FIDELIO

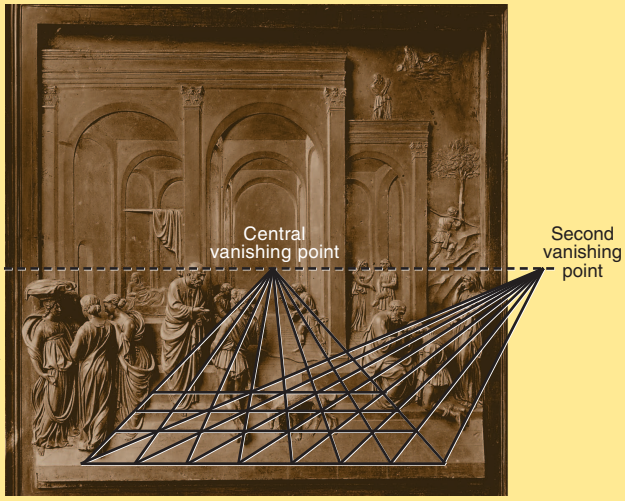
Journal of Poetry, Science, and Statecraft

Winter 1996

$5.00

The Invention of Perspective

The invention of perspective was a giant step for mankind, through which humanity greatly increased its mastery over nature. Lost for centuries and rediscovered only in the Renaissance, this science was the result of protracted effort, and involved a great many superseding hypotheses.



Alinari/Art Resource, NY

Ghiberti, "The Story of Jacob and Esau," Florence Cathedral (1430-1437).

How to unify visual space, how to make it appear to be homogeneous, occupied the thoughts of those artists who first tried their hand at linear perspective. At the turn of the Fifteenth century, Donatello, Ghiberti, and Brunelleschi were rivals in the great competition, by which Ghiberti was finally chosen to decorate the "Gates of Paradise" of the Florence Baptistery. It was they who first put to methodical use a second vanishing point, which they located not at the center, but at the side, of which system Ghiberti's *bas relief,* "The Story of Jacob and Esau," is a magnificent example.

Light—above all in the case of Rembrandt—was to become an extraordinarily powerful means to suggest the existence of spaces not explicitly shown. In Rembrandt's work, there is a dialogue between the light within, and light from without; there is thereby conveyed a most powerful impression of how the presence of an individual being, effects the transformation of light. It is *Light* itself, therefore, which has become the new Transfinite.

To Leonardo, a limit is defined, not by a line as such, but as a change in the geometry or sense of orientation. *Sfumato,* a technique through which one consciously blurs or softens a figure's outline, is a first step toward defining the material world in terms of a higher reality: *Light.*

© RMN

Rembrandt van Rijn, "The Philosopher" (1650).

FIDELIO

"It is through beauty that one proceeds to freedom."
—Friedrich Schiller

Vol. V, No. 4 Winter 1996

EDITOR-IN-CHIEF
William F. Wertz, Jr.

EDITOR
Kenneth Kronberg

ART DIRECTOR
Alan Yue

EDITORIAL ASSISTANT
Denise Henderson

BOOKS
Katherine Notley

Fidelio (ISSN 1059-9126) is published by the Schiller Institute, Inc., P.O. Box 20244, Washington, D.C. 20041-0244. Editorial services are provided by KMW Publishing Company, Inc.

Fidelio is dedicated to the promotion of a new Golden Renaissance based upon the concept of *agapē* or charity, as that is reflected in the creation of artistic beauty, the scientific mastery of the laws of the physical universe, and the practice of republican statecraft for the benefit of our fellow men.

Subscriptions by mail are $20.00 for 4 issues in the U.S. and Canada. Airmail subscriptions to other countries are $40.00 for 4 issues. Payment must be made in U.S. currency. Make check or money order payable to Schiller Institute, Inc.

On the Cover
Raphael Sanzio, '*Archimedes group,' The School of Athens* (1509). SEE page 30 for analysis. (Photo Vatican Museums)

FID 96-004

Reality Strikes! Exonerate LaRouche!

EDITORIAL

Now that the year-long "virtual reality" of the 1996 national election campaign in the U.S. has come to an end, the Congress and the Executive branch of the U.S. government must prepare to take those actions necessary to reverse a worsening global financial, economic, and political crisis.

The worsening financial and economic crisis is accentuating the social and political crises in every region of our planet. The Middle East is on the verge of blowing up. The most intensive genocide of the Twentieth century—against the Hutus of Central Africa—is in progress at this moment. Central Asia is ready to explode under the impact of the Taliban operation. In Central and South America, virtually every nation is on the verge of disintegration. Meanwhile, Russia is on the brink of dictatorship or chaos.

Under these circumstances, it is of the utmost importance, that we continue to build political support in this country for the U.S. government to act immediately, once the banking collapse begins, to put the world's monetary and financial systems into government-supervised bankruptcy reorganization. This is the concrete task facing mankind as we approach the Third millennium. The world will either descend deeper into Hell, or we shall build a bridge into the Twenty-first century—a bridge from Hell to Purgatory.

This task will not be accomplished, however, unless Lyndon H. LaRouche, Jr., is exonerated, and thus placed in a position to contribute directly to the urgent task of reconstruction. This is not to exaggerate the role of Lyndon H. LaRouche, Jr.—it is merely to state the inescapable truth: Lyndon LaRouche has been defamed by the opponents of world economic development, precisely in order to prevent others from turning towards him for solutions in the coming crisis, out of fear that they will be crushed for so doing.

If you fear to work openly for his exoneration, if you fear to identify yourself publicly with his policy leadership, then you have failed the test of leadership. You are afraid to do the one thing, which the enemies of humanity are most intent on preventing. Without LaRouche's leading role, the world will descend even more rapidly down the "slippery slope" to Nazi-style genocide. In this situation, your fear of working openly with Lyndon LaRouche, is the oligarchy's most powerful weapon.

The role of the creative individual as *imago viva Dei,* acting in the present with a mental vision of the future, while building on the unique mental discoveries of the past, is crucial in shaping world history. Some individuals are called upon to play a greater role than others. As Lyndon LaRouche recently stressed in reference to the "Columbus Principle," it was neither the crew nor the ships that caused Columbus' discovery of the Americas. The crew was opposed to the discovery, and the ships had no opinion on the subject whatsoever. The crew and ships were a necessary vehicle for the action of discovery, but *it was the mind of Columbus,* commanding those resources, which *effected the discovery.*

In his essay, "The Essential Role of 'Time-Reversal' in Mathematical Economics," which appears in this issue of *Fidelio,* Lyndon H. LaRouche, Jr., demonstrates how the future shapes the present. As he writes: "'When' is the future? At what point in time? Similarly, what is the beginning-point in time from which to define the cumulative past with which the future is to collide? The answer to this seeming paradox, was already known by Plato, by Augustine of Hippo, and, therefore, also, Thomas Aquinas: *All time is subsumed under a general regime of simultaneity!* The highest expression of *change,* is that lattice of higher hypotheses which expresses the transfinite notion of hypothesizing the higher hypothesis. What underlies that lattice? That lattice is underlain by what Plato distingishes as *the Good.*"

In an accompanying article, Mindy Pechenuk explores how this principle of time-reversal works in Classical musical composition, through an examination of Mozart's *Ave Verum Corpus.* As Lyndon LaRouche emphasizes: "It is so in life, as Mozart seeks to remind us in his setting of the *Ave Verum Corpus.* 'The test of death': How shall I choose to live under the impact of the certainty of death?"

The universality, from a natural law standpoint, of the nature of man as *imago Dei,* and as having *capax Dei,* is further developed by Schiller Institute founder Helga Zepp LaRouche in her article on "China's Confucian Legacy in Today's World." Following in the footsteps of G.W. Leibniz, Zepp LaRouche identifies the Confucian philosophical-cultural tradition in China's five-thousand year history, as the basis for China to overcome the scourge of Maoist Legalism, and emerge as a potential ally of the United States in the fight for world economic development, in opposition to British imperial geopolitics.

The interviews in this issue, with Bishop Anthony Pilla, president of the National Conference of U.S. Catholic Bishops, and Bishop Howard Hubbard of Albany, New York, consider profound theological issues, such as time-reversal, from the standpoint of how such questions must be reflected morally in one's approach to the crucial policy issues that confront us today.

Among those issues, as reported in our News Department, are the necessity of stopping the Nazi-style policies of killing the poor, immigrants, and elderly through the denial of necessary medical treatment. Of particular importance are the call by Pennsylvania State Representative Harold James, for hearings on the genocidal medical cuts implemented in that state by Governor Tom Ridge, and the recent policy forum held in Washington, D.C., to discuss how to stop the homicidal consequences of so-called "managed health care."

Of similar significance is the explosive revelation in our review of two special reports produced by E.I.R. magazine, that the crack-cocaine drug epidemic in this country was deliberately facilitated by the National Security Council apparatus of then-Vice President George Bush. They flew drugs into this country by the "cargo plane load," to generate cash in support of the Nicaraguan "Contras." If honestly investigated, this scandal has the potential, of dismantling the entire secret government apparatus, which stands in the way of both the exoneration of Lyndon LaRouche, and of the U.S. government playing the kind of role it must, to create a just, new economic and moral world order.

Finally, we draw your attention to our reviews of AFL-CIO President John Sweeney's new semi-autobiographical book, and of the memoirs of Msgr. George Higgins, which uniquely demonstrate the powerful role played by the social encyclicals of the Roman Catholic Church in helping to organize the labor movement in this country throughout the Twentieth century, as well as pointing to their potential to help revitalize it today. Linking this tradition to the person and policy initiatives of Lyndon LaRouche, in rebuilding the labor-Civil Rights coalition in this country, is a crucial step to enabling our nation to reassume its proper and necessary world leadership role, as we enter the next millennium.

The Proverbs of Confucius

I.

Threefold is the stride of time:
Hesitantly is the future nighing,
Arrow swift the now is flying,
Stands the past in still eternal clime.

No impatience can e'er speed it
In its stride, if it delay.
Neither fear, nor doubt impede it
In its course, if it runs 'way.
No remorse, no magic saying
Can move that which e'er is staying.

Wouldst thou wisely and with pleasure
End the days of life's brief measure,
Take the hesitant to heed,
Not as tool to serve thy deed.
Ne'er as friend the fleeting know,
Nor the ling'ring choose as foe.

II.

Threefold is the span of space:
Ceaselessly with restless pace
Strives the *length;* i'th' distance soaring
Endlessly the *breadth* is pouring;
Bottomless the *depth* descends.

Thee as image these are given:
Restless forth must thou be driven,
Ne'er stand still and weary be,
Wilt thou the completion see;
Thou in breadth must be extended,
Shall the world be apprehended;
In the depth must thou be going
Shall the essence thou be knowing.

But persistence guides to th' goal,
But the full to clearness guideth
In th' abyss the truth resideth.

—*Friedrich Schiller*

Photo Vatican Museums

'When' is the future? At what point in time? . . .
The answer to this seeming paradox, was already known by Plato,
by Augustine of Hippo, and, therefore, also, Thomas Aquinas:
All time is subsumed under a general regime of simultaneity!

The Essential Role of 'Time-Reversal' in Mathematical Economics

by Lyndon H. LaRouche, Jr.

October 3, 1996

The centerpiece of my August 31, 1996 keynote address to the Reston Labor Day Weekend Conference, was the identification of the determining role of "time-reversal" in constructing any competent mathematical representation of an economic process.[1] The same principle of efficient time-reversal, as met in Classical motivic thorough-composition, was also demonstrated, following that keynote, in a performance of Wolfgang Mozart's motet *Ave Verum Corpus* (K.618).[2] During the discussion period of that conference, I also emphasized the relevant, crucial role of Carl F. Gauss' treatment of the subject of "biquadratic residues," in constructing an adequate representation of any mathematical function which purports to address the implications of "time-reversal."[3]

In order to make clear the apparent paradox, I asked the audience to acknowledge the perplexity, the which this notion of "time-reversal" would pose to the ordinary professional mathematician. I state here, as then: *How might one represent, mathematically, a function in which an event in the future might serve as the apparent cause for an event in the present?* This was, in fact, being considered by the famous Soviet physicist Sakharov, as a formal problem in mathematical physics, during the later years of his

1. Labor Day Weekend Conference, co-hosted by the Schiller Institute, Reston, Virgina, U.S.A., August 31-September 1, 1996 [SEE page 76, this issue].
2. A presentation by Mindy Pechenuk, with chorus directed by John Sigerson, during the second panel, August 31, 1996 [SEE page 34, this issue]. This highly sophisticated, compact, and beautiful work, is among the most convenient illustrations of the same principle of "time-reversal" otherwise underlying both experimental physics in general, and physical-economic processes specifically. Any master's Classical composition according to the principles of motivic thorough-composition, such as those of Wolfgang Mozart, L. v. Beethoven, F. Schubert, R. Schumann, Johannes Brahms, *et al.,* must be performed by applying the developed conception reached at the close of the composition, to the interpretation of every portion of the composition, from the beginning of the performance of the composition. The modification so imposed by the intent of such a composer, results in what the celebrated conductor Wilhelm Furtwängler identified as "playing between the notes." The relationship of the counterpoint in this motet to Mozart's derivation of the principle of motivic composition from Bach's *A Musical Offering,* illustrates the relevant historical point, that although full-composition motivic thorough-composition was introduced by Wolfgang Mozart during 1782-1783, as prompted by the preceding work of Joseph Haydn, motivic thorough-composition would not have been possible without the preceding development of the principles of counterpoint, based upon C=256, by Johann Sebastian Bach, whose work provided the basis for Mozart's discoveries. Video recordings of the August 31 pedagogical presentation of the motet are available through the Schiller Institute.
3. As indicated in Lyndon H. LaRouche, Jr., "Leibniz From Riemann's Standpoint," *Fidelio,* Vol. V, No. 3, Fall 1996: notes 15, 18-20, pp. 21-22. (G.F.) Bernhard Riemann, *Über die Hypothesen, welche der Geometrie zu Grunde liegen* ["On The Hypotheses Which Underlie Geometry": 1854 habilitation dissertation], in *Bernhard Riemanns Gesammelte Mathematische Werke,* ed. by H. Weber [reprint of (Stuttgart: B.G. Teubner, 1902)] (New York: Dover Publications, 1953) [also (Vaduz, Liechtenstein: Saendig Reprint Verlag], pp. 272-287. The specialist should supplement

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

This article originally appeared in Executive Intelligence Review, Oct. 11, 1996 (Vol. 23, No. 41).

life.[4] The issue of the functional role of "time-reversal," is the most important of the fundamental issues confronting mathematical physics today. It is also a key, axiomatic issue in the field of natural law, and, in a related way, important for cleansing theology of certain cultish, intrinsically pagan superstitions, which have no proper place in the teaching of Christianity, Judaism, and Islam. Here, all those issues are implicit; but, it is the decisive role of "time-reversal" in any competent economics teaching, which is the topic explicitly addressed in the following pages.

This physical principle of "time-reversal," and its importance, were themes which had been featured aspects of my original discoveries in physical economy, during the 1948-1952 interval. For example, some of my former students will recall, that I had stressed that central, "world-line" feature of physical-economic processes in my lectures delivered at Columbia University campus, during the Spring 1973 semester. I had stressed that, in the published version of my lectures on the dialectical examination of Karl Marx's economics.[5] During preceding years, I had written and lectured often on related principles underlying the Classical method of composition and performance of motivic-thorough-composition in music,[6] and had addressed this recently, in response to remarks, on the subject of "time-reversal," by Nobel Prize economist Kenneth Arrow.[7]

Nonetheless, although the notion of time-reversal has always been the core of my discoveries and teaching in the science of physical economy, it is only since the Reston address, that I have received demands, from among my collaborators, for in-depth background expositions on these, and interrelated matters. One might speculate, that, perhaps, it is the psychological tremors set off by the onrushing, global disintegration of the world's monetary and financial systems, which increase sensible people's interest in questions of physical-economic fundamentals. My students had often heard this conception presented by me earlier. The difference is, this time, they had decided it was now necessary to consider actually mastering the concept, rather than simply acknowledging the importance which I place upon it. Thus, at last, the stunning implications of the relevant paradox have been noticed.

The Future As Change

A dog reaches for a bone; a dog hunts for prey not yet seen, heard, or smelled. How does human reaction to the idea of the future, differ from what an observer might

---

the habilitation dissertation with several additional Riemann and Gauss references. These include Riemann's own later (Paris) report on the substance of his mathematical discussion in the 1854 habilitation proceedings. The most essential such references are, the following. For the reader of Latin: *Commentatio mathematica, qua respondere tentatur quaestioni ab III^ma^ Academia Parisiensi propositae, op. cit.,* pp. 391-404; the mathematics can be followed, with help of cross-reference to the appended notes, in German, pp. 405-423. On Riemann's reference to Gauss on the relationship of biquadratic residues to a general theory of curved surfaces, see *Carl Friedrich Gauss Werke* [*Werke*] (Hildesheim: Georg Olms Verlag). Riemann references explicitly *Theoria Residuorum Biquadraticorum: Commentatio Secunda* (1831) (*Werke,* Vol. II, pp. 93-138); but see the German notice: *Zur Theorie der Biquadratischen Reste* (*Werke,* Vol. II, pp. 315-385). The text of Riemann's dissertation references *Disquisitiones Generales Circa Superficies Curvas* (1828) (*Werke,* Vol. IV, pp. 217-258). But, for relevant background, see Gauss' *Allgemeine Auflösung der Aufgabe Die Theile einer gegebenen Fläche auf einer andern gegebnen Fläche so abzubilden dass die Abbildung dem Abgebildeten in den kleinsten Theilen ähnlich wird* ["Copenhagen Prize Essay"] (1822) (*Werke,* Vol. IV, pp. 189-216). Compare with Riemann's *Theorie der Abel'schen Functionen* (1857) (*Riemann Werke,* pp. 86-144), especially the celebrated *Lehrsätze aus der Analysis Situs für die Theorie der Integrale von zweigliedrigen vollständigen Differentialen,* pp. 96-99. The origins of Gauss' development of biquadratic residues, are found in his 1799 doctoral dissertation, *Disquisitiones Arithmeticae* (1801) (*Werke,* Vol. I); it was the development of the early work of his doctoral dissertation, through later work in astrophysics and geodesy, which produced, twenty to thirty years later than the *Disquisitiones,* the refined notions of a general theory of curved surfaces, to which Riemann makes reference.

4. Andrei D. Sakharov, "Cosmological Models of the Universe with Reversal of Time's Arrow," in *Collected Scientific Works* (New York: Marcel Dekker, 1982), pp. 131-136 [originally published in *ZhETF,* 79:689-693 (1980), trans. *Sov. Phys. JETP,* 52:349-351 (1980)]. See also, in the *Collected Works:* "Violation of *CP* Invariance, *C* Asymmetry, and Baryon Asymmetry of the Universe," pp. 85-88; "The Baryonic Asymmetry of the Universe," pp. 115-130; and "Maximum Temperature of Thermal Radiation," pp. 137-150.

5. On "world line," as presented in the Columbia University lectures, see Lyn Marcus (pen-name of Lyndon H. LaRouche, Jr.), *Dialectical Economics* (Lexington, Mass.: D.C. Heath, 1975), pps. 61-62, 134. The crux of my criticism of Karl Marx's *Capital,* now as then, was to point to Marx's repeated admission, that he had constructed his doctrine without considering the implications of technological progress; thus, what was generally accepted as "Marxist economics" among its professionally qualified scholars, was a parody of those combined, mechanistic doctrines of Quesnay, Adam Smith, *et al.,* which each and all presumed zero-technological growth as the axiomatic basis underlying all of the fundamental theorems of the doctrine. I.e., they implicitly deny the distinction, the individual potential for creative mentation, which sets mankind apart from and above all the beasts, and which, thus, defines the only admissible basis for either an economic science or the study of history. An incident from the late 1950's is relevant. An acquaintance invited me to deliver a lecture to a class of his students of Karl Marx's *Capital,* Vol. III. When I identified the need to apply the implications of technological progress to correct the flawed notion of "extended reproduction" used by Marx, consternation erupted among both students and host!
6. Lyndon H. LaRouche, Jr., "That Which Underlies Motivic Thorough-Composition," *Executive Intelligence Review,* Sept. 1, 1995 (Vol. 22, No. 35). _____, "Norbert Brainin on *Motivführung,*" *Executive Intelligence Review,* Sept. 22, 1995 (Vol. 22, No. 38) (also *Fidelio,* Vol. IV, No. 4, Winter 1995).
7. Lyndon H. LaRouche, Jr., "More 'Nobel Lies,'" *Executive Intelligence Review,* May 31, 1996 (Vol. 23, No. 23).

attribute to the "intentions" controlling the dog's action? In short, the difference is, that, except when a man is behaving with the simple-mindedness of a *macho,* materialist, or empiricist, the object of the relevant expression of human intent, is not the apprehension of a sensory object, but, rather, a desired *change* in the *axiomatic* characteristics of some referenced pattern of human behavior. That point may be stated otherwise: *What is desired is not a mere event, nor a mere change in opinion, but, rather, either a change in hypothesis, or theorem.*

The change which distinguishes characteristically human ideas of the future, from the bestial intent which might be expressed by a beast, or in a man's moment of beastliness, is always of the *ontological* quality designated by the connotations of the term *Platonic idea,* rather than mere contemplation of a real, or merely desired object of sense-perception.[8]

We may desire the coming into being of a condition which is consistent with a theorem of an established hypothesis, a condition which does not presently exist. More profoundly, we may desire a revolutionary change, a new hypothesis, to replace the reigning hypothesis of existing practice. The properties of Plato's method of hypothesis, are indispensable keys for rendering transparent the meaning of the "time-reversal" paradox. Bernhard Riemann's 1854 habilitation dissertation[9] then serves as a pivotal reference, for transforming the mathematics of "time-reversal" into the form of expression suited to validation according to Nicolaus of Cusa's and Riemann's principle of experimental physics: *measurement.*[10]

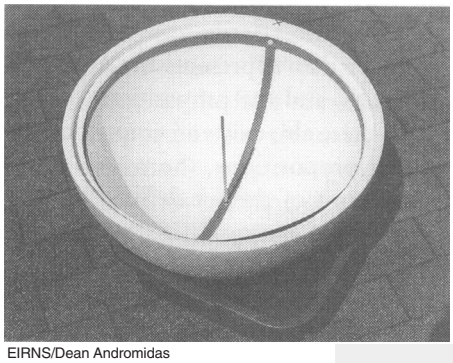
Let us now restate the case in the terms of my customary pedagogical tactic, from the standpoint of a system of theorem-lattices.

For pedagogical purposes, define a deductive "theorem-lattice" as follows. Given, any set of propositions, for which it may be shown, that no pairwise permutation is, apparently, deductively inconsistent. Employing Plato's Socratic method, adduce a set of axioms, postulates, and definitions, the which must necessarily underlie that set of propositions. The latter then represents the *hypothesis* for that set of propositions, and the propositions qualify as *theorems.* In this case, there also exists an empty or non-empty set of additional propositions, the which could qualify as possible theorems of the set defined by that hypothesis. The addition of the qualifiable theorems from the latter set, to the initial set of propositions, defines a deductive theorem-lattice of that hypothesis.

Any deductive mathematics *for which extension is presumed, arbitrarily, to be perfectly continuous,*[11] qualifies as such a deductive theorem-lattice. Thus, for pedagogical purposes of first approximation, any series of events which might be stated as consistent propositions of a presently generally accepted classroom mathematics, can be supplied a formal representation in the terms of a theorem-lattice, in the celebrated fashion of the time-worn Euclidean-geometry classroom. From such a mathematics, any consistent, commonplace schoolbook variety of lower undergraduate mathematical-physics is derived, such as the gas theory of Ludwig Boltzmann, and the crude, if sometimes complex systems of B. Russell devotees, such as Norbert Wiener's pseudo-science of "information theory" and John V. Neumann's theory of games.[12]

Although the principle of theorem-lattices upon which we are to focus, applies equally to all Classical

8. For both Riemann and the present writer, this notion of the "ontological" quality of a "Platonic idea" references the *ontological paradox* underlying Plato's *Parmenides* dialogue. The notion is, that the type of paradox elaborated within the *Parmenides* can be solved only by recognizing *change,* rather than "fixed objects" of sense-perception, as the form of the primary substance within physical space-time. I.e., in this dialogue, which serves as an implied preface for all of his later dialogues, Plato reconstructs Heracleitus' much-cited, and often misapprehended statement: *Nothing is constant, but change. Cf. Proclus' Commentary on Plato's Parmenides,* trans. by Glenn R. Morrow and John M. Dillon (Princeton, N.J.: Princeton University Press, 1987).
9. *Op. cit.*
10. See Nicolaus of Cusa, *On Learned Ignorance* (*De Docta Ignorantia*), trans. by Jasper Hopkins (Minneapolis: Banning Press, 1985). See also, B. Riemann, habilitation dissertation, *passim,* respecting the axiomatic distinction between mathematical physics and experimental physics.
11. E.g., not only the mathematics of Galileo, Descartes, and Newton, but also all mathematics and mathematical physics derived from the widely popularized, tautological hoax concocted by Leonhard Euler in his "Letters to a German Princess" (1761) [*Letters of Euler on Different Subjects in Natural Philosophy, Addressed to a German Princess,* ed. by David Brewster (New York: Harper & Brothers, 1840)]. Euler's hoax was his fraudulent claim, to have proven the pervasively perfect continuity of extension in physical space-time, by means of a formal geometry ("virtual reality"), in which perfectly continuous extension is axiomatically preassumed. This is the same hoax from which celebrated followers of Euler, such as Lambert, Lagrange, Laplace, Cauchy, Hermite, Lindemann, Felix Klein, B. Russell, *et al.,* derived their insistence upon a universe consistent with nothing but perfectly continuous functions (e.g., "the sliding rule," infinite algebraic series). Notably, in the mathematical physics of G. Leibniz or B. Riemann, Euler's tautological fallacy is rejected. This rejection is the precondition for non-paralogical solutions for true "non-linear" functions.
12. Both Wiener and, later, V. Neumann were more than merely students of Bertrand Russell, they were *epigonoi* of Russell's beastly doctrines: Russell's wildly radical positivism in mathematics and views on physical science, and in that ultra-fascistic streak of utopianism characteristic of Russell, H.G. Wells, and their own and Aleister Crowley's acolytes: Aldous and Julian Huxley, and George Orwell. The beastly and mechanistic "theory of the mind" which is axiomatic to Wiener's "information theory" and V. Neumann's "systems analysis," pervades every aspect of the putative scientific work, as well as social and psychological doctrines of them all.



EIRNS/Dean Andromidas

Left: Hemispheric sundial, built for replication of Eratosthenes' experiment, Wiesbaden, Germany, 1995.

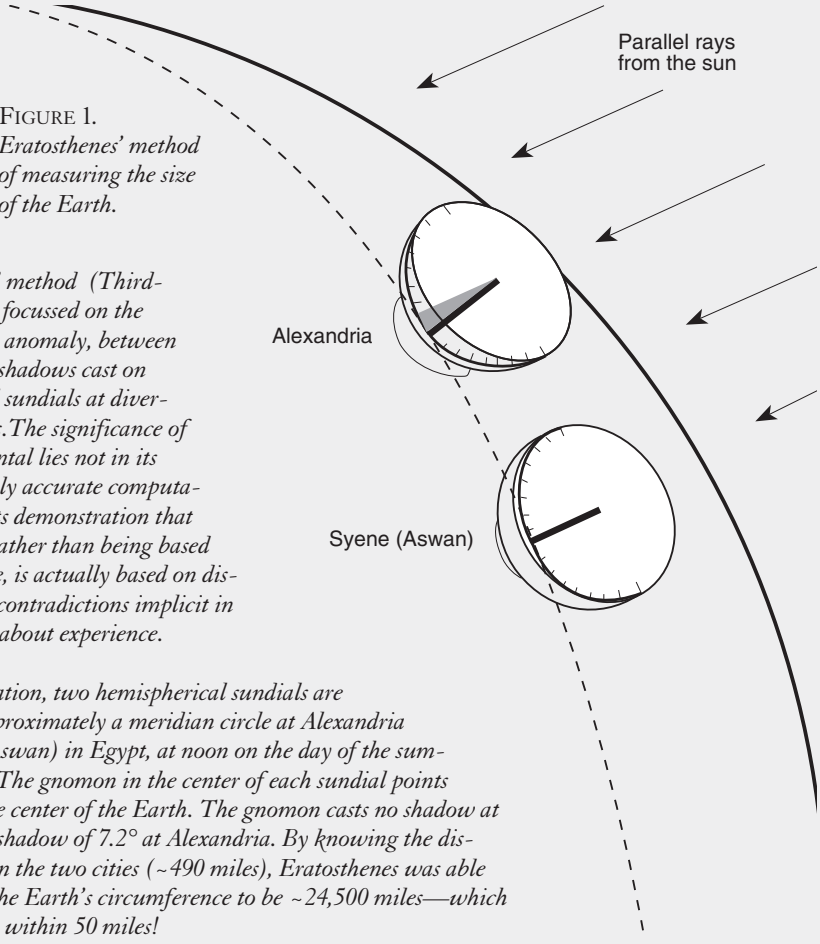


FIGURE 1.
Eratosthenes' method of measuring the size of the Earth.

Eratosthenes' method (Third-century B.C.) focussed on the difference, or anomaly, between the angles of shadows cast on two identical sundials at divergent latitudes. The significance of the experimental lies not in its extraordinarily accurate computation, but in its demonstration that knowledge, rather than being based on experience, is actually based on discovering the contradictions implicit in our opinions about experience.

In the illustration, two hemispherical sundials are placed on approximately a meridian circle at Alexandria and Syene (Aswan) in Egypt, at noon on the day of the summer solstice. The gnomon in the center of each sundial points straight to the center of the Earth. The gnomon casts no shadow at Syene, but a shadow of 7.2° at Alexandria. By knowing the distance between the two cities (~490 miles), Eratosthenes was able to calculate the Earth's circumference to be ~24,500 miles—which is accurate to within 50 miles!

forms of poetry, music, drama, and plastic art, we develop the relevant notions for mathematical physics and physical economy; the case for music is employed only to the degree wanted to illustrate features of physics, leaving to other locations the relevance of the same principle of rationality in art generally. We begin at a point which leads most directly to the fundamental discovery of principle set forth in Riemann's 1854 habilitation dissertation: the celebrated measurement of the curvature of our planet Earth by Eratosthenes.[13]

In recent time, I have often employed this discovery by Eratosthenes. That choice reflects the fact that this discovery provides the simplest, cleanest example of the way in which *Platonic ideas* arise in *every* fundamental, experimental discovery of physical principle. By comparing the angles cast by the noonday shadow upon the interior of hemispherical sundials, along the meridian linking Syene (Aswan) to Alexandria, in Egypt, Eratosthenes demonstrated, geodetically, that the Earth was a spheroid, estimating the Earth's polar diameter with a margin of error of approximately fifty miles [SEE Figure 1]. The relevant paradox is, that Eratosthenes measured the curvature of the Earth's meridian more than two thousand years before any person was to have seen our planet's curvature.[14] The principle of the Earth's curvature, as adduced thus, represents a *Platonic idea: a conception of measurable* **relationship**, *a relationship which is not directly perceived as a sense-perception, nor as a new theorem of an existing deductive form of theorem-lattice.*[15]

13. Lyndon H. LaRouche, Jr., "Leibniz From Riemann's Standpoint," *op. cit.,* pp. 25-27, including Figure 1. In a modern case, Christiaan Huyghens' discovery of isochronism in the gravitational field, already took physics beyond the comprehension of Descartes' and related mathematics. The demonstration, through the work of Ole Rømer, Huyghens, and Jean Bernouilli, that a finite rate of retarded propagation of light, coincided with gravitational isochronism, already demanded a non-Euclidean geometry of relativistic physics.

14. The still-ocean "horizon effect" does not meet the requirement of experimental physics: clear *measurement* of *relationship*. *Cf.* the relevance of Leonardo da Vinci's treatment of a vanishing-point as a property of vision, rather than objects.

15. So, although we may see the moon as a distant object, the measurable relationship governing the distance between the moon and Earth is not an object of simple sense-perception. Consider the work of Thales, Aristarchus, and Eratosthenes on this subject, as an example of the problem.

All such notions of measurable relationship which underlie the principles of astrophysics,[16] are obtained only as "Platonic ideas." From mankind's successes in astrophysics, we derived later the method to open up the domain of microphysics.

In mathematics and mathematical physics, for example, a "Platonic idea" appears only as cognitive mental activity within the mind of either an original discoverer, or, of a student who comes to know that idea in the only way possible, through replicating the mental act of original discovery within the confines of the student's own, sovereign mental processes. In both cases, original discoverer, or student, knowledge can not be obtained by mere classroom and textbook learning of the means to pass an examination, such as that idiot-savant's delight, the multiple-choice questionnaire; it must be acquired by the kind of *deductively-discontinuous* mental processes unique to generating an original discovery. In the lesser case, the Platonic idea appears as the initial act of discovery of a theorem which is consistent with an implicitly preexisting hypothesis.[17] In the higher-ranking case, the same method of original discovery is the means by which the discovery of new axioms (e.g., a superior hypothesis) is accomplished.

As Riemann introduces this notion in his 1854 habilitation dissertation[18]: *The interdependent issues of* **hypothesis** *and of physical space-time* **curvature** *become unignorable in mathematical physics, whenever an experimental paradox compels us to introduce a validated new principle of experimental physics.* The paradoxes so posed are identical in principle with the famous ontological paradox of Plato's *Parmenides* dialogue.[19] *It is at this juncture, that the central role of "time-reversal" is implicitly posed to mathematical physics, and to economic science.*

At this point, define this connection as of a *type.*[20] Construct a preliminary definition of this type in its relatively most rudimentary terms. For this first-approximation definition, employ a pedagogical ruse borrowed from elementary Euclidean geometry. To the degree that the hypothesis underlying a deductive theorem-lattice is fixed, the lattice acquires the form of a deductive architecture, an architecture whose construction determines a sequence, or chains of sequences. In Classical motivic thorough-composition, or *Motivführung,*[21] the notion of sequence inheres in the nature of music: The unit of musical composition, is the interval, *not* the individual tone. In Classical composition, as distinct from musical composition more generally, the unit of thought is the polyphonic elaboration of a modal pair of intervals. The quality of sequence is paradigmatic for all naive (e.g., reductionist) notions of functional time in mathematical physics generally: a sequence of occurrences, such as a sequence of propositions, or theorems.

What transpires within the underlying hypothesis, during the lapse of time the lattice's petals bloom? The hypothesis itself remains unchanged during all moments of the unfolding. So, in the case of any chains of events, the which are presumably defined by propositions of a deductive theorem-lattice, the hypothesis underlying that lattice does not change with any referenced place in mathematical space-time. To employ a relevant Biblical allusion: The hypothesis is the "alpha and omega" of the array of theorems which it underlies.[22]

The Science of Musical Composition

Consider the challenge of performing a Classical thorough-composed musical work by Mozart, Beethoven, Brahms, *et al.* The point most relevant for attention here,

16. As will be emphasized below, the notions of relationship employed here go beyond the generally accepted limits of conceptions found in the mathematical-physics classroom, into the broader range specified for *analysis situs* by G. Leibniz. The notion of experimental-physical relationship stressed in this report, is the efficient relations among events, propositions, theorem-lattices, and the hierarchy of hypothesis. This is introduced in the illustrative treatment of motivic thorough-composition, below.
17. Not all pre-existing hypotheses are consciously established. One's opinion-making may be regulated by underlying axiomatic assumptions of whose efficient existence one is not aware, assumptions which have the characteristic of irrational "blind faith." Thus, the corresponding hypothesis exists, but the victim is unaware of its existence as an hypothesis. Thus, most of today's secondary and university students of mathematical subject-matters, would accept Isaac Newton's fraudulent *hypotheses non fingo,* because they are ignorant of the hypothetical nature of those axiomatic assumptions, the which are responsible for their acceptance of Newton's wild claims on sundry matters. [See, e.g., *Riemann Werke, op. cit.,* p. 525.] Thus, to state the general case, one must reference "pre-existing," rather than merely "established" hypothesis.
18. *Op. cit.*
19. Lyndon H. LaRouche, Jr., "Leibniz From Riemann's Standpoint," *op. cit.* See pp. 18-24, under the sub-heading, "Riemann's Principle of Hypothesis."
20. In first approximation, this implies Georg Cantor's notion of a *mathematical type.*
21. This is the term for motivic thorough-composition attributed to Joseph Haydn, as employed by former Primarius of the Amadeus Quartet, Norbert Brainin. See my "Norbert Brainin on *Motivführung,*" *op. cit.*
22. Thus, the higher hypothesis is the "alpha and omega" of the array of hypothesis which it underlies; hypothesizing the higher hypothesis, is the "alpha and omega" of the array of higher hypotheses which it underlies; and, Plato's *Good* underlies, similarly, every past, present, and future change which exists within the universe.

is that since Mozart's derivation of the principle of works such as his six Haydn quartets, his K.475 Fantasy, etc., from a study of J.S. Bach's *A Musical Offering,* each masterwork by a Classical composer,[23] from Mozart through Brahms, is based upon an implicitly transparent, but not deductive, succession of modalities. The effect is, that the composition has the form of a succession of modal hypotheses, such that the concluding resolution of the composition defines the composition as a whole as an expression of the principle of higher hypothesis.[24] Thus, the characteristic of any successful such application of this method of composition, is the following:

The organization of the process of composition, for such a case, is of the following form:

1. Each phase of the composition is of a quasi-mathematical *type,* representable by an underlying hypothesis, designated by the general, Riemannian form $\mathbf{h_i}$ (i=0, 1, 2, . . . , i, . . . , m).[25]

$$h_0, h_1, h_2, h_3, \ldots, h_m .$$

Thus, the compositional process is representable by a series of the form:

2. Thus, according to Plato's solutions for the ontological paradox posed in his *Parmenides,* the process of change underlying that deductively discontinuous series $\mathbf{h_i}$, is of the relative *type* known as an "higher hypothesis," $\mathbf{H_j}$, also symbolized as:

$$(h_i)^j$$

$$(j = 1, 2, 3, \ldots, n).$$[26]

3. But, higher hypothesis H_j is a member of a series "hypothesizing the higher hypothesis." In this example, that "hypothesizing the higher hypothesis" defines the domain of all Classical motivic thorough-composition. Thus, the general representation of the domain, is symbolized for our reference here as:

$$(H_j)^k$$

or,

$$[(h_i)^j]^k .$$

4. These functions are each and all representable as a sequence of events: polyphonic intervals, is the elementary character of the immediate event within performed music; the ordering of hypotheses (e.g., modalities), is also presented in sequence; etc.

5. However, every hypothesis, or higher hypothesizing, acts simultaneously upon every possible element of sequence within the domain which that hypothesis underlies.[27] Thus, all times within the historical past and future are subsumed by:

$$[(h_i)^j]^k .$$

6. The characteristic action within that domain of change, is symbolized by:

$$\left[\frac{(h_i+1)}{(h_i)}\right]^{(k,\ k+1)} .$$

23. This does not apply to Romantic composers, such as Franz Liszt, Hector Berlioz, Richard Wagner, *et al.,* nor to the so-called "moderns." The essence of such styles of musical composition, is that they are premised upon the argument laid down by Immanuel Kant's *Critique of Judgment,* that there is no discernible rational principle in composition of works of art.
24. The *Ave Verum Corpus* was selected as a beautiful, short work, which demonstrates this principle of motivic thorough-composition. It is the role of the mental functions associated with the principle of higher hypothesis, which underlies the distinction between legitimate use of the term "musical genius," as contrasted with the lack of such insight in the mind of the learned musical pedant, or Romantic. This is key to the meaning of Furtwängler's famous references to "playing between the notes": see more on this, below.
25. I.e., *n, n+1, n+2,* . . . . In other words, these successive modalities must have the form of effect of physical space-time curvatures of increasing mathematical cardinality (increase of implicitly denumerable density of singularities *per* interval of action).
26. It should be sufficient at this point, merely to note the fact that the notion of functional relationship indicated by these formulations falls under the implied category of Leibniz's generalized notion of analysis situs.
27. As Mindy Pechenuk emphasizes in her August 31, 1996 presentation of the Mozart *Ave Verum Corpus,* the mind of the performer must recognize, functionally, not only every quoted mode of each passage, but, also, all of those modalities are defined implicitly by reversing (mentally) the direction (e.g., up, or down) of the succession of intervals considered, both in the same voice, and also with respect to cross-voice, polyphonic intervals. Thus, the theorem-lattice of any modality, or succession of modalities, employed within a composition, includes all of these additional "possibilities," whether they are explicitly quoted, or not. That general scope of the relevant theorem- and hypotheses-lattices, subsumed under the general functional relationship symbolized above, applies throughout the domain of all possible Classical forms of motivic thorough-composition.

The root-model for the principle of motivic thorough-composition employed by Mozart, Beethoven, Schubert, Schumann, Brahms, *et al.,* is that which Mozart derived from mastering the implications of the six-voice "Ricercare" from Bach's *A Musical Offering.* The Beethoven Opus 13, like the Opus 111, like the Mozart *Ave Verum Corpus,* is an example of the same method (i.e., higher hypothesis) of ordering of successive modalities, the which one had met in earlier applications of this Bach-rooted discovery, such as Mozart's six Haydn quartets and the K.475 keyboard Fantasy. Mozart's derivation of the role of the Lydian mode in the works such as that *Ave Verum Corpus,* or the significance of that mode in Beethoven's Opus 132, are expressions of the hereditary pervasiveness of that principle of musical higher hypothesis, the which Wolfgang Mozart adduced from this study of Bach's *A Musical Offering.*

Two additional facts must be stressed here, by aid of this reference to the musical case.

First, a relevant observation on the role of differentiated higher hypotheses. Each successful piece composed according to that principle of thorough-composition, represents a series of mutually distinct hypotheses (modalities). The unity of the composition as a whole, lies, therefore, in that corresponding principle of higher hypothesis, which subsumes (underlies) the resolutions connecting the succession of hypotheses (modalities) of which that piece is composed. Thus, in the relevant, Leibnizian *analysis situs,* the generalized principle of motivic thorough-composition, the which Mozart adduced from his study of Bach's *A Musical Offering,* is of the order of *hypothesizing the higher hypothesis.* E.g.:

$$[(h_i)^j]^k .$$

Second, the role of higher hypothesis, of hypothesizing the higher hypothesis, has the same significance in music as Leibniz's principle of *necessary and sufficient reason* in mathematical physics. At this juncture, consider, once more, the author's frequently supplied illustration of the relevant point.

There are principally two diametrically opposing views on the subject of the nature of mathematical physics: one, the semi-literate, relatively more popular, misconception, that mathematical physics is the discovery of an explanation for a physical phenomenon, from the repertoire of a fixed, hypothesis-free type of generally accepted classroom mathematics; second, the view, shared by Leibniz and Riemann, for example, that crucial discoveries of physical principle, generated, outside of mathematics, in the domain of experimental physics, oblige us to overturn previously existing mathematical physics, to fit the axiomatic features of mathematics to the discovered principles of nature. This issue was sharply defined during the 1690's, as the uncompromisable issues of principled difference, between the algebraic school of Galileo, Descartes, Newton, *et al.,* and the non-algebraic, or transcendental school of Leibniz, Jean Bernouilli, *et al.,* and, just over a century and a half later, Riemann. This was the core of the underlying difference in hypothesis, between the fraudulent, and unworkable calculus of Newton, and the previously introduced, and successful calculus of Leibniz.[28]

For all but those who were blinded to facts by their fanatical devotion to the cults of René Descartes and Isaac Newton, the case for Leibniz and Bernouilli's argument, was established conclusively by Bernouilli's and Leibniz's collaboration in recognizing the identity of two apparently distinct experimental-physical discoveries of principle, during the late Seventeenth century: Christiaan Huyghens' study of the experimental-physical principle of isochronism in the gravitational field,[29] and the work by Huyghens' student Ole Rømer and Huyghens on the implications of Rømer's astrophysical measurement of the speed of light.[30]

The implication of this 1690's discovery of a principle of special relativity, by Bernouilli, Leibniz, *et al.,* is that the notion of mechanistic "causality," which is characteristic of all such philosophical reductionists as the materialists, empiricists, and logical positivists, cannot account for the actual measurements of action within real physical space-time. The interdependency between the two Seventeenth-century discoveries had discredited entirely the mechanistic, "pull-me/push-me" world of Galileo, Hobbes, Descartes, Locke, Hooke, and Newton. It also discredited, in advance, the same mechanistic world-outlook and method of David Hume, Adam Smith, and Leonhard Euler. Today, that discredited, but still widely advocated view, is no better than bad "science fiction." It is an

---

28. I.e., putting to one side Newton devotée Augustin Cauchy's Euleresque "correction" of Leibniz.
29. Christiaan Huyghens, *The Pendulum Clock,* trans. by Richard J, Blackwell (Ames, Iowa: Iowa State University Press, 1986).
30. Christiaan Huyghens, *Treatise on Light* (1678), trans. by S.P. Thompson (New York: Dover Publications, 1962). See also Poul Rasmussen, "Ole Rømer and the Discovery of the Speed of Light," *21st Century Science & Technology,* Vol. 6, No. 1, Spring 1993; and "Johann and Jakob Bernoulli. The Brachystochrone," in *A Source Book in Mathematics, 1200-1800,* ed. by Dirk J. Struik (Princeton, N.J.: Princeton University Press, 1986), pp. 391-399. [Note the French/German alternates for the brothers Jean/Johann and Jacques/Jakob of this illustrious, multi-generational extended family of Swiss mathematicians. Recent texts have standardized the spelling of the family surname as "Bernoulli."—Ed.]

On the Curvature of Physical Space-Time

In 1696, the mathematician Jean Bernouilli issued a challenge to the scientific world, to solve the following problem: "To determine the curve joining two given points, at different distances from the horizontal and not on the same vertical line, along which a mobile particle acted upon by its own weight and starting its motion from the upper point, descends most rapidly to the lower point." Or, expressed another way: "If the curve is replaced by a thin tube or groove, and a small sphere placed in it and released, then this [sphere] will pass from one point to the other in the shortest time." This curve, he called the *brachistochrone,* from the Greek words for "shortest time" [Figure 2(a)].

The curve in question, Bernouilli discovered, was the cycloid [Figure 2(b)]—a curve which had been investigated earlier by Christiaan Huyghens (1629-1695), and described in his book *The Pendulum Clock*. Huyghens determined that a weight falls along a cycloidal path in the same amount of time, no matter from what point on the cycloid it begins its motion. This curve, he called the *tautochrone,* from the Greek for "same time" [Figure 2(c)].

Bernouilli described his amazement, when he discovered that the two curves were the same: "But you will be petrified with astonishment when I say that precisely this *cycloid,* the *tautochrone of Huyghens,* is our required *brachistochrone*."

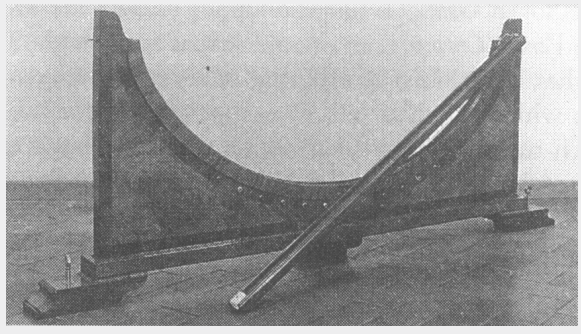
His amazement did not stop there. Bernouilli went on to write that the same property also applied to the refraction of light [Figure 2(d)]:

> I discovered a wonderful accordance between the curved orbit of a ray of light in a continuously varying medium and our *brachistochrone curve*. . . . The *brachistochrone* is the curve which would be traced by a ray of light in its passage through a medium whose rarity is proportional to the velocity which a heavy particle attains in falling vertically. For whether the increase in the velocity depends on the nature of the medium, more or less resistant, as in the case of the ray of light, or whether one removes the medium, and supposes that the acceleration is produced by means of another agency but according to the same law, as in the case of gravity; since in both cases the curve is in the end supposed to be traversed in the shortest time, what hinders us from substituting the one in place of the other? . . .
>
> Thus I have with one stroke solved two remarkable problems, one optical and the other mechanical; . . . I have shown that the two problems which are taken from entirely distinct fields of mathematics are nevertheless of the same nature.

—Susan Welsh

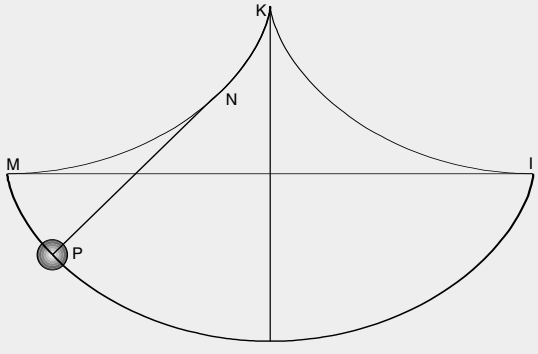
[Text excerpts from "Bernoulli on the Brachistochrone Problem," in *A Source Book in Mathematics,* ed. by David Eugene Smith (Mineola, N.Y.: Dover, 1959), pp. 644-655.]

FIGURE 2.

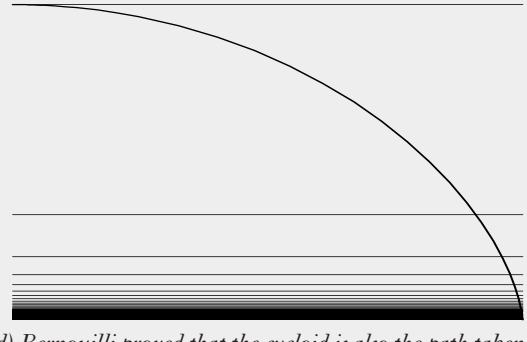


(a) Model of a brachistochrone. A ball that rolls down the cycloidal track, reaches the bottom faster than one rolling down the straight track.

(b) The cycloid is the curve traced out by a point on a circle, as the circle rolls along a line.



(c) The tautochrone: Huyghens used the cycloid to make a pendulum clock, because the time of a cycloidal swing remains constant, as the swing height decreases.



(d) Bernouilli proved that the cycloid is also the path taken by a ray of light passing through a medium of constantly increasing density.

Ockhamite delusion, a mere "virtual reality."[31]

Modern empiricism, prior to the 1690's, relied upon an algebraic method derived from an Ockhamite reading of formal Euclidean geometry.[32] It relied upon the arbitrary, axiomatic presumption, that space-time was extended without limit in four mutually independent senses of direction ("dimensions"), and that this extension, of space-time itself, was perfectly continuous, without possibility of interruption (of "discontinuity"). This four-dimensional space-time manifold served the empiricists as a kind of empty box, into which a continuous fluid of some sort (an "ether") might be poured by a Newton, or J. Clerk Maxwell, or not; "ether," or no "ether," physics was degraded into algebraic descriptions of the movement of perceptible (or, merely imagined) bodies in terms of that box-like four-dimensional manifold.

During the 1690's of Leibniz and Bernouilli, that algebraic view was challenged in a crucial way, by the measurable demonstration of isochronicity in a gravitational field. The measurement of a speed of propagation of light, was another devastating refutation of the algebraic world-outlook. The combined effect of Jean Bernouilli's experimental design: the measurable coherence between isochronism in the gravitational field, and the same form of function respecting refraction of radiation propagated at a measurable speed, was devastating refutation of the empiricist's algebraic standpoint in method [SEE Figure 2].

The *type* of paradox posed by this experimental evidence was the same which had been confronted, and resolved by Eratosthenes, in his approximate measurement of the curvature of the Earth's surface. In this case, the existence of a general curvature of physical space-time, inconsistent with the empiricist's algebraic method, was the import of the measurement.

Specifically, to bring axiomatic assumptions of mathematics into conformity with the experimental evidence, it was necessary to eradicate the notions of limitless and perfectly continuous extension of space-time, and to introduce certain additional reforms, those placed in view by Riemann's referenced, 1854 dissertation.

In Riemann's Platonic, Leibnizian physics, every discovered principle of nature which is validated by the methods of experimental-physical measurement specified by Cusa,[33] functions, like spatial extension and time, as an extensible dimension of a general physical-space-time manifold. With each validated addition of such a dimensionality, we are obliged to validate, by experimental measurement, not only the reality of the individual principle considered as if in isolation, but also the "geodetic curvature" of the physical space-time so defined. The demonstrated phenomenon of isochronicity in the gravitational field, and a measurable rate of retarded propagation of electromagnetic radiation, are individual principles which demand that we discover, that we measure, whether or not this principle is associated with some change in the curvature of the physical space-time associated with such a manifold. It is not sufficient to show that a finite "speed of light" exists; it is also necessary to show, how this affects the measurable curvature of the physical space-time manifold: in other words, to practice a "non-Euclidean" geometry.

