EIR Feature

SCIENCE AND ECONOMIC CRISES

The Pagan Worship Of Isaac Newton

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Preface: The Curse of Modern Empiricism

The most common source of the great, truly tragic failures of official society's attempted practice of physical science, are found in the chasm which separates science pursued merely as a professional occupation, from science pursued as a mission for discovery of truth. In the first case, the professional asks, "Will it be accepted? Will it work?" In the second case, he asks, "Have I proven that this is actually true?"

Forget the customary academic double-talk! Forget what your peers say! "Is it really true? Do you really know it to be true, or do you merely expect that your peers will share your wish to believe that it is true? Do you believe it, only because you fear ridicule if you do not?"

"Should you actually believe in what you propose?" For the so-called "practical mind," the usual philistine of business, politics, or science, the difference between the two may be thought to be slight, even of merely trivial significance. On the contrary, between the two states of mind there is a gulf, a deep gulf, and one which is almost unbridgeable, a gulf which represents what is often a tragic difference, not only for the scientist, but for the culture itself.

In today's politics, for example, I am confronted currently by nine pathetic rivals for the Democratic Party's 2004 U.S. Presidential nomination. Some of these are intelligent and capable legislators, but as Presidential candidates they have been, so far, a pitiable pack of pure disaster. Among those few of that pack worth mentioning, the problem is not that they lack the intelligence-potential for a reasonable understanding of the issues of war, economics, and social justice which menace our republic today. The problem is, that in their roles as candidates, they lack the

"The fraudulent defense of Isaac Newton, on an issue of mathematics, became a central feature of the Eighteenth-Century, and presently continuing attack on the political movement which led into the U.S. 1776 Declaration of Independence." The great Benjamin Franklin (left) worked with Europe's Leibnizian circles, notably the mathematician Abraham Kästner. Newton (right), the dabbler in black magic, was promoted to become a cult figure by Paolo Sarpi and his followers.

simple "guts" even to address these issues publicly, just as they have each and all shown the lack of "guts" to debate relevant matters such as the current, systemic economic crisis publicly with me, a nationally leading candidate for the nomination, and, on the public record, the world's leading long-range economic forecaster of the past several decades to date. The general type of psychopathology responsible for this emotional failure by those otherwise capable persons, is of crucial significance for understanding those specific matters of economic science on which our attention will become focussed in the body of this report.

For this occasion, I shall now precede the presentation of my proposed solution for that problem with a description of the principal source of relevant expressions of the presently continuing scientific incompetence often met among leading university-trained economic professionals and others today. Hence, the immediately following prefatory summary of the modern political history of this problem of physical scientific practice. After that summary, I shall turn, in the body of this report, to the meat of that problem as reflected in the crisis of the presently onrushing breakdown of the world's present monetary-financial system.

For that purpose, I devote this preface to the exemplary, tragic case of a very famous, professed devotee of Isaac Newton, Leonhard Euler.

Given Euler's extensive accomplishments in mathematics as such, his sundry attacks on Gottfried Leibniz's uniquely original discovery of the infinitesimal calculus, were not merely wrong, but a fraud, a dirty lie. For more than two centuries, Euler's sundry—each vicious—hoaxes against Leibniz, have been copied, more or less directly, by a majority among our culture's relevant textbooks and classrooms. Today, those false premises which Euler had employed have become an implicitly self-evident dogma, even for many professionals. The notable, if radically extreme examples of that dogma, include the influence of such acolytes of the pathetic Ernst Mach and thoroughly evil Bertrand Russell as Norbert Wiener (the "information theory" hoax), John von Neumann (the "systems analysis" and "artificial intelligence" hoaxes), and also the latters' dupes, still today.

All dirty lies!

As I shall show, these hoaxes by Euler and his empiricist followers may not have caused all of the leading systemic incompetencies of today's university and related professional training in the subjects of economic policies; nonetheless, they did cause much of it, and they typify the erroneous method which has been the principal cause of the rest.

Euler's fraud was premised on the version of empiricism

associated with such followers of that influential Paris-based Venetian, Antonio Conti, who played a guiding hand, from Paris, in transforming what had been a relatively obscure dabbler in black magic, Isaac Newton, into a Voltaire-backed celebrity of the Eighteenth-Century British-French "Enlightenment." Although the system of moral corruption known as empiricism had been introduced to Seventeenth-Century England and France by the influence of Venice's Paolo Sarpi on such Anglo-Dutch and French figures as Sir Francis Bacon, Thomas Hobbes, René Descartes, and John Locke, it was the 1688-89 capture of the British Isles, as led by the Netherlands India Company's William of Orange, and the related political and military developments of 1689-1714, which gave new twists to Sarpi's neo-Ockhamite doctrine. It is only from this point of historical reference, that we are able to situate the present-day political significance of reductionists such as Euler, Lagrange, Kant, Laplace, Cauchy, et al. for reference.

The clinical characteristic common to most of the foregoing, or similar cases of behavior from among academics and the like today, is that person's hysterical blindness to what should have been obvious to him as folly in choice of method. Such behavior from among professionals, or the like, can not be fairly classed as anything but psychopathological "hysteria." The irrelevant kind of emotional outbursts which often color the polemics of such persons, must be recognized as just that. Their outbursts often reflect passions which were better attributable to neuroses, or worse, than issues of substance. In the matter of their worship of their demigods, such as Newton, Euler, Lagrange, Laplace, and Cauchy, many devotees even among professionals, are, as I shall show here, no better than religious fanatics.

This pathology among professionals is usually expressed as follows.

The referenced frauds by Euler et al., typify cases in which formal, deductive-inductive consistency is employed as such a kind of sleight of hand. The crucial point to be made in diagnosing those tricks, is that that person's deductions are controlled by the reductionist's use of essentially fictive (e.g., a priori) forms of "self-evident" definitions, axioms, and postulates. Such are the fictions of Euclidean geometry, of the empiricist's William of Ockham, or Descartes. As in the case of the widespread corporate folly of substituting what is called "benchmarking" for actual engineering design, these fictions have been used by them as a relatively cheap replacement for that experimental proof of principle which is required to define any rational form of elementary proposition of mathematical physics. Scholars of modern literature should recognize that kind of behavior among mathematicians as something from English academic life of early Eighteenth-Century Britain, which Jonathan Swift described in his allegorical account of the Voyage of Lemuel Gulliver to Laputa.

In the longer history of European mathematics, the form of the issue posed by hoaxes such as Euler's, is traced back to ancient sources such as the Sophists, or, to the same effect, the method of rhetoric employed, against Plato's work, by Demosthenes' pupil Aristotle. All the most famous modern hoaxes of European professional mathematical physics, are derived from the sophistry of Aristotle, either directly, or as Paolo Sarpi's founding of the more radical sophistry of modern empiricism echoed the medieval irrationalist William of Ockham.

'Power' Versus 'Energy'

Take the Classical conflict between the concepts of "power" and "energy" as a most appropriate illustration of that point.

The crucial issue of contemporary mathematical physics posed by that Plato-Aristotle conflict, that summarily detailed by my associates Mr. Antony Papert and Dr. Jonathan Tennenbaum, is a pivotal point of the deadly controversy, on the subject of geometry. Where Plato writes what modern usage translates as "power" (dynamis), or the Kraft of Leibniz's German, Aristotle writes "energy." The two terms, "power" or "energy," so employed, signify directly opposite meanings, and refer to directly opposite kinds of objects: Power represents the role of universal physical principles in being the cause of a specific quality of action; Aristotle's notion of energy, as brought into modern practice by such empiricist opponents of Carl Gauss, Wilhelm Weber, and Bernhard Riemann as Clausius, Kelvin, Grassmann, Helmholtz, Maxwell, Boltzmann, and the pack of radically reductionist, positivistic fanatics associated with the cult of Ernst Mach, et al., represents an effect.

"Power," as Plato emphasizes, is typified by what the Pythagorean Archytas demonstrated as the solution for doubling the cube by nothing but geometric construction. "Power" signifies the practical effect (e.g., physical effect) of employing the discovery of an experimentally defined universal principle to effect a qualitatively superior outcome of some human action upon our universe. Aristotle's "energy," as adopted by the Nineteenth-Century authors of a reductionist mathematical thermodynamics, is an irrational "demon," such as that Maxwell demon who exists only under the floorboards of bad dreams. Modern sophists insist, as sophists would be expected to do, that these empiricists were speaking as scientists; the truth of the matter is, that these were sophists substituting a nasty sort of religious belief for science. The religion in question is properly identified as "demon"-worship.

For example, Bernard Mandeville's ***The Fable of the Bees*** argues that the unleashing the willful "demon" of individual wickedness ("vices") of individuals makes society prosperously happy. Physiocrat François Quesnay's notion of laissez-faire, and Adam Smith's plagiarism of Quesnay's laissez-faire as "free trade," proffer exactly the same worship of the irrational "demon" vice as does Mandeville's ***The***

Fable of the Bees.[1] To the same effect, radical positivist Norbert Wiener invoked the powers of "Maxwell's demon" to found his "information theory" hoax.

"Power," as defined by the arguments of Plato and Leibniz, is typified by the principled discoveries of physical chemistry, through which we have progressed from use of simple solar radiation, through the higher, Promethean power represented by controlled use of fire, through the successively higher powers represented by rotating machinery, and through use of nuclear and thermonuclear reactions. Each of these steps takes society upward in respect to man's power over his circumstances, per capita and per square kilometer. This progress is accomplished through those discoveries of principle by means of which we deploy the same effort to achieve a qualitatively more effective result. Plato's concept of power, is the principle underlying the successful performance of the practice of technology in bringing about the very existence-in-fact of all successful phases of modern European political-economy.

This notion of power may be traced for today directly from the Pythagoreans' use of a pre-Euclidean method of constructive geometry, a method derived from that ancient progress in astronomy which they named "spherics." It was from viewing the visible heavens as a display of motion within a spheroidal space of very, very large diameter, both as astronomy, and as the related matter of principles of transoceanic navigation, that a Classical Greek culture of such as Thales, Solon, and Pythagoras, one informed by the magnificent Egyptian knowledge to be read from the design of the Great Pyramids, introduced the concept of "efficiently universal principles" to European civilization. That crucial point should be restated for clarity, as follows.

The Pythagorean school of pre-Euclidean, Classical geometry, adopted the crucial paradoxes of a constructive geometry as typifying the effect of the action of universal physical principles. Thus, they associated the notion of universality with the behavior of the spheroid universe perceived around us, and defined universal physical principles as those unseen causes which generate the lawfully recurring anomalies of the observed "spheroidal" domain. So, for Kepler, the paradoxical apparent back-looping of the Mars orbit, reflected the role of universal gravitation in the organization of the relations among the planets of our Solar system.

Thus, they asked such elementary questions as: 1.) Define the meaning of a line. Now, attempt to construct the doubling of a length of such line within the bounds of "lineness" so defined. Ah! We must proceed to an added, higher principle, the notion of a surface: lines as determined by surfaces. 2.) Double a square by construction, not arithmetic. The paradox of irrationals now supersedes simple linearity. A mean principle, between the original square and its double must be defined. 3.) Now, to double a cube by construction; the so-called Delian Paradox requires a successive pair of mean actions. The actions by which we may proceed from an apparent line, to a surface, and from a surface to a solid, are required to deal with the universe as presented to us in an intrinsically paradoxical form by sense-perception. Thus, these principles of constructive geometry's domain of astronomy-cued spherics, are efficiently universal physical principles, principles which are expressed as phenomena of constructive geometry, examples which show us the physical-experimental basis on which the existence of a competent (e.g., Gauss-Riemann) mathematics depends.

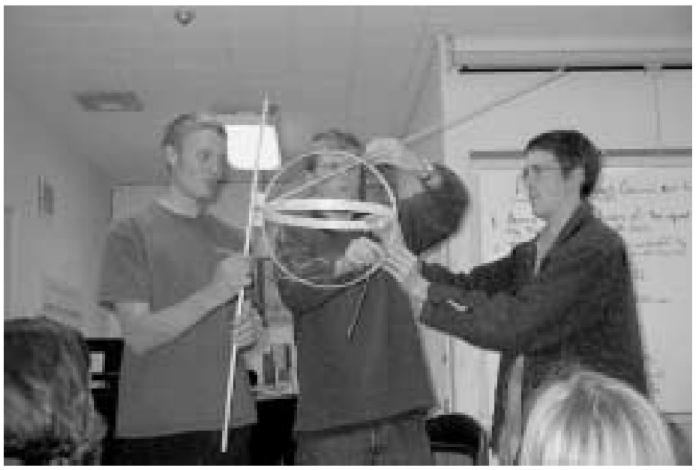
A special, fourth case, beyond the line, surface, and solid—that of the uniqueness of the constructability of a series of Platonic solids—shows us, as both Plato and Kepler famously illustrated this point, that the physical universe is not a self-evident sort of empty space invaded by particles—not the space of "action-at-a-distance." The universe, including what sense-perception attributes to space, is governed entirely (as Leibniz showed, pervasively and perfectly-infinitesimally throughout), by universal physical principles; the very existence of space (and, also, time) depends upon principles which must be discovered in an experimental-physical way, never a priori.

