allocation for basic economic infrastructure. The institution of these measures of protectionism, motivated by the principle of the general welfare, were the birth of modern economy. The complexities of European economy since that time, can not be understood, without reference to the indicated interdependency between the notions of protectionism and the promotion of the general welfare.

The First Nation-State

Elements of this complexity are to be seen in France's King Louis XI. The case of Louis XI, as the beneficiary of Jeanne d'Arc, serves us a double purpose here. We cite that case again, now, to make clear both a lesson from the panorama of history, and to make history clearer by means of a corresponding example from Classical artistic composition.

History is not a fiction practiced on the stage of a *tabula rasa.* This rule is clear in the process leading into Louis XI's coronation, and the circumstances under which he ruled thereafter. The case of Jeanne d'Arc, the intersection of her case with the reemergence of the Papacy during the decades immediately following her martyrdom, and the convergence of both her role and that of the outcome of the Council of Florence, are key to understanding how Louis XI came to power as he did. The mixed defeats and continued achievements of the circles of Cardinal Nicholas of Cusa, following that Council, were reflected in the increasing difficulties Louis XI and France suffered in the later part of his reign.

The history of Europe from the time of Venice's Fourth Crusade, near beginning of the Thirteenth Century, until the accession of England's Henry VII, was a nightmare, caused chiefly by the alliance of the imperial maritime power of Venice with the Norman interests largely controlling England and France, a legacy which continued to plague Europe into the time of the Fronde's alliance with France's Louis XIV.

The great New Dark Age which erupted during the middle of the Fourteenth Century, had begun with the wars against the Holy Roman Empire's Frederick II and his successors, during the middle decades of the Thirteenth Century, a war which had been continued through the so-called "Hundred Years War" and, in England, the "Wars of the Roses." Meanwhile, the fall of Constantinople had, for that time, ruined the ecumenical agreement reached during the Council of Florence, thus enabling Venice and its allies among the old Norman interests to reassert the authority lost during the earlier parts of the Fifteenth Century, leading thus into Venice's fomenting and orchestration of those religious wars of the 1511-1648 interval which threatened to eradicate the accomplishments of the Florence Council and Renaissance.

In this context, Jeanne d'Arc role played a crucial role, leading toward the liberation of France and the revival of the Catholic Church from the ruinous political strife of the Fourteenth and early Fifteenth Century. For that, her French and English Norman foes, the latter allied with a current anti-Pope, feared and hated her.

Although Friedrich Schiller uses a piece of fiction in dealing, on stage, with the issue used, in history, as a pretext for retrying and burning her, in transposing the events from the vast panorama of France to the pin-hole of the Classical stage, Schiller never deviates from the historical issue posed by the richly documented historical record of her case. On this account, Jeanne not only makes history, but serves as a vehicle for Schiller's efforts to lift drama from the relatively more primitive art of tragedy, to the higher Classical form of the sublime. As Bach's ***St. John*** and ***St. Matthew Passions*** use the New Testament to present Jesus Christ's mortal life and actions as the epitome of the sublime, so Jeanne walked in the pathway of Christ, losing her life, not through a tragic flaw, but for a sublime higher purpose, as Plato, earlier, had used the case of Socrates to assert the principle of the sublime, in contrast to the standpoint of the Classical Greek tragedians.

Thus, do real history and Classical artistic composition converge as one. Moreover, it was in the same setting of Jeanne's combat and martyrdom, that Cusa composed his ***Concordantia Catholica.***

The principle of the general welfare, as a principle of natural law, is the specification that no government has the moral authority to rule, except as it promotes efficiently the general welfare of the living and their posterity. The principle is more or less clear, from what we have considered in the preceding pages. However, that leaves a not-unimportant issue unresolved: *Who shall decide what promotes the general welfare? How shall that decision be judged? Who shall judge?*

The general answer to those questions, is fairly stated as reason. That means reason as defined by cog-

nitive determination of truthfulness, in the Socratic sense of truthfulness, as all matters of universal principle must be defined in no other way. Who shall then judge whether or not, by reason, a government does, or does not meet the Gettysburg standard of *government of the people, by the people, and for the people? How shall the people know that they are being governed properly according to that principle?*

This points to a twofold issue posed by Dante Alighieri, the issue of Classical art. Since cognition occurs through the ironical use of language, the determination of the suitability of government must be made in terms of the language of the governed; however, that is not possible, if the language itself is not developed to the level of capacity for communication which such cognitive responsibilities imply. What shall then replace Latin as the language of government? Admittedly, within medieval Latin, the influence of Classical Greek had uplifted the use of Latin to a certain degree of literacy and related sophistication; but the problem of the use of language for government persisted. Thus, the pioneering by Dante and Petrarch founded the possibility of establishing the nation-state, as the reading of Dante's ***Commedia*** in the public places in Florence, show the pathway to elevating Italian into the condition needed for government according to reason.