The point of reference, from Eratosthenes' experimental estimate of the Earth's curvature, through Riemann's habilitation dissertation, and beyond, the standpoint for comparison of a Euclidean with a so-called "non-Euclidean" manifold, is the so-called "Pythagorean":

$$\sqrt{(x^2 + y^2 + z^2)} \ .$$

Given: an n-fold, Riemannian, physical-space-time manifold. What is the difference in the distance between two points in that manifold, when compared with the Pythagorean metric of Euclidean space-time?

The first step of approximation, in introducing this notion to the secondary pupil, is to challenge the student knowledgeable in solid Euclidean geometry and spherical trigonometry, to show how a person living on a very large, spherically curved surface would be able, by means of geodesy, not only to show that that is indeed such a surface, but to measure the curvature of that surface. We would challenge the student to define the kinds of mathematical methods and procedures required to conduct

31. "Okhamite" (*var.* "Occamite"): Followers of William of Ockham's radically reductionist parody of Aristotle. Approximately a century and a half after the establishment of a modern European science based upon Nicolaus of Cusa's principle of experimental-physical measurement (A.D. 1441), Ockham admirer Paolo Sarpi, and his followers Galileo Galilei, Francis Bacon, *et al.,* introduced the mechanistic doctrine of empiricism, in the effort to destroy the established modern science of Cusa, Luca Pacioli, Leonardo da Vinci, Johannes Kepler, *et al.* Leibniz, the French Leibniz school of Gaspard Monge, Lazare Carnot, *et al.,* Gauss, and Riemann typify the continuation of modern science, despite the relative political hegemony of the empiricism and positivism of Laplace, Cauchy, Kelvin, Clausius, Helmholtz, Mach, *et al.*

32. For our purposes here, there is no significant distinction to be made among such forms of linear, mechanistic reductionism as materialism, empiricism, and positivism. With the convergence of the two Cartesian schools, of British Nineteenth-century philosophical radicalism, and the positivism of such fanatical Newtonians as Laplace, Cauchy, Helmholtz, *et al.,* the accidental, earlier distinctions between the Cartesians and British empiricists were dissolved, as if asymptotically, into a neo-Kantian homogeneity.

33. Nicolaus of Cusa, *De Docta Ignorantia, op. cit.*

the relevant experimental measurements. With that grounding, the student is on the road to understanding how and why Riemann, in composing his habilitation dissertation, relied upon the referenced earlier work of Gauss.

Look at Leibniz's notion of *necessary and sufficient reason* from this vantage-point. Apply the same conceptions to Mindy Pechenuk's August 31, 1996 presentation of the succession of hypotheses of which Mozart's *Ave Verum Corpus* is composed.

Turn around Riemann's notion of the physical space-time manifold. Given: a measurement, in quasi-Pythagorean terms, of the estimated characteristic curvature of a physical-space-time manifold. What is the hypothesis which corresponds to this measurement? The hypothesis which meets those requirements, is a demonstration of Leibniz's principle of *necessary and sufficient reason.* Given: any crucial type of event; that is to say, an event which is typical of the measurement of the characteristic quasi-Pythagorean of the real manifold in question. The hypothesis which determines that physical space-time manifold, to have that typical curvature, expresses *necessary and sufficient reason.*

In physical economy, as in Mozart's *Ave Verum Corpus,* it is the Riemannian form of representation of a physical space-time manifold, which supplies us the most characteristic representation of the relevant "curvature." For reasons which need not be a topic of separate elaboration at this moment, each added "dimension" of a well-ordered Riemann series of the Leibniz *analysis situs* form

$$\left[\frac{(n+1)}{n}\right]$$

action, which measures the relevant, relative *cardinality* of the characteristic interval of action of two such Riemannian manifolds. In physical economy, as in the developmental processes of Mozart's *Ave Verum Corpus,* it is this type of increase of cardinality, the which is the strictest measurement of the characteristic difference of two compared manifolds. This choice of characteristic is in correspondence with the general expression already given:

In this sense of the matter, there is a relevant, direct correlation, among: (1) the "cardinality" of typical action within a physical space-time; (2) the order of the Riemannian manifold, which, according to Leibniz's princi-

$$[(h_i)^j]^k \ .$$

ple of *necessary and sufficient reason,* represents that physical space-time; and, (3) the implicitly adducible hypothesis underlying statements expressed in terms of that manifold. It is the correlation of some physical value with the notion of the relative cardinality of the characteristic of action for a given manifold, which is the basis for a physical science, such as physical economy, and for Classical motivic thorough-composition.[34]

What Does 'Linear' Mean?

In the Ockhamite and related forms of algebraic methods, derived from a formalist interpretation of Euclidean geometry, the characteristic unit of action within algebraic space-time is a quantity of linear extension. Thus, the "distance" between two points is measured, typically, by the simplest form of the "Pythagorean":

In "non-Euclidean physical geometries," such as that of Riemann's habilitation dissertation, the unit of displacement ("distance") on a curved surface, has an outward appearance which would have been tolerated by

$$\sqrt{(x^2 + y^2 + z^2)} \ .$$

Leonhard Euler, *et al.*; but, underlying that mere appearance, the smallest length of displacement "outwardly" represented by a simple line or arc, is transfinitely dense with "holes," called "discontinuities," sometimes identified by, and sometimes arbitrarily suppressed as, the infinitesimals inhering in the Leibniz calculus.[35] These are each *transinfinitesimally* small interruptions, which mark the location of an actual, or possible new singularity, such as a new "dimension" of an expanded Riemannian manifold.[36]

In other words, we must distinguish between the mere appearance of a simply linear displacement, and the physically efficient content masked by that displacement, the density of discontinuities/singularities. We must distinguish, thus, between the formalist's merely virtual reality, and that which the formalist masks, the underlying, physical reality.

---

34. For example: In the case of any masterwork in the mode of the type of motivic thorough-composition introduced by W. Mozart, the cardinality expressed measures the creative mental power applied by the composer, and, hopefully, exciting the performance.
35. In abstraction, a "purely" linear displacement (without "holes") may be generalized as a displacement whose density of discontinuities is "0."
36. The use of the terms "transfinite" and "transinfinitesimal," here, should be recognized as involving, not only the distinction between the mathematical transfinite of Georg Cantor, and bad notions of "infinite" and "infinitesimal," but also the distinction, implicit in the discoveries of B. Riemann, between a merely mathematical (formal) transfinite, and an ontological (physically efficient) transfinite.

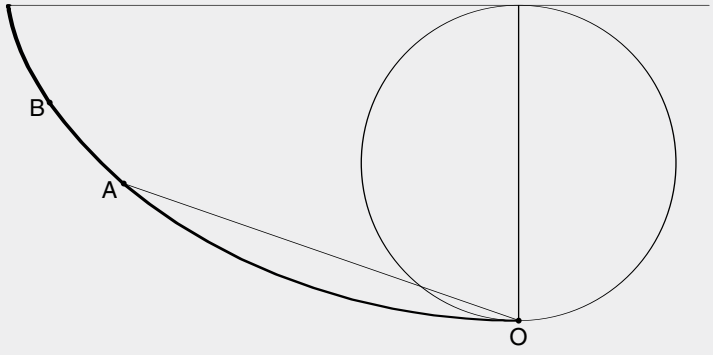


FIGURE 3.
Cycloidal curve BAO is the isochronic pathway in both the gravitational field, and for the case of refraction of light in a medium.

These considerations lead to conclusions which will prove indispensable, at a later point here, in tackling crucial implications of functional "time-reversal" in physical-economic and other processes.

Consider a significantly simplified representative of a relatively simple experiment, an illustration nonetheless accurate enough for the point being made. Construct a cycloid by rolling a circle along the underside of a line. As for C. Huyghens' case,[37] the attributed, radiated impulse of gravity is normal to the line on which the circle has been rolled. Designate the low point of the generated cycloid by *O,* and mark a point, *A,* other than *O,* on the descending pathway of cycloid [SEE Figure 3]. Construct the straight line *AO.* As for the Huyghens experimental study of isochronicity,[38] compare the lapsed time required for two balls to fall to the lowest point *O,* from *A,* one along the constrained pathway defined by the arc, the other the inclined straight line. Observe that the longer pathway, the arc, is faster. Then, observe that the lapsed time to fall to *O,* along the arc, from any other point *B,* is the same as from *A*: *isochronicity.*[39]

In those Riemannian manifolds which experimental physics imposes upon us, two leading considerations are immediately relevant to examining that algebraic fallacy, of assumed linearity, upon which the mathematical physics of Sarpi, Galileo, Descartes, Newton, Euler, Cauchy, Clausius, Helmholtz, *et al.,* are each and all premised.

First: Any change in an axiomatic assumption, imposed upon us by validated discovery of a revolutionary principle from the domain of experimental physics, establishes a new hypothesis, which supersedes, and is inconsistent with every preceding hypothesis. Each of the two hypotheses, new and old, compared, represents a different manifold, and physical space-time curvature, different from, and functionally inconsistent with the other.

Nonetheless, although no theorem in either of these two theorem-lattices will be consistent with any theorem in the other, the valid experimental physics of the old lattice, is carried forward within the new theorems internal to the new theorem-lattice. In this case, the relatively valid theorem-results in the old lattice, have the form of the relatively degenerate case, in respect to the new lattice. Therefore, the mathematical function containing the transition from phenomena satisfactorily explained by the old hypothesis, to the experimental phenomena characteristic of the new, will be typified by the relevant discontinuity[40] in the function constructed to describe such a case.[41]

Second: For any valid function, the transfinite cardinality of action is, primarily, the density of discontinuities determined by the cumulative "dimensions" of the relevant physical space-time manifold. This "property" is crucial for identifying the expression of "time-reversal" within the action of, for example, performing a composition which were composed as an application of Classical motivic thorough-composition: conductor Furtwängler's "playing between the notes."

As Riemann stresses in his *Hypothesen* dissertation, the root of the difference in curvature expressed, by two mutually distinct physical-space-time manifolds, lies within the contrasted hypotheses. To borrow the argot of the modern mathematics classroom, the differences in curvature express the "hereditary" impact of the differences in axiomatics, as these axiomatics are located within the respective, underlying hypotheses. One must sense the efficient immediacy of the correlation between

37. *The Pendulum Clock, op. cit.*
38. *Ibid.*
39. *Ibid.*

40. I.e., "transinfinitesimal."
41. For an example of this, see B. Riemann, *Über die Fortpflanzung ebener Luftwellen von endlicher Schwingungsweite* ("On the Propagation of Plane Air Waves of Finite Amplitude": otherwise known as Riemann's exposition on the cohering topics of sonic shock waves, transsonic flight, and isentropic compression), *Riemann Werke* [see note 3, above], pp. 157-175. Note that Riemann was not the original discoverer of sonic "booms"; that distinction belongs to Leonardo da Vinci, who also recognized the finite speed of propagation of sound, through such means as observing lightning-strokes.

a shading of difference in axioms, and a shading of difference in characteristic curvature of the associated manifold.

"Curvature" has been examined, since Eratosthenes, from the geodetic standpoint employed by C.F. Gauss, both in astrophysics and, in turn, in the revolutionary development of modern geodetic surveys. Even in those outwardly "innocent" excursions, the idea of curvature, generalized through the successive work of G. Monge, A.-M. Legendre, C. Gauss, Karl Jacobi, Jacob Steiner, *et al.,* acquired new meaning through the discoveries of B. Riemann, and this in a way which is absent from the related work of such geometers as (the younger) Bolyai, and N. Lobachevski.[42]

In the common classroom and campus cant on the subject of "non-Euclidean geometry," there is a tendency to seize, with wild-eyed zeal, on the matter of the "parallel postulate." Such ivory-tower contemplation, has contributed much to the proliferation of tiresome, sterile, and utterly counterproductive academic sophistries on the subject. The viable issue often hidden under the cloak of "non-Euclidean geometry," is not a matter of mathematical formalism; it is, as Riemann stresses throughout, a matter of experimental physics. As Riemann also stresses from the outset of the *Hypothesen* dissertation, the problem to be solved requires that we abandon the domain of deductive mathematical formalism, and look at the way in which physical reality demonstrates the pervasive fallacy of the generally accepted classroom view of the Euclidean axiomatic system as a whole.[43]

The crucial evidence is directly contrary to those modern mathematical physicists who insist upon the presumption, that physical space-time in the small is either linear, or a nearly asymptotic approximation of blissful linearity. The truth of the matter is precisely the opposite: The smaller the interval of action, the more radically non-linear the microphysical domain becomes! Paradoxically, because of "time-reversal" considerations, as we shall show at a later point, here, the smaller the interval, the more pronounced the impact of the density of singularities, relative to the interval of action chosen.[44]

Riemann's mathematical physics requires us to deny primary efficiency to the attributed linear span of displacement, and locate efficiency in the transfinite terms, of density of discontinuities (singularities) per interval of action. However, to render Riemann's earth-shaking discovery transparent, we must leave the campus department of mathematical physics, for the laboratory of physical economy. We have now set the stage for the argument to be made. Now, we proceed to demystify "time-reversal" from that standpoint.

The Historical Basis For This Study

---

42. On relevant exchanges between C. Gauss and the members of the Bolyai family, see *Carl Friedrich Gauss: Der "Fürst der Mathematiker", Briefen und Gesprächen,* ed. by Kurt-R. Biermann (Munich: Verlag C.H. Beck, 1990). On Gauss' relations to the younger Bolyai and the work of Lobachevski, see pps. 27, 137, 139-140, 176. Editor Biermann (p. 27) cites Gauss' remarks to Wolfgang Bolyai, Johann's father, as found in *Briefwechsel zwischen Carl Friedrich Gauss und Wolfgang Bolyai,* ed. by Franz Schmidt and Paul Staeckel (Leipzig: 1899): "Hingegen mußte sich der Sohn seines Jugendfreundes Bolyai, János [Johann] Bolyai, ebenfalls einer der Pioniere der nichteuklidischen Geometrie, mit der merkwürdigen Anerkennung bescheiden, Gauss könne ihn nicht loben, denn ihn loben heiße, sich selbst zu loben." (Gauss could not praise Janos' discovery, if to praise him, would mean that Gauss were praising himself.) *Cf.* Biermann, *op. cit.,* p. 139. On Gauss on Lobachevski, see Gauss' November 28, 1846 letter to H.C. Schumacher, in *Carl Friedrich Gauss: H.C. Schumacher Briefwechsel,* Vol. III (Hildesheim: Georg Olms Verlag, 1975), pp. 246-247.

43. The referenced case of L. Euler's tautological hoax, is a useful choice of example of such formalist traditions of academics' propensities for being most pedantically arrogant, when they are at their tiresomely tedious worst on such accounts. They reason like "jailhouse lawyers," imposing upon a selective interpretation of the language of a chance-read precedent, the delusion that the application of deductive casuistry to a mere quibble, must command the mighty rivers of the judiciary to bend to the proponent's exalted sense of cabalistic authority. Pathetic? Then, Leonhard Euler was more pathetic than such a petty jailhouse quibbler, and Lambert, Lagrange, Laplace, Cauchy, Clausius, Helmholtz, Maxwell, Hermite, Lindemann, and F. Klein, among many others, after him. Construct a deductive proof, which rests entirely on the mere arbitrary presumption, that extension in space-time, is essentially linear, unbounded, and perfectly continuous; then, employ that systemic error of axiomatic presumption, pervasively, to construct a deductive edifice, whose relevant conclusion is: "Extension in space-time is perfectly linear, boundless, and perfectly continuous, Q.E.D." Only a fool or a charlatan would propose to prove, or disprove an axiom of the system by means of a chain of deduction from the theorem-lattice which depends upon that axiom. On this premise of this pathetic, deductive, fallacy of composition, today's generally accepted mathematics classroom is politically ideologized to the proverbial gills, with the pagan religious cult-dogma of Euler's deluded view of infinite algebraic series: "linearization in the very small."

44. *21st Century Science & Technology* quarterly, will soon publish a report by Laurence Hecht, documenting those fundamental discoveries in electrodynamics which empiricists, such as J. Clerk Maxwell and H. Helmholtz, worked to ban from the classroom and textbook [*21st Century Science & Technology,* Vol. 9, No. 3, Fall 1996]. Hecht's report is the outcome of what had been, initially, the 1975 prompting of me and my associates by the University of Chicago's Professor Robert Moon, deceased during late 1989. It was Moon who first emphasized the deeper significance of the

To repeat what is already known to those familiar with my work, my original discoveries in economic science, including the material bearing upon "time-reversal," were prompted by a 1948-1952 project, originally undertaken to refute Professor Norbert Wiener's radical-positivist hoax of "information theory." It is relevant, that the success of that 1948-1952 project, was grounded in my intensive study, during my adolescence, of primary sources in Seventeenth- and Eighteenth-century English, French, and German philosophy. That youthful undertaking prompted me to adopt G. Leibniz as my mentor, a dedication which I had affirmed in an essentially competent refutation of those attacks on Leibniz's work, the which are central to Immanuel Kant's *Critique of Pure Reason.*[45]

Sometimes, as in the present instance, it is as important to know how certain discoveries came about, as to know the details of the discoveries themselves. Human beings, and individual human behavior, do not happen; they are expressions of an historical process. Not to include that process as such, would be to perpetrate a fallacy of composition, by excluding much of that crucially relevant evidence. To assess a person out of his historically determined setting, is such a fraud: a fallacy of composition. The case of my discoveries in that science of physical economy which was founded by Leibniz, is an example of the crucial importance of such an historical approach. The matters immediately to be addressed at this point in the report, are permeated with such specific historical implications as the deeply embedded impression which the Leibniz-Clarke Correspondence, and the posthumously published Leibniz work known as the *Monadology,* made upon all of my development leading into the 1948-1952 project; one could not understand the discoveries themselves, without considering the functional role of the relevant, historical setting, of the U.S. economy and economic policy, during the late 1940's and the 1950's.

As I have stressed repeatedly, in other locations: Knowledge cannot be learned; the student must re-create knowledge, by means of reenacting the type of act of discovery experienced, either as by a relevant original discoverer, or based on the model of a subsequent reenactment of that discovery by some relevant person. The act of discovery is not the communication of a literal statement, but, rather, the student's solving of a paradox for which no literal solution is available to him. That solution could not be generated within the bandpass of a medium of communication. That re-discovery may be accomplished, only within the sovereign creative mental processes of each individual person. That process, of evoking a successful reenactment of a discovery of principle, within the sovereign bounds of the individual's cognitive processes, is the only manner in which actual knowledge of a principle could be transmitted.[46] That process of rediscovery (not classroom or textbook learning of successful responses to anticipated multiple-choice questionnaires), is knowledge.

My task of presenting the notion of "time-reversal," to a largely lay audience, albeit one of relatively exceptional literacy and intellectual commitment, is to enable, especially, those readers who are either "Baby Boomers," or representatives of "Generation X," to reenact, each in his, or her own sovereign mental processes, the kind of process through which I came to those discoveries represented here. For the reader to accomplish the implied reconstruction, he, or she must be presented with those features of the historically determined background, which brought me into conflict with a specific, relevant nest of paradoxes; he, or she must also be able to reconstruct the historically specific circumstances, the setting in which the challenges motivating the discoveries were experienced. Without at least a strong indication of those

discoveries of the founder of electrodynamics, the Monge Ecole Polytechnique's A.M. Ampère. The implications of Ampère's work were rescued from oblivion by C. Gauss' and B. Riemann's collaborator Wilhelm Weber. However, the circles of Britain's Lord Kelvin, including the practiced scientific hoaxster Hermann Helmholtz, and J. Clerk Maxwell, were dedicated to destroy the influence of Gauss, Weber, and Riemann; Maxwell apologized for his unacknowledged parodying of the electrodynamics discoveries of the Gauss-Weber-Riemann circle, by emphasizing, that it was the intent of the British circles to refuse "to acknowledge any geometries but our own [Newtonian dogma]." During the middle of the Nineteenth century, Weber demonstrated the relationship between "strong" and "weak" forces, on the scale of atomic and nuclear physics, and, then, estimated coefficients, derived from experimental inquiry, which are close to Twentieth-century values. The role of "strong forces" within the domain of the microphysical small, continues to defy efficiently those among today's fanatics who continue to insist on a mathematical physics which presumes linearity, or near-linearity in the very small. Hecht's report presents the relevant accomplishments of W. Weber, aided by Gauss, in developing experimental proof for the relevant discovery of nuclear "strong forces," as being implicit in the discovery of Ampère.

45. The report of the relative competence of that adolescent's defense of Leibniz, rests upon a 1970's rereading of one of the notebooks on Leibniz and Kant, which I had filled with relevant comment, during the 1936-1938 interval.

46. E.g., "principle" is employed here in the sense of the act of discovery of a validated principle of physical science, or comparable principle of Classical art-forms. As above, such a principle is to be situated as Riemann does, as a "dimension" of a physical space-time manifold, and, hence, an axiomatic feature of some type of an hypothesis (hypothesis, higher hypothesis, hypothesizing the higher hypotheses), as distinct from a theorem-like proposition.

features of the setting indicated, the present-day reader would be at a loss to recognize the problem for which those discoveries served as solutions.[47]

The most important of the preconditions to be met, by any person who came to adulthood after the assassination of President John F. Kennedy, is to muster insight into the historically determined differences between the cultural hypotheses of the "Baby Boomers," and those of their parents' and grandparents' generations. For this purpose, the glib term "generation gap," excuses more ignorance than it corrects; this involves no mere "generation gap," but, rather, the moral separation of the "Baby Boomers" from their parents, by a gulf of a "cultural revolution" more fundamental than any experienced since the adoption of our original Federal Constitution. The "Baby Boomer" reader must abandon any sense of "naturalness," or "self-evident rightness" of today's "politically correct mainstream-thinking," and see the fundamental, axiomatic incompatibility between typical American patriots of all earlier generations, and the victims of the 1966-1979 "cultural revolution."[48] The generations are thus separated by axiomatically uncompromisable differences in cultural hypothesis.[49] No competent appraisal of the problems of the U.S.A. and the world today were possible, unless the two hypotheses are seen simultaneously, from a higher vantage-point than each.

So, we continue, to complete the remainder of the relevant background.

For all their faults, the first two decades of the postwar U.S. economy were a virtual paradise, if compared to the spiral of degeneration which has dominated policies, practices, and their results, since the 1966-1979 "cultural paradigm-shift." To understand the mind of the majority of the labor-force from the earlier, relatively happier time, one must take into account the large percentile, much more than a majority, of the total labor-force, the which was engaged either in production and physical distribution of physical goods, in basic economic infrastructure, or scientific and related professions. In that time, we were, predominantly, production-oriented, and the most likely employment opportunity for most, was the nearby factory-gate. As for the small ration among us associated with industrial consulting: technique, bills of materials, and process sheets, were the most commonly employed tools of our trade.

During that earlier time, most of us, if confronted with any among those fads of so-called "liberal economics" which have become "politically correct" opinion over the course of the recent three decades, would have retorted with words to the effect: "That's insane; with your 'funny-money' theories, you will collapse the economy!" We would have been right, and prophetic, in making such a response. After three decades of a cultural paradigm-shift, which features "post-industrial utopianism," the net physical output and input of the U.S. economy, as measured in physical market-baskets *per capita* of labor-force, has fallen to approximately half of what it was during the second half of the 1960's.[50]

The corresponding, relevant difficulty, today, is that the topmost positions in government and in the most influential private institutions of business and education, are populated, predominantly, by "Baby Boomers," the overwhelming majority among whom, have neither known, nor experienced a viable form of economic policy and practice during their adult lives. There are some exceptions, but they are relatively rare. Among today's typical influential and other "Baby Boomers," most of those radical policy changes of the 1970's through 1990's, including those policies which are responsible for the ongoing collapse of the physical productivity, income, and tax-revenue base of the U.S. population and its gov-

---

47. This would be understood as the Classical humanist approach to education, among that shrinking, already tiny minority, from among the victims of Twentieth-century trends in U.S. educational policy. The influence of the model of Britain's Oxford and Cambridge Universities, which President Charles Eliot imported by fiat, to replace patriotism and the influence of C.F. Gauss and the Humboldt brothers (e.g., Louis Agassiz) at Harvard University, was accompanied and followed by the "decorticating" American Pragmatism of William James, the Rockefellers' successful promotion of the Fabian John Dewey, and the more recent takeover of U.S. education generally by the influence of the "deconstructionist" current, such as the followers of Jacques Derrida, or the Modern Language Association (M.L.A.). The increasingly predominant uselessness of the generation of recent science graduates for serious scientific research into anything but the depths of "virtual reality," is largely a reflection of the lack of even a remnant of Classical humanist principles in the elementary, secondary, and higher educational institutions today.

48. The interval, including the 1971 monetary crisis, from the introduction of neo-Malthusian doctrines into the State Department agenda, through the introduction of those "Volcker Measures" of October 1979, which accomplished the rapid destruction of the once great United States.

49. E.g., either the Earth is flat, or it is not: an example of a difference in theorem rooted in an underlying difference in principle. The uncompromisable issue, is primarily the principle; the fact that the theorem must not be compromised, is an "attribute" which the theorem "inherits" from the principle. Since British philosophical liberalism is premised upon a denial of knowable hypothesis, empiricism allows no notion of "uncompromisable principle" in the sense we employ it here. Our difference with the empiricists, on this point, is uncompromisable.

50. See Christopher White, "NAM's 'Renaissance' of U.S. Industry: It Never Happened," *Executive Intelligence Review,* April 14, 1995 (Vol. 22, No. 16). See also "U.S. Market Basket Is Half What It Was in the 1960's," *Executive Intelligence Review,* Sept. 27, 1996 (Vol. 23, No. 39).

ernment, would be defended by most such "Baby Boomers" today as "mainstream thinking" of the post-1968 world. In German, the cant to this latter effect would tend to be seasoned with jargon such as *Weltgeist, Zeitgeist,* and *Volksgeist.*[51]

Consequently, the typical influential incumbent in government, university, or general economic practice today, will experience a great difficulty in overcoming his own, deeply engrained, misguided prejudices, when confronted with conceptions here which might have been understood with far more receptivity, and a higher level of competence in knowledge, by the same classes of influentials earlier, among the parents and grandparents of today's "Baby Boomer" stratum.

Until the late 1940's aftermath of World War II, most patriotic Americans (excepting the sometimes very odd Anglophile), understood, as did President Franklin Roosevelt, that the British monarchy, and British "free trade," had been the consistent enemy of the United States throughout our history, and believed that the continuation of the British Empire was an abomination. We understood, whether we had studied Hamilton, Carey, and List, or not, that the (anti-"free trade") American System of political-economy was the best model of economy ever devised: The war-time economic mobilization showed us that we were correct in that patriotic estimation.

During 1948-1952, returned veterans of the war-time skyrocketting of the U.S. economy, out of ex-President Calvin Coolidge's 1930's Depression,[52] viewed the Truman administration's reversing President Franklin Roosevelt's intended post-war economic and foreign policies, as an embittering betrayal of our national heritage, of the policies which Treasury Secretary Alexander Hamilton named "The American System of political-economy." The disgusting problem which I met among my generation, during the moral downturn from President Franklin Roosevelt, in policy-making of the late 1940's and of the 1950's, was their fear-ridden, "politically correct," and, therefore, morally corrupt, capitulation to the unfortunate "way things were" under Truman and Eisenhower.

Such was the relevant collapse into cultural pessimism, which most of the parents of today's "Baby Boomers" suffered, as a result of the moral decay spreading through my own post-war generation. Yet, among those professionals and skilled operatives of my generation who had the courage to think for themselves, many could have readily recognized the basis for, and competence of the line of argument on economics which I employed during the 1948-1952 project, and summon, yet once more, here.

---

51. This is not only a U.S.A. problem. In Germany for example, the 1989 assassination of Deutsche Bank's Alfred Herrhausen, marked the end of the post-war era of successes in the German economy. Herrhausen was the last leading banker schooled in Hermann Abs' school of principles of sound industrial banking; Herrhausen's successors have turned out to resemble river-boat gamblers, more than bankers. It was during the 1980's, throughout the world, that representatives of my generation were replaced, around the world, by the "Baby Boomers'" rise to controlling executive and academic positions in most of the world's governmental and private institutions of policy-shaping power. The 1985 accession to Soviet General Secretary by Mikhail Gorbachov, symptomizes the same downshift to economic disaster in the last phase of the former Soviet Union. My generation, and its predecessors, were dominated by those capable professionals who specialized in promoting technological progress in physical development of infrastructure, agriculture, industry, and related qualities of educational, medical, and scientific services. The "Baby Boomer" generation is polluted with hedonistic fads in sociology, psychology, and monetarism. Since the approximately global "cultural paradigm-shift" of 1966-1972, the emphasis has shifted, from capital investment in increases of future physical-productive potential and demographic gains for the households of the population as a whole, into looting accumulated such investments from the past, to turn that loot into capital gains for "pirates" of the Carl Icahn, and Michael Milken types. So, as measured in income-ranges, the top 0.5% of the U.S.A. population grows fabulously richer, and ever more morally decadent, while the lower 60% accelerates its rate of downward slide into the depths of destitution. The 1982 Garn-St. Germain Bill, the Kemp-Roth Bill, the rise of the "Junk Bond" pirates, and the fanatical commitment of the GOPAC cannibals toward ever greater orgies of tax-free financial capital gains, even if this means increasing the mortality rates among their parents' generation: It is the "mainstream opinion" which refuses to regard these recent trends as morally insane, which reveals that corruption of public opinion which is destroying us all.

52. The two most popular delusions respecting the causes of the 1930's Depression, are the myth that President Herbert Hoover caused it, and, second, Professor Milton Friedman's outright lie, that that Depression was caused by the Smoot-Hawley tariff legislation. Long before Smoot-Hawley's enactment, and years before the election of President Hoover, the 1930's was the foregone conclusion embedded in policies consolidated under Coolidge. Like the 1996 Republican Presidential candidate Robert Dole, encumbered with his Party's commitment to the so-called "Contract with America" lunacy, Hoover entered the office of President in March 1929, encumbered by the legacy of Coolidge, to meet the outbreak of the fabled stock-market crash less than six months later. The 1930's Depression was primarily a global phenomenon; the U.S.A., then the world's chief financial creditor, was caught by the tidal waves of financial collapse inhering in the Reparations system set up by the Versailles powers. On the domestic side, it was the U.S.A.'s drift, away from a Hamiltonian tradition, into radical "free trade" policies, and speculative binges only less wild than those of today, which ruined the U.S.A.'s ability to meet the tidal waves of bankruptcy sweeping through the financial systems of our European debtor-nations. The Smoot-Hawley tariff was adopted in recognition of the fact that it had been "free trade" policies of Coolidge and Mellon, which had already plunged us into the Depression, which must be reversed, in favor of return to a traditional, patriotic, "protectionist" policy.

The ignorant prejudices, respecting economy, which have come to predominate among influentials and others of today's "Baby Boomer" generation, must be referenced in that historical setting. What must be said, to inform even relevant professionals among today's "Baby Boomers" (in particular), goes against today's perceived *Zeitgeist,* against that "mainstream" of opinion presently carrying our world civilization toward the cesspool. One may hope that these remarks have forewarned readers from the "Baby Boomer" generation, and others, against the misguided prejudices, which they will experience welling up within them, as we proceed.

From the outset, my work in the science of physical economy, was prejudiced by both my developed affinities for my adopted mentor, Leibniz, and the patriotic outlook on economy which I have summarized identified above. These were not merely prejudices; my 1948-1952 views on these matters, were significantly, if modestly well-informed, and, more important, stand up, in review, as predominantly correct, from my far more developed standpoint in knowledge and experience, today. Plainly, a generation of "Baby Boomers" which has, predominantly, accepted our nation's recent and continuing drift, into the rubble-fields of "post-industrial utopia," "information society," "world government," and "global economy," will react with prejudice against much of what I have to report. Nonetheless, on the condition, that such readers will recognize that their reaction must be considered suspect, as reflecting an ahistorical faddism, a prejudice, as I have indicated here, they are perhaps half-way to understanding the important series of arguments which I supply now.

'Not-Entropy'

The standpoint of the bill of materials and process sheet, provides us the basis in experience, for showing that the productivity of labor, as of productive enterprises generally, depends upon continuing to supply not less than some minimum level of essential inputs. During 1946-1966, when we were still a nation oriented to the production of wealth, it was the natural presumption of anyone with exposure to scientific training, that there must be some notion of function associated with the array of experimentally verifiable, physical facts gathered into such bills of materials and process sheets. From that latter vantage-point, the notion of function, we are impelled to recognize that it is insufficient to regard these essential inputs merely as "financial costs." *Their functional significance lies not in the prices attached to their purchase, but, rather, in the physical significance of these inputs, in determining whether the potential productive powers of labor rise, fall, or are simply maintained.*

This applies to the level of income and public services supplied to the households of the labor-force; certain minimum standards of inputs must be met, if the productive potential, of both present and future members of the labor-force, is to be maintained in such a way as to maintain both net growth and the technological progress upon which that growth depends. This requirement applies to basic economic infrastructure (as supplied, traditionally, either as economic activity of government, or by government-regulated public utilities). It applies to agriculture and related production, mining, manufacturing, and other industry. It applies to the supply of education, of effective demographic performance of health-care, and of scientific and related services. It applies to consumption by households, by branches of useful economic activity, and to allowable and required amounts of administration of both governmental and private institutions.

Such considerations, bearing upon necessary physical standard of incomes of households, were the leading feature of Leibniz's first writing on physical economy, his 1671 *Society and Economy.*[53] The experimentally demonstrable relationship, between physical values of inputs and the predetermining of the potential (physical) productive powers of labor, pervades Leibniz's economic and related writings on technology, throughout the 1671-1716 interval. The implications of this view, of a functional dependency of productive powers of labor, upon maintaining minimal cost-inputs, are otherwise attested by all of the known demographic history and pre-history of mankind. This viewpoint in the science of physical economy, obliges the investigator to premise the study of economic processes on no lesser scale, than the known demographic history, and pre-history of the existence of the human species considered as a functional oneness.[54]

Such a study begins, with a general overview of the upward sweep, and also occasional impairments, of population-size, population-density, and correlated improvements in the demographic characteristics of typical households. This must be done from the standpoint permeating Leibniz's *Society and Economy.*[55] From the historical period, we emphasize the dramatic improvements, on all counts, in not only the population of western Europe, but the world taken as a whole, since the first establishment of the modern form of sovereign nation-state, with the accession of France's Council of Florence-linked, Renais-

53. J. Chambless, trans., *Fidelio,* Vol. I, No. 3, Fall 1992.

54. Lyndon H. LaRouche, Jr., "Non-Newtonian Mathematics for Economists," *Executive Intelligence Review,* Aug. 11, 1995 (Vol. 22, No. 32) (also *Fidelio,* Vol. IV, No. 4, Winter 1995). _____, "Leibniz From Riemann's Standpoint," *Fidelio, op. cit.*: "Potential Relative Population-Density," pp. 36-40.

55. *Ibid.*

sance figure, King Louis XI, during 1461-1483. Featured, included emphasis in that approach, is upon the reproductive power of society, *per capita, per* family household, *per* unit of land-area, and upon the improvement of demographic characteristics of those households (longevity, health, level of cultural development, etc.).[56]

Examining this matter more closely, we note that the inhering factor of "technological attrition," relative to natural resources employed, prohibits a "zero-technological growth" model of society. We must examine the prehistorical and historical statistics of population and its demographic characteristics, from the standpoint of what we recognize, in modern civilization, as progress in science and technology.

These combined considerations lead us to a set of discoveries which, by definition, determine all the elementary features of not only a science of physical economy, but, also, any admissible theory of knowledge, knowledge of physical science included. It is that aspect of the inquiry which compels us to acknowledge the empirical evidence for the case of "time-reversal."

The summary argument required for our purposes here, goes as follows.

To state the most characteristic feature of a physical economy in the terms of approximation afforded by textbook thermodynamics, agree to define the *necessary* physical costs (input) of an economy's level of productivity (including administration), under the heading of "energy of the system," and to consider the not-wasted, remaining portion of output, as "free energy." "Energy of the system" includes both current new input, and the net replacement cost (in physical terms) of that portion of functionally significant physical capital, the which is stored within the economic process. The latter, stored, net (physical) capital investment, includes basic economic infrastructure, improvements in the physical-economic fertility of land, agriculture, industry, and a restricted portion of actively stored total services: in the form of education and health of the members of households, and science and technology potential of the labor force and enterprises.[57]

Express these, in first approximation, in my own changes in definitions for the symbology for the terms which Karl Marx adopted from his British teachers.[58] Let **V** signify input/output of the labor-force, **C** signify required materials input for the entire economy (functionally defined), **F** net (functional) physical capital, **d** necessary deductions for government and administration otherwise, **S** output in excess of *energy of the system,* and **S′** *free energy* (after deductions for both necessary administration and waste). Be reminded: read these symbols as defined here, not the Marxist reading. Prepare the way by describing the constraints to be examined, as follows.

The general constraints are:

1. The potential population-density of the economy (as a whole) shall not be decreased, and the demographic characteristics of the population as a whole shall be improved.

2. The inputs and outputs of the "market baskets," and of their contents, shall be increased in absolute (physical) terms, for households, for performance of infrastructure, for agriculture and related, for industry, for education, for health care, and for science and technology services. These increases shall be measured in market-baskets, also as contents of market-baskets, and in terms of *per-capita* (of labor-force), households, *per*-square-kilometer of land area.

3. The ratio of "free energy" to "energy of the system," so defined, shall not decrease, but the relative energy of the system (*per capita* of labor-force, *per* household, and *per* square kilometer) shall be increased through reinvestment of "free energy" generated.

These seemingly paradoxical requirements may then be expressed as:

---

56. *Ibid.*
57. Insofar as education of the household's members, science and technology, Classical cultural activities, and health care, affect the productivity of the labor-force, and the demographic characteristics of typical households, these services, unlike virtually all other kinds of services, determine the rate of growth of mankind's *per capita* reproductive power over nature, the power of our species over nature. The growth of man's potential power over nature, *per capita* of labor-force, *per* household, and *per* relevant area, is the measure of the validity of discovered principles underlying society's practice, on the condition that the requirement for a demographic improvement is also satisfied.
58. During the span of his university studies, first at Bonn and later at Savigny's Berlin, Karl Marx was recruited to the British foreign service's "Young Europe" organization. He continued under the sponsorship of Lord Palmerston's Giuseppe Mazzini, from that point, until the death of Palmerston, and perhaps slightly beyond; for much of that period, Marx was operating in London under the supervision of Palmerston's subordinate and rival David Urquhart. It was under Urquhart's guidance, that Marx elaborated his so-called "early writings" on economy, during the 1850's, and laid the basis for his *Das Kapital*. François Quesnay, Giammaria Ortes, Adam Smith, and the British East India Company's Haileybury school (as developed under the patron of Lord Palmerston's career, the British foreign service's Jeremy Bentham), are the principal sources from which the analytical features of *Das Kapital* are derived. It is Marx's venom against such American System economists as Friedrich List, and later condemnation of Henry C. Carey, both motivated, according to Marx himself, by F. Engels, which, as the proverb goes, "give the game away."

Population-density (adjusted for demographic parameters):

"Free Energy" Ratio:

$$|(F)\ P_1| \leq |(F)\ P_2| \ .$$

"Energy-Density" Ratio (per-capita of labor force):

$$\left[\frac{S'_1}{(V_1 + C_1)}\right] \leq \left[\frac{S'_2}{(V_2 + C_2)}\right] \ .$$

and

$$\left[\frac{(V_1 + C_1)}{F_1}\right]_1 \geq \left[\frac{(V_2 + C_2)}{F_2}\right]_2 \ .$$

This set of "market-basket" relations overlays a set of constraints defined in terms of divisions in output of

$$(M_v)^1 \leq (M_v)^2$$

force." In this case:

$$(M_c)^1 \leq (M_c)^2 \ .$$

It should be noted, that the difference between the first, "market basket," model, and the second, "division of labor," model, is that the first states the relations of the second in terms of the *per-capita relations between the society and the universe in which the society exists.* The signifi-

$$\left(\frac{V}{C}\right)_1 \geq \left(\frac{V}{C}\right)_2$$

economic process and the process of generating scientific

$$\left(\frac{S'}{V}\right)_1 \leq \left(\frac{S'}{V}\right)_2$$

discoveries of physical (and analogous) principle occur.[60]

$$\left(\frac{S'}{V + C}\right)_1 \leq \left(\frac{S'}{V + C}\right)_2 \ .$$

characteristic of the human species' entire span of historical and pre-historical existence. The paradoxical appearance of this set of constraints, does not bespeak some fallacy in our argument; the error is the critics' own, the error of attempting to impose upon the universe at large, the purely fictional presumptions of the three so-called "laws" of thermodynamics, as the latter were prescribed by Lord Kelvin, Rudolf Clausius, Hermann Grassmann, H. Helmholtz, *et al.* The evidence refuting the latters' widely taught thermodynamics dogma, is conclusive; it is now summarized as follows.

Probably, the student would not recognize the significance of many features of this process of human existence, if we focussed upon some pre-historical or early historical case, in isolation from modern societies; once the internal dynamic of modern civilization is understood, we recognize these same, underlying, hypothesizing of the higher hypotheses, the which underlie the modern, industrialized nation-state economy, already at work, in the assumptions which underlie the relative success or failure among even the earliest societies. The available data on changes in population, population-density, and demographic profiles of populations, from prehistory forward, to date, shows that the constraints we have just summarized here, are the characteristics of all successful efforts at continuing human existence [SEE Figure 4 and Table I, p. 24].[61]

The known, combined, pre-history and history of mankind, presents us with the phenomena of a lattice of higher hypotheses: In other words, the phenomena subsumed by a functional notion which might be described only as the *hypothesizing of higher hypotheses.* That is to say, we have already extended the notion of "function," to satisfy broader notions of "relationship," notions of the higher types which Leibniz consigned to a generalized *analysis situs.* We have escaped the banality of a mathematics shackled by deductive formalism, into the primary relations which must necessarily underlie, and thus govern any competent mathematical physics, for example. *We have moved the location for the primary relations within physical processes, away from the inferior domain of deductive propositions, to focus upon the determining relations, within the ruling domain of hypothesis.*

---

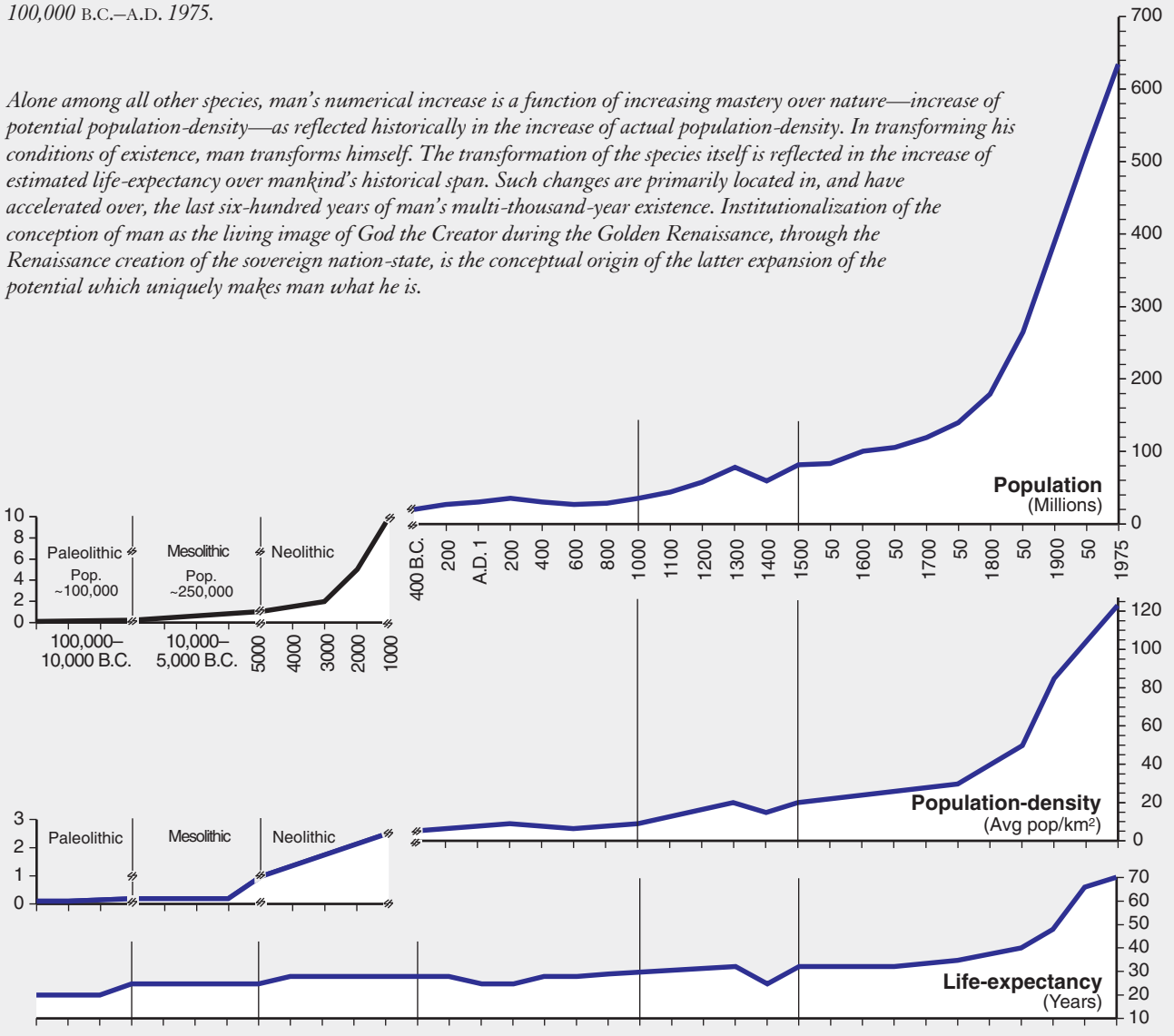
59. See, Lyndon H. LaRouche, Jr., *So, You Wish To Learn All About Economics?* (1984), 2nd ed. (Washington, D.C.: EIR News Service, Inc., 1995), *passim.*

60. As opposed to the social model of Thomas Hobbes, John Locke, Bernard de Mandeville, David Hume, François Quesnay's *laissez-faire,* Adam Smith, Jeremy Bentham, John Stuart Mill, *et al.* In the Hobbes model, the individuals of society are treated as kinematically interacting particles, of fixed, linear, axiomatic properties, interacting within the virtual reality of a mechanistic "gas theory." In reality, the determining relations are located with respect to the development of the sovereign creative cognitive processes internal to the individual's mind.

61. Relevant studies of so-called "primitive" societies, dispel the illusion that these are predominantly aboriginal, or approximately aboriginal forms; as in cases such as anthropological studies of the language and behavior of the so-called "digger Indians," in the usual case, virtually all cultures which some commentators prefer to identify as relatively "primitive," are in fact degenerate relics of the collapse of an earlier, relatively higher level of culture: either an externally imposed catastrophe, as in the instance of the so-called "digger Indians," or a self-imposed catastrophe, as in the case of the repeatedly failed cultures of ancient Mesopotamia.

FIGURE 4. *Growth of European population, population-density, and life-expectancy at birth, estimated for 100,000* B.C.–A.D. *1975.*

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



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

Note breaks and changes in scales.

The crucial paradox defined by the experimental evidence, which thus distinguishes successful from failed models of economy, is summed up: *The ratio of net "free energy" to "energy of the system" must not be decreased, although the per-capita value of "energy of the system," per capita of labor-force, per family household, and per relevant unit-area, must increase.* To underscore the nature of this paradox, the following remarks are interpolated.

The source of the accumulation of physical capital, is the transfer from the account of "free energy" (symbolized by "S′" above), to "F." The relevant experimental fact is, that should "S′" be distributed to increase of administration or personal consumption, above the "energy of the system" allowances for "V," "C," and "d," the result would be a lowering of the rate of gain in the productive powers of labor, and, sooner or later, a net lowering of the *per-capita* standard of living of the labor-force. The trend in economic growth and incomes would be either merely less than if the amount is invested in "F," or, worse, the factor of technological attrition would lead to negative growth, and, thus, to subsequent fall in standard of living of the labor-force.

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

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

However, in the alternative, that necessary consumption were postponed, in order to increase the stock of physical productive capital, as was done during the U.S. war-time recovery of 1940-1945, the results may be positive for the labor-force, and might have the effect of an economically successful "savings" program, which works to the advantage of the labor-force.[62] Traditionally, prior to the 1966-1979 "cultural paradigm-shift" in U.S. economic policy, every competent farmer or industrial entrepreneur, and others, recognized this principle of saving: of capital-accumulation through postponed consumption, as leading to greater aggregated consumption than the alternative policy. The reconstruction of war-ravaged economies, provides compelling images of the same principle in practice.

To get at the true nature of the indicated paradox, one must define productivity in the indicated physical terms, stripping away all efforts to substitute prices for the physical variables which are the actual content of economic processes. There is no greater, or more popular form of lunacy among academic economists and their deluded admirers, than the effort to explain business cycles in terms of movements of prices. It was not private investment of money savings which created modern economies; it was the modern nation-state, which created the credit, and built the infrastructure, under which a society composed of citizens, rather than feudal subjects, organized the preconditions for the successful proliferation of private entrepreneurship.

Once the mind has cleansed itself of the effects of that mental disease called "financial statistical analysis," the true nature of the paradox is forced to the surface. That paradox I have identified above, may be restated: The attempt to interpret economic processes, as if the presumptions underlying the "three laws of thermodynamics" were applicable, is effectively the act of a charlatan. What causes my constraints to appear to be self-contradictory to some would-be critics, is those critics' attempt to explain economic processes without regard to that which sets human beings apart from baboons: those sovereign, creative cognitive potentials of the individual human mind, upon which the generation and successful application of fundamental scientific progress depend.

The apparent paradox is: *The requirement that, under the conditions that net "free energy" is reinvested in the economy as a productive process, to increase the density of the process' "energy of the system," per capita of labor-force, and per relevant unit of land-area, the ratio of "free energy" to "energy of the system" must not decline.* In summary, the process is characteristically "not entropic."[63]

Thus, the associated, also crucial paradox, is, that experimental evidence also shows: *This successful performance can not be secured, except through progress in what modern civilization has come to identify as an emphasis upon policies adopted as necessary to foster investment in "scientific and technological progress."* For the defenders of today's generally accepted classroom mathematics, the implication of that requirement is more painful than any bare paradox; for them, it is a catastrophe.

These are paradoxes in the same sense as any experimental demonstration of the existence of a needed discovery of some new physical principle, a principle required to prevent existing mathematical physics' descent into intellectual bankruptcy in face of an undeniable experimental challenge. In this case, the root of the difficulty is ultimately identical to the *ontological paradox* characteristic of Plato's *Parmenides* dialogue. These are paradoxes derived from the pervasiveness of the cult of linearity in today's generally accepted classroom mathematics, paradoxes of a type ultimately as fatal to the mental life of science as the *paresis* resulting from long infection with syphilis.

Underlying this blunder of the empiricists, of Leonhard Euler, of Immanuel Kant, *et al.,* is a misconception of science, since Sarpi, Galileo, Fludd, Bacon, Descartes, Locke, Newton, *et al.,* which has been concocted in

---

62. The appearance, that the presenting of the war-time savings by the labor-force as demands upon the post-war economy, caused the inflation of 1946-1947, is a fraudulent reading of the evidence, a *non sequitur,* a fallacy of composition. It was the Truman policy of 1945-1948 which caused the menacing inflationary spiral of that period (a policy which the Truman administration adopted at the behest of the Anglo-American establishment generally, and the Federal Reserve influentials in particular). To create the economic mobilization for war, a large mass of withheld wages and other income was channelled, through war-time austerity measures, into capital formation in agricultural and industrial potential, in addition to expenditure for military goods. To deal with the post-war effects of this postponement of personal income, it was imperative that, with the close of war, no significant industrial demobilization must be allowed. We should have converted the build-up of the tool-industry for war, to civilian capital-goods production; under no circumstances, should a general collapse of the level of industrial output be forced, as it was, or even allowed. The critical problem was the failure to deploy a "dirigist" program for rolling over war-time industrial build-up, rapidly, into high rates of agro-industrial build-up for civilian capital-goods output, a failure which collapsed the physical growth-rates of the U.S. economy, as the postponed monetary expenditure began to flood into the markets. Similarly, since 1971, a world-wide inflation has been sustained, not by an excess of money, but by a growing insufficiency of investment in technology-intensive, capital-intensive, and energy-intensive modes of both agro-industrial production of goods, and build-up of the capital stock of high-technology infrastructural investments. Where lunatic monetarists see an "excess of money," sane economists see a shortage of investment in technologically progressive output of goods.