To recapitulate, and re-enforce this crucial point just made, reflect upon the following cases.

Kepler's uniquely original discovery of universal gravitation; Fermat's principle of quickest (rather than shortest) pathway; Leibniz's definition of an infinitesimal calculus; Leibniz's discovery of the interrelated notions of the catenary, of a physical principle of universal least action, and of the associated notion of natural logarithms; make a distinction between sense-perception and the universal principles which are not directly sensed, but whose existence is proven to be the efficient authorship of the relevant paradoxes of sense-perception.

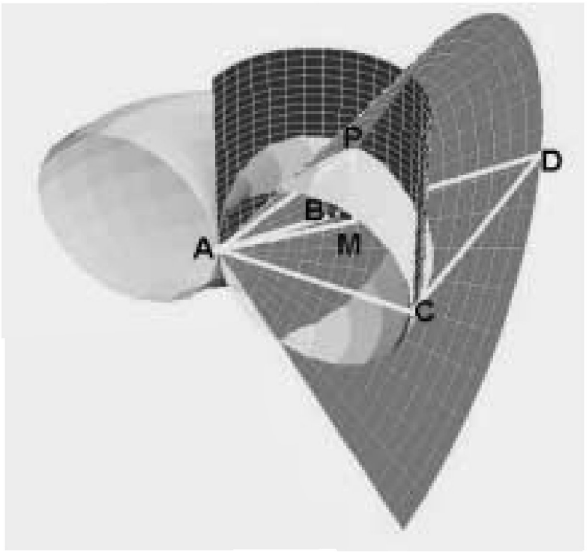
The problem of representing the relationship between sense-perception and a provable physical principle, as was presented by Kepler's discovery of gravitation, was solved, successively, by the work of defining the complex domain, by, chiefly, Carl Gauss and Bernhard Riemann. This latter method preserves the Pythagorean notion of spherics, and, in the case of the catenary-related notion of universal physical least-action, employs the principle adopted by Archytas to solve the doubling of the cube by construction. That latter model, as referenced by Gauss's 1799 paper on ***The Funda-***

1. Adam Smith, ***The Theory of the Moral Sentiments*** (1759). This was published three years prior to Lord Shelburne's assignment of Smith to the project which included Smith's plagiarizing of the Physiocrats Quesnay and Turgot. This 1759 work reflects chiefly the influence of the same David Hume who was chiefly responsible for the mind-set of his German representative Immanuel Kant. The coincidences in method of the 1759 Smith and his later plagiarisms of the work of Quesnay and Turgot, as also Locke, and Mandeville, are reflections of a consistency, respecting the attributed nature of man, which pervaded the Eighteenth-Century "Enlightenment."



Archytas' solution to the Delian paradox typifies the work of pre-Euclidean, physical, constructive geometry. Here, members of the LaRouche Youth Movement have built a pedagogical device to demonstrate his solution, which creates a cone, a torus, and a cylinder in order to find the geometric means between two magnitudes—AC and AB in the drawing.

Archytas' Construction for Doubling of the Cube



mental Theorem of Algebra,[2] has served as the guide to developing an appropriate form of mathematical representation of the relationship between sense-perception and the unseen, but efficient principle.

Those principles, so conceived, represent powers in the Platonic sense.

Unfortunately, under the Romans, civilization took a giant step backward from the science and culture of Classical and Hellenistic Greece. The hoaxster Claudius Ptolemy's Aristotelean system of astronomy, which continued to dominate European civilization until the discoveries of Kepler overthrew the astronomy of Ptolemy, Copernicus, Brahe, and of Sarpi's Galileo, is typical of long-ranging frauds, such as the empiricism which has gripped Euler and his followers to the present day.

Those distinctions between the scientific principle of "power," and the reductionist "demon" (or, "vice") called "energy," are implicit in the original discoveries of Kepler and Leibniz, but began to be made clearer through the influence of the great Eighteenth-Century educators Abraham Kästner and Hofrath A.W. von Zimmermann on their student Carl Gauss. Kästner's argument prescribed a return to anti-Euclidean (and, also ante-Euclidean) constructive geometry. This was reflected simply and clearly in Gauss's 1799 ***The Fundamental Theorem of Algebra,*** and in the subsequent development of the general principles of curvature leading into that celebrated 1854 habilitation dissertation by Bernhard Riemann which defined a comprehensive notion of a universal physical geometry, and defined, for me (during 1952-53), the needed notion of a practicable form of that science of physical economy which is reflected in this paper.

Indeed, through the span of the history of specifically European civilization, since the work of Thales, Solon, and the Pythagoreans, there has been a see-saw battle between the forces of Classical humanist science, as typified by Plato, and the opposing forces of reductionism, as the latter is typified by the Delphi cult of the Pythian Apollo, the Sophists, and those celebrated "featherless bipeds" known as the Aristoteleans. The judicial murder of Socrates by that Democratic party of Athens otherwise known as the Sophists, typifies the essence of the fundamental division in all European civilization, from before the Age of Pericles to the present day. Modern reductionism, as expressed by the referenced work of Euler and Lagrange, is essentially a symptom of the continuing controversy, a controversy which the judicial murderers of Socrates defined as an issue of religion, the issue of that form of pagan religious fanaticism expressed by Euler's fraud against Leibniz.

The origin of the form of neo-Aristotelean and empiricist doctrines specific to Europe's Sixteenth Century, was the effort, by the reactionary forces left over from medieval society, to eradicate the leading influence of Europe's Fifteenth-Century, Italy-centered Renaissance. The account of the Euler controversy must be situated clinically in that context.

The Origins of Euler's Empiricism

Consider the political history of that hoax by Euler et al. This Fifteenth-Century Renaissance had produced the

2. Carl F. Gauss, ***Demonstratio Nova Theorematis Omnem Functionem Algebraicam Rationalem Integram Unius Variabilis, Werke III,*** pp. 1-31. Various translations.

first modern nation-states which were premised upon the principle of national sovereignty of those kinds of governments committed to the defense and promotion of the general welfare of all the population and its posterity. These principles were not new in themselves; the Classical Greece of Solon, Socrates, and Plato had already defined those principles. The Christianity of the Apostles John and Paul had put the Platonic principle of agapē ("the common good") at the center of the practice of Christianity. However, it was almost two millennia later than the lifetime of Plato, that Louis XI's France and Henry VII's England appeared as the first two such states actually based on the common good (the general welfare) to exist in known history of the world.

The existence of modern political-economy dates from precisely those reforms institutionalized by the Fifteenth-Century Renaissance, and brought to a concrete form of realization under Louis XI and Henry VII. The modern state begins when that state ceases to tolerate the degradation of large sections of the population to the status of human cattle, such as slaves or serfs. It is the perfectly sovereign state's assumption of inalienable responsibility for the general welfare of all the living population and its posterity, which creates the indispensable natural-law basis for sovereign nation-states and for all doctrine of political-economy. Unless the government assumes its accountability for the maintenance and improvement of the general welfare of all its people and their posterity, that government is not acting as a legitimate nation-state under moral, e.g., natural law.

That poisonous weed, the form of society which that Renaissance sought to destroy, was, immediately, the medieval rule of most of Europe and its vicinity by the combined forces of the imperial maritime power of Venice's financier oligarchy and the Norman chivalry. It was the latter, unrepentant medievalist forces, led by Venice, which struck back with their effort to crush the Renaissance; that, by such means as the religious warfare spawned repeatedly over the course of the 1511-1648 interval.

This Venetian reaction was typified in significant part by the roles of Cardinal Pole, Thomas Cromwell, and royal marriage-counselor Zorzi (a.k.a. "Giorgi"), in Venice's recruitment of England's King Henry VIII. The new Aristoteleanism of Sixteenth-Century Venice, complemented by the introduction of empiricism by Venice's Paolo Sarpi and his household lackey Galileo Galilei, coupled religious and related forms of warfare with the political role of the Habsburg dynasties, not only for the purpose of restoring those medieval practices which had degraded most persons to the condition of virtually inhuman cattle; they sought to accomplish this with aid of a systemic effort to uproot those Fifteenth-Century conceptions of natural law which set all persons absolutely apart from and above the beasts. The crucial fact to be emphasized through this report, is that empiricism, the cult which produced such included, characteristic phenomena as the figures of Isaac Newton and Leonhard Euler, was crafted by Sarpi and his followers to the specific purpose of uprooting that conception of the individual human mind (and, therefore, soul) upon which all scientifically valid distinction of man from human cattle depends.

For those reasons, as I shall show here, the introduction of empiricism to supplant the Judeo-Christian-Muslim conception of man—man as made in the likeness of the Creator—defined empiricism as implicitly a pro-Satanic form of religious practice. The term "Satanic," so employed, identifies the generic quality of each and every systemic effort, such as that of the empiricist, to bestialize man as, for example, Thomas Huxley, Frederick Engels. Friedrich Nietzsche, Bertrand Russell, and the so-called "Frankfurt School" have done. The history of the modern development of empiricism, since Sarpi, is summarized as follows.

This continuing struggle by the Venetian tradition, to uproot the institutions of the Fifteenth-Century Renaissance, assumed a slightly altered political form with the late Seventeenth-Century decline of Venice as a state with former claims to imperial maritime power. The period of the wars of France's Louis XIV, the coup d'état of William of Orange, and the 1714 seating of George I on the newly established British throne, shifted the location of the imperial political power formerly deployed by Venice, to those virtual clones of Venice's financier oligarchy which appeared in the form of an emerging Anglo-Dutch Liberalism, a form which became known during the course of the Eighteenth-Century as "The Venetian Party." Out of this process of change, a modified organization of the empiricist cause emerged under the name of "The Eighteenth-Century French and British Enlightenment."

Beginning 1689, but especially with the subsequent accession of George I to the British throne, the emerging Eighteenth-Century Enlightenment came increasingly into conflict with a growing impulse of old Europe of that time, a growing impulse toward establishing a true modern republic among the English colonies of North America. With the 1763 British peace treaty with France, Lord Shelburne's British East India Company and its puppet-king, George III, moved to crush, "preventively," the emerging American tendency toward independence. Opposite to the rabid empiricists of the British East India Company's "Venetian Party," was the new Classical humanist movement which emerged around such figures of Germany as Abraham Kästner, Gotthold Lessing, and Moses Mendelssohn. This Classical movement, which spread its influence against empiricism throughout much of Europe, formed the intellectual basis for spiritual and physical support of the cause of American independence, up to the point of July 1789 and the subsequent Jacobin Terror.

For related reasons, the center of the conflict between Classical humanism and empiricism ("The Enlightenment") in Europe was centered in Frederick the Great's Berlin, where the empiricist forces represented by Voltaire, de Maupertuis, Euler, Lambert, Lagrange, et al., were in pitched intellectual

battle with the opposing forces grouped around the Leibniz tradition of Kästner, Lessing, Mendelssohn, and their followers. It was the deaths of Mendelssohn and Lessing which cleared the way for the appearance of an Immanuel Kant who would have been demolished politically had he published his infamous collection of sophistries, called Critiques, while Lessing and Mendelssohn were active as the intellectual lions of Berlin, Leipzig, et al. It was the French Revolution and its Napoleonic aftermath which restored the Romanticism of the Eighteenth-Century Enlightenment to a vengeful hegemony over most of the political life and culture of Europe, and thus prepared the way for the two great wars of the Twentieth Century.

Euler had been a leading part of the anti-Leibniz cabal during the period of influence of Lessing and Mendelssohn. It was the writings of Lagrange and Immanuel Kant during the middle through late 1780s and 1790s, which embedded the broader philosophical implications of Euler's empiricist corruption more widely within what was to become Napoleonic Europe's insurgency of the Nineteenth-Century German Romanticism of Kant, G.W.F. Hegel, et al.

The precepts of that Newton cult are usually presented, as by Euler, solely as a matter of the indoctrination of professionals in a form of blind utopianism, a form of utopianism which is, without exaggeration, a pathetic form of religious belief. Or, to restate that point, the faith expressed by such clinical cases expresses the kind of sharing of belief we should associate with phenomena of mass-psychosis, such as a mass delusion. The notable proponents of this cult of empiricism do not actually know what they say; but, rather, rely upon their mere wish to believe certain arbitrary, axiomatic assumptions constructed as a matter of blind faith. That wish thus assumes the functional role of a unproven, "self-evident" axiom.

The specific form of this religious faith which I am addressing here, the cult belief which Euler shared, is to be recognized as the Anglo-Dutch empiricism associated with the Anglo-French Eighteenth-Century "Enlightenment's" notorious scalawag Voltaire. The personal relationship between Leibniz-haters Euler and Voltaire in Berlin, is typical of the connections among the "Enlightenment" faction of that Century.