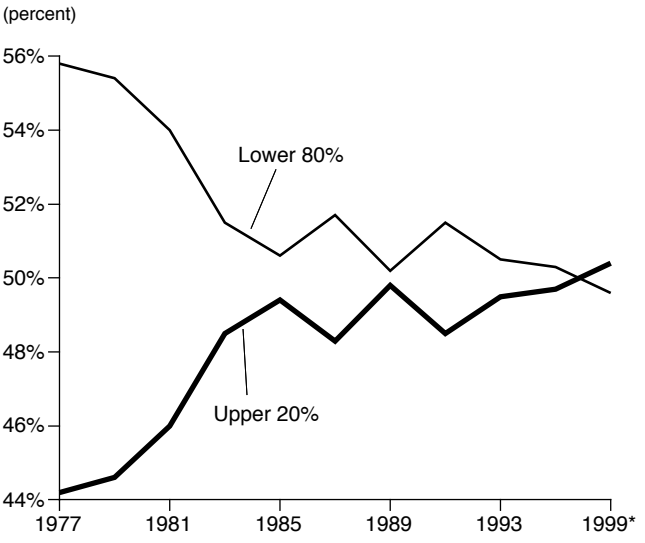
Thus, for these and related reasons, it is clear that a nation must not be so small, a virtual micro-state, that it is not capable of a reasonable degree of sovereignty; but, we can not simply lump populations together, without a concurrence in the shared use of a literate form of language, a form of language conditioned to serve as a medium for cognitive communication.

The net result, is a system of nation-states, each immediately, and sovereignly responsible for its own general welfare, but, not indifferent to the general welfare among nations. So, there must be a standard of natural law, by which consenting nations agree to order their mutual relations in ways consistent with the promotion of the general welfare of each and all.

The Quality of the Citizen

The great affliction which threatens the best efforts of any modern statesman, is the persisting tendency of the great majority of the population to accept a self-policed status as a virtual herd of human cattle, rather than true citizens. Thus, in the recent U.S. Presidential election, the majority of those who voted, voted in the fashion of slaves begging for favors at the back-door of the master's mansion. They proposed to support a candidate, not because he was actually worthy of the office, but because they deluded themselves they might glean a favor or two from the one that they might not gain from the other. What was good for the nation, for their posterity, was, generally speaking, not their concern. They were like the slaves who said, "Master! We aren't asking for freedom; all we ask that you pay us off with a few shekels' worth of reparations." All for one measly, miserable bowl of pottage.

FIGURE 10
America's Richest 20% Now Make More than the Other 80%



*Projected
Sources: Congressional Budget Office; *EIR*.

That state of mind of the generality of the U.S. adult population, is in itself a far step down from the temper of the same strata of the population thirty-five years earlier. The curve of the declining share of U.S. national income represented by the lower eighty percentile of the nation's family households [**Figure 10**], since President Carter's inauguration, shows the way in which the majority of the U.S. population has become accustomed to its economic and political degradation under the trend set by the Nixon "Southern Strategy" campaign of 1966-1968.

This decadence in the generality of the citizenry, is reflected in the moral degeneration of the educational system, in the degraded characteristics of what the population tolerates as popular entertainments.

The citizens of the U.S. have, in fact, the constitutional authority to free themselves from this oppression. They have reached the point they have temporarily lost the desire to do so. Better to be a fed pig in a pen, even if the butcher is not far off, than a beaten child in the master's house.

The responsibility of leadership, as long as society slides again, and again, into the habits of human cattle-likeness, is to awaken the people to their essential humanity. To arouse from the swinishness of Adam Smith's filthy doctrine, and to adopt a sense of mission which makes their life meaningful in the eyes of the Creator, meaningful in their own eyes.