63. The obligation to say "not entropic," rather than "negative entropy," has been imposed by the "information theory" cult's misuse of the term "negentropy," to signify a mechanistic implication of Ludwig Boltzmann's H-theorem.

search of congruence with that *degraded, Venetian misconception of the nature of the human species, and human individual introduced as the Seventeenth and Eighteenth centuries' French and British "Enlightenment."*[64]

The Essential Subjectivity Of Science

Above, we employed the example of Mozart's *Ave Verum Corpus* to identify those features of B. Riemann's discoveries which are characteristic of both scientific and technological progress, and also of progress based upon discoveries of rational principle within the domain of the Classical art-forms.[65]

We now turn to present the principal implications of that evidence: *Contrary to simple-minded illiterates, and other superstitious persons, physical science is not "objective knowledge." Science is not a reflection of the universe as simply reflected into our minds by our senses, as if by a kind of mirror. Science is premised upon the experimental evidence obtained through mankind's relevant successes and failures in our species' efforts to increase its power over the universe.* The very term "scientific objectivity," is a paralogism; it bespeaks a person afflicted with superstition. Only after we have acknowledged the essential subjectivity of knowledge, do we escape from that erotic bondage called "sensual science."

Reference the general function identified above:

This, as indicated at an earlier point in this report, represents the role of *hypothesizing the higher hypothesis* as underlying all scientific and related progress in human knowledge and practice. This is a statement, in terms of a Leibniz-Riemann-referenced mode of *analysis situs,* of the axiomatic generality of all valid scientific knowledge: *Since the history of man's increase of our species' power to command the universe to our species' benefit, is a history of man's hypothesizing the higher hypothesis, the term "science" is properly delimited in use to signifying rational comprehension of the process of hypothesizing the higher hypothesis.* In that sense, we must think of the subjectivity of science.

In terms of the adding of relatively valid new theorems according to some fixed hypothesis, man's power to increase the potential relative population-density of our species has a limit. Our species exceeds that limit; but,

$$[(h_i)^j]^k .$$

that success occurs solely through experimentally validated, axiomatic-revolutionary changes in hypothesis. It is such axiomatic-revolutionary changes, all within the domain of hypothesis, which constitute the action, by means of which mankind exceeds the bounds of any fixed theorem-lattice. This action is the *change* referenced by Heracleitus' famous apothegm, "Nothing is constant, but change." That is the same notion of *change* which Plato introduces as the crucial conception of his *Parmenides.* In first approximation, this change, this action, is located ontologically within the domain of higher hypothesis: the efficient, valid change, from one hypothesis to a higher one. The generalization of this notion of change, or Plato's *becoming,* is located within the domain of hypothesizing the higher hypothesis.

Thus, the reality of the universe is comprehended by the mind, not the ignorant man's blind, irrational faith in the bare experience of his senses. That is the definition of *Reason,* as used by Johannes Kepler; we have already referenced this here, above, as Leibniz's notion of *necessary and sufficient reason.* The notion of the necessary, efficient existence of functional time-reversal, arises, as necessity, from these considerations.

The lesson of the progress of science, in these, Platonic terms of reference, is that the universe is, in effect, so predesigned, that it is obliged to obey man's will, whenever man's will is expressed according to Reason: according to valid changes in hypothesis, from lower to higher hypotheses. The relevant action, by means of which the efficient principle of existence of the human species is defined, is the advancement of man's operating hypothesis, from a relatively lower hypothesis, to a relatively more valid, more powerfully efficient one. In effect, the relevant changes are typified mathematically, in the form of an increase of the Gauss-Riemann physical-space-time curvature, by the relative, transfinite cardinality of action.

---

64. Among the numerous published locations in which this writer has addressed the matter at some length, relevant recent instances include the following; "Non-Newtonian Mathematics for Economists," *loc. cit.*; "How Hobbes' Mathematics Misshaped Modern History," *Fidelio,* Vol. V, No. 1, Spring 1966; and, "Leibniz From Riemann's Standpoint," *loc. cit.*

65. The rational employment of the term "Classical" is a choice of term which references the Classical period of ancient Greece, with emphasis on the Athens-centered culture, from the time of Solon through Alexander the Great's destruction of the Persian Empire. Otherwise, the rational use of the term "Classical," is limited either to certain Classical Greek models, or their reflection in modern forms of art and science. In western European civilization, from Augustine of Hippo through the Classical humanist followers of Friedrich Schiller in Nineteenth-century Germany, the term "Classical" signifies art and science cohering with the rational principles of Plato and his Academy at Athens. In practice, "Classical" signifies contempt for arbitrary beliefs, in both art and science: e.g., those not governed by Reason. It signifies contempt for arbitrary, erotic effects in art. As noted earlier here: The principles of Classical musical, motivic thorough-composition exemplify the coherence of Reason (e.g., John Keats' "truth") and Beauty in art, and a degree of rationality which is identical with the function of Reason in science.

This is the essence of that which deserves the name of "science," or of "Classical art."

The experience of scientific, or artistic activity, so defined, is presented to our minds in two ways. On the one side as the form of *analysis situs* demonstrably cohering with the increase of mankind's power over the universe. In physical economy, this form is correlated with mankind's willful increase of the potential relative population-density of our species. On the other side, as Classical art typifies this, this activity of our minds is expressed in the form of the emotion associated with what Plato and the Apostle Paul identify as *Agapē*.[66] The mind is able to distinguish *Agapē* from the erotic impulses associated with the materialist's blind faith in sense-certainty.[67]

(Notably: The indispensable function performed by successful Classical art-forms, is to bring forth the motive quality of *Agapē* in its more concentrated expression. The Classical motivic thorough-composition of anti-Romantic, well-tempered polyphony, by W. Mozart, the later Joseph Haydn, Beethoven, and Brahms, is the typical expression of this, like the great and prolific well-tempered polyphony of J.S. Bach before them.[68])

Hence, the fundamental distinction between Plato and Aristotle. Hence, the legitimately Aristotelean, modern, Venetian tradition of *mortalism,* traced through Padua's anti-Renaissance Pietro Pomponazzi and Michel Montaigne, through the Seventeenth-century followers of Paolo Sarpi.[69] Whereas, in the relevant tradition of Christian civilization, the Aristotelean, like the bathless hesychast, the Stoic, the Epicurean, and kindred schools of pornography, contemplates the world, the Platonist masters that world, and that out of a sense of the responsibility inhering in a creature "made in the image of God," in the sense of the cup passed to Christ in Gethsemane. For the Aristotelean, such as the empiricist and irrationalist Immanuel Kant, the world is a construct, fabricated from the detritus of naive sense-certainty. Thus, for the Kant who purports to be the Apostle of Reason, it is the central feature of his Romantic reconstruction of empiricism, in his *Critiques,* that an *efficient* form of Reason does not exist.[70] Out of the related version of empiricism, the Ockham simplification promulgated by Paolo Sarpi and his followers, we have that contemplative standpoint in mathematical formalism of Isaac Newton, Leonhard Euler, and their radical-positivist followers, such as Bertrand Russell, Norbert Wiener, John Von Neumann, *et al.*

Hence, given this fundamental controversy between the experimental standpoint of Cusa, da Vinci, Kepler, Leibniz, Monge-Carnot, Gauss, and Riemann, versus contemplative, "ivory tower" philosophies of science, any attempted approach to the issues of scientific method which is not rooted in rigorous study of the Plato-Aristotle controversy in philosophy, would be the bungling enterprise of a science-illiterate, one acting as a virtual charlatan. It is toleration of such charlatanry in the name of "generally accepted classroom mathematics," which gave us the infamous Solvay Conferences of the 1920's, the toleration of B. Russell's hoaxes, and the narrow corners, such as Andrei Sakharov's work, into which the evidence of "time-reversal" has been confined to date.

Man's knowledge of the lawful composition of our universe is limited, by necessity to those processes of knowledge which have shown themselves to lead to mankind's repeated improvement of the number, demographic characteristics, and *per-capita* power of our species over the universe. Let us agree to name that test of knowledge according to the spirit of Riemann's experimental physics, "The Great Experiment." The primary

---

66. I.e., Plato: love of justice, love of truth. *Cf.* Paul, *I Corinthians* 13. The charismatic "feeling" according to *Agapē* is never irrational, but always an expression of Reason.
67. The deepest secret of the Romantic existentialism of the proto-Nazi Friedrich Nietzsche, the Nazi Martin Heidegger, Jean-Paul Sartre, the irrationalist Martin Buber, deconstructionist Jacques Derrida, *et al.,* is implicitly disclosed by the notorious *Liebestod* of "Young Europe" terrorist R. Wagner's *Tristan and Isolde* (as by Wagner's operas and music-dramas generally). A comparison of Jean-Paul Sartre's ("Sartre-Masochismus") autobiographical rant, with the notion of "thrown" central to the doctrine of the Nazi ideologue Heidegger, tells us much about the underlying kinship among French existentialists, German Nazis, and also existentialists of the Hannah Arendt and Martin Buber types. The kernel of the doctrine of existentialism is the impulsion to give freedom to (unleash) the "inner pig" one adduces as the essential kernel of one's innermost self. The lunatic Nietzsche, who has the distinction of being the most candid among the degenerate breed called existentialists, rightly attributes the ancestry of his cult to the Apollo-Dionysus dualism of the satanic, Delphi cult of Gaia-Python/Dionysus-Apollo, and, thus, implicitly, to the Hellenistic cult of Isis-Osiris: the victim whose erotic impulse has carried him, like Adolf Hitler and Heidegger, deep into the depths of Hell.
68. Hence, the intrinsically religious quality of virtually all of the music of these composers. Hence, for related reasons, the intrinsically satanic implications of bringing the dionysiac "Christian rock" into the churches.
69. *Cf.* Webster G. Tarpley *et al.,* "From Napoleon to Nashville," *The New Federalist,* Sept. 23, 1996 (Vol. X, No. 37).
70. During World War II, the British propaganda service enlisted Heinrich Heine's prophetically insightful *Religion and Philosophy in Germany,* in warning that Immanuel Kant was a spiritual ancestor of Adolf Hitler's acceptance within Germany. Notable, is the strain of neo-Kantianism running through the positivism of Madame de Staël, her collaborator Saint-Simon, and Auguste Comte, in France, and Hegel's accomplice, Karl Savigny, in Germany. The *Volksgeist* irrationalism flagrantly displayed in Kant's *Critique of Judgment,* running through Savigny's Romantic school of law, and Hegel's philosophy of history, supplied the rationale for Germany's fatalistic submission to the Anglo-American financier-oligarchy's imposition of Adolf Hitler's rule in the "legal" coup d'état of 1933-1934. On the Anglo-American backing for the Hitler coup, see Webster G. Tarpley and Anton Chaitkin, *George Bush: The Unauthorized Biography* (Washington, D.C.: EIR News Service, 1992), pp. 26-62.

task of science is, therefore, to discern and define those processes within the sovereign domain of individual human cognition, by means of which the successful furthering of the process of hypothesizing the higher hypothesis is to be promoted. It is in that context, that a rational comprehension of the principle of "time-reversal" becomes accessible.

Riemannian *Time-Reversal*

The measurable impact of "time-reversal" must necessarily lie within the conceptual bounds of the crucial discovery at the center of Riemann's habilitation dissertation. In other words, applying those methods of C.F. Gauss' general principles of curved surfaces (which Riemann incorporated in the method of his own discovery), there must be a measurable difference in the implied curvature of physical space-time, reflecting the action of time-reversal upon the function as otherwise determined. For this case, measurement appears in two available expressions: (1) The measurement of extension, as this is extended from Gauss' work on the higher expressions of biquadratic residues; (2) As expressed by discontinuities in attempted simple extension.

Once more, return to our referenced musical example, to define the form of this set of relations. What is to be emphasized here, as in reference to this musical case in earlier published locations, is that the characteristic feature of Classical art is the evocation of *Agapē,* by means of the rigorous subordination of art to that Platonic principle of Reason, the which is expressible only by the form of development which employs resolving transitions to new hypotheses of a relative higher cardinality than the utterance of the preceding hypothesis. Thus, as Pablo Casals instructed his master-class students, in great art, as typified by his beloved J.S. Bach, there is never repetition, but always contrapuntally progressive variation.[71]

As we stressed earlier, here: In the referenced illustrative case, the progression through a series of polyphonic hypotheses, into the culminating hypothesis which concludes the composition, registers the composition as a whole as a process of development located ontologically within the domain of a specific proposition, that within the domain of higher hypothesis. Now, once that is apprehended by the performer, or hearer, every detail of the performance must be subordinated to that specific proposition otherwise defined only at the close of the piece. The result is a shading of interpretation in the shaping of each interval of the composition, both within the individual voice, and across the polyphonic voices. The effect is of a slight deviation of the "physical space-time curvature" in the performance: conductor Furtwängler's doctrine of "performing between the notes."

That must not be over-simplified. Each locality within the composition belongs to one among the sequence of polyphonic hypotheses, and must be so performed; but, that hypothesis must be affected in the shading of its performance by the proposition which locates the development process of the composition as a whole within the domain of higher hypothesis. The image of Gauss' development of, and Riemann's apprehension of higher implications of biquadratic residues, is forced to our attention, thus. In music, it is the ability to hear, to recognize, and to anticipate the distinction between appropriate and inappropriate shadings of difference of "curvature" within the performance, which is crucial. In music, as otherwise, such music must be heard first in the mind, and, after that, what is heard so in the mind must command the instruments employed.[72]

Those differences in manifest "physical space-time curvature," are, relatively speaking, the more readily accessible feature of the principle of "time-reversal": Its efficient presence can be measured so, whether in musical performance or physics as such. The more profound aspect of matter forces our attention to the functional implications of true discontinuities. The crux of the matter is efficiently introduced by the following proposition.

How is it possible for the human mind to perceive a mental object, whose form does not originate from within the domain of sense-perception? To most, that question immediately suggests the domain of microphysics; it must be recognized that the concepts of

71. Among the greatest enemies of Classical music, on several grounds, are the leading recording companies. Exemplary of these firms' endemic, mercenary artistic imbecility, is the question often expressed by a performing ensemble: "Shall we do the repeats?" In Mozart and Beethoven, for example, there is never carbon-copy repetition, even when repetition might be suggested by the printed text of the score. That is to say, neither Mozart nor Beethoven intended mere repetition, but rather a recapitulation which is apposite to the initial utterance of the text. This is a device borrowed, so to speak, from Classical strophic poetry, which must be performed (and heard in the mind) as a process of constantly ongoing development, never as monotonous sing-song prosody. In the works of these composers, the "repeat" is always a lead into a new development.

72. The performance of music must never be from text to instrument, but through the digestion of the hearing as performed in rehearsal by no other instrument than the mind itself. Only in such a domain of memory, can the mind "hear" the interplay among all hypotheses and conclusion as if in relative simultaneity, relative to every interval of the relevant moment of performance. It is in replaying compositions, so, within the polyphony of the mind, and constantly adjusting one's interpretation according to all these considerations at once, that these notions can be mastered by the performer, or the musical audience.

microphysics are but a derivative of the general category of Platonic ideas. Restate the proposition in other terms: How are singularities, such as metaphors, afforded discrete distinctness within the mind? The answer from any literate person should be: by the juxtaposition which we term irony: a "double meaning," the which can not be resolved deductively.

The quality of "definiteness" attributable to a Platonic idea, is derived from the association of such an idea with a formal discontinuity. This involves a "non-linear" transition, as from one hypothesis to another, a transition which occurs in such a manner that it must appear to a deductive mind-set as a "leap" of comprehension across an incomprehensible gap. This may be a valid metaphor, in poetry, Classical drama, painting, or music; or, it may be the introduction of the need to consider a new quality of principle (a new hypothesis), as a precondition for accounting for the actual continuation of a process, as in the case of Riemann's *Fortpflanzung* paper, referenced here earlier.

On this same point, consider a "map" of science in general, which we have identified in locations published earlier. If we seek to outline the full domain of scientific inquiry from the standpoint of the relations of hypothesis, we have the following, general, preliminary result.

We divide the domain of inquiry among three classes of phenomena and three categories of relationship of judgments to methods of empirical inquiry. The three general classes of phenomena are: (1) Ostensibly non-living processes, both organic and inorganic in ostensible composition; (2) Living, but presumably non-cognitive processes; (3) Cognitive processes. The three categories of inference are: (a) Astrophysics, (b) Microphysics, (c) Macrophysics. This yields a table of nine cells. Since the existence of this evidence is conditional upon the existence of human cognition, it is the driving of the cognitive processes to the ever-expanded limits of inquiry into astrophysics, microphysics, living processes, and cognition itself, which underlies this nine-cell domain of science as a whole.

All of the permutations of relations among the nine cells are defined in terms of strict boundaries, strict discontinuities. Consider the most exemplary such case, the transition of what is ostensibly the same living process into a non-living state, and the distinction between living processes which are typified by cognitive functions, and those which are not. What are the transitions which separate these states? Define them functionally. The difference in organization of the three states is expressed as a difference within hypothesizing the higher hypothesis, a difference, however apparently subtle, in the effective curvature of the process.

On this account, the peculiarity of living processes, and also cognitive ones, is of the form of time-reversal: the apparent pre-determination of the next phase-state in a way which either distinguishes a living from a non-living process, or a cognitive from a non-cognitive activity within a living process. For this, the conceits of A.M. Turing and his followers will not do. Once we have identified the necessity of time-reversal for one class of processes within the array, we have identified the necessity for the generality of functional time-reversal.

The introduction of the notion of time-reversal, obliges us to face up to the implied questions: What is the efficient future to be considered? What is the efficient scope of the relevant past?

The truth is always elegant and lovely, but the delusions which commonly obstruct access to that truth, tend toward the ugly sentimentalities of the rutting Yahoo class. The clinical problem to be addressed, is illustrated by reference to those commonplace, pathetic commentaries upon musical compositions, the which inhabit concert program notes, or the dust jackets of recordings. According to that Romantic irrationalism, the which has dominated British taste since Thomas Hobbes outlawed metaphor, the purported explanation of a Biblical text or a musical composition is to be found in the orgasmic domain of erotic symbology.[73]

One might say, that our perennially prissy British art critics, like their American mimics, are as irrationally symbol-minded in their artistic opinions, as in their lunatic, low-church notions of the future, their so-called Biblical prophecies. Indeed, if we understand the mental breakdown of such critics, when faced with "time-reversal" as it occurs in poetic speech or music, we have ready insight into the pathetic mental condition of that homicidal, American, "Lost Cause" variety of Protestant cults, the which predict, that erecting a Hebrew temple on the site of Jerusalem's Dome of the Rock, will unleash "End Times" events, leading to the Rapture, thus, presumably, freeing them from the obligation to meet next month's mortgage-payment.

The name of the issue underlying each and all of those mental disorders of the symbol-minded, is "Bad Infinity." In gnostic parodies of Christianity, such pathetic symbol-mindedness may assume the form of "End Times" prophecies. In respect to Classical art, it appears as the inability to accept the notion that a future event, the apprehension of the metaphor at the close of a poem or

73. Unfortunately, there are performing musicians who attempt to breathe the spirit of such program notes into their performances, with all-too-common catastrophic results. Such obscenities could please no one but music critics and other devotees of the satanic cult of the *Zeitgeist*.

‘Stand facing the famous *School of Athens* . . .

Photo Vatican Museums

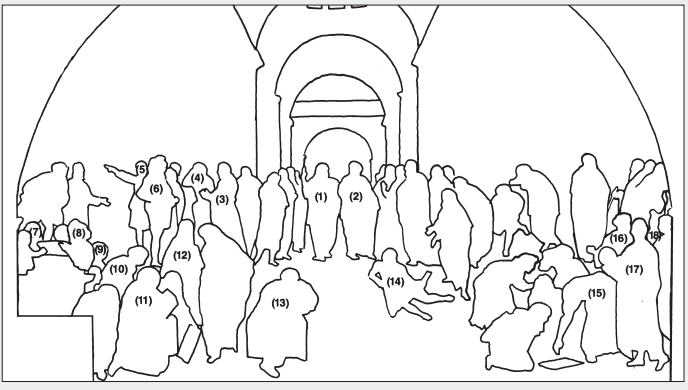
‘As you stand there, call that mural to life. Look around inside that mural; which of these are old friends of yours? You never met any of them face to face, but most of those in the hall never met one another in the flesh, either. Yet, you have relived a most intimate moment of the mind of each of some of them, reliving one or more of their creative moments of discovery. First, pick those whom you know in that way. You know Plato, and are acquainted with Aristotle. Are there not two or three in the foreground? As you focus upon the ideas, especially those ideas which represent original axiomatic-revolutionary discoveries, or something proximate to that, one figure after another within this busy hall comes alive for you. As for the others, I believe you know most of them already by reputation.

“Think of the number of generations of history spanned by the personalities gathered here within this hall! Radiating from that hall, there is a sense of being embraced, where you stand, by some living intelligence proximate to Temporal Eternity. That radiance fills the small room in the old papal apartments.

“Raphael understood the point well enough to design and transmit a message, this mural, which would reach both of us, nearly five centuries later, standing with our minds within that mural’s assembly within the great hall. It is no fantasy; it is a painting of a scene the like of which this writer has seen within his own mind, many times. It is a scene which Raphael painted from life, with the gathering of the inhabitants of his mind as living models. It draws from life those relationships within Temporal Eternity which are higher, and more efficient than any drawn in ordinary space or ordinary time. Those are the direct relationships of creative minds’ ideas, which dissolve centuries into the span of a pleasant day’s assembly, and bring vast spaces comfortably into a room no larger than that which contains this mural.

“This mural is no mere symbolism, nor an imagined room in Paradise. It is a moment of *déjà vu!* It is a portrait of Raphael’s relations to the most intimate acquaintances of his daily mental life, all captured so to share the companionship of a moment in Temporal Eternity. . . .

“When the relationship of the individual person to



Above: Personalities gathered together by Raphael. (1) Plato, (2) Aristotle, (3) Socrates, (4) Xenophon, (5) Æschines, (6) Alcibiades, (7) Zeno, (8) Epicurus, (9) Federico Gonzaga, (10) Averroes, (11) Pythagoras, (12) Francesco Maria Della Rovere, (13) Heracleitus, (14) Diogenes, (15) Archimedes, (16) Zoroaster, (17) Ptolemy, (18) Raphael's self-portrait. (Diagram courtesy of Vatican Museums.)

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

mankind in general, and other persons in particular, is measured in the space and time of the generation and transmission of those qualities of ideas associated with valid axiomatic-revolutionary discoveries, what a short distance a mere few centuries become! The order of necessary predecessor and necessary successor is preserved: the intelligence of the timeless Absolute is not zero-motion; the lack of spatial division is the consequence of being simultaneously everywhere, such that there is nothing in between any two experiences which would require us to experience time, except as, for us the onlookers, a sense of a timeless ordering of development. For us, the onlookers, just so, the duration of space and extent of time shrink almost to the vanishing-point. . . .

". . . Truth lies accessible to us on condition we are able, as Raphael's mural tells us, to comprehend the reality of Temporal Eternity as a form of human existence measured in terms of *efficient* relationships among axiomatic-creative qualities of ideas. . . . While that thought occupies one's mind, move through the rooms of the old papal apartment more thoughtfully, catching every aspect of Raphael's work there. Does it not occur to you, that the [last 3,000 years of history], is a moment of Temporal Eternity which could be such a mural as one of those Raphael left as messages for us?"

—Lyndon H. LaRouche, Jr.
from "The Truth About Temporal Eternity"
Fidelio, Vol. III, No. 2, Summer 1994

musical composition, must efficiently shape the development of the composition at each preceding point in time. Thus, the distaste for Classical poetry and music among the cognitively illiterate, such as the wont for the rage-brimming, Brechtian soap-operas of "Country and Western" whines, like the wont for today's rutting-and-gore, story-free Hollywood entertainments, reflects the flight from *Agapē* to *Eros*.

The Classical composition, in any medium, follows the underlying model of the Greek Classic, the same Classical humanist model found in the educational programs of the Brothers of the Common Life and in the Schiller-Humboldt program for Classical Humanist education in Germany. Such education, and such art, submits to the policy, that the development of the mind of the young, must be the student's experience of the reenactment of the actual process of original discovery of a principle of nature within the sovereign domain of the individual student's mind. The re-discovery of the principle, at the end of that reenacted experience, is, thus, akin to the final hypothesis of Mozart's *Ave Verum Corpus;* in music, as in Paul's *I Corinthians* 13, as in life, the "test of death" returns our thought to an agapic vision of life's meaning.[74]

As Mindy Pechenuk's description showed, Mozart's setting of this motet, leads the music through a succession of hypotheses, thus impelling the singers and audience into the kind of excitation of the sovereign cognitive processes of the individual mind, which evokes the experience of re-creating Mozart's discovered principle, and thus evokes the quality of emotion which Plato and the Apostle Paul identify as *Agapē*. Thus, music, so employed, evokes the highest level of Reason.[75] This is the same Reason employed to effect either an original, valid discovery of natural principle, or the reenactment of that original, sovereign mental act of discovery.

Motivic thorough-composition, a revolution effected within the domain of J.S. Bach's well-tempered polyphony, demonstrates the twofold absurdity of the claims upon which Immanuel Kant bases the entirety of his

74. Thus, the importance of the Requiem Mass as a musical subject for Mozart and Beethoven. What joy could be found in the interment of a family member, or close friend, except that we return from such ritual refreshed in our commitment to free living from enslavement to the banal eroticism of petty things, to live a life whose duration shall have become durably necessary for humanity even long after one's passage through life has ended. This is not a matter of symbolisms; it is a matter of *Agapē ,* in the sense of the term common to Plato and the Apostle Paul. In all art, all science, the composition whose conclusion defines, retrospectively, every moment of its unfolding, is the heart of the matter. Thus, the "test of death"; thus, the *Agapē* of the Lacrymosa of Mozart's *Requiem,* as contrasted with the ugly erotic parody of this Mozart Lacrymosa within the gnostic Hector Berlioz's blaring, Bonapartist *Requiem.*

famous *Critiques*. Mozart's *Ave Verum Corpus* demonstrates not only that the principle of valid original discovery of principle is cognizable, but that the same principle of Reason which Mozart employed for this composition, is the principle of Reason underlying all valid scientific discovery. The most fundamental principles of either art or science can be comprehended, only if we reject the irrationalist war-cry of Kant's *Critique of Judgment,* Savigny's hermetic separation of natural science (*Naturwissenschaft*) from art (*Geisteswissenschaft*), to recognize the underlying interdependency of art and science, as did the founder of comprehensive mathematical physics, Johannes Kepler. The notions of potential (i.e., cardinality) and efficient time-reversal, as adduced from Classical musical compositions such as this, are general for art and science: they involve identical cognitive potentialities of the individual mind.

Employ this musical context to explore a deeper meaning of "the future acting upon the present." At first, the thought will be a stunning one; then, gradually, the initial shock of astonishment will gave way to the consoling reassurances of Reason.

"When" is the future? At what point in time? Similarly, what is the beginning-point in time from which to define the cumulative past with which the future is to collide? The answer to this seeming paradox, was already known by Plato, by Augustine of Hippo, and, therefore, also, Thomas Aquinas: *All time is subsumed under a general regime of simultaneity!* The highest expression of *change,* is that lattice of higher hypotheses which expresses the transfinite notion of hypothesizing the higher hypothesis. What underlies that lattice? That lattice is underlain by what Plato distinguishes as *the Good.* In the *analysis situs* of hypothesis, that Good is "simultaneously" efficient in all times and places which might exist. Thus, in those terms of reference, the past and future, as hypothesis, are existent as efficient agency in each present moment.

Stunning? Consider, and remove the false assumptions which might be attributed, mistakenly, to what has just been uttered here. Does this signify that each and all events are predetermined—"predestined." No: recall the conditions of *analysis situs* which we have imposed, repeatedly, upon this report's content, from the outset. Everything we have said here on this matter, to the present moment of writing, is premised upon, and delimited to statements respecting the set of relations defined by the general principle of hypothesis, even as Riemann's 1854 habilitation dissertation expresses that Platonic principle as its pivotal foundation. The general set of relations defined by the principle of hypothesis are otherwise describable as relations within an hierarchy of available "pathways of change." The ordering principle underlying this hierarchy is cardinality, as we have indicated that principle of ordering of Riemannian physical space-time manifolds here. It is in terms of efficient choices of pathways of change, that the future acts upon the present. So, the choice of conception (higher hypothesis) reached with the conclusion of a Classical piece of motivic thorough-composition, determines the potentialities of each subsumed hypothesis, and, thus, of each interval of tolerable counterpoint, within the composition as a whole.

Therefore, we must anticipate the implications of time-reversal to be manifest in those instances a change in choice of hypothesis, to one of relatively higher cardinality, is demanded of us, as by the eruption of an undeniable anomaly from within the domain of experimental physics.

Physical Economy As 'The King of the Sciences'

Look at that from the standpoint of the science of physical economy. C.F. Gauss famously identified mathematics as "The Queen of the Sciences," which, the feminists must excuse us, was intended to indicate that mathematics must not be king. As for Nicolaus of Cusa, for Leibniz, and for Riemann, the essence of physical science lies with the employment of measurement to demonstrate those valid principles of nature accessed through either experimental physics or similar methods of inquiry. It is through experimental physics, and similar methods, that we demonstrate that every valid discovery of principle increases man's power of local intervention into the universe. However, it is only in the domain of physical economy, that we demonstrate the same principle applies to the relationship of mankind to the universe as a whole. Physical economy is "The King of the Sciences."

The principle of hypothesis affects the potential relative population-density of mankind by two pathways. In the guises of Classical art-forms, mankind discovers new, higher qualities of institutions, such as the constitutional modern nation-state, the institutions of education, the institutionalization of scientific and technological progress, and so on. In the guise of contributions to progress of science and technology, the productive powers of labor are advanced. It is the interrelation between the two aspects of these changes for human progress, that mankind's functional relationship to the universe is

75. In this way, the true "religious feeling"—*Agapē*—is evoked, by Reason, *not* as irrationalist, Romantic, psychotomimetic exaltation.

defined.

Human history, and pre-history, so read, shows that the universe is so designed, that whenever man's demand upon the universe is expressed as valid hypothesis, the universe obeys man. That, whenever man's demand upon the universe is expressed as a valid change in hypothesis, the universe obeys man's will. Thus, the pathway of change marked by valid directions in hypothesizing the higher hypothesis, expresses, as experimental physics, and as the increase of potential relative population-density, the lawful ordering of the universe. That demonstration is the essence of science; it is the only source of knowledge of that which we might regard as the laws of the universe. In that sense of the matter, we are obliged to end foolish babbling about "scientific objectivity," and think of "scientific subjectivity," instead.

In that sense and degree, the ordering within the domain of valid hypothesis does define the lawful ordering which *governs* the universe. It is upon that premise, that we may be certain of the efficient principle of "time-reversal" in physics, as well as Classical musical composition.

Consider as a relevant case, the choice of the future expressed by formulation of economic policy by the government of a modern European model of nation-state republic, such as our Federal republic under the anti-British, anti-Metternich, anti-"free trade," American System of political-economy, embedded as the intent of our Federal Constitution.

Contrary to the sewage which has spoiled the mainstream of economic-policy thinking the recent thirty years, the making of U.S. economic policy during all successful periods of our history, since the earliest period of the English colonies here, has been premised upon a commitment to investment in scientific and technological progress. Under the governance of such a higher hypothesis of national self-government, each promoted change in patterns of investment, production, employment, and trade, has represented shifts from practice of relatively lower cardinality to higher cardinality. Or, to say the same thing, in effect: In choosing the hypothesis of relatively higher cardinality, we have chosen the better future inhering in the latter hypothesis.

To provide the relevant contrast: Without introducing such considerations, of change of hypothesis, into policy-shaping, the relationship of future to present becomes as paradoxical as it was for Nobel Prize-winner Kenneth Arrow.[76] It is the transitions from one phase-space to a higher one, under penalty of "entropic" technological attrition if we do not so change, which display the functions of time-reversal in a clearer, relatively more immediate way.

It is so in life, as Mozart seeks to remind us in his setting of the *Ave Verum Corpus*. "The test of death": How shall I choose to live under the impact of the certainty of death? From the standpoint represented above, the answer is neither obscure, nor remote.

If I am conscious of the content of my own knowledge and practice, in the manner underlying a Classical humanist form of education, then I know that most of what I know represents valid discoveries of principle effected by individual original discoverers, some known by name, more unknown, most located deep in the lost pages of pre-history. In reenacting their discoveries of principle, I have relived in my mind, moments from the interior of their own. I am closer to these long-deceased persons than to most of the daily associates of my childhood, youth, and adult life. If I aid in transmitting these precious gifts from the past, into the countless generations of the future, and perhaps add one or two such gifts of my own, I am certain that my life will have been a necessary one: both a fulfillment of the past, and a gift to the future. I have thus met "the test of death."

That illustration implies the crucial point. It is in the terms of the relations of hypothesis, and in no other way, that the issues of scientific principle are rendered intelligible, even the rudimentary consideration that all processes in the universe are subject, as Wilhelm Weber's appreciation of Ampère's work, or Max Planck's related discovery attest, to an alteration of their curvature by efficient "time-reversal." That principle is already implicit in the deeper meaning which Plato's *Parmenides* supplies to Heracleitus' maxim, "Nothing is constant, but change"—nothing is real, nothing is efficient, but the quality of change which is located in the *analysis situs* of those relations defined by the architecture of hypothesis.

76. *Loc. cit.*

Ave, ave verum corpus
natum de Maria virgine,
vere passum immolatum
in cruce pro homine.

Cuius latus perforatum
unda fluxit et sanguine,
esto nobis praegustatum
in mortis examine.

Hail, hail true body,
born of the Virgin Mary,
truly having suffered sacrifice
on the cross on behalf of man.

Whose pierced side
trickled water and blood,
be thou for us a foretaste
in the test of death.

A Crucial Proof of Mozart's Discovery,

Last March, in response to a question I put to Lyndon LaRouche, he suggested that the best route to understanding the profound Platonic ideas in great Classical music, is to use a short piece, such as Mozart's choral motet, *Ave verum corpus,* K.618. If the conceptions are understood as developed in a short piece, LaRouche argued, this will carry over, later, into comprehension of the larger Classical musical works.

I took his advice, and began to see the *Ave verum*—which I had known for years—with new eyes. It is these discoveries, that I want to share with you.

I begin with a few introductory remarks, mostly for those who may not be familiar with our philosophical association's work in music, and who may wonder why it is so important.

As is the case with all our work, the axiom that must govern music, is that of *agapē*: Plato's *Good,* the axiom of cultural optimism. Music written from that standpoint, is what we have come to call Classical.

On the other hand, today, we have a diametrically opposed culture of pessimism, which is better termed Romanticism. The Romantic worldview is driven by *eros,* the world of sense perception. A nation that tolerates the axioms of pessimism embedded in such forms as country and western music, the wallowings of Richard Wagner, rock, or other forms of modern popular entertainment, or which tolerates such scientific frauds as Hermann Helmholtz,[1] is a nation *on its way to fascism.* It is therefore

1. Hermann Helmholtz, *The Sensations of Tone as a Physiological Basis for the Theory of Music* (New York: Dover Publications, 1954).

This article is an adaptation, for the printed page, of a presentation delivered to the conference of the Schiller Institute in Reston, Virginia on August 31, 1996.

Mozart's *Ave Verum Corpus*

and a Short Pedagogical Exercise in Musical Memory

by Mindy Pechenuk

Bettmann Archive

Wolfgang Amadeus Mozart, drawn by Dorothea Stock, sister-in-law of Friedrich Schiller's friend, the poet Gottfried Körner.

of the utmost urgency today, that we learn a lesson from Mozart, and create the foundation for the survival of the nation—a foundation built on the sanctity of the human creative life.[2]

Mozart composed the *Ave verum* at the end of his life, in 1791, at a critical time facing civilization. Only two years before, in 1789, France had fallen prey to the machinations of the evil British-Venetian oligarchy, a failed revolution which marked an ominous turning-point in history, which prompted Friedrich Schiller to raise the question whether "a great moment has found a little people." Mozart, like Schiller, concluded that the only solution to the crisis was the ennoblement of the individual human being, and, he concentrated in his *Ave verum*, all the momentous discoveries he had made over the preceding decade. In this short piece, only forty-six measures long, you can discover Mozart's "new higher hypothesis," as he, in turn, built upon his friend and teacher Joseph Haydn's breakthrough in motivic thorough-composition,"[3] while simultaneously working through the implications of J.S. Bach's discovery of higher orders of modality in such works as *A Musical Offering* and *The Art of the Fugue*.

Mozart's compositional activity was therefore on the order of Plato's conception of memory and hypothesis, in which a discovery by an individual goes beyond, but also fully subsumes, the earlier hypothesis of a previous discovery. Mozart's work goes beyond that of Haydn and Bach; and yet, Mozart could not have made his discoveries without those predecessors' contributions.

Think, therefore, of the *Ave verum* as a short drama: Do you leave a performance of the piece, concluding that you must do something substantial with your life, so as to leave this world a better place than it would have been, had you not lived? Can you die, "with a smile on your face"?

Mozart challenges you to understand how the future

2. For further discussion, see Lyndon H. LaRouche, Jr., "The Essential Role of 'Time-Reversal' in Mathematical Economics," page 4, this issue; _____, "On the Subject of Civil and Natural Law," Address to the Labor Day Conference of the Schiller Institute, *The New Federalist,* Sept. 16, 1996 (Vol. X, No. 36).

3. See Lyndon H. LaRouche, Jr., "Norbert Brainin on *Motivführung,*" *Executive Intelligence Review,* Sept. 22, 1995 (Vol. 22, No. 38) (also *Fidelio,* Vol. IV, No. 4, Winter 1995), for discussion of an original contribution to the discovery of this principle of motivic thorough-composition (*Motivführung*) made by Norbert Brainin, first violinist of the legendary Amadeus Quartet.

governs your present actions. For Mozart, as for Plato before him, the relationship of God, Man, and Nature, of cause and effect, is not to be found in a mechanistic notion of "causality." It is not as most people think: that the past orders the present, which in turn determines the future. For, as Lyndon LaRouche recently noted, the truth lies in "the Riemannian conception of the future, which is the Platonic conception of the future: that the future exists outside time—that is, outside time as normally conceived. The future exists in what Plato calls the Good . . . . The Good is a form. The Good is an existence outside of time, but which *affects and determines time.* The Good is something which does not change, in and of itself, as it acts. It rather acts *upon* time."

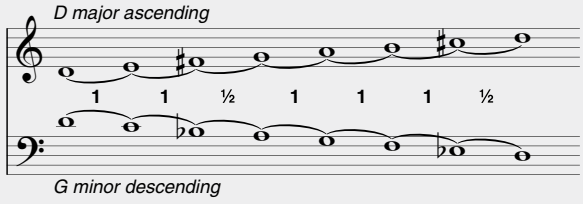
This is Mozart's conception of how the future determines the present, which is essential to understanding the actual ordering of a musical composition.

The Musical Medium

In the musical medium, we are concerned with the question of the transformation of modality, and its relationship to motivic thorough-composition.* If we treat the two as a "one," we find that the modality becomes richer in the densities of singularities.

Modality, therefore, is not a fixed series of frequencies, organized according to some mystic, mechanistic notion of Nature, as Helmholtz, Wagner, and others insist. Rather, it is discoveries made by each great composer concerning the paradoxical nature of the well-tempered system. Each such discovery is equivalent to a new hypothesis, overthrowing the previously accepted hypothesis—the previous modality. What Mozart has done, is to generate, through his discovery of a *new modality,* a new yardstick for measurement. In musical terms, we discover what both LaRouche and Riemann have characterized as a *(n+1)/n* order of change. Therefore, the new modality redefines all the relationships of the intervals, so that the intervals are not fixed distances, but are undergoing a constant process of change. This change, as LaRouche would say, prompted by a "valid axiomatic-revolutionary discovery of principle, also represents elevation to a higher cardinality."

FIGURE 1. *D major generates G minor, by taking the same intervals of the D major ascending scale, and changing their direction.*



Beginning in 1782, Mozart made a fundamental creative leap: the treatment of the major and minor modes as a "One," and not as separate major and minor modes. The "one-ness" of the major and minor, for Mozart, has the following significance. Take the case of the modality of the *Ave verum,* D major-D minor. Think how D major generates G minor, by taking the same intervals of the D major ascending scale, and *changing their direction,* playing the intervals downward, instead of upward, from D [SEE Figure 1]. Such explicit or implicit *changes of directionality* are crucial, both for the discovery of the paradoxes of the "new modality," and for Mozart's development of motivic thorough-composition.

Now, think about all the potentialities that exist in the entire composition—major and minor—as a *One,* and you begin to grasp the higher hypothesis which governs the composition as a whole.

Before proceeding any further, I must strongly encourage readers who are not already familiar with Mozart's *Ave verum,* to become so, before reading on. The full choral and orchestral score [SEE pages 43-45] may be used for reference, but it is no substitute for actually hearing the work in your own imagination, however you might be able to accomplish this. Singing the work in a small group, or singing each of the vocal lines, is highly recommended. If circumstances make this impossible, repeated listening to a passable recording becomes a second-best option.[4]

Now, referring to Figure 2, compare the very last phrase of the work, sung on the words "in mortis examine," with the very opening bars, sung on "Ave, ave." Study, or listen to, these two sections enough, so that each

* "Mode," "modality": Beginning with J.S. Bach's later works, the terms "key" and "modulation" became no longer capable of accurately characterizing the transformations within a Classical musical composition, and must be superseded by a notion of "modality," in which a given mode may contain two or more "keys" simultaneously. J.S. Bach's *A Musical Offering,* for example, develops the modality of C major-C minor.

4. A videotape of the presentation of this paper to the Labor Day Conference of the Schiller Institute, which presentation was assisted by the Schiller Institute chorus under the direction of John Sigerson, is available from the Institute. Note that virtually all commercially available recordings of the work, are flawed from the very outset by their use of the modern, arbitrarily high tuning of A=440 Hz.

FIGURE 2. **Hypothesis E.** *Compare the very last phrase of the work (Hypothesis E), sung on the words "in mortis examine" (a), with the very opening bars (Hypothesis A), sung on "Ave, ave" (b). Note the greater density of Lydian intervals in (a).*

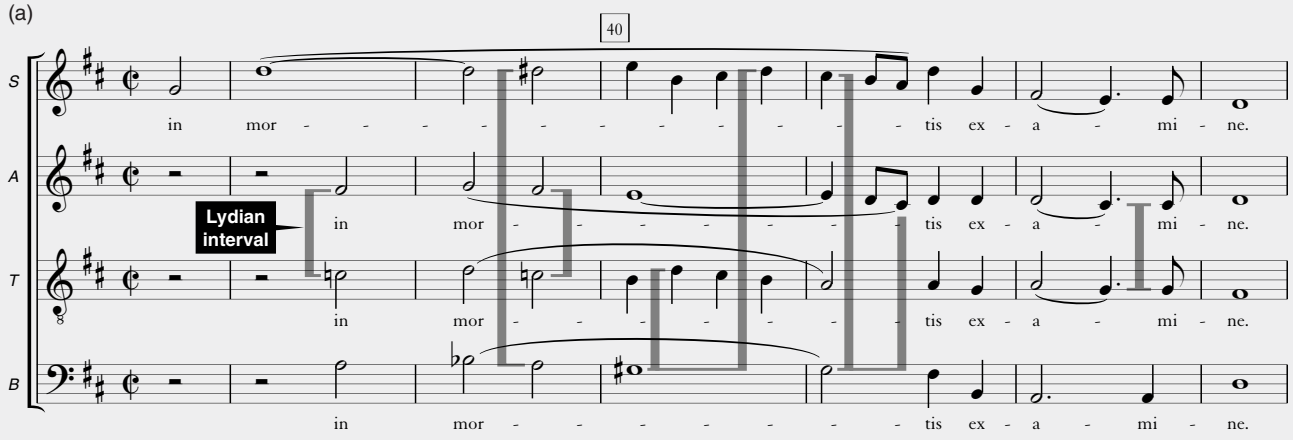
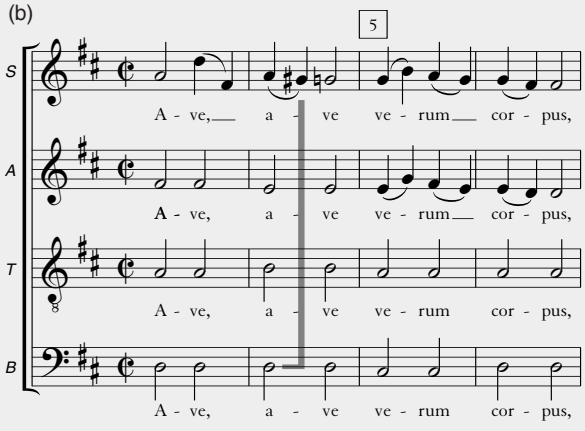


FIGURE 2. *(b)* **Hypothesis A.**



forms a distinct image in your mind. Then, ask yourself, what governs the density of singularities in the "in mortis examine," as compared to the opening "Ave, ave." Do not perform this comparison "analytically," but, rather, "synthetically"; what is crucial here, is the process that governed Mozart's generation of ideas. You will discover that "in mortis examine" is transformed, in relation to the opening "Ave, ave"—it is related, and yet it is different. Ask yourself, what has changed, and, more importantly, *what has ordered that change?*

Clearly, there is a greater density of action, marked by a greater density of Lydian intervals [SEE box]. This change, is the crucial *characteristic* of the composition—a change which Helmholtz, Wagner, and the Romantics deny exists. That is, they would deny that Mozart has here made a deliberate and intelligible creative discovery. Instead, they would claim that, by some *unknowable* means, Mozart has managed to arrange the "in mortis examine" section as a particularly sensually pleasing series of seventh chords and minor thirds—since, for them, the musical medium is reduced to a simple linear continuum.

The question before us, however, is, *What governs the shift which Mozart has made?*

To find the answer, we must consider, in succession, each section of the "Ave verum," in the same way that Plato treats the idea of hypothesis, higher hypothesis, and hypothesizing the higher hypothesis. For example, to begin with, consider the opening interval pairs as a paradox derived from this process. In order to focus us upon the very first interval pair, Mozart departs from the standard Latin text of the poem, by repeating the first word, "Ave," a second time; instead of "Ave verum corpus," Mozart composes "*Ave, ave* verum corpus." In this way, Mozart sets up the opening paradox, which is crucial to the development of motivic thorough-composition.

There is only one other place in the entire composition, where Mozart repeats the text: the concluding line, "in mortis examine"—"the test of death." The second "in mortis examine" is totally *different* than the first. What is Mozart saying about how creativity works, and about how the human mind works? How do you reflect on your life, so that you live your life in order to triumph over death, by being a creative person? That is why Mozart repeats this "in mortis examine" differently.

Now, go back to our first interval pair, on "Ave," which consists of two parts as a "one": the first "Ave" is a leap of a fourth upward, while the second "ave" is a descending line (A-G -G¥) sung by the sopranos, against a sustained D in

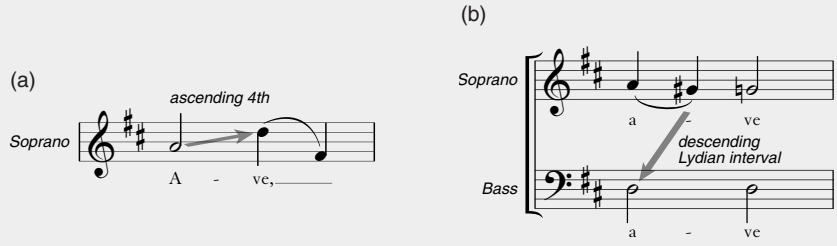


FIGURE 3. *The opening paradox. (a) The first "Ave" is a leap of a fourth upward. (b) The second "ave" is a descending line sung by the sopranos, against a sustained D in the bass vocal line.*

the bass vocal line [SEE Figure 3(a) and (b)].

With this D-G cross interval, Mozart is unfolding something very special: the Lydian interval, our first generation of a singularity. The mechanists, such as Helmholtz, would once again insist that this G be treated as simply a passing tone, a sensually pleasing musical arabesque. After all, they would argue, God created a universe in which all relationships are fixed—all that mankind can do, is arrange and rearrange these relationships according to fixed rules. But this is not Mozart's viewpoint. Within the opening two measures of the chorus, Mozart presents you with a paradox, in the form of the interval pairs—in this case, the fourth upward and the descent into a Lydian interval. It is this *discontinuity,* as discovered by Mozart, which is crucial. It is also crucial, that this discontinuity be *heard* when the piece is performed. That is, one must not perform merely the interval of the fourth or the Lydian, as such; what must be performed, is the interval *between* the intervals: what the great conductor Wilhelm Furtwängler meant, when he once remarked, that one must play, and sing, "between the notes."

The Future Determines the Present

Go back to what I stated earlier about Mozart and Plato's concept of *agapē* and the Good, the *hypothesizing of the higher hypothesis.* This is what governs the metaphor, which takes its form in Mozart's mind, and governs the unfolding of the entire composition. Unfolding in music, is what Plato would call "the becoming." So, it is this *One,* that must prevail, from that pregnant moment just before the performance starts, to the moment after the last sound is heard. But this, in turn, presents us with a fundamental paradox: Whereas the composition must be performed sequentially from beginning to end, in linear time—A, B, C, D, E—it is nevertheless *generated* from the future, to the present. In other words, A does not *generate* the next section B, nor does B generate C; the past does not *generate* the present.

This paradox flies right in the face of the "pit creatures" of the Enlightenment, who claimed that the ordering of ideas occurs only according to a naive sense perception of space, with continuous linear extension and three categories of direction: back-forward, side-to-side, and up-down; time, meanwhile, being extended, in a similar way, from past to future. The failure even to admit the existence of this paradox, is what is wrong with standard music training today, and with anyone who insists that the printed score is the literal statement of the composer's intent. The score is no such thing; it is only a footprint of the metaphor in the composer's mind.

In the *Ave verum,* you have the *One,* Mozart's higher hypothesis, which generates the following five hypotheses:

Hypothesis A:
Ave, ave verum corpus
natum de Maria virgine,

Hypothesis B:
vere passum immolatum
in cruce pro homine.

Hypothesis C:
Cuius latus perforatum
unda fluxit et sanguine,

Hypothesis D:
esto nobis praegustatum
in mortis examine.

Hypothesis E:
in mortis examine.

Let us now sweep through each level of hypothesis. This is not intended to be an analysis of the piece, and I will not go into every detail. The crucial point, is to put yourself into Mozart's own mind, discover his discovery, and to think about how you can recreate those ideas. Note, in the case of each new hypothesis, the change or transformation of the original interval pairs, the crucial changes in the vocal registration, and the increased densities of singularities.

I start with the end, before the beginning, as did Mozart: **Hypothesis E,** "in mortis examine"—"the test of death." It is the underlying discovery of this hypothesis, as generated from Mozart's unspoken higher hypothesis, and his *hypothesizing the higher hypothesis,* which governs the entire composition. Throughout this discussion, remember, as you sing or listen, that this is the question

of "the test of death."

Compare, once again, "in mortis examine" with the opening "Ave, ave." I think you can hear that there is more tension in the "in mortis examine," a more concentrated rate of change, than in the opening "Ave." The two levels of hypothesis are related, but there is difference. Once again, this *difference* is precisely what must guide the performer, when he performs the opening.

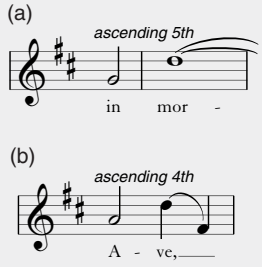
First, let us take the bass vocal line in Hypothesis E. Mozart has generated this phrase as a transformed series of singularities—a combination of the opening descending line, and the play of the one-ness of major and minor. Sing, in alternation, this bass line, and then the opening "Ave, ave" soprano line [Figure 2].