Leibniz & Gauss Versus Empiricism

This Eighteenth-Century hoax spread by the circles of Conti, Voltaire, Euler, the French Encyclopedists, Euler, et al., is the same fraud exposed as such by Carl Gauss's statement of the case for the complex domain, in his 1799 ***The Fundamental Theorem of Algebra.***

The most immediate proof that Euler's argument is willful fraud, is that that admittedly expert mathematician, and Leibniz-hating fanatic, Euler, was fully knowledgeable respecting those characteristics of the generalized conic functions which demonstrate that the rate of change of curvature of an elliptical function is intrinsically, and ontologically, an infinitesimal function, as Kepler, Pascal, Leibniz, and Jean Bernouilli had successively defined this. Euler was also informed of the work of Leibniz and Jean Bernouilli, including the principle of physical least action, the notion of the infinitesimal calculus, and that notion of natural logarithms which Euler parodied from Leibniz's original work. This was the kernel of the fact exposed by Gauss in 1799.

The principal experimental proofs, which were fraudulently evaded by Euler, were two. I now include some restatements of some of the points made above, in this specific context.

The first such proof, was Johannes Kepler's warning of the need to develop an intrinsically infinitesimal calculus, for astronomy, as this need was demonstrated experimentally, for the case of the planetary orbits, by Kepler's 1609 ***The New Astronomy.*** Leibniz's work in Paris, including the relevant study of the work of Fermat and Pascal, and Leibniz's collaboration with Christiaan Huyghens, produced Leibniz's original discovery of such a calculus, from about the time of his 1676 submission of that discovery to a Paris printer. The second, more comprehensive such proof, was the outcome of continuing work on this through the beginning of the next century, work which led Leibniz, working in collaboration with Jean Bernouilli, to the elaborated development of the physical principle of universal least action. This latter was a more adequate version of his earlier development of a calculus, as developed through a deeper examination of the evidence of physical pathways of quickest action (rather than the naive notion of shortest Euclidean pathway).

Leibniz had addressed this latter point in a richer elaboration of his uniquely original, earlier discovery of the infinitesimal calculus, in demonstrating the universal principle of physical least action, a demonstration which Euler referenced in his own, fraudulent attack, from Berlin, on this work by Leibniz. This added work by Leibniz, clarified the universal physical significance of the catenary, and defined the notion of natural logarithms before Euler's effort to redefine such logarithms from a reductionist standpoint. This work by Leibniz was to serve as a starting-point for Carl Gauss's definition, from 1799 on, of the complex domain and related general principles of mathematical-physical curvature.

Study of the practical implications of seeing the path from Gauss's development of the general principles of curvature, to Riemann's 1854 habilitation dissertation, illustrates the crucial importance of these issues for the teaching and practice of science today.

Euler's hateful attacks on Leibniz's work were therefore a product of asserting an argument which Euler knew to be false. In this way, he laid the basis for Immanuel Kant's reliance, in the latter's Critiques, on the argument by Euler and Lagrange, in Kant's own defense of axiomatic irrationalism. As I have already announced that intention above, I shall explain here, that the subject of Euler's hoaxes is not merely a problem internal to the formalities of classroom mathemati-

Gottfried Leibniz (1646-1716) and Carl Gauss (1777-1855). Gauss's 1799 "Fundamental Theorem of Algebra" exposed the fraud of Euler's famous attack on Leibniz, the discoverer of the infinitesimal calculus.

cal physics; it is nothing but a religious issue, the issue of the nature of the assumptions of belief, respecting the nature of man in the universe. Mathematicians shall not hide behind their blackboards, nor digital computers; the issue is not one peculiar to the department of mathematics, but to the domain of religious belief from which empiricism has drawn the policies which it has imposed, as axiomatic, upon empiricist practice of mathematics. It is, therefore, only in its relationship to religious belief that empiricism could be competently judged.

The appropriate treatment of such an issue does not belong in the department of arithmetic, but in the department of philosophy. By philosophy, I point to the subject of epistemology, in which attention is focussed upon the choice of the kind of slippery assumptions which modern sophist Euler, for example, superimposed arbitrarily upon the form of argument he employed against Leibniz. From the standpoint of epistemology, Euler's argument for his savage defamation of the modern Socrates, Leibniz, was essentially a parody of the methods of the ancient Sophists.

The religious side of this matter is one which needs to be made clear, with all delay removed: U.S. Speaker of the House of Representatives Tom DeLay, for example.

All that argument which I have summarized here so far, is true in its own right, as a mathematical-physics proposition as such. However, merely stating the formal proof of a fact is not sufficient. The proven facts I have cited so far, do not explain the essential practical implication of Euler's hoax for the political situation in Europe and the U.S.A. still today. We must show how and why this fraudulent defense of Isaac Newton, on an issue of mathematics, became a central feature of the Eighteenth-Century, and presently continuing attack on the political movement which led into the U.S. 1776 Declaration of Independence.

The political motive is the same motive behind the British monarchy's repeated 1763-1865 efforts to crush the U.S. republic in its cradle. An understanding of that same specific type of motive behind the Newton hoax, is of crucial importance for understanding the hoax itself. The key to understanding that motive is found, by treating philosophical empiricism for what it is, a form of pagan religious cult traced from sources such as the Phrygian cult of Dionysus, the Delphi cult of Apollo, and the Sophists' judicial murder of the ever-Sublime Socrates, in Athens at the close of the Fifth Century B.C.

Thus, as I shall show here, the importance of exposing the Newton myth as a hoax, in this way, is that: Only those with the personal integrity, and courage, to attack a religious problem of sophistry, such as the matter of empiricism, are capable of leading mankind to freedom, away from a repetition of the worst horrors which globally extended modern European civilization has experienced to date.

So far, what I have said in these prefatory remarks, either has been said, or might be said, by my collaborators (among other qualified reporters). I give that entire matter a different frame of reference, the role of emotion in the practice of scientific discovery and belief. I bring thus to physical science, the crucial importance of a moral issue, the issue of the difference between merely doing one's duty in the sense of performing an assigned task, and the seeking of and fulfilling a duty which is selected as a necessary service of a life's mission of immortal importance in itself.

In other words, we must distinguish between science, for

U.S. Speaker of the House Tom DeLay (left) typifies the infectious influence of the epistemological hoaxes perpetrated by Leonard Euler (1707-1783). "The subject of Euler's hoaxes is not merely a problem internal to the formalities of classroom mathematical physics; it is nothing but a religious issue, the issue of the nature of the assumptions of belief, respecting the nature of man in the universe."

example, practiced as a means to an end, and the practice of science as an end in itself. Science as a means to an end, poses the question, "Will it work?" Science as an end in itself, poses the question, "But, is it also true?" All the sad or even ugly failures of what might appear to be technically competent science, fall into the gulf lying between those two distinctly different ways of practicing science.

One way, perhaps the best way of illustrating that point to a relevant contemporary audience is, as I have already stated here, to lay the emphasis on the fact that the frauds of such as Leonhard Euler must be attributed to a nasty variety of explicitly religious belief.

1. Empiricism As a Religion

I shall now show that the adopted empiricism of Euler and his co-thinkers is a religion.

In the preceding introduction, I have indicated summarily that the Venetian neo-Aristoteleanism and empiricism which erupted as instruments of medieval reaction during the Sixteenth and Seventeenth Centuries, were implicitly and chiefly anti-Christian religious movements. That is to say, movements which sought to defend not only the medieval, but earlier practice of holding the masses of the population in a state of virtual bestiality, as human cattle, such as slaves or serfs. This was done by placing the claims of financier-oligarchical usury above the principle of human life, that in the same spirit a farmer might cull a herd of cattle, for profit, convenience, or, as the Spartan tradition or the Emperor Nero would have done, mere amusement.

By invoking an irrationally arbitrary principle of dogma, such as John Locke's or Adam Smith's notion of "profit," in opposition to Christianity, in particular, as U.S. House Speaker Tom DeLay and U.S. Associate Supreme Court Justice Antonin Scalia's doctrine of "shareholder value" do today, those Venetian novelties known as neo-Aristoteleanism and empiricism defined themselves as pro-Satanic religions: as I shall show that connection here.

The relevant argument, which I have made frequently in earlier publications, may be fairly summarized as follows.

Were man merely a more developed form of higher ape, as Britain's Thomas Huxley and Frederick Engels insisted, the population-potential of the human species would never have exceeded several millions living individuals. Today, we have a reported population in excess of six billions. An argument to the same general effect was made by Russia's V.I. Vernadsky, in showing, on the evidence of geobiochemistry, that mankind expresses a power, of a principled form, which is categorically absent in such inferior species as the higher apes, a noëtic power typified by the discovery of experimentally valid universal physical principles.

Vernadsky's successive definitions of the Biosphere and Noösphere, divided the known universe of experimental physical science among the three Classical categories which are now known to modern science by the names of the abiotic, the living, and the noëtic. These are, functionally, respectively, phase-spaces; they are, when taken together—as they must be to make sense of our universe—multiply-connected phase-spaces. This implicitly defines our known universe as Riemannian, in the sense of Bernhard Riemann's 1854 habilitation dissertation.[3]

Although Vernadsky's argument is grounded on the evidence of an experimental physics in the tradition of his teacher Mendeleyev, especially in an expanded view of physical chemistry, our ordinary sort of experimental knowledge of a relevant principle of life, and of a noëtic principle, remains

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

essentially negative. We can demonstrate the presence, or absence of life; but, by the nature of the situation, a principle of life can not be positively affirmed from the standpoint of an ordinary abiotic physics. Thus, abiotic and living processes are shown, by experimental methods, to belong to respectively different phase-spaces, but both are, nonetheless, efficiently multiply-connected phase-spaces. Furthermore, all three—abiotic, living, and noëtic—are multiply-connected as a functional set. Similarly, the existence of the noëtic function, as distinct from that occurring in any known form of life other than man, is clear; but, the principle of noësis itself can not be accessed positively from the standpoint of an abiotic physics, nor even living processes in general.

Those difficulties should force our attention to a subject which was first defined for us, in terms of surviving literature, by Plato's dialogues. The human sense-perceptual processes are functions of our biology. Therefore, we can not claim that sense-perception shows us the world "outside our skins" directly; but, as Plato employs his allegory of "The Cave" to convey this notion, qualified experience does show that the human individual's matured sense-perceptual processes present us with the shadows which many among the processes outside our skins cast upon our mental-sensory processes.

For that specific reason, several years ago, I proposed to the members of my then emerging youth movement (principally of persons in the 18-25 age-interval of university students), that they remedy their present education by beginning with the ironies of Carl Gauss's definition of the complex domain, as encountered in his 1799 ***The Fundamental Theorem of Algebra.*** I proposed that they define the concept of an idea from the standpoint that 1799 paper proffers; and that they, then, organize their studies historically, as a matter of the history of ideas, as ideas are so defined implicitly. I have often repeated that proposal, as now, again.

I shall now show, that, from that standpoint, the referenced paradoxes posed by Vernadsky's presentation of the concepts of Biosphere and Noösphere, can be approached with some degree of approximate success. I explain.

The enduring elegance, and pure delight afforded by Gauss's first published work, his 1799 ***The Fundamental Theorem of Algebra,*** is that, although it is greatly indebted on that account to the education provided by his great teachers, Zimmermann and Kästner, it establishes the essentially relevant, direct connection of the modern tradition of Nicholas of Cusa, Leonardo da Vinci, and Leibniz to that tradition's ancient Classical roots in the founding of modern European science by the circles of Thales, Heraclitus, and Pythagoras. I shall begin the illustration of this specific argument by returning to the case of Kepler.

What Is a Universal Principle?

To repeat here what must be often repeated: Once we have abandoned the reductionist's misconception of space, as that is associated with Euclid, Descartes, et al., we are impelled to return to a pre-Euclidean, physical, constructive geometry, as typified by Archytas' solution for the Delian paradox, and the treatment of the physical implications of the Platonic solids by Plato, Kepler, et al.

