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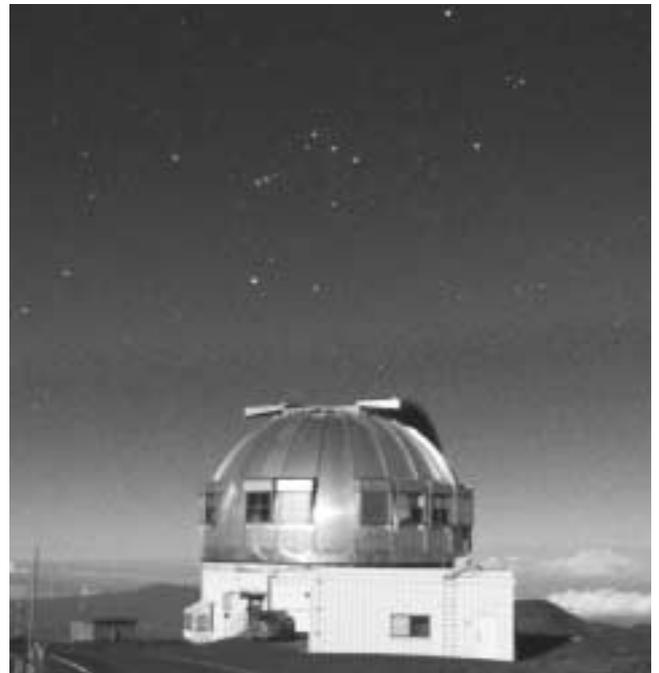
Visualizing The Complex Domain

by Lyndon H. LaRouche, Jr.

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HST/NASA



Robin Phillips/UKIRT, Mauna Kea Observatory, Hawaii

“The oldest known precedent for what we call ‘physical science’ today, is reflected in ancient astronomical calendars.”

Clockwise from top left: (A) Cave drawing at Lascaux, France, ca. 14,500 B.C., thought to depict the constellation of Taurus the bull, with a map of the Pleiades over its shoulder; (B) Stonehenge in England, ca. 2800 B.C., an ancient astronomical site; (C) remnant of Ulugh Beg’s observatory in Samarkand, ca. 1420, where this large marble sextant was used for astronomy measurements; (D) one of five astronomical observatories built by Indian astronomer-king Maharaja Jai Singh II of Jaipur, ca. early 1700s to measure celestial positions; (E) Carl F. Gauss with his telescope, ca. 1800; (F) the U.K. Infrared Telescope, one of many different telescopes at the Mauna Kea Observatory in Hawaii, with Orion in the background; (G) The Hubble Space Telescope, photographed from the Shuttle during a servicing mission.



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I shall show here, that the unstated, but implied aspect of the charge which Carl Gauss delivered in 1799, against D'Alembert, Euler, and Lagrange, lies in the implication, that the latter were virtually Satanists, that in the sense of the philosophical tradition of both the medieval William of Ockham and those founders of modern empiricism, Venice's Paolo Sarpi and his personal lackey, Thomas Hobbes's teacher Galileo Galilei. I shall show here, without exaggeration of any kind, that that charge of Satanism is not merely relevant, but must be emphasized, to bring into focus the implicit, most essential features, and political importance, of Gauss's argument respecting mathematics itself. I shall also focus some exemplary attention on the leading role of empiricism in producing those widely accepted, incompetent doctrines of economy, such as contemporary monetarism, which have played a leading role in bringing about the 1971-2003 collapse of the economies of the Americas, Europe, Japan, and elsewhere.



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As I have shown in locations published earlier, the crucial quality of functional significance of philosophical reductionism, such as empiricism, for physical science, is that it attempts to uproot knowledge of the existence of what the celebrated geobiochemist V.I. Vernadsky identified as those *noetic* powers of the human mind which distinguish human beings from beasts.¹ Within the realm of political science and law, that denial of the distinction between man and beast, is the philosophical basis for Satanism.² Typical are the Synarchist and kindred followers of G.W.F. Hegel and Friedrich Nietzsche.³ In a narrower aspect of that specific issue, as implied by Gauss's devastating exposure of a fraud in the work of Euler and Lagrange, the specific philosophical expression of Satanism called empiricism, is the axiomatic basis for not only that radical positivists' aberration which is known as the so-called "new math," but what has been usually recognized, even earlier, as today's generally accepted classroom mathematics, and the economic fads of the positivists.⁴

Within the bounds of a narrowly defined physical science, the corrupting influence of empiricism, is its role as the doctrine of today's politically powerful echo of the "ancient Babylonian high priesthood." That priesthood's tradition's modern role in science is such, that even many presumably sophisticated students and experts in physical science, are often victims of their own fearful sense, that no argument by them on mathematical-physics subjects, will be tolerated among their so-called community of professionals, unless the submitted argument confines itself within the axiomatically aprioristic, soulless bounds of the currently prevalent, reductionist (e.g., empiricist) notions of classroom mathematics. The same perversion is at the root of

today's widespread "two cultures" syndrome of academic life: the categorical separation of the usually taught practice of the so-called mathematical sciences from the so-called liberal arts.⁵ That commonplace folly of both academic mathematics and so-called liberal arts today, is the widely accepted, and intellectually crippling premise of the victim's propitiatory effort to secure either academic, or popular acceptance for the social expression of his, or her views.⁶

In mathematical physics, for example, submission to that kind of popularized classroom and textbook convention, is the common source of the failures of attempted academic "de-mystifications" of the complex domain, as the latter domain was properly defined by Gauss, Riemann, et al. I have made reference to the specifically pro-satanic roots of empiricism here, to force the reader's attention to the usually unsuspected moral effect of the efficiently corrupting, false principle underlying the empiricist mystification still prevalent in the university classroom, as elsewhere, today. This mind-numbing influence spills over from mathematics, into such forms as the evil done to the 1965-2003, growing influence of the "free trade" fads of such centers of gnostic sophistry as the American Enterprise Institute. It is commonly expressed as today's customary misapplication of statistical financial accounting to economics generally. The pernicious effect of carrying those statistical fads to their limit, is notably widespread, as expressed by the Enron and other examples of the proliferating effects of empiricism on social and political practice today.

As I shall show here, the influence of such reductionist currents of popular opinion is such, that the attempt to teach Carl Gauss's 1799 treatment of the fundamental principle of algebra, would often fail, simply because the teacher were lured into attempting to prove the existence of the ontologically complex domain within the bounds of the presumptions which bow to the currently most widespread classroom and related opinion. Classroom opinion on many topics is widely polluted, still today, by the prejudice, that all must be proven according to the popular presumption that truth lies ultimately, axiomatically, in the domain of the so-called "real" counting numbers of simple sense-perception, as distinct from the

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

2. As I shall show in the course of unfolding this report, this use of the term "Satanism," is not a matter of any one variety of religious belief. It is also a category of political, and, as I show here, also physical science. Otherwise, apart from the matters I address in this report, its expression in various forms is among the topics of the political practice of law, or, as in the case of cults associated with Britain's Aleister Crowley or Synarchist occultism, may pop up as a subject of public safety or even national security concerns.

3. Cf. Lyndon H. LaRouche, Jr., et al., *The Children of Satan* (Washington, D.C.: LaRouche in 2004, 2003).

4. The Bertrand Russell who was usually in error on matters of actual science, was nonetheless correct in stating that positivism, such as that of Ernst Mach, was merely another name for radical empiricism. The same should be said of reductionism generally. The function which empiricist thinking generated as the evil of the utopian social doctrines of Bertrand Russell, Norbert Wiener, John von Neumann, and MIT's Marvin Minsky, expresses the connection between empiricist thinking in mathematical physics and satanic qualities of wickedness which that mathematical mind-set generates in the domains of art and social practice. The presently continuing influence of the systemically pathological economic dogmas of Wiener and von Neumann, is typical of the worst effects on world and national economies today.

5. The allusion is to C.P. Snow's *Two Cultures (Two Cultures and the Scientific Revolution)*, London and New York: Cambridge University Press, 1993 reprint.

6. For example, many brilliant, original discoverers among experimentalists spend years of their life seeking to secure "peer review" acceptance of their experimental successes, by distorting their discoveries in ways which are intended to make such opinions acceptable to the sterile Babylonian priesthood of the contemporary, reductionist, "peer review" mafia. The case of the hounding to which the friend of Albert Einstein, the brilliant Kurt Gödel, was subjected, at the Princeton Institute of Advanced Studies, by the hyena-pack of Bertrand Russell's ideologues, is representative of the general pattern.

AUTHOR'S NOTE

A discussion during the question period of a Hannover, [Germany] event, prompted me to recognize the importance of adding explicit emphasis on what I wrote in the original publication (*Executive Intelligence Review*, July 11, 2003) of this item on the power/passion function, respecting the actual conception of thought-objects as rec-

ognizable ideas. I have now added a few relevant interpolations in the originally published text, *and appended a supplement on this point at the close*. I have also restored some edited-out paragraphing, where this was required to convey meaning.

—Lyndon H. LaRouche, Jr., July 21, 2003

higher standpoint which Euler and Lagrange maliciously libelled as the domain of “imaginary” numbers.

The point emphasized here, is that it would be an intellectually fatal tactical mistake, to attempt to show a devout reductionist an argument for the Gaussian complex domain “in terms he is willing to accept”: terms which are bounded by the essentially linear, axiomatic assumptions of arithmetic reductionists such as Euler and Lagrange. Therefore, for such an errant discussion partner as one of the latter ideologues, only that kind of Classically Socratic argument for the relevant hypothesis, which would blow his beliefs apart *emotionally*, could actually show him the incurable folly of Euler’s, and his own argument, as I do in this report. The use of this method of hypothesis means attacking the falseness of the reductionist’s fixed ontological assumptions, not in his choice of method, deductively,⁷ but *epistemologically: emotionally, rather than merely deductively.*

On this account, *epistemology*, it was the relevant specific virtue of that 1799 Gauss piece, which had prompted me to situate it as the cornerstone of the initial educational program of the youth movement. The immediate issue of the dispute over that piece, from the close of the Eighteenth Century to the present day, has been, as Gauss’s enemies themselves emphasized at that time, Gauss’s insistence on viewing problems of modern mathematical physics from the standpoint of a Classical pre-Euclidean, *geometric* treatment of those same errors which Gauss exposed as the products of the “ivory tower” mysticism of Euler and Lagrange.⁸

For an example of the same mysticism I am attacking here, I point to the errant argument which was made, by Felix Klein, and others, Klein’s false claim, that crucial features of Kepler’s, Leibniz’s, or Gauss’s discoveries could be replicated by the errant methods of such followers of the Enlightenment philosophers Lagrange, Kant, and Laplace as Cauchy, Hermite, Lindemann, et al. The fraud implicit in the latter’s attempts, is their vicious exclu-



Stuart Lewis

Lyndon H. LaRouche addressing a Washington, D.C. audience in a live webcast.

sion of the physical geometries of Leibniz, Gauss, and Riemann; so, the celebrated Maxwell confessed his politically motivated complicity in this matter of suppressing what he knew had been the crucial contributions of Ampère, Weber, Gauss, and Riemann to electrodynamics. This ethereal fraud by Maxwell et al., is typical of widely accepted hoaxes still presented, on record, in today’s classrooms, reference works, and textbooks.⁹

That fraudulent mathematics of the reductionists is avoided, only when the underlying epistemological issues of counting numbers, such as those issues posed by Gauss’s *Disquisitiones*, are situated within the realm of an essentially constructive, “synthetic” anti-Euclidean geometry. So, Gauss’s work, employing his teacher Kästner’s anti-Euclidean geometry in this case, is the most crucial, make-or-break issue of modern mathematics to be posed for the student’s competent introduction to modern mathe-

matical physics. The exclusion of critical consideration of the axiomatically geometric roots of the orderings of numbers, was the premise of the relevant essential fraud perpetrated by Euler et al., and the common mistake of the credulous imitators of Euler’s error today.

Such was the sad state of affairs in that education which had been made available to me prior to my own suspicions concerning some of what was taught to me in classrooms and related kinds of sources on these topics. My own contrary views, as I developed them within that relatively hostile intellectual environment, proceeded along the lines I present in these pages. Therefore, I insist today, that competent teaching requires that the teacher not rely on the putative authority of textbook material, but, rather, aid the student in reliving the successes of the original (source) discoverer’s experience in making, or reliving the relevant physical discoveries being presented. I explain this point from my youthful experience as follows.

On account of what was, for me, initially a much simpler, adolescent’s mere approximation of that same core issue

7. On another of those rare occasions when Bertrand Russell did not mis-speak, he emphasized that reductionist inductive method is only borrowing against the presumed fruits of future deduction. So much for the delusion of “the inductive sciences.”

8. The complementary terms, “pre-Euclidean” and “anti-Euclidean” geometry, represent a conception introduced to modern European science by a leading Eighteenth-Century mathematician, Gauss’s teacher Abraham Kästner. “Anti-Euclidean” geometry in the sense of the geometries of Gauss, Riemann, et al., is defined at the opening of Riemann’s 1854 habilitation dissertation. “Anti-Euclidean” geometries are specifically contrary to so-called “non-Euclidean geometries,” such as those of Lobatchevski and Jonas Bolyai, which latter are reforms within the bounds of the principles of Euclidean *a priori* geometries. Cf. Foreword, by Joseph Ehrenfried Hofmann, to Abraham Gotthelf Kästner, *Geschichte der Mathematik* (reprint edition), (Hildesheim-New York: Georg Olms Verlag, 1970) pp. XIII-XVI. Hofmann’s praise for Euler, D’Alembert, Lagrange, and Laplace, typifies the fraudulent opinion against both Gauss’s teacher Kästner and Gauss, which persists to the present time.

9. According to the influential Klein, for example, the definition of the mathematically transcendental in general, and of π , in particular, was originally accom-

plished by Hermite and Lindemann, working from what was, in fact, a fraudulent definition of that task, successively, by Euler and Lambert. In fact, the modern concept of that transcendental was first presented, in a critical treatment of the discoveries of Archimedes, by Nicholas of Cusa. The modern mathematical-physics definition of the transcendental, was introduced as an integral feature of Leibniz’s proof for a principle of the origin of the infinitesimal, a proof integral to his catenary-cued definition of both natural logarithms and the principles of universal physical least action. Leibniz-hater Euler, by denying the existence of the infinitesimal, as, for example, in his 1761 *Letters to a German Princess*, created a fraudulent, radically reductionist substitute for Leibniz’s infinitesimal, in Euler’s own and Lambert’s misstated definition of the “transcendental.” Hence, Klein’s pro-reductionist praise for the work of the reductionist followers of Lambert, Hermite and Lindemann. The indicated errors include those who present so-called mathematical models of Riemann surfaces without any indicated notion of the physical meaning of such a surface. On the discoveries of Ampère, Weber, Gauss, and Riemann, in opposition to the reductionists Grassmann et al., see Laurence Hecht, “The Significance of the 1845 Gauss-Weber Correspondence,” *21st Century Science & Technology*, Fall 1996; Jonathan Tenenbaum, “An Introduction to ‘The Significance of the 1845 Gauss-Weber Correspondence,’” *21st Century Science & Technology*, Fall 1996.

which is posed by Gauss's 1799 paper, I have always stubbornly insisted, since my first moment of encounter with the "ivory tower" superstitions taught as the definitions, axioms, and postulates of secondary-school geometry, that the matter of the optimal design of a functioning, real world, structural beam, already suffices to point out that the nature of mathematics must be demonstrated from an experimental, *physical* standpoint, not *a priori* definitions, axioms, and postulates.



New York Public Library Picture Collection

Carl Friedrich Gauss
(1777-1855)



Library of Congress

Bernhard Riemann
(1826-1866)



Vladimir Vernadsky
(1863-1945)

I point, now as then, to that experimental standpoint which, in fact, coincides with the relevant epistemological proofs of the experimental methods of hypothesis presented in Plato's Socratic dialogues, and echoed in the Apostle Paul's I Corinthians 13. Then, in my adolescence, and, later, until early 1952, even before I came to actually master some part of the crucial, axiomatic aspects of the work of Gauss, Riemann, et al., I was already prudent enough to limit the claims which I presented in my arguments, to the same Classical epistemological premises which I have continued to employ since, as here today. The spontaneous, childish ridicule unsuccessfully heaped upon me by foolish teachers and classmates then, more than sixty-five years ago, in the secondary classroom's response to my rather obvious statement of fact to that effect, had only succeeded in convincing me, rightly, of the backwardness of both the popular and classroom culture of that time.