Mozart sets up our new paradox by composing the other voices, unfolding his discovery of the Lydian and major-minor, as generated by his *new modality.* Think, for example, of Mozart's transformation of the soprano line, leaping a fifth upward on "in mor-," as an inversion of the ascending fourth in the sopranos' opening "Ave" [SEE Figure 4]. Combine this transformation of the fourth and fifth, with the inversion of the bass voice, and you will discover how Mozart generates every singularity of the piece, now transformed.

Now, put all four voices together. Think about why all this development occurs on the idea of "mortis"—"death," remembering what I said at the beginning, that Mozart is posing to you the question, Can you live a creative life? Can you make such transformations for all of mankind?

In putting all four voices together, as the sopranos sing a sustained D on "mor-," the tenors and altos enter, with a Lydian interval between them, on "in." Then, with the sopranos still sustaining their D, and the other voices now joining the sopranos on "mor-" of "mortis," Mozart touches upon the G minor mode; only then, to create yet another Lydian series (in fact, double Lydian*) between all four voices. Still on "mor-," he continues, forming successive

FIGURE 4. **Hypothesis E.** *Mozart's transformation of the soprano line, leaping a fifth upward on "in mor-" (a), as an inversion of the ascending fourth in the soprano opening "Ave" (b).*



Lydian intervals between the basses and tenors, and then between the basses and sopranos, until the "-tis" of "mortis."

So, here you have, within a few short measures, the unfolding of the *new modality*—of Mozart's discovery, a discovery which is made only in Mozart's mind. Mozart drives the tension throughout this section, and, on the final "examine," brings all the voices into their first register—as audience and performers reflect on the "test of death."

The entire Hypothesis E is exactly like a couplet at the end of a poem by Shakespeare or Schiller: a transformation of hypothesis. What has been unfolded previously, in other hypotheses, is now a higher order in only a few short measures.

With Hypothesis E in mind, go back to the beginning of the composition, to **Hypothesis A,** which is governed by one completed idea. In singing or listening through Hypothesis A, keep in mind the original interval pair through which Mozart has presented his paradox—a paradox that is governed by Mozart's higher hypothesis, as generated from his hypothesizing of the higher hypothesis.

Now, let us consider **Hypothesis B,** "vere passum." Familiarize yourself with this section [SEE Figure 5(a)], so

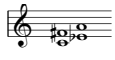
* I.e., that it 

FIGURE 5. *(a)* **Hypothesis B***, "vere passum."*

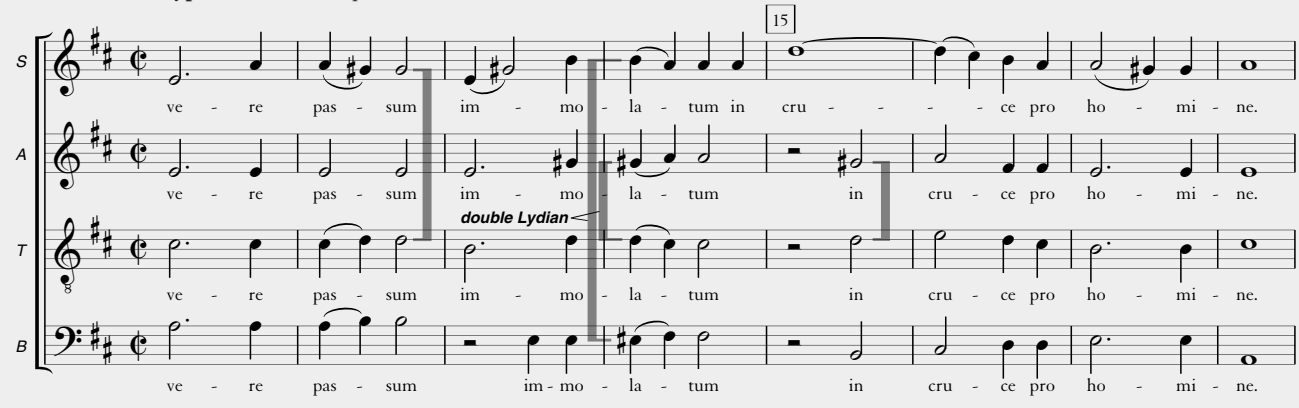


FIGURE 5. *(b)* **Hypothesis B.** *Entrance of the basses is an inversion of the sopranos' original second "ave."*

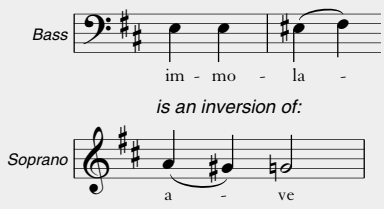
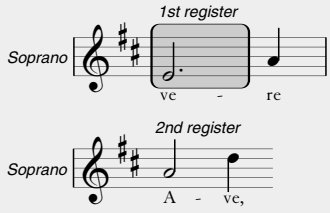


FIGURE 5. *(c)* **Hypothesis B.** *Shift in soprano voice register, compared to opening "Ave."*



is firmly in mind, and then mentally re-perform the entire composition from the beginning, up through this section. While you might recognize some similarity between the opening interval pairs of Hypothesis B and Hypothesis A, they are quite different. Hypothesis B is of a higher order than A; B involves greater rates of change, and a greater density of singularities. It is both the unspoken metaphor and the transformations between B and A, that must govern the performance at this point.[5] While you are singing A to B, it is actually the higher-order mental process which is governing the unfolding of the composition, and generating the creative tension in the performance.

Let us look at Hypothesis B more closely, and see what is different about it. First of all, Mozart takes his first singularity, of the Lydian interval, and subjects it to a process of development. You find this in the interplay between all four voices. Throughout the voicing of "immolatum," Mozart increases the rate of the singularities, first on the "-mo-" between the tenor and alto, singing D and G respectively, followed by a double Lydian interval on the syllable "-la-," the first between the bass and soprano lines, and the second between tenors and altos. This interplay, which creates the intensity of "immolatum," requires that the performers achieve a maximum of vocal transparency, so that the listener does not hear the music "vertically," as a "diminished chord" and so forth, but, rather, dialectically, as a Platonic dialogue among the individual voices.

Mozart increases the intensity further by offsetting the entrance of the basses, on E-E -F , which you can now easily recognize as an inversion of the sopranos' original second "ave," A-G -G¥ [SEE Figure 5(b)]. But once again, even though the notes seem similar, we have a totally transformed idea here, governed by a different level of hypothesis.

Mozart doesn't allow you to stop, but drives the idea still further, with the sopranos entering for the first time alone, on "in cruce"—"on the cross, on behalf of man." Here, Mozart brings together the paradox of the opening in the most concentrated transformation up to this point. We have the rising fourth (our original interval pair) in the soprano voice, while the three other voices play upon the paradox of the Lydian interval, such as between the tenors and altos on "in."

To complete this hypothesis, it is important to note the crucial role that the natural registration of the human singing voice plays among all the voices as the modality unfolds.[6] Take the opening of this hypothesis, on the words "vere passum." Mozart starts the sopranos in their first, "chest" register, then leaps upward a fourth, just as in the opening statement; but this time, there is a clearly-defined shift in tone-quality and shaping between the first and second notes. This shift in voice register creates a changed idea [SEE Figure 5(c)].

Hypothesis C, "Cuius latus perforatum unda fluxit et sanguine," is related to, but, again, different from the opening idea. Now you have an even greater rate of change. And once again, I must remind you that Hypothesis C is of a higher order than Hypotheses B and A. Hypothesis C is generated by Mozart's higher hypothesis, not by A or B. And it is this difference which must be heard.

Familiarize yourself with this section, and then mentally compare its intensity with that of Hypothesis A, "Ave, ave" [SEE Figure 6(a)]. From the standpoint of

5. For further discussion of the principle of metaphor, see the following works by Lyndon H. LaRouche, Jr.: "Mozart's 1782-1786 Revolution in Music," *Fidelio,* Vol. I, No. 4, Winter 1992; "On the Subject of Metaphor," *Fidelio,* Vol. I, No. 3, Fall 1992; "That Which Underlies Motivic Thorough-Composition," *Executive Intelligence Review,* Sept. 1, 1995 (Vol. 22, No. 35); *The Blunder in U.S. National Security Policy* (Leesburg, Virginia: Committee to Reverse the Accelerating Global Economic and Strategic Crisis: A LaRouche Exploratory Committee, November 1995).

6. See *A Manual on the Rudiments of Tuning and Registration,* Book I, ed. by John Sigerson and Kathy Wolfe (Washington, D.C.: Schiller Institute, 1992).

FIGURE 6. *(a)* **Hypothesis C,** *"Cuius latus."*

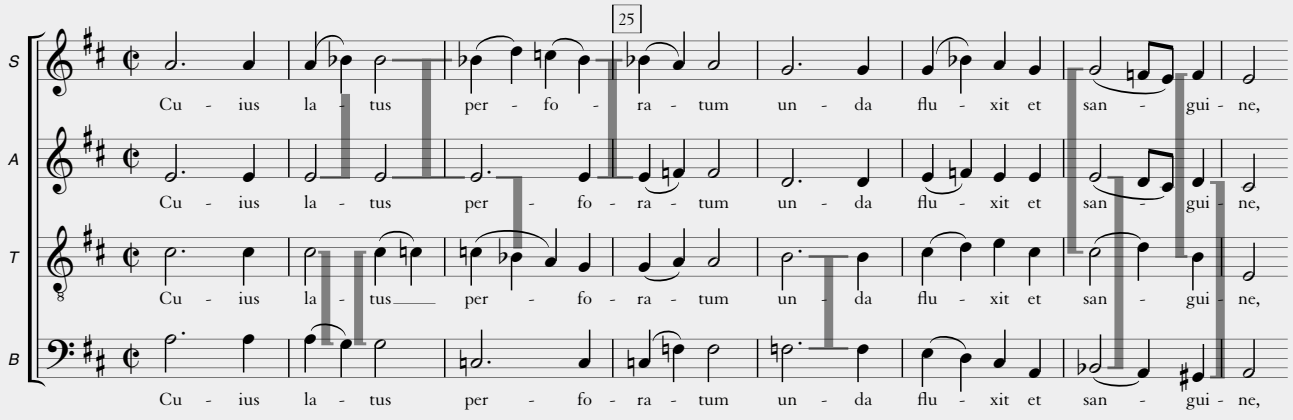
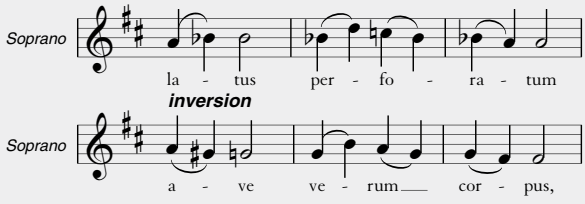


FIGURE 6. *(b)* **Hypothesis C.** *Soprano "Cuius latus perforatum," is a minor inversion of the major "Ave, ave verum corpus" of Hypothesis A.*

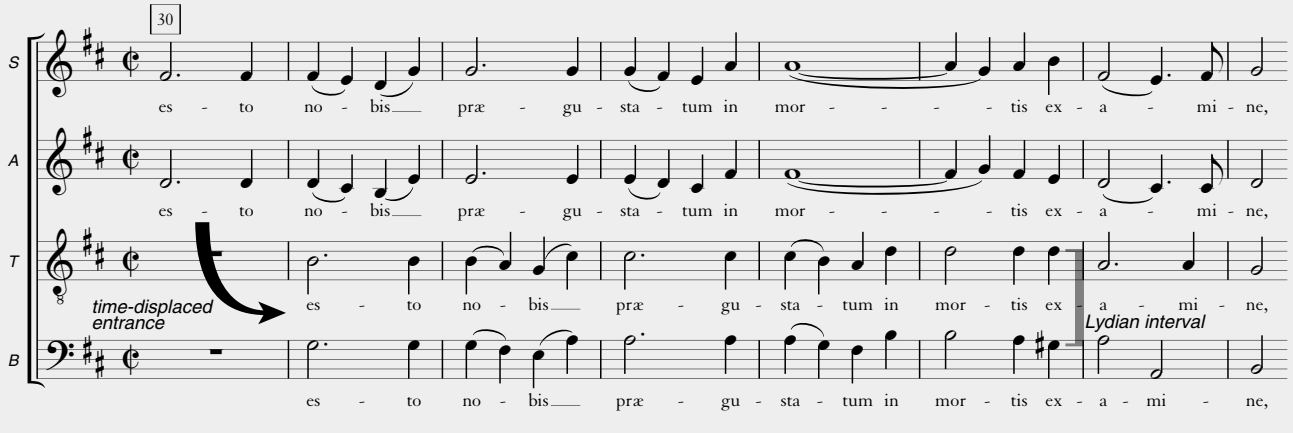


Mozart's discovery in modality, you have more singularities *per* interval of action. Note the play between the major, the minor, and the Lydian. Think about the unspoken "higher hypothesis" which generated this hypothesis, and how this governs the unfolding of this hypothesis. Take, first, the Lydian interval on "-tus" of "latus" between the bass and tenor voices; second, the Lydian interval between basses and tenors on "un-" of "unda"; and third, the double Lydian interval on "san-" of "sanguine" among all four voices.

On another level of change, Mozart starts this section with a direction-reversal of the sopranos' second opening "ave." Sing the two soprano lines, "cuius latus perforatum" and "Ave, ave verum corpus," while keeping the other voices in mind. What do you hear as the difference? The "cuius latus" is the minor inversion of the major [SEE Figure 6(b)]. What Mozart is developing in his third hypothesis, is a play between the major, minor, and Lydian—a *new modality.* And thus, when you put the four voices together, something entirely new has occurred, which is not in any of the notes or intervals themselves, but is generated from Mozart's discovery, his metaphor, his "higher hypothesis."

Proceed now to **Hypothesis D,** "Esto nobis" [SEE Figure 7]. Once again, fix this section in your mind, and then

FIGURE 7. **Hypothesis D***, "Esto nobis."*



sing, or imagine, the entire piece up to this point, keeping in mind the differences in each of the successive sections, and their relation to each other and to the unspoken *One,* the higher hypothesis. Compare the opening of Hypothesis D, to the both Hypothesis C, and to the "Ave, ave" of Hypothesis A.

Mozart has again increased the rate of action, including, for the first time, his introduction of voice pairs entering in time displacement, as in a canon. The rising fourth as sung by the soprano voice in the opening "Ave," has been subsumed by the canonical entrances across the voice pairs, such that the tenors and basses enter an inverted fourth (i.e., a fifth) lower than the sopranos and altos. Note the transformations in the unfolding of the phrase beginning with "esto," through the "examine"—the test of death. It is on the "ex-" of "examine," that Mozart places the Lydian—a subtlety which cannot be glossed over in performance. Mozart is challenging the listener and performer, to look inside themselves and ask the question: *Have you lived your life, such that you have triumphed over death? Have you lived a creative life, and done something crucial for all mankind?* Thus, Hypothesis D subsumes all that is come before, and, like each hypothesis previously, it is generated by the higher hypothesis which is never explicitly stated.

From this standpoint, now turn back to to Hypothesis E, the final "in mortis examine."

* * *

Like all great writers of tragedy, Mozart has made *change*—and you, his listener—the subject of his discussion. And, like Plato, Mozart, through the *Ave verum,* has unfolded the discovery of musical memory.

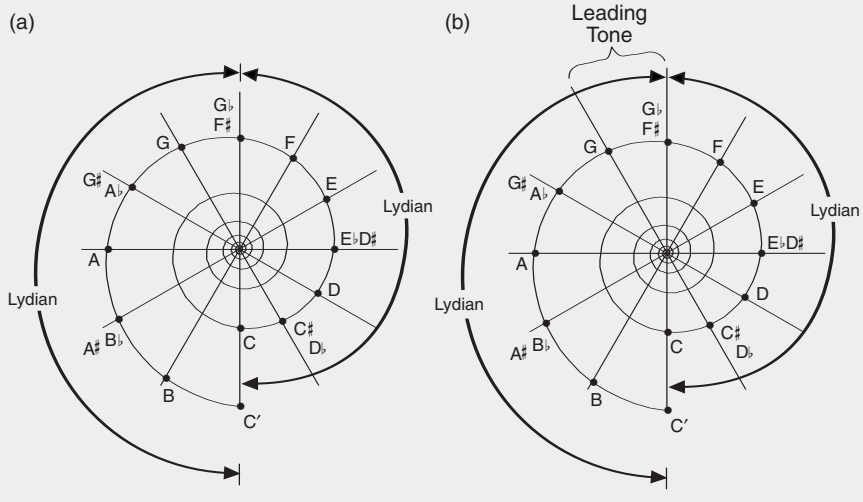
Listen to the entire *Ave verum.* Let us take our lesson from Mozart. With it, we shall win the battle for every child in every nation, for many generations.

The Lydian Interval

A singularity of great importance, the "Lydian" interval is the interval which divides the octave exactly in half. It is often misnamed the "devil's" interval, or tritone. From the standpoint of the diatonic scale in itself, it is also popularly described as an augmented fourth or diminished fifth.

The Lydian is the only interval which cannot be generated by the principle of inversion or complementary intervals within any given mode. This interval uniquely divides the octave exactly in half: that is, the interval from the tonic to the Lydian tone is the same amount of change as the interval from the Lydian tone to the octave. In the mode of C major/minor, for example, this corresponds to the interval between C and F , which also corresponds to the physical singularity of the register breaks in the soprano and tenor singing voice [figure (a)].

In the major/minor mode, the Lydian interval is a dissonance with respect to any given mode. For example, in the mode of C major/minor, the interval C-F is such a dissonance. Yet, this Lydian interval has the unique property of being a pathway from one mode to the next, by way of the leading tone of that next mode (F - G in the mode of G major/G minor) [figure (b)].

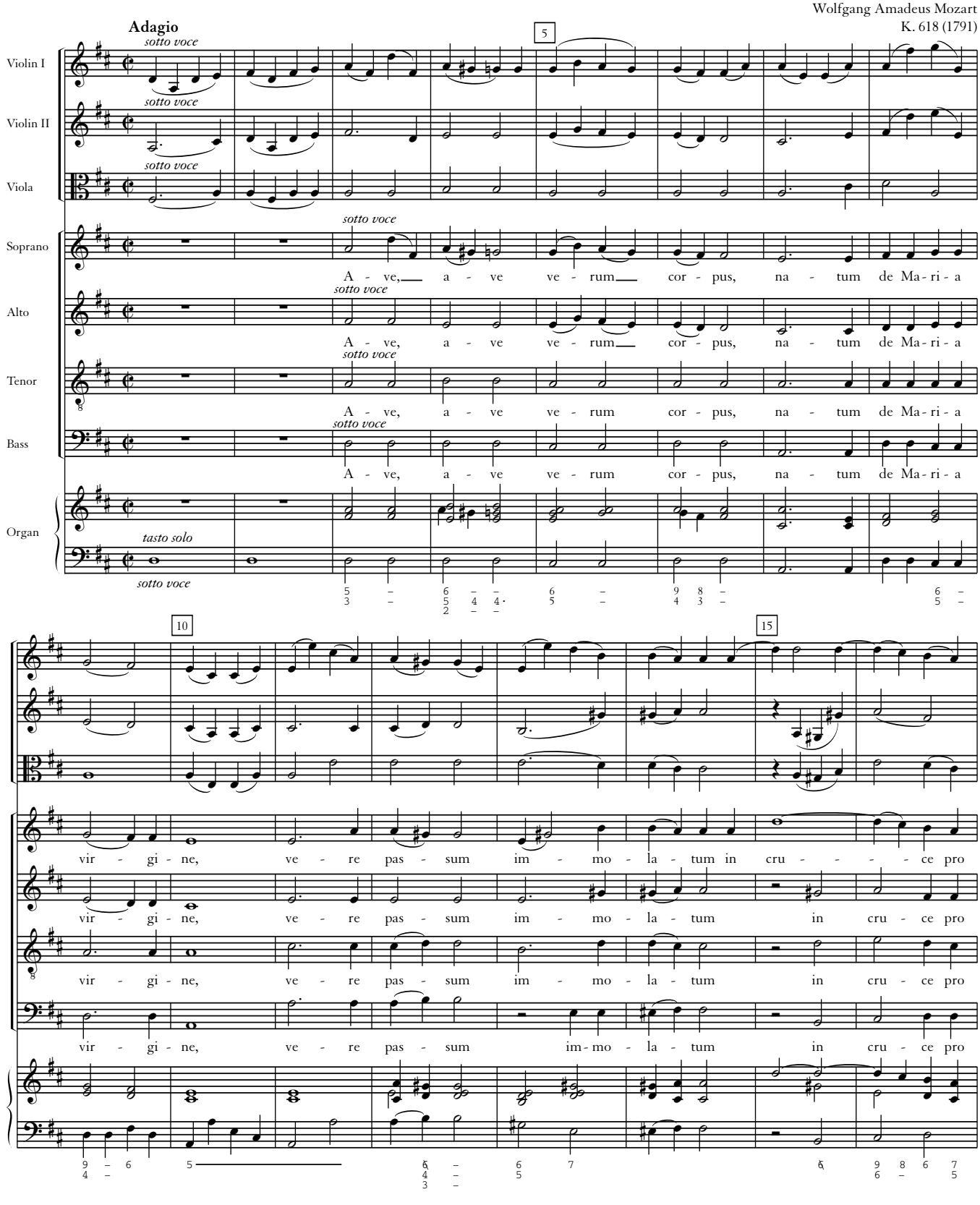


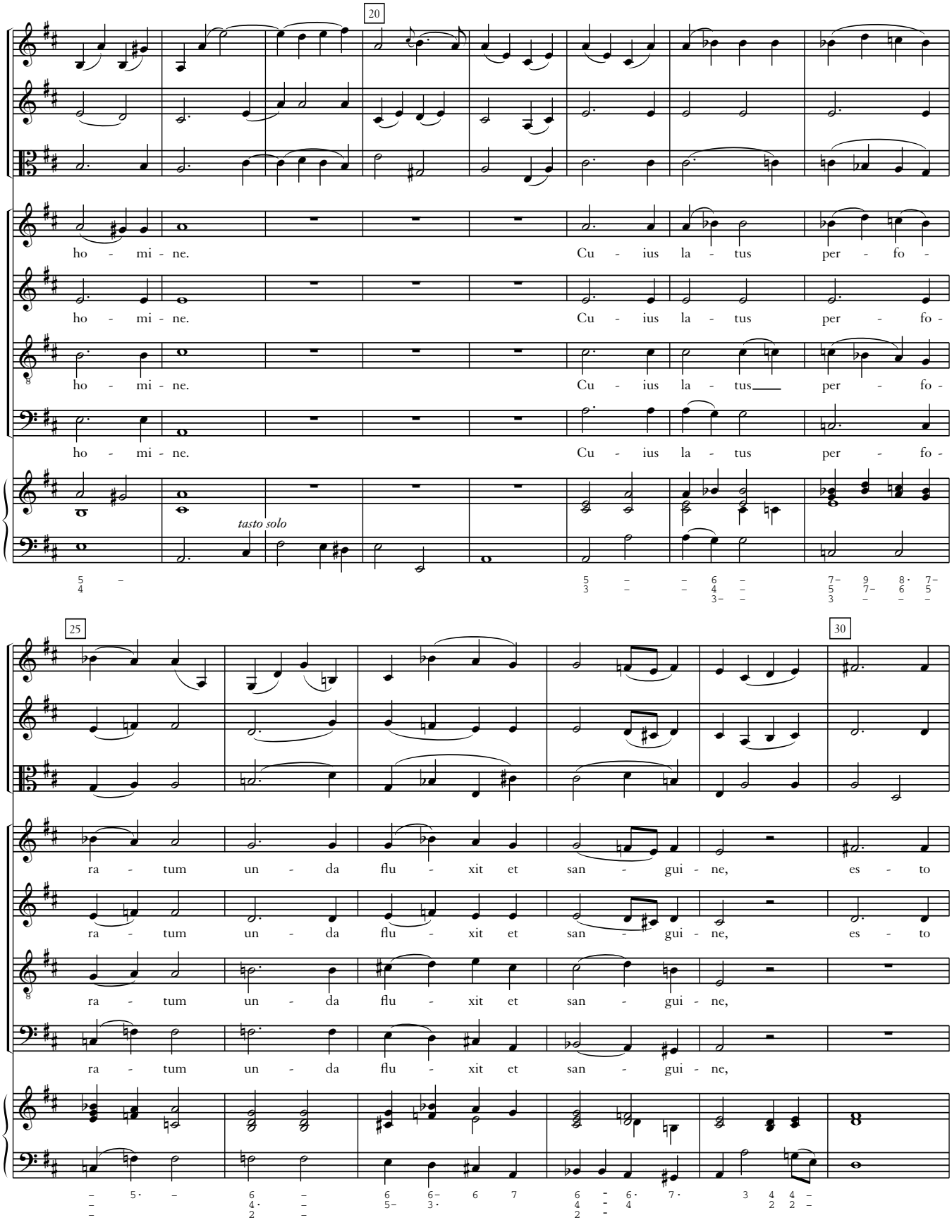
—Bruce Director,
"What Mathematics Can
Learn from Classical Music"
Fidelio, Winter 1994 (Vol. III, No. 4)

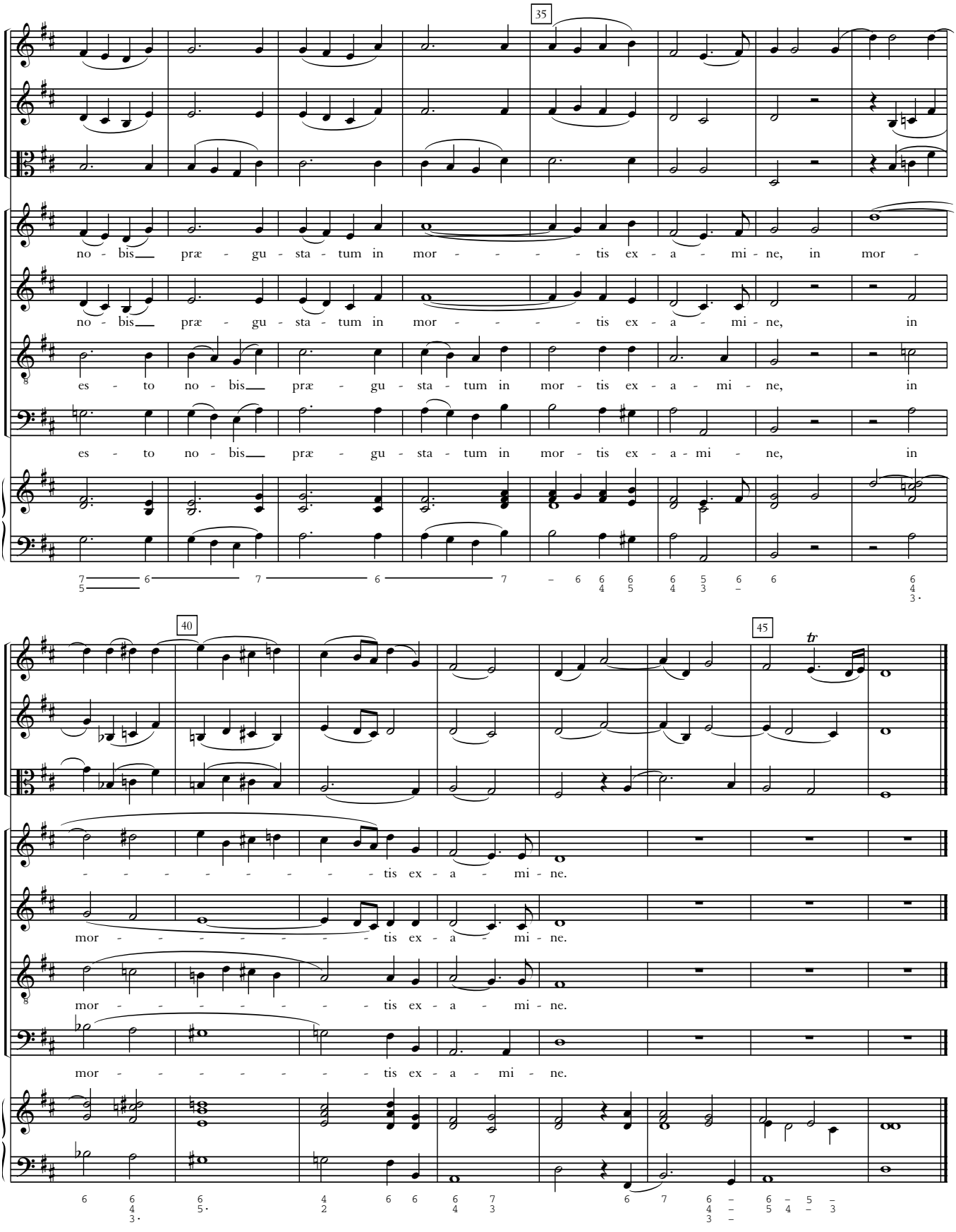
Ave verum corpus

Motet for SATB, Strings, and Organ

Wolfgang Amadeus Mozart
K. 618 (1791)




20
ho - mi - ne.
Cu - ius la - tus per - fo -
ho - mi - ne.
Cu - ius la - tus per - fo -
ho - mi - ne.
Cu - ius la - tus per - fo -
ho - mi - ne.
Cu - ius la - tus per - fo -
tasto solo
25
30
ra - tum un - da flu - xit et san - gui - ne, es - to
ra - tum un - da flu - xit et san - gui - ne, es - to
ra - tum un - da flu - xit et san - gui - ne,
ra - tum un - da flu - xit et san - gui - ne,


35
no - bis__ præ - gu - sta - tum in mor - - - - - tis ex - a - mi - ne, in mor -
no - bis__ præ - gu - sta - tum in mor - - - - - tis ex - a - mi - ne, in
es - to no - bis__ præ - gu - sta - tum in mor - tis ex - a - mi - ne, in
es - to no - bis__ præ - gu - sta - tum in mor - tis ex - a - mi - ne, in
40
45
tr
- - - - - - - - - tis ex - a - mi - ne.
mor - - - - - - - - - tis ex - a - mi - ne.
mor - - - - - - - - - tis ex - a - mi - ne.
mor - - - - - - - - - tis ex - a - mi - ne.

The Invention of Perspective

Thoughts on how the science of perspective came into being

by Karel Vereycken

The invention of perspective was a giant step for mankind, through which humanity greatly increased its mastery over nature. Lost for centuries and rediscovered only in the Renaissance, when an explosion of genius gave it accelerated development, this science was the result of protracted effort, and involved a great many superseding hypotheses. Here, we review the outlines of this historic debate.

Before considering the technical notions pertaining to constructing images in perspective, let us first look at some elementary issues.

First: How is it that that marvel, the human eye, allows that miracle known as sight, to occur? What feat is it, that enables us to grasp the complexity of the world around us?

That answered, we shall examine with a suitable degree of suspicion, different representational systems, before discarding them.

Rather like learning to swim, there is no way around an initial feeling of unease. To avoid going under, you must not be too heavy, nor thrash around too much—because here you are your own lifeguard. Eschewing the formal logical presentation of yet another theory, we prefer to set up paradoxes, which are designed to afford points of reference to the novice, while spurring on those who have some grasp of the subject.

Rethinking Vision

Despite a bold effort by some neurophysiologists over the last decade, the phenomenon of sight, as engraved in collective consciousness, is generally thought of as being roughly similar to a *camera obscura,* or dark room [SEE Figure 1]. The brain is imagined to be a sort of huge computer hooked up to a hyper-sensitive camera: each time there arises a stimulus to the cones (color reactive) and rods (depth reactive) of the retina (from the Latin word for network, *rete*), there is a corresponding stimulation of a point on the visual projection area of the cortex. Known as the *internal screen theory,* according to which the brain would be a kind of movie theatre, it contends that, *first,* outside images are projected by our organs of sight onto an internal screen, and only *afterwards,* are they interpreted by our consciousness. Such a theory reflects, predictably, the philosophical dualism of Aristotle, Descartes, and Newton: man, the "mind-subject," objectively interprets the "matter-object," or world. Were this mechanistic view shown to be correct, we should shortly be able to put together machines better able to see than any man, and creative computers, better able to think than any scientist.

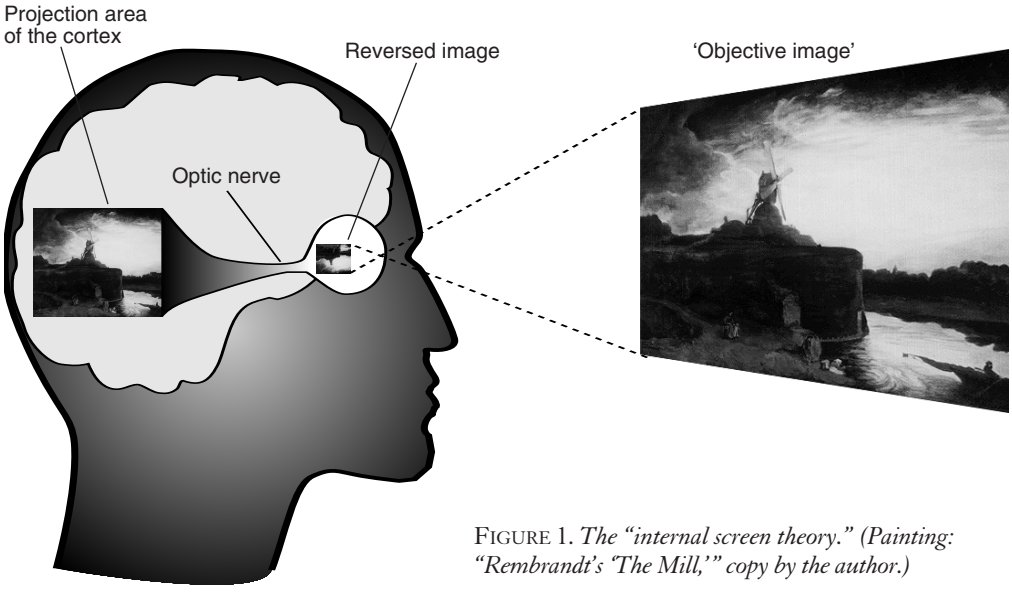
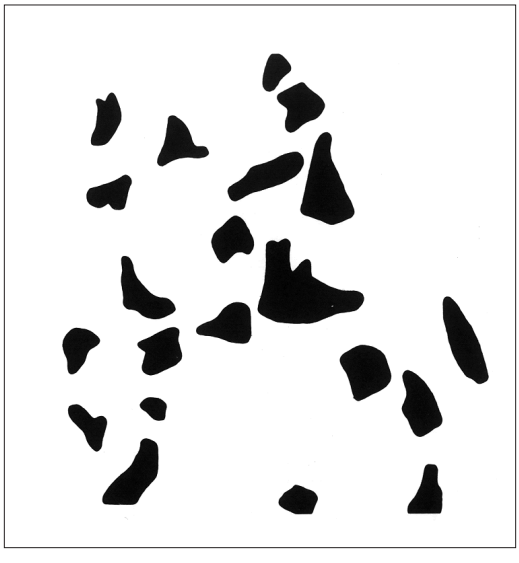


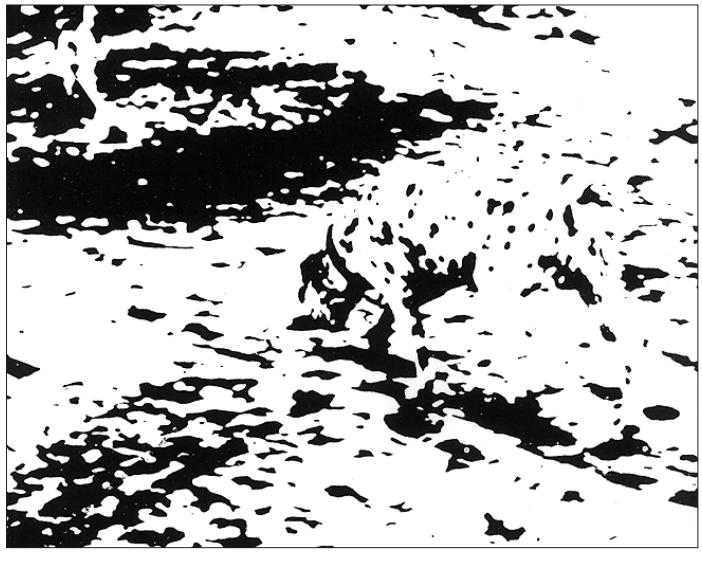
FIGURE 1. *The "internal screen theory." (Painting: "Rembrandt's 'The Mill,'" copy by the author.)*

Although it is of some use as a heuristic model, the "camera obscura" theory is, nevertheless, a gross simplification; a detour past images sometimes called *optical illusions* will uncover its fallacious side. These optical illusions are intended to shatter our belief in the objective nature of "photographic perceptions," and to raise the veil shading the true character of the function of sight. How curious, to see that you may not be seeing what you see, if you see what I wish you to see . . . .

Study of the two images in Figure 2 shows that the act of seeing calls for some sort of intellectual grasp of *what* is seen. Once we have established what the image means, we cannot put that meaning out of mind. As soon as the Dalmatian's spots and the horseman's parts have become "blindingly" obvious, these images never again appear to us as a collection of black spots lacking rhyme or reason. The puzzle having once been solved, the image of the puzzle as a whole reveals itself to the mind's eye in each and every one of its pieces. In other words, seeing is an act of man's will, utterly different from the action of the camera, which does not see, but merely records. Sight, it turns out, is, in fact, a complex function, having to do

FIGURE 2. *Optical illusions. The eye seeks to make sense of these spots straightaway. Once the meaning has been found, it cannot be "unlearned."*





with how one finds things out, how one conquers new areas of thought; it is an act of cognition. It is worth noting here, that in the human embryo, the eyes and the brain develop out of one single original unit.

We have said that, unlike the camera, the organs of sight are not "objective." This point is well made by the famous case of Dr. P., as reported by the celebrated neurologist Oliver Sacks in his account, *The Man Who Mistook His Wife for a Hat*. A patient of Sacks, Dr. P., suffered from a disorder affecting the brain's visual zones. When, for instance, Dr. Sacks showed Dr. P. a glove, the latter identified the glove as a continuous surface with five outgrowths which seemed to him to be a kind of receptacle. Thus, the patient saw the details (the Many), but not the image in its entirety (the One). Dr. Sacks concludes: "Visually, he was lost in a world of inert abstractions. Clearly, he had quite lost contact with the real visual world, in the same way that he no longer possessed, so to speak, a *visual self*. Doctor P. operated as though he had become a machine. Not only was he as indifferent as a computer might be towards the visual world, but, more striking still, he broke the world down into parts as a computer does . . . . He was clearly unable to come to any cognitive judgment . . . ." [translated from the French edition—KV]

Dr. Sacks further reported that Dr. P., an amateur painter, had moved away from figurative to abstract painting precisely *because* of his pathology.

From the preceding, it is apparent, that were the visual function nothing but a rush of details travelling through our field of perception, man would never have survived as man, but would have rather vegetated, in the manner of someone hallucinating, the prey to images wandering in free association through his mind.

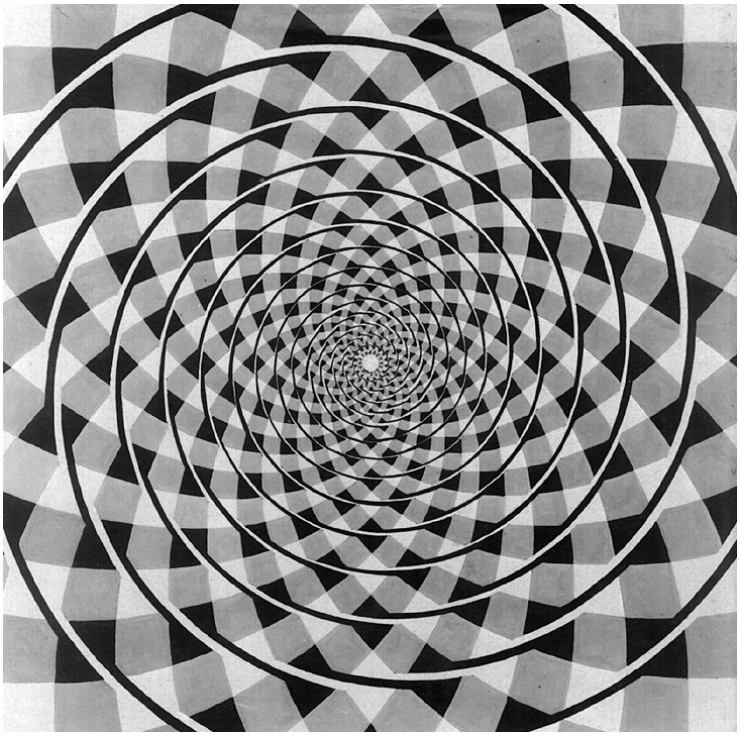
But what is it, that we do see? Is it mind or matter, rest or motion; or, is it something else?

In the Fifth Book of *The Republic,* Plato's *Myth of the Cave* raises the issue in this way: Prisoners held in a cave, in chains, are made to bend their gaze to a wall upon which shadows are cast. Are these shades the *All* of reality? To the prisoners, to whom the shades are objects in themselves, it is so. If one were to get free of the cave and come out into the light of day, dazed and blinded, his first and only impulse would be to flee back to *familiar reality,* back to the shadow-objects cast upon the wall. But, should he once become accustomed to the light, the idea may occur to him that *behind* the shades, there is a reality, revealed and made intelligible, in part, by enlightened interpretation of simple perception.

The prisoners' chains stand for the limitations of our senses, the which lead us to confuse the *perception* of an object with its *reality*. Subjective beings as we are, we have no access to the objective reality of a thing; it is only by the force of reason, that we are taken beyond our limits, on toward the *truth* of a thing, that is, its *idea*.

In "Fraser's spiral," to our surprise, we find that, although it is spiral action which dominates what we see in this image, we are dealing, in point of fact, with concentric circles! [SEE Figure 3] The illusion of the spiral is so powerful, that even if you

FIGURE 3. *"Fraser's Spiral."*



Reprinted from John P. Frisby, *Seeing* (1979), permission of Oxford University Press.

trace along the circles with your finger, the illusion may yet pull you into its orbit—there, where a computer would "see" nothing but concentric circles. A computer could never "perceive" the idea of spiral motion, which motion is nonetheless quite real.

So far, we have shown that man sees much more than "forms" dotted about the landscape. It would appear that sight obeys the principle of least action—(how the least possible effort may be applied to produce the greatest possible quantity of work), a principle that occurs everywhere in the spatial ordering of organic growth, and in the geometrical organization of technologies applied by man. We are led by the higher functions of mind directly to the essential, i.e., to see Transformation, Action, and even *potential* Action: in the matter of vision, essence precedes existence. The mind, conforming in this with the laws of the universe, is directed entirely toward grasping the primacy of processes of transformation, whether they be actual or potential; processes, where mind and matter are as one. Witness, the stairs in the drawing "Ascending and Descending" by M.C. Escher [SEE Figure 4]. Men are clearly to be seen going up and down steps; the fact that they always come back to the same starting point does not disturb us overmuch! A trick with the perspective makes the building's fake geometry seem perfectly plausible, because that geometry breathes action, which takes over the entire image. Thus, the idea of action is so overpowering, that it can even lead us into error.

Why Perspective?

Once it has been understood that to *see* means to make *intelligible,* it must needs follow that to *depict* a thing, means to *make others see;* in other words, to make it intelligible to one's fellow men. Drawing is first and foremost a *language,* or, if you will, several languages. Indeed, an architect will not use the same terms with his builders, as with those who are to live in the house.

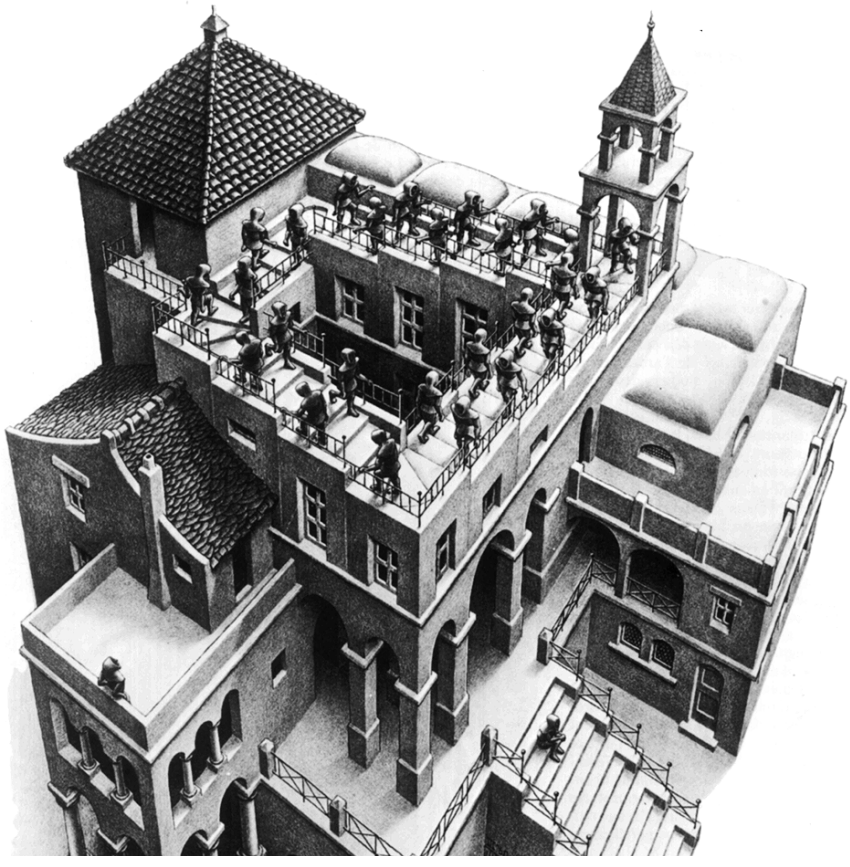


FIGURE 4. *M.C. Escher, "Ascending and Descending," (detail).*

The contractor and the builders will be given detailed blueprints with all they need to know to put up the house: its various dimensions, each of the materials to be used and, so on. Whereas, those who will live there, will be shown a glowing perspective, so that they may admire the depth of the living room, or the cunning spiral staircase. With his builders, the architect refers to the *object;* with his clients, to the *idea.*

In order that we may communicate those elements needed to build a three-dimensional object, recourse is had to projective geometry, which involves both isometry and the notion of scale. Projective geometry emerged from a process begun in Paleolithic times, when man realized he could project onto a cave wall, in outline, that best of all tools: his own hand [SEE Figure 5].

Over thousands of years, countless experiments led to the breakthroughs made by the engineer-architects of the Ecole Polytechnique, Gaspard Monge and

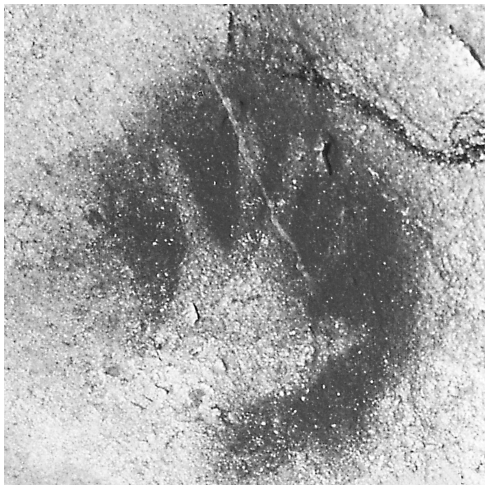


FIGURE 5. *Silhouette of human hand, Grotte Chauvet, France, c.35,000 B.C.*

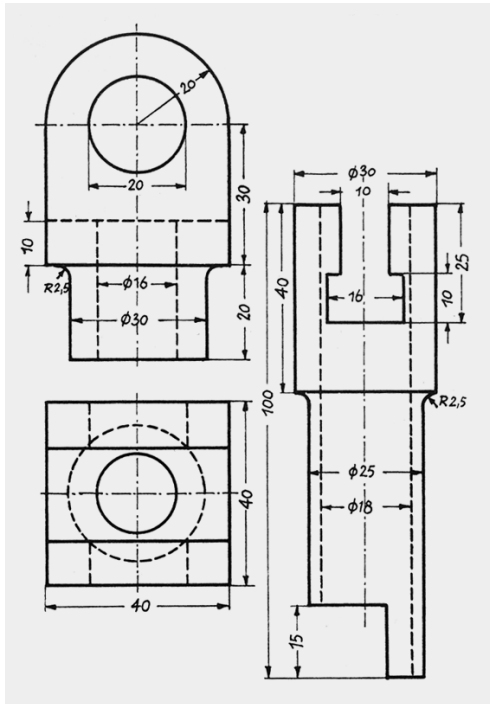
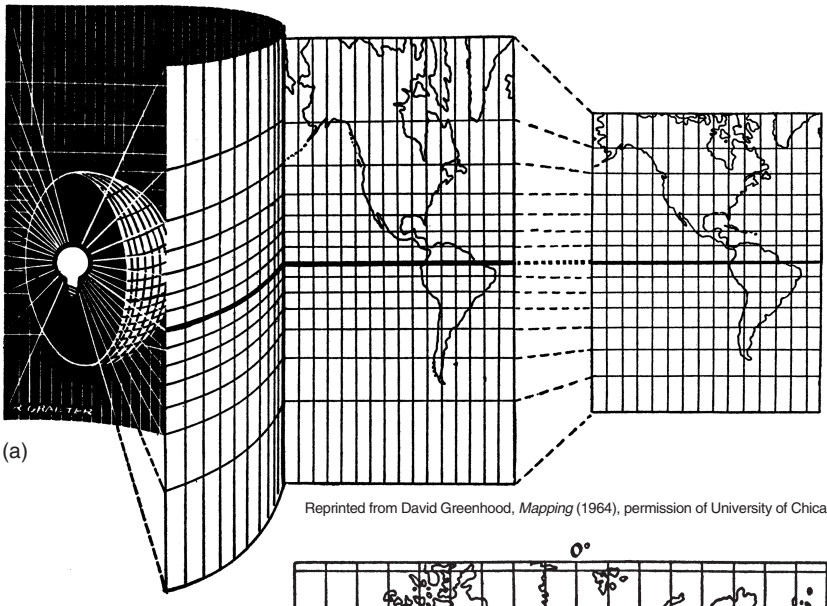


FIGURE 6. *Without projective geometry, there would have been no industrial revolution. Once it became feasible to represent an object on a plane surface, and to specify its material constraints, productivity in the economy surged upwards.*

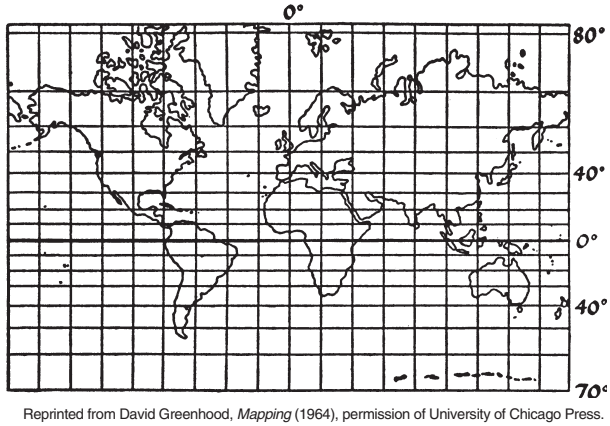
Jean-Victor Poncelet; experiments carried out by figures such as the cathedral builder Villard de Honnecourt; then in the Renaissance by Paolo Uccello, Francesco di Giorgio, Leonardo da Vinci, and Piero della Francesca, among others; and down through Gérard Desargues and Blaise Pascal in more modern times.

Owing to the development of projective geometry, there was no longer any need for wooden models to build artillery pieces and machine-tools; thenceforth, they were built straight from drawings. The new intellectual instrument made it possible to ensure that a given construction could be built over and over to the same identical specifications; by opening the way to mass production, projective geometry took mankind from the age of craftsmanship, to the age of industry. *It was not the Renaissance that created "perspective," but perspective as a science that gave rebirth to civilization.* Its consequences were so far-reaching, that in France, until the Revolution, the new geometry was jealously guarded as a military secret; it was to become the key-

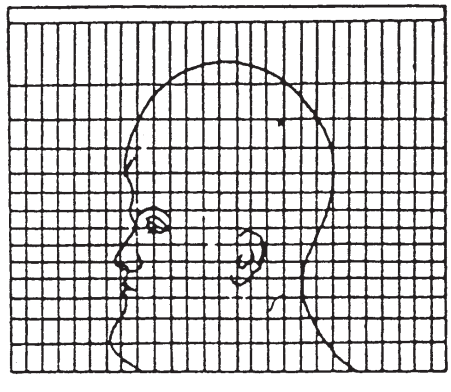


(a)

Reprinted from David Greenhood, *Mapping* (1964), permission of University of Chicago Press.