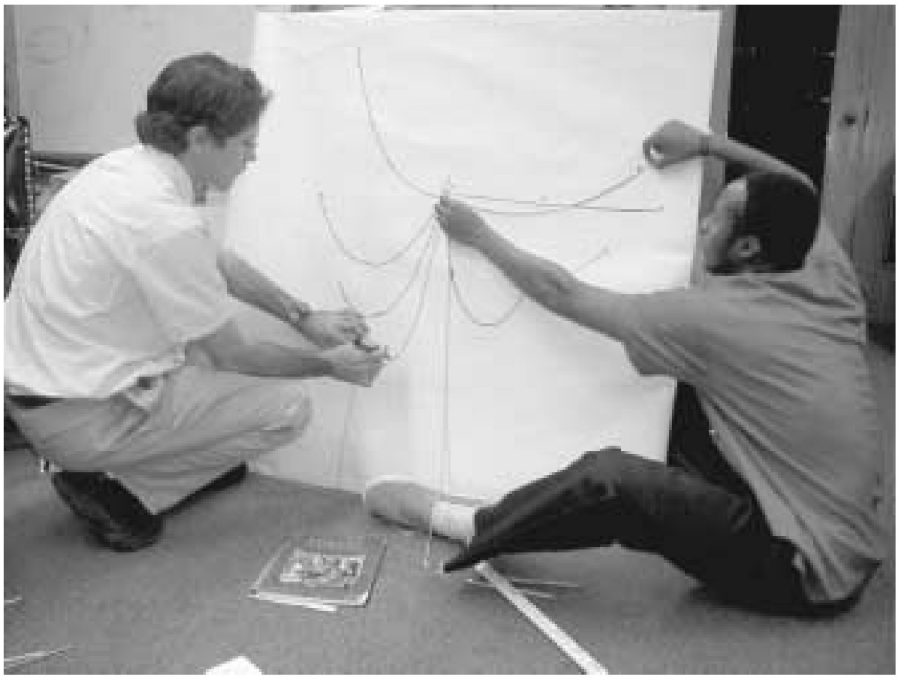
This signifies to the mathematician that we must adopt the standpoint of spherics as the elementary form of the physical geometry of sense-perception. In that experimental domain of physical geometry, we are confronted with formally insoluble paradoxes, such as the case of the physical implications of the Platonic solids in demonstrating a difference in mathematical principle between abiotic and living processes. At that point, we must leave the department of mathematics, as Bernhard Riemann concludes his habilitation dissertation, for the department of experimental physical science.

Archytas' solution for the Delian paradox is perhaps the best point from which to start such studies. The advantage is, that two mean actions can each be represented in a visual way, but they, as actions by which the cube is doubled, are invisible to an attempt to view the actual doubling of the cube. This paradoxical picture, typifies the necessity of Gauss's development of the notion of the complex domain, and also affords us efficient insight into the physical implications of Riemann's leading work. From that point, proceed as follows.

Take as our first choice of illustration, Kepler's uniquely original discovery of universal gravitation, as sufficiently illustrated by his 1609 ***The New Astronomy.*** The evidence that, a) the orbit of Mars is virtually elliptical, and that b) the rate of change of the motion of the planet along that normalized set of observations of its orbital pathway is inconstant, signifies some agency from outside our powers of sense-perception is controlling this visible behavior. Similarly, Fermat's experimental demonstration that light follows a pathway of quickest action, rather than shortest (Euclidean) distance, provided the point of departure for the further work of Christiaan Huyghens, Leibniz, and Jean Bernouilli, leading to the principle of universal physical least action, and Leibniz's uniquely original discovery of the catenary-related notion of natural logarithms. These kinds of experiences, throughout the scope of physical science, define that modern notion of universal physical principles, which is consistent with what was set into motion by Nicholas of Cusa's founding of the unfolding process of development of modern science, in his ***De Docta Ignorantia.***

To repeat here what must be repeated from my frequent published statements to the same effect: By the nature of our processes of sense-perception, our direct perception of the world "outside our skins" (so to speak) does not show us that world "outside our skins," but, rather, the impact of that unperceived real world upon the biology of our mental-sensory processes. In other words, the shadows on the wall of Plato's Cave. However, it is a specific quality of the human mind, a quality absent in other living species, that we are able to adduce paradoxes from among the processes of sensed experience, and able to comprehend those paradoxes as experimentally demonstrable universal physical principles.

This specific quality of the human mind is congruent with



LaRouche movement organizers in Chicago demonstrate Leibniz's work on the catenary (the shape traced by a hanging chain): a discovery of universal physical principle in physical geometry, whose importance is ignored by the empiricists.

the three-phase-space characteristic of our known experience of the universe as a whole: that from our standpoint, as Vernadsky made this distinction, the universe is composed of a multiply-connected array of abiotic, living, and human mental processes, such that the relatively lower can not access the specifically characteristic principle of the higher, but that the higher can access control over the lower. So, the attempt by radical positivists to adduce the principle of life from the abiotic, or the noëtic from biology in general, are to be classed technically as behavior symptomizing the typical effects of a reductionist's delusion. What that says, is that the universe as a whole, which is composed of a multiply-connected ordering among the three specific phase-spaces, acts upon all aspects of that universe. This works to the included effect of superimposing upon a specific quality of living organism, the human being, a quality of those noëtic powers which are typically expressed as that quality of human reason whose existence reductionists such as Kant and Laplace denied.

We, as individuals, are not some creature which evolved from the upward evolutionary progress internal to living muck; we reflect an intervention into that muck, from above, an intervention which distinguishes us absolutely from the apes.

For example: The most crucial of the issues of religious belief, are located in that way.

The Religious Side of Empiricism

Notably, the monotheistic idea of God as the Creator of the universe, is an actual idea of the same specific qualities as any experimentally validated universal physical principle, one generated by the individual mind's power to form experimentally validatable, non-self-evident ideas. For example, consider the Aristotelean's self-evident conception of a Creator as a creature who, by creating the universe, had deprived himself of the power to alter the course predetermined by the laws built into the original creation. God the Creator is not an object of Creation, but a continually acting Creator; we are a particular (individual) expression of that process of continuing creation. We, as individuals, are a mirror of the image of that Creator. It is by expressing that creativity that we are acting as representatives of the human species.

This brings us directly to the crucial issue of the science of physical economy. The human being who follows faithfully in imitation of the traditional ways of economic life in which his or ancestors acted, as the code of Diocletian, for example, prescribes, is living as human cattle, not as a human being. He or she is behaving, not as a human being, but as a cow.

That cow is selected from the breeding process by qualities estimated to be fruitful for the cattle-herder, a process which sends some to early culling, slaughter. The cow who is privileged to survive, is "cared for," herded into the field, impregnated by the chosen bull, milked and fed in the barn, until the time for her culling (slaughter) has come. If it appears to the farmer that the bulls are being permitted to enjoy the cows, the farmer also watches the results of the breeding closely, to determine whether or not the progeny of those unions are satisfactory; if not, off to the slaughter-house with them! The accountants have decreed: No expenditure wasted on health-care for those who have passed their productive prime!

What distinguishes a person's life of labor from the nature of a mere beast? What else but freedom from the way of the medieval European guild!? Change, in the sense of development, is human freedom! It is the expression of the noëtic powers of the individual, as typified by a society committed to an upward track in scientific and technological progress, which distinguishes human beings, in practice, from beasts.

In a manner of speaking, a human personality is defined by what that individual accomplishes within the scope of that temporary visit to current history called individual life. However, important as such deeds must be, those deeds alone do not satisfy the more essential need of the mortal person. The

essential quality of human need is located in a social process based upon the individual's development for its own sake. A person is what he, or she is the process of becoming. Becoming is those actions which express the fulfillment of the noëtic potential of both the individual as such, and the development of the society through the individual's interventions into its life. Human life is noësis per se, a particular expression of the universal creativity located in the Creator of the universe. It is being such a person which is the highest condition of individual humanity.

Such is human nature. Such is the premise of all natural law respecting human beings, physical science, Classical artistic composition, and society.

I shall return to this at a suitable point, later in this report. Now, return to the focus on physical science.

The Complex Domain of Noësis

If and when we discover and prove the efficient existence of a universal physical principle, we are implicitly confronted with the following problem of mathematical representation of that discovery.

Our discovery began with recognition of a special significance of a paradox in the evidence presented to us by our sense-perceptions. Kepler's discovery, through normalization of observations by Tycho Brahe and himself, of the paradoxical features of the elliptical orbit of Mars, is an example of this. Kepler sought the invisible principle which had caused this anomalous effect; he sought what his translator termed "the intention"—the Creator's intention—which had produced that apparently anomalous effect. This intention he identified as his hypothesis respecting a principle of universal gravitation. Through measures he reported in that book, and also additional qualifications reported in subsequent writings, he accomplished four things of relevance, as examples, for our present discussion here.

First, he qualified his discovery of universal gravitation as not only an appropriate form of hypothesis, but an experimentally demonstrated universal principle.

Second, he developed a general observation on certain anomalies of mathematics previously addressed by Plato, and by such followers of Nicholas of Cusa as Luca Pacioli and Leonardo da Vinci, respecting the implications of the Platonic solids, and related implications for music.

Third, from this work he concluded the necessary former existence of a missing planetary orbit between those of Mars and Jupiter, the orbit of a planet which destroyed itself because of anomalous harmonic characteristics of its determined-as-necessary orbit. This Kepler hypothesis was essentially proven by Carl Gauss's discovery of the orbit of such principal asteroids as Ceres.

Fourth, he pointed to two incomplete features of his own discoveries, problems which he relegated to future mathematicians:

First, those future mathematicians must define elliptical functions. This problem was solved in essentials by the work of Gauss and his collaborators and followers, including Abel and Riemann.

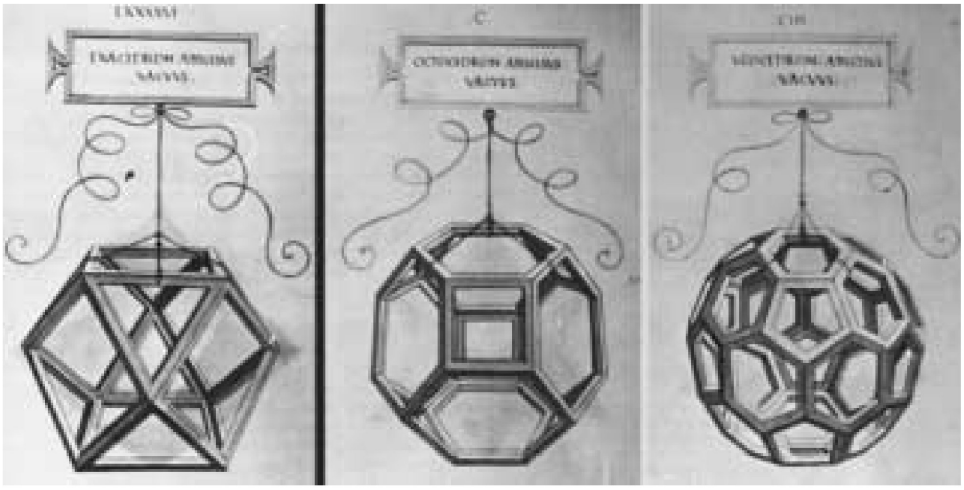
Second, those future mathematicians must develop a truly infinitesimal calculus corresponding to the implications of Kepler's discoveries in gravitation. This was accomplished, first, both by the uniquely original discovery of such a calculus by Leibniz, and by Leibniz's subsequent refinement of that, in collaboration with Jean Bernouilli, in defining a universal principle of physical least action. The generalization of such a mathematical physics was accomplished by the work on reforms of taught mathematics of the time, which were accomplished through emphasis on those higher principles of geometry which had been evaded by the empiricists. This was brought to a rounded state of generalization, by a number of crucial successors of the circles of Gauss and Riemann, with an essential contribution by Abel. The generalization of this challenge by Riemann, was modelled on thinking in that direction accomplished by Gauss.

This sweep of the development of the hypothesis of universal gravitation into the form of an experimentally demonstrated universal physical principle, typifies the case I am addressing at this juncture. This referenced case illustrates crucial features of all human knowledge, and, therefore, of categorical distinctions of human nature from that of beasts and empiricists alike. Such experience of scientific progress also demonstrates several crucial challenges to those who would represent themselves as purveyors of mathematical physics.

Firstly, although discovery shows that the images of sense-perception are shadows of reality, rather than substance, we can not deny the role of sense-perception. Yet, experiment has shown that sense-perception as such does not represent the universal physical principles which control our universe, the universe whose passing footprint is reflected as the shadows of sense-perception. Therefore, to define any event, we must combine both elements, shadow and substance, in a single expression of the form typified by Gauss's definition of the complex domain. There is no "imaginary" component in that complex domain; what the empiricist fanatics D'Alembert, Euler, and Lagrange defined as "imaginary numbers," were an indispensable aspect of a reality in which real perception and real, unseen causes are united in a single form of representation.

This challenge, as met by Gauss beginning 1797 (as reflected in the 1799 ***Fundamental Theorem of Algebra***), did not spring from a mere response to the blunders of Euler, et al. on issues posed by the Cardan problem of cubic roots. Gauss was a student of the Kästner and Zimmermann, who were among the leading proponents of the mathematics work of Leibniz at that time.

Look at the political history behind the prevalent present-day academic nonsense on the subject of the content of Gauss's 1799 paper. Leipzig-born Göttingen University Professor Kästner was the leading teacher of mathematics in Germany of that time, and also not only the leading, public de-



Leonardo da Vinci's drawings for Luca Pacioli's geometry text, The Divine Proportion. Kepler identified the importance of the anomalies of mathematics respecting the Platonic solids, and related implications for music.

fender in Germany of the work of two other names of Leipzig, Leibniz and J.S. Bach; but the mentor of another, the Ephraim Lessing who, in concert with Moses Mendelssohn, had virtually founded that late-Eighteenth-Century Classical Humanist renaissance from which the international Classical Humanist movement of the late Eighteenth Century spread throughout Europe and into the Americas.