Since the post-war 1940s, I have developed and adopted a progressively refined form of that same epistemological proof in all of my principled arguments respecting art and physical science. I restate it here in the same frame of reference I came to know it during 1948-1953, including, especially, through the addition of my 1952-1953 comparison, and contrast of the standpoints of the 1880s work of Georg Cantor and, the methods I prefer to Weierstrass and Cantor at the latter's pre-1890s best, those of Bernard Riemann.

My leading motive for restating that case here, is to expose the nature of the mental block which I have observed as a frequent cause of the student's failure to grasp the deep implications of Gauss's 1799 paper. It is the need to strengthen our youth movement's higher-education program on this pivotal topic, on which my attention is focussed here. However, the same argument is also needed by the wider audience which I include here.

On that account, as I shall show, although the topics implicit in Gauss's 1799 paper have been much more than merely ably presented by a number of my collaborators, Dr. Jonathan Tennenbaum, Bruce Director, and some of the youth themselves, I think an additional degree of improvement in our program is needed. The epistemological issue of the functional difference between man and beast, should be

presented more emphatically, as part of the argument, and with that degree of qualitatively greater emphasis which I employ here. In such topical areas within epistemology, I have become the relevant specialist. The deeper, epistemological issue, has been the intended, but sometimes merely implied feature of all of my published work, including my original scientific discoveries on the principles of economy, the crucial proof of the economic fraud of so-called "information theory," and related matters. Here, in this present report, I have thought it necessary to focus that same much-honed epistemological insight more sharply on the psychological aspect of the related physical-science issues of mathematics as such.

The interdependent set of issues so brought into focus, is as follows.

1. What, Physically, Is the Complex Domain?

The subsuming, pivotal question implied by Gauss's 1799 paper, is: *What is the nature of human knowledge?* In other words: *What is the experimental evidence which demonstrates, that the existence of the human species as we know it, depends upon some universal principle of human individual and social behavior, a principle which is lacking in all other living species?*

Proceed to that end by successive approximations.

Begin by taking as an example, a comparison of the construction of a solution for the task of doubling the cube, as solved by the ancient Archytas, with the modern approach represented by Gauss's 1799 exposure of the folly of Euler and Lagrange on this point. When Gauss's solution for the ontological problem of Cardan's algebraic approach to cubic roots (as already solved geometrically by Archytas) is used to demonstrate the principle already at work in the axiomatic issues of doubling the line and

10. Plato, arguing from the standpoint of pre-Euclidean notions of physical geometry, defined the concept of "power," as reflecting those discoveries by means of which the human mind is able to increase the power of man's willful action upon the universe. (e.g., *Theaetetus*). This notion of "power" was opposed by Plato's famous opponent, that sophistical reductionist Aristotle, who introduced that reductionist's notion of "energy" employed in reductionist thermodynamics since Clausius, Grassmann, Kelvin, et al. Cf. Antony Papert, private comments and lectures on Greek language and history.



AIP/Emilio Segrè Visual Archives

Leonard Euler
(1707-1783)



AIP/Emilio Segrè Visual Archives, E. Scott Barr Collection

Joseph Louis Lagrange
(1736-1813)



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Baron Augustin Louis Cauchy
(1789-1857)

square, the existence of the complex domain, as a domain of efficient *power* (in Plato's sense of the notion of *power*), we must recognize that the physical reality of Gauss's argument was already clearly, and conclusively shown by the pre-Euclidean Classical Greeks working in the tradition of Pythagoras.¹⁰ The task assumed by Gauss in 1799, was to unveil that same ancient principle of pre-Euclidean (e.g., anti-Euclidean) geometry within the frame of reference of modern, post-Fourteenth-Century mathematical physics.

In other words, as I shall clarify this significantly below, modern mathematical physics must recognize those historic circumstances specific to the history of modern economy, which prompted the successive steps of development, chiefly by the efforts of Gauss, Dirichlet, Abel, and Riemann, of solutions for the higher principles of a general notion of physical space-time curvature.

Modern developments, since that Fifteenth-Century European Renaissance which founded modern European civilization, have presented us with a new form of practical, social expression of the same issues of physical geometry treated by Archytas, Plato, et al. The succession of developments from such Renaissance founders of modern science as Nicholas of Cusa, Luca Pacioli, and Leonardo da Vinci, and their outstanding, avowed follower, Johannes Kepler, created those Seventeenth-Century foundations of the valid mathematical physics developed by Gottfried Leibniz and his associates.

Unfortunately, the subsequent gaining of relative political hegemony by the contrary, decadent, pro-empiricist political currents of Eighteenth-Century Europe's so-called "Enlightenment," provided that century's empiricist followers of Sarpi, Galileo, and Descartes the opportunity to nearly succeed in destroying science.¹¹ The already referenced, two skilled "ivory tower" formalists of that time from among mathematicians, the fanatical hoaxsters Leonhard Euler and Lagrange, led that fraudulent attack upon Leibniz which, fortunately, Gauss refuted, essentially, in his own 1799 paper.

Napoleon Bonaparte's accession to what is to be termed today a fascist form of imperial power, and his sponsorship of

11. The method of Descartes is to be treated as a variant of empiricism.

Ecole Polytechnique. That same hoax was continued in such forms as the savage attacks on the foundations of modern European science by the combination of the British empiricists and neo-Cartesian followers of Lagrange's assault on the Leibnizian roots of France's Ecole Polytechnique. As a result, since that time, especially since the hoaxes of Clausius, Grassmann, Kelvin, Helmholtz, et al., that form of the conflict between good, Classical science, and empiricist hoaxes in the name of science (reductionism), has persisted to the present day. Usually, reductionism has prevailed politically, so far.

That much said on those pivotal historical features of those problems of modern science, I return to the trail of my principal, ontological argument here.

Two elementary modern discoveries of physical science illustrate the method *already employed by such ancients* as the Pythagoreans and Plato to solve such elementary paradoxes as the doubling of the line, square, and cube, and the uniqueness, by construction, of the five Platonic solids.¹² The most elementary, and crucial *modern* applications of the same Classical method, are Kepler's uniquely original discovery of universal gravitation and the elaboration of Fermat's principle of universal quickest action, as continued through Leibniz's original development of the infinitesimal calculus, and as the catenary-keyed universal physical principle of least action.

These works of Kepler, Leibniz, and their like, were the discoveries fraudulently attacked by those pro-satanic modern sophists known variously as the empiricists, Cartesians, Physiocrats, phenomenologists, and existentialists.¹³ The role

12. Again, Plato's notion of "power," as opposed to the "ivory tower" metaphysics of so-called "energy."

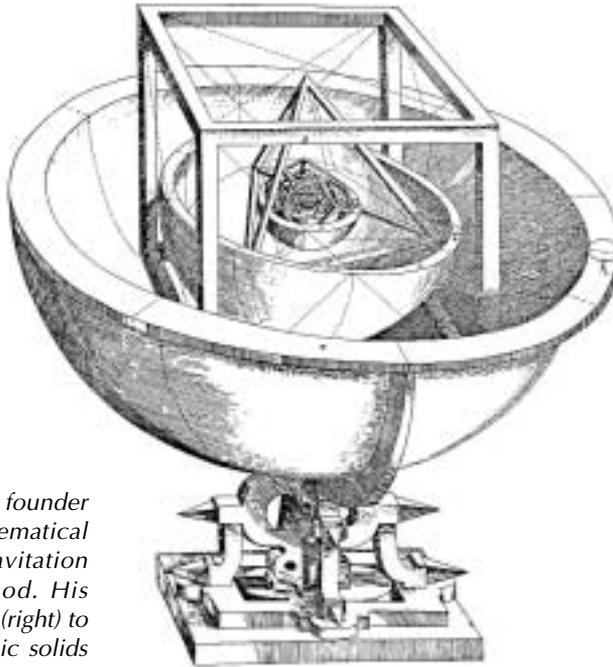
13. Since this report was drafted, my associate Michael Liebig has stoutly and correctly emphasized his thesis, that the continuing root problem of European civilization, still today, is what Socrates and Plato attacked as the essential form of pure evil in their time, the sophists, and, I add, such predecessors of the sophists as the reductionist Eleatics, such as Parmenides, and the Delphi Apollo cult. The modern reductionists, such as the empiricists, are essentially a continuation of that popularized cult of sophistry which destroyed the civilization of ancient Greece, and also Rome, from within. This sophist tradition is the same acid by which contemporary European civilization, including that of U.S. popular opinion, has nearly destroyed the U.S.A. and Europe from within, over the recent four decades. Sophism were better understood as a typical synonym for the generality of the methods of reductionism.

presentation of the empiricist dogmas of Lagrange, produced the opportunity and precedent for a new, Eighteenth-Century attempt to destroy Classical forms of modern French science. This assault was continued with increased force in the post-1814 role of the British-founded, French Restoration monarchy's favorites, Laplace and Cauchy, in their attempt to eradicate the original, Leibnizian program of the Carnot-Monge geometric tradition of the



Illustration by Jan van der Heyden, courtesy of New York Public Library Prints Division

Johannes Kepler (1571-1630), the founder of astrophysics and modern mathematical physics, discovered universal gravitation using an anti-Aristotelean method. His ordering of the orbits of the planets (right) to cohere with the ordering of Platonic solids was not based on "sense perception."



Reproduced from Kepler's 1596 *Mysterium Cosmographicum*

of the cult of "free trade," is typical of the way in which such forms of what I shall expose here as pro-satanic forms of belief, induce a people, such as many in our U.S.A., to tend to destroy itself, as by a flight from being the world's leading productive power, to the floundering, post-1964 decadence of our predatory, pro-imperialist, consumerist culture, an increasing moral, cultural, and economic decadence, which took over control during the 1964-2003 interval to date. Look at the two cases, gravitation and least action, successively, as cases which illustrate a crucial, most elementary ontological principle of all competent scientific method. Failure to grasp the elementary principle expressed by those cases, would cripple all subsequent attempts to define a scientific way of modern thinking in general.

As our association's educational program has emphasized in its work to date, Kepler's observation is typical of all valid scientific method, in pointing out the scientifically fatal errors of judgment common to the pro-Aristotelean astronomy of Claudius Ptolemy, Copernicus, and Tycho Brahe. Contrary to the mathematical presumptions of those pro-Aristotelean astronomers, the planetary orbits were not only elliptical, with the Sun situated as one of the foci; but, the motion along the orbital trajectory was constantly non-uniform. As Kepler emphasized, explicitly, this evidence demonstrated, among

14. Aristotle was deployed from Demosthenes' school of rhetoric, to bore from within Plato's Academy. His *Nicomachean Ethics* is typical of the sophist method. Claudius Ptolemy's scheme, which was based upon the fraudulent method of Aristotle, was an effort to destroy the most competent astronomy of that time, the legacy of Aristarchus and Eratosthenes. Kepler deals explicitly with the methodological fallacy of Aristotle in his own report of the discovery of gravitation. Aristotle's method is the reductionist method otherwise associated with the name of sophistry.

other things, that that product of reductionism known as Aristoteleanism, was fraudulent.¹⁴ Aristotle's "apriorism," which degraded knowledge to the mere describing of sense-perception, was proven false by a more competent study of certain kinds of irregularities in the observed phenomena themselves. Kepler's discovery of gravitation was the point of origin of such crucial later developments as Leibniz's uniquely original discovery of the infinitesimal calculus, and, as I shall emphasize here, of the crucially pivotal concept of a Riemann Surface Function.

The sophist (reductionist) method denies the existence of knowable truth, as the ancient

Aristotelean hoaxsters denied such knowledge, for astronomy or otherwise, and the famous modern hoaxster, the empiricist neo-Aristotelean Immanuel Kant did.¹⁵ The reductionist insists that we actually know only that which is presented to us by our senses.¹⁶ Contrary to the sophists, the measured characteristics of the compared planetary orbits of Earth and Mars, sufficed to exemplify the proof that we do not know physical reality from our senses; we know reality through the specifically human power of hypothesizing, by experimental determination of the validity of those hypotheses which solve the contradictory paradoxes which often arise when we attempt to explain the behavior of the observed world by reliance on merely describing the experience of sense-perception.¹⁷

Shadow and substance! (Passion!) Gravitation is an experimentally proven hypothesis, which defines our knowledge of that universal physical principle as one which can not be detected directly by the senses, but which nonetheless efficiently affects the movement of those mere

15. (Kant, previously a rabid empiricist from the school of David Hume, produced his series of "Critiques" premised upon a syncretic expression of empiricism incorporating the teachings of Aristotle.) Meanwhile, while this was being edited for release, my associate Bruce Director elaborated the same essential point, in contrasting it to the revolutionary discovery presented by Bernhard Riemann in the latter's 1854 habilitation dissertation. Cf. Bruce Director, "Defeating I. Kant," *Riemann for Anti-Dummies*, no. 47, at www.theacademy2004.com.

16. "That's only a theory!" is the typical protest of the sterile intellect steeped in the dogmas of simple sense-certainty. The curious fact of the matter, is that the advocate of such views miraculously fails to grow the tail which would manifest at least the species-sincerity of his doctrine.

17. Actually, as I have occasionally illustrated this point, this discovery by Kepler requires the implied notion of a Riemann Surface Function as the means for representing the mental image of Kepler's concept visually.

shadows which are the sensed aspects of our world. This points the mind of the intelligent observer to the fact, that our sense-apparatus is merely part of our organism. What our senses report to us, is, at best, the effect of action by the world outside on those sense-organs, not the image of that efficient action itself.¹⁸ The senses show us, at best, shadows cast by a universe which exists beyond the direct observation of the senses. The domain of sense-perception presents us the mere shadows of the real principles which operate in a universe outside the domain of direct sense-perception. The same point was made in Plato's treatment of the doubling of the square (*Theaetetus*)¹⁹ and the construction of the Platonic solids.²⁰

Shadow and substance! (Passion!) Fermat discovered that the propagation of light follows a pathway of quickest time, rather than shortest distance. The continued refinement of that discovery, successively, by Huyghens, Leibniz, and John Bernouilli, most notably, led to Leibniz's interrelated discoveries of that principle of universal least action, which is the unique basis for the infinitesimal calculus, the related physical principle of logarithmic functions, and the role of the catenary as an expression of the most characteristic feature of what Gauss and Riemann later defined, successively, as the complex domain.

Both of the outcomes of those exemplary cases, Kepler's uniquely original discovery of the principle of gravitation, and Leibniz's defining of a universal physical principle of least action, defy that naive, false presumption which teaches that our senses show us directly the real universe in which we exist. These, and comparable discoveries of universal physical principle, show us principles by means of which we can increase our willful, and also visible control of the universe; but, they also show us the nature of that universal principle of physical hypothesis, the faculty of *noësis*²¹ by means of which we are able to adduce the existence of, and effect the practical (*emotional*) mastery of those specific physical principles.

The acquisition of such efficiently practical knowledge of principles beyond the powers of sense perception, enables us to define the efficient function of sense-perception within that real universe which lies within nothing less than the complex domain, a universe beyond the shadow-world of

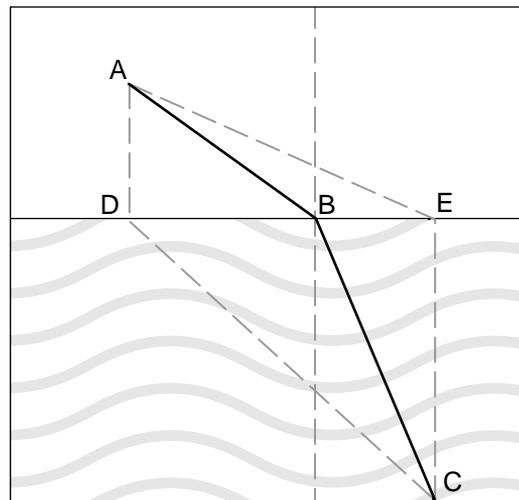
sense-perception as such. Describe this relationship by aid of the following illustration.