The only method by which such attempts at leadership have succeeded, in the past 2,500-odd years of European civilization, is the method of Plato, the method which theologians sometimes term "spiritual exercises," as the referenced discoveries of Kepler typify such arousals of that in the individual which is made in the image of the Creator.

It is not with do's and don'ts, that the individual soul is saved. It is with a sense of mission, the mission of being, and acting as a creature made in the image of the Creator. That is the image which the true leader of a people must evoke from within those citizenry he seeks to uplift to rediscover their own true nature. That is the image of a true citizen of a true republic, which this republic of ours was founded to become.

5. Quarter-Century Cycles as a Standard of Accounting

As I wrote here of this paradox, in an earlier section of this report, in economics, the future lies in the present, and the success of the present is to be seen only in the mirror of its future. In practice, the future of immediate reference for the present, is a generation ahead, a period of approximately twenty-five years lapse of time, from today's newborn to the matured young adult of about twenty-five years.

For example, one to two generations, is the lapse of time which, in saner times, used to be required for a medium-income-level family household to acquire the ownership or equivalent of a suitable residence. Important infrastructure represents an investment in the same general magnitude.

Indeed, when we build a home, or equivalent housing, we should design and build it to last without disastrous costs of maintenance, for fifty to a hundred years or more: glorified tar-paper shacks with pasted-on Hollywood exteriors, at $400,000 and up, is not really the answer to the housing need, especially when a large ration of such speculative, low-grade, cheap-labor-built construction, has been dumped onto a market defined largely by the lately hired "new economy" recruits presently being dumped in droves. As might be recognized already, this aspect of the "Y2K"-keynoted, 1995-2000 "new economy" bubble, has not been particularly kind to the banks which have been involved in conducting credit into these not merely highly speculative, but even dubious markets. The way in which a new household formation brings forth a matured next generation, is thus a fair approximation of the span within which the making of the future must define the present.

Large-scale infrastructure, such as public utilities, educational institutions, should be designed with adaptation to new developments in mind, but the basic platform on which those new developments will be superimposed, should last for a quarter-century at least, and, with reasonable ratios of maintenance, better fifty to a hundred years.

Thus, for example, the idea of a wage can not be defined competently as the income paid to an individual. We must think in terms of household income, and of the conditions of household life needed to ensure the healthy production of the required quality of the next generation of the labor-force and its associated households. We must therefore think in terms of the conditions of life within the framework of that household, and associated extended families, and of the conditions of the community of which the household is a part. We must think of the organization of the living day in the household, including the hours in commuting daily, and of personal life associated with the household, as this bears upon such prominently included considerations as the rearing, and education of children and adolescents.

We must be alert to those errors in child-rearing and circumstances of childhood and adolescent life today, which tend to produce an impairment of the functional development of the individual who is presumably on the way toward adult maturity.

These and many considerations confronting us when we think approximately a generation ahead, usually involve cost, in some sense of cost to society. These costs must be paid, in one way or another. How shall we

FIGURE 11
Productive Compared to Non-Productive Labor Force, U.S.A.

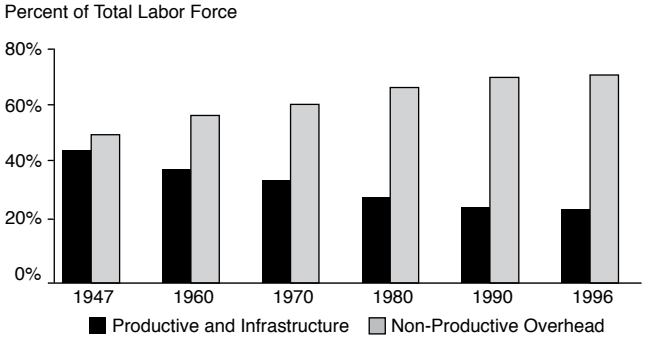
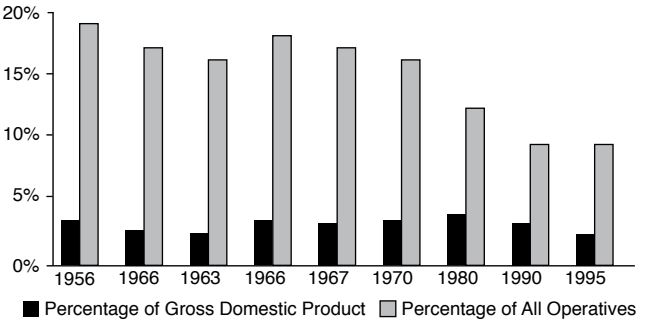


FIGURE 12
U.S. Manufacturing Investment and Employment



be able to pay?