Kästner was also the one-time host and helper of founder of the U.S. republic, Benjamin Franklin, and the German whose inspiration was crucial in rescuing Shakespeare from a British Enlightenment artistic garbage-dump, to give rebirth to England's own, great but discarded English literature; this done, in large part, through the revival of the true Shakespeare in Germany.

Kästner was also the founder of rebirth of that ante-Euclidean physical geometry properly recognized as anti-Euclidean today. Thus, when Gauss, nearly a half-century later, wrote to Jonas and Wolfgang Bolyai about Gauss's own original discovery of an anti-Euclidean geometry, Gauss was not referring to interesting so-called "non-Euclidean" geometries of Lobatchevsky and young Bolyai, but the kind of actually anti-Euclidean geometry declared by Bernhard Riemann in the opening paragraph of Riemann's 1854 habilitation dissertation. Essentially, as Gauss's argument in the 1799 paper attests, his views on geometry, as reflected in that 1799 paper, were already an anti-Euclidean geometry, one built upon modern supplements to the work of pre-Euclidean constructive geometry in the Pythagorean tradition.

The sponsorship of empiricist Lagrange's decrees by the Emperor Napoleon Bonaparte, would have almost extinguished Gauss's scientific career but for the intervention of the circles of the Ecole Polytechnique of France's Lazare Carnot et al. Gauss was a special target of persecution during portions of the reign of Napoleon.

Later, the dictatorship of Lagrange disciples Laplace and Cauchy, virtually wrecked the Ecole, a wrecking officially prescribed by the London-appointed Restoration monarchy of France; the hegemony of the empiricists was established under the ascending slime of Romanticism which spread throughout the scientific and artistic culture with the rise of Napoleon and the aftermath of the Metternich-Castlereagh (sexual) Congress of Vienna (where the counting of votes was done by countesses arranged in bedrooms according to the provisions of Metternich and the princedom's same Chancellor-run Geheimpolizei which spied against Beethoven during comparable periods of time). The letters of Gauss prompted by Jonas and Wolfgang Bolyai's complaints against Gauss's announcement of the originality of his own youthful discovery of an actually anti-Euclidean geometry, reflect, thus, the police-state atmosphere under which European science was still menaced during most of the later life of Gauss's sponsor Alexander von Humboldt.

Such is often the political history, even police-state history of science. Secret-police agencies and ministers of justice are often boorish fellows, but they, or their employers, have learned that real ideas are the most powerful forces in the history of mankind, such that a single idea, once spread, may be more powerful in shaping history than even a large army. The suppression of politically unwanted ideas, is the dominant feature of the history of brutal official and kindred forms of oppression. If one can not put the idea in prison, or, at the least, ostracism, putting the thinker there may produce the effect desired by his enemies, if, perhaps, as my own case has demonstrated, only temporarily.

The fascinating feature of the history of ideas, such as those of the ancient Pythagoreans, Plato's Academy of Athens, the Fifteenth-Century Renaissance, Kepler, Leibniz, Gauss, Riemann, et al., is that these ideas sometimes spring forth afresh, sometimes after intervening leaps of many generations. In numerous cases, the rebirth of such an idea occurs as a rediscovery which was prompted by recognition of the work of a named discoverer, even thousands of years after his death. Some, reflecting on this, ask: "Has God intervened in the interest of justice?" In a certain way, the answer is "Yes."

Members of the LaRouche Youth Movement in Seattle use cubic blocks to investigate the principle of powers. "The power which intervened to set the human species apart from, and above all other forms of life, expresses the intervention as a simmering potential, waiting to spring forth from each newborn human individual."

We who discover, or rediscover, are the instruments by which such seeming miracles may be accomplished, as if we were ancient prophets on a modern mission. The principle we express by such work, is the highest-ranking principle known to us as existing in the universe: the principle which sets us apart from and above apes such as Thomas Huxley professed himself to be, and such as Huxley's virtual pet baboon, H.G. Wells, who demonstrated the bestiality, perhaps sexually and otherwise, which he had been taught at his master's beckoning.

With the birth of each child, a potential discoverer appears, ready to revive and advance the cause of noësis. It appears to us, that the likelihood of such a happy outcome of that newborn human life usually depends upon the nurture of the young, and might be restricted, therefore, by the qualities of opportunities afforded to the young and adult individuals. Sometimes, what is justly recognized as a genius, erupts in seeming defiance of all those circumstances of individual life which would seem to have prevented such a happy outcome. The fact remains, that mankind has risen from that level of population of a few ape-like millions which appears, in practice, to have been the desire of such reductionists as the empiricists. Even the fanatically empiricist Euler was a very clever fellow, remarkably useful in some ways. The power which intervened to set the human species apart from, and above all other forms of life, expresses the intervention as a simmering potential, waiting to spring forth from each newborn human individual.

The crime to be prevented, is the suppression of that happy outcome in the young. Empiricism is such a crime against humanity, an offense against the Creator's clearly expressed intention.

Reductionism and Satanism

The difference, therefore, between man and beast, is expressed, in a unique manner and degree, by man's willful access to knowledge and control of what we have identified here as universal physical principles. The nature of man lies, thus, in the way in which the human mind is capable of comprehending what Gauss, in opposition to Euler and Lagrange, et al., defines as the complex domain. Reality is as Riemann states the principled case sharply in the opening of his habilitation dissertation. This is man in the image of the Creator.

The reductionists, from such traditions as the Delphi cult of Apollo, through the Sophists as such, Aristotle, and the modern intellectual and moral degenerates known as the empiricists, positivists, and existentialists, et al., either simply reject the notion of man as in the image of the Creator, or invent a diabolical concoction—such as that of Quesnay and Adam Smith—the willful demon which they proffer as a substitute for the Creator. Empiricists Hobbes, Locke, Mandeville, Hume, Adam Smith, and Jeremy Bentham, like Quesnay, quite plainly define what Smith calls "The Great Director of Nature" as a demonic creature expressing the same nature as the vice worshipped by Mandeville. Like Thomas Huxley, these other reductionists do not merely describe man as a beast; they also demand that society be ordered in such a way that morality of state, church, and individual alike, is defined, as Hobbes did, as the obligatory, predatory nature of beast-men. From the standpoint of science, there is no different definition of Satan and Satanism than that.

The motive for such Satanism as that of Sarpi, Hobbes, Locke, et al., is essentially political. If the majority of humanity is to be hunted or herded, and culled, as Locke's ***Essays on Human Understanding*** prescribe, as beasts are, then man must be defined politically, and by law. or in other expressions of public immorality, as nothing better than a beast. This purpose of such wickedness is not merely to entertain a low opinion of, and predatory behavior toward one's fellow-creature. The purpose is to prevent those parts of humanity held subject to the status of human cattle, from learning to practice the kind of behavior which would cause them to recognize the essential distinction between themselves and beasts. This is accomplished by prohibiting the lower classes, such as the

lower eighty percentiles of U.S. family-income brackets today, from actually practicing scientific and technological progress. The predator interest requires that the idea of actual scientific and technological practice be uprooted, or even made abhorrent, as the so-called "ecology movement" has expressed this maliciously intended perversion.

It is not possible for modern society, with its post-Fifteenth-Century population densities, to persist, if it were to resist scientific and technological progress altogether. Consequently, the feasible objectives of the predatory classes are: to tend toward inhibiting scientific and related progress when its immediate necessity can not be avoided; and, above all, to deny the subjugated strata of society the right to know the general principles for generating such progress; that, as a capability which is characteristic of the human individual. The object is to cause the victims not merely to believe that they are cows, but to be prepared to fight fiercely to maintain their proud status as mere cattle. Such was the intention of the Sophists, as this was exposed by Plato, and the intention of Aristotle after them. Such has been the intention of reductionists such as the modern empiricists and their offshoots, the positivists, pragmatists, and existentialists, since Sarpi. Such was the intent of Hobbes' "each against all," and of what Locke termed "property" and Justice Scalia "shareholder value." Modern science, as introduced by the Fifteenth-Century circles of Brunelleschi, Nicholas of Cusa, Luca Pacioli, and Leonardo da Vinci, has confronted the modern philosophical descendants of the Sophists with a new degree of challenge on this account.

The Fifteenth-Century Renaissance not only reversed the awful collapse of European population which was characteristic of the preceding century's "New Dark Age." The Renaissance set into a motion a long-term improvement of the standard of living and fecundity of the European and other, affected populations. The improved conditions of individual and social life unleashed by the Renaissance and its effects, depend upon a long-ranging trend of improvement in the potential relative population-density of mankind, a trend which depends upon realized scientific-technological and related cultural progress. Were this progress to be halted for a generation or more, the long-term effects would be a tendency toward a plunge into a new dark age, with deep levels of depopulation, and even eradication of entire branches of human cultures. Moreover, collapses of this class could not be prevented without new leaps in scientific-technological progress in the productive powers of labor and standard of living. No general turning back of the clock of progress were possible which did not lead into a catastrophic new dark age, perhaps a planetary new dark age. Since that Fifteenth-Century Renaissance, scientific and technological progress is now the law of civilization; cultures which resist that law will disappear, destroyed by their own will and hand.

Thus, the practice of modern European science since those developments within, and following the Fifteenth-Century Renaissance, presented the reductionists with a new threat: the emergence of a systemically practiced modern science; and, also, the related developments of Classical humanist modes of artistic composition; as both were but typified with a certain extraordinary excellence, by the intellectual fertility of Leonardo. Experience showed the reductionists that the role of a systemically practiced modern science must be attacked in a new way. A more vicious expression of the sophistry of Aristotle was required by them. The empiricism pioneered by Sarpi and his personal lackey Galileo Galilei, was the result.

Therefore, if it were not possible for a durable form of national culture to ban the impact of scientific progress from general practice of society absolutely, a sophistical sort of substitute for that science might be concocted. Galileo's fraud, "action at a distance," typified the result of such scheming. By explaining the results of science in the fraudulent fashion a modern form of sophist would desire, it were feasible to train people in the practice of the new technologies, without exposing them to the methods by which discoveries of universal physical principles had occurred up to that time. In this way, by crafting the approved methods of teaching of the practice of science to the effect of making the victim of such education hostile to that essential principle—the Platonic principle of hypothesis defining the process of discovery of fundamental principles—the fruits of science might be plucked by the aristocratic rulers without letting the prestige of modern science infect the population with what the reductionist sort of political philosophers and kindred scoundrels might consider to be excessive admiration for the practice of scientific progress. Therefore, by such "brainwashing" of popular opinion, they might suppress what might be deemed excessive enthusiasm for the sacred distinction of the human individual. So, lunatic Newton wrote: "hypothesis was not necessary." So, during the 1890s, after he had been driven insane by his persecutors, Georg Cantor repudiated his great achievements of the preceding decade by writing the same lunatic's motto, "hypothesis was not necessary."[4]

Appropriate study of the case of Gauss's 1799 theorem,

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4. Georg Cantor, ***Beiträge zur Begründung der transfiniten Mengelehre,*** 1897. English translation published as ***Contribution to the Founding of the Theory of Transfinite Numbers,*** reprint of the 1915 Jourdain translation, with extended introduction by Philip E. B Jourdain (New York: Dover Publications Reprint edition). Under the impact of a savage, inquisitional quality of attack, led by Leopold Kronecker, the brilliant Georg Cantor of his middle 1880s work fell into fits of insanity which orbitted around an embarrassing effort to induce Pope Leo XIII to adopt the method of Isaac Newton. The theosophist Rudolf Steiner and Bertrand Russell came to play typical, pathogenic roles in fostering some of this problematic behavior. However, apart from the importance of his ***Grundlagen*** and his complementary correspondence on that subject during the middle to late 1880s, there was a deeply humanistic side to Cantor, which he identified with his ancestor Josef Böhm, the collaborator of Beethoven on the performance of the late quartets, and the method of the Böhm school of violin performance of which Cantor was a qualified amateur performer.

For the lunatic Isaac Newton, "hypothesis was not necessary." Here, Harpo Marx as Newton in the 1957 film "The Story of Mankind."

neatly illustrates the way in which the empiricist frauds of Sarpi, Galileo, Euler, Lagrange, et al., were crafted.

As I have repeatedly restated my frequent argument in this report, the scientist's distinction of the human being from the beast, points to the fact that what are demonstrated experimentally to be universal physical principles are ideas which exist beyond the direct reach of human sense-perception. They are known only through the process of hypothesizing, as Plato's dialogues, or the earlier precedents of pre-Euclidean Greek constructive geometry illustrate that fact. The consequence of this knowledge of the nature of such principles is that modern mathematical physics is obliged to combine the apparent action, as sense-perception defines action, with those discovered universal physical principles which exist only beyond the direct reach of sense-perception. The functional interrelationship of these two is the reality of the complex domain.