The Case of the Nighttime Sky

The oldest known precedent for what we call "physical science" today, is reflected in ancient astronomical calendars. The derivation of the notion of science today, is traced in European civilization from a geometric study of astronomy which the pro-Egyptian Pythagoreans named "spherics." The notion of "universally efficient physical principles" today, is derived from study of the regular behavior of the "wanderers" of our Solar System, as seen against the background of the clearer moments of opportunity to view the nighttime stellar sky.²²

As man begins to approximate a "normalization" of the nighttime sky, to compensate for the fact that any observation from a point on Earth, is viewing immediate sights from a point on the surface of a rotating and moving quasi-spheroid, our planet, a certain notion of what we call a "universe" emerges. The question is thus posed: What are we seeing, "up there"?

From a "normalized" position on Earth, the stellar display appears to lie on the interior surface of a spherical space of great, but undetermined radius. In ancient times, solar events seemed to many to be willfully insolent wanderers against the backdrop of an array of seemingly fixed stars, stars apparently lying along the internal surface of a celestial sphere. Call this upward-looking view of the universe, the relevant starting-point for mankind's notion of a universal *Sensorium*, a view of



Pierre de Fermat (1601-1665), French philosopher and mathematician, discovered that the propagation of light follows a pathway of quickest or least time, rather than least distance. A light ray beginning at point A in air, and entering the water at point B, will direct itself towards the point C in the denser medium, the total time of travel along the path ABC being the least possible.

18. Again, the image conveyed by the notion of a Riemann Surface Function.
 19. On this, see, once again, Antony Papert on Plato's use of the notion of "power," here, in opposition to the reductionist term, "energy," subsequently introduced by Plato's adversary Aristotle.
 20. In this instance, I reference Plato's treatment of the implications of that construction in his *Timaeus*.
 21. Vernadsky's term for those uniquely human powers of creative reason, by

means of which individuals discover those hypotheses which prove, experimentally, to be universal physical principles, principles which exist beyond the abilities of lower forms of life, and beyond the direct reach of our powers of perception.
 22. The "deep pit" method used by Eratosthenes and others, provided a way of viewing the stars during midday. E.g., the method of observation employed to assist his celebrated estimation of the curvature of the Earth.

that universe as it is presented to our sense-organs. Those who made the mistake of assuming that our senses show us the real universe directly, tended toward the belief that the measurements of what could be read as constant angular, or straight-line motion of observed bodies, would be the simply statistical form of expression of laws directly governing the universe, lawful effects which were thus misinterpreted as merely lying within, confined to the bounds as of a universal *Sensorium* within which the existence of our Earth was presumably situated.

Similarly, as in the example of the typical modern dupe's misunderstanding of cyclical and related periodic movements within financial markets, the dupe assumes that charting those apparent patterns produces knowledge of supposed "laws of the marketplace." That dupe fails to grasp the point that financial markets, like sheep-shearings, are deployed to trap and strip the victim-investor by aid of the investor's own simple-minded cupidity, his foolish faith in "seeing is believing," as in his substitution of patterns of simplistic statistical readings for what should have been his attention to physically efficient causes of effects.

That said, turn one's attention in two directions. In one direction we have, contrary to the reductionists, those more insightful ancients who viewed the universe within the bounds of that *Sensorium* from a pre-Euclidean standpoint akin to that of Thales and the Pythagoreans. We have also, their proper successors, including the Aristarchus who demonstrated that the Earth orbited the Sun, and the Eratosthenes who measured the curvature of the surface of the Earth (with remarkable approximation) by observations made from points, in the vicinity of the Mediterranean, on the surface of our planet. Then, we have modern science, which erupted within the Fifteenth-Century, Italy-centered Renaissance.

I shall bring our attention back to that fact at a relevant point, later in this report; for the moment, focus on the fact that this Renaissance revived ancient Classical Greek knowledge of the methods of physical science from the relative intellectual dark ages of Roman imperial traditions, and did this in the setting of giving birth to the first modern sovereign nation-states, those of Louis XI's France and Henry VII's England. This was also the birth of modern European civilization out from a long dark age which dominated Europe under the emerging Roman Empire and the subsequent prolongation of feudalism.²³ It was also the birthplace of modern science, as typified by the work of Brunelleschi, Nicholas of Cusa, Leonardo da Vinci, and their follower, the founder of the notion of a comprehensive modern mathematical physics, Johannes Kepler. The historical circumstances most relevant to this report, are,

23. The emergence of the modern nation-state out of the morass of ancient imperial Rome and ultramontane feudalism, is to be studied, chiefly, as an impulse toward the freeing of society from the Romantic's ultramontane notion of imperial law. This process is chiefly divided between two periods. The first of these steps toward freeing mankind from the ultramontane, is typified by the rejection of the fraudulent "Donation of Constantine," from Charlemagne through Dante Alighieri. That first period is treated by legal historian Friedrich August von Der Heydte's *Die Geburtsstunde des souveränen Staates* (Regensburg: Druck und Verlag Josef Habel, 1952). The second phase is the birth of the modern sovereign nation-state republic during the course of the Fifteenth-Century Renaissance, as expressed by Louis XI's France and Henry VII's England. A comparison of the two cases has been made public by my wife, Helga Zepp-LaRouche.



Gil Riviere-Weckstein

The courage of Joan of Arc in the Fifteenth Century made possible the first nation-state—a united France under Louis XI, which made it possible for the majority of the population to rise above the status of "human cattle." Here, a statue of Joan in Paris.

in summary, the following.

Although the fact of the Earth's orbiting the Sun was known to mid-Fifteenth-Century founders of modern experimental science, such as Nicholas of Cusa, Inquisition-ridden, post-A.D. 1511 Europe returned to the failed Aristotelean, "ivory tower" methods of astronomy of Claudius Ptolemy, Copernicus, and Tycho Brahe: until Kepler. All three of these pre-Kepler copiers of Aristotle's reductionism, portrayed the universe as lying within the apparent linear-statistical regularity of motion within the "internal surface" of the astronomical *Sensorium*.

Now, centuries later, the *Sensorium* is conceived in depth. It is imagined that an expanding universe of galaxies, and of highly complex and vast configurations within each galaxy is to be considered. However, such latter discoveries do not yet address the crucial question: Is the *Sensorium*, so defined, *self-evidently* real? This forces our attention to the function of the modern, pro-Platonic nation-state republic, in giving a needed new definition to the meaning of science.

What was the pathological assumption which prompted post-1511 official, relatively decadent, then predominant, Venice-centered, reactionary authorities in Europe, to attempt to turn back the clock of science to reductionist superstitions, such as the methods of Aristotle and William of Ockham? What is the simplest way of making clear the systemic features of that Venice-orchestrated rampage of moral decadence during the 1511-1648 interval of religious warfare? Consider the social origins of the decadence, first, and then focus upon the epistemological consequences.

As I shall emphasize here, the underlying political issue posed by the Venice-led attempt to reverse the progress of the Fifteenth-Century Renaissance, is the fight over the proposition: *Is man a higher form of beast, or a species categorically distinct from, and superior to all lower forms of life?* In other words, this issue is, once again: What is the functional nature of *specifically human knowledge, which sets the human species apart from the beasts?* What are the conditions under which the members of a culture are confronted with proof of such considerations?

The Fifteenth-Century, Florence-centered Renaissance is the historical benchmark which separates emergence of modern European civilization from the admittedly still lingering aromas of the declining, philosophically irrationalist, Romantic world of feudalism. The central intellectual figure of that revolutionary moment of historic change is Cardinal Nicholas of Cusa, whose *Concordantia Catholica* prescribed both an ecumenical reform of the then shattered Papacy, and the replacement of the feudal system by a community of principle among sovereign nation-state republics,²⁴ and whose *De Docta Ignorantia* provided the initial approximation of a comprehensive definition of what became known as modern physical science. The crucial complementary development to that effect in Italy, was the transition, pioneered by the courage of Jeanne d'Arc, which made possible the first modern nation-state, a united France under Louis XI. The second modern nation-state was England under Henry VII.

The correlated political development was Christopher Columbus's voyage of discovery, implementing a post-A.D. 1453 project which organized by Nicholas of Cusa, and carried out according to maps and other designs which Columbus planned and conducted, on the basis of materials he obtained from Cusa's collaborator Toscanelli. The irony of Columbus's 1492 re-discovery of the inhabited land across the Atlantic, was that it coincided with the precedent of that brutish savagery of tyrannical Spain's monstrous persecution of the Jews and Moors.²⁵ The latter brutishness opened the door for what has been called modern Europe's "little new dark age" of recurring religious and related wars of the 1511-1648 period.

Despite the brutish horrors of those chiefly Venice-orchestrated religious and related wars of the 1511-1648 interval, the

24. *Concordantia Catholica* is, in principle, the successor to Dante Alighieri's *De Monarchia*. The latter, which reflects the totality of Dante's principal work, defined the proposed emergence of a form of national societies freed from the shackles of *ultramontane* 13th and 14th centuries Venetian-Norman feudal hegemony.

25. This expulsion of the Moors and Jews, was the crime against God and mankind which set the pace for the brutish self-destruction of 1511-1648 Spain, and for the subsequent eruption of Carlism and such fascist sequels as the pathological doctrine of Hispanidad.



Philip Ulanowsky

Columbus sailed to the New World in a project organized by Nicholas of Cusa, using maps and materials from Cusa's collaborator, Paolo Toscanelli. This statue of the explorer stands at Columbus Circle in New York City.

secular thrust of the entire span of 1401-1789, and beyond, through all ebbs and flows, was the net progress, over the period taken as a whole, toward forms of society which liberated Europe from that prevalent degradation of the mass of humanity to the status of either hunted or herded human cattle. For the first time, the principle of *agape*, of Plato and Christianity, found expression in a notion of political society as rightly governed by that principle of natural law which appeared later as the fundamental constitutional principle of law in the Preamble of the U.S. Federal Constitution. That principle is expressed summarily by the combined names of an interdependent notion of *national sovereignty, general welfare, and posterity*.

This doctrine of natural law meant three things in practice. That a nation-state republic must be perfectly *sovereign*. That the rulers had no moral right to reign except as they were efficiently dedicated to the *general welfare* of all of the population, and that society placed the benefits to *posterity* above those enjoyed by the presently living. It followed, that although states must enjoy sovereignty, they are bound,

according to natural law, to promote these three rights and benefits among all peoples; hence, those concurring conditions represent the basis in natural law for a *community of principle*, rather than a system based on the prescription of inevitable conflict, such as that of the empiricists Hobbes and Locke.

This Fifteenth-Century, Renaissance-led revolution in statecraft, as typified in approximation by Louis XI's France and Henry VII's England, was the date and place of the birth of actual political-economy. This birth of political-economy gave practical expression of a new, lawful definition of the proper nature of government of both the human individual and society. This notion of the state's moral accountability for fostering the general welfare of all persons and their posterity, is the birth of modern society, the progressive freeing of that former underclass, the majority of mankind, from the social-political, and economic status of being treated as virtually merely "human cattle."

It was this modern conception of natural law, rooted in a functional notion of the promotion of the general welfare of all persons and their individual and collective posterities, which is the basis for any competent notion of law and political-economy in particular, and of physical science in general. It is from the standpoint of the Fifteenth-Century notion of modern science, that we adopt the ancient Classical precursors of science, such as the pre-Euclidean Pythagoreans, as an imperfectly developed, but integral part of the foundations for emergence of a competent modern science today.

Earlier, that larger mass of mankind, which had been treated conventionally as hunted or herded human cattle, had few lawful rights under feudal imperial (ultramontane) law which differed little, even unwittingly, from those forms of rights accorded to fairly treated herded cattle. This same feudal doctrine, expressed by the Anjou-like Anglo-French *Fronde* tradition of the Sixteenth and Seventeenth centuries, was the premise of the neo-feudalist dogma of the Physiocrats, as defined axiomatically by Dr. Francois Quesnay. Quesnay's doctrine of *laissez-faire*, like that of Turgot, and of the Adam Smith who plagiarized his "free trade" dogma largely from France's Physiocrats, was premised on the proposition, that the serfs of the estate had no more rights than those enjoyed by herded, non-human cattle, and that, therefore, the profit of the estate was a magical expression of the Cathar-like benefit of the charter expressed by the patent of lordship over the estate held by that usually lazy parasite currently the decadent, aristocratic landlord or other titleholder to property-right or "shareholder value."

Prior to the new, modern conception of law, a notion of law typified by such works of Cusa as his inherently complementary *Concordantia Catholica* and his subsequent *De Docta Ignorantia*, the reduction of the foreigner and lower classes to the virtual status of human cattle, defined the latter as merely at the service of the ruling classes, as cattle are, rather than measuring society's performance in terms of the included benefits expressed in the uplifting of the whole population.

For example. Following the U.S. Civil War, the policies of education of the slave represented by the work of Frederick Douglass, were widely superseded by a doctrine which lowered the standard of education and intellectual life of the freed slave to the level sufficient for a workaday life of menial work.

Earlier, the world's leading economist of that time, Henry C. Carey, documented the case, the pre-1865 U.S. national economy, had "lost money" on the work of the slaves, while the profits of that slavery were enjoyed chiefly by British interests and their American Tory accomplices. The ultimately catastrophic collapse of the internal economy of Italy under the slavery-ridden Roman Empire, is typical of the kind of false, merely superficial and temporary prosperity enjoyed by a nation which obtains the apparent prosperity of the few, through the looting of the land and persons of the many, which loots, thus, both that land and those lower classes which it treats as virtually human cattle.

The collapse today, of a U.S.A., which had been the world's leading producer-power under Presidents Franklin Roosevelt, Eisenhower, and Kennedy, into a predatory, decadent, ruined consumerist culture, reflects the ruinous effects of U.S.-directed post-1971 monetary-financial policies of the IMF on the nations of the Americas which those U.S.-directed IMF policies have driven to collapse. The parasite which thus destroys its host, is thus condemned to collapse out of its own reckless folly.

The principle of the sovereign nation-state gave the serf the right, taken from him by ultramontane feudalism, of being human, under a new conception of the law of sovereign nation-states. The development of the productive powers of the individual and the right to participate in the fruit produced by that development, became the *intent* of the natural law of the newly introduced institution, the modern sovereign nation-state. Under this law, the people and land of the nation were no longer mere cordwood to be consumed for the warmth of the oligarchs and their lackeys; the defense and improvement of the welfare of all the people and their posterity became the calculable form of obligation on which the continued authority of the government depended. That is the elementary expression, in first approximation, of the modern institution called political-economy.

Rendering this new order of society in that implicitly calculable form of organization, by defining political-economy creates the setting which was indispensable for the Fifteenth-Century birth of modern European science. The possibility of an improvement of the conditions of life of both current and future generations, depends upon the objective interdependency of two forms of specifically human activity, by means of which man accomplishes what no other living species can do, the effecting of willful increases of the potential relative population-density of the human species.

These two forms of activity are typified in their effect as, first, the efficiently used discoveries of universal principles, and, second, those insights into the principled role of Classical artistic composition, such as the Classical tragedy of Aeschylus, Shakespeare, and Schiller, in enabling society to intend to cooperate willfully and efficiently in efficient promotion and use of the benefits of physical-scientific progress.

The difference between those two cooperating impulses, is that *in the fundamental discoveries of universal physical principle, the individual creative mind is acting in individual relationship to the physical universe. In the principles of Classical artistic composition, the individual is acting in an emotion-driven relationship to the principles of those social processes*



Nicolaus of Cusa
(1401-1464)



Gottfried Leibniz
(1646-1716)

The founding of the U.S. Republic, based on the ideas of Leibniz and his Renaissance predecessors, created the conditions for modern physical economy, scientific and social progress, and a reference model for relations among nation states.



through which society cooperates in the application of discovered universal physical principles. The benefits of those activities are the only actual source of what should be regarded as the physical form of economic profit by society. There is no other source of true and legitimate profit than the combined benefit of the action of discovering and adopting these two kinds of universal principles.