For one thing, we must set certain priorities. Keep the unnecessary overhead down, for example. Generally, after all the relatively obvious measures of economy are taken into account, there remains a substantial deficit in what might be projected as available future income against morally unavoidable future physical costs. We must always think, first of all, in physical terms, rather than financial ones. Whence the additional margin of income?

In general, the answer to the question so posed, is scientific and technological progress. The question becomes: What programs of accelerated investment in scientific and technological progress will foster the rates of increase of the physical productive powers of labor needed to balance the implied budget of the economy overall?

The dull-witted sort of accountant, perhaps a fellow-traveller of Senator Phil Gramm, will answer "slash expenditures; we can not afford more investment in research and development at this time." The problem of the linear mentality, to which I have made frequent reference here already, has thus cropped up once again.

The solution to the problem is human in nature. The human being, if properly educated and inspired, is an ultimately inexhaustible source of creativity, as discovery of valid universal physical principles typifies this creativity. This creativity, so expressed, is characteristically anti-entropic. That is, the more we are able to spend for that anti-entropy, the greater the rate of growth of the real net national income.

The shaft of the spear of anti-entropic progress, is education combined with the fostering of Classical culture. However, to get the shaft through the target efficiently, we must put a sharp point on the spear. The best choice of point is what is called an economically broadly based "crash science-driver program," as typified by the pre-1966 phase of President Kennedy's manned Moon landing program.

I explain a few crucial points respecting such a much-needed "crash science-driver program" for the world today.

Reconstruction

Turn your attention to the categories of employment of the U.S. labor-force over the interval 1946-1965, prior to the injection of the pro-malthusian phase-shift of 1966-1967, into the U.S. Federal budget. Trace the decline of those categories of employment which had been associated with technologically-driven increases in development of basic economic infrastructure and physical production of physical goods, prior to 1966. Contrast this with the shift in composition of categories of total employment over the interval 1971-1987, and, again, the shift over the interval 1989-2000. [See **Figures 11** and **12**.]

Now consider reducing the percentiles of employment in services, by category, to the levels of 1946-1965. Then, intend to shift the percentile cut from employment to the effect of restoring the percentiles of composition of employment to levels consistent with 1946-1965 trends in composition of employment of the total labor-force. This means, in effect, the shift of composition of employment of the total labor-force, back to the more productive composition of the earlier, pre-1966 interval.

Since we are presently headed for massive unemployment, the kind of shift of composition of employ-

National Archives

The most crucial thing, is to instill in the population an informed sense of mission for the future. Then, as Franklin Roosevelt said, we shall have nothing so much to fear from this new great world-wide depression, as fear itself. Here: President Roosevelt in 1936, with drought-stricken farmers.

ment indicated will be best accomplished simply by absorbing new employed into expanded employment in categories corresponding to the more physically productive component of employment. This means, of course, government programs, in the spirit of FDR's recovery effort, which steer credit into the categories of employment which are more desirable, because of their impact on the desired increase of the physical productivity of the labor-force as a whole.

This means, of course, much higher rates of Federal and other taxation on those relatively upper-bracket personal and business incomes which are not recycled as investments in the physically productive sectors of the economy. This would be added by reversing Kemp-Roth and related follies, to increase radically the financial capital-gains tax-rate, but with a compensating investment-tax-credit program along lines not dissimilar from President Kennedy's program.

The idea that increasing the ratio and amount of tax-free financial gains would promote productive investment, was a fairy-tale in the first place. The way to manage the job, is to reward those who employ their gains for the increase of physical productivity of the economy, and tax those relying upon speculative appreciations at the relatively highest rates. We must learn the lesson of thirty-odd years of liberal folly, recognize the mistakes of deregulation and the like, and restore what had worked before the ruinous effects of Nixon's and Carter's elections as President.