The use of the term "imaginary" for the square roots of negative numbers, as by Euler and Lagrange, is provocative. These are really imaginary in one sense of the use of that word, but only in the sense that they are the most significant aspect of a reality, an image of a reality reachable by human knowledge only through the human individual's power of hypothesizing and proving hypotheses experimentally. Yet, Euler et al. insist that these so-called "imaginary" components of mathematical-physical reality are not real; and they misuse the word "imaginary" as a sophist's way of lying, by denying that these elements are not merely real, but indispensable for scientific progress.

The Satanic aspect of their misuse of the term "imaginary," is made apparent by considering the categorical nature of the effect their sophistry concocts. They not only deny a truth which is important for the continued existence of our species; they prohibit man from knowing his own nature, and thus degrade the credulous students of their doctrine into a form of mere human cattle. That is Satanic!

2. Science & Passion

For example:

Most among today's teachers and professors of mathematics are, in effect, clinically insane in their customary treatment of that and related subject-matters. The experimental proof of that fact has been lately demonstrated, more or less widely, on two continents, North America and Eurasia. It is implicitly demonstrated on all of them.

In the U.S.A. itself, the presently generally accepted practice of public education has reached the proportions of what might rightly be called "menticide." The textbooks, examination-and-grading procedures, and teachers and professors of this quality, assume that the consistency of a closed deductive-inductive system, if perfectly consistent in its own chosen terms, is therefore real knowledge. That form of sophistry, as practiced by such persons and institutions, is, in fact, a form of nothing other than clinical schizophrenia: a form of what may be called either "legalized," or "popularized" schizophrenia.

This point is more or less readily demonstrated to be true, by challenging almost any professor of mathematics or mathematical physics who merely accepts that notion of mathematical consistency in defiance of the issues posed by Carl Gauss in his 1799 ***The Fundamental Theorem of Algebra.*** The customary reaction from that professor, if challenged in an efficiently rigorous way, will be a sudden explosion into the type of utterly irrational, childish tantrum specific to a mental disease. The instances of specific tantrums of that wildly irrational type, from such pedagogues and the like, continue to be numerous.

The pedagogical point I am emphasizing in introducing that issue of sanity at this moment, is that the pretense of that sort of mathematician, or mathematical physicist, is his claim that his claimed objectivity is intrinsically unemotional. In other words, he or she assumes that physical science is based on reductionist mathematics, and that that mathematics is purely deductive-inductive. The explosion of emotion in the referenced sort of tantrum, proves that they, as professionals,

Construction of Platonic and Archimedian solids in a Schiller Institute Summer camp, using the pre-Euclidean, constructive geometry of "spherics."

are living a very, very emotional, big, very personal, lie. By identifying the fallacy of the definitions which they have adopted as a substitute for the real, physical universe outside their Laputan fantasies, a knowledgeable critic can trigger a clinically crucial, insane outburst from them.

Their insanity has principally two aspects. The first principle of their systemic insanity, is their delusion, that truth is "objective": rooted in the combination of sense-perception with a set of purely fictitious choices of sets of deductive forms of definitions, axioms, and postulates. The second principle, which is assumed to be a correlative of the first, is that emotion has no place in mathematical, or comparable modes of supposedly reasonable thinking. In point of fact, their minds are like goldfish swimming in a bowl, such that, for them, nothing exists outside the water contained within that bowl. In their mathematical schemas, the reality of mathematical physics exists in a goldfish bowl-like sub-universe, from which emotion and reality, alike, are shut out. To cause a leak in that container which holds the water, unleashes a flood of emotion in them.

We who might have provoked this reaction, did not actually cause that emotional display by them. We simply unlocked it, like tapping on a vial of overheated nitroglycerine. The explosion was an expression of the brutal repression which had been their continued experience, usually since childhood. This emotionally charged repression, this, their internalized Gestapo, had been the mechanism by which they were conditioned to adopt the ivory-tower assumptions at issue. The emotion expressed by the irrational outburst of emotion by them, was the result of pushing their attention to the fact of the container in which their delusory notion of mathematical principles was contained. The container was of the ontological quality of a fear-stricken emotion of repression. That fear is what had imprisoned them, acting to this effect as what we experience from their wildly irrational outbursts, as the habituated set of emotional shackles on their minds.

The emotion expressed by their explosions of irrational rage, was the "force" which herded them into the set of so-called self-evident assumptions which they had pretended, until provoked, to express in an emotion-free way. That was the "force" of intellectual repression. When you made visible the barrier which contained their conditioned-as-emotion-free views; by merely making that barrier visible, you touched off the explosive charge that barrier represented.

One must add, that provoking such a reaction in that way, is not "doing a bad thing;" it is not a violation of what we could, defensibly, call polite behavior. Only if and when such a professor has, first of all, experienced such a "catharsis," will he or she be capable of becoming sane. It is not naughty to make lunatics sane; quite the opposite. Thus, telling the truth will usually touch off those or similar kinds of explosions of anger; the way to avoid such outbursts is to condone and nourish the lies, which is itself a form of lying commonly practiced by cowardly candidates for the U.S. Presidential nomination, and others.

Take the case of Euclidean geometry as an example of the way in which such forms of functional schizophrenia function.

The Thirteen Books of Euclid, are like a Scotsman's haggis, a lot of things, picked up from here and there, and stuffed into a kind of pudding. Many of the pieces which might be picked out of that pudding were generated as fruits of serious, competent investigations. When the pudding is taken as a

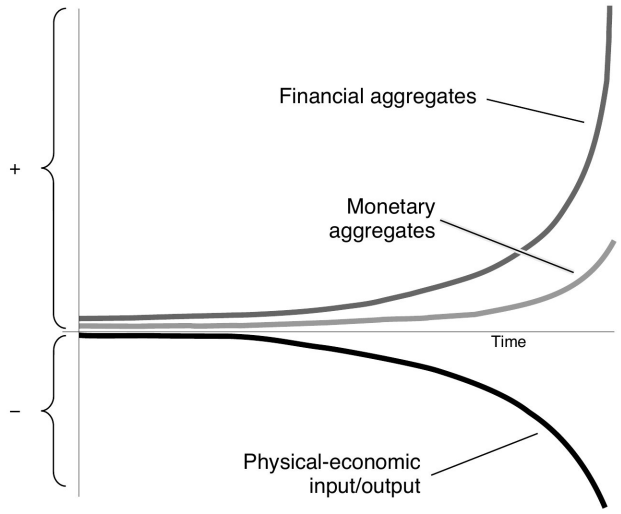
whole, the arrangement among the component parts is riddled with paradoxes, especially respecting the contents of the Tenth through Thirteenth of those books. Those latter books should be recognized as implicitly contradicting the set of so-called self-evident definitions, axioms, and postulates, on which the entirety of the content of ***Euclid's Elements*** depends.

The paradoxes reflected there, are a result of the fact that Euclid has replaced the real domain of "spherics," from which the ironical content of the Tenth through Thirteenth books was, chiefly, derived, by a childish fantasy-world in which objects are floating within an imaginary soup of linear space and time. The most critical features of the last three books, reflect the contributions of the pre-Euclidean, constructive geometry. This latter is the geometry which the Pythagoreans, et al. derived, as "spherics," from the kind of interrelated knowledge of astronomy and oceanic navigation which the emerging Greek culture derived chiefly from that Egyptian tradition typified by the design of the Great Pyramids. The error of the Euclidean or kindred sorts of a priori definitions, axioms, and postulates, is what polluted the so-called "mainstream" of European science's mathematics, as Riemann reported in the opening two paragraphs of his 1854 habilitation dissertation.[5]

Riemann thus reaches back to a time prior to Euclid. In fact, he combines the historical tradition of the pre-Euclidean, constructive geometry of "spherics," of Thales, Heraclitus, the Pythagoreans, and Plato, with the principal accomplishments of modern science since Nicholas of Cusa's ***De Docta Ignorantia,*** the latter including the work of such successors of Cusa as Leonardo da Vinci, Kepler, Fermat, Huyghens, Leibniz, and Riemann's principal predecessor, Carl Gauss. Following the line of Gauss's 1799 attack on Euler, Lagrange, et al., in Gauss's ***The Fundamental Theorem of Algebra,*** Riemann makes the most crucial of the steps which implicitly free European civilization's science from the relics of thousands of years of reductionist decadence.

My own, 1948-1953, crucial original contributions to Leibniz's 1671-1716 founding of the science of physical economy, had the specific, crucial significance of resolving what C.P. Snow fairly named the "two cultures" paradox of contemporary education. That is to say, the division of physical science from Classical art. My solution to this "two cultures" paradox depended upon showing the common ontological characteristics of Classical artistic principles of nonplastic art and scientific discovery, the latter as expressed by increase of the productive powers of labor through technological progress.

FIGURE 1
LaRouche's Typical Collapse Function



LaRouche's "Triple Curve" schematic diagram, first presented in 1995, shows how the cancerous rise of financial and monetary aggregates destroys the physical economy at an increasing rate.

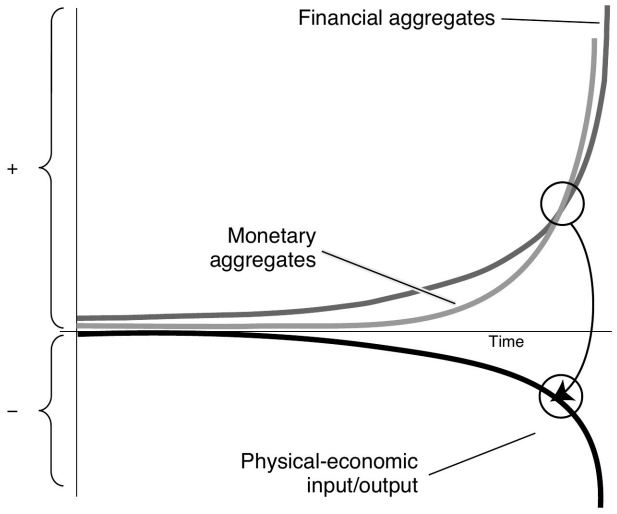
As a result of that work, which was done at sundry intervals of 1948-1953, I was able to eliminate the need for efforts to derive principles of political-economy from monetary processes, as the British Haileybury school had done; and, instead, to define monetary processes from the standpoint of comparative potential relative population-density (per capita and per square kilometer). The organization of my effort had the following features of relevance for the subject of the present report. Since late 1995, I have illustrated the effects of applying that method of physical economy, to design of a series of pedagogical charts [Figures 1-5], comparing relative changes in physical output with those expressed as monetary and financial aggregates. These charts cut through the nonsensical estimates of the U.S. economy which have been prevalent during the 1996-2003 interval of the Clinton and Bush administrations.[6]

5. From the Henry S. White translation, in D.E. Smith, ***A Source Book in Mathematics,*** New York, 1959. "It is well known that geometry presupposes not only the concept of space but also the first fundamental notions for constructions in space as given in advance. It gives only nominal definitions for them, while the essential means of determining them appear in the form of axioms. The relation of these suppositions is left in the dark; one sees neither whether and in how far their connection is necessary, nor a priori whether it is possible.

"From Euclid to Legendre, to name the most renowned of modern writers on geometry, this darkness has been lifted neither by mathematicians nor by the philosophers who have labored upon it. . . ." For the German original of those opening paragraphs, see ***Bernhard Riemann's Gesammelte Werke,*** H. Weber ed. (New York: Dover Publications reprint, 1953), pp. 272-273.

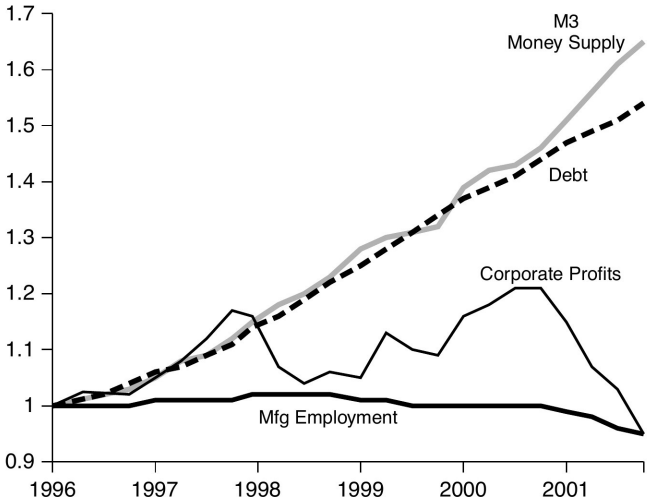
6. As I pointed out in an early 1984, half-hour network TV broadcast: By about the end of 1983, the Federal Reserve System and U.S. government had introduced a monstrous fraud into the official reports on the state of the national economy. This hoax was called the "Quality Adjustment" index. It is now sometimes described as the "hedonic index," a notion derived from British East India Company utilitarian (and coordinator of the British-directed Terror in 1789-1794 France) Jeremy Bentham's 1789 ***An Introduction to The Principles of Morals & Legislation.*** This was the same Bentham of the kindred, short but notorious piece, ***In Defence of Usury.*** Since 1983, all

FIGURE 2
The Collapse Reaches a Critical Point of Instability



This elaboration of the "Triple Curve" shows the onset of hyperinflation, as the values for monetary aggregates exceed the financial aggregates. This began to occur around the onset of Federal Reserve Chairman Alan Greenspan's Y2K "wall of money" policy at the end of 1999, as Figure 3 shows.