This view of science, within the context of political economy, forces modern society to confront itself with a new kind of view of the difference between man and the beast. As we can show clearly from the doctrine of Moses, the work of Plato, and the principles of Christianity, for example, exceptional individuals of earlier society were able to adduce an essentially correct definition of the nature of man which sets our species apart from, and above the beasts; but the modern nation-state republic, as seen in Nicholas of Cusa's *Concordantia Catholica*, was the first appearance of a form of society whose passions are efficiently ordered for the promotion of forms of progress consistent with the special nature of the human being, as a creature whose characteristic activity is the passion for discovery and application of those two classes of universal principles.

The modern sovereign nation-state republic, is a form of state which must be efficiently dedicated to that higher authority of the doctrine of natural law expressed as the Preamble of the U.S. Federal Constitution, which does not recognize the existence of a right to "class interest" by any social class; the

notion of "shareholder value" spread in modern nations today exists only as a specifically fascist doctrine of the Romantic law-tradition of the accomplices Hegel and Savigny, and their follower the Nazi Carl Schmitt. Like science, republican natural law measures intention and performance by nothing less than universal standards: specifically, the universality of mankind, and mankind's implicitly assigned role of exerting increasing control over, and responsibility for the welfare of mankind, and improvement of the universe we inhabit.

With the Fifteenth-Century Renaissance, the idea of man in the universe, as a universal being so expressed by willful practice, became the guide for those changes in mankind's practice which deserve the name of progress. With the 1789 adoption of the Preamble of the U.S. Federal Constitution, an impassioned moral standard was established for all modern European civilization, under which society obliged itself to regulate itself according to the measurable progress of its entire population, toward the improvement of the general welfare of all of its people and their posterity. With that continuation of the Fifteenth-Century Renaissance's founding of the modern nation-state, the 1648 Treaty of Westphalia, the 1776

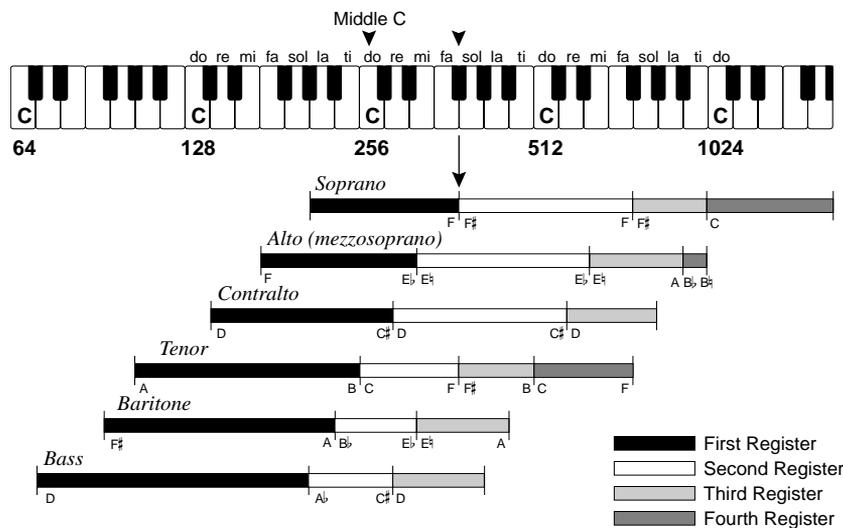
U.S. Declaration of Independence, and the 1789 U.S. Federal Constitution, a form of lawful physical economy was invoked as a model of reference for a supreme law of nations, which, when served, represents a measurable form of the true nature of mankind. Hence, the very name of modern history, and the related notion of modern science, must be so dated.

These missions of the modern republic can be accomplished in no other way than accumulated knowledge and use of those discovered universal physical principles which exist beyond the mere shadow-world of naive sense-perception. This proper view of mankind, its power, and its mission, begins when we seek those principles, of those two kinds, which, by their nature, are hidden from mere sense-perception, by knowledge of which man may reach out toward controlling the invisible ordering of events in the Sensorium which is reflected to our senses as the nighttime sky.

It was under those political preconditions, that modern science adduced the notion of the complex domain from the precedents of the ancient Platonic tradition.

2. The Complex Domain and Man's Immortality

The proof that the universe contains efficient universal principles which are not themselves directly objects of the senses, presents us with the need to think of the individual's relation-



The bel canto method, which defines six types of human singing voices, and the social relationships this implies, is a necessary feature of Classical composition. Classical performance requires human thought and passion, not simply playing or singing the notes. The conductor Wilhelm Furtwaengler called this "playing between the notes," a quality startlingly evident in recordings of his performances.



Berlin Press Agency, 1930

ship to nature around us in terms of two geometries. The first of those is what I have defined, in the preceding pages, as the anti-Euclidean form of the geometry of the universal Sensorium; the second is a geometry based on nothing but an experimental reading of the measurable relations within a set of inter-relationships among those discoverable, and experimentally validated universal physical principles which are generated by Plato's method of hypothesis. The first, is approximately the shadow-world geometry of sense-perceptual space-time. The second, is the unperceived universe of those actual principles which produce those paradoxical sensory effects which prompt the recognition of the existence of the unperceived, but efficiently existing universal physical principles. The two geometries are everywhere interacting.

We shall consider this, first, as it impacts the work of the physical scientist. Later, we shall turn to the matter of Classical artistic composition.

In the first of those two instances: The known interaction of those two geometries, perceptual and physical, is the effect reflected in modern mathematical physics as the notion of the actuality of the Gauss-Riemann complex domain. Within this combined notion, the relationship of the second, the physically efficient action, to the first, the physical geometry of the visible domain, is expressed as the shadowy impact of physical principles on the Sensorium; these, combined, are the subject of the general notion of a Riemann Surface function, as elaborated by Riemann on, chiefly, the foundations of Gauss's notions of the general principles of curvature.²⁶ For first

approximation, consider this case for gravitation as Kepler defines it. Next, in second approximation, consider the evolutionary development of Fermat's concept of quickest time, the notion which was to appear in a more developed form as Leibniz's catenary-pivotted concept of universal least action.

Kepler situates the physical principle of gravitation with respect to evidence bearing upon the successive treatments of the implications of the construction of the Platonic solids by Plato,²⁷ Luca Pacioli,²⁸ and Leonardo da Vinci. Kepler proceeds from this insight into the ostensibly elliptical harmonic characteristics of the set of solar orbits, to make the first generalized leap of insight into what became known later as the physical nature of the complex domain. This insight led to Kepler's defining a set of orbital values characteristic of a necessary, but also necessarily exploded planet, lying in a designated orbit between Mars and Jupiter, an exploded planet which Gauss proved, nearly two centuries later, to be the remains known as the Asteroid belt.

These considerations by Kepler define an unseen, but efficient action occurring everywhere in the perceived Solar System, action causing that system to behave differently, at every visible point, than can be accounted for in terms of constant action among visible movements. Therefore, we must create the mental image of a new space-time, which, on the one hand, corresponds to perception, but, on the other hand, moves perceived action by the *intention* expressed as some *impassioned*, knowable, but imperceptible universal physical principle. The conjunction of these two actions, respectively shadow and substance, defines a new geometry in which both effects, perceived and causal, are combined as one geometry.²⁹ That becomes the complex domain of Leibniz's principle

26. Bernhard Riemann, "On the Hypotheses Which Underlie Geometry" (*Über die Hypothesen welche der Geometrie zu Grunde liegen*) *Bernhard Riemanns Gesammelte Mathematische Werke* (New York: Dover Publications reprint edition, 1953).

27. E.g., *Timaeus*.

28. E.g., *De Divina Proportione*.

29. Hence, what Euler mistakenly discards as "imaginary," is the real, and what Euler calls "real," is the product of the sensory imagination!

of universal least action, the complex domain as defined, successively, by Gauss and Riemann, in concert with their collaborators, such as Lejeune Dirichlet, and others, such as Abel, on whose work the product presented by Riemann depended in most significant degree.

Such is that quality of passion which separates true genius from pedantry, in both physical science and Classical artistic composition and performance.

I shall leave it to our collaborators to work through the pedagogical exercises required by the geometries my outline has thus implied. The included purpose of that assigned exercise, is to break through the barrier which separates simply perceptual visualization of events in sensory space-time, from the conceptualization of higher geometries arising from synthetic visualization of the unseen principle of action revealing its presence at each point. The reader's attention will be returned to some implications of that matter, below, after we have compared this case to that presented by the notion of a Classical principle of artistic composition. Therefore, reasons for this decision by me will be clarified a bit later in this report.

The Subject of Classical Irony

In an effective staging of a Classical tragedy, or of a Classical musical composition, the images on stage are superseded by a drama performed on the internal "stage" of the individual audience member's imagination. The comparison of the two stages, the shadows perceived and the imagined reality, involves contrasted human mental states analogous to the contrast between sensory perception and recognition of the unseeable universal principle governing the movements of that which is perceived. Every *successful* Classical performer, dramatic or musical, is implicitly aware of this, and is governed by a prescience of such relationships.³⁰ This is the key to the definition of all Classical artistic principles; it is also the key to all political practice which leads nations along an upward course of social self-development of the human species as a whole.

Those introductory remarks on the matter now immediately before us, are intended to point attention to a question: *What is the object which corresponds to the individual's mental act of hypothetical discovery of what proves, experimentally, to be a universal physical principle?* That mental act corresponds to what Vernadsky defines as (biogeochemical) *noësis*.

In true *noësis*, our subject is the existence of ideas which reside outside the scope of sense-perception; yet, they are definite, experimentally efficient ideas, of the same degree of distinctness, as ideas, as might be ascribed to any sense-perceived object.³¹ These are referenced under the heading of

powers by Plato.³² Therefore, out of respect for the definite nature of such ideas of principle, I refer to these distinct conceptions as *thought-objects*.³³

To hone my foregoing observation to a fine point: what is the *thought-object* represented by the act of discovery of a universal physical principle? What is the recognition of such a *thought-object* in one mind by another person? What is the kindred *thought-object* whose controlling presence defines the successful composition, or performance of a Classical tragedy, or musical composition, as distinct from the mere sensationalism of Romantic and modernist artistic composition or performance?³⁴

Both of these compared types of *thought-objects*, physical and Classical-artistic, have the ontological quality we meet in my earlier references, here, to the original discovery of an experimentally validated, hypothetical physical principle. The best choice of introductory exercises for acquiring a sense of the equivalence of universal physical principles to the thought-objects of Classical artistic composition and performance, is the study of the collection of Plato dialogues. In that collection as a whole, the student encounters the thought-objects called *Platonic hypotheses*, which pertain to physical principles; the same method yields those insights, also called hypotheses, which pertain to the principles of social processes.

The latter class of insights into social processes, populate the domain of Classical artistic composition, and are, as I have often emphasized in earlier utterances, the key to recognizing the interdependency between Classical artistic composition and a competent force of a political science of history-making.

In Classical composition, as in the discovery of experimentally validated universal physical principles, the entire composition is both generated by a single act of insight, and never departs from being an expression of that single insight. Take a musical example of this principle. The late Beethoven string quartets Opus 131 and 132 are a work of genius even by the standard of Beethoven's best earlier compositions, the most notable, most coherent, and highest expression, to date, of a compositional principle of well-tempered counterpoint first defined by J.S. Bach. Properly apprehended, these compositions, properly delivered, like related cases of so-called "late" Beethoven compositions, fascinate the mind's powers of concentration, subjecting it to an *impassioned*, kaleidoscopic succession of exciting acts of discovery, as coherent development, from start to the aftermath of the close.³⁵ The ordering princi-

30. The task of the playwright or composer, is to foresee the arrangement of the shadows represented by the seen and heard action on stage, and to arrange those shadowy elements deployed in such an ironical fashion as to provoke the audience to search its own mind for the reality to which those shadows correspond. It is as if God arranged the visible motion of the Solar System to cause Kepler's mind to recognize the reality of a universal principle of gravitation. So, the adequate performer of a Classical musical composition crafts his or her performance to force the real intent of the composer upon the audience. The greatest conductor of the Twentieth Century, Wilhelm Furtwängler, referred to this as "performing between the notes."

31. Cf. B. Riemann, "1. Zur Psychologie und Metaphysik," *Bernhard Riemanns Gesammelte Mathematische Werke*, pp. 507-538. N.B. pp. 509-520.

32. A. Papert, op. cit.

33. There are those who recognize such thought-objects, and those who protest, "I Kant!"

34. Exemplary is the disgusting practice of "director theater" arrangements of Classical drama, the one more disgusting than the version it superseded.

35. The performance of any similarly qualified Classical composition, requires the performers, and audience, alike, to make the unfolding, unifying process of the completed composition "one's own." This is accomplished by reducing the entire composition's process of development, from an ominous moment of silence before its beginning, to a moment of silence at the end, to a single principle of development. The late Beethoven quartets are perhaps the best cases to consider from this standpoint. Instead of a succession of stages, there is a seamless process of transcendental development, a notion of development which expresses the unfolding of the entire composition as a single idea, an idea comparable to Kepler's notion of the organization of the Solar System.

ple which subsumes that succession, is a thought-object. That thought-object is the generating idea of the composition's unity of effect.

A great performance of a Classical tragedy has a similar effect.

That said, begin the definition of Classical composition in general with a crucial question: *How does the individual's mind discover the set of principles of both composition and performance; how does this relate to the individual's sovereign act of generating an experimentally validated universal physical principle?* In other words, *what is the feature of thought-objects which is common to discoveries of principle in both physical science and Classical composition?* How does the answer to that question make clear the reason why we must see Classical artistic and opposing forms of artistic composition (or, performance) as placed into qualitatively opposing categories. Classical and Romantic artistry are not contrasting views of art; they are different species of existence, opposing one another's existence in a way comparable to the interspecific sterility enjoyed between mammals and reptiles.

The key to the answer to that question so posed, is already reflected, typically, in the account of Pythagoras' definition of the musical *comma*. That account states that Pythagoras derived the proof of that *comma* by, in effect, comparing the division as of the octave, by a singing-voice and a monochord. In such an experiment, the *comma* is generated consistently only when the human singing voice is one developed to its naturally optimal potential by methods equivalent to that Fifteenth-Century Florentine *bel canto* singing-voice tradition associated with the musical knowledge referenced by the fragmentary remains of Leonardo da Vinci's book *De Musica*. The result is the same characteristic of the human singing-voice reflected in the systemic conflict between Bach's well-tempered counterpoint and the empiricist's equal-tempered keyboard.

In the Florentine *bel canto* tradition, for example, the act of placing of the tones and phrasing of the human singing voice, is established in memory as a set of *ideas* in the sense of Platonic thought-objects as ideas.³⁶ This notion of the *bel canto* singing voice, is the pivotal feature of Classical composition of not only music, but also, as the German and Italian Classical song and opera which the Classical poetry and drama of those musical compositions require. The same is the rule of *passion* for the composition and performance of poetry, or the musical substructure of what is to be delivered as the drama for the Classical stage.

There is some more, which is of crucial performance in distinguishing music as Classical art, for example, from a musical physics.

The *bel canto* musical scale divides the categories of human singing voices among six types of human singing voices, as determined by what are known as natural register-shifts, and otherwise determined by secondary differentiations within voice-types. The combined effect of these

36. This conception of music is that which Kepler adopted from both the implications of Plato's treatment of the determination of the five Platonic solids and the treatment of the same matter by Luca Pacioli and Leonardo da Vinci.

and related features of the properly developed natural potentials of the human singing voice, define music as a social, rather than an individual expression of the use of the human creative powers for generating and sharing experience of the generation of thought-objects as ideas. This set of social relations integral to the "chest" of human singing voices, and the essential role of counterpoint in Classical musical composition, defines Classical musical composition and performance, as a domain of Classical artistic composition, rather than a type of mathematical physics, even though the definitions of human thought-objects for Classical art and physical science are otherwise perfectly congruent.

Thus, as Bach's *Well-Tempered Preludes and Fugues* illustrate the case, the social characteristic of musical ideas is expressed by the principles of Well-Tempered counterpoint. On this account, Classical musical performance requires that instrumentalists impose the characteristics of the *bel canto*-trained human singing voice on the instruments; otherwise, the attempted instrumental aspect of performance of even Classical compositions degenerates into a mimicry of Romanticism, such as that of Liszt and Wagner, or even modernism. Competent performers never play the notes of the score; the score is a mnemonic device, a mere shadow of the Classical composer's intention, which must be back-translated into the process, the unifying thought-object, the principle, which is the intended composition as an indivisible single conception to be transmitted to the audience.