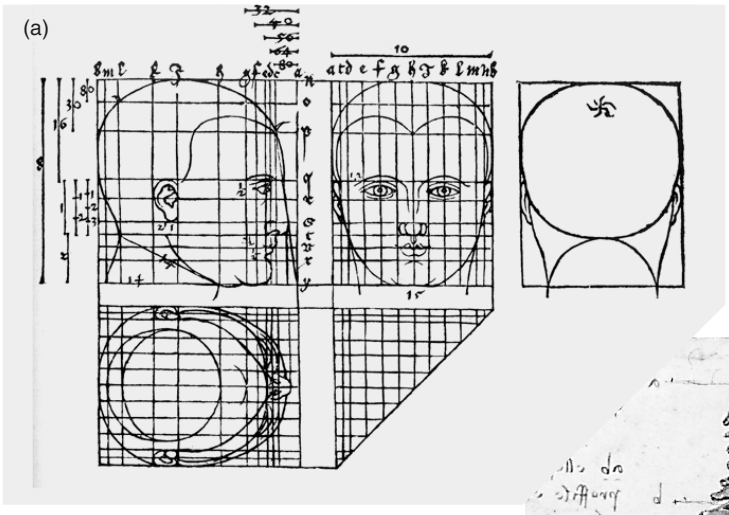
(b)

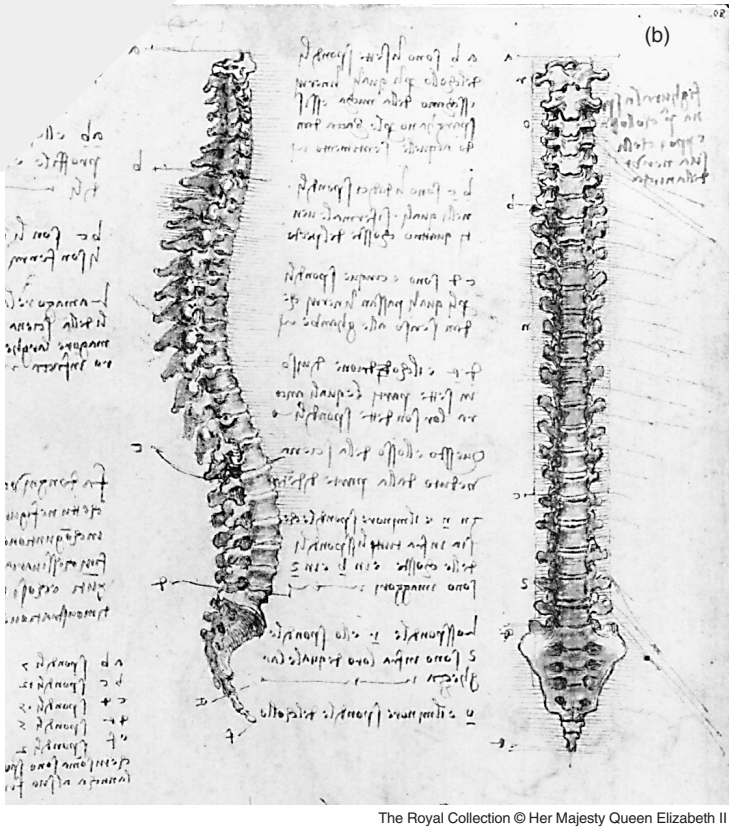


(c)

FIGURE 7. *(a) Mercator projection. (b) We are used to this map, but it is distorted. (c) Human head drawn according to the Mercator projection shows how the proportions are deformed.*

Reprinted from David Greenhood, *Mapping* (1964), permission of University of Chicago Press.





The Royal Collection © Her Majesty Queen Elizabeth II

FIGURE 8. *(a) An example of Dürer's work on the measurements of the human body (1512). (b) Leonardo, who had quite another approach, had realised through careful study of the skeleton and muscles that one cannot understand living processes merely by measuring their external forms. ("Two studies of the spine," Windsor, RL19007v, detail)*

stone of the curriculum of the first Ecole Polytechnique [SEE Figure 6].

Although descriptive geometry did markedly increase the power of man over nature, it has limits one cannot ignore. The first to run up against them were the cartographers. For, although when a cube is projected onto a plane surface, nothing is altered in its essential characteristics, this is not the case with a sphere. This brings up the vexed question of the squaring of the circle, the issue dealt with by Cardinal Nicolaus of Cusa, himself an expert cartographer. Cusa showed it to be *ontologically* impossible that a true circle should ever be drawn by the procedure of adding ever more sides to an inscribed polygon.

To the demand for a cartographic topology suited to navigation, Gerhard Kremer, generally known as "Mercator" (1512-1594), responded with a projection. When the surface of a sphere is projected onto an imaginary cylinder, which is then unrolled, a map may be drawn which preserves the angular relations [SEE Figure 7]. This latter property is essential to navigation. Of course, in Mercator's projection, the continents' true relative proportions are quite distorted, increasingly so toward the Earth's poles. The latter, which were points upon the sphere, become lines on the plane surface. Thus, the sphere reveals that there is a peculiar quality to three-dimensional space, a quality which cannot be reduced to a plane surface, nor projected from a linear standpoint.

Further limits to descriptive geometry appear once one turns to examine living processes. It is most instructive, in this respect, to compare the anatomical studies by Dürer, to those of Leonardo da Vinci [SEE Figure 8].

In the wake of the excitement aroused by the studies of Piero della Francesca and of Uccello, Dürer decided to apply himself most zealously to measuring the *outside* forms of the human body. Without meaning in any way to belittle Dürer's important contribution, it must be said nonetheless, that he fell into a trap. Never did he really come to understand the *dynamic* of the human "machine," but rather wandered off down the path of a kind of geometric numerology.

Not at all like Dürer in his approach,

Leonardo looked instead at the interaction between the spinal column, which his research into anatomy had shown him to be the foundation of all movement, and the muscular apparatus. In this manner, he arrived at an understanding of what appears to us as *grace,* visible through form; as the necessary expression of work done by the body at a precise moment.

The question now posed, is whether there be a means to reach beyond the limits of projective geometry, such that there should be made intelligible all that pertains to the *idea* of creation, rather than to its *results.* But, in order for that to occur, the doctrine known as "*mimesis,*" whereby Aristotle affirms that the purpose of art is to but *imitate* nature, must be put entirely aside.

To the Aristotelean, from the fact that an idea, that movement, that transformation or the infinite, do not belong to the material world, one may deduce that such-like notions cannot be represented, unless it be by symbols. Negating, as they do, creation as a universal law—negating, therefore, the harmonic interaction between mind and matter—, they seek arbitrarily to bind an idea to some object. France, for example, shall be represented by the tricolors Red, White, and Blue. To this school of thought, the representation of an idea is not intelligible as such, but rather, it is something to do with convention, accessible only to the initiate. To the non-initiate, it shall forever remain a mystery. How very distant is this school from the notion that creativity shall be made intelligible to the many!

That, to the Aristoteleans, beauty must be founded on two elements, i.e. *magnitude* and *order,* shows up as yet another flaw in their dualistic system. In the Seventh Book of his *Poetics,* Aristotle has written that

> a beautiful object, whether it be a living organism or any whole composed of parts, must not only have an orderly arrangement of parts, but must also be of a certain magnitude; for beauty depends on magnitude and order. Hence a very small organism cannot be beautiful; for the view of it is confused, the object being seen in an almost imperceptible moment of time. Nor again, can one of vast size be beautiful; for as the eye cannot take it all in at once, the unity and sense of the whole is lost for the spectator; as for instance if there were one a thousand miles long. (1450b)

That the Mind may be greater than the limits of sight, is something Aristotle would not even contemplate; once a thing is too large or too small to be seen, we can neither know, nor understand it. What cannot be perceived by the senses, is not, to Aristotle, part of the real universe. What's more—there being no necessary relation between objects and the space they occupy—, there is nothing left, but to be "practical," and uphold "order" by assigning to each and every object its appropriate pigeonhole.

At the opposite pole to this school of thought, lies that of Plato. Beauty, to Plato, has to do with *harmony* and *proportion*; the latter being the expression by which the underlying harmony shall be made known, and each element of Creation, an instrument by which the harmonic web of the whole shall be made known. Thus is the whole found in the part, the One in the Many.

Once we place our trust in such a pre-existing—although not unchanging—harmonic Unity, there may be introduced the notion of a *horizon,* a singularity in the nature of a metaphor (in Greek, "*metaphor*" means "to carry beyond"); which notion unleashed a revolution in the science of perspective. Although this frontier does seem to appear at the seaside, it, nevertheless, has no material being as such. It can neither be measured algebraically, nor can its distance from us be calculated. The line drawn to express the horizon, is *neither object nor symbol.*

Truly a transfinite, the horizon—(while pertaining to the world of finite things, it is yet a lever to the infinite)—remains naught but a line you may easily trace; for example, the line you trace when sketching a room in your home. The horizon enfolds within it an infinite number

of vanishing points, upon each one of which coincide an infinity of harmonic relations; the latter's proportions do not change, although their spatial projection decrease. That parallel lines do meet at infinity, well expresses the notion of perspective: that so harmonic, so unique an organization, encompassing all of a Creation itself so varied and so profuse, should yet be made intelligible.

The horizon, as the examples we shall present shall show, may be perhaps but one—*the first*—of the transfinites one may bring forth, while others are in gestation, so to speak. To the artist, a fixed system exists only to be transcended; to awaken the powers of mind, there must be irony, there must be surprise. Whereas measurement, *ergo* repetition, is the language of the geometer, that of the artist is movement, change, and that beauty which arises out of a lawful break with whatever order be already given, to reach a higher form of order. Only such a science of perspective is compatible with the laws of mind.

The Various Types of Perspective

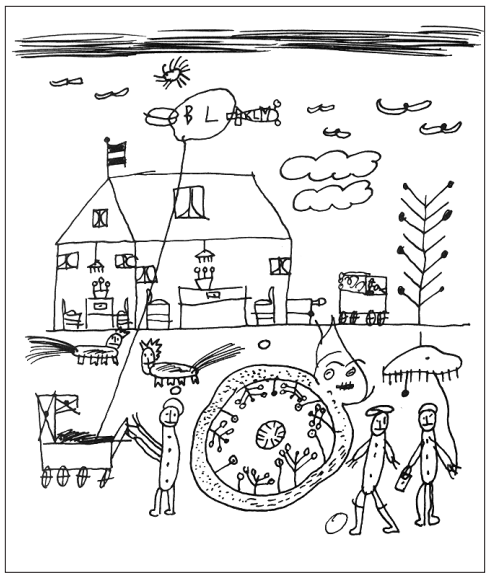
Let us now examine various models of spatial representation. In the interest of simplicity, we have arranged them into three categories:

- Infantile and/or symbolic perspective
- Linear perspective
- Non-linear perspective

One type need not exclude another. In order that the artist be free to "tune" his work in accordance with that which he wishes to say, a painting may be built around the articulation between various types of perspective—rather like the way repetition may be a feature of a poem, without it being a method or *sine qua non* upon which the poem stands or falls.

Infantile and/or Symbolic Perspective

To a child, the existence of objects is self-evident, as he cannot identify processes in the real universe. Did he wish to represent "objects" or his feelings about them, he would set out by enumerating them, lining them up, like the child's drawing shown in Figure 9. Once the line has been filled in, he may perhaps draw a second line, thereby building what some call "*register perspective.*" In the same *ordering,* he might sketch in people, whose size will depend upon how important they are to him. Be all that as it may, we remain within a flat universe called an "aggregate space," rather than a "system space."



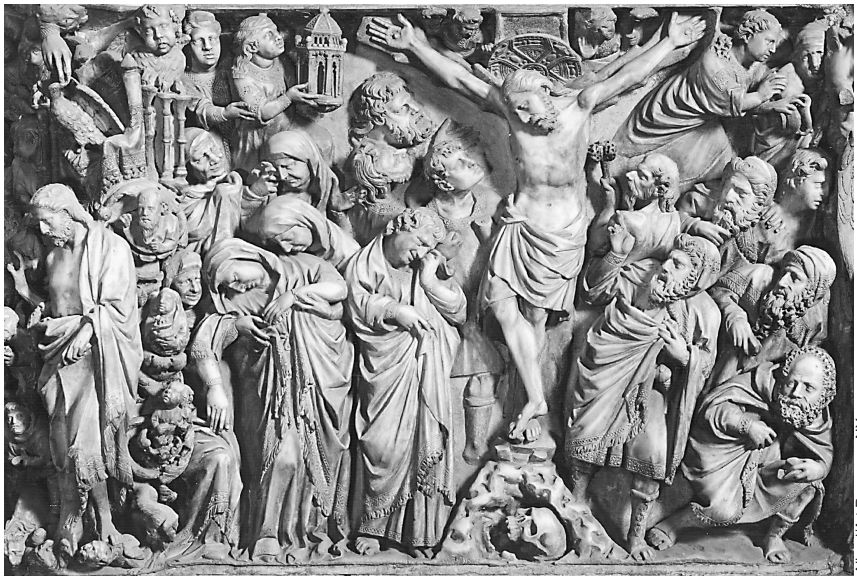
Reprinted from Tjomme de Vries, *Het tekenen van de ruimte*, permission of Het Spectrum.

FIGURE 9.
Infantile perspective.

Pretentious as it is, modern art, too, does seem to rest upon this *non-system.*

Linear Perspective

Those who were first confronted with the problems posed by complex spatial representations, were undoubtedly the sculptors. Where a "Last Judgment" might perhaps be felt to have been adequately rendered by the low-relief ("*méplat*") technique of *bas relief,* in very complex scenes such as the Passion, the figures simply had to be brought forth from a plane surface, this truly three-dimensional technique being known as "*ronde bosse*" ("high-relief"). In the Roman and Byzantine style, a carved figure was as though caged within a plane; a revolution erupted with the Gothic style: its figures were placed within a space proper to them, often cylindrical segments of a vault, although much



Alinari/Art Resource, NY

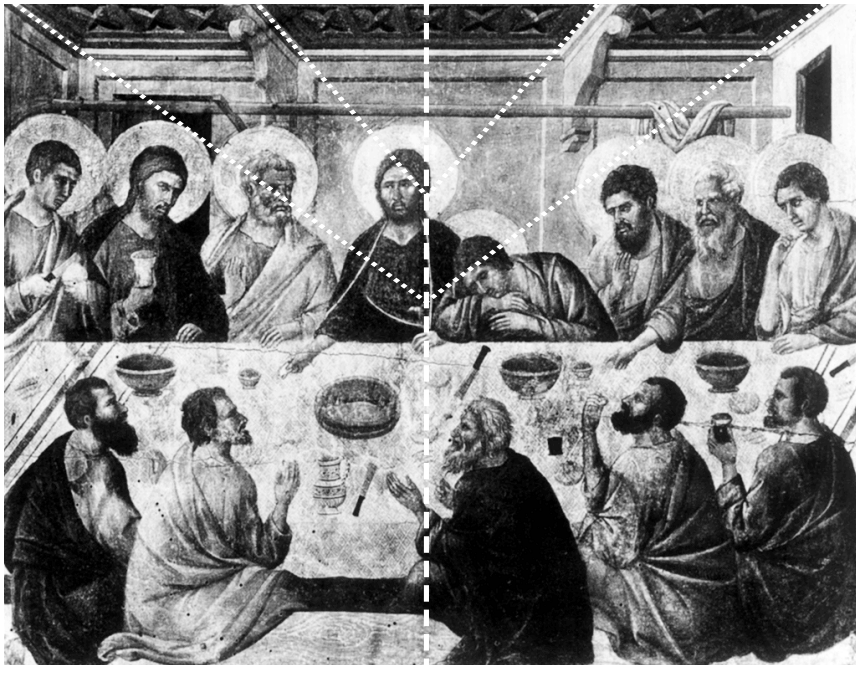
FIGURE 10. *Left: "Register perspective," as seen in the "Doubting Thomas" from the Santo Domingo de Silos cloister in Burgos. Right: Nicola Pisano's "Crucifixion," for the pulpit of the Cathedral at Siena.*

larger spaces were also used.

In this respect, a noteworthy comparison is that between Nicola Pisano's "Crucifixion" on the pulpit of the Cathedral at Siena (1265), and the "Doubting Thomas" at the Cloister of Santo Domingo de Silos at Burgos (c.1130) [SEE Figure 10]. Through the development of the Gothic style, three-dimensional space suddenly appears to us—(or should we perhaps say, re-appears!)—and thereby, the play of light in all its splendor. That Robert Campin (the Master of Flémalle), Jan van Eyck, and others, often depicted sculpture "*en grisaille*" ("in grays") may perhaps be their homage to the Gothic stone-cutters.

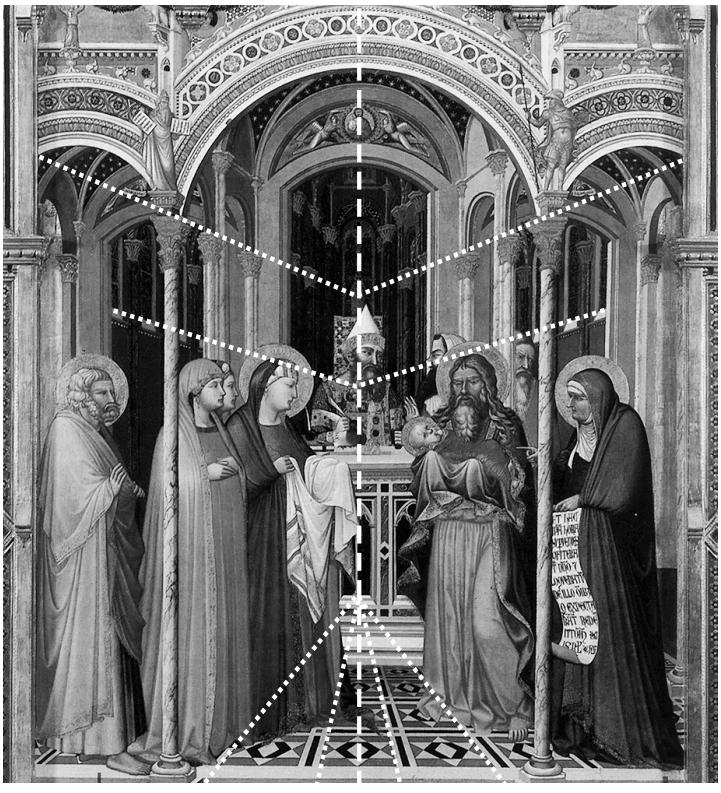
How to unify visual space, how to make it appear to be homogeneous, occupied the thoughts of those artists who first tried their hand at linear perspective. An early, Greco-Roman representation, like that one may see at Pompeii, does not rely upon a single central vanishing point, but upon a "vanishing axis," also called a "fishbone system." An example is Duccio's "Last Supper" [SEE Figure 11]. (Whether the lack of a single point at infinity arises merely from a lack of developed knowledge, or from a theological aversion to directly representing "the infinite," is not known.)

The next step was to improve upon the system, by connecting lateral vanishing lines to the central vanishing axis, at different heights, as in Ambrogio Lorenzetti's "Presentation in the Temple" (1342) shown in Figure 12. Then, however, in his "Annunciation," painted in 1344, Lorenzetti adopts one single vanishing point [Figure 12]; the question remains whether this may not be due simply to the arrangement he had decid-

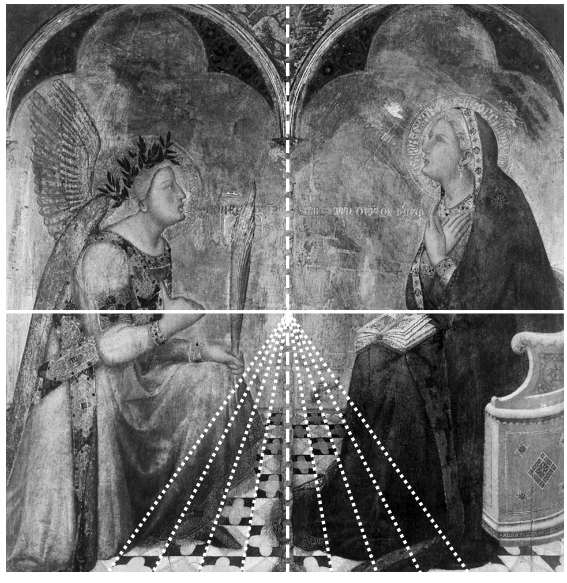


Alinari/Art Resource, NY

FIGURE 11.
Duccio (1255-1318), "The Last Supper," perspective in the "fishbone system."



Alinari/Art Resource, NY



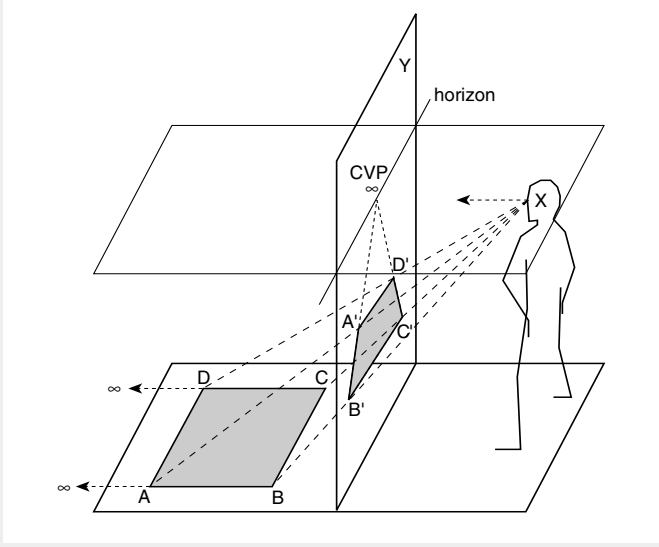
Alinari/Art Resource, NY

FIGURE 12. *"The Presentation in the Temple" (left) and the "Annunciation" (right) by Ambrogio Lorenzetti, who seems to have used a hybrid system.*

ed upon for his figures. A similar solution was adopted by Giotto in his "Confirmation of the Order of St. Francis," painted in 1325.

(Before proceeding further, the reader should consult Figure 13, for an introduction to the basic terminology of perspective drawing.)

FIGURE 13.



Above: The quadrilateral A′B′C′D′ is the cross section of the cone of vision; its base is ABCD, its apex X. When projected onto the Y plane, The ABCD square will become the A′B′C′D′ trapezoid. The central vanishing point is where the parallel lines AB and CD meet at a point in infinity, which will be one of the points on the horizon.

(a)

(b)

(c)

Left: Where one chooses to locate the horizon, depends upon where one has decided the viewer's standpoint shall be. Such subjectivity of standpoint thus has to do with how high, or how low the horizon line shall be.

If the horizon line is placed very low, as in (c), the sensation created is one of the landscape falling in upon us. In (a), we observe the landscape from above. Then, when figures are to be located in the landscape, their sightline must lie at the level of the chosen horizon if they are to appear to be in proportion to their surroundings.

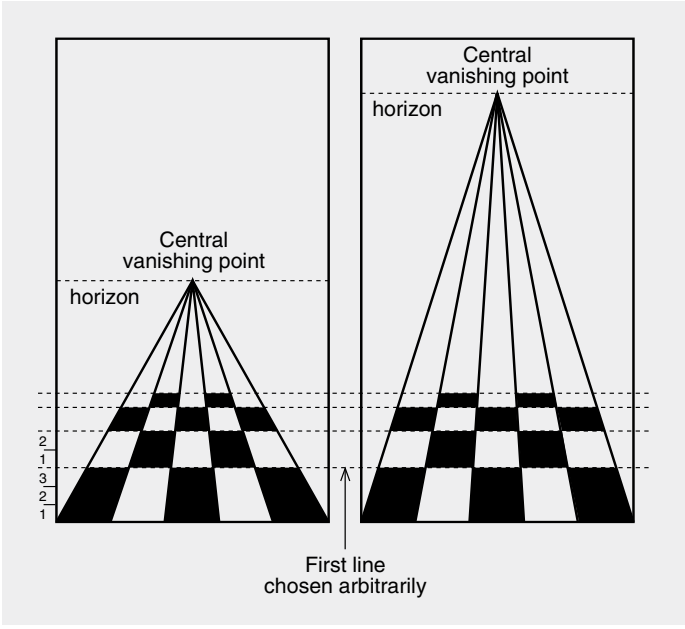


FIGURE 14. *Perspective according to the "musical system."*

Shortly thereafter, painters began to wonder as to how accurately defined receding distances might be pictured. Many simply ignored the problem, and continued to paint symbolic works. Others proposed, as a first approximation, the so-called musical system, according to which distances recede successively by thirds, two-thirds being the proportion proper to the musical interval of a fifth [SEE Figure 14]. Such a system, a mere arbitrary construct imposed upon reality, cannot possibly convey the notion of a harmonic whole. In order for something truly harmonious to be created, perspective must shift in accordance with the height of the horizon.

We owe the next step to the work of Donatello, Ghiberti, and Brunelleschi, sculptors and architects all. At the turn of the Fifteenth century, these three had been rivals in the great competition, by which Ghiberti was finally chosen to decorate the "Gates of Paradise" of the Florence Baptistery. It was they who first put to methodical use a second vanishing point, which they located not at the center, but at the side, of which system Ghiberti's *bas relief,* "The Story of Jacob and Esau," is a magnificent example [SEE Figure 15].

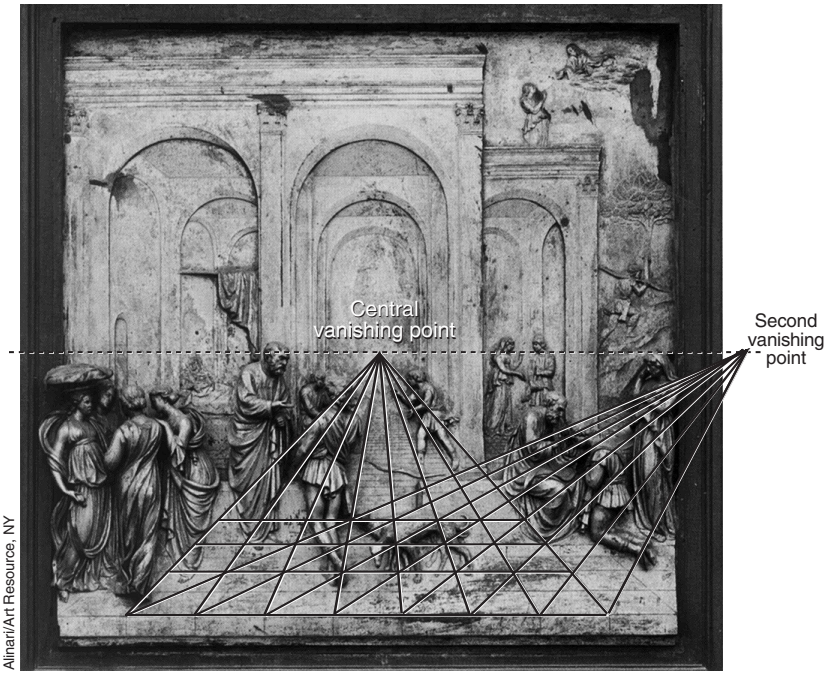
For the flagstones, Ghiberti chose a *braccio,* i.e., an arm's length, the convention of the time being that a man's height was generally three *braccia.* With the aid of these subtle reference points, Ghiberti drew a second figure in the background perfectly proportionate to that in the foreground.

It is greatly to be regretted that so few among the scientific treatises of that period, have come down to us; Paolo Toscanelli's *Della Prospettiva* (1420) is, to cite one notable example, lost. This mathematician and cartographer, friend to Cardinal Nicolaus of Cusa and to Brunelleschi, and mapmaker to Christopher Columbus, seems to have been a figure of the greatest importance to his age; had we his treatise still, we should doubtless have gained some considerable insight into the debate raging at the time over methods of perspective.

What *has* come down to us, is the well-known work of Leon Battista Alberti, *De Pictura* (1435); all the great breakthroughs in perspective, however, were made earlier, between 1401 and 1425, in which latter year Masaccio painted his fresco of "The Trinity." (Alberti came to Florence only in 1434, and could not have visited the city prior to 1428, when the ban exiling the Alberti family from Florence was lifted.)

As for Masaccio, it is believed that Brunelleschi himself helped to further his

FIGURE 15. *Ghiberti, "The Story of Jacob and Esau," Baptistery, Florence Cathedral, "Gates of Paradise" (1430-1437).*

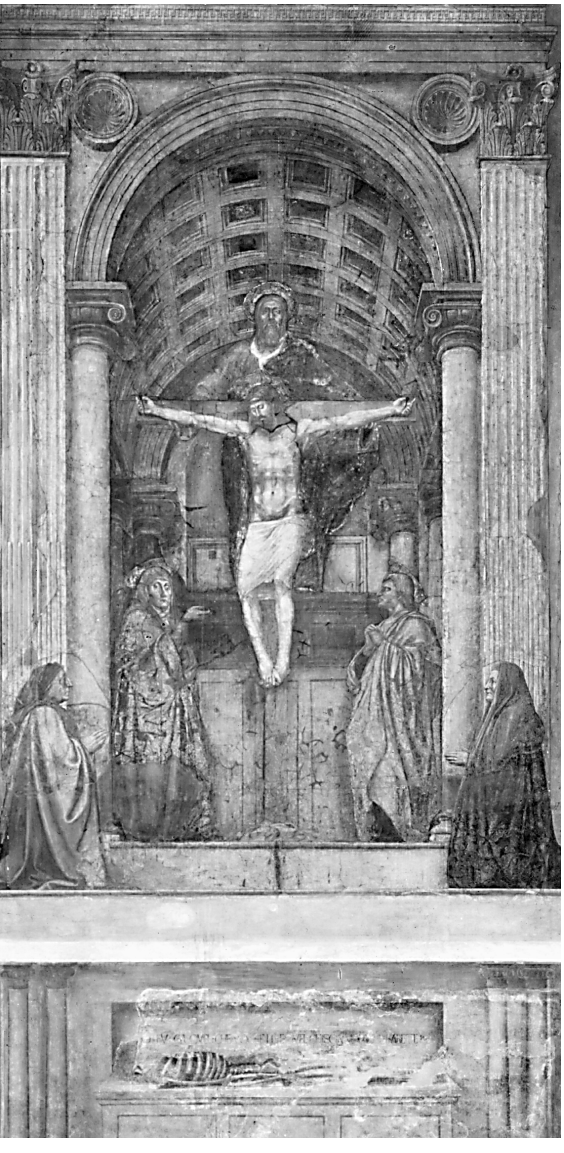


Alinari/Art Resource, NY

most extraordinary ability. It is often said, and with some reason, that "The Trinity" is the first true demonstration of perspective [SEE Figure 16]. The new science's great power is brought out by the "low angle" perspective: just below the foot of the cross lies the central vanishing point—there, exactly at eye-level, where the earthly and the heavenly worlds do separate.

Although dedicated to Brunelleschi, Alberti's *De Pictura* in fact defends Aristotle's doctrine of "*mimesis*": "Clearly, the painter has no concern for things that are not visible. And so, the painter is solely concerned to imitate the things which light shows us." Further on, Alberti quite adopts the axioms of Euclidean geometry, wherein points, lines, and surfaces are still, dead objects in a space made up of abstractions.

Neither in the Italian nor in the Latin text, does *De Pictura* delve at any depth into the fundamental issue of the horizon. In the final analysis, and notwithstanding the author's skill at weaving in the notion of a central vanishing point, nor the treatise's great importance in circulating this method beyond the guild workshop system, Alberti's work utterly contradicts the Renaissance principle, being an attempt to codify science in obedience to the standards of Aristotelean logic. To Alberti, the central vanishing point is a mere technical formula, not the principle of composition underlying a work of art. His method leads perforce to a *single* vanishing point, the lateral thereby becoming a mere aid to construction, which means that the painter has to keep within the framework of a symmetrical arrangement [SEE Figure 17]. (Early on, Alberti claims he will give mathematical proof that his system holds, but oddly enough, towards the end of Book II, we read:"It is my habit, when working with my closest collaborators, to adduce geometrical proofs in order to show in more perfect detail why these things are as they are, but I thought that such proofs might well be left out, so brief be my commentary here." Book II, 23.)



Alinari/Art Resource, NY

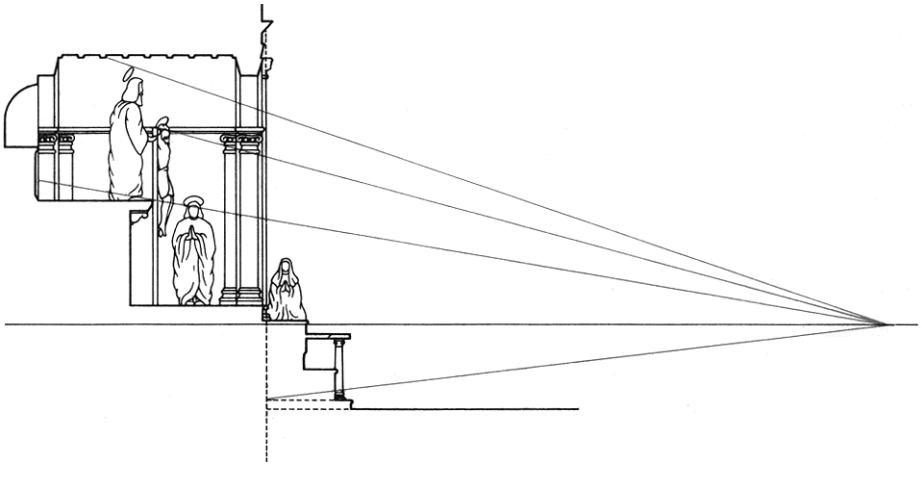


FIGURE 16. *Masaccio, "The Trinity" (1426).*

FIGURE 17. *Alberti's method. By making point X rotate 90° on the horizon (H), we obtain a second vanishing point (X′), one that is lateral, not central. By connecting the points e′f′g′h′i′ with O, we obtain the recession lines. If we connect them to X′, we get efghi on the intersection with the Y axis. By projecting efghi parallel to H, inside the triangle Oe′i′, we get the recession distances for the flagstones. If the drawing has been done accurately, the diagonals of the projected image will be straight lines.*

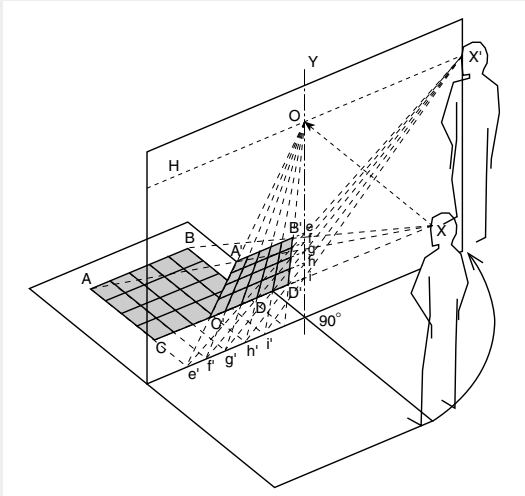
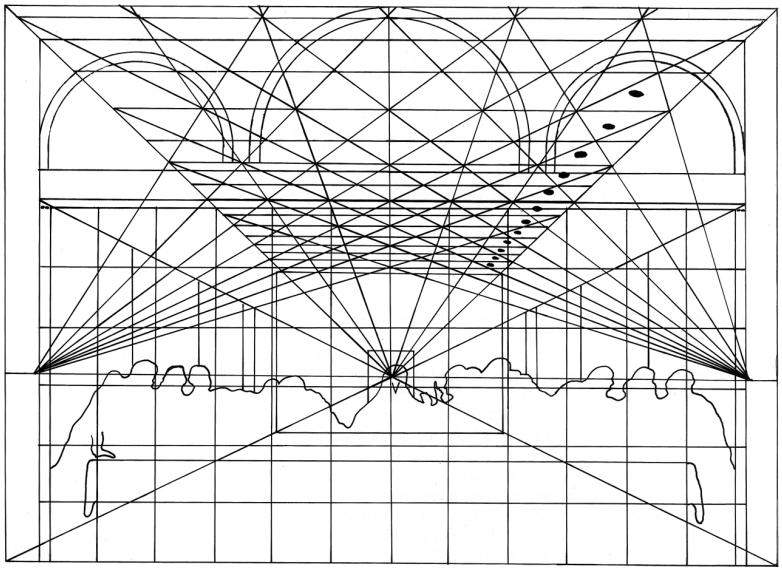


FIGURE 18. *Leonardo da Vinci, "The Last Supper" (1495-98).*

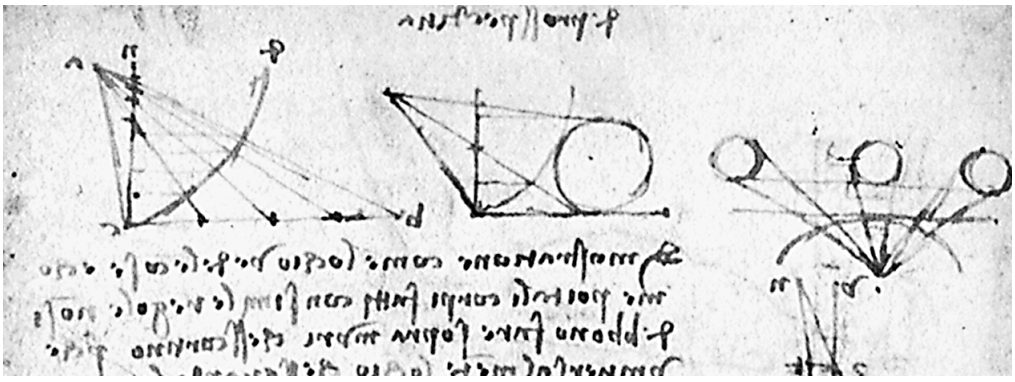
Diagram: The central vanishing point lies behind the head of Christ.

Alinari/Art Resource, NY



By 1450, Paolo Uccello, followed in this by Leonardo, had begun to explore a path which development of a second vanishing point had opened: by means of the second diagonal, one may arrive at a third vanishing point. In the Albertian system, the second diagonal was but a means to double-check the perspective; after 1450, it became the cornerstone of a new method, which did away with the complex projection heretofore used to plot distances as they recede on a surface. Alberti had placed these receding distances on the edge, or even, at times, far from the painting itself; thenceforth, all events fell within the field of vision.

How very great is the unifying potential of such a construction, is shown by Leonardo's celebrated "Last Supper": the central vanishing point lies behind the head of Christ, He, who has unified all Creation [SEE Figure 18]. It is at the the intersection of



Biblioteca Nacional, Madrid

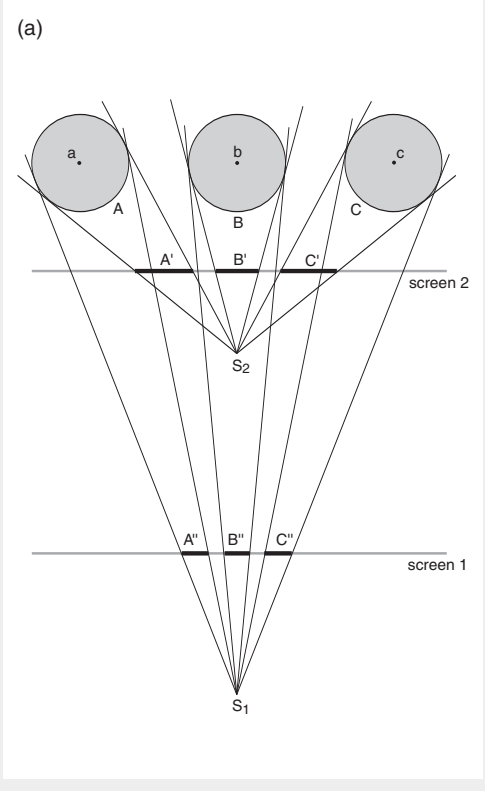
FIGURE 19. *Sketches by Leonardo. To the left can be seen one approach to curvilinear perspective, and to the right, Leonardo's famous paradox. (Madrid Codex II, folio 15v, detail)*

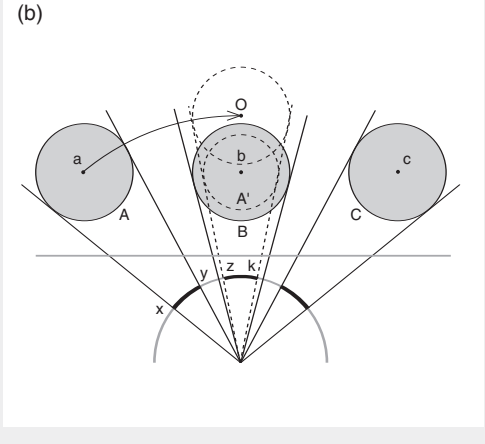
the three vanishing points that one finds the origin of the form of each singular element of the composition. Another advantage to this method, is that it opens the way towards asymmetrical compositions. Jean Pélerin Viator, once secretary to King Louis XI, was to put forward its merits in his *De Artificiali Perspectiva* (1505), printed at Toul in Eastern France; this was the first treatise on perspective ever printed in Europe.

Those who first defended this system were, not surprisingly, the first to find fault with it. According to some sources, Piero della Francesca points a finger in that direction in his *Di Prospectiva Pingendi* (1474). The other great trouble-maker was Leonardo himself, as we can see from the manuscript in the Madrid Codex, known as "The Paradox of Leonardo" [SEE Figures 19 and 20].

Linear perspective, as his Paradox shows, is but one of a number of possible cross sections of the visual cone. "Anamorphoses" is the name given to the representations of

FIGURE 20. *Leonardo's Paradox.*





(a) If the spectator stands at S_1, and projects the image of three columns, A, B, and C onto screen 1, the projected image seems acceptable. If on the contrary, the spectator is at S_2 and projects the image onto screen 2, A′ will be bigger than B′, while A is further away from the spectator.

(b) Using the eighth theorem of Euclid's Optics, which postulates that the perception of distance is defined by the angle of vision, the columns' strict proportions can be restored by projecting their image onto a spherical surface. To verify this, we have rotated column A into the same angle of vision as B and have called it A′. Now, the projection of A′ onto the spherical screen is called zk and is equal to xy.

This paradox confirms Leonardo's insight into the limits of linear projection. The eye and its curved retina, as well as the rotation of the eyeballs, help man correct the distortions which otherwise increase, the nearer the eye is to the object.

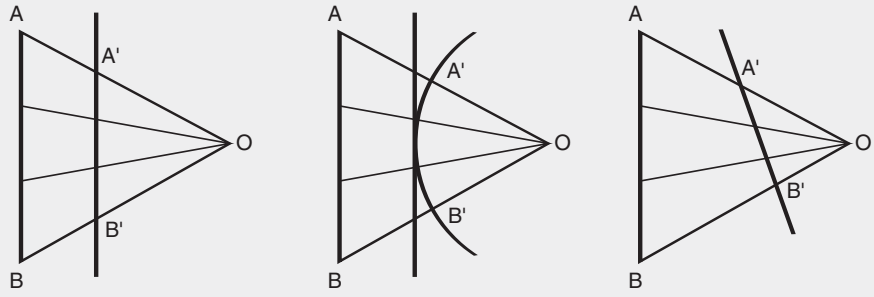


FIGURE 21.
Cross sections of the visual cone.

other sections, whether elliptic, hyperbolic, or otherwise [SEE Figure 21]. These can be astonishing: in Holbein's painting "The Ambassadors," for example, the viewer must move, if he is to see the painting's "hidden" element, as the skull can only be seen when one stands at a tangent to the edge of the painting [SEE Figure 22]. The ambassadors stand before us, surrounded by all the attributes of the age's material wealth, its musical and its scientific instruments; yet "out of the corner of the eye" as it were, death steps in to disrupt the seeming quiet, recalling to our mind how ephemeral life is, and to what extent our senses trick us into forgetfulness. Once again, the artist has made us direct our gaze on a course which has to do with the composition's true, metaphorical meaning.

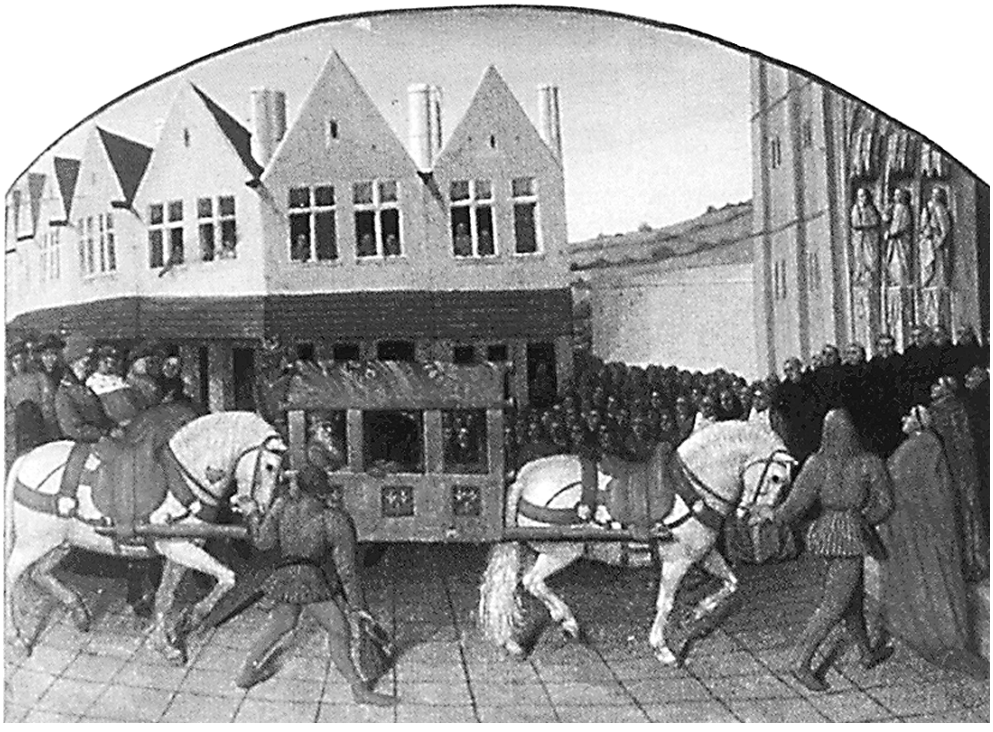
Anamorphoses thus bring out yet another shortcoming of linear perspective: there is but *one fixed point alone,* from which the viewer can really take in the painting.

Before turning to non-linear perspectives, let us examine one last example of linearity which is often mistakenly presented as an alternative to rectilinear perspective: curvilinear perspective. Striving to correct the tendency for space to be systematically deformed by linear constructions, the celebrated miniaturist Jean Fouquet, as well as a few of his contemporaries, worked out a curvilinear system. If one takes as a starting point,

Reproduced by courtesy of the Trustees, The National Gallery, London

The National Gallery, London

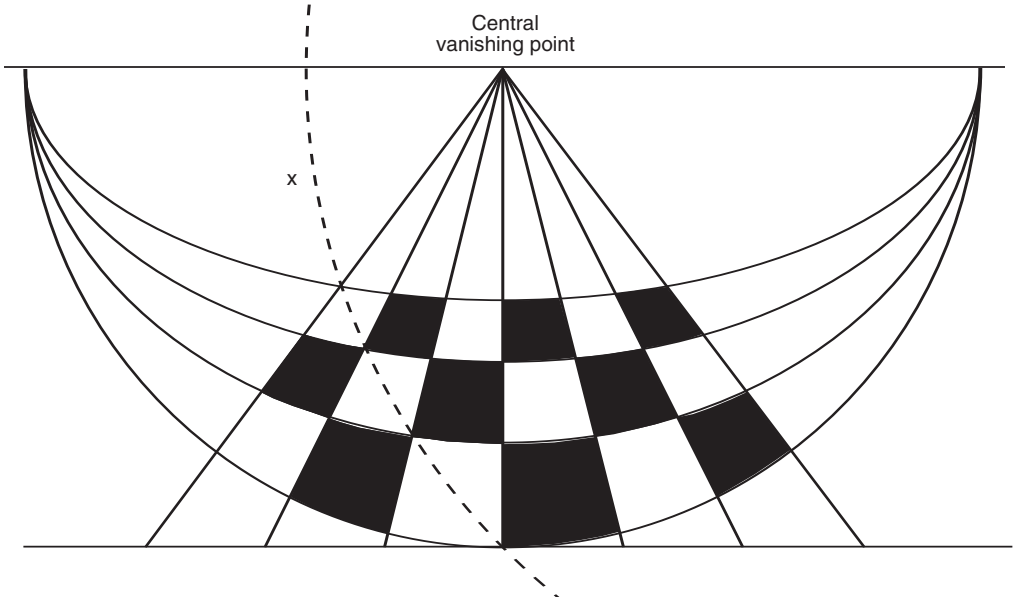
FIGURE 22. *Hans Holbein, "The Ambassadors" (1533). Detail, right: The skull seen from a tangent angle.*



Bibliothèque Nationale de France

FIGURE 23. *Example of curvilinear perspective. Jean Fouquet, miniature of Charles IV arriving at the Cathedral of St. Denis (c.1458).*

Diagram: The x-curve's crossing of the linear receding lines going from the baseline to the central vanishing point gives us the division of the distances.



the notion that distances should decrease to the viewer's left as well as to his right, the problem can, at least formally, be solved by tracing the arc of a circle [SEE Figure 23].

On the facsimile of the Madrid manuscript, Leonardo does adopt that method, although he seems to have been quite aware that at the end of the day, the problem is bound to pop up elsewhere: whether everything be made rectilinear, or again, curvilinear, one falls into the trap of one or the other structure which only a non-linear approach can pry open. Turner, very deliberately, and Van Gogh—(*cf.* the latter's "Bedroom in Arles")—more likely by intuition, began to explore the curvilinear path, which still holds out great promise.

Johannes Pötzsch

FIGURE 24. *Tilmann Riemenschneider, altarpiece, St.-Jacobskirche, Rothenburg (1500-1504) (detail of center panel).*

Reproduced by courtesy of the Trustees, The National Gallery, London

FIGURE 25. *Antonello de Messina, "St. Jerome in His Study" (c.1474) (detail).*

Non-Linear Perspective

The non-linear approach, far from being a thing of recent invention, has always co-existed with the linear, the two having developed in symbiosis, and in complementary opposition. Where linearity seeks to *unify,* albeit at the *expense* of the manifold, non-linearity rests upon the persuasion, that it is only through the greatest possible unfolding of the Many, that there shall be attained a Unity, greater even than that which may be depicted. It being the case, that the mind will tend to confuse unity, with *uniformity.*

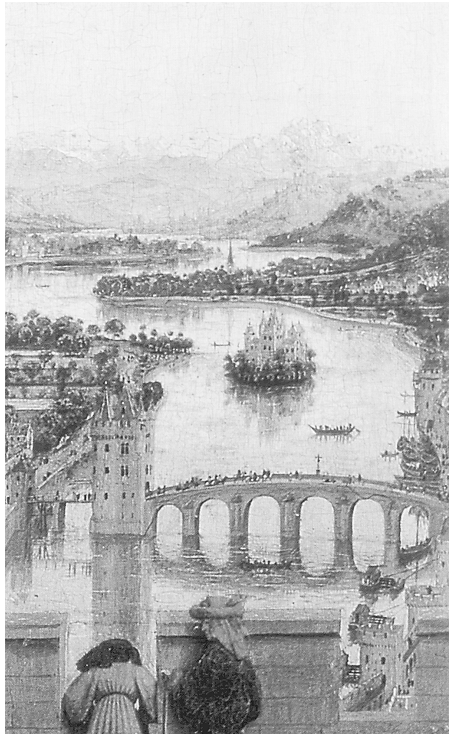
I may choose, in order to further the unity of a composition, to ignore a detail, or allow it to fade away. Or, I may choose to bring out the beauties and the profuseness of the Many, by showing the degree to which they partake in Unity. In music, several chords may be made to vibrate at once: musical unity is not at all the same as unison, but has to do with harmonic composition, to which dissonant elements also belong. So it is with space, which must be made to live, and from which all that gives off a sense of cold and void should be expelled. A detail, seemingly minute, a window, may let the spirit escape into the infinite.

One *tour de force* of this kind, might be named the *perspective of suggested space.* When depicting, let us say, a loggia, one may, by letting in windows or adjacent hallways, suggest other spaces without ever drawing them in. When, for his altarpiece at the Church of St. Jacob in Rothenburg, Tilman Riemenschneider sets tiny bright panes of glass into his sculpture, it is all the more remarkable for the fact that one has gone from the texture of wood to that of glass [SEE Figure 24].