The leading edge for the initial mass of raw growth such a recovery program will set into motion, will be infrastructure. Here, my outline earlier of the implications of the infrastructural interface between mutual development of noösphere and biosphere, should predominate in policy-shaping. The increase of water throughput, energy throughput, and higher energy-flux densities, per capita and per square kilometer, chiefly through public utilities, will provide the initial leading stimulus for economic recovery in both infrastructure and those entrepreneurial activities affected by expansion of infrastructure.

This emphasis upon infrastructure, should build the platform for a two-fold approach to upgrading the productive powers of labor in the so-called private sector generally. In short, the two approaches are, respectively, bottom-up and top-down. Bottom-up, means the traditional approach of the 1939-1965 interval: upgrading the quality of employment of so-called "blue-collar" and other productive employment, with emphasis on technology-intensive, capital-intensive modes for bringing this effect about. Top-down, means a "crash science-driver program" approach, in which the mere development of scientific discovery is treated as the highest priority quality of product produced by the economy as a whole.

To situate the top-down aspect of the program, look at the global prospects for a U.S. long-term economic recovery.

U.S.-Eurasia Cooperation: Science as a Product

Among the crucial economic situations in the world at large, is the collapse of the export margins of the German economy, the economy on whose support the

entirety of western continental Europe depends for its economic vitality. The natural export market for western continental Europe as a whole, is chiefly Eurasia. The pivot for any such cooperation between western continental Europe and Asia, is Russia. Relations among Russia, China, and India, are the keystone upon which broader cooperation in Asia depends more or less absolutely. It is through western continental European cooperation throughout Eurasia, in cooperation with Russia, that a general and durable economic recovery of Eurasia as a whole becomes feasible. In a rational state of affairs, the government of the U.S.A. would eagerly cooperate with its partners in western continental Europe in such a Eurasia undertaking.

This is not to deprecate the importance of Africa or of Central and South America, or of Australia and New Zealand either. Rather, unless the Eurasian land-mass pivot is viable, the world lacks the net resources to provide much-needed rescue for Central and South America, or Africa.

There are two economic fulcra in this Eurasia project. One is the underdeveloped landmass of Central and North Asia. The other, is the fact, that without massive infusion of technology into nations such as China and India, beyond the internal resources of those nations themselves, the amount of technology which could be infused into those two most populous nations would not be sufficient to overcome the burden of the deep impoverishment of the less developed portions of the populations and areas of those nations, in particular.

The solution for these and related challenges internal to Eurasia, is a long-term reorientation of the economies of the traditional technology-exporting nations of the world, toward the technology-hungry appetites of East, Southeast, and South Asia. Essentially, this means applying the lessons actually and implicitly learned from the 1946-1965 cooperation between the U.S.A. and western continental Europe, to the expanded horizons of Eurasia as a whole.

It would be a great mistake to imagine that such a program could succeed on the basis of off-the-shelf technologies from present U.S. and European enterprises. The degree of technological leverage represented by such inventories, is not sufficient to accomplish the implied mission in a timely degree. There must be a virtual explosion of scientific progress, and technological progress driven by scientific progress, to the effect of increasing the rate of technological gain greatly beyond that which would be possible with off-the-shelf-plus strategies.

This means, that the potential volcanoes of large-scale technology export, such as the U.S., western Europe, Russia, a resuscitated Korea, and Japan, must cooperate with other nations in creating a virtual new category of employment: "crash science-driver program" employment.

Realistically, such a program must come chiefly from national governments, mobilizing such a new industry on the basis for lessons from projects such as the Manhattan project and the post-war space programs. This means a heavily overloaded, ostensibly "overstaffed" initiative, not one conducted according to today's accountants' notions of efficiency. This means, heavy engagement of universities, with build-up of their science departments and research projects, with much emphasis on pre-benchmarking notions of engineering design for advanced experimental work.

It means the inclusion of such programs as the Sänger project's scramjet program, for lower-energy-cost access to geostationary Earth-orbit, and every other plausible avenue of task-oriented space-exploration work. It also means, a crash-program approach to the noösphere-biosphere concepts of Vernadsky et al, with much emphasis on the kinds of biophysics implied by that work, as opposed to the dubious claims for molecular biology's cure for practically anything.