Insight into these functions of Classical musical composition derived from the natural, *bel canto*, characteristics of the human singing voice, leads into insight into the cognitive functions of the human speaking voice itself. These connections are best explored by attention to the role of Classical forms of sung prosody in ancient through modern forms of the poetry of sundry languages.³⁷ Modernist compositions and utterance of poetry and prose are an expression of forms of decadence which have resulted in the victims' critical loss of the ability to compose and utter such prosody, or even to compose the forms of spoken and written utterance required to convey what Percy Bysshe Shelley identifies as "profound and impassioned conceptions respecting man and nature." This loss of the power of intelligible communication of important ideas, has become increasingly acute in European languages during the course of the recent forty years since the beginning of the popularization of a "rock-drug-sex youth-counterculture" as a mode of attempted eradication of the influence of Classical culture.³⁸

One of the notable effects of the post-1963 spread of the so-called "cultural paradigm-shift" among those entering

37. Cf. the comparison of the modern Classical Italian and German modes of the *bel canto* human singing voice's application to Classical song composition. See: *A Manual on the Rudiments of Tuning and Registration, Book I: Introduction and Human Singing Voice*, Project Editors John Sigerson and Kathy Wolfe (Washington, D.C.: Schiller Institute, 1992)

38. In decadent forms of composition, or of misreading of Classical compositions, the passion is attached to the sensual effect of the perceived sensations; in Classical composition and performance, the passion is attached to the idea, the act of insight whose object lies beyond the limits of sense-perception as such.

adolescence in Europe and the Americas during the middle through late 1960s, is a widespread impairment of the literate use of language. Much of this impairment is a reflection of the destructive impact of the “rock-drug-sex youth-counterculture” on the sense of the role of musicality (i.e., *bel canto*-rooted prosody). This was aggravated by other, coincident factors. The latter factors included the shift of this generation away from the future-oriented culture of earlier generations, to the “Now Generation’s” loss of a sense of personal historical perspective. The result of that qualitative moral down-shift in perspective, is that most of those now between fifty and sixty years of age have undergone an existentialist, emotional-intellectual impairment of the cognitive powers comparable to the synarchist cult’s pathological “end of history” dogma.³⁹

This accelerating cultural down-shift of recent decades, is reflected in a loss of that power of prosody in speaking which is rooted in the principles of Classical poetry and song, with a consequent diminution, or even loss of the power of communicating actual ideas.

The apparent exceptions to that aspect of a general cultural decline in recent generations’ capacity for intelligible prosody, include the substitution of a kind of Romantic sing-song which is mistaken by the credulous for “pretty speech,” a sing-song proffered as a substitute for the quality of utterance needed to convey the kinds of ideas typified by, but not limited to Classical scientific discovery of universal physical principles. In other words, the location of the passion is shifted from human ideas, to beast-like sensations of both objects and per-



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Two peas in an empiricist pod: Thomas Hobbes (1588-1679) and U.S. Supreme Court Justice Antonin Scalia.

ceived monkey-equivalent moods (screaming, cooing, and so on) of other persons.⁴⁰

Consider the exemplary case of the leading pro-fascist ideologue on the present U.S. Supreme Court, Justice Antonin Scalia. Scalia is notorious for his shameless admission of his denial of the existence of any historically defined principles of law, and for his repeatedly, publicly uttered, explicit insistence on a substitute for reason, in his “Orwellian,” dictionary-nominalist dogma of what he calls “text.” On that account, Scalia has flunked the reading of even the Preamble of the U.S. Federal Constitution.

Consider, for example, the principle of *sovereignty*.

The Irony of Sovereignty

It is notable that the empiricist Thomas Hobbes expresses explicitly his own and the positivists’ seemingly instinctive abhorrence of irony in general, and metaphor most emphatically. As I have already noted, as the central theme of this report, the reduction of the definition of “rational” to a mechanistic, “connect-the-dots” kind of description of experience, has the effect, and intention of outlawing acknowledgment of the existence of any reality which is not a kind of “connect-the-dots” reading of sensory experience. Charlatans such as Bertrand Russell and his acolytes, such as Norbert Wiener, John von Neumann and their like, carry Hobbes’ satanic dogma to an extreme.

Contrary to Hobbes’s and Antonin Scalia’s implied dictionary nominalism, only forms of human mental behavior fairly described as schizophrenic could assume that what might have been intended as a literal meaning of words encompasses human knowledge. The sane use of any language begs recognition of similarities to the Gauss-Riemann complex domain. Words are used literally, to designate perceptions of object-like subjects, or perceptions of emotional impulses.

39. The prevalent decadence of the so-called “Baby Boomer” generations of (most notably Europe and the Americas), is a reflection of the combined effects of the 1961-1964 succession of such events as the Bay of Pigs, Cuba Missiles Crisis, Kennedy assassination, and launching of the official U.S.A. war in Indo-China. The flight of relatively privileged strata of emerging post-adolescents into the rock-drug-sex-counterculture, was merely one of several expressions of the decadence this experience promoted among those recruited from numerous socio-economic strata currently in their 50s or 60s. The commonly underlying feature of the sundry is what is fairly described as a special kind of cultural “desensitization.” The result was the assortment of expressions of flights into crude sensationalism, including neurotic flights from one becoming boring “life-style” fugue into the mayfly existence of a successor. The result, in all variations, is the common pathology of a flight from the reality of a producer society’s culture to that of a consumerist culture. The lust for experiencing of decadent forms of cultural sensations, rather than ideas of the future social outcome of one’s living, is the common feature of the decadence which grips most of those in those “Baby Boomer” age-categories today. The passions are diverted from the real universe into the Romantic-existentialist fantasy-world of “my immediate feeling experience.” The attachment of passion is shifted from the universe inhabited by the human mind, to the universe of animal-like sensations, with the result that the victim tends to act toward man as beast toward beast.

40. This use of “location” corresponds roughly to Sigmund Freud’s notion of “cathexis.”

41. There is no room in Classical art for mere symbolism; no condoning of symbolism is intended, or allowed by me here.

But, sane human speech is never simply literal; sane speech has its own version of the complex domain. By means of irony in general, or metaphor most emphatically, intelligent speech encompasses notions of realities which operate, like universal physical principles, beyond the realm of literal descriptions of sense-perception. Sometimes, the ironies are misleading, even false; but, the existence of truthful ironies is indispensable for truthful human communication of ideas, true or false. Classical poetry, for example, is based entirely upon the basis of that higher order of intention shared between speaker and hearer.⁴¹

These subtler, higher meanings permeate the folklore of a people, and are encountered in their more refined expression in Classical plastic, as much as non-plastic art. Typical is the distinction of Classical from Archaic modes of ancient Greek sculpture and the related original redefinition of perspective for painting by Leonardo da Vinci. Great Classical sculpture presents the mind with a body, not as fixed, but recognizable by the mind as captured in mid-motion; the mind senses the existence of that motion, as John Keats describes this effect in his "Ode to a Grecian Urn." This kind of art expresses principles, in the same sense that the complex domain expresses principles of continuing development in action, as the mathematics of Galileo, Euler, Lagrange, and Cauchy does not. Folklore and Classical art convey the sense of principles of action which lie beyond the comprehension of the reductionist form of literal statements.

Thus, intelligent communication among a people relies essentially on those ironical, anti-reductionist meanings which lie between the cracks of literal imageries. The introduction of new, principled ideas to a people, depends largely on the sharing of that store of such ideas within the practice of the existing language-culture.

In general, therefore, it is only to the degree that a people has the approximation of a Classical language-culture that it is able to discover, and to deliberate upon new ideas. What is called the freedom of the individual members of a society, depends upon processes of deliberation within the society which are based upon the accumulation of ironies embedded in the general language-culture of that society. Without those functions of a literate form of irony-rich language, the members of a society are degraded to the functional status of virtual human cattle, unable to participate efficiently in shaping the common national destiny.

The problem on which our attention is focussed here, is the same issue of *passion* which has been repeatedly referenced in preceding portions of this report. Pause here to reflect on a common expression of the problems involved. Focus on the factor of irrational rage which permeates the reductionist's attempts to explain the occurrence of any phenomenon whose existence corresponds to a true universal physical principle (or Classical artistic composition).

Some decades past, I chanced to study the report of one

knowledgeable specialist, that mathematicians tend to dream in black-and-white, whereas Classical musicians tend to dream in color. I found his report knowledgeable, in correspondence with my observation of differences in behavior between Classical musicians and mathematicians. Yet, his report is only an insightful generalization, not a firm and fast rule; the human mind is not quite so simple as his clever observation implies. Yet, it is true that the essential classroom or kindred emotion produced by adherence to the reductionist assumptions of Aristotle, the empiricists generally, and the Kantians in particular, is usually an anally focussed quality of *gray rage*, the quality of rage which fosters the promotion of existentialist and related pro-fascist ideologies. Smiling John von Neumann's rage against the Kurt Gödel who had destroyed the fundamental assumption of von Neumann's god, Bertrand Russell, before von Neumann's eyes, is only one notable example of the controlling role of *gray rage*—a *night in which all Hegelian and other lurking wolves are gray*—typical of expressions of reductionist forms of logic.⁴²

The emotional problem created by the victim's submission to reductionist methods, such as those of Kant, is that of the mathematician so afflicted. It is much the same even with the experimental physicist who is compelled by the Mephistophelean social pressures exerted by his colleagues, to corrupt himself by an act of degrading his experimentally validated discovery, by appearing to prove that his experimental results were nothing more than an extrapolation of that pre-existing, generally accepted classroom mathematics which were prescribed by a Babylonian-priesthood-like body of so-called peer review.⁴³

The principled character of both the intellectual and emotional crisis produced by such roles of the reductionist method, may be summarized at this point, as follows.

Human knowledge, as contrasted with the academic monkey-business of the typical reductionist, recognizes a distinction between those mental objects which are an interpretation of sense-experience, and those other kinds of Classical-artistic or scientific mental objects which correspond to experimentally validated discoveries of those universal physical principles which, while provably efficient, do not exist, themselves, as objects of sense-perception. Within the relatively more narrowly defined notion of the latter, higher order of mental objects, the notion typified by universal physical principles, those mental objects correspond to sense-perceived experiences of such a paradoxical quality that they defy interpretation from the standpoint of sense-perception as such.

The problem is, that of the impassioned reductionist, who insists on the "materialist" or kindred view, that the elementary nature of the physical universe is in direct correspondence to the presumption that sense-perception is the only existent expression of physical reality. In the desperate wishes of the victim of such reductionist presumptions, everything, however paradoxical, "must be explainable" in terms of the common-sensical view that sense-perception's objects are the essence of whatever might be assumed to correspond to "matter." The assumption is made, that ideas of universal physical principle have the same statistical quality as ordinary counting-number-mathematical images of simple mechanical relations.

42. Cf. Kurt Gödel, "On Formally Undecidable Propositions of *Principia Mathematica* and Related Systems," [1931] *Kurt Gödel Collected Works*, ed. Solomon Feferman, et al. (New York: Oxford University Press, 1986), pp. 144-195.

43. The fraud of referring to a Cauchy-Riemann function, is typical of the work of such fascist-like peer-review traditions in contemporary academic life.



Archives of the Institute for Advanced Studies, Princeton, N.J.

Bertrand Russell's devotees, such as information theorists John von Neumann and Norbert Wiener, hated Kurt Gödel (right) for his exposé of Russell's principal hoax, *Principia Mathematica*. Here, Gödel with friend Einstein at the Institute for Advanced Studies, in the 1950s.

In reality, we know that the reductionist's assumption is false. As I have already emphasized earlier here, sense-perception is the shadow which reality casts upon the senses, not that reality itself. The fellow who is conditioned to reject that view, becomes hysterical whenever the evidence of a universal physical principle is introduced as the subject of attention. That hysteric is obsessed, like a fox trying to pass for a chicken in a shotgun-armed farmer's hen-house, with a sense of need to "explain away" the need to consider this issue.

The case of John von Neumann's enraged, life-long reaction to Kurt Gödel's 1931 exposure of the pervasive hoax of Bertrand Russell's *Principia Mathematica*, illustrates the point. The lunatic cult of "information theory," "artificial intelligence," and so on, is premised explicitly on the rage of such Russell devotees as von Neumann, Norbert Wiener, and sundry other Russell devotees then prominent at Chicago University and the Princeton Institute for Advanced Studies. The lunatic abracadabra of the Reverend Moon's science cult, is an outgrowth of the rabidly logical-positivist cult of the "unification of the sciences" launched during the 1930s by Russell, Chicago's Hutchins, et al. Strip away the exotic costuming of a Moon-side mass marriage, and the remaining, underlying issue is exactly the same as that folly of Euler and Lagrange attacked by Carl F. Gauss's 1799 definition of the concept of the complex domain.

In the exemplary cases of Kepler's uniquely original discovery of universal gravitation, the development of Fermat's con-

cept of quickest action, and the generalization, by Gauss and Riemann successively, of Leibniz's derived concept of a catenary-cued principle of universal physical least-action, we are dealing with mental objects which, by definition, are not the experience of mere fixed objects of sense-perception. The opposing view, that of the materialist or empiricist, prefers the experienced superficial view of the factual evidence; this opposing view is premised upon the error of mistaking the mere shadow of reality, mere sense-perception as such, for the imperceptible reality which casts the shadow.

In all relevant cases, the quality of ontological difference between shadow and substance, is that emphasized by Heraclitus, and Plato after him, the famous aphorism: *nothing is constant but change*. Return to Kepler's notion of gravitation to illustrate the point.

Kepler's correction of certain relevant errors in Tycho Brahe's observations, demonstrated that the planetary orbits are not of the regular form demanded by the reductionist ideologues who had been deluded into following the doctrine of such as Aristotle. Rather, the planetary orbits are approximately elliptical, with the Sun at one of the foci of the ellipses, and the motion of the planets along their orbital pathways is constantly non-uniform motion. Thus, a deluded faith in sense-perception is confronted by the evidence, that the planets' orbits are governed by a principle of *constant change*, as Heraclitus' famous aphorism makes the point. This characteristic requires an agency operating from outside the scope of sense-per-

ception, an agency whose efficient presence is expressed as an *intention*, requires the discovery of a universal physical principle invisible to the senses. The experimental proof of that principle, now becomes a definite object of the mind, an object which exists from beyond sense-perception.

The understanding of such a mental object as that, such as any universal physical principle, requires the mind to generate a kind of object which has the content and form of *constant change*. Only ideas of those characteristics qualify as universal physical principles. An autobiographical note is in order here.

My own 1953 adoption of the standpoint of Bernhard Riemann as the required approach to systematic representation of my own earlier discoveries in the science of physical

44. "Anhang," *Bernhard Riemann's Gesammelte Mathematische Werke*, H. Weber, Ed. (New York: Dover Publications reprint edition, 1953), pp.507-538. (English translation in "Riemann's Philosophical Fragments," *21st Century Science*, Winter 1995-96, pp. 50-62).

45. Riemann references his earlier auditing of a series of lectures delivered at Göttingen University by Johann Herbart. Herbart, who was, notably, educated early at Professor of History Friedrich Schiller's Jena University, became a noted pedagogue in the orbit of Wilhelm von Humboldt, and was a leading opponent of the influence of such notables as Schiller's adversary-target Kant and the pro-fascist Romantic admirer of Napoleon Bonaparte's tyranny, G.W.F. Hegel. The impact of Herbart, a giant relative to the prevalent philosophers of the post-1815 period, on Riemann's thinking is notably of scholarly epistemological interest today. During the mid-1980s, I had intended to address that implication of Herbart's work, the intervention of pressing events prevented me from completing the study of his extensive literary remains which would have been necessary.

economy, was affected in a most crucial way by intensive reflection on three of Riemann's posthumously published philosophical papers, dating in origin from 1853.⁴⁴ The first of these three, entitled "*Zur Psychologie und Metaphysik*," was most important for me at that time, and remains so, for somewhat different reasons still today.⁴⁵ I reference it here out of regard for Riemann's treatment of the notion of "*Geistesmasse*" in that location, an epistemological notion which underlies Riemann's emphasis on what he identifies as Dirichlet's Principle, and Riemann's adducing the concept of Riemannian manifolds from the starting point provided by Gauss's concept of the general principles of curvature. In my own original discoveries in the science of physical economy, the efficient role of the generation and transmission of universal physical principles is the only axiomatic basis for a rational notion of economic processes. Although that concept was already clear to me during my work of the 1948-1952 interval, the review of my own conceptions in the light of Riemann's reference to *Geistesmasse*, has been crucial in most of my life's work since, including the material restated in this present report.