As regards this principle in painting, let us look closely at Antonello de Messina's "St. Jerome in his Study" [SEE Figure 25]. The viewer finds himself standing before a house, into the rooms of which he may gaze, while, through its windows, he further perceives a far-off landscape. Thus, while St. Jerome is shown in the privacy of his study, yet we see him as if in an open space. By allowing our gaze to light upon a

succession of spaces, each unlike the next, Antonello introduces a sense of greater freedom.

What might be called *narrative perspective,* pertains to the same school of thought. Space is built up by a succession of all manner of elements, the proportions of which can only with difficulty be appreciated. In Jan van Eyck's "Virgin of Autun" ("The Virgin with Chancellor Rolin"), there is a loggia in linear perspective, beyond which and a little below it, a garden is to be seen; at the garden's edge stand ramparts, from which two men look down upon a river meandering towards a bridge; and over the bridge, wind a great many tiny figures and seven, or perhaps more, horses; further still in the distance, in a bend of the river, rises a castle; and behind it, snow-capped mountains; and so it goes . . . . [SEE Figure 26] Although this construction is not a mathematical one, we are yet led, by the manner in which each succeeding plane somehow telescopes into the next, to experience space as a *discontinuous whole.* At the end of the day, the loggia may well be found to lie at a celestial height, which effect the painter appears precisely to have sought, for it is in the meeting between the mortal and the divine that the scene's true meaning lies.



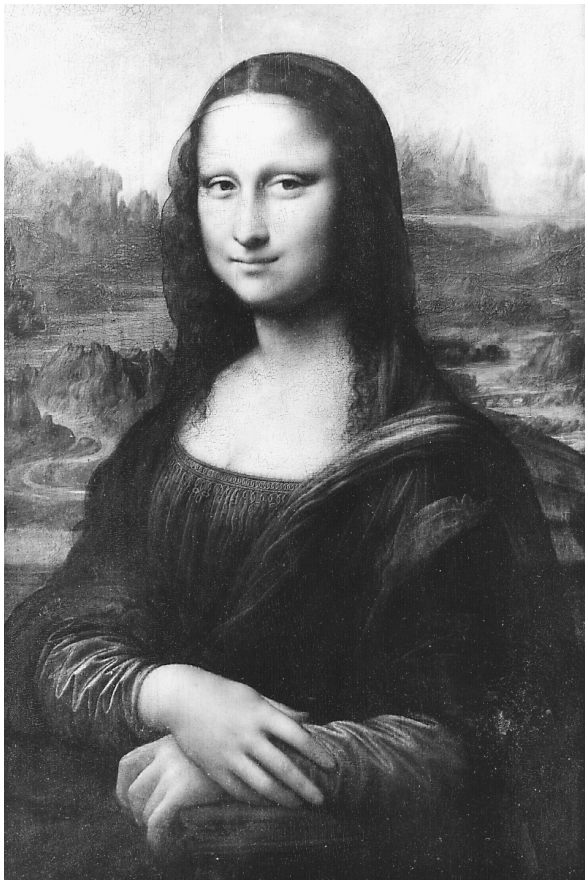
© RMN

FIGURE 26. *Jan van Eyck, "The Virgin of Autun" ("The Virgin with Chancellor Rolin") (1436). Left: Detail showing "narrative perspective."*

Yet another sort of nonlinear perspective is that known as the *dancing horizon.* Rather than a single horizon, why should there not be several?

It is, after all, the mind which "builds" a perspective, wherever we choose to cast our eye. The most brilliantly successful, and least understood, example of this is the "Mona Lisa" [SEE Figure 27]. Own up!

© RMN



© RMN

FIGURE 27. *Leonardo da Vinci, "Mona Lisa" (1503).*

Had you really swallowed Freud's fraudulent tall tale about Leonardo, the transvestite, disguising your mother-in-law's nasty smirk behind the lovely lady's smile? The fact is, that what unsettles us is not the lady herself, but the landscape beyond. To the left of her face, the horizon lies more or less at the level of the nose, while to the right, a horizon appears to float somewhere about the level of the eyes. As one goes on studying the painting, other horizons swim into view.

We find a similar procedure in "The Siege of La Rochelle," by Jacques Callot, the noted engraver from Nancy [SEE Figure 28]. Whether frontal or from above, the views are integrated into the self-same plane. Here again, one may imagine a series of horizons, ranging from those which, as we examine the foreground, lie rather low, to those fading off into the far distance as we study the naval blockade sealing off the city.

Light—above all, in the case of Rembrandt—was to become an extraordinarily powerful means to suggest the existence of spaces not explicitly shown. In Rembrandt's work, there is dialogue between the light within, and light from without; what cannot be pinpointed, is the source of such light. There is thereby conveyed a most powerful impression of how the presence of an individual being, effects the transformation of light [SEE Figure 29]. It is Light itself, therefore, which has become the new Transfinite, and Rembrandt, in this particular respect, shows himself to have been a true disciple of Leonardo.

To Leonardo, a limit is defined, not by a line as such, but as a change in the geometry or sense of orientation. *Sfumato,* a technique through which one consciously blurs or softens a figure's outline, is a first step toward defining the material world in terms of a higher reality, Light. Is it not through light, and light alone, that we see? And is it not the play of light and shadow, which shapes what we see?

Color, and how color evolves through space, is to Leonardo yet another means to free the composition from linear con-

FIGURE 28. *Jacques Callot, "The Siege of La Rochelle, 1627" (detail) (1631).*

straints. In his own words: "In nature, the perspective of color obeys her laws always, whereas, that of magnitude is arbitrary: next to the eye, there may lie a little hill, and far off in the distance, a great mountain . . . ." (Manuscript A, Institute de France, folio 105v) To the extent that we cling to the domain where forms be represented as such, we may be deceived by what we think we see; on paper, a tiny but proximate object looks as large as a great one that lies very distant from us. Hence, Leonardo's work on *aerial (atmospheric)* or *color perspective,* which he describes thus:

> There is another kind of perspective which I call Aerial Perspective, because by the atmosphere we are able to distinguish the variations in distance of different buildings, which appear placed on a single line; as, for instance, when we see several buildings beyond a wall, all of which, as they appear above the top of the wall, look of the same size, while you wish to represent them in a picture as more remote one than another and to give the effect of a somewhat dense atmosphere. You know that in an atmosphere of equal density the remotest objects seen through it, as mountains, in consequence of the great quantity of atmosphere between your eye and them—appear blue and almost of the same hue as the atmosphere itself when the sun is in the East. Hence you must make the nearest building above the wall of its real color, but the more distant ones make less defined and bluer. Those you wish should look farthest away you must make proportionately bluer . . . . (Ashburnham I, folio 10a)*

(The reader should note, that the word "aerial" here has its original meaning of "airy" or "pertaining to air" and its gradations (i.e., "atmospheric"); it does not mean, as it would in contemporary acceptance, "seen from above.")

In this manner, we begin to leave behind formal perspective, wherein objects have characteristics, such as magnitude or color, which are fixed, and move rather

Widener Collection © Board of Trustees, National Gallery of Art, Washington

FIGURE 29. *Workshop of Rembrandt van Rijn, "Portrait of Rembrandt" (1650).*

towards a physical perspective, where the changes Leonardo speaks of are taken into account, according to the subjective conditions of where the object is to be located. In other words, objects, or the elements of a landscape, are painted taking into account their physical interactions, which interactions had lain almost entirely outside the field of linear perspective. Space has ceased to be an empty place, to become a field of interaction. What here transcends the subjective aspect, are the actual physical principles at work.

It is from our awareness of those principles that there springs a sense of having seen, not reality as such, but rather Truth, in Leonardo's painting; for, these principles, which we recognize as underpinning the universe, pertain more to *truth* than to *reality.* In this manner, Leonardo proves that artistic beauty and scientific knowledge are truly one.

It is also Leonardo who introduced the notion of *fading perspective,* or *perspective of disappearance*:

> Every object as it becomes more remote loses first those parts which are smallest. Thus of a horse, we should lose the legs before the

* *The Notebooks of Leonardo da Vinci, compiled and edited from the original manuscripts by Jean Paul Richter* (New York: Dover Publications, 1970), Vol. I, p. 159, No. 295.

Important Dates in the Invention of Perspective

The Greek Classical Age

Fifth-century B.C.

- **Agartharcus, Anaxagoras, and Democritus**. In his *De Architectura* (Vol. III, Bk. 7), the Roman architect Vitruvius writes ". . . Agarthacus, in Athens, when Aeschylus was bringing out a tragedy, painted a scene, and left a commentary about it. This led Democritus and Anaxagoras to write on the same subject, showing how, given a center in a definite place, the lines should naturally correspond with due regard to the point of sight and the divergence of the visual rays, so that by this deception a faithful representation of the appearance of buildings might be given in painted scenery, and so that, though all is drawn in a vertical flat façade, some parts may seem to be withdrawing into the background, and others to be standing out in front." (Para. 11)
- **Plato**, in the *Sophist,* condemns the sculptors' fascination with illusion.
- Plato's *Timaeus* dialogue deals with the problem of what appears to be an opposition between emission and reception of visual "radiation": "When, therefore, the daytime light surrounds this stream of vision, then like meets like, both fusing together, and one homogeneous body is formed along the line of vision wherever the light from inside the eyes encounters some external object. And so the whole stream of vision, because of its similarity, is similarly affected, so that if it ever touches some objects or is touched by them, it passes on the movements from these throughout the whole body right into the soul, and causes the sensation we call seeing." (Steph. 45c)
- Pliny the Elder praises the illusions of space painted by **Zeuxis, Parrhasius, and Apollodorus**.

Third-century B.C.

- **Archimedes** writes that "the eyes do not see from a single point, but from a certain magnitude," thus anticipating a solution to "Leonardo's Paradox."
- **Euclid**, *Optics and Catoptrics.*

The Modern Age and Golden Renaissance

Eleventh-century A.D.

- **Al-Hazen** writes *Optics* and *On geometrical curvature* (treatises).

Thirteenth-century A.D.

- **1265: Nicola Pisano**, sculptor, active at Pisa and Siena.
- **1267:** Franciscan monk **Roger Bacon** writes his *Opus Majus.*

Fourteenth-century A.D.

- **1325: Giotto** paints "The Confirmation of Saint Francis" in Florence.
- **1333: Simone de Martini** paints "The Annunciation."
- **1342: Pietro Lorenzetti** paints "The Birth of the Virgin" in Siena.
- **1375:** Birth of **Robert Campin**, the Master of Flémalle. He was to work for the Carthusian monastery at Champmol, near Dijon, the capital of Burgundy. He taught Rogier van der Weyden, and greatly influenced Jan van Eyck.
- **1376:** Founding of the teaching order of the **Brothers of the Common Life** in Deventer (The Netherlands).
- **1385:** Dutch sculptor **Claus Sluter** completes the fountain, now known as the "Moses-well," at the Champmol monastery.

Fifteenth-century A.D.

- **1401:** Competition at Florence to decide who shall execute the *bas reliefs* for the Baptistery's second Gate.
- **1410-24: Brunelleschi**, as *per* notes written by Antonio Manetti around 1475, tests his perspective constructions against reality, by looking through a small hole in a painting, towards the image of the Baptistery reflected onto a looking glass. Manetti does not however say how the perspective drawing should be carried out.
- **1420: Paolo Toscanelli** writes *Della Prospettiva* (treatise). Works with Brunelleschi; the latter takes up the challenge to complete the Cathedral's cupola, a thing believed to be impossible at the time.
- **1423: Nicolaus of Cusa** stays in Padua, where he probably meets his friend Toscanelli.
- **1423: Donatello** sculpts "Herod's Feast" for the Baptistery door at Siena, with a vanishing point perspective.
- **1426: Masaccio** paints "The Trinity," at Santa Maria Novella in Florence.
- **1432: Jan van Eyck** paints "The Mystic Lamb," altarpiece for the Cathedral at Ghent (modern Belgium).
- **1435: Ghiberti** completes the Gates of the Florence Baptistery, after thirty-four years of work.
- **1435: Leon Battista Alberti** writes *De Pictura,* his treatise dedicated to Brunelleschi.
- **1436: Van Eyck** paints "The Virgin of Autun" ("The Virgin with Chancellor Rolin"). That same year, he paints the French composer Guillaume Dufay in "Timotéos." Dufay composed a four-voice motet, sung in the Cathedral of Florence during the Council.
- **1437-39: The Council of Ferrara**, later removed to Florence to flee the plague, adopts the "*Filioque.*"
- **1445: Ghiberti** writes his *Commentaries.*
- **1460: Jean Fouquet** paints miniatures in *The Book of Hours of Etienne Chevalier.*
- **1474: Piero della Francesca** writes *De Prospectiva Pingendi* (treatise).
- **1492: Christopher Columbus** reaches the New World, guided by a map drawn by Toscanelli, which suggested that a path to the Indies lay to the west.

Sixteenth-century A.D.

- **1503: Leonardo da Vinci** paints the "Mona Lisa."
- **1505: Jean Pélerin Viator**, once a secretary of France's Louis XI, writes *De Artificiali Perspectiva,* the first printed treatise on perspective in Europe.
- **1509-1511: Raphael** paints "The School of Athens" in the Vatican.
- **1518: Raphael** paints "The Transfiguration."
- **1525: Albrecht Dürer** writes his *Underweysung der Messung* (*Instruction on Measurement).*
- **1533: Hans Holbein** paints "The Ambassadors."

> head, because the legs are thinner than the head; and the neck before the body for the same reason. Hence it follows that the last part of the horse which would be discernable by the eye would be the mass of the body in an oval form, or rather in a cylindrical form and this would lose its apparent thickness before its length . . . . (Manuscript E, Institute de France, folio 80b)†

This means, that the greater the distance between the eye and the object it observes, the more do the outlines of that object fade. And of an object overly close, the same may be said:

> When an object opposite the eye is brought too close to it, its edges must become too confused to be distinguished; as it happens with objects close to a light, which cast a large and indistinct shadow, so is it with an eye which estimates objects opposite to it; in all cases of linear perspective, the eye acts in the same way as the light. (Manuscript A, Institute de France, folio 103v)‡

A fine illustration of the above, is a painting attributed to Rembrandt, "The Philosopher" [SEE inside front cover, this issue]. In the foreground, we discover objects the outlines of which are blurred. Note how this technique accelerates the impression of depth and light. Clearly, Leonardo had struck gold: the way we perceive space is, indeed, defined by light alone, and by the manner in which light leads us to confront the universe.

As we come to the end of this study, let us linger a moment on Pieter Bruegel the Elder's painting, "The Magpie and the Gallows" [SEE inside back cover, this issue]. A marvellous landscape stretches before us, painted in accordance with Leonardo's rules for aerial perspective. Oblivious to that vaster plane, their sight hindered by trees and thick hedgerows, rural bumpkins dance about, only to perish somewhere between the cross and the gibbet. —May this not tell us something of the purpose of sight in our own lives?

Translated from the French
by Katherine Kanter

† *Notebooks,* Vol. I, p. 127, No. 223.
‡ *Notebooks,* Vol. I, p. 57, No. 92.

BIBLIOGRAPHY

(English-language editions of works originally cited in French have been supplied wherever possible.)

Leon Battista Alberti, *On Painting,* trans. by John R. Spencer (New Haven: Yale University Press, 1966).

Aristotle, *Poetics* (New York: Dover, 1951).

Jurgus Baltrusaitis, *Anamorphoses,* trans. by W.J. Strachan (New York: Harry N. Abrams, 1977).

Roland Bechmann, *Villard de Honnecourt* (Paris: Picard, 1993).

L. Brion-Guerry, *Jean Pélerin Viator et sa place dans l'histoire de la perspective* (Paris: Les Belles Lettres, 1962).

Jacques Cagliardi, *La conquête de la peinture* (Paris: Flammarion, 1993).

Jacques Cheminade, "Lazare Carnot, organisateur de la Nation," Speech at Beaune, France, November 1989; published in: *Regard sur la France républicaine* (Paris: Editions Alcuin, 1991).

Hubert Damisch, *The Origin of Perspective,* trans. by John Goodman (Cambridge, Mass.: MIT Press, 1994).

Leonardo da Vinci, *The Notebooks of Leonardo da Vinci* (New York: Dover, 1970).

_____*Treatise on Painting,* trans. by A. Philip McMahon (Princeton, N.J.: Princeton University Press, 1956).

Albrecht Dürer, *The Painter's Manual,* trans. by Walter L. Strauss of *Underweysung der Messung* (New York: Abaris Books, 1977).

Euclid, *L'Optique et la catoptrique* (Paris: Blanchard, 1959).

Alfred Fäustle *Perspektief en Projektie* (de Bilt: Cantecleer, 1971).

John Frisby, *Seeing: Illusion, Brain, and Mind* (New York: Oxford University Press, 1979).

Robert Gallagher, "Leonardo da Vinci's Science of 'prospettiva,'" *21st Century Science & Technology,* Vol. 2, No. 6, Nov.-Dec. 1989.

Histoire de l'Art: 1000-2000 (Paris: Hazan, 1995).

Martin Kemp, *The Science of Art* (New Haven: Yale University Press, 1990).

L'Italie de la Renaissance, un monde en mutation (Paris: Fayard, 1990).

Lyndon H. LaRouche, Jr., "On the Subject of Metaphor," *Fidelio,* Vol. I, No. 3, Fall 1992.

Roy McMullen, *Mona Lisa: The Picture and the Myth* (Boston: Houghton Mifflin, 1975).

Peter and Linda Murray, *The Art of the Renaissance* (New York: Oxford University Press, 1963).

Erwin Panofsky, *Early Netherlandish Painting: Its Origin and Character* (Cambridge, Mass.: Harvard University Press, 1953).

Paul Philippot, *La peinture dans les anciens Pays-Bas* (Paris: Flammarion, 1994).

Les Primitifs flamands et leur temps (Louvain: La Renaissance du Livre, 1994).

"Plato's Timaeus; the only authentic English translation," The Campaigner, Vol. 13, No. 1, Feb. 1979.

Oliver Sacks, *The Man Who Mistook His Wife for a Hat, and Other Clinical Tales* (New York: Perennial Library, 1987).

Pierre Thuillier, "La naissance de la perspective," *La Recherche (Paris),* No. 160, November 1984.

Vitruvius, *The Ten Books of Architecture* (New York: Dover, 1960).

Tjomme de Vries, *Het tekenen van de ruimte, toepassingen van de perspectief* (Utrecht/Antwerp: Het Spectrum, 1966).

China's Confucian Legacy In Today's World

by Helga Zepp LaRouche

China is a culture which has more than five thousand years of continuous history. *It is the oldest continuous culture in the world.* That puts China in an almost-unique position, and this is important for an evaluation of what is going on in that part of the world. They had already had a high point in culture in the Fourth century B.C., at about the time of the Greek Classical period. They had a beautiful renaissance in the Twelfth century A.D., and the Confucian tradition itself is *over 2,500 years old.* And, over that period, there has been a conflict between Confucianism, Legalism, Taoism, and Buddhism.

What separates Chinese from European culture is that, in a certain sense, except for the very recent developments, in China the medieval period was prolonged for centuries. China did not make the leap which Europe did in the Fifteenth century. And thus, for the last five hundred years, since the Golden Renaissance, China has been falling behind the West.

LESSONS OF UNIVERSAL HISTORY

I am going to tell you a little bit about Confucius, who lived from 551 to 479 B.C. He was part of a waning nobility. As we do today, he travelled widely from one kingdom to another, trying to find people who would listen to his ideas. He did so for over ten years, but he was not able to carry out his political ideas anywhere (unlike us!). He lived in the period of the great upheavals, at the end of what is called the "Spring and Autumn" period, when the House of Zhou fell into the hands of the princes of the various states.

And therefore, the highest political goal Confucius had, was the reconstruction of society out of a condition of chaos. The world with which Confucius was confronted had, according to him, "left the Right way [*wu Tao*]." Confucius therefore said, "The most important step is to bring the notions, the words, the categories, into order, so that they again fit the meaning."

The Teachings of Confucius

In the philosophy of Confucius, the idea of *Ren*—love, benevolence, but more love in the sense of *agapē*—is *the* central concept. Love of the people: that is, that people

---

This article is an edited excerpt from "The Leading Role of China in the Future of the United States," a speech delivered by Schiller Institute founder Helga Zepp LaRouche to the Institute's Labor Day Conference, held in Reston, Virginia on September 1, 1996. The full text, which summarized current plans to bring a Eurasian Land Bridge into being through infastructure development projects in Central and East Asia, as well as the history of Maoist and post-Mao China, appeared in The New Federalist, Vol. X, No. 41, Oct. 21, 1996.

The Palace Museum, Beijing

*Above: Zhang Zeduan, "Going Up-River at the Qing Ming Festival" (12th century) (detail), depicts daily life in the metropolis of Kaifeng, capital of the Northern Sung Dynasty (*A.D. *960-1126).*

Left: The philosopher Confucius.

should love each other. *[*SEE *End Note on the spelling and pronunciation of Chinese characters.]*

Confucius says, "My teaching contains an all-pervading principle: *Ren* and its realization." *Ren* is the desire to develop oneself to develop others. "Do not do to others, what you do not like yourself." Confucius described *Ren,* love, as something purely subjective, as a kind of internal cultivation of yourself. "Love has its source in oneself. It is a mental cultivation on the part of the inner self. Therefore, its realization is very easy. As soon as I desire benevolence and love, love is there."

Confucius asked all people to cultivate love: "The people are in need of love more urgently than of water and fire. The principle of love should be applied to the governing, as well as to the governed. When the gentlemen are earnest to their kinsmen, the people will be inspired with love. Not only to have love, but to practice it. I'm talking about universal love for mankind."

Now, Maoism obviously made this impossible, because a society divided into classes, in permanent class struggle, makes love impossible. In the period of Mao Zedong, the Chinese leadership declared that Confucius was only preaching deception, that this was all a trick to maintain the power of the feudal class.

Confucius said, "There are gentlemen who are not loving, not benevolent. But there is no small-minded man who is ever benevolent." It was the idea of loving people, caring for other people.

Ren is an idea which subsumes a whole spectrum of moral values. And Confucius, who spent long years in teaching, therefore also reached a series of conclusions, in terms of the methodology of teaching and learning. "You learn new knowledge by reviewing the old. Never be opinionated, never be prejudiced, never be stubborn, and never assume self-infallibility." He stressed, like all humanist thinkers, the importance of learning from predecessors, because it is only by following in their footsteps that one can hope to make progress. "You cannot be let into the house of the master, unless you follow his steps." This is the humanist method, while the modernists throw out everything and start something arbitrary.

Confucius wanted his pupils to arrive at their conclusions independently, not through rote learning, but by thinking it out for themselves, so they would be able "to reflect upon the three others, when one is hinted." Now, that's exactly the hypothesis, the three axioms; always keeping in mind the three other possibilities.

Confucius, therefore, has unquestionably the most important place in the history of education in China. He introduced the idea of teaching *all people,* without regard for rank or social status. He insisted on the study of the ancient Classics, and he selected five Classic books: *The Book of Odes, The Book of History, The Book of Rites, The Book of Changes,* and *The Spring and Autumn Annuals,* and established another key notion, the notion of *Li*—which is the idea that each person must fulfill his place in society. This was Nicolaus of Cusa's idea, too: only if all microcosms develop, can there then be *concordantia.*

Li also means, no break between the past and the pres-

ent; and, for Confucius, as for the later Confucians, *Li* was the expression of a cultivated humanity. Since many of the elite violated the old *Li* order in Confucius' time, he gave the answer, that the position or rank of a person should not be dependent on his birth or family, but instead, upon his moral perfection. The more moral a person is, the higher should be his rank. This is exactly what Nicolaus of Cusa said later, in Fifteenth-century Europe.

To my knowledge, this was the first time that any thinker had the idea, that *development of the person* should determine leadership, and not oligarchical considerations. And, even though it was not yet implemented at that point, it is important to see when that idea occurred for the first time.

Now, Confucius says, each individual can realize himself in his life, through knowledge—*chi*—and through the practical application of that knowledge, called *qi*. Doesn't learning, and exercising this knowledge, give you satisfaction? asks Confucius. Education must be accessible, irrespective of one's social rank.

That whole complex of Confucian ideas was the foundation of the Chinese examination system developed in the Han period. From the Seventh century A.D. on, it was fully developed, and anybody who had any function—a bureaucrat or government official—had to go through that examination system.

For Confucius, *sheng ren,* the person of the highest moral perfection, had also a religious component, because such a person must base his rule on the Mandate of Heaven. "The ruler must be the most noble example of this." One day, his pupil, Zi Lu, asked Confucius, "What does ruling mean?" And he answered, "To go ahead of the people, to give an example and inspire them, and have moral excellence." Later, this was somewhat misused to glorify power; but, nevertheless, these ideas shaped Chinese history for centuries.

An important role was also played by faithfulness, *zhong*. The written character, or ideogram, for *zhong* is middle, or heart: to be directed to the middle of your heart. In the *Lun Yu,* the famous talks of Confucius, there are many references to the importance of the connection between *Li* and *Yue,* music.

Music and *Li*

Confucius says, "songs elevate man: *Li,* the rites, give him strength, music makes him complete." As for Plato, so for Confucius, music had a function for the state. Confucius said,

> [m]usic rises from the heart when it is touched by the external world. Therefore, if sorrow gives you the sound, then the sounds of the music are somber. Satisfaction: the sounds of the music are languorous and slow. Joy: the sounds are glorious. Anger: the sounds are harsh and strong. Piety: the sounds are simple and pure. Love: the sounds are gentle and sweet.
>
> These moods are produced by impact from the external world. Therefore, the ancient kings were ever-careful about things that affect the human heart. They tried to guide the people's ideas and aspirations by means of *Li,* to establish harmony and sounds by means of music. *Li,* music, punishment, and government have a common goal, which is to bring about the unity in the people's heart, and carry out the principles of political order.
>
> Music rises from the human heart. When the emotions are touched, they are expressed in sounds, and when sounds take definite forms, we have music. Therefore, the music of a peaceful and prosperous country is quiet and joyous, and the government is orderly. The music of a country in turmoil, shows dissatisfaction and anger, and the government is chaotic. [You could say that for Western governments and music!—HZL]
>
> The music of a destroyed country shows sorrow and remembrance of the past [like country and western music!—HZL] and the people are distressed. Thus we see music and government are directly connected with one another.

In a very beautiful treatise on music, Confucius writes,

> When the likes and dislikes are not properly controlled, and our conscious minds are distracted by the material world, we lose our true selves in the principle of reason, and nature is destroyed. When man is constantly exposed to the things of the material world which affect him, and does not control his likes and dislikes, then he becomes overwhelmed by the material reality, and becomes dehumanized or materialistic. When a man becomes dehumanized or materialistic, then the principle of reason in nature is destroyed, and man is submerged in his own desires. From this arise rebellion, disobedience, cunning, and deceit, and general immorality. We have, then, a picture of the strong bullying the weak, the majority persecuting the minority, the clever ones deceiving the simple-minded, the physically strong going for violence, the sick and crippled not being taken care of, and the aged and the young helpless and not cared for. This is the way of chaos.
>
> So, music is connected with the principles of human conduct. Therefore, the animals know sounds, but they do not know tones. He who understands music, comes very near to the understanding of *Li,* and if a man has mastered both *Li* and music, we call him virtuous, because virtue is the mastery of fulfillment. . . .
>
> Truly great music shares the principle of harmony with the universe. When the soil is poor, things do not grow; and, when fishing is not regulated according to the seasons, then fishes and turtles do not mature. When the climate

deteriorates, animal and plant life degenerates, and when the world is chaotic, the rituals and the music become licentious. We find, then, a type of music that is rueful without restraint, and joyous without calm.

Therefore, the superior man tries to create harmony in the human heart, by a rediscovery of human nature, and tries to promote music as a means to the perfection of human culture. When such music prevails, and the people's minds are led towards the right ideals and aspirations, we may see the appearance of a great nation. Character is the backbone of our human nature, and music is the flowering of character.

Mencius: Exponent of Confucianism

The philosopher Mencius (390-305 B.C.) lived in the middle of the "Warring States" period, about a hundred years after Confucius, and was a contemporary of Aristotle. Like Confucius, Mencius travelled from court to court, in the hope of implementing his political ideas. He launched numbers of polemics against Mo Zi and Yang Zhu, who challenged the philosophy of Confucius. Mo Zi in particular had the idea of utility, and Mencius said that "an orientation towards utility, prevents unity in society. It leads to each trying to maximize their personal benefit at the expense of others."

The philosopher Mencius.

Mencius also launched a very harsh critique of the rulers of his time, for their selfishness, for having no sense of responsibility for society as a whole. He accused the rulers of having destroyed ancient texts, out of fear that people would read these old texts as guidance.

Later, in 213 B.C., the Emperor Qin Shihuang (221-207 B.C.), the famous one revered by Mao Zedong, burned all books, and he also burned four hundred sixty philosophers.

Mencius developed a program for a humanist government, which included the consensus of the governed, because he said, "without this, unity of the state is not thinkable." He also pronounced the need for the government to have the Mandate of Heaven: "If the ruler is immoral, the Mandate of Heaven is withdrawn."

Mencius also spoke about the right of resistance, if the ruler is bad. "Man must live according to his internal moral laws, no matter what the external conditions are." He said, you have to take martyrdom, rather than betray your convictions. "I love life," he said, "but there is something I love more than life."

Mencius was an incredibly culturally optimistic thinker. He was convinced that not far in the future, the realization of Confucian ideas would come, because the basic nature of man is good, and therefore the world one day would become good. Each person could become like the mythical emperors of Yao and Shun, who were regarded to be the incarnation of the highest moral development.

Mencius said, "Each person has the same potentiality in him." So, there was clearly a humanist conception in the early Confucianism, as well as the idea, that things do not depend only on Heaven, but it is your own efforts which determine your life and how far you develop morally. That there is, in human-kind, the ability for self-perfection.

Mencius said, "The ten thousand natures of all things are all complete in us. Therefore, let us follow our inner nature, and be truthful: there is no greater joy. There is a correspondence between the inner and the outer world, between Heaven and Man, between the laws of morality and the universe." These are the same ideas you find in Nicolaus of Cusa and in Leibniz.

Mencius said, "There is the nobility of the Heaven, and there is nobility of man. Love for mankind, faithfulness, duty, reliability, and limitless joy about the good: That is heavenly nobility." From that standpoint, he criticized the rulers of his time.

Mencius' influence was the main reason why Confucianism became the foundation of the state during the Han period; but, the real Mencius renaissance developed in the Eleventh to the Twelfth century, in the Sung period, which Michael Billington has pointed to many times.[1] The *Book of Meng Zi* became one of the four books of Confucius that were mandatory reading for all bureaucrats.

Legalism and Taoism

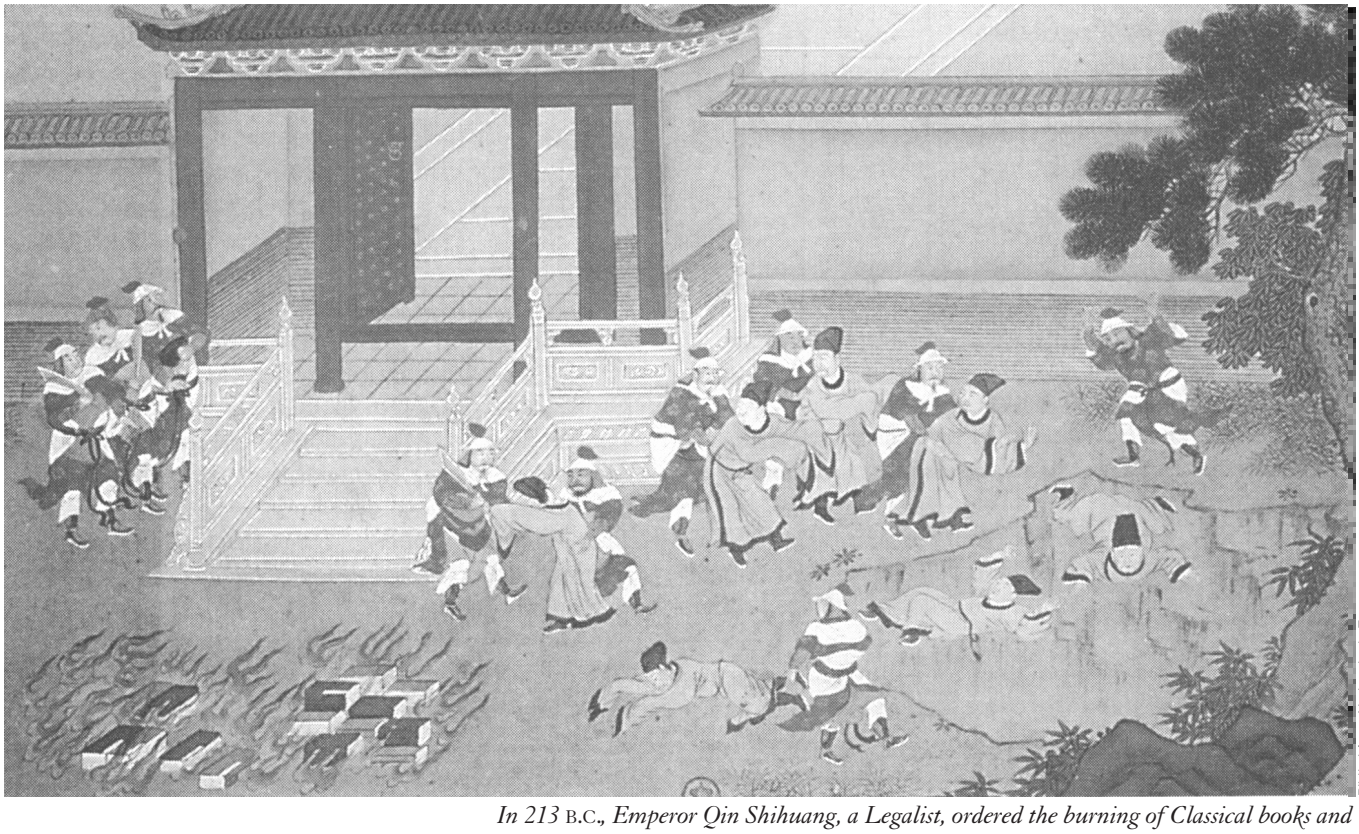
But, before we come to this renaissance period, let's quickly look at Xun Zi (298-338 B.C.), who was the dean of the Academy of the Chi-hsia University, and the mayor of Lan-lin in Shandong. He very consciously placed himself in opposition to both Confucius and Mencius, developing a materialistic notion of Heaven. For him, "Heaven" was just a collective noun for all natural phenomena.

Xun Zi developed the theory that human nature was evil, thus creating the theoretical foundation for a political doctrine which went explicitly against Mencius' conception of the basic goodness of human nature. Xun Zi said, "Human nature is evil. Its goodness is artificial. Human nature is evil *a priori.* Man is born with a desire to seek profit, to prefer enjoyment before hard work. [There must have been a Generation X there already!—HZL] Since human nature is inherently evil, social disorder will be the result, and chaos; therefore, you need the rule of rites."

There is a striking similarity between the social contract theories of the Seventeenth and Eighteenth centuries, of Hobbes and Locke—and Gingrich, for that matter—and those of Xun Zi. Chinese Legalism had already developed, nearly word for word, what these later writers, including Malthus, Adam Smith, Mill, and Bentham, would say; namely, that man is a mere beast, motivated by pleasure and the fear of pain. In fact, my suspicion is that all these British empiricists were plagiarists, who didn't even develop that garbage which they wrote. For example, Xun Zi said that, "Learning is only the accumulation of sense-perception, a reacting of man to rewards and punishment."

Xun Zi had an even worse student, by the name of Han Fei (280-233 B.C.), who advised that king who later became the first Emperor of the Qin dynasty (the one who burned all the books). Fortunately, Han Fei was framed up by false accusations, and committed suicide in prison; unfortunately, he left a political doctrine, according to which "all speeches and actions that do not observe the law, have to be prohibited. Education should only consist of learning the laws, and the tutors should consist only of the officials."

Now, the doctrine of Xun Zi and Han Fei became the model for despotic rule throughout China's history, and Mao referred to it very explicitly. Statecraft was called "the art of punishment." The two vehicles of power were called "the two handles": to handle people through life, and death. Power is the means for maintaining supremacy over the masses, and obviously, this completely ignored all the noble aspects of man. Soon after the



Bibliothèque Nationale de France

In 213 B.C., Emperor Qin Shihuang, a Legalist, ordered the burning of Classical books and the execution of scholars and intellectuals. He was revered by Mao Zedong.

Emperor Qin Shihuang had unified China based on this doctrine, there was a great peasant uprising, and they overthrew the short-lived Qin Dynasty.

Another of Han Fei's ideas was, that the growth of the population would cause a scarcity of material wealth, and therefore lead to chaos. His argument was, "In trying to persuade rulers, callers do not advocate the use of power which is sure to win, but say that if one is devoted to the practice of humanity and righteousness, one will become a true king. This is to expect that every ruler must be equal to Confucius, and that all the people in the world be equal to this seventy followers. This is absolutely impossible!"

Obviously, this is exactly contrary to what Schiller's famous drama *Don Carlos* says: "Be a king among a million kings!" Everyone can be a Confucius. This has always been the issue in *all* cultures.

The Legalists declared scholarship illegal, just like Mao, who said that all intellectuals were counterrevolutionaries. It was in this spirit, that the Emperor Qin Shihuang burned four hundred sixty people to death.

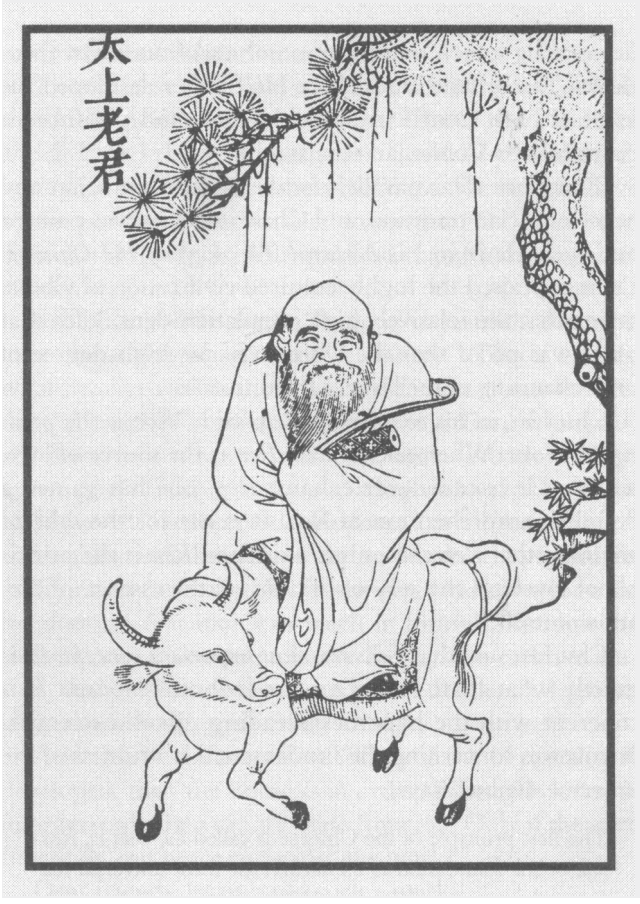
So much for the Legalists. Then, you had the Taoist school, whose founder, Lao Zi, lived at approximately the same time as Confucius. Lao Zi said, "The reason why people are hard to govern, is only that they know too much. The Ancients, who were good in practicing the Way [*Tao*], did not teach the people with intelligence, but kept them in ignorance. Being ignorant, the people would be kept void of knowledge and desire, and therefore it would be easy for the rulers to govern."

This is the clearest statement of the oligarchical principle in my experience. Later, it would be covered up more, and other arguments added. But, this is the essence: Keep the people stupid, and you can govern them.

Lao Zi also had a model of society, which was a small country with only a few inhabitants. They should have boats and carriages, but no one should use them. People will grow old and die without having visited each other. They should be kept stupid and attached to the soil.

"Attain the ultimate emptiness; maintain absolute tranquility. All things move and grow, I observe their return, the ultimate return to the non-being," said Lao Zi. He was radically opposed to any kind of studying, because, he said, "the pursuit of learning increases daily, while the pursuit of Tao decreases daily. The more one learns, the more Tao suffers." So, therefore, stop doing anything.

A contemporary of Mencius, Shuang Shi (369-286 B.C.), was even worse. He went a step farther than Lao Zi—backwards. He strongly recommended *never* intervening in the natural course of the world—that is, return to primordial chaos! He was against any kind of social progress and social reform. People should lead their lives in the most ignorant way, because everything else would violate the Tao.



Lao Zi, founder of Taoism.

Shuang Shi taught that there should be a denial of the existence of the objective world, and even began to doubt his own existence as a consequence. One day, he said: "Was I dreaming I was a butterfly, or am I a butterfly?" That shows how far you can take this! He said, "I have abandoned my body and discarded my knowledge, and so I have become one with the infinite. This is what I mean by sitting in forgetfulness."

The T'ang dynasty, unfortunately, and most of its emperors, were very much dedicated to Taoism and Buddhism. In the Seventh to Tenth centuries A.D., there was sometimes a conflict between those two, but most of the time, they merged into a syncretic mixture.

The Neo-Confucian Renaissance

The Sung dynasty emerged out of the collapse of the T'ang dynasty in A.D. 960, and with it, the very important neo-Confucian school, the so-called "Cheng/Zhu" school, as it is called in China, of whom the most important scholar was Chu Hsi (A.D. 1130-1200), who launched a

devastating attack on the immoral and fraudulent theories of Taoism and Buddhism. He further developed the ideas of both Confucius and Mencius, and produced a beautiful neo-Confucian renaissance.

There are clear parallels between the Confucian and neo-Confucian tradition, and Christianity, as was pointed out by Leibniz in his *Natural Theology of the Chinese*. Leibniz praised the highly cultured civilization of China, saying that the relatively high population-density for that time, was proof that the Chinese had a high degree of understanding of the laws of the universe.

Chu Hsi, in his treatise on *Ren,* said: "*Ren* is the principle of love. When one realizes *Ren* is the source of love, and that love can never exhaust *Ren,* one has gained a definite comprehension of *Ren*. It is not for the sake of anything that *Ren* comes into existence. *Ren* is the principle of love and the way of life. *Ren* is the essence of creation of itself."

Chu Hsi said that *Li* is *the most important concept*. *Li* is exactly what Plato's *ideas* are, or Leibniz's *monads*. It is coherent with the hypothesis leading to valid scientific discoveries concerning the fundamental lawfulness of the universe. Leibniz says,

> The first principle of the Chinese is called *Li,* that is, *Reason,* or the foundation of all nature, the most universal reason and substance; there is nothing greater nor better than the *Li*. . . . It is not that all are capable of divinity as regards its being, and it is the principal basis of all essences which are and which can exist in the world, but it is also the aggregation of the most perfect multiplicity, because the being of this principle contains the essence of things as they are in their germinal state.
>
> We say as much when we teach that ideas, the primitive grounds, the prototype of all essences, are in God. The Chinese also attribute to the *Li* all manners of perfection so perfect that there is nothing to add. One has said it all. Consequently can we not say that the *Li* of the Chinese is the sovereign substance which we revere under the name of God?

Now, Chu Hsi says "*Li* is the all-encompassing wholeness which contains everything, and which is contained in everything." This is what Nicolaus of Cusa calls "*quod libet in quōlibet*"—that you have a germ of the entire universe in every little microcosm. All created things reflect the lawfulness of the microcosm. This is obviously a complete refutation in Chinese culture of the materialistic view of the world.

Chu says, "The mind is always in danger of responding to the appearance of material things rather than their essence, their principle. In this way, the mind becomes cloudy, dragged down by selfish desires and fixations on things in themselves, and the purity of the God-given original nature is obscured." That is what Nicolaus of Cusa speaks about.

"Man receives the material force, called *qi,* in the clearest form, while animals receive it in a turbid state. But whose mind is clouded, is not far away from the animals," says Chu. Nicolaus of Cusa calls such a person, "*homo animalis*"—bestial man.

Chu also introduced the great learning for adults—the idea that adults should learn all their life, that they should never stop learning. Continuous perfection—learning the principle of hypothesis, not "facts."

This beautiful, neo-Confucian period ended temporarily in 1211, with the Mongol invasion and establishment of the Mongol dynasty in 1279. A hundred years later, in 1368, the Mongol dynasty collapsed.

There was a Confucian revival in 1435, under the Ming dynasty, which brought about the building of great projects, such as canals. There was also a flowering of the Cheng/Zhu neo-Confucian school, which almost entirely dominated the court, the educational system, and the civil service examination system, especially in the second Ming dynasty (1402-24), under the Emperor Yongle. It was Yongle who moved the capital from Nanjing to Beijing, and built the palace in Beijing that is today known as the "Forbidden City." The same neo-Confucian tradition continued under the Emperor Xuan De from 1425 to 1435.

Unfortunately, under Wang Yang-ming (1472-1529), there was a subversion of the Cheng/Zhu school, and Taoism dominated. There was a watering-down of Confucianism, especially by Wang Yang-ming.

When the Jesuits arrived in China in the late Sixteenth century, the Confucian tradition was seriously damaged. But the Emperor Kangxi revived the Cheng/Zhu school. It was this emperor who caused Leibniz's excitement, saying that the mathematics of Kangxi was such that if an emperor on the other side of the earth could have the same ideas as himself, then that was the proof that there was only one God.

The Vision of Dr. Sun Yat-sen

Later, Dr. Sun Yat-sen, the founder of modern China, would again emphasize the similarity of the Christian religion and Confucian classical thought, and he had the same idea as Leibniz of integrating the Eurasian Land Bridge.

But, at the same time, there was a massive British campaign to influence Chinese thought, utilizing the British empiricists. And, the affinity you find between the old Chinese Legalists, Taoists, and Buddhists, and the British empiricists, is, in my view, the reason why the Twentieth century went the way it did.[2]

For example, there was in particular Yan Fu, a scholar who translated all the British empiricists. He was very hostile to Judeo-Christian ideas, and to Confucianism. He praised Taoism, Buddhism, Montesquieu, and Darwin. His translations of these people formed the main material for Mao's studies, outside of Karl Marx and Lenin. Mao openly embraced Legalism.

Sun Yat-sen, on the other hand, like Leibniz, emphasized the truth underlying both Christianity and Confucianism. In 1912, he led the republican revolution, but unfortunately, he could not consolidate a unified government; only in a small portion of southern China, could he establish government, while the rest of the country remained under various warlords.

Dr. Sun denounced the famous Fourth of May movement in 1919 as being inflicted on China from outside, and as a great danger to China's survival, because it drew upon Rousseau and Mill. At the same time, between 1919 and 1921, Bertrand Russell and John Dewey were teaching classes in both Beijing and Shanghai. These were the influences leading to the early development of the Maoist movement, and Chen Duxiu, the founder of the Communist Party, was very much influenced by these translations by Yan Fu.

In 1919, Sun Yat-sen called for the international development of China, and he had very detailed proposals for rail, water, agriculture, and industry. But, these plans could not be realized, because of the May 1919 Versailles Treaty.

Today, the Eurasian Land Bridge is back on the agenda, and the Chinese government is the main force driving it. The Chinese are moving ahead economically very forcefully, and they have formulated a policy very consciously, not only thinking about China, but about the whole world. And, I must say, in my discussions with representatives of the Chinese elite in Beijing, I was really positively shocked.

Because they said, "What will be the meaning of civilization in the next century? The worst catastrophe which could hit the world, is if everybody just goes after material values. If Western materialism as we see it now in the United States, in Europe, in Russia, in other places, were to spread all over the globe, we would lose control over civilization. This would be the worst catastrophe. If everyone were guided only by the idea of how to maximize their own personal profit, then the meaning of life would be lost. The challenge confronting us right now, is: how, in the face of a collapse in both the West and the East, can we find a solution?"

Science and technology cannot remain the privilege of one country only. It must become the possession of the whole world. Western science and technology has increased wealth, but the West has become lazy. Western culture has no motivation, no goals.

The Chinese say, "We need a new civilization, which should be neither East nor West. China has a culture which lasted thousands of years. Some of it was good, some of it was bad. So also in the West. We need to have a new world culture, we need to integrate it. We need to do something which influences and changes the course of history."

In China, people think, "Be good to yourself, then you have the ability to govern the country." This is exactly what Schiller said in the *Aesthetical Letters,* about the aesthetical conception of man. Schiller and Confucius actually have very much in common, because both of them have a goal of lifting man up to a higher level of humanity, to have a harmonic development of all man's moral and intellectual abilities—to bring mankind to the highest humanity, to have him in self-determination for total freedom, so that man can reach in himself, through the coincidence of all contradictory forces, that creative tension which eliminates any kind of force, and which makes man really, truly free.

And thus, Confucius says, "Only if the personality is developed, then the house is in order. When the house is in order, only then can the state function. Only if the state functions, can peace come into the world."

Dear friends, let us build such a world!

* * *

1. See, for example, Michael Billington, "Toward the Ecumenical Unity of East and West: The Renaissances of Confucian China and Christian Europe," *Fidelio,* Vol. II, No. 2, Summer 1993; and "The European 'Enlightenment' and the Middle Kingdom," *Fidelio,* Vol. IV, No. 2, Summer 1995.
2. *Cf.* Michael Billington, "The Taoist Perversion of Twentieth-Century Science," *Fidelio,* Vol. III, No. 3, Fall 1994.

NOTE: ON SPELLING AND PRONUNCIATION OF CHINESE CHARACTERS

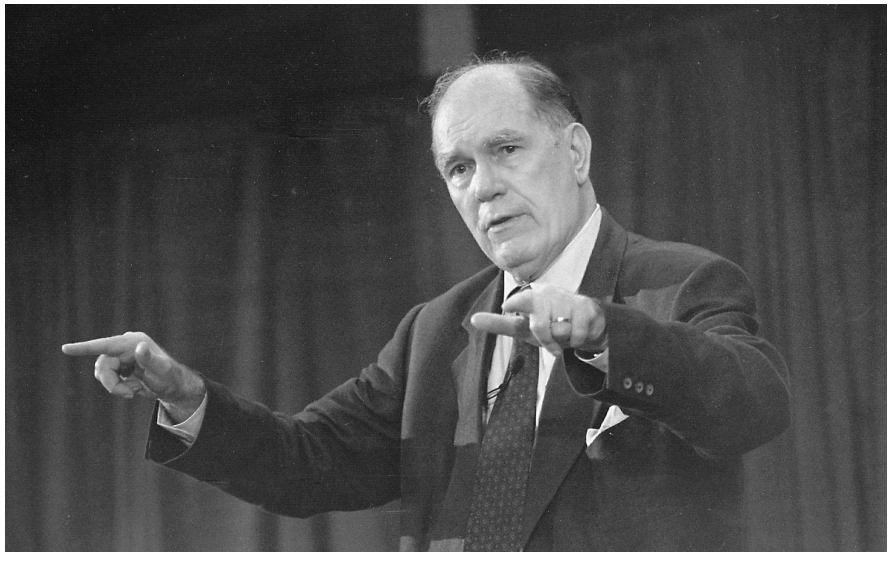
Unlike English words, Chinese words are not spelled with letters representing spoken sounds. Instead, each word is written as an ideogram (or character) representing an idea. A number of systems have been devised to spell Chinese words in the Latin alphabet used in most of the West. In this article, most Chinese words are spelled according to the pinyin system adopted by the People's Republic of China in 1979 to replace the Wade-Giles system developed in Great Britain in the Nineteenth century. The use of the pinyin system makes some Chinese words that have been familiar in older forms look strange; *it does not change their pronunciation, however, but only the way they are spelled in English*. Thus, "Peking" becomes "Beijing," "Mao Tse-tung" becomes "Mao Zedong," "K'ang Hsi" becomes "Kangxi," and the philosophical concepts which have appeared in previous issues of *Fidelio* spelled as *Jen* and *ch'i,* become *Ren* and *qi.* A fair approximation can be made by using the equivalent English sounds for pinyin consonants, with these exceptions: *c* is pronounced *ts* when it begins a word; *q* is pronounced *ch*; *x* is pronounced as *sy* (soft *sh*); *z* is pronounced *dz*; and *zh* is pronounced *j*.

Schiller Conference: 'We're Changing World History'

LaRouche: 'Now, Finish Off George Bush!'