The intended by-products of such a broadly defined "Vernadsky Project," should include new assistance to crop programs, aimed to secure the world's food supply, in both quantity and quality. It should include broader-based study of infectious and other diseases, and the possible remedies. It should emphasize helping the biosphere to transform wastelands into viable crop-lands and areas of habitation. It should include the build-up of useful, managed forests, as part of the build-up of the biosphere. It should foster improved approaches to developing long-term residential areas, public facility areas, and commerical and industrial areas, in ways which a deeper understanding of noösphere and biosphere suggest.

The most crucial thing in all of this, and related work, is to instill in the population an informed sense of mission, looking toward what must become a quarter-century ahead, and still further. Then, as Franklin Roosevelt said, we shall have nothing so much to fear from this new great world-wide depression, as fear itself.

For Further Reading

The following bibliography of recent articles provides extensive documentary and analytical material on subjects that are covered in this article by Lyndon LaRouche.

Jonathan Tennenbaum and Bruce Director, "How Gauss Determined the Orbit of Ceres," ***Fidelio***, Vol. 7, No. 2, Summer 1998.

Lyndon, H. LaRouche, Jr., "New Accounting Systems Are Imperative: The Becoming Death of Systems Analysis," ***EIR***, Vol. 27, No. 13, March 31, 2000.

"Any cost-conscious corporate management so reckless, as to imagine it might be permitted to reduce costs by substituting so-called mathematical modelers, for the type of design-engineering developed for the tasks of testing new universal physical principles, should be promptly discharged, that out of consideration for urgent issues of managerial incompetence."

LaRouche, "On a Basket of Hard Commodities: Trade Without Currency," ***EIR***, Vol. 27, No. 30, Aug. 4, 2000.

"A basket of commodities . . . is to be understood as a shared commitment to do good. The issue of economy is, therefore, not the exact price to be placed on any commodity, but the good will expressed in the way a reasonable estimate of a fair price is adopted. On that basis, a reasonable price for a unit basket of commodities, will be the right price in practice."

LaRouche, "The Lost Art of Management," ***EIR***, Vol. 27, No. 35, Sept. 8, 2000.

LaRouche clarifies "what today's leaders must come to recognize as the deeper meaning which they ought to attribute to the term 'full set economy.'"

LaRouche, "Benchmarking: Faking as an Art of Self-Deception," ***EIR***, Vol. 27, No. 42, Oct. 27, 2000.

The admission that the U.S. government has been faking its official inflation statistics, plus the surfacing of a letter in which Ford executives described how they covered up a design-failure in the firm's best-selling Sport Utility Vehicle, "tell us much, if not quite all, about the administrative reasons for the presently onrushing collapse of the global, Anglo-American-dominated financial system."

LaRouche, "A New Voyage to Laputa: California Takes a Swift Look at Today's Economists," ***EIR***, Vol. 28, No. 5, Feb. 2, 2001.

Why have nearly all among today's ostensibly leading economists failed so miserably? The defective mentality behind their policy failures, is a pervasive cultural disease. Jonathan Swift's famous ***Gulliver's Travels*** suggests the explanation for the follies of today's middle-aged economic-policy Laputians.

LaRouche, "On the California Energy Crisis: As Seen and Said by the Salton Sea," ***EIR***, Vol. 28, No. 7, Feb. 16, 2001.

Unless President George W. Bush abandons his present ways, his policies are now going to lead his administration toward a global crisis "so horrifying, that most of you would not now even try to imagine it. . . . For the sake of all of us, please permit me to lead you, step by step, into discovering for yourselves, what it is that you need to know, if we all are to work our way out of this mess."

LaRouche, "A Philosophy for Victory: Can We Change the Universe?" ***EIR***, Vol. 28, No. 9, March 2, 2001.

Classical philosophy, properly defined, is the only branch of science in which possible solutions to the crisis in U.S. decision-making can be rationally discussed.

Vladimir Ivanovich Vernadsky, "Problems of Biogeochemistry II: On the Fundamental Material-Energetic Distinction Between Living and Nonliving Natural Bodies of the Biosphere," Jonathan Tennenbaum and Rachel Douglas, trans., ***21st Century Science & Technology***, Vol. 13, No. 4, Winter 2000-2001. The first complete English translation of a 1938 article by the innovative Russian biogeochemist, who saw the human mind as the highest development of natural processes.