In coming to understand the notion of any experimentally defined universal physical principle, we must, so to speak, relive *the kind of unfolding continuing action of constant change* which that principle represents. Kepler's notion of gravitation, for example, or Leibniz's discovery of the principle of universal physical least action, are excellent pedagogical illustrations of that point. Whereas the sense-perceptual images give us a notion of fixed objects in motion, notions of universal physical principle are images of the continuous unfolding of non-uniform action (e.g., *change*).

To illustrate that point of distinction, contrast the Classical and Romantic view of J.S. Bach's development of the principles of well-tempered counterpoint.

The reductionist seeks to reduce Bach's work to a set of rules; the Classical composer, as typified best by the late string quartets of Beethoven, understands counterpoint as the use of a principle of *constant change*, such that a seemingly elementary contrapuntal irony becomes the generation of an elaborated, complete composition: a composition which is a uniquely definite object, contrasted with all other objects. Thus the performer, or conductor proceeds, from the start, with attention fixed on the idea of the principled character of the contrapuntal irony which defines the entire composition, from the pause which precedes the uttering of the first tone to the breath of silence following the last. He performs, as Furtwängler states the case: "between the notes."

Not only are all ideas occurring in the mind thought-objects; there are qualitative differences in internal characteristics which distinguish ideas of objects of sense-perception (e.g., thought-objects) from those thought-objects which correspond to universal physical principles. The ontological content of the latter class of thought-objects, is a generative principle of constant change.

The characteristic form of pathological states of mind associated with empiricist and kindred forms of reductionist thinking about notions of principle, are the expression of the

attempt to impose the relatively static quality of a sense-perceptual idea upon the mental experience of an idea corresponding to a non-constant factor of qualitative change of state, within the domain of universal physical principles. In mathematics, the result is the imposition of the deductive mechanics of arithmetic procedures upon events which, by their nature, lie, ontologically, outside the realm of the simple counting numbers. The effect of substituting deductive procedures for higher geometric ones, is the generation of a mental state corresponding to rage within the milieu within which the deductive approach is prevalent.

This point becomes clearer when we apply the same critical approach to the subject of Classical artistic composition.

In the Domain of Art

Now, taking into account what I have written, thus far, on physical science, the most effective modes for developing cultures, including national cultures, is Classical art, most notably Classical forms of poetry, drama, music, and plastic arts. In architecture, Classical principles are functionally essential to a healthy, and happy national culture, such that the organization of communities, and architecture of buildings, meet an intelligible Classical-artistic standard. Take the matter of the difference in principle between Archaic and Classical Greek sculpture, as a keystone illustration of the point.

The essentially distinguishing principle of Classical Greek sculpture, is that the mind of the viewer sees the figure as in mid-motion, that in a way consistent with Heraclitus' "nothing is permanent but change." A related feat was accomplished by Leonardo da Vinci's revolution in perspective, as applied to painting, as to the work of Raphael Sanzio and such Rembrandt works of genius as "Homer contemplating the fatuous Aristotle." These works of art, employ the introduction of paradoxical ironies in the visible shadows, to convey a sense of the real universe of the unseen domain whence the shadows are generated. So, in Classical art, as in science, the qualities of thought-objects pertaining to the shadowy domain of sense-perception are of a different nature than the thought-objects of that real universe of nothing but change, which lies, and disposes from the realm beyond sense-perception. So, as for Percy Shelley, the great moments in the history of a people express a momentary increase of "the power of imparting and receiving profound and impassioned conceptions respecting man and nature"—both physical science and those aspects of social relations expressed in their most concentrated form as Classical art.

In other words, the same principle expressed by the complex domain for physical science, is realized in an explicitly social form by Classical art. This is so essential to the happiness and functional effectiveness of a people, that a healthy society requires perfect national sovereignty based upon an increasingly rich and rational Classical form of culture. No "Towers of Babel" are permitted. It is necessary that different nations have a common standard of truth; but, each will reach that standard voluntarily, only through its own sovereign function of a sovereignly national Classical standard of culture.

The means by which such respectively sovereign, separate language-cultures are able to share a common notion of truth, is usefully described as a broadly defined principle of ecumenism. In theology, such an ecumenical principle is asso-



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Classical art, like science, uses the ironies in the visible shadows, to convey a sense of the real universe of the unseen domain that generates the shadows. Here, Rembrandt's "Homer contemplating the fatuous Aristotle."

ciated with the the notion of "The One God," as in Nicholas of Cusa's *De Pace Fidei* or the argument of Moses Mendelssohn. This notion, the notion of a universal natural law, is seen more broadly, without losing any of the connotations of Cusa's and Mendelssohn's argument, at the moment we emphasize the nature of man and woman as made equally in the image of the Creator, and assigned responsibility for dominion within the bounds of that Creation.

The functional forms of effective ecumenical relations among differing religious bodies, or nations, are arrangements which limit their commonly shared obligations to a certain definition of the nature of mankind, as set apart from, and above the beasts. These principles which are properly common to respectively sovereign states or bodies of religious belief, limit their supranational or equivalent authority to the principles of a body of *universal natural law*, such as those three referenced principles set forth in the Preamble of the U.S. Federal Constitution.

Such an ecumenical principle could exist only if it is premised on a strict and universal distinction of man from beast. That distinction is, essentially, nothing other than the power of the human mind to discover experimentally validated universal physical principles lying beyond the capabilities of sense-perception as such. The form of Socratic dialectic per-

meating Plato's dialogues, typifies a universal body of principle, which expresses this universal distinction of the human mind, and so, from this higher standpoint, defines a body of ecumenical harmony bridging the perfect sovereignties of separate national cultures. In other words, that form of the dialectic is an efficient common principle properly shared among otherwise perfectly sovereign, distinct national cultures and their languages.

The additional point to be emphasized, is that the relevant dialogue must be expressed in terms of the predicates of each sovereign national culture, even though the conclusions to be reached may be ultimately, truthfully the same among each and all of those respectively sovereign national cultures. Those aspects of national cultures which meet that standard of "Classical" which is typified by my foregoing exposition above, are the expression of the means by which that ecumenical fraternity among sovereign cultures may be established and maintained.

The pivotal issue of universal natural law is the following.

At first thought, the human individual has two choices of personal identity. For most persons in societies known so far, the individual's choice of personal identity is that associated with the mortal existence between conception and death. For persons of a relatively more cultivated disposition, the essential identity of the individual is

located in that immortal personality which temporarily inhabits the mortal existence. The first, inferior choice, thus locates the individual person's *mortal* identity within the bounds of sense-perception as such. In this case the motivating *passion* of the idea of self is located in that way. The second, true sense of human individual identity locates the *immortal* existence of the individual, by name, as good science recalls the personal name of those discoverers of valid universal physical principle whose ideas, in fact, belonging to the Gauss-Riemann complex domain, or, similarly, of Classical artistic composition, handed down from generation to generation. The great Classical scientist or artist is the epitome of a true, implicitly immortal, individual identity. In the second, higher sense of the nature of the individual self, the passions of the experience of discovery of universal principle, scientific and Classical-artistic, supplies the *passion* which implies the immortality of that individual's soul. The fatal lack of such higher-order passion in Shakespeare's Hamlet, typifies the inferior sense of personal identity.

In the existence of society so far, the success of any culture depends upon the contributions of the leading role of the persons devoted to the second, immortal sense of universal identity, as guides of a people which were pulled down morally by an excessive emphasis on the less than universal, inferior, mor-

tal sense of personal identity. So, for all globally extended European civilization to date, exceptional persons of universal outlook, such as Solon of Athens, the Socrates of Plato's dialogues, and Plato himself, are typical of, and essential for the internal European origins of the best of European culture as a whole.

The point just underlined returns our attention to the essential functional distinction of modern European civilization. The obligation of the head of state is to defend the sovereignty, and promote the general welfare of all the living and their posterity for the present and future of the nation as a whole. Thus, the leadership of the nation requires persons who efficiently embody an historical sense of universality, and who, thus, each act as an indispensable agent of national conscience, to subordinate the small-minded, parochial impulses of the people to the universality of the past, present, and future historical existence of the nation as a whole. This requires of such leaders, whether official or moral, a commitment to a sense of historical past, present, and future humanity as a whole. This means a commitment to the discovery and application of principles which are not only those properly characteristic of the nation, but also of humanity generally.

The related problem in the world thus far, the U.S.A. and Europe included, is that our people, even our leaders, are much too small-minded, even miserably petty in both the moral and practical expression of their opinions and practices. Throughout known history, as Solon of Athens warned, good societies have depended upon the interventions of morally and intellectually exceptional leaders, such as our Benjamin Franklin, Abraham Lincoln, et al, to lead the people of a nation out of that folly which they then, as during recent decades, have brought down upon themselves.

On this account, our Federal Constitution, which was shaped by aid of reflection on the warning by Solon of Athens, has been the most durably effective instrument of all modern political history, even through long periods during which that

**“Only the nation so committed to
endless progress can secure its citizens
the rightful access to true functional
immortality.”**

Constitution was savagely betrayed, as during the 1964-2003 interval. The crucial element of true genius in that Constitution, is expressed as its Preamble, to which all interpretation of other elements of the Constitution, its amendments, Federal laws, and Federal Court decisions, are subject. The invocation of that triadic principle of sovereignty, general welfare, and posterity, lodged in that Preamble, has been the point of reference and national renewable virtue which has made our political Constitution the most durably efficient in known history. The unexcelled genius so embedded in that Preamble, is that it obliges the Federal government to return to the standpoint of true universality, to rescue the nation from the follies of recurring, errant and petty currents of popular opinion. Thus, when we adhere to that Constitution, in that mode, our republic has a certain genius for immortality, if we

use it, not achieved by others to date.

The importance of that view of our Constitution's Preamble is usefully contrasted to the fatal traditionalism of the ultramontane, Roman Code of Diocletian. Tradition in the sense of that Code is the deadliest enemy of any people foolish enough to embrace such a policy. It is change for the better which must constantly supersede such tradition. Scientific and Classical cultural progress must be the tradition which constantly supersedes any other tradition. It is in this, that the immortality of the personality inhabiting the mortal individual is secured. Only the nation so committed to endless progress can secure its citizens the rightful access to true functional immortality.

This brings us to the matter of the principles of curvature, wherein I treat the determining function of discoveries of universal physical principle for economies.

3. The Principles of Curvature

I return our attention to the opening thematic topic of this report. This time, I focus attention on the example of J. Clerk Maxwell as—like such followers of Ernst Mach as the Ludwig Boltzmann who played a key role in laying the groundwork for the Wiener-von Neumann “information theory” hoax—one who is still among the very influential, Nineteenth-Century figures in the corruption polluting academic and related science-instruction and belief still today.

J. Clerk Maxwell's reprehensible “explanation” of his fraudulent treatment of the combined contributions of Gauss, Weber, and Riemann (and Ampère's principle) to the founding of electrodynamics, typifies the hoaxes which underlie the generally accepted classroom view of cosmogony still today. Maxwell's explanation of his fraudulent behavior was his self-described “moral” indignation at the prospect of being obliged to acknowledge the existence of “any geometries” other than “our own.” He meant the empiricist's reductionist tradition of Sarpi, Galileo, Euler, Lagrange, Laplace, Cauchy, Faraday, Clausius, Grassmann, Kelvin, and Helmholtz.⁴⁶ The result of that and kindred expressions of the popular, but immoral view still prevalent in classrooms and related premises today, is the following generally accepted view of cosmogony in general.

The root of this problem is typified by the form of sophistry which I have described as associated with the “apriorisms” of Aristotle and Euclid, and expressed in a more radical form by modern empiricism and its derivatives.

This aprioristic tradition produces a reductionist conception of the universe, a conception which is an intrinsically entropic set of “ivory tower” definitions, axioms, and postulates. The submission of physical scientists to the acceptance of that aprioristic hoax, as expressed by Euler, Lagrange, Laplace, Cauchy, et al., results in a superimposed, axiomatically entropic, mathematical interpretation of physical evidence.

46. To propose that Maxwell's views on this point are typical of England, overlooks the work of the founder of the concept of the programmable digital computer, Charles Babbage. Babbage, young Herschel, and Peacock's blast at the incompetence of the taught mathematics of early Nineteenth-Century Britain, typifies the existence of a competent current of international modern culture in physical science, operating in parallel to the incompetent “Enlightenment” traditions.



Millikan and Gale, *A First Course in Physics* (Boston: Ginn & Co., 1915)

James Clerk Maxwell (1831-1879)

Maxwell rejected the true implications of the work of Carl Gauss and Wilhelm Weber—which confirmed Ampère’s revolutionary hypothesis concerning the angular force between current elements—because it demolished the empirical edifice of Newton.



Courtesy of the Museum of Electricity at Polymieux

André-Marie Ampère (1775-1836)

and the human-cognitive. Vernadsky’s approach, biogeochemistry, supplied the modern experimental basis for defining the principled distinctions and principled interconnections among those three phase-spaces.

The successive work of Pasteur, Curie, Vernadsky, et al., demonstrated, experimentally, that, from the standpoint of experimental physical chemistry, “life” is a category of universal physical principle which is efficient, but does not lie within the domain of non-living processes. Hence, it represents a

Acceptable physical theories are those designed to fit that “generally accepted classroom” notion of mathematical models. In turn, deductions are made from the theories so corrupted, to the effect that varying interpretations concocted within the bounds of those pathetic deductive schemes, become hotly debated in academic circles, and spill over as the form of silly, essentially superficial debates on such matters in the lay press. In general, all agree, today, that the universe is essentially entropic as a whole.

As I shall restate the case summarily here and now, One of the most relevant modern approaches to exposing the fraud of cosmogonies of that reductionist type, has been the elaboration of the notions of the *Biosphere* and *Noösphere* by a great successor of D.I. Mendeleev, Vladimir Vernadsky.⁴⁷ I have addressed that contribution by Vernadsky in various locations published earlier; on this present occasion, I merely summarize the essentials relevant to the present topic. The crucial point to be emphasized, is the way in which Vernadsky’s development and application of the principles of biogeochemistry gave fresh expression to what had been the traditionally Classical view since Plato et al., that the universe is a multiply-connected composite of three distinct, principled phase-spaces: the ostensibly non-living, the living,

distinct universal phase-space. Similarly, the creative powers of the human mind express principles which do not lie within the domain of living processes generally. Hence, human cognition, which Vernadsky terms *noësis*, which is expressed by the Platonic dialectic, is not a principle merely derived, experimentally, from living processes in general: it can not be derived from living processes in general, but, instead, intervenes within the domain of living processes, as if by a higher, anti-entropic principle from “outside” life in general.⁴⁸

Vernadsky’s application of what he defined as biogeochemistry, shows that living processes dominate the non-living increasingly, and that *noësis* dominates biogeochemical processes increasingly. From the vantage-point of statistical thermodynamics, life is intrinsically anti-entropic, relative to non-living processes, and *noësis* is intrinsically anti-entropic, relative to living processes generally. Hence, the universe as the interaction among these three ontological qualities of principle, is intrinsically anti-entropic, since all phase-spaces are efficiently multiply-connected. The universe is ruled by the principle which is to be adduced from the pervasive principle of the Platonic dialectic, as Plato’s *Timaeus* points to this, and as Pacioli, Leonardo da Vinci, and Kepler point to this.

In addition, the way in which the respective space-phases of non-living, living, and *noëtic* processes interact, is a universal physical principle, a principle, a *passion*, consistent with Heraclitus’ “nothing is constant but change.” This interaction is of the form of *passion* which Plato identifies as *powers*, in contrast to Aristotle’s and the empiricist’s contrary, sterile (dead) principle of *energy*, and, as Philo of Alexandria, for example, argues against the “post-creation” sterility of a God as wrongly defined by Aristotle.