Speaking in Reston, Virginia on Sept. 5, at the national conference of the Schiller Institute, former Presidential candidate Lyndon LaRouche declared war on George Bush and the remnants of the Gingrichite forces of the "Contract on Americans." We are a "third force," LaRouche declared, and have used our power, the power of *ideas,* to induce some dangerous characters to destroy themselves.

LaRouche's keynote kicked off three days of meetings of the LaRouche movement in the U.S., including activists from at least 35 states of the Union, Canada, and various international guests from Eastern Europe, Western Europe, Ibero-America, Africa, and Asia. Convened under the theme "We Are Changing World History," the conference featured a major presentation on the economic and cultural potential of today's China by Helga Zepp LaRouche, and a four-hour *tour de force* presentation on the threat of fascist ideology in America, titled "From Napoleon to Nashville." In addition, the conference program included a Classical music performance and presentation of Wolfgang Amadeus Mozart's "*Ave Verum Corpus.*"



EIRNS/Stuart Lewis

Lyndon H. LaRouche, Jr., keynotes Labor Day conference.

Changing History

The fact that "Dirty Dick" Morris, a major political target of LaRouche, had been forced to resign from the Clinton campaign, in the midst of scandal, two days before the conference began, set a tone of optimism for the event. Morris is gone, Pennsylvania Governor Ridge is seriously hurt, DNC Chairman Don Fowler is leaving soon—these events should all tell you something, LaRouche said at the start of his keynote. We got them out, he said, just as we destroyed Ollie North back in 1994. And now, we're going to use the same method to finish off George Bush.

LaRouche described the method which he devised in all these cases: Create a situation in which the evil person has to either *change* his nature, or be destroyed. In all the cases so far, the subjects have acted like tragic figures, who would rather hold on to their vicious flaws, even though it meant their political death.

Our inducing Ollie North to destroy himself, put us in a powerful position, LaRouche said. Now we have followed it up, in a dramatic way. We hurt Phil Gramm a great deal, and the proponents of the "Contract on Americans" overall. But, we have much more to do—to finish the job on Ridge, and create the conditions for routing all Congressmen who share his Nazi-style proclivities.

The next major target, LaRouche elaborated, is none other than George Bush. Bush is the "President in Charge of Vice," who assembled a secret government apparatus that brought planeloads of cocaine into the United States—making him the biggest drug kingpin of the

EIRNS/Philip Ulanowsky

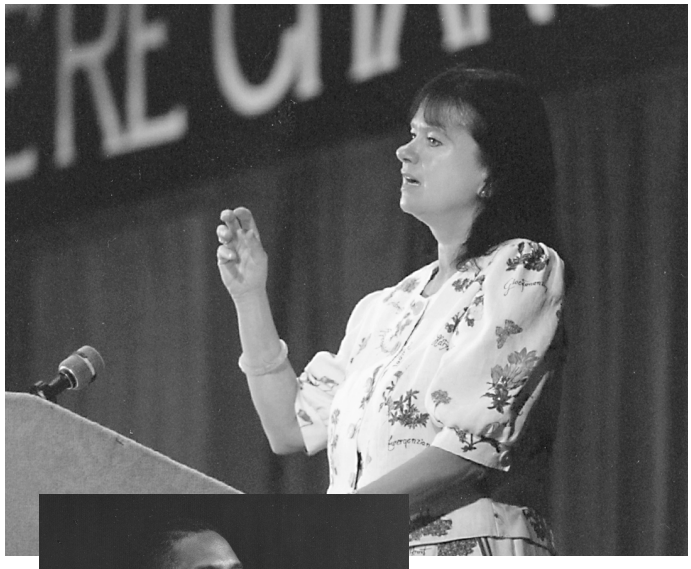
Schiller Institute chorus members perform Mozart's "Ave Verum Corpus."

1980's. George Bush created the network which carries out the bulk of terrorism in the world today, especially against President Clinton. What Bush represents is precisely what is wrong with the Republican Party, and with the nation—people who attack "big government," in order to promote *world government,* like the United Nations to which Bush subordinated us in the Gulf War.

To accomplish these aims, LaRouche emphasized, is the equivalent of carrying out the principle of French republican Lazare Carnot, who developed the idea of the military flank. Destroying Bush, and Ridge, are the flanks, by which the entire army of Gingrichite fascists can be destroyed.

LaRouche also devoted a considerable portion of his speech to the hypotheses which underlie this principle—and the concept of the future determining the present. The way this works, he emphasized, is through the power of creative ideas. What has to be done, is to preserve, and recreate, a system of nation-states which sponsors a quality of universal education and opportunity, which results in a benefit to all mankind—because "the more individual minds you develop in that way, and the greater the rate of the advancement of the human condition, the more moral and less immoral this planet becomes."

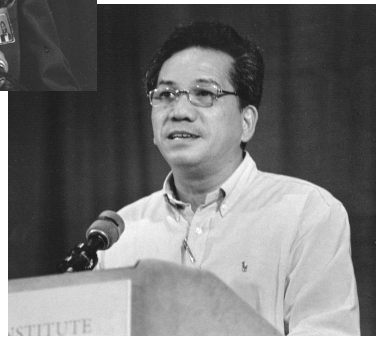
"Therefore, that is the future," LaRouche said. "That is what we are to be. We don't know what the end results are going to be, . . . but we do know, that *the result must be improvement, an improvement which is consistent with the nature of mankind and mankind's needs.* And each of us, as an individual, has the potential to make a contribution to that, and to live a life, which is based on that principle. And, that is the future. And *it is that future on which we must act, in every present moment.* And that is the difference between man and a beast."



EIRNS/Philip Ulanowsky

EIRNS/Stuart Lewis

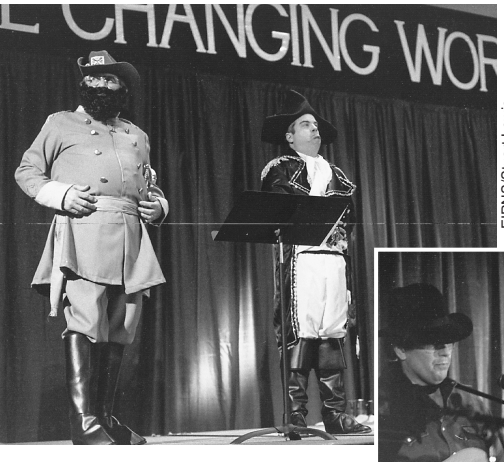
Above: *Helga Zepp LaRouche.* **Guest speakers:** *Dr. Abdul Alim Muhamad (left), and Jose Regulario, of the Philippine movement Katapat.*



EIRNS/Stuart Lewis

American-Style Fascism

Eight historians, two actors, and a troupe of musicians came together under the direction of Institute president Webster Tarpley, to present a panel on the theme "From Napoleon to Nashville." The group took on the disease of Bonapartism, and nostalgia for the "Lost Cause" of Confederate racism and feudalism, which underlies the widespread support in the U.S. for the Nazi-like policies of Ridge, Gingrich, *et al.* today. Included in the panel was a pointed spoof on country music, complete with special lyrics emphasizing how country music drags its devotées into maudlin pessimism and hostility to ideas—thus making them "easy pickin's" for fascist movements.



EIRNS/Stuart Lewis

EIRNS/Stuart Lewis

"From Napoleon to Nashville": *Skits portray dialogue between Napoleon Bonaparte and a Confederate general (above), and the maudlin banality of country and western music (right).*

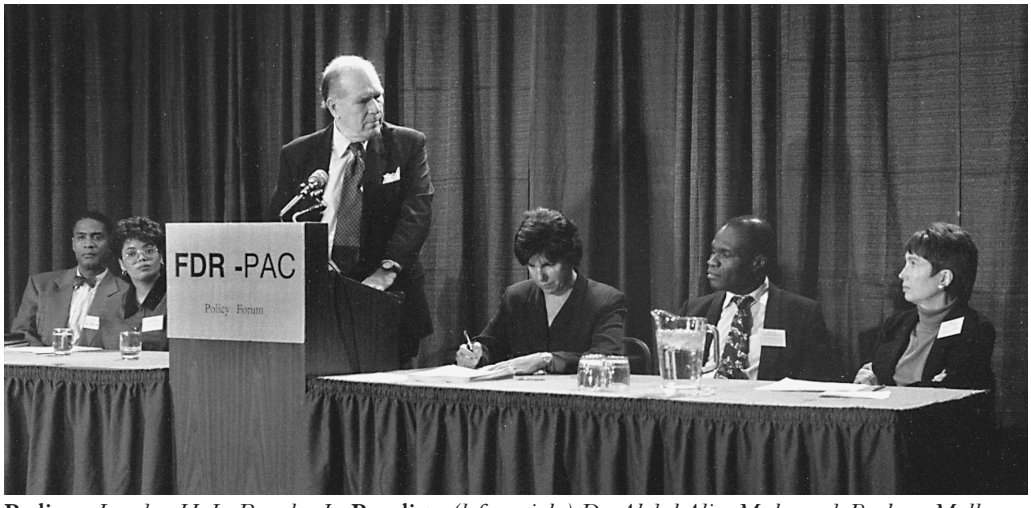
Guest presentations to the conference were made by Dr. Abdul Alim Muhamad, national spokesman for Minister Louis Farrakhan of the Nation of Islam, and by Jose Regulario, of the Philippine movement Katapat, who reported on his organization's resolution against I.M.F. conditionalities, and for a restoration of national sovereignty.

Excerpts of Helga Zepp LaRouche's conference presentation, "China's Confucian

Washington, D.C. Policy Forum

Managed Health Care: Crime Against Humanity

The newly formed political action committee known as FDR-PAC, held a forum in Washington, D.C. on Oct. 9, to establish standards for the provision of health care. The event was dedicated to the memory of Chief Justice Robert Jackson, U.S. representative to the Nuremberg Tribunal, and his assistant, Dr. Leo Alexander, who worked on the Nazi doctors' trials.



EIRNS/Stuart Lewis

Podium: *Lyndon H. LaRouche, Jr.* **Panelists:** *(left to right) Dr. Abdul Alim Muhamad, Barbara Mallory, moderator Debra Hanania Freeman, Dr. Kildare Clarke, and Marcia Merry Baker.*

The forum was addressed by Lyndon H. LaRouche, Jr., a policy adviser for FDR-PAC, and a panel of four speakers from different sections of the health care profession. First was Dr. Abdul Alim Muhamad, Minister of Health for the Nation of Islam; then Barbara Mallory, from the Executive Board of Nurses of Pennsylvania; then Dr. Kildare Clarke, Associate Director of the Emergency Room at Kings County Hospital in Brooklyn, N.Y.; and then Marcia Merry Baker, Director of Economics for E.I.R.

Lyndon LaRouche defined the problem: faced with financial disintegration, the financial oligarchy is using the economic collapse to accelerate the looting of the population. But, how is the population responding? Some say, let's be practical, and they go along with the cuts. Others, like the President, say, let's be "civil," and find "middle ground" with the killers.

We have shown in the recent election campaign that, when there is leadership which addresses the issues without civility—which tells the truth—Americans will move. The three factors responsible for the successes of the Democrats in the recent election were seniors, the AFL-CIO, and the LaRouche intervention.

Hence, "we cannot be civil," LaRouche said. Where the actions are paralleling Nuremberg crimes, we are going to call them mass murder. We must "make pariahs of mass murderers."

Health Care Experts

The panel of health care professionals was led off by Dr. Muhamad, who said that doctors had let accountants and other profiteering sharks take over the hospitals, and that the monied institutions had particularly targetted health institutions because they represent $1 trillion out of $6 trillion "product" in the economy. Managed care is to move in on that cash flow, he said.

Dr. Muhamad also hit hard at the question of Dr. Kevorkian, as an example of how the culture of death had changed the role of the doctor. How are you to trust your doctor? Who is he responsible to?

Barbara Mallory then spoke on the Nurses of Pennsylvania's fight for decent care for nurses, and patients, in

Schiller Institute Fights 'Assisted

The Schiller Institute has filed for permission to submit an *Amicus Curiae* (Friend of the Court) brief before the U.S. Supreme Court in the upcoming case on "assisted suicide."

The brief, written by Attorney Max Dean of Michigan, is being filed on behalf of the State of Washington, which is challenging a U.S. 9th Circuit Court of Appeals ruling, which threw out Washington State's ban on physician-assisted suicide. The Washington case will be heard in January, along with a similar case from the U.S. 2nd Circuit Court of Appeals, which threw out New York State's ban.

In its appeal to the Supreme Court to accept its brief, the Institute argues: "The accompanying proposed brief advances an argument not developed by Petitioners: the extent to which allowing physician-assisted suicide on any of the alleged grounds, or permitting the various states to do as they please, would be an act of worldwide negative significance. It would expose all those physicians acting in reliance upon such rulings to be adjudged criminally responsible for crimes against humanity in future proceedings similar to those had under the Four Power Agreement establishing the international tribunals at Nuremberg at

their state. It's a question of profit margins versus patient care, she said, and demonstrated with numerous cases how this was exemplified. The Institute of Medicine claims there is no definitive evidence of how much harm HMO's are doing, but the testimony given by Pennsylvania nurses this last summer, showed there to be plenty of evidence. She showed how "downskilling' and the replacement of nurses with all kinds of technicians are tantamount to murder.

Dr. Kildare Clarke, who is both an attorney and a physician, first posed the question: is health care a right, or a privilege? He then told numerous stories about the decline of health care in New York, as doctors have knuckled under to those who put profit above care.

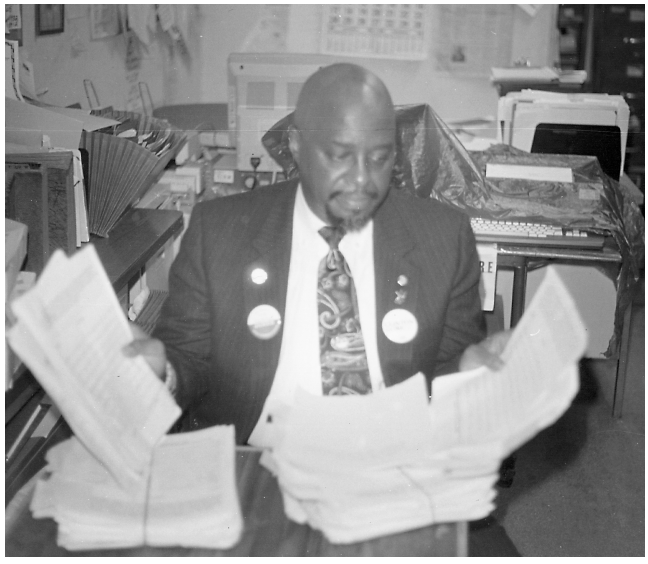
Dr. Clarke stressed that doctors and patients have the power to break the HMO's. He said that he, along with others, had also taken out a law suit against HMO's, which charges that they are responsible for the murderous acts of those under their authority—along the lines of the Nuremberg Tribunal principles.

The final speaker on the panel was E.I.R.'s Marcia Merry Baker, who gave a national overview of the change in health-care policy from the late 1960's/early 1970's, and the spread of HMO's. She then contrasted HMO policy with the Hill-Burton policy: It's a question of "universal care," she said, "versus managed care."

Impeach Governor Ridge!

Call for Hearings on Pennsylvania Medical Cuts

State Representative Harold James (D-Phila.), chairman of the Pennsylvania Legislative Black Caucus, released the following statement on Oct. 31.



EIRNS

Representative Harold James reviews petitions signed by 7,000 constituents for the impeachment of Governor Ridge.

Last May, Democratic leaders warned of the deadly and devastating impact that Gov. Ridge's medical cuts would have on the people of Pennsylvania. Our beloved state senator, the late Roxanne Jones, told Gov. Ridge that his plan was "a form of genocide."

Yet, Gov. Ridge rammed his killer bill through the legislature, despite all warnings and appeals, including some from his own party. This means that an estimated 220,000 poor and disabled Pennsylvanians are in the process of being systematically cut off state medical assistance.

I recently asked that research be done on the impact of Ridge's medical cuts so far. The preliminary report I have received reveals a picture of death, devastation and threat to innocent lives beyond what many of us thought possible in a civilized society. This includes:

- the mass layoffs of medical personnel at hospitals and other cutbacks, including the severe restriction of emergency room care for persons without medical coverage, and the replacement of nurses with unlicensed substitutes, which according to the testimony of nurses before the Pennsylvania House Committee on Health and Human Services, has already led to the unnecessary suffering and death of patients;
- the cutoff of people in the middle of life-saving medical procedures, such as chemotherapy;
- the cutoff of mentally disabled people from treatment and medication, leading to at least one tragic death already, and inhumane conditions for

Please turn to page 82

Suicide' with Supreme Court *Amicus*

the conclusion of World War II.

"The Schiller Institute's brief supports the position of Petitioners, and points out where such Nazi policies have led in the past and where they will lead again. . . ."

The brief then argues, with documentation from Dr. Leo Alexander, a consultant to the Chief of Counsel at Nuremberg, from the Nuremberg Tribunal itself, and from the history of Nazi euthanasia, that there can be "no constitutionally protected right to suicide. To judicially accord a terminally ill competent individual, a constitutional right to the assistance of a physician to commit suicide, will lead to punishable acts under future Nuremberg-type tribunals established to punish those who commit such crimes against humanity."

Dr. Alexander, in particular, sharply identified the way in which a philosophy of "lives not worthy to be lived," which began in small ways, led to the genocidal mass killings in Nazi Germany. It was Dr. Alexander's belief, expressed in an interview with the Schiller Institute in 1984, that moves to legalize euthanasia in the U.S., and the philosophy of individuals such as Dr. Richard Lamm, were leading toward Nazi crimes.


EIRNS


EIRNS

Institute Fact-Finding in Sudan

On the initiative of the Schiller Institute, a delegation of four U.S. elected officials visited Sudan Sept. 13-23, to investigate allegations of government supported slavery. The delegation consisted of former Congressman James Mann of South Carolina; Assistant Speaker Pro Tem of the State Legislature of Arkansas Benjamin McGee; Member of the State Legislature of Massachusetts Ben Swan; and Member of the State Legislature of Alabama Thomas Jackson. They were accompanied by Lawrence Freeman and Muriel Mirak Weissbach, both of the Schiller Institute.

The delegation was received by Sudanese officials at the state and federal level, as well as by religious leaders, representatives of leading economic sectors, and the press. Among them were the leaders of the National Assembly (Parliament); its President, Dr. Hassan Turabi; Deputy Speaker Shiddo; the chairman of the Foreign Parliamentary Relations Commission, Dr. Mohamed Shakir Alsarraj; the chairman of the Foreign Relations Committee, Einayet Abdel Hameed; the chairman of the Peace Committee, Juang Tuoj Nyoab; the Deputy Chairman of the Human Rights Committee, the Rev. Adi Ambrose, and many leading parliamentarians. The delegation was also received by the Secretary General of the National Congress, the Secretary General of the Council for International People's Friendship, the Minister of Justice, and the President of the Sudanese American Friendship Association.

On the state level, the delegation was received by the chairman of Khartoum State Legislative Council, along with many committee chairmen, and the Minister of Agriculture of South Kordofan State.

Since the central purpose of the visit was to probe allegations regarding slavery in Sudan, the elected officials engaged in lengthy sessions with groups of Sudanese officials, posing direct questions on the matter. Sudanese officials detailed how, following United Nations allegations in late 1995, they had sent investigating teams to the areas where such practices were alleged. UN Special Rapporteur Gaspar Biro, they related, had been pleased with the team's findings, issued Aug. 15; they showed no cases of slavery in the Nuba Mountains.

Visit to Nuba Mountains

The U.S. delegation followed up its discussions in Khartoum with federal and state officials, by going to the Nuba Mountains to see the situation with their own eyes. The Nuba Mountains are the area where, according to Amnesty International, the Society for Endangered Peoples, and Christian Solidarity International, the Sudanese "Arab" government has practiced ethnic cleansing against the Nubas.

The Schiller Institute delegation received exhaustive reports from the Kordofan State Governor, the Agriculture Minister, State Assembly members, local authorities, and the tribal chiefs in Kadugli. They were briefed as well by the representatives of the Roman Catholic Church, the Coptic Church, and the Sudanese Church of Christ.


EIRNS

Top left: *In Kadulgi, Rep. Thomas Jackson, Lawrence Freeman, and Rep. Ben Swan (left to right) meet with refugees from the Nuba mountains.* **Top right:** *In Khartoum (clockwise around table), Reps. Swan, Jackson, and Benjamin McGee meet with Minister of Justice H.E. Abdel Baset Sabdarat, ministry officials, and Rev. Adi S. Ambrose, deputy chairman of the Human Rights Committee.* **Bottom:** *Reps. McGee and Swan meet with Dr. Hassan Turabai, President of the National Assembly.*

As Rep. Ben Swan told a Sudanese reporter in an interview on returning to the capital, not only were the reports given them by the local people credible, but the entire social atmosphere, with children freely roaming the fields, swimming in the river, and playing, made clear that there was no fear of abduction among the local population. Representative Jackson told the same reporter that he found it "incredible" that, with all the massive press campaigns about slavery, "No one has ever gone there."

Youth Meetings Mark LaRouche Slovakia Visit

On July 31-August 3, Lyndon and Helga LaRouche returned for their second visit to the eastern European country of Slovakia. They were hosted by Dr. Josef Mikloško, the former vice-premier of former Czecho-Slovakia, who is chairman of the Slovak Friedrich Schiller Foundation for the Protection of Life, Culture, Education, and Human Rights, and also chairman of the Committee to Save the Children of Bosnia.

During the visit, the LaRouches held numerous meetings, four of which were public: a press conference; lectures on "The actual problems of today's financial world, and the consequences for transformed post-communist countries," and "Science and religion in today's world"; and a meeting with youth, especially from orphanages and children's shelters.

Approximately fifty journalists attended the press conference. To a question from the TV station VTV, concerning his opinion of Slovakia, Lyndon LaRouche responded, ". . . Slovakia is a more happy country than the others. I was persuaded on that by my last visit in 1994. I have heard, in Nitra, on a religious pilgrimage, about 50,000 people singing. This was beautiful. Slovaks have a sense of spiritual values, and, in spite of everything, they did not lose their own national identity. Slovakia needs a leader, someone honest and resolute."

EIRNS/Carlos DeHoyos

Dr. Josef Mikloško, Helga Zepp LaRouche, and Lyndon LaRouche (front, left to right) pose with youth from orphanages and children's shelters.

More generally, LaRouche emphasized, "The East survived the collapse of communism and the West's plunge into collapse. . . . Today's financial and monetary system doesn't need a doctor, but an undertaker. . . . Everything that causes the deaths of people—children, pensioners, poor people, ill people—for example, by cancelling medical care, making social cuts, cuts in education—the people who do all that belong on trial, like the Nuremberg trials. The Opposition in the East did not understand, after the revolution against communism, the Pope's words and social teachings, about the culture of death and liberal capitalism."

LaRouche offered constructive suggestions for various economic, cultural, and moral problems, after making a harsh criticism of world government, the globalization of economics, and the marginalization of some countries. He attacked the I.M.F., the European Union, NATO, and the United Nations as contributing to those problems.

The LaRouches also met about one hundred young people. Lyndon LaRouche told the youth, "Every man is created in the image of God. Each child has a right to be a historic personality. . . . Positive changes in mankind are coming, through big crises. You are living in an astonishing time of great changes and chances. Life is short. Many generations fought for some goals, only one generation then starts to use them. . . . We must create a world movement for these aims. . . . If you think that something is very important, you must hold firm in the fight for this goal."

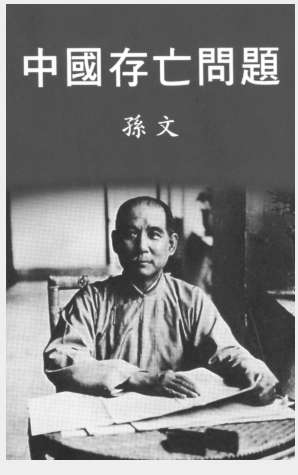
At the end of the discussion, Helga LaRouche said to the youth: "The most beautiful thing in the world is to keep your soul clean and pure."

A farewell event was held in the House of Slovak [Composers] in Dolna Krupa, where it is believed Beethoven wrote his "Moonlight Sonata." Many of those present were in the movement; also, there were ten young people from children's orphanages and shelters, invited by the LaRouches to attend their farewell party.

Institute Reprints Sun Yat-sen Booklet

The Schiller Institute released a new edition of Dr. Sun Yat-sen's 1917 Chinese-language booklet, "On the Vital Problem of China"—a work almost completely unknown today in the Chinese-speaking world—on Nov. 12, the 130th anniversary of Dr. Sun's birth.

Included in the edition is a beautifully written postscript by Chiang Wei-Guo, the son of Chiang Kai-shek. In the edition's preface, Helga Zepp LaRouche says, "Dr. Sun demonstrates an exceptional insight into the British manipulations which had led to World War I, as well as the perfidy of the concept of 'balance of power,' and his essay is surely one of the most devastating analyses of British policy as it existed then, or as it is now."



Ibero-American Contintent Mobilizes

'There *Is* Life After the Death of the I.M.F.'

On Oct. 12, the Ibero-American Solidarity Movement (M.S.I.A.) carried out a continental mobilization, the keystone of which was a forum held in Mexico City, to pull together the forces needed to bury the International Monetary Fund.

The initiative was joined by the Movement for National Identity and Ibero-American Integration (MINeII), founded by Col. Mohamed Ali Seineldin, the Argentine nationalist leader. Also joining were other political movements, professional and civic associations, and a number of labor organizations, including the Colombian oil workers, the Argentine farm women, Peruvian port workers, and the Stone Workers' Union and the Federation of Construction Workers of Venezuela.

In addition, prominent individuals sent messages of support—including Panama's General Manuel Noriega, who is imprisoned, a Bush POW in the United States, and Domingo F. Maza Zavala, the former president of the Venezuelan Academy of Economic Sciences who is currently a director of Venezuela's Central Bank.

The level of mobilization shows the hemisphere's growing resistance to the I.M.F. and its genocidal policies.

'Time for Justice'

The reason for this was explained by Lyndon LaRouche, who spoke in a videotaped address that was shown in Mexico City and at the other forums. "Argentina's almost not a country any more. Chile is a corpse which is nicely embalmed. It's not a real economy, it's an illusion, it's virtual reality. Peru is almost destroyed. Central America—don't talk about Central America. Colombia is a narcoterrorist dictatorship by George Bush's drug-pushing friends. Venezuela can blow, it's on the edge, they're out to crush it. Brazil is ready for civil war, or some other form of disintegration."

But, there is hope. "The power, the economic power, the authority of the institutions, which have imposed these policies over the past 30 years, is crashing. And therefore, we have a moment of a vacuum in history. This is the time you can intervene, because those in power are at their moment of greatest relative weakness. And, that's our opportunity, because the time for justice has come. Justice is not going to be delivered to us; but, *the opportunity to win that victory, is now presented to us.* And therefore, we should seize it."

The only real policy proposal on the table with which to intervene, is the "LaRouche Plan," more formally known as the Emergency Bill for the Bankruptcy Reorganization of the Economy. This draft bill, which is already before the Congresses of Mexico and Argentina, calls for declaring moratoria on the foreign debt, imposing exchange controls, establishing a new international financial system to replace the I.M.F., and eliminating autonomous central banks, replacing them with national banks to issue credit for infrastructure and the production of needed physical goods.

Call for Hearings

Continued from page 79

many others;

- the denial of essential medications and procedures to diabetics, severe asthmatics, people with HIV and life-threatening conditions;
- the devastation of the working poor, who cannot afford to purchase life-saving medications or procedures;
- the cutoff of persons seeking rehabilitation from drug addiction.

In addition, my constituents have presented me with petitions representing over 10 percent of the people in my legislative district, along with many in nearby neighborhoods, asking that I take action toward the impeachment of Gov. Ridge. Over 7,000 people in my area, of all colors and ethnic backgrounds, have signed their names, demanding action against the governor. This is an overwhelming demand for action, which I respect.

Gov. Ridge must sit down with our legislative leadership, including the Democratic Chairman of the Health and Human Services Committee and other pertinent legislators, and work out a plan whereby adequate medical services will be provided to those being cut off of medical assistance.

At the same time, I am calling for public hearings, to thoroughly document the deadly impact of Gov. Ridge's actions. I believe, based on the information already at hand, plus the additional information we will gather as people's health further deteriorates, that Gov. Ridge's actions will rise to the level of an impeachable offense, and a resolution to impeach Ridge will be introduced into the House of Representatives.

The objective of impeachment would be to charge the governor with gross misbehavior in office under Article VI of the Pennsylvania Constitution, since he knew, or should have known, that his medical cuts would result in the wrongful death or injury of innocent persons. I warned Gov. Ridge on the floor of the House of Representatives on May 15, that when Pennsylvanians begin to die as a result of his cuts in the state medical assistance program, that, upon proper complaint, I foresee an indictment being considered against him.

An impeachment resolution will demonstrate that the people will hold government leaders responsible for the Gingrich-style, mean-spirited policies that cause injury and loss of innocent lives. . . ."

Most Reverend Anthony Michael Pilla, President, U.S. National Conference of Catholic Bishops

'We don't believe in *future* life, we believe in *eternal* life—and we're already experiencing it'

Bishop Anthony Pilla was elected president of the National Conference of Catholic Bishops in November 1995, after having served as vice-president for the previous three years. As president, he presides over the meetings of the Bishops, over the administrative committee for the conference, is chairman of the executive committee, and gives oversight to the staff of the National Conference of Catholic Bishops/United States Catholic Conference in Washington, D.C.

Bishop Pilla was born in 1932, and was ordained to the priesthood in 1959. In June 1979, Pope John Paul II announced his choice of Rev. Pilla as Titular Bishop of Scardona and Auxiliary Bishop of Cleveland, Ohio, and in January 1981, he was installed as the Ninth Bishop of Cleveland.

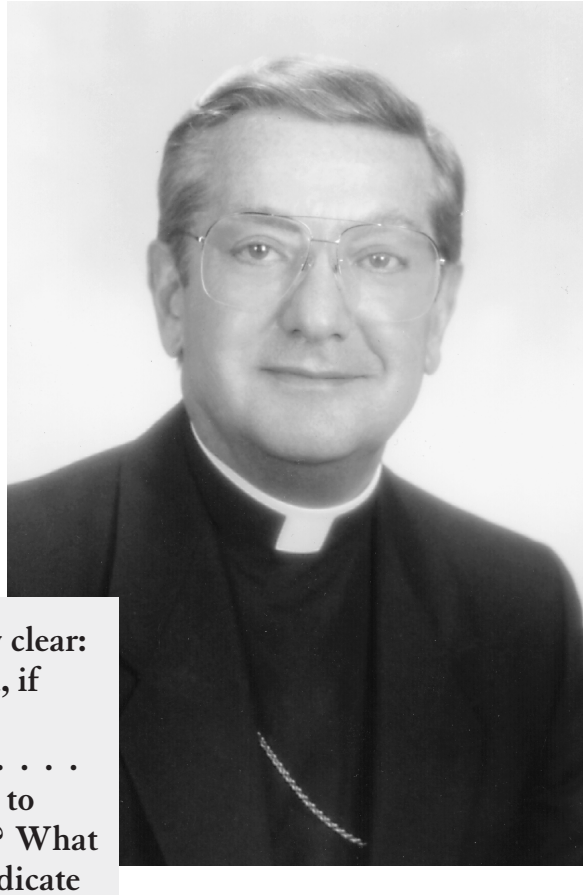
Bishop Pilla was interviewed for Fidelio by Nina Ogden at the National Lay Forum in Cleveland, Ohio, which was sponsored by the National Conference of Catholic Bishops Committee on the Laity. The interview was conducted on October 11. A previous interview with Bishop Pilla appeared in the Spring 1996 issue of Fidelio.

Fidelio: In the same issue of *Fidelio,* in which this interview will appear, we examine the question of "time reversal." In re-reading the Pope's Apostolic Letter, "Toward the Third Millennium," I became aware that John Paul situated the Jubilee in this context, of the future acting on the present. He wrote: "Speaking of the birth of the Son of God, St. Paul places this event in the 'fullness of time.' Time is indeed fulfilled by the very fact that God, in the Incarnation, came down into human history."

Bishop Pilla: The future shapes our present lives. The danger is to live in the future, thinking that you don't have to act in the present. It's very important to focus in the present moment, rejoice in the present moment. The reality we see is the present day, but that is not the whole reality.

Fidelio: Pope John Paul, in the letter, says, the present is a "plan for the fullness of time, to unite all things in Him, things in Heaven and things on Earth. . . . Christ is the Alpha and the Omega."

Bishop Pilla: The Holy Father, in raising the theological point of view—that's an eternal perspective. It's unity, all One. We experience it sequentially. We should always have a vision of the eternal, or the unity of time. That's where hope is based.



Jesus made it pretty clear: You don't love God, if you don't love your brothers and sisters. . . . What are we doing to bring about justice? What are we doing to eradicate poverty? Are we making a difference? Or, do we buy all the rhetoric, that every poor person is a 'welfare junkie,' and all that nonsense?

There's no question about the triumph of the Gospel, but in each moment our perspective is very important. That's very key, very key—because you're talking about eternal reality here. We're just one part of that, but it's the whole thing that we're engaged in; and we have our part to play in the whole salvation history, and our part is very important. We're part of that, because Christ is salvation and participating in the whole salvific event is what's tremendous here. So nothing is really insignificant; everything we do is "big stuff," cumulatively, in the mystical body. The Pope is so pro-

found and so poetic—that's what he's talking about—, and he's very conscious of his role, and he wants us to be conscious of our own.

It's not such a complicated thing; it's the root of responsibility. By identifying Christ present in our life now, we are in the future, in a sense. We're already there, because we don't believe in future life, we believe in eternal life; and we're already experiencing it in ways that are very important. So, we don't have to wait; we experience eternal life now. Heaven is a fulfillment of this. We don't have to wait for some ideal Church, as some people do. We don't have to be sad and grumpy, waiting for something ideal; we can rejoice.

Fidelio: I thought it was crucial that he developed time in this way.

Bishop Pilla: That's why he set the focus in the first year on the Incarnation. Unless you understand the Incarnation—Christ assumed human form as a slave—you would miss the whole thing. That was Christ's role in his human existence: to put us in touch with the divine. There's always the Trinitarian reality there: through Christ we are in touch with the unifying mystery of God.

Fidelio: John Paul says, "Against this background we can understand the custom of the Jubilee. . . . In the sabbatical year [every seventh year—Ed.], in addition to the freeing of slaves, the Law also provided for the cancellation of debts in accordance with precise regulations. And all this was done for the Glory of God. What was true for the sabbatical year was also true for the jubilee year, which fell every fifty years. In the jubilee year, however, the customs of the sabbatical year were broadened." He speaks very specifically about "reducing significantly, if not cancelling outright, the international debt which seriously threatens the future of many nations." He, of course, talks about Paul VI's *Populorum Progressio,* and that "development is the new name for peace." This brings to mind Bosnia, Northern Ireland, the Middle East, and the situation in the entire Third World.

Bishop Pilla: Of course, we must take the concept of this legislation and apply it to the realities of our time: Africa, the Third World debt, and the terrible oppression it's causing, and the violence. We focus on those tragic situations. And look at our urban situation. This is where we have to be careful that it's not something simply theoretical. How does this reality inform our situation? That theology has to inform our behavior. How does this impact on our behavior, so that our behavior is Christ-like.

They accuse us of being hysterical about 'the slippery slope.' Well, it is a slippery slope. . . . Who's going to make these decisions? Will they kill the elderly? The handicapped? People who are not in their peer group? Once you establish this principle, where does it end? We've seen that historically. We must be opposed to these things.

We have to be very careful because, sometimes, religion is a way of rationalizing away our responsibility: "I had this encounter with Jesus and I'm O.K." Well, that's not what the Gospel says. The vertical has to be complemented by the horizontal, otherwise it's not true Gospel, in our tradition. Jesus made that pretty clear: You don't love God, if you don't love your brothers and sisters. So we were talking in very deep terms, initially, about the Incarnation, but the proof of the pudding now, is how that is lived out in these issues. What are we doing to make for less violence? What are we doing to bring about justice? What are we doing to eradicate poverty? And you must ask, what can you do, and what are you doing? Are we getting involved? Are we making a difference? Or, do we buy all the rhetoric, you know, that every poor person is a "welfare junkie," and all that nonsense?

Fidelio: I wanted to ask a specific question, along those lines, about the scandal that the crack-cocaine epidemic emanated from the White House Special Situation Group responsible for Iran-Contra.

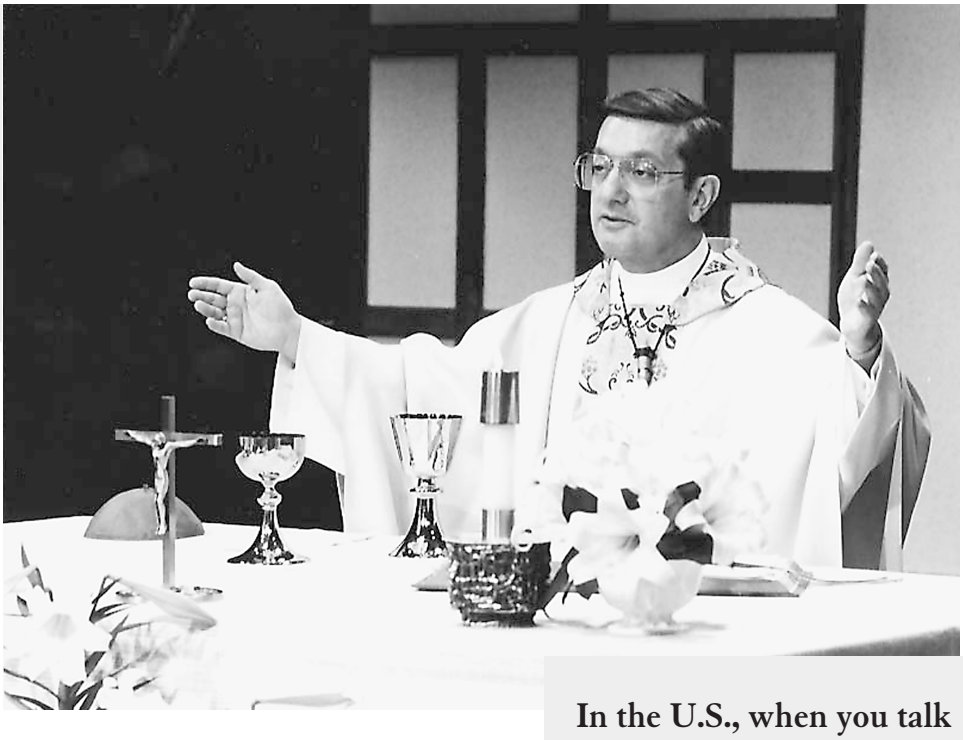
Bishop Pilla: I don't totally know where the truth lies. I'm not privy to all the information. I've read everything I could about it. If it's true, I don't know how you justify it; that's expediency at its worst. Can you justify all that by national interest? The national interest must involve the whole society. What about the people victimized by drugs? Shouldn't there be complementarity between the needs of people, foreign policy, and national interest? And what about the integrity of our government?

Fidelio: There are growing calls for investigation.

Bishop Pilla: We are in the forefront of most issues concerning justice. We haven't been invited to investigate, because of the tradition in the U.S. of the "separation of Church and state." There's reluctance to have the Church involved in any such role, lest that principle be violated. Not that I agree with that. Churches should be involved in civil affairs, without having to be part of the government. The Church will get involved in this vital question. We will say something about this. We're concerned. If we would be asked to investigate, we would want to do that.

Fidelio: The last time I interviewed you, I asked about the Pope's call for a Synod for the Americas. The Latin American bishops have, of course, repeatedly called for debt relief.

Bishop Pilla: That's what's being worked on now. We're involved in the process now. The discussion is in two parts. One is evangelization: How can we make the Church more present to her people, and share it with others? The other part is economic and social justice. We're discussing what we can do in our political contexts to alleviate some of the injustice. This will come out in the final working group.



Fidelio: Which is scheduled sometime soon, I believe?
Bishop Pilla: Sometime after April.

Fidelio: I want to read you something a particular Congressman said criticizing the excellent statement the National Conference of Bishops issued on political responsibility last year. This Congressman published an essay stating, "I must take respectful exception to a formulation in the United States Catholic Conference's new statement on political responsibility in the forthcoming election year. Speaking in the name of the Bishops, the conference document says this: 'We stand with the unborn and the undocumented when the politicians seem to be abandoning them. We defend children in the womb and on welfare. We oppose the violence of abortion and the vengeance of capital punishment.' "
Bishop Pilla: He's in opposition? Why?

Fidelio: He says, "I'll leave the substance of the issues of immigration reform, welfare reform, and capital punishment for another day. They are important issues; they are controversial. But I do regret the suggestion of moral equivalence contained in the form of the United States Catholic Conference statement. . . . I'm afraid this is more than a mere stylistic difference of opinion: it's an affirmation of the seamless-garment metaphor which is based on, in my opinion, an unwarranted moral equivalence."
Bishop Pilla: The Bishops are not talking about the particulars of equivalence. They're talking about things that are basic and fundamental. Your integrity about all life issues is important here. You have to change people's minds. We are concerned about the right to *all* of life. I don't think the Bishops have ever said anything about equal issues. But they *are* issues, and to ignore these other issues because one is primary, is doing a disservice to the Gospel—because the Gospel speaks of all of it. And should we not talk about parts of the Gospel?

In the U.S., when you talk about choice, about individualism, this is a high value. In the current climate, use the words 'family values,' and it makes it all acceptable. Are these really family values, or something we would normally reject, couched in a way to make it more acceptable? It's packaging, it's the modern media, it's spin control.

Fidelio: The Schiller Institute is addressing the questions of cuts in health care, and assisted suicide, and social security, by the Nuremberg Code criteria: as dangerous crimes against humanity.
Bishop Pilla: That's tremendous. Basically, going back to what we've said: Whose province is this, humanity's or God's? These are dangerous precedents here. They always accuse us of being hysterical about "the slippery slope." Well, it *is* a slippery slope, and we'd better stop it now, or the crimes you're talking about will become more and more possible. Who's going to make these decisions? Will they kill the elderly? The handicapped? People who are not in their peer group? Once you establish this principle, where does it end? We've seen that. We've seen it historically. Once established, it goes to places you may not want it to go, nor should it go. We must be opposed to these things.

Going back to your other question: Sometimes when people say that the Bishops do or don't do things, what they really mean is, we don't do it the way they want to do it. That doesn't mean we're wrong. We may differ, but it doesn't necessarily mean we're wrong. We're noted for our pro-life stand, and criticized for being so focussed on it, and so forth. We are not the enemy. We ought to focus on other people. Don't make the Bishops and the Church's authority the enemy. Our enemies rejoice in this. It doesn't help the cause by saying the Bishops aren't doing it right—our enemies love that.

Fidelio: The economist who won the Nobel Prize in 1992, Gary Becker, has spoken on several occasions at forums sponsored by the Pontifical Academy on the Family. He uses the buzz words

"family values." He is a protégé of Milton Friedman at the Chicago School of Economics. He believes in the legalization of drugs for the "free market." He was in Argentina recently, talking about privatizing pensions, social security, and infrastructure: the Conservative Revolution agenda. How can he say he's for family values with that agenda?
Bishop Pilla: Because that's what makes it work. "Buzz words" is right! Words turned inside out. That's why people who support abortion say they're "pro-choice." They couch it in those terms to make it more acceptable, and people fall for rhetoric. In the U.S., when you talk about choice, this is a high value. Talk about individualism—high value. See? And now, in the current climate, use the words "family values," and it makes it all acceptable.

You have to listen to what is being said. Are these really family values, or something we would normally reject, couched in a way to make it more acceptable? It's packaging, it's the modern media, it's spin control. It's clever, but you've got to be careful. Then, they won't get away with it.

Fidelio: Could he use the institutions of the Catholic Church to become an American spokesman for these things?
Bishop Pilla: The Bishops Conference speaks for the Bishops; nobody else.

Fidelio: The title of the 1996 National Lay Forum is, "Crossing the Threshold with Hope."
Bishop Pilla: And these are real issues that you bring up. They are complex, and, in the course of one interview, we certainly can't resolve all these things. I keep going back to who we are: I am at peace and I have confidence, not because I have all the answers, but because I trust in a good and loving God, made so clear to me in the life of Jesus Christ; and He said, that victory is assured for those who believe and persevere, and I take that at its word. So, for me, the suffering isn't meaningless—it isn't just pain, it's redemptive. Somehow my continued efforts, despite failure, despite pain, are adding to that whole salvific effort—just as His was.
Fidelio: Thank you, Bishop Pilla.

Most Reverend Howard J. Hubbard, Bishop of Albany, N.Y.

'I'm emphasizing the sacredness of *all* aspects of human life'

Bishop Howard J. Hubbard, who was born in Troy, N.Y. in 1938, was ordained to the priesthood in Rome, Italy in 1963 and became the ninth Roman Catholic Bishop of Albany, New York in 1977.

Soon after he became a priest, he co-founded the Hope House Drug Rehabilitation facility, which now, thirty years later, services eight thousand people yearly in residential, outpatient, community, and school-based programs.

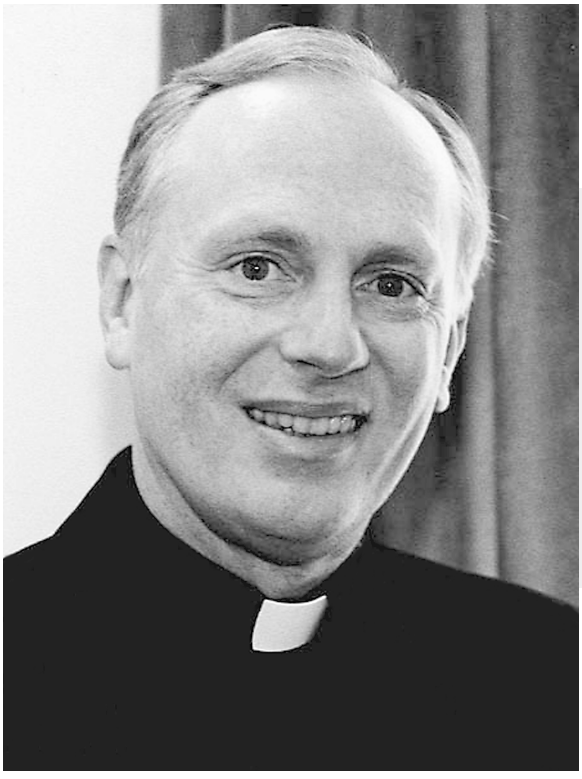
When capital punishment was reinstated in New York State in 1994, the Bishop helped organize "New Yorkers Against the Death Penalty" and he now serves as its president. He is active in many other civic projects, and is the president of the Urban League of Albany.

Bishop Hubbard is the chairman of the Public Policy Committee of the N.Y. Catholic Conference and, among his national responsibilities, serves on the Social Policy and World Peace Committee of the U.S. Catholic Conference and the Committee on the Laity of the National Conference of Catholic Bishops.

This interview was conducted for Fidelio by Nina Ogden on Oct. 12, in Cleveland, Ohio at the National Lay Forum sponsored by the National Conference of Catholic Bishops.

Fidelio: Bishop Hubbard, you addressed an executive session of the U.S. Bishops Conference last fall, to raise your concerns about the organization called the Catholic Alliance, which was started by the Christian Coalition. Why did you raise this issue?
Bishop Hubbard: I received literature from them right following our Holy Father left the U.S. after his trip here last October. I found much of this literature extremely disturbing, especially the partisan tone and the blatant untruths of the Alliance's Congressional scorecard. I was also disturbed by the intentional manipulation in the literature, which implied that the Alliance spoke for the Holy Father and was officially "Catholic." The organization stated its purpose as representing the Catholic community before the Congress, state legislatures, and local political bodies, and I thought that would sow great confusion among those bodies. I was also concerned about the confusion created among the Catholic faithful, who would somehow think that this material could represent the social doctrine of the Church. The Bishops Conference had published a very carefully thought out statement on political responsibility ("Political Responsibility, Proclaiming the Gospel of Life, Protecting the Least Among Us, and Pursuing the Common Good"). Our statement cuts across political and ideological lines. Its strongest characteristic is its consistent advocacy for the dignity and sacredness of all human life, at every stage of human life. The material I received was absolutely at variance with that statement.

The 'Catholic Alliance' stated its purpose as representing the Catholic community before the Congress, state legislatures, and local political bodies, and I thought that would sow great confusion. I was also concerned about the Catholic faithful, who would think that this material could represent the social doctrine of the Church.



Dillon News Photos

Fidelio: Where do the differences lie?
Bishop Hubbard: Well, if we compare agendas, one might think we agree on the subject of abortion. But we absolutely disagree on most of the issues of life, such as the question of the death penalty, which the Bishops oppose. The other major issues which they take a strong stand on, after abortion, seem to be a balanced budget amendment, term limits, malpractice reform; these kinds of things, which we take no stand on. But issues we take a strong position on, like legislation to protect poor children and immigrants, are certainly not on the Coalition's agenda.

Fidelio: Did you bring this up after the Catholic Alliance had established a separate board of directors?
Bishop Hubbard: Yes, afterwards, but they are still a fully- owned subsidiary of the Christian Coalition. I was concerned that a supposedly separate, so-called "Catholic" organization, would undermine our attempt to invoke a unified social-moral ethic in defense of the dignity and sacredness of every facet and stage of human life. When this organization was set up and called a "Catholic Alliance," they had absolutely no communication with our Bishops Conference or any of its representatives. In these days of ecumenical dialogue, I was offended by this unilateral initiative, and saw it as an effort to split Catholics from their bishops, who are the official teachers of the Church. I think there should be truth in advertising.

I was also concerned about IRS questions. We have 501C3 tax status, and can't be involved in supporting specific candidates, while they have 501C4 status and say that they desire to form a so-called Catholic-Christian voting bloc. *But they are on a collision course with the approach we emphasized in our political responsibility statement.*

Fidelio: In the 1994 election, in the area where I live in Northern Virginia, many people were outraged to find, in the diocesan newspaper, the Christian Coalition voters' guide endorsing specific candidates and issues. And, of course, since the Coalition's flagship candidate in Virginia was Oliver North, whom the Christian Coalition was supporting for the U.S. Senate and whom we had exposed as a drug runner near the top of the Iran-Contra hierarchy, people were even more upset.
Bishop Hubbard: We will not allow the parishes to distribute Christian Coalition or Catholic Alliance material in our diocese. The parishes plan to distribute the Bishops statement on political responsibility in preparation for the presidential election. We have our own grass roots efforts on public policy issues. In New York State, we have developed public policy education networks in each diocese, reaching into local parishes. But I worry that the activity of the Catholic Alliance may militate against these kinds of grass roots efforts.

If we compare agendas, one might think we agree on the subject of abortion. But we absolutely disagree on most of the issues of life, such as the question of the death penalty, which the Bishops oppose. . . . Issues we take a strong position on, like legislation to protect poor children and immigrants, are certainly not on the Christian Coalition's agenda.

Fidelio: Do you think the material disseminated by the Catholic Alliance contributed to the attacks on the poor and vulnerable in the most recent period?
Bishop Hubbard: I'm very concerned about that process. This is not a hypothetical question. When I spoke on this matter to the Bishops Conference, I said that it appeared that the Christian Coalition had already turned the tide in Congress on the child-exclusion and family-cap provisions in the welfare reform legislation. Our Conference vigorously opposed these exclusions. And since that time, obviously, much of this kind of legislation has been consolidated.

Fidelio: What are you doing to counter this destruction?
Bishop Hubbard: This month is designated "Respect for Life" month, and what I am doing as a bishop is emphasizing the sacredness of all aspects of human life. I have asked every pastor to preach on this. The kinds of programs we are talking about in this conference on the Third Millennium, will be based on the hope of reconciliation and justice. We must be the advocates for the poor and helpless—for those who have no voice. We must evangelize through these years, to turn away from a culture of death and become a culture of life.

'My Body Told Me To Do It'*

by Lyndon H. LaRouche, Jr.

A certain well-known U.S. comedian has made almost a career in itself, out of his plaintive punch-line, "My Bawd-dy!" I would not go to the extreme of suggesting that he be apotheosized for this, but I wish to demonstrate that he has performed a public service in supplying this delectable bit of wit. The construction of a magnificent, classical cathedral in the tradition of Chartres' Augustinian harmonics, might be funded, by collecting one U.S. dollar for each time some "Baby Boomer" attributed his or her "substance dependency," homosexuality, tardiness, racism, or advocacy of "pro-choice," to commands allegedly uttered by his or her own, or someone else's body. Here, I shall make plain the premise for my wish, that each time we hear such Yahoo sophistries uttered, we might, each and all, recall that comedian's bawling "My Bawd-dy!"