FIGURE 3
The U.S. Economy's Collapse Function Since 1996



Source: EIRNS.

I describe the most relevant aspects of the process of my discovery as follows.

Targets: Wiener and von Neumann

The best way to convey any idea is to present the relevant audience with the process of experiencing the unfolding process of the idea's discovery. So, as Friedrich Schiller emphasized, the Classical stage is the best medium for the study of history. The member of the audience, seated perhaps in the balcony of the Classical theater, relives the history, or history-like legend on the stage of his or her own imagination. Seeing the doom gripping the leaders of a society unfold, on that stage of the imagination, the ordinary citizen is inspired to judge the principles which have brought an entire society to its tragic or sublime outcome. Thus, as Schiller reports, the ordinary citizen, so uplifted to the status of statesman, leaves that theater a better person than he entered it a few hours earlier. The same principle applies to the proper method for teaching science. The mastery of science is the reliving of the actual historical process of discovery and transmission of ideas. What must be retained is not textbook-like recollection of the formal, dictionary-like features of a discovery; what must be acquired is a memory of a relived experience, the experience of reliving the process of the relevant discovery and its transmission to present times. Proper education in science, is science re-enacted, and relived, as an historical drama, in the mode of a Classical tragedy or the like.

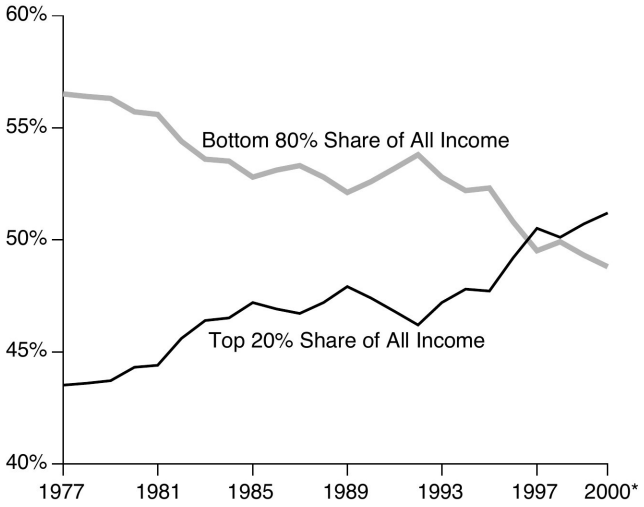
For me, my cultivated antipathy, since early childhood, toward learning something merely because it was the taught, or the popular view, impelled me, from about the age of fourteen, to take up an intense reading of English-language editions from among the best-known writings of the leading English, French, and German philosophers of the Seventeenth and Eighteenth Centuries, from Francis Bacon through Immanuel Kant. This was prompted, in part, by my sense of horror at being confronted with such shibboleths as what I later considered as the plainly fraudulent, purportedly self-evident definitions, axioms, and postulates of my first encounter with a standard Plane Geometry. My adolescent search for truth was soon steeped in enmity against what I have identified here as "reductionism." By about the age of sixteen, I had become a follower of Leibniz engaged in preparing a refutation of the principal thesis of Kant's first Critique.

By the close of the 1939-1945 war, I was occupied with the relationship and systemic distinctions among the three Classically defined categories of abiotic, living, and cognitive processes. How does the mind generate an idea, which is an unseen but efficient principle? For a period, I wrestled with the implications of William Empson's ***Seven Types of Ambiguity,*** with the purpose of identifying those features of Classical irony, as in poetry, which corresponded to the relationship

official U.S. reports on inflation and economic growth have been a worsening gigantic fraud, as the continuing, post-1977 fall of the relative physical standard of living (market basket) of the lower eighty percentiles of U.S. family households attests.

FIGURE 4

Top 20% of Population Have More Than Half of All After-Tax Income

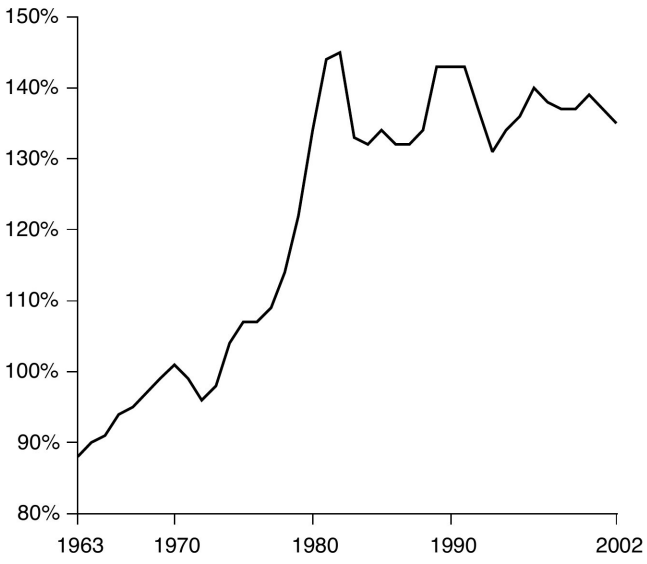


* = projected

Sources: Congressional Budget Office; *EIR*

FIGURE 5

Combined Home, Car, Medical, College, and Food Payments as Percent of Average Paycheck



Sources: U.S. Department of Commerce; National Association of Home Builders; The College Board; U.S. Department of Labor, Bureau of Labor Statistics; *EIR*.

The decline in real incomes of the lower 80% of American family-income brackets is suggested by Figures 4 and 5, which give the lie to claims of a "Recovery." Households have been forced to take on more jobs, longer work hours, longer commutes, and more debt, in order to survive.

between systemic paradoxes and successful hypothesis in physical science. It was a continuation of my adolescent occupation with affirming Leibniz against Kant's Critiques.

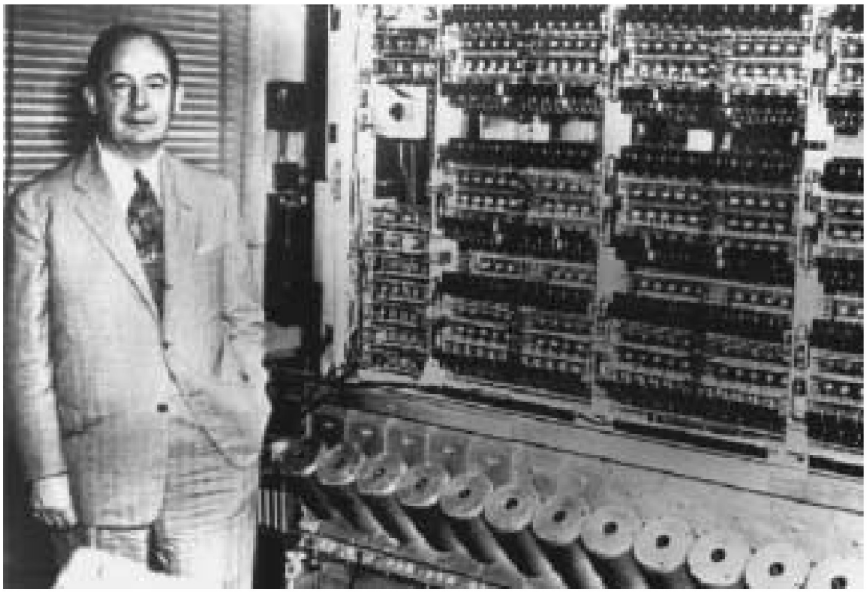
Against that background, in January 1948, I was loaned, through Professor Norbert Wiener's daughter, a copy of the Paris pre-publication, reviewers' edition of his ***Cybernetics.*** That date is significant only because the chain of developments leading to my discoveries in physical economy began under those circumstances. By March of that year, I was deeply committed to the intent to refute Wiener's argument for "information theory." The portion of the book devoted to control mechanisms, was delightful. The use of the term "cybernetics," to signify what Wiener defined as information theory, was a hoax, a logical positivist's intellectual horror-show. Since that time, most of my intellectual life has been entwined, in one way or another, in warfare against the pure evil typified by Bertrand Russell and such among his numerous, self-dehumanized devotees as Wiener and John von Neumann. The point of reference for my argument against the specific evil of Wiener's notion of an "information theory," was as follows.

In competent science, we begin the discovery of a principle, or student's-like reaction to such a discovery, with attention to a systemic paradox. Kepler's discovery of the implications of the Mars orbit, is a model case. The successful composition of a Platonic form of Socratic hypothesis defines a conjectured principle which might solve the paradox. This conjecture, that working hypothesis, requires a specific kind of experiment, something corresponding to a proof-of-principle experiment.

If the experiment were successful proof of that principle, we adduce from the relevant design of that experiment, certain features which directly echo the tested principle. So, we are able to proceed from the work of the laboratory-experimental machine-tool or comparable designer of the experiment, to the application of those features of the experimental design which reflect the newly defined principle.

In a general way, this is the image of the role of technology in the improved design of products and processes of production.

Reflect on what was going on stage, so to speak, as that procedure from paradox to new technology unfolded. The beginning of the process occurred within the sovereign cognitive processes of an individual human mind. The development of the appropriate hypothesis, and its experimental or equivalent validation, produced a technology by means of which man's power over nature, per capita and per square kilometer, was increased. Contrary to Wiener, the radically reductionist statistical method of Ludwig Boltzmann has no place in this process. In representing the increased physical power of labor

Norbert Wiener (left) and John von Neumann. Since 1948, LaRouche writes, "most of my intellectual life has been entwined, in one way or another, in warfare against the pure evil typified by Bertrand Russell and such among his numerous, self-dehumanized devotees as Wiener and John von Neumann."

as a result of a statistically ordered process, Wiener had committed a fraud: a fact which would not have astonished the David Hilbert who threw both Wiener and John von Neumann out of Göttingen University for their committing precisely such kinds of hoaxes.

I do not accept Hilbert's delightful, descriptive notion of what he describes as (what translates from German as) the "intuitive" methods of pure geometry which are essential replacements for standard classroom algebra, for purposes of crucial aspects of advanced scientific work. Nonetheless, I recognize his intention to refer to something valid, something which I do recognize as a real phenomenon of human creative work, but which I locate in what would be considered the strictly Platonic methods of the Pythagorean tradition, as I do in my present report here. Better than "intuition," were "insight." However, whatever terms are used to refer to the phenomenon, it signifies the Classical Greek noësis, a quality which distinguishes human beings from apes, man as made in the likeness of the Creator. Call it "intuition," or not, the intent of Hilbert's argument on this point coincides, in fact, with my own ontological sense of what Classical tradition defined as the noëtic quality of cognition. In all that I have read from the work of both Wiener and von Neumann, and of their kindred modern sophists, that quality of scientific insight is precisely what is conspicuously lacking, even willfully, savagely excluded.

This (noëtic) power of creativity is not something which was done to man; it is a sovereign power of the individual person. It is not man acted upon by creativity; it is man expressing that creativity which is already embedded in his nature.[7] This is an agency outside the reach of both abiotic and merely living processes, as Vernadsky followed the relevant Classical Greek tradition on this point. Just as the principle of life exerts an increasing role in determining the geological development of the planet as a whole, so the human creative principle uniquely specific to the sovereign human individuality, has the power to transform both the abiotic and living processes in general. Thus, were mankind, whose population is presently reported to exceed six billions persons, merely a higher ape, the living population would have never exceeded several millions.

Man's ability to increase our productive power over nature, per capita, by willfully efficient intention, is the only true source of what might be called "profit" and the accumulation of physical capital. Such is mankind's power to increase the human species' power to exist, something which can occur among lower species only through an evolutionary up-shift of species, not by any willful potential available to that species.

That is not the end of the argument against Wiener, von Neumann, et al. The development of the productive powers of labor, is generated by individuals, but its realization is social, not merely individual. This brings us to the principal

7. E.g., the Creator did not deprive himself of the power to change the universe by creating it. Note the importance of the German educator Herbart for both Riemann and, later, Georg Cantor, on this point. Whatever is discovered to be a validated universal physical principle, is a definite object. See Riemann's ***Werke,*** on "Geistesmasse," Zur Psychologie und Metaphysik, pp. 509-520. This Herbartian ontological feature of the work of Riemann and Cantor was crucial for me in 1952-53.

follies of Wiener, von Neumann, et al., the subject of human communication.