47. It is sufficient to note here, that the elaboration of Mendeleev’s famous discovery had two successive phases of development. The first, was that which usually commands attention, and interpretation from a reductionist standpoint. The second, the optical-geometric approach, echoing Plato’s concept of power, rather than Aristotle’s misleading doctrine of energy, emphasized by the work of our leading collaborator, the late physical chemist Professor Robert Moon of Chicago University, is yet to be fully grasped. However, Vernadsky’s treatments of the Biosphere and Noösphere, imply the implications of the second level of Mendeleev’s work. Unfortunately, the corrupting influence of Britain’s Cambridge University systems-analysis group, of John von Neumann-influenced Lord Kaldor, et al., on Soviet science, via the Laxenberg, Austria International Institute for Applied Systems Analysis (IIASA), induced the spread of a pro-Malthusian, pro-reductionist view among some late-Soviet-era Russian students of Vernadsky’s work. Consequently, the fact that Vernadsky’s work implicitly shows the universe to be anti-entropic, rather than entropic, is obscured among a significant portion of even his followers in Russia and Ukraine today.

48. This notion of *noësis* corresponds to the complementary notions of individual human soul and Creator, in Christian theology, for example. The immortal aspect of human life, which is the site of the dialectical creative powers of the human mind, is a higher state of being than the non-living and biotic processes themselves. Vernadsky, like Plato, gives the ontological quality of that soul a rigorously experimental-scientific basis.

Review the methodological implications of what I have just written. Review the matter from the vantage-point of epistemology.

Fraudulent substitutes for scientific method, such as Aristotle and the empiricists explicitly, and the reductionists generally, argue for *a priori* definitions, axioms, and postulates, on the premise that those arbitrary assumptions appear to explain a shadowy universe confined to the shadowy appearances of sense-perception. They then, as Euler, Lagrange, Laplace, Cauchy, Clausius, et al. do, interpret the phenomena statistically according to the precepts of those arbitrary presumptions. An epistemology which abhors arbitrary presumptions, looks into the human mental processes to uncover, there, all presumptions applied to the interpretation of experience.

The result is comparable to Riemann's leading argument in his habilitation dissertation: No universal assumption can be allowed in physical science which is not rooted, like Kepler's discovery of universal gravitation, in evidence which proves that a certain relevant class of phenomena exists only as a reflection of a thought-object, a set of universal physical principles, which exist only outside, and beyond the reach of mere sense-certainty. However, the efficiency of those universal physical principles, is demonstrable from a rigorous experimental scrutiny of experience, especially, as Vernadsky defines the Noösphere, man's experience in willfully changing his universe through application of the discovery of such principles. Hence, the universe of physical scientific inquiry has a physical-geometrical doubleness, which combines sense-experience, as an intrinsically non-linear process in universal principle, with the "curvature" of efficient actions (universal physical principles) external to direct sense-perception.

Economy: Under Our Creative Sun

Hence, we have the following picture of mankind's universe, as viewed experimentally. I develop that picture in two successive steps of approximation.

In first approximation, the universe appears to be composed of two sets of universal physical principles, the first set of principles, *m*, as the implied totality of discoverable such principles, and the smaller set, *n*, of experimentally validated principles presently known to mankind. However, in second approximation, the universe *m* is already developing in an anti-entropic way prior to man's willful intervention. Take, as illustration of that argument, the case of the "history" of the Solar System. Each among these principles is of the form of universal physical principles, thought-objects, belonging to the real universe beyond the shadows of sense-perception.

Currently, our best knowledge is, that the Solar System began as a fast-spinning, youthfully exuberant solitary Sun in the universe at large. According to Kepler's principles, this young Sun spun off some part of its material into a disc orbiting the Sun itself. If we assume polarized nuclear fusion occurring within that disk, then it were possible for polarized fusion, and, presumably, only polarized fusion, to have generated the observed periodic table of the Solar System. That fusion-generated material from the disk would have been "fractionally distilled" into approximately the Platonic orbits defined by Kepler. Then, according to Gauss's reading of the matter, the elliptical-harmonic characteristics of the orbit would have "condensed" the

material distributed along each orbit into relevant planets and their moons. The crucial view of this hypothesis was provided by Gauss's proof of Kepler's case for the self-fractured missing planet, the debris known as the asteroid belt.

Such Kepler-Gauss-et al. conclusions are in accord with the primary characteristics of what I have summarily described as Vernadsky's systemic biogeochemical view of the universe. In other words, the argument is, that the universe is created as an intrinsically self-developing universe, in a process of development expressed, inclusively, by built-in generation of more highly differentiated states of self-organization. Additionally, that the anti-entropic principle of cognition (*noësis*) already existed in that universe "from the beginning," but could be expressed as man only under the emergence of certain new, lawfully generated states of local organization of the universe as part of the universe's overall, anti-entropic self-development. Since the anti-entropic principles of life and *noësis* are of a universal quality inhering in a multiply connected universe, the universe was always anti-entropic as a whole. Man's manifest power to increase his willful control over the universe through nothing other than *noësis*, demonstrates this experimentally. Such is the work of epistemology; no ideas are legitimate, unless the necessity of their coming into being is demonstrated from an experimental standpoint.

This view of the universe has a complementary proof. Men and women who view their personal existence in a way which is coherent with that view of the universe, are the most effective leaders of mankind, in physical science, in art, and otherwise. Those who share the burden of a contrary "feeling" about the universe tend to be failures as leaders in any crisis in their life's work.

If you believe that you are truly immortal in the sense of the universe which I have summarized here, then you have an unshakable capacity for effective leadership, in what happens to be your appropriate life's work, as Jeanne d'Arc did for the coming-into-being of the sovereign nation-state republic, for example, as Ludwig Beethoven's work shows this, as the saintly Friedrich Schiller did, as poet, dramatist, philosopher, and historian. For the scientist who approaches this topic of reflection as I do here, there exists a very clear physical-scientific proof of that sublime notion of immortality. The weight of such a line of argument, is, considering man's extraordinary place in the universe, the outlook on that universe which produces the most effective motivation for improvement of the universe, is an expression of the outlook which most nearly corresponds to what the universe actually is.

This universe has no beginning, and no end. As Einstein once put the point, the universe is finite and unbounded. There is nothing outside it, and nothing exists before or after it. It is a self-developing, anti-entropic universe, ruled by that same personal principle which is reflected in the maturely developed work of the great creative scientist and Classical artist; it is a personalized universe, representing a personalized Creator, knowable as personalized because he expresses the same *noëtic* principle which sets the human individual apart from, and above all lower forms of existence. In those our travels we call our mortal life, within this universe, time is not measured as back and forth, but, rather, up and down, just as the unfolding development of the Solar System, from a fast-

spinning, young, solitary Sun, suggests. What we should call "progress," is up, and we call "tradition," or "entropy," is down. It is therefore a wonderful universe in which to live.

What, then, is our life? The answer comes: "Your life is what you do with it, what you do for past, present, and future humanity as a whole, what you do for man's willful assumption of increasing responsibilities for the *noëtic* development of the universe itself." Your life, your immortality, is your work to such effects. You have but a brief mortal existence; therefore, spend that talent wisely, according to what the universe and its Creator require of you as your work. Such insight into the condition of our brief existence in a mortal frame, frees us from all of those doubts which make cowards of all like Shakespeare's Hamlet, all like the typical, relative best among nearly all U.S.A. political leaders, for example, today. We who grasp those principles are more powerful morally than others, because we have no Hamlet-like need to doubt the value of whatever good we may be able to contribute toward the improvement of the human condition and to the betterment of the universe we inhabit.



AIP Niels Bohr Library

"Your life is what you do with it, what you do for past, present, and future humanity as a whole, what you do for man's willful assumption of increasing responsibilities for the noetic development of the universe itself." Here, Marie Curie (1867-1934), who consciously viewed her scientific discoveries in these terms.

This was recognized, at least to some useful degree of approximation even among certain English poets who came later than Shakespeare. Wordsworth wrote of "intimations of immortality," Keats described the matter with beautiful elegance in his "Ode to a Grecian Urn," and Shelley went to the essence of the practical issue in his "In Defence of Poetry," in celebrating periods of history of a people during which there is an upsurge of "the power of communicating profound and impassioned conceptions respecting man and nature."

When we have come, thus, to our reconciliation with the fact of mortal life and death, as the requiem for a deceased hero, or friend, should jolt us joyfully into remembering this fact, we are able to become truly moral persons, at last. When we see that the brevity of mortal life has a purpose expressed by the immortal soul's realization of the work of *noësis*, there is nothing, as the man might have said, "which can stop us" from performing that mission which is more precious to us, and to the Creator, than our mortal existence itself.

The universe is there, without anything outside it, without beginning or end. If we make ourselves part of its purpose, we are everything; if we betray that purpose, we are as nothing. Thus, our view of that universe is the great source of added strength, which produces the greatest leaders in science, in Classical art, and in political life.

Unfortunately, relatively few persons have come to the point of knowing that view. They seek, foolishly, the meaning of life in the trash-pile which is, usually, the currently popular body of opinion. Today, more than fifty years or so later, many are somewhat like the singer of trash who dies in an ugly way of an overdose of a so-called recreational drug. It is the stink of pessimism, which is today's prevalent popular opinion, which produces the fearful Hamlets which have served as the relatively better political leaders, and fosters that fearful rage of popular despair on which today's fascist thugs, the so-called "neo-conservatives," feed like greedy vultures.

Such demoralizing fears are nourished by a pessimistic attitude toward the progress of what is called physical science, and by the spread of the satanic influence of existentialist cults of those truth-haters of the Frankfurt-School style. On the one side, optimism toward the universe and mankind's place in it, breeds morality and happiness; pessimistic attitudes toward scientific and technological progress, and Hobbesian pessimism toward mankind, are the stuff of which Hitlers are made.

Let the Sun shine in our view of the universe of which we are a part. That Sun is not an object, but a self-developing process, as is the universe as a whole. See ourselves in that setting, and see, above all, the special, forever immortal place of mankind in the universal, boundless, endless process of Creation as a whole.

Once we have recognized the existence of universal physical principles as (implicitly Riemannian) thought-objects, we have gained access to a more advantageous insight into the practical implications of those general notions of curvature developed, successively, by Gauss and Riemann.

You do not "see" this curvature itself with your senses. Do not ruin your days attempting to do so. You see it with your mind, not your senses. Nonetheless, you are able to prove its efficient existence by aid of the explicit evidence provided by your senses, but only as Kepler discovered the *intention* which

“Those who desire to keep most of mankind in the condition of virtual human cattle, are therefore intent on preventing the general use of nuclear fission and fusion as power-sources. For if we raise the standard of living, and education, of humanity generally, what oligarchy could hope to continue overlordship among mankind?” Here, two views of India: Cowdung collection for agriculture vs. nuclear power production.



C. Srinivasan/United Nations



Courtesy of Government of India

he recognized as universal gravitation. Look at the thought-object which was Kepler’s discovery of gravitation. (Do not waste unnecessary time on that slime-ball Galileo and his empiricist cult-followers.)

Think of what I identified, above, as the Sensorium. Try to map observed celestial events, for example, on the implied surface of the interior of that Sensorium. How, then, shall we treat irregular movements, movements which do not correspond to notions of physical laws as Aristotle or Claudius Ptolemy, for example, did. Now, define a curvature of something touching the apparent trajectory of the planet or star, a trajectory which is not to be seen visually, but only in the imagination. This measured, but unseen trajectory touches and regulates the action along the Sensorium-trajectory at every point. The movement of that unseen trajectory, along the Sensorium, defines the impact of an unseen physical geometry, for which the apparently seen trajectory is but a shadow of reality.

By returning, more radically than Gauss had done publicly, to the Pythagorean type of pre-Euclidean (e.g., anti-Euclidean) physical (constructive) geometry of Plato et al., Riemann eradicated all relics of Euclidean or kindred geometries from the competent opinion of modern science, leaving us with nothing but the observational Sensorium, whose reflected motions

express the unseen physical curvatures associated with those thought-objects we know as universal physical principles.

The existing array of such universal physical principles, can be estimated, at any point in experience, as representing what I have referenced as the “m” universal physical principles of the universe as a whole. Of these possible “m” principles, mankind so far knows, actually, only some, “n.” Each of the latter corresponds to a curvature, but the array of known such principles, also defines a curvature relative to what is observed experimentally in terms of the Sensorium. The combined effect of those curvatures also represents a curvature, a curvature implicitly determined by the interaction of all of the behind-the-scenes curvatures taken into account.

What, Then, Is Economics?

Now comes man’s willful intervention, guided by such acquired knowledge, into the universe. Mankind’s willful action on behalf of an accumulation of discovered such principles, changes the universe. For example, the rate of man’s effective action on the universe speeds up as scientific progress is applied. The net curvature of the apparent universe is thus

changed by scientific progress. Man thus creates new states of nature, such that the curvature of the universe of man’s action, and experience, is changed.

Even if, as we assume, that all universal physical principles pre-exist, the fact that man applies those discovered principles to that universe, now as subjects of his will, changes the universe. *Man is able to change the universe by making those discovered, pre-existing principles the subject of the human voluntary will.* Man thus increases the anti-entropy of the universe, as Vernadsky’s principle of life dominated the Earth to bring forth the increasing power of the Biosphere, and as his physical chemist’s notion of human noësis generates a Noösphere which is superior to the Biosphere. On this account, the acts of discovery and wielding of such pre-existing universal physical principles are not separable events, but constitute, as for Heraclitus, a single, permanent principle of universal change.

Thus, as we know more of the principles of the universe, our opinion of the curvature of the universe changes. As we apply that increased knowledge successfully, the curvature of the universe of man’s action is changed. Look at this as I redefined a science of physical economy, back during my undertaking of 1948-1953.

When mankind discovers, and applies a pre-existing universal physical principle: Take, for example, the shift from

power-sources associated with chemical combustion, to the qualitatively higher “energy flux densities” of nuclear fission, and the qualitatively still-higher such densities of nuclear fusion, or, perhaps, so-called matter-antimatter reactions.

For example, if we outlaw nuclear fission as a principal power-source, we place limits on the human condition which must result in a global catastrophe for the human species. If we fail to master nuclear fusion, another catastrophe for mankind as a whole lies a bit further down the line. Those who desire to keep most of mankind in the condition of virtual human cattle, are therefore intent on preventing the general use of nuclear fission and fusion as power-sources. For, if we raise the standard of living, and education, of humanity generally, what oligarchy could hope to continue overlordship among mankind? The oligarchy prefers to keep the masses of mankind brutally poor and as stupid as conditions allow, as we see in the post-1973 changes in health-care, education, popular-cultural, and related policies of the U.S.A. and other nations.

This taken into account, how, as a matter of principle, is it possible for man to produce added wealth?

We can fairly estimate the potential relative population-density of the most advanced form of higher ape, as corresponding to a maximum sustainable level of several millions living individuals, under any of the known general conditions existing since the onslaught of the Ice Age cycles. Today, the estimate is, that more than six billions human individuals now live on this planet. This increase of approximately three decimal orders of magnitude of the human potential relative population-density above that of any higher-ape species, points to the effect of the accumulated discovery and transmission of universal principles to the transformation of generalized human practice.

As I have freshly emphasized that in this report, the relevant principles are each and all of the quality of thought-objects which lie within the Gauss-Riemann complex domain, beyond the reach of sense-perception. From this standpoint, the relevant form of action by human individuals, is the discovery and transmission of a growing accumulation of those kinds of principles. It is not repetitive toil by avowed ape-man Frederick Engels’ “horny hand of labor” which generates progress, but, rather, the transformation of practiced knowledge to the effect of increasing the relative anti-entropy of mankind’s action on the universe. It is the qualitative transformation of the quality and circumstances of human labor, which is the only possible source of true physical margins of profit of society. This is to be conceived as a principle of permanent change. This is the fundamental, hubristic principle of any competent form of political-economy, the fundamental, anti-entropic principle of the science of physical economy. It is the transformation of ideas of principle, in this anti-entropic way, which is the only possible source of true profit of a national or world economy.

Here lies the key to understand the kind of stupidity, as typified by the foolish followers of Adam Smith, et al., which has transformed the U.S. economy from the world’s pre-1964, most productive nation of the world, into a pathetic, predatory, consumerist-culture parasite sucking upon the wealth it is able to suck from the juices of other nations and peoples, even the lower eighty percentile of the family income brackets of the U.S.A. itself. Here lies the answer to such questions, and,

by corresponding implication, the solution.

This brings the focus of our attention back to the nature of the essential evils of Aristoteleanism, empiricism, and the like, both respecting the practice of taught and practiced science, and in education, and cultural policies (including religious policies, such as those so-called U.S. reformed or potential, bipolar and other drunks and dope-addicts known as the Elmer Gantry-style “religious fundamentalists”) generally. Stupefy the people, and you have already recruited them to the ranks of willing human cattle. The post-Civil War educational “reforms” for ex-slaves, of “not educating them above their intended station in life,” typifies the same policy of keeping people captive within the barns and shacks, or barren fields and stinking dumps, where the human cattle are housed.

It is in our practiced conception of the nature of man, that the cause of all the respective forms of progress and retrogression of society are to be found. It is to the degree that human thought and practice are situated within the higher regions of the complex domain, rather than the swamps of brutish reductionism, that man is enabled to exist and progress as mankind. It is the passion for the truth which lies only beyond the shadows of mere sense-perception, by means of which we can rescue mankind from the global catastrophe which the past thirty-odd years of decadence of the culture of globally extended European civilization have now brought upon us all.

4. Satanism & Economy

The immediately foregoing observations now bring us to that point of discussion promised at the outset of this report: Satanism and society, or, empiricism as the basis for the American Enterprise Institute’s, Heritage Foundation’s, and kindred swamp-creatures’s practice of de facto Satanism in the name of political-economy. First, a few essential historical facts about Satanism.

The tradition of Satanism in modern Europe is traced, today, chiefly, from the reign of the Roman Emperor and Mithra-cultist Tiberius at the Isle of Capri, and, secondly, from the role of Venice’s financier oligarchy during and since its position of de facto ruling imperial maritime power of the Mediterranean and Europe more widely, since developments since the interval from the reign of the Emperor Otto III and the time of Norman Conquest, until the decline of Venice’s imperial pretensions as a state toward the close of the Seventeenth Century. However, the tradition of Venice’s diplomatic/spy system and its role as a manipulator of European history through its financier-oligarchical networks, continues to the present day. Attack the traditions of Capri and Venice explicitly on such relevant historical points of continuing importance today, and you will think you have touched a political and religious hornet’s nest.

The central reference-point for identifying the continuing historical significance of Tiberius and the cult of Capri for leading features of Twentieth-Century European history still today, is the Satanist’s emphasis on the actually historical role of Tiberius and his de facto son-in-law Pontius Pilate in the Crucifixion of Jesus Christ. The cult of Tiberius at Capri, is the principal modern cult of the Anti-Christ.

This set of connections of continuing major relevance for today, is typified by the set of explicitly pro-Satanic cults associ-

ated with a leading crony of H. G. Wells, Bertrand Russell, and Julian and Aldous Huxley, the avowed Satanist and Theosophist Aleister Crowley. Gregory Bateson, the one-time spouse of witch-staff-wielding population-control-freak Margaret Mead, is also found at the center of the networks associated with the Capri pro-Satanist cults. The history of fascism,⁴⁹ from its founder, occultist Napoleon Bonaparte, through Mussolini, Hitler, and Spain's Franco, is a history redolent with the pro-Satanic occult tradition of Capri's Twentieth-Century Mithra-cult proceedings, including the Maxim Gorki cult-sessions at the Capri grotto. Fascism today, as practiced by the Leo Strauss-related U.S. neo-conservatives around Vice-President Dick Cheney, is the leading political expression of Satanism.⁵⁰

The posing of the issue of Satanism, as I do here, is not in any way an exaggeration of that subject's practical significance for society today. As the danger of world war from the actually Synarchist cult of neo-conservatives attests, there is no sane basis for objecting to raising the issue of Satanism in connection with today's world strategic crises. The problem to be mastered, is understanding it as a clinical phenomenon, the nature and causes of the kind of mass-phenomenon mental disease it expresses, as I do here.

As I have indicated at the outset of this report, the essence of the matter is that suppressing responsiveness to the essential difference between man and beast, is the essential functional distinction of what is Satanism-in-fact. When that matter is viewed in that rigorously scientific way, we are obliged to recognize that the known existence of society prior to the referenced Fifteenth-Century Renaissance was a state of affairs in which some people hunted or herded other people as virtually human cattle. The treatment of the majority of humanity as human cattle, as beasts, degraded the hunters and keepers to a common bestiality. Thus, the pre-history and history of mankind has been, essentially, a long effort to liberate mankind from self-inflicted bestiality.

In the history of European civilization, this struggle against the hegemony of bestiality includes such featured developments as the history of science running through the Pythagoreans, Solon of Athens, and Plato, through the principle of human universality as in the image of the Creator, established by Jesus Christ, and spread through, most notably, the Gospel of John and Epistles of Paul. The realization of that impact of a Classical-Greek situated Christianity upon Judaism and, later, Islam, prepared the ground for the first emergence of the modern nation-state under the conditions produced by the return from Latin, to revived emphasis upon the morally and intellectually superior Classical Greek culture of Plato's Academy at Athens, during the Fifteenth-Century Renaissance.

As I have emphasized, the Venice-orchestrated religious wars of the 1511-1648 interval's "little new dark age," the wrecking of France's Seventeenth-Century renaissance by the combined legacy of Louis XIV and the Eighteenth-Century Enlightenment, reduced the prospects for continuing the political legacy of the Renaissance founding of the modern nation-

state, to the European backing for the effort, led by Benjamin Franklin, in North America. The London-directed efforts of Lord Shelburne's Jeremy Bentham, et al., which launched the July 14, 1789 storming of the Bastille as a plot to prevent the continued effort for the Bailly-Lafayette constitution, and the subsequent Jacobin Terror and Napoleon's reign, ruined the possibility of establishing true republics like the U.S.A. in Europe. The result was, the mixed blessing of certain reforms of the feudal order, producing the presently typical Anglo-Dutch Liberal model of banker-controlled parliamentary democracy.⁵¹ Today, unfortunately, the success of the right-wing currents associated with the 1966-1968 Presidential campaign of Richard Nixon, and the incumbency of Nixon's control by the pro-consulate of Henry Kissinger, George Shultz, Paul Volcker, et al., unleashed that uprooting of the U.S. Constitutional tradition which has brought ruin upon both the Americas, Europe, and sub-Saharan Africa today.

Nonetheless, the U.S. Constitution is the most durable of all designs of government in the world today, a Constitution which has been brought back, repeatedly, as from the grave, as under Presidents Abraham Lincoln and Franklin Roosevelt. The most crucial element of true genius in that Constitution is its Preamble, which is in itself, as I have described it, the fundamental law of our republic.

To round out the argument of this report, consider the following strategic assessment of the present world situation.

If you were the Devil himself, and wished to eradicate from this planet all that represented the efficient difference between man and beast, from whence would you launch your attack? To establish a world-empire for Satan, so to speak, what part of the world would you choose as prime target for takeover?

Go back to the Summer of 1944. The Allied breakthrough in Normandy has assured the early doom of the Nazi regime. A President Franklin D. Roosevelt, tired from the combination of his continuing illness and his labors, is preparing for the post-war reorganization of the world as a world composed of a unity of anti-colonialist principle among sovereign nation-states. He has chosen his Vice-President Henry Wallace as, once again, his choice of Vice-Presidential nominee for the coming Democratic Party convention. The right-wing, inside and outside the U.S.A., representing those financier interests, and their accomplices, behind the Synarchist rulers of Nazi Germany, fascist Italy and Spain, and Vichy France, are determined to secure themselves against the looming threat of justice, and to ensure a termination of those policies which President Roosevelt represents. Thus, Senator Harry Truman is forced upon Roosevelt as replacement for Wallace at the convention.

The election of President Dwight Eisenhower temporarily reversed the drive toward a fascist takeover of the U.S.A. under Truman, but it proved to be only a setback, a delay for the ambitions of those utopian, factional forces of intended international fascism who are associated today with names such as neo-conservatives and a "Revolution in Military Affairs (RMA)." The

49. I.e., what is officially known to U.S. and France intelligence services under the post-World War I file designation of "Synarchism/Nazi Communism."

50. Today's imperial, e.g., "neo-conservative" form of fascism is known by such rubrics as "universal fascism," the Nazi international Waffen SS copied form known in the U.S.A. as the "Revolution in Military Affairs (RMA)."

51. The attempt to establish the Fifth Republic in France, under which France's national finances were tied to the U.S. model of the gold-reserve-based fixed-exchange-rate system, is the most notable approximation of an actual republic in Europe to date. That was ruined by the U.S.-led developments of 1971-1972, but the legacy of that aspect of "Gaullism" lingers as a potential future benefit today.



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“Fascism today, as practiced by the Leo Strauss-related U.S. neo-conservatives around Vice-President Dick Cheney, is the leading political expression of Satanism.” Here, Hieronymus Bosch’s (ca. 1460-1516) depiction of Hell as a garden of earthly pleasures, which exemplifies what LaRouche calls “Satanism in fact”—denying the difference between man and beast.

1962 missile crisis, the assassination of President Kennedy, and the launching of the U.S. official war in Indo-China, transformed the United States from the world’s leading producer economy, into the parasitical, bankrupt, and world-predatory consumer society it has degenerated into becoming today.

The essential feature of this change is typified by the referenced case of Associate Federal Justice Antonin Scalia’s profascist, and frankly pro-Satanic doctrine of “shareholder value.” The essence of the Satanic quality which Scalia merely typifies, is the denial of the essential principles of the U.S. Constitution, most notably the anti-Satanic principles of “general welfare” and “posterity.”

The denial of the right of the population to be developed and employed in service of that realized scientific-technological progress essential to the human nature of the population as a whole, is the essence of practical Satanism, the bestialization of the people as human cattle deemed best suited to serve as the prey of a financier-predator class.

The objective of such pranks, is not merely to deprive the people of their right to such development of society. The truly Satanic character of the onslaught against the U.S. Constitution,

is the commitment to eradicate from the people the popular will to participate in scientific-technological progress.

If the people are caused to degenerate in that way, then, they, like the popular opinion of the citizens of ancient imperial Rome marching in to enjoy the bestial spectacles of the gladiatorial arena, will become fascists like those ancient Romans. Then, they, and similar populations of subject other nations, will become a predatory mass of beast-men, to bring about the Satanic goal of uprooting an order among people which was dedicated to the principle of man and woman made equally in the image of the Creator. There is no policy more Satanic than such a reliving of the ancient Roman Empire of Tiberius, et al., as that.

Could any of you be so degenerate, as to be willing to compromise with that Satanic intention being expressed by the neo-conservative changelings infesting the U.S. government, and Democratic National Committee’s tyrants today?

Addendum

Take as a case in point, the nominally Christian priest who either ceased to believe, or never actually did, but who continues to be a priest, and defends the priesthood on some pretext other than an actually Christian belief. I have encountered a number of representatives of that type, in various denominations. The worst of those is typified in history by the horrid legacy of the Crusades and Inquisition. At his worst, such a false priest becomes nothing but Satanic. Essentially, by inclination, he usually tends to represent a continuation of the same tradition in sophistry represented by Kant, Euler, and Lagrange.

Our contemporary Protestant “fundamentalists,” most notably the nominally Zionist variety of these traditionally anti-Semitic creatures, are only the reverse side of the coin for the right-wing priest who is no longer gripped by the *passion* of Christ, or, perhaps, never was. What do such wretches as any of those believe?

Compare the case of Theodor Adorno and Hannah Arendt, two existentialist cronies of the Nazi philosopher Martin Heidegger, whose disqualifications for the Nazi Party membership toward which their philosophy inclined them, was, essentially, nothing but the birth records which identified them as Jewish. Like Heidegger’s follower Leo Strauss, these nominally Jewish swine found in the U.S.A. a place to practice a Nazi-like dogma, for which they became noted as liberals, all without giving up anything of that which they shared essentially with the Nazism of Heidegger. What do such wretches as those actually believe? What do non-believing priests of all colors actually believe? In the case of Christianity, the appropriate type of answer to such questions is more or less readily accessible. I summarize the argument, as follows.

Christianity is premised inclusively, adducibly, on the Mosaic doctrine that man and woman are made equally in the likeness of the Creator, and endowed with the powers and responsibilities for the security and ongoing development of the domain to which they are assigned. In short, the essence of Christianity is the absolute distinction between man and beast, as I have, once again, defined that distinction in this report.

Moreover, the distinction of Christian is that notion of



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The storming of the Bastille, July 14, 1789, was launched by the London-directed forces to prevent France from adopting a U.S.-style Constitution. The Jacobin Terror and Napoleon's reign which followed, wrecked the efforts of Benjamin Franklin and others to continue the Renaissance legacy by establishing republics in Europe.



immortality which, as I have emphasized, affrights the Hamlet of the Third Act soliloquy. The persistence of the Christian Church after the judicial murders of Apostles such as Peter and Paul, and the terrible mass-murders of Christians by Roman Emperors, beginning with the crucifixion of Christ by the son-in-law of the Emperor Tiberius of Capri notoriety, is a reflection of precisely that notion of immortality which Shakespeare's Hamlet feared more than death itself. The Christian, especially the true priest, is a person with an immortal mission, a person who follows the light of that thought-object, to a place beyond the domain of sense-perception, which lies, as an object within the simultaneity of the infinity which is reflected by the complex domain. That thought-object expresses his passion, his creative devotion.

On that account, mankind's appropriate passion for his own destiny is seen in Classical Greek tradition as essentially *Promethean*, in the sense of the Mosaic definition found within *Genesis 1*, but also echoed in Aeschylus' *Prometheus Bound*. Those who condemn such a Promethean devotion, are no Christians, but, more likely, suspect devotees of the virtually Malthusian Code of the Roman Emperor Diocletian.

What, then, of the priest who lacks such a controlling thought-object, such a controlling passion? He finds a substitute for passion as all the reductionists do, the sophists most notably. Like the frankly Satanic Bertrand Russell and his devotees, he makes up sets of *a priori* rules, like the definitions, axioms, and postulates of a Euclidean geometry, or the counting-number dogmas of the empiricists or the kindred dogmas of the Cartesians. These sets of rules become the arbitrary rules of a children's game, a game often as ugly as Dungeons and Dragons, or the sadism of the Harry Potter stories. The rules are always beastly, as the heirs of the Emperor Constantine defended the institution of serfdom against the modern sovereign republic; they situate the actor within the bounds of a

sense-certainty prescribed by an unknowable beyond, and demand that the dupe of such rules solve the puzzle by these rules, upon which the Babylonian priest insists. If the rules fail, a new set of rules, with the same fault as the first, will be provided magically, by the Delphic oracle or her like. If all else fails, the rules are defended as an order of affairs predetermined by arbitrary divine right of those to which such authority is attributed.

The priesthood of those who do not believe in the mission of their profession, degenerate into a kind of freemasonic bureaucracy, not much distant from the occult, Cathar-like freemasonry of the Synarchist private bankers. Thus, some such priests, in Spain and elsewhere, became adjunct and part of Synarchism, during the past, and still today.

In the real universe, as Philo of Alexandria argued against the sophist's folly of Aristotle, there are no known limits to the knowable true rules of this universe. Rather, as I have summarized the case within this report, the universe beyond the powers of direct sense-perception is made accessible, increasingly, through our discovery of more and more among those principles which lie still, yet to be discovered as verified Platonic hypotheses, beyond the bounds of sense-perception.

Therefore, where could that sophist of a non-believing, but practicing priest go to pray; to what strange god does he pray in fact? What strange god does he actually serve? To what drum-beat does he march? In fact, that false-flagged priest, like the occultists Aleister Crowley, H.G. Wells, and Bertrand Russell, can do no better than play games of sophistry, making up sets of axiomatic rules to explain away what he can not comprehend, as the the Hellish assortments of sundry empiricists, Kantians, and positivists of the modern academic form of Babylonian priesthood of peer review do still today, as Euler and Lagrange, and their followers Kant and Hegel, did approximately two centuries ago.