'Communication Theory'

In that increase of mankind's power to exist which is generated by newly discovered universal physical principles, there is an element which is uniquely sovereign to the individual mind. How is such an element transmitted, as communication, from one mind to another? Each such discovery is a revolution, for which nothing existed within the realm of that person's sense-perception, up to that point. Therefore, it would be clear that no literal statement within the existing language could contain the relevant communication of the pertinent new idea. With that, the claims to a body of "statistical communication theory," such as that of Wiener, von Neumann, or MIT's Marvin Minsky, break down.

This brings us back to the ambiguities posed to me implicitly by Empson's work. That brings me back to a long-favorite passage from P.B. Shelley's essay, "In Defence of Poetry," and to some fascinating work by one of my favorite American spies, Edgar Allan Poe. During certain periods, there is an increase of "the power of imparting and receiving profound and impassioned conceptions respecting man and nature." What Shelley references thus, is the power of irony and metaphor associated with the great Classical humanist resurgence of the late Eighteenth Century. Compare the case of the famous Third Act Hamlet soliloquy: "To be, or not to be. . ."

Language uses ambiguities arising in the use of language, or mathematical physics (for example), to define systemic paradoxes having the quality of distinctness shown by Kepler's reflections on the implications of a corrected image of the Mars orbit. These are the ambiguities, of a validatably systemic quality, which point toward the sovereign creative powers of the individual human mind, toward the discovery of a relevant hypothesis. By the same means, the use of well-crafted ironies, such as metaphor, one mind is able to provoke another to replicate ideas which can not be explicitly stated in previously established use of language as known previously to those engaged in that communication. This generation and receipt of such communication is accomplished through the principle of Plato's Socratic hypothesis.

When Wiener, for example, sought to argue that an anti-entropic progress in the human condition could be effected in ways determined by Boltzmannian statistical mechanics, he perpetrated a fraud, as Hilbert would have understood Wiener's behavior on this account. The theory of the brain, of mathematical economics, and of artificial intelligence, by von Neumann, were frauds of the same general class of hoaxes.

These considerations led me, by 1953, to a preliminary general notion of the differences and consonances of the principles of composition of Classical non-plastic art and of physical science. Both taken as one, define a validatable science of physical economy.

The increase of the potential relative population-density of the human population, demands a relevant source of anti-entropy.[8] There must be, first, the specifically anti-entropic characteristic of living processes, as distinct from that of abiotic processes. There must be, second, another specifically anti-entropic influence which is otherwise absent among inferior living species, but specific to human beings. The function of a science of physical economy, is to define the kinds of measurements by which society might successfully define some of those policies which will lead to net improvement of the human condition over a span of several generations to come. The development of such ideas by individuals, is not sufficient. There must be a communication of such and also certain other classes of ideas within the society. This latter task has two principal, relatively distinct aspects.

First, there is the matter of the communication of specifically anti-entropic ideas among individuals, as I, not Wiener, have summarily defined anti-entropy above. Second, there must be the discovery of an additional class of universal principles which, like what are ordinarily considered physical principles, pertain to the necessary ordering of social processes.

Society is not a simple aggregation of individual or otherwise local activities. A modern national economy, for example, is a kind of "social organism," in which the most significant effects are a reflection of individual actions directly on the economy as a functionally indivisible whole, rather than as an accumulation of localizable effects. This means that the members of a society must, to a very large degree, subordinate what local experience suggests to be their interests, to a superior definition of that local interest as defined by proceeding from the society as a whole, rather than the particular to the whole.

There are maddened fanatics who seek to deregulate everything, arguing that any interference with their antic impulses were not merely a wrongful assault on their individual will, but necessarily bad for the society as a whole. This lunatic view was that proposed by Mandeville's paean to vice in his ***The Fable of the Bees;*** in John Locke's notion of "property"; in Quesnay's "laissez-faire" doctrine that peasants are merely cattle; and in Adam Smith's 1759 ***Theory of the Moral Sentiments*** and 1776 anti-American propaganda-piece ***The Wealth of Nations.***

In fact, approximately half of the allotted effort of a healthy form of modern nation-state economy, is expended to produce and maintain those forms of basic economic infra-

8. The term "anti-entropy" is coherent, both formally and functionally, with "anti-Euclidean." The concept is of the type associated with the Classical paradoxes of doubling the line, square, and cube, in the Pythagorean mode of pre-Euclidean constructive geometry. The shadowy effects of such procedures in defining relatively higher orders of existence can be described in algebra, but the process of generation of those results belongs entirely to the domain of constructive geometry, as the case of Archytas solution for doubling the cube typifies this. Again, the notion of anti-Euclidean geometry is not to be confused with a merely non-Euclidean geometry.

structure which are of general importance to the economy of that region, rather than merely to some particular enterprise within that area. Generation and distribution of power, water management, general transportation, health-care systems, educational systems, urban organization, and so on define the characteristics of the general environment within which individual activities are situated.

For example, two ostensibly identical factories situated in different environments will have different characteristic physical productivities. The quality of sources of generation and distribution of power, development of water resources, and so on, are relatively more obvious. Then consider the lower productivity of the plant, if placed in an area which relies on highways rather than modern mass-transit systems for passengers and freight. The inherent social cost of the highway travel is greater per capita, and the time lost by reliance on highway transport is multiply a cost-factor, that for reasons which include the substantial, if indirect effects of a diminishing of the quality of family life.

The development of infrastructure coheres with level of technology in defining the geometry of the society and its economy as a whole. The addition, or elimination of some of the functional elements which characterize that society as a whole, will determine a variation in the productivity expressed by the individual firm so situated. The source of this variation is not the firm, but the general economic infrastructure's impact upon the actions occurring within the firm. This relationship between infrastructure and individual enterprise is of the form of a Riemannian geometry. The interpolation of a short explanation of that, will suffice here.

Man in the Universe

The crucial paradox presented by realized forms of application of fundamental physical principles, is the following.

What man discovers, in uncovering a universal physical principle, as Kepler discovered universal gravitation, is a pre-existing principle of the universe. Generally, we think of this in terms of principles presumed to exist prior to the appearance of mankind. When man discovers and applies such a principle to change the universe, he has not added an absolutely new principle to the universe; but, the added re-application of that pre-existing principle to the universe, by the will of mankind as discoverer, changes the universe.

We must therefore think of physical geometries of the universe along the following lines.

The immediate physical-geometry of reference for us, is, in first approximation, the universe as represented by a set of principles whose effects we know. If the universe contains m principles, we know a mere portion, n, of such principles. Can man increase the number of principles corresponding to m? When man applies a discovered universal physical principle, such as controlled nuclear fission or fusion, we change the universe; this effect occurs not by our discovery of that principle's existence, but our willful application of that principle to produce new kinds of principled states of existence in the universe, kinds of effects which did not exist prior to man's such willful action. New elements and isotopes are merely typical. If we could control what we define experimentally as matter-antimatter reactions, that would be quite stunning. That seemingly paradoxical effect is perhaps the most intellectually stunning expression of man's creative nature.

In all cases, a change in those aspects of our physical-space-time geometry which are more or less immediately important for society's present functions, may alter the way in which ordinary action occurs in the detailed features of social and economic life. Generally, man's power over nature increases, and man's ability to accomplish positive actions is sped up. The tempo of processes may be accelerated or slowed relative to specific, important functions of daily life and economy generally. This relationship between the physical geometries of the whole environment in which we live, and the relative value of space and time of our actions, is the true practical meaning of relativity.

So, we have the following picture. The source of increase of the productive powers of labor is, on the one side, the creative power of the individual, especially the productive individual, such as the scientist, the inventor, the true entrepreneurial farmer, manufacturer, and so on. However, the increase of the productive powers of labor is not limited to action at the proverbial "point of production." Improving the basic economic infrastructure can increase the productivity of the individual enterprises within society even without any notable change in the behavior internally generated by those enterprises themselves. To sum up the sundry arguments so implied, the physical geometry of the basic economic infrastructure within which the particular enterprises of a society are contained, is the boundary-condition which determines the general level of productivity which may occur within individual parts of that economy. The development of basic economic infrastructure therefore represents the primary "cost of materials" of any society as a whole. If that cost of infrastructure is not fully paid, the productivity of that economy collapses significantly.

Return to the problem of communication from that vantage point.

In respect to those qualities of the human mind which set the human individual apart from all lower forms of life, the individual human mind is the most sophisticated design-work we encounter. Whenever we attempt to proceed from relatively simplistic explanations of "human nature," we are not merely wrong, but probably dangerously muddleheaded meddlers. The "structure" of the system of relations represented by social processes, is the most scientifically challenging of all of the topics of scientific inquiry we might choose. Plato's dialogues offer us a core of principled insights into those processes. On that matter, the context of this present report permits us to limit ourselves to saying this much of the following about that subject-matter.

The characteristic feature of the individual human mind

is what is illustrated by the Platonic principle of hypothesis. That principle of hypothesis, which is the foundation of all Classical artistic composition and physical science alike, is the key to the distinction of man from all lower forms of life, and is, for our knowledge, the principle from which all other characteristics of social processes must be adduced. So, in the known history of human cultures, those aspects of communication which share the attributes of Classical artistic composition, typify the means by which successive generations of populations are able to transmit specifically human forms of knowledge within contemporary society, and across even thousands of years of successive generations.

So, the development and realization of discoveries of physical science, taken together with the aspects of culture which correspond to Classical artistic principles of composition, combine to supply us a higher and broader working definition of physical science. As the history of legend and Classical tragedy attests, from Homer through Schiller and Beethoven, and in the traces of ancient Vedic poetic calendars, these kinds of reflections present us an overview of the subject we might term "Platonic ideas," ideas corresponding to that principle of hypothesis upon which both physical science so-called and Classical artistic composition depend absolutely.

However, all of these elements of knowledge are not sufficient to give us a clear, principled image of the human individual. The crucial word is "immortality." A species may be relatively immortal as a species; but only man is immortal as an individual. The trouble with the word "immortality" begins when we insist upon locating the notion of specifically human immortality axiomatically in the biological individual. The following points are to be considered.

To focus the argument, think about certain great scientific discoveries. Choose discoveries for which we know the original discoverer by name, such as Pythagoras, Plato, Archimedes, Eratosthenes, and so on. We actually know these persons only when we have replicated their relevant act of discovery within our own mind, and when we, in turn, also transmit that inner experience of discovery to others who may come after us. This personification of great discoveries of universal physical principle, is in no sense a fantasy. Think of any experimentally validated universal physical principle. That principle functions as an Herbartian principle, an individuality of the form which Herbart and Riemann reference by the German term Geistesmasse. In orderly scientific practice, there is a correspondence between the named (personality) of the discoverer and the quasi-personality of the discovered principle. We must think of the principle as of the form of a personality: It was an object brought into our knowledge by the sovereign cognitive (noëtic) action of a discoverer.

So, the creativity of the individual, both original discoverer and he or she who replicates the act of discovery, is the essential distinction of both man and woman as individuals, and attaches the immortal quality of personality to the discovered principle itself.

Thus, to the degree a person is a consistent reductionist, he or she is virtually dead, or worse, spiritually.

It is this sense of being part of humanity as a whole, a sense accessible to us only through our roles in an ongoing social-noëtic process, which is the proper source of a sane passion for science, or for the creation and performance of Classical forms of artistic composition. It is this sense of the role of science and Classical art which is the only true personal morality of the person. This is what Socrates and the Apostle Paul identify as agapē, as that is translated into English as "the common good," or "the general welfare." It is only when we locate our identity so, as opposed to merely those desires which lie within the bounds of our mortal biological existence, that we can be happy in Leibniz's sense of the pursuit of happiness.

The cultivation of this sense of the true meaning of happiness, the intention upon which the independence of our republic was founded, is the true, exceptional, virtually unique greatness and exemplary virtue of that republic so constituted under the guiding mind of our Benjamin Franklin, and that of Cotton Mather before him. It is that quality of passion, so infused in our choice of deeds, and our actions themselves, which expresses what Friedrich Schiller defines as the Sublime, the quality which a self-doomed Hamlet of Shakespeare's Third Act soliloquy fears, and for fear of which he willfully brings about his own useless death, and that of his nation besides.

The foolish person pursues rewards, or merely avoids penalties. The wise person, of which there are admittedly few in our society today, pursues eternal happiness as Leibniz defined it. That pursuit is his passion, the force which moves him, or her, to discover, and to act for mankind.

It is the consonance of the Socratic way of thinking, the Sublime, with science as Plato implicitly defines science as hypothesizing, and with love for mankind, past, present, and future, which expresses that wonderful passion by which the greatest acts are inspired. There lies the passion for science which is lacking in the reductionist. It is hatred of that which they are not, by the reductionist, which is key to understanding the evil of Newton and of Euler's attacks on Leibniz. If we understand this, we are able to do happily what we must, without regard for fear or favor. Such is, among others, the true scientist.