Do not be misled. As in great Classical drama, so in life, it is sometimes the ridiculous behavior of the poltroon, which augurs the doom of the tragic figure. So, that comedian's insight into a widespread, popular state of mind, which is susceptible to manipulation by such appeals to "My Bawd-dy," points our attention to one of the most deadly, and prevalent, present political threats to the security of the United States and all of its people.

The general point to be made can be identified by limiting our argument, to showing the axiomatic connection among two offending theorems of that bawdy geometry. To that purpose, we demonstrate the crucial, subsidiary fact, that theorems of racialism, and of the popular feminist sophistry, "pro-choice," are interdependent secretions of one and the same underlying sickness of mind.

Our topic here, is *not* the issue of abortion. Our topic is the veteran New Left feminist's intense conditioning to the "pro-choice" sophistry: a psilogism which also happens to be among the more popular forms of rhetoric used today, in arguing for Federal funding of "abortion on demand." Thus, our purpose here, is not to argue that abortion issue, as such; but, rather, as the reader will recognize in the course of this article: to help our fellow-citizens gain insight into, and control over their own mental processes.

At this point, do you sense thousands of pairs of enraged, beady eyes, glaring in my direction? The printable version of the ugly epithets shrieked at me from that gloomy corner, runs: "You will see how many people agree with us, and not with you!" I remind you, that that spectacular collapse of literacy and economy, which has gripped the world, since the assassinations of President John F. Kennedy, Martin Luther King, Robert Kennedy, and other notables, should not be blamed on anything but a significant and widespread derangement, in what passes today for popular opinion. Therefore, defy those beady eyes. We, our children, and our grandchildren, shall never escape from the disasters which prevailing popular opinion is now bringing upon us all, until we are willing to consider the fact, that the mere popularity of any irrationalist form of post-1963 radical change in scientific or artistic opinion, might be sufficient grounds for doubting the current state of mental health of its believers.

Reuters/Bettmann

This argument which I have referenced, respecting the inherent error of today's popular opinion, is situated on the more sophisticated of two available levels. Only on the relatively higher of these two levels, do we understand how our own minds form those opinions which we are sometimes astonished to hear dripping from our mouths.

On the relatively simpler of these two levels, it can be demonstrated, that the net progress which mankind had achieved, until a quarter-century ago, in

* *October 18, 1996. Commentary on a theme addressed by Bishop Howard Hubbard, in a Fidelio interview with Nina Ogden [SEE page 86, this issue].*

"Anyone who adopts the axiomatic standpoint of 'My Bawd-dy,' will be a racist **whenever suitably prompted***, and will find the 'pro-choice' argument unassailable." Left: "pro-choice" rally, 1992.*

life-expectancy, in productivity of labor, in material conditions of household life, and so forth, represents the benefit of cumulative, prior corrections of erroneous opinion.[1] For most of those beneficial corrections, we were greatly indebted to persons in societies which lived long before us. Even on that simpler level, we must consider much of the past quarter-century's decline in literacy, economy, and even simple interpersonal morality, a kind of abomination, a global catastrophe. On this level, it can be demonstrated, that, relative to the mid-1960's appeal to reason by the Rev. Martin Luther King, today's "mainstream opinion" expresses a retrograde movement in ideas and social practice.

Here, we consider the same practical issue on its higher level. On the simpler level, we might address the fact of improvements, or retrogressions, in society's theorems of practice. On that simpler level, we judge, thus, the relative rightness or wrongness of policies and popular opinion. Our proof is supplied by evidence of the superior demographic efficiency of that which is better, as measured implicitly in terms of the welfare of present and future generations of mankind as a whole: as the Preamble of our U.S. Federal Constitution instructs all sentient and morally sane officials of our government. However, when we examine those same practical questions on the higher level, we, like Plato, enter the realm which Plato, and Bernhard Riemann, among other Platonists, have identified as the domain of those *hypotheses* which are often hidden from our consciousness, but which, nonetheless, control the making of our opinions.

Thus, Shakespeare's Hamlet would prefer to die a useless death, than avoid that end, if avoidance came at the price of replacing the faulty hypothesis of his current belief. So, Hamlet was destroyed. So, often, great empires and seemingly powerful cultures, such as the Soviet Union, and the Russian Empire before it, like each and all of the earlier empires of ancient Mesopotamia, Rome, and Byzantium, have brought about their own destruction. So, that Atlantic Alliance which gloated over the Soviet collapse of 1989-1991, is now gripped, like Shakespeare's Hamlet, by a similar, already ongoing self-destruction.

Can we free ourselves from the grip of that hypothesis, from those prevailing currents of "mainstream" popular opinion, which are now sweeping our United States toward that cesspool of history, where collapsed cultures and empires are doomed to repose? Can we uproot the hypothesis which rules the popular opinion now destroying us? Can we recognize, in the words of Shakespeare, that our principal enemy lies within ourselves, within those expressions of "New Age" irrationalism which dominate today's "mainstream opinion?"

I have chosen to focus upon the racial-

1. See Lyndon H. LaRouche, Jr., "Leibniz From Riemann's Standpoint," *Fidelio,* Vol. V, No. 3, Fall 1996: table, "Development of Human Population," on p. 39. See the same table in Lyndon H. LaRouche, Jr., "While Monetarism Dies," *Executive Intelligence Review,* Oct. 25, 1996 (Vol. 23, No. 43): pp. 15- 19; Table on p. 18. [SEE Table I, p. 24, this issue.]

ist root of the radical feminist's "pro-choice" argument here, because the demonstrable clarity, and painfulness, of that embarrassing connection, impels reluctant citizens to recognize those underlying, pathological determinants of popular opinion-making, which nag our government, as we see in such exemplary mass news-media conduits, as our capital city's *Washington's Pestilence* and the *Moonshine Times*.[2]

Why are so many citizens such credulous fellows, that they allow their minds to become misshaped by repeated blows from corrupt mass-media? Why, thus, do so many of our fellow-citizens permit themselves to be controlled, by induced political opinions which they could not fairly call their own?

The Granger Collection

Famous bodies in history: Anti-Leibniz cultist Sir Isaac Newton meditates on the fall of the apple: "A body in motion tends to stay in motion, and a body at rest . . . ."

How The Human Mind Works

In the same sense, that the nominally Euclidean "Plane Geometry" of the secondary-school curriculum, is defined as a "degenerate" reflection of that curriculum's Euclidean "Solid Geometry," so the mind of the Anti-Defamation League (A.D.L.), or other variety of racist, is a degenerate reflection of the principles of the normal human mind.[3] These degenerate, "flat earth" ideologies, include, not only racism against African-Americans, but, anti-Semitism against either Arabs or Jews, etc., and also "anti-Caucasian" racism among African-Americans and others. "Radical feminism" is derived from the same mental "algebra" from which such expressions of racist ideologies are generated [SEE End Note]. It is that mental "algebra" which is the source of the "my body" sophistry addressed here.

Before plunging into the core of this matter, the following cautionary note on the subject of taught psychology is supplied.

Relative to the notion of "mental algebra" which we reference here, the contrary, prevailing opinions among professional psychologists, as practiced today, might seem to be clinically beneficial to some troubled persons, but no variety of psychology or sociology taught in any known university today, has scientific competence, as we shall identify the proof for that fact, summarily, here.

Rather, some professional clinicians have developed, like William Shakespeare, or a good Classical poet, an exceptional refinement in powers of personal insight. This is expressed as the ability to recognize the patterns of thought which are controlling the behavior of a subject, and to assist the subject person in gaining recognition, and corresponding degrees of control over relevant aspects of those mental processes.[4] In the worst cases, the profes-

---

2. In its Sept. 24, 1976 edition, *Washington Post* editorial-page editor Stephen S. Rosenfeld, stated, shamelessly, the creed which has ruled that so-called newspaper over the intervening twenty years: Never to publish the truth about (then-) U.S. Presidential candidate Lyndon H. LaRouche, Jr.; but, to print that name only for the purpose of defaming that candidate. The *Washington Star,* under editor, and well-known Northeastern University alumnus Murray Gart, practiced a similar policy. During the same twenty years, the *Star*'s reincarnation as the Washington voice of the Moonie-backed George Bush's, and (no-Count) Arnaud de Borchgrave's WACL *Times,* has acted, more or less consistently, in this matter, as Katharine Graham's intellectually-challenged twin. These are called "newspapers"? Such publications are to be read, not for their news content, but, like the neighborhood child-molester, because they bear watching.
3. The A.D.L.'s current anti-African-American, racialist policy, is that which was formulated in its "Dinnerstein Report," as presented, deliberated, and endorsed by the A.D.L. at a Montreal conference. See Joseph Brewda, "Racist A.D.L. Hits African Americans," *Executive Intelligence Review,* April 26, 1996 (Vol. 23, No. 18), pp. 28-31.
4. This was aptly described by psychoanalyst Theodor Reik (not to be confused with Wilhelm Reich), as "Listening with the Third Ear." Theodor Reik, *Listening With the Third Ear: The Inner Experience of a Psychoanalyst* (New York: Farrar Strauss, 1948).
5. *Cf.* (Don) Ennio Innocenti, *Critica alla psicanalisi* (Rome: Sacra Fraternitas Aurigarum in Urbe, 1991). This work is an expanded treatment, incorporating the elements of the same author's earlier *Fragilita di Freud.* Don Ennio's argument is supplied crucial support by subsequent release of documentation by cus-

sional's skills tend to be those of a "psycho*bath*ologist," more of a public menace, or mere nuisance, than a help. The notorious Dr. Sigmund Freud had insight, which only served to make his poisonous recipes more deadly.[5]

Yet, despite the preponderance of variously silly and dangerous quacks, some professionals, of honor, compassion, and dedication, have honed their relevant powers of insight to good effect; the troubled personality might hope to fall into the hands of one of these rare, invaluable professionals. We intend to take nothing away from the latter sort of professional. The point is, that even the best teaching of psychology and sociology, in universities today, reaches no higher, in respect to the proper notion of "science," than comparability to the work of the barefoot, village herb-doctor. (Unfortunately, too often, pushing the wrong herbs!)

Corbis/Bettmann

Famous bodies in history: Embalmed mummy of British empiricist Jeremy Bentham, author of "In Defense of Pederasty," in residence at the University of London.

The relevant point, which must be emphasized in presenting our subject here, is, that the usual doctrine of psychology, is the attempt to explain the mechanisms underlying actual or merely conjectured insights, from the reductionist standpoint of materialist, empiricist, or positivist dogma.

Thus, on deeper analysis, Freud's work turns out to have been radical positivism illustrated with dirty pictures. Most, at their relative best, are as silly as the famous Frederick Engels, who sought to explain away the human cognitive processes, by attributing the development of technology in human society to an epiphenomenon of man's "opposable thumb"! Freud, like Engels, and Karl Marx, was impassioned by his lustful perversity of zeal, in seeking to assert that there is nothing in human nature, or in man's and mankind's relationship to nature, which is not implicit in the morally degenerate, materialist or empiricist dogmas asserted by Thomas Hobbes, John Locke, Bernard de Mandeville, François Quesnay, Adam Smith, Jeremy Bentham, and that source which Thomas Malthus plagiarized, and Charles Darwin parodied, Venice's key foreign-intelligence operative, Giammaria Ortes.[6]

These views of that matter are derived from the method known generically as Plato's "Socratic method." Given, a proposition: rather than attack the proposition directly, explore the assumptions which must necessarily underlie the construction of such an assumption, respecting the matter referenced. This is also the method designated by G. Leibniz for adducing the *necessary and sufficient reason* for the characteristic of action within a given experimental domain. Here, we emphasize two derivatives of Plato's method: Gottfried Leibniz's warning of the problems of *Analysis Situs,*[7] and the rev-

---

todians of Freud's private papers.

6. Giammaria Ortes (1713-1790): co-author, with Pierre-Louis Maupertuis. of the hedonistic ("felicific") calculus later central to British Foreign Service head Jeremy Bentham's *Introduction to The Principles of Morals and Legislation* (1789). A Camaldolesian monk, with vows perennially in abeyance. A leading agent of the far-flung network of Newton-cult salons headed by Venice's coordinator of the international anti-Leibniz cabal, and controller of the Dr. Samuel Clarke of the Leibniz-Clarke correspondence: Abbot Antonio Conti (1677-1749) [*La Chronologie de M. Le Chevalier Isaac Newton* (1725)]. Ortes was trained, during 1734-1738, under Pisa's Guido Grandi (1671-1742), in the tradition of the founder of the European anti-Renaissance "Enlightenment," Paolo Sarpi (1552-1623) and of Sarpi's ally and founder of modern "Malthusianism," Luigi Botero (1544-1617). Ortes' most notable influences are his shaping, together with Pierre-Louis Maupertuis, of the British school of "free trade," with his *Errori popolari intorno all'economia nazionale* (1771), *Della economia nazionale* (1774), *Della economia nazionale libri sei* (1777), and his *Reflessioni sulla popalazione delle nazioni* (1790). The latter work's English translation was crudely plagiarized by Thomas Malthus for *An Essay On Population* (1798). [Ortes is praised by David Urquhart's Karl Marx in the latter's *Das Kapital,* Vol, I, Chap. XXV.] The Club of Rome's introduction of Ortes' concoction, "carrying capacity," coincides with a recent literary revival of his work. See, Webster G. Tarpley, "Giammaria Ortes and the Venetian Hoax of Carrying Capacity," *The New Federalist,* June 20, 1994 (Vol. VIII, No. 22).

7. G.W. Leibniz, "27. Studies in a Geometry of Situation. . . ," *Gottfried Wilhelm Leibniz: Philosophical Papers and Letters,* ed. by Leroy E. Leomker, Vol. 2 (Dordrecht, Netherlands: Kluwer Academic Publishers, 1989), pp. 248-258.

olution in physics which Bernhard Riemann derived from the inspiration of Leibniz's *Analysis Situs*.[8] Consider this matter as it confronts us in the effort to identify the characteristic mechanisms operating to produce the result known as scientific and technological progress in increasing the *per-capita* productive powers of labor.[9]

The fact upon which all studies of human behavior are premised, is, that, unlike any other living species, humanity has increased its potential population-density, its spectrum of life-expectancies, and its physical standard of living, *per capita, per* household, and *per* square kilometer.[10]

This progress has depended upon the practical realization of an array of selected artistic, scientific, and technological discoveries.[11] This progress assumes the forms of the "leaps" associated with realization of new physical principles, and further development of the technologies derived from the application of such principles. The development of the modern European form of post-feudal, sovereign nation-state, which first appeared with the 1461-1483 reign of France's King Louis XI, as typified by the U.S. Federal Constitution of 1789, is an example both of the application of a discovered artistic principle and of the relationship of that application to the successful fostering of increase of the productive powers of labor through state sponsorship of investment in scientific and technological progress.

To portray the relevant notions to be adduced from this, consider the apparent paradox generated by the following type of construction.

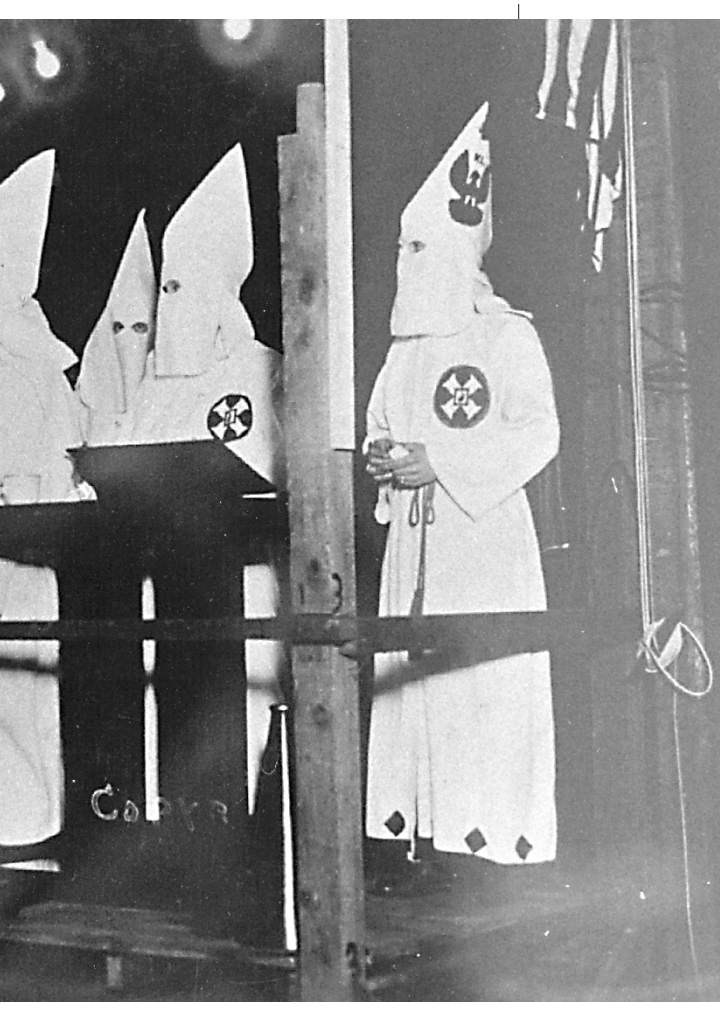
Using the methods of "process sheets" and "bills of materials," construct an "input-output," flow model of the cycle of production and consumption of produced products within an entire national economy. For the relevant Leontieff-type charts,[12] consider only physical products, plus only three special categories of services: education, health-care, and science and technology services such as fundamental scientific research (everything else, excepting, of course, ongoing development, expansion, and maintenance of basic economic infrastructure is dumped into the catch-all buckets of either "overhead costs and expenses," or waste (such as gambling).

Express these lists of products, basic infrastructure, and the indicated types of services, as "market baskets." At each point of consumption (basic economic infrastructure, agriculture, industry, education, health-care, science & technology, and households), define the requirements as they are physically incurred by either household consumption, or by the act of production, or by the maintenance and operating requirements of basic economic infrastructure (including education, health-care, and science services in the category of infrastructure). Thus, we have market-baskets measured in units of *per capita* of labor force, *per* household, and *per* square kilometer of relevant surface area.

Prints and Photographs Division, Library of Congress

Note that the rationale which governs our determining the necessary contents of these market-baskets, is the effect of changes in contents upon the potential physical productivity of the labor sup-

8. Bernhard Riemann, "*Theorie der Abel'schen Functionen*" (1857), in *Bernhard Riemanns Gesammelte Mathematische Werke,* ed. by H. Weber (New York: Dover Publications, 1953), pp. 86-144. N.B., "*Lehrsätze aus der Analysis Situs für die Theorie der Integrale von zweigliedrigen vollständigen Differentialen,*" pp. 91-95. Also, "*U[[pi ub]]er die Hypothesen, welche der Geometrie zu Grunde ligen,*" *loc. cit.,* pp. 272-287.
9. E.g., U.S. Treasury Secretary Alexander Hamilton, "Report to the U.S. Congress on the Subject of Manufactures" (Dec. 5, 1791), in *The Political Economy of the American Revolution* (1977), ed. by Nancy Spannaus and Christopher White, 2nd ed. (Washington, D.C.: Executive Intelligence Review, 1996), pp. 390-454, *passim.* On Leibniz's original development of Hamilton's notion of "productive powers of labor," see, Lyndon H. LaRouche, Jr., *So, You Wish To Learn All About Economics?* (1984), 2nd ed. (Washington, D.C.: EIR News Service, Inc., 1995).
10. *Ibid.* Also, see table referenced in footnote 2, *supra.*
11. Contrary to the dogmas of the empiricists, and of Romanticist irrationalists such as Immanuel Kant and Friedrich Karl Savigny, the principle of discovery in science and of metaphor in Classical art-forms is the same. As B. Riemann's discoveries illustrate the point, there is no formal, deductive determinism, such as any among today's generally accepted classroom mathematics, involved in either scientific or artistic creativity, but, rather, Reason, in the sense of Johannes Kepler's usage, or the principle of "necessary and sufficient reason" as specified by G. Leibniz.
12. The reference is to the methods of input-output analysis of national income and national product developed with prominent participation by Professor Wassily Leontieff. The imagery of the types of "critical-path" charting employed for large-scale projects, such as the U.S. 1950's-1960's space program, is also relevant here.



"As the case of John Locke's perverted views on both freedom of choice and slavery illustrate the point for persons of that pro-oligarchical tradition, the body is supreme, and slavery of some by others, is a natural state of affairs." Left: Ku Klux Klan rally, 1924.

plied to the physical economy by households. Labor raised in households more poorly supplied, for example, will have a lower potential productivity. Conversely, raising the technological standard of required productive performance requires better and more education, better health-care, more expenditure on science and technology services, and family and community circumstances consistent with greater emphasis on a leisure life emphasized science and Classical cultural activities.

Thus, by including allowances for non-productive, "overhead" costs and expenses, in both percentiles of total labor-force and their family market-baskets, we have introduced the notion of "energy of the system" into our examination of the relationship between necessary consumption and productivity of the physical economy as a whole. I.e., to raise the level of general physical productivity, we must raise the level and intensity of investment in more advanced technologies, and also increase the allowed (physical) capital investment and market-basket expenditure *per capita,* and *per* square kilometer, at each point of production. In other words, we must increase the density of the "energy of the system" *per capita,* and *per* square kilometer.

The principle is, that the unwasted margin of total output of the types of products and services which we have identified here, must exceed the levels of physical consumption required to meet "energy of the system" requirements. This margin of gain, we may view as the relative "free energy" of the productive processes of the national economy considered as a functional unity. The object is: *The ratio of "free energy" to "energy of the system" must not decrease, although the ration of "energy of the system" per capita, per* household, and *per* square kilometer, must increase. This requirement, if satisfied, represents a physical economic process in its entirety as a "not entropic" process.

Any "physical economy," as represented by the social processes of any successful society at any technological level of development, even those considered the most primitive pre-historic cases, is characterized by that same "not-entropic" function. Even when a society collapses, through failure to satisfy those constraints, its failure expresses the principle involved, often more dramatically than success. That noted, let us now state that relevant apparent paradox which points to the characteristic features of the human mind. State this for the form of modern, pre-1966, agro-industrial society with which persons over fifty-five years of age are more or less familiar.

The "rays" of "flow," converging upon, and out of, any nodal point at which production intersects those rays, present us with two arrays of market-basket content: the relative input, and the relative output. Although the quantities so compared might be, themselves, subject to a mathematical comparison, the process which distinguishes the rate of output from the rate of input can not be represented in terms of any generally accepted classroom mathematics existing today.

At first glance, if we are focussed upon the individual point of production within the webbing of the input-output lattice, the view of the matter is not yet clear. As soon as we compare the rates of input and output of the economy as a whole, the images become distinct. Once we acknowledge the functional relationship between market-baskets of consumption and potential (physical) productivity, and, also, acknowledge the associated requirement for "not entropic" transition from inputs to outputs, as measured in such market-basket terms, the apparent paradox emerges.[13] Our attention is forced outside, and above, the virtual reality of mathematical physics, into those higher domains, of reality, which Leibniz identified by the name "*Analysis Situs.*"

The apparent paradox might provoke the following response from the perplexed academic economist: "Are you saying that commodities do not produce

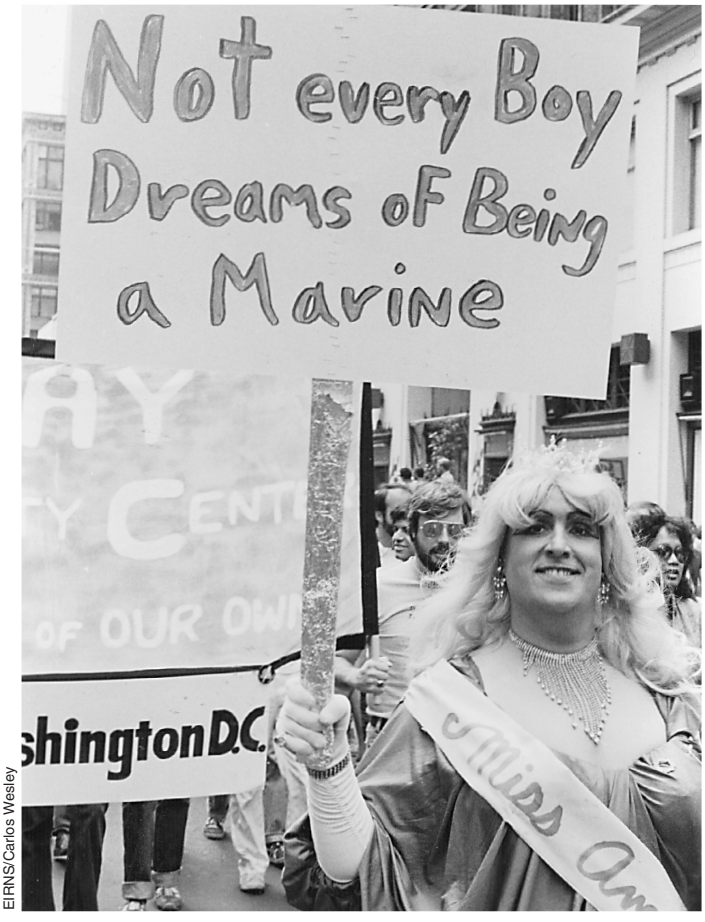
13. *Cf.* G.W. Leibniz, *Society and Economy* (1671), trans. by John Chambless, *Fidelio,* Vol I, No. 3, Fall 1992.

commodities?"[14] The "not entropic" characteristic of the successful physical-economic process, is generated within the sovereign domain of the individual person's mind: the "not entropic" transformation of input into output, is defined by the cognitive processes of the individual operative as an individual. The relations of production are not relations among materials and physical acts as such; they are relations of cognitive mental processes within the individual mind to the productive process: An instance of *Analysis Situs,* as lying outside the domain of deterministic deductive expressions.

The gist of the matter is this.

The functional source of the "not entropic" gain, from which the sustainable flow of physical-economic relative "free energy" is derived, is those higher capacities of the individual's cognitive processes, which are expressed either as valid discoveries of physical principle, or, in Classical art forms, as valid metaphor. Each such discovered principle of science or art, may be regarded, functionally speaking, as a new dimension of a Riemannian, expanding physical space-time manifold. The increase in what is recognized as the relative mathematical cardinality, of a manifold of "*n+1*" dimensions, over one of "*n*" dimensions, correlates with the increase in the potential, *per-capita* physical-productive power of society. This increase is realized through the practical realization of scientific, technological, and artistic progress originating within the domain of ideas.

Thus, mankind's power in, and over the universe is increased, in the sense of "dominion" as used in the King James Version's *Genesis* 1. So, man's potential relative population-density is increased, as the spectrum of life-expectancies is also increased, and as the material and intellectual conditions of family and individual life are also enhanced. Thus, scientific and artistic progress, so defined, has the import of "error correction": the discrepancy between the potential power in the universe given to man, by the characteristic nature of the individual person, and man's ability to approximate that potential in practice, is decreased: the margin of error is decreased, a gain which may be described by means of what we have portrayed as an expanding Riemannian manifold. This is the source of the physical-economic "not-entropy"; this is the sole source of a sustainable form of social profit in physical economy.



EIRNS/Carlos Wesley

'My Body Told Me To Do It': Gay Pride Parade, New York City, 1979.

On this account, the science of physical economy attains the highest authority among all of the sciences. It is the veritable "king of the sciences," on which the authority of all other physical science depends. How could it be otherwise. Ask for a functionally meaningful definition of "human knowledge," a definition which must rest upon an integral standard of, and *agapic*[15] passion for truthfulness and justice. The answer is supplied in two successive approximations.

In the first approximation, the subject of physical science is the matter of the human species' functional relationship to the universe. With respect to our home planet, Earth, this is expressed as we have made the point above. Our species' relationship to the universe, is measured in terms of increase of potential relative population-density, a notion defined to account for a spectrum of life-expectancies, and standard of human individual and family life, *per capita* and *per* square kilometer

14. All generally employed textbooks in mathematical economics, base themselves on the implicit presumption of Leon Walras, John Von Neumann, *et al.,* that inputs *cause* outputs. In other words, that "commodities produce commodities." The relevant argument on behalf of that implicit assumption has been made by one of England's Cambridge University economists, Piero Sraffa, *The Production of Commodities by Commodities* (1960).

15. The Classical Greek *agapē,* as in Plato, *The Republic,* Book II, *passim,* where this term is identified with the quality of passion associated with love of justice and of truth. This is the same conception famously addressed by the Apostle Paul's *I Corinthians* 13. *Agapic* passion, as contrasted to erotic passion, is the motive force of discovery of scientific principle, or, also Classical art-forms, such as the musical thorough-composition of Wolfgang Mozart, Beethoven, Schubert, and Brahms.

of relevant surface-area. In this first approximation, "knowledge" signifies the truthfulness exhibited by those choices of methods by means of which mankind's potential relative population-density is increased.

That represents what might be termed the "objective standard" for the definition of truthful "knowledge." Thus, is the science of physical economy, the "king" of all physical science. In the next approximation, a more refined view of "knowledge," a higher view, emerges.

The cumulative advancement of "objectively" defined human knowledge, is marked by experimentally validated discoveries of technique and of principle of nature, among which a certain type of validated discoveries have a most crucial importance: those axiomatic-revolutionary, experimentally validated discoveries of principle which constitute the added "dimensions" of a Riemannian physical space-time manifold. The manner in which these qualities of validatable discoveries of principle are generated, within the sovereign precincts of the individual's cognitive processes (e.g., can not be simply "transmitted" as so-called "information"), exposes those distinguishing characteristics of the individual human mind which are uniquely human.

Thus, we have the following: The experimental proof of science in general, is the measurable demonstration, that the practical realization of progress in Classical art-forms and science increases the human species' potential relative population-density. That feature of the science of physical economy, is the proverbial "Great Experiment," upon which all claims for scientific authority, in every domain, ultimately depends. Whereas, the evidence, that man is the only species which is capable of this accomplishment, demonstrates the characteristics and implications of the individual human mind.

To wit, whenever man commands obedience from nature according to this standard of truthfulness, nature obeys: as if our universe were predesigned to accept dominion over it by the indicated characteristics of the individual human mind.

Under its numerous relevancies, this view of the characteristics of the individual human mind, is key for identifying, and remedying the types of mental pathologies under consideration here: the functional equivalence of racism and the feminist "pro-choice" paralogism. Such matters take us out of the realm of generally accepted classroom mathematical science, but not out of the domain of experimental physical science. We are in the higher domain of *Analysis Situs.*

We clarify that point summarily, and then proceed directly to our concluding argument.

The Method of Hypothesis

All systematic mastery of the subjects of physical science begins with Classical geometry. It is through mastering, and exploring the mechanisms, and the inhering fallacies of a standard classroom geometry, that students of the author's generation, and earlier, were led along the pathway to uncovering the secrets of the typical individual human mind's successful functioning. This wrestling with geometry, prepares us to express these discoveries in the form which admits of experimental demonstration. The crucial internal fault in today's generally accepted classroom mathematics, is that the customary textbook and classroom, alike, refuse to acknowledge the central feature, the Platonic principle of hypothesis, of the Classical Greeks' development of such an approach to geometry.

Reuters/Corbis-Bettmann

'My Bawd-dy!': Performer Michael Jackson . . . a racist idol?

All Classical geometry, that of Bernhard Riemann included, rests upon the Platonic principle of hypothesis. It is this principle of hypothesis which makes clear why persons accepting the feminists' "pro-choice" paralogism, will show themselves to be racists under appropriate forms of social stress.

Take a Classical Euclid's geometry. The underlying, governing feature of that elaborated, open-ended lattice of propositions and theorems, is an interrelated set of axioms, postulates, and definitions. This interrelated set constitutes an *hypothesis,* in the Platonic sense of the

term used here, in the sense the term "hypothesis" was employed by Riemann. Although Leibniz pointed the way for this earlier, Riemann, as he states at the outset of his habilitation dissertation, was the first to overturn, comprehensively, the interrelated set of axioms, postulates, and definitions underlying not only *Euclid's Elements,* but also all usually accepted classroom mathematics up to the present time, still today.[16]

Although Riemann retained notions of space and time as axiomatic, he eliminated two most crucial fallacies of previously established classroom mathematics. First, he eliminated the notion of a physical universe as contained within a Galileo-Descartes "bucket" of a simply extended four-dimensional space-time manifold. Second, like Leibniz before him, he eliminated the fallacy of anti-Leibniz fanatics, such as Antonio Conti, Samuel Clarke, and Leonhard Euler, expelling the notion that space-time is extended with perfect, infinitely divisible continuity. Thirdly, he eliminated, in the footsteps of Plato, Augustine of Hippo, *et al.,* the notion that space and time are simply extended, without limit, without bounds. Fourthly, he extended the quality of physical dimensions to every measurable, validated demonstration of a relatively independently definable physical principle.

In no other branch of physical science is the point demonstrated so forcefully, immediately, and comprehensively as it is in physical economy. It is readily shown, that an axiomatically nonlinear,[17] "Riemannian" process, is not susceptible of algebraic representation in the terms of any generally accepted classroom mathematics. To be specific: such a relationship between physical-economic input and output, could not be described by means of any deductive form of deterministic mathematics. Nonetheless, despite the impossibility of representing this in terms of a formalist mathematical physics, the relationship has a precise, measurable significance, in the sense of experimental physics.[18]

Thus, we are so confronted by a problem in Leibniz's higher domain of *Analysis Situs.*

The relations of production are not relations of physical input to physical output, are not "the production of commodities by commodities." The market-basket is a matter of a functional relationship to the sovereign internal cognitive processes of the individual mind of the operative, etc. This is the case in consumption of the household market-basket, the consumption of the market-basket of the relevant "point of production," and so on. This is a matter not only of the relationship of that market-basket to the individual, but to the relevant surface-area within which the functional relationship is situated. Similarly, the transformation of the market-baskets consumed, into the content of market baskets produced, is a relationship to the individual's cognitive processes.

The principle of hypothesis is the relevant characteristic of these cognitive processes. It is the "hierarchy" of relations among the formation and existence of hypotheses, which defines the kind of *Analysis Situs* in which the experimentally demonstrated relations of production can be made comprehensible in the same sense that we think of ordinary mathematical comprehension of a physical subject-matter.

That relationship situated within the higher domain of *Analysis Situs,* is the efficient source of the "not entropy."[19]

This is so with man, as it is not with any lower species.

This is not only a principle of economic science. It is the characteristic of every individual member of the human species. This is the characteristic of "man in the living image of God."[20] Man is in the image of God, not by virtue of a living mortal body, but, by endowment with those creative cognitive potentials of the individual mind, by means of which man is able to exert increasing power over the universe, and even to create new types of physical states within that universe.

This is the root of all of the differences between those who identify human relations in terms of this principle of creative endowment of all human individuals, against those materialists, and quasi-materialists, who regard mental processes as Frederick Engels and Sigmund Freud did, as epiphenoma of the human body. It is the latter, degenerate view of man, which is the axiomatic root of both racism and the derivation of all those propositions, including the pro-choice one.

The Choice of Racism

This is the difference in hypothesis, between those who think of man as a talking beast, the racists, and so on, and those who think, axiomatically, of relations among persons as rightly premised upon the common quality which Nicolaus of Cusa identified as man made in the living image of God. Anyone who adopts the axiomatic standpoint of "My Bawd-dy," will be a racist *whenever suitably prompted,* and will find the "pro-choice" argument unassailable.

All modern European civilization,

16. Although the work of Johann Bolyai and N.I. Lobachevsky was brilliant, in neither case did their work toward establishing a "non-Euclidean" geometry "break the envelope" of so-called Euclidean geometry, but rather sought to define a relevant, formal "loophole" within the fabric of the system. Riemann's solution, although rooted in Plato, Leibniz, and indicated features of the work of Carl Gauss, remains unique. The solution to the paradox of the formal Euclidean hypothesis must be sought and found outside the domain of a deterministic, deductive, formal, mathematical physics, in the domain of measurable experiment.

17. The strict definition of a "non-linear process," is one which can not be represented as linear in the very, very small, can not be represented by any algebraic infinite series.

18. *Cf.* B. Riemann, "*Hypothesen, op. cit.,* pp. 272-273, p. 286.

19. I.e., *necessary and sufficient reason* for the generation of not-entropic development within the physical-economic process.

20. In the Latin of Cardinal Nicolaus of Cusa: *imago viva Dei.*

including the Americas, has been internally besieged by a factional division between two mutually exclusive conceptions of man and nature. The one, is the Christian Platonic tradition of the Golden Renaissance; the second, the Renaissance's implacable foe, is the reactionary, pro-oligarchical opponent, the so-called "Enlightenment." Cardinal Nicolaus of Cusa, Gottfried Leibniz, and the followers of Leibniz, such as Benjamin Franklin, who founded the U.S.A. as a Federal, constitutional, sovereign nation-state republic, typify the first. Venice, the empiricists, materialists, Romantics, positivists, existentialists, the French Jacobin Terror, the British Empire, Napoleonic France, the Holy Alliance, the Confederate States of America, John Von Neumann, Norbert Wiener, and the Nashville Agrarians, typify the Enlightenment.

We U.S. patriots of the Renaissance tradition, locate the identity of the human individual within the developable sovereign potential of the individual mind; the human body is a functional appendage of that mind. The Enlightenment faction regards the human mind as an appendage of a body. For the Enlightenment's Alexander Pope, every man is a dog, a breed of a particular race, destined to aspire, at most, to ownership by a kindly master, such as racist Thomas Jefferson was to his African-American slaves. It is written in the "*Mein Kampf*" of such authors as the reactionary Physiocrat François Quesnay and John Locke, that the human body is "property," and the mind is as much the chattel of that body, as the serf is deemed the mere chattel of the feudal Physiocratic lord who holds title to the land under that serf.

For U.S. patriots, our personal and national interest is located primarily in the individual mind and its characteristic work of increasing mankind's dominion in this universe "for ourselves and our posterity." Our social relations are relations among such individual minds. Our bodies we use, perhaps prudently, but we use them nonetheless; they must do as our minds command them.

View this from the standpoint of the principle of hypothesis. The geometry of the thinking of the Christian, for example, is axiomatically, the individual man or woman, made in the image of God, to exert dominion over the universe. This image of God is represented by that demonstrable creative potential of the individual human mind, through which man is able to exert increasing dominion over the universe. So, we define our individual social, and historical identity; so, we define our motivating fundamental self-interest.

For the representative of the Enlightenment (the materialist, empiricist, Romantic, positivist, existentialist, and so on), matters are directly the opposite. As the case of John Locke's perverted views on both freedom of choice and slavery illustrate the point, for persons of that pro-oligarchical tradition, the body is supreme, and slavery of some by others, is a natural state of affairs.

Simple-minded people delude themselves, that they have chosen their opinions. Wise people know, that one's choice of hypothesis actually chooses one's opinions for one. Thus, it is not bad opinions which destroy the tragic figure; it is his or her choice of hypothesis which compels the victim to choose those opinions by aid of which he or she will be destroyed.

In these ominous times, there is no more pitiable fool, than the person who argues: "This is what I believe, and that is that." Freedom is the act of freeing oneself from the destructive force of irrational, but popular opinions. Freedom is challenging one's own hidden assumptions of belief.

END NOTE

After women's suffrage had been attained in the U.S.A., politically active feminism, as distinct from matters of women's civil rights, shrank to the members of two kinds of associations: socialist and communist organizations, and eugenics freaks such as the Harriman family's sometime Nazi-linked Margaret Sanger. The present, popularized form of "radical feminism," dates from a proliferation of "therapy-group" sessions among 1969-1970 veterans of the far-left wing of the rock-drug-sex youth-counterculture. The center of this initial recruitment-drive was the same "Revolutionary Youth Movement (RYM)," of later terrorists Mark Rudd, Bernadine Dohrn, John Jacobs, Robert Avakian, *et al.,* which had been brought into being through funding by McGeorge Bundy's Ford Foundation. [Notably, this featured an operation set up by the C.I.A. veteran Herbert Marcuse, funded by the Ford Foundation, and others, through an "East Side Service Organization (ESSO)" funding conduit, run in cooperation with the Washington, D.C. Institute for Policy Studies (IPS). The same Marcuse-linked channel gave us Angela Davis, her YWLL-centered antics, and "den mother" Anne Braden's Atlanta, Georgia "scene." The rumpus at the 1968 Chicago Democratic Convention, the emergence of the Weatherman, LSD-stoked terrorist gang, the emergence of the early-1970's "Rainbow Coalition," and the celebrated Woodstock festival, are among the notable markers of the epidemic.] The popular political form in which the New Left version of "radical feminist" graduates of the "T-group" sessions presented themselves, during the 1969-1970 interval, was as a parody of "black nationalism," sometimes going to such extremes as demanding the right of women to form a separate nation! The latter impulse was, inevitably, typical of those women who had been transformed into lesbians through the attack-therapy techniques practiced within the "T-group" sessions of organizations such as "WITCH" ("Women's International Terrorist Conspiracy from Hell"). It is the tendency toward New Left feminist parodies of "black nationalism," which is the topic of this report.

George Bush's Political Hotseat

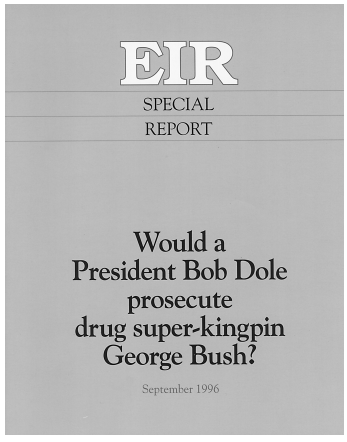
To many Americans, Vice-President George Bush was an almost invisible man within the Reagan administrations. To those who knew him, he was a vicious, hard-nosed boss of covert, dirty operations—a secret government which one crossed at peril to one's person. Indeed, the fear still encountered when discussing the truth about George Bush's dirty operations in public, is a testament to the continuing power of Bush's machine.

Bush's political power, tied as it is to the financial interests of Great Britain and the oligarchy's geopolitical gameplan, thus continues to be a major obstacle to putting the United States on the right track, out of the post-industrial psychosis that is bringing the world down on our heads. Accommodation to that power hindered the first Clinton administration every step of the way, and the cost of accommodation—to mankind—will get greater over time.

Enter these E.I.R. Special Reports. Based on more than fifteen years of "you are there" intelligence work, they make the irrefutable case that the Bush machine has been behind a major portion of the U.S. government-supported drugs and mayhem which have plagued the world over this period. Now, the Secret government has a name, and there is an agency—the Executive Intelligence Review magazine founded by Lyndon LaRouche—which is not afraid to expose it. The Bush machine has thus been put in a position where it can be destroyed.

Drug Kingpin

The first of the two E.I.R. reports, keys off the explosive revelations published in August 1996 by the *San Jose Mercury News*. The *Mercury News* series has supplied the political factor needed to end the coverup of George Bush's role in the Contra cocaine-running of the 1980's, LaRouche says in his introduction, by showing how African-American communities around the country were victims of the venal Contra operation.

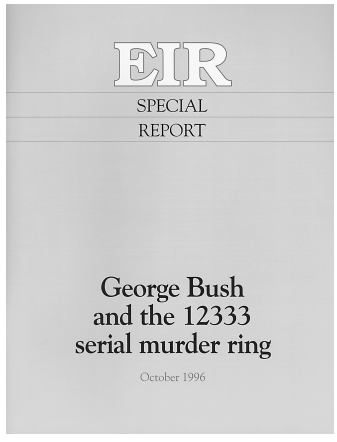


Would a President Bob Dole prosecute drug super-kingpin George Bush?
by the Editors of Executive Intelligence Review
Washington, D.C., 1996
120 pages, paperbound, $100.00

As LaRouche points out, much of the material in the drug kingpin report has existed in E.I.R.'s files for a long time. Much of it was published in 1992, in E.I.R.'s *George Bush, the Unauthorized Biography* by Webster G. Tarpley and Anton Chaitkin, and was later publicized by this author in her campaign against Virginia Senate candidate Oliver North in 1994. But, to many, the point seemed moot; it was history.

That has now changed, as the consequences of Bush's control over the secret government apparatus that ran the Contras, become clear. E.I.R.'s report spells out, in stark detail, not only the chain of command through which Bush ran his dirty operations, but also the way in which Bush succeeded in putting agents of the Cocaine Cartel into power throughout Ibero-America (Mexico, Colombia, and Panama), and how his network created the network of Afghanistan terrorists who have been responsible for the world's worst terrorist incidents of the last several years.

The evidence proving Bush's personal role is so strong, that E.I.R. was able to assemble a model indictment of this former "President In Charge of Vice" which—by using material primarily in the public record of the Walsh Iran-Contra Report, and the Kerry Subcommittee report on narcotics and terrorism—makes a stronger case for Bush being a drug kingpin, than was available for many of those the Federal government has put in prison.



George Bush and the 12333 serial murder ring
by the Editors of Executive Intelligence Review
Washington, D.C., 1996
96 pages, paperbound, $100.00

Serial Murder

The second E.I.R. Special Report takes up the activities of the Bush Secret Government in the domain of arms smuggling. A look at these activities leads one into examining a disturbing string of dead bodies, murdered ones in particular. Each appears to be connected to the desire of the arms (or explosives) cartel, to protect their operations.

The "serial murder ring" report takes off from the September 1996 revelations about the 1986 assassination of Swedish prime minister Olof Palme, an assassination which has remained unsolved. The revelations came from the on-going Truth Commission hearings in South Africa, a stronghold for the explosives cartel. These hearings exposed to view, elements of the British-controlled international arms mafia, which had remained hidden for years.

The Palme murder is a virtual "Rosetta stone" for the Bush-Thatcher global mafia, as it brings together leading arms firms with moneybags and political operatives, such as Wall Street's John Train and London's Jimmy Goldsmith. These individuals, of course, remain players in Britain's geopolitical operations today. And, they also both have traceable connections to one of the filthiest political prosecutions of the recent period, that of Lyndon LaRouche and his associates.

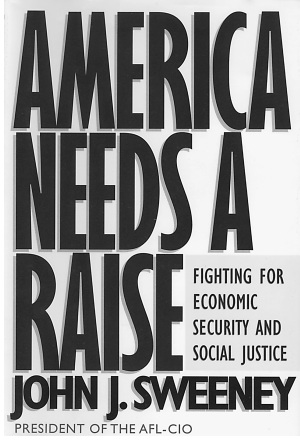
The political sensation which the *San Jose Mercury News* revelations are creating in the United States, is being matched on the international level by the dramatic revelations in Sweden, South Africa, and Belgium. The Belgian case has mobilized the greatest passion, since new arrests in unsolved murders of arms dealers, and those who were threatening to unmask illegal arms deals, are occurring in tandem with the uncovering of a ring of prominent citizens now exposed as pedophiles. Once more, the focus is on unsolved murders—like that of Andre Cools, and of Gerard Bull.

What connects this series of scandals and murders to George Bush, is, once again, Bush's role as head of the secret government, which ran a global underground of armaments and dirty money throughout the 1980's. The report lays out the required lines of investigation, and a detailed timeline of significant developments in the domain of arms-smuggling and the Bush-Thatcher alliance, is provided at its conclusion.

To anyone concerned with getting to the bottom of the illegal drug and arms smuggling of the 1980's—whose networks still plague the world today—these reports are must reading. Concerned U.S. citizens have already purchased copies for all of the old Congress. The next step, is to get some real investigations going, so we can finally put George Bush in the cell where he belongs.

—*Nancy Spannaus*

'A Rising Tide Lifts All Boats'



America Needs a Raise:
Fighting for Economic Security and Social Justice
by John J. Sweeney, with David Kusnet
Houghton Mifflin, New York, 1996
167 pages, hardbound, $18.95.

AFL-CIO president John Sweeney means far more than a monetary "raise," in his *America Needs A Raise,* although he does devote much of the book to proving that American workers desperately do need an increase in living standards. More broadly, Sweeney is talking about the formation of a new, sweeping movement for social justice, one that can guarantee a decent living standard to all working people—a movement whose goals are consonant with those for which the LaRouche political movement has stood, sometimes virtually alone, over the past two decades. This is the vision spelled out by Sweeney in his new autobiographical work, released, appropriately, on Labor Day.

"We're going to change the nature of politics itself, so that working people can set the agenda, run for and win public office, and teach public officials some lessons about the daily realities of most families' lives," Sweeney declares. "We need to act as a social movement that represents working people throughout the society—union members and non-members alike," he writes, and in such a way that the unemployed and those on welfare are also "raised" economically and socially.

Such a new social movement should be *independent* of both political parties, Sweeney says, and should operate "all year round, not just during campaign seasons. . . . And restoring our independence will make us more effective than tethering ourselves to a political party."

Reviving the Social Contract

Sweeney's vision is based on his own upbringing, in the period following World War II, when, he says, there was a "social contract" in place. "The old social contract that made America so successful during the postwar era was based on a simple but profound truth: For the economy to grow and prosper, working people must be able to buy the goods and services they produce. . . .

"Business people knew that if they paid their workers fairly and plowed some of their profits back into their communities, they could count on loyal employees and loyal consumers. For companies back then, good citizenship was good business. And our leaders in government understood that, as President Kennedy said, 'a rising tide lifts all boats.' They saw their purpose as raising the standard of living for all, not accumulating enormous wealth for just a few."

Church, Family, Union

This society was based on three institutions, all of which have since broken down, to greater or lesser degrees: Church, family, and union. As Sweeney writes, "Without the Church, there would have been no hope of redemption. Without the family, there would have been no love. And without the union, there would have been no food on the table."

Sweeney credits his training to a combination of the trade unionism he learned at his father's knee, and the Roman Catholic social teaching he got in school. Sweeney's father was an Irish immigrant, who became a bus driver in the Bronx, New York, and was a loyal member of the Transport Workers Union.

As to his schooling, Sweeney writes, "I studied Catholic social teaching. In many ways, I learned a more detailed version of the values I'd been taught at home. Since men and women are created in God's image, their dignity must be respected. Working people have the right to a living wage—in fact, we used to say that breadwinners should earn a 'family wage' so that they could support their households. And though there will always be some churning in the economy, working people should not be cast aside like disposable parts when the last drop of energy and effort has been wrung out of them.

"Human dignity," Sweeney continues, "demands that workers have a voice on the job, and the Papal encyclicals we studied recognized the role of unions. Several priests and teaching brothers . . . taught me a lesson I try never to forget: A union must be a movement and a mission, not a business or a bureaucracy. In particular, they taught that organizing new members is not only an institutional necessity but an ethical imperative. It is a practical example of the fortunate helping their less fortunate sisters and brothers."

"Recently, the United States Catholic Bishops said it all: 'The economy exists for the human person, not the other way around.' " He footnotes this, as follows: "For an excellent presentation of the progressive social teaching of the Catholic church, as well as the memoirs of our nation's leading labor priest, see Msgr. George C. Higgins" [SEE accompanying review].

Reviving the Labor Movement

Labor Day 1996 was like a breath of fresh air, reflecting what the new leadership of the AFL-CIO has achieved in just under a year, since their election last October. Hundreds of thousands of workers marched for their rights in parades in many cities, and the leadership of the AFL-CIO was marching with them, for the first time in years. In fact, on the Friday before Labor Day, Sweeney himself was arrested for disorderly conduct at the headquarters of the union-busting Detroit News.

America Needs A Raise gives a glimpse into the real thinking behind Sweeney's decision to run against the Lane Kirkland regime, in the first contested election for the AFL-CIO presidency since the federation was formed, out of the AFL and the CIO, in 1955. Sweeney writes, "Working Americans had come to a critical point—with corporations downsizing, wages stagnating, unions declining, and our enemies seizing control of Congress. We waited for the top leader of the AFL-CIO to raise his voice or sound his trumpet—but the silence was deafening."

Now, the sound of a reinvigorated, fighting labor movement is scaring the pants off those who took out the "Contract on Americans." It couldn't have come at a better time.

—Marianna Wertz

The Church and the Labor Movement

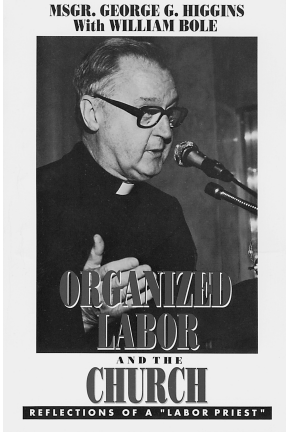
At a moment when the U.S. labor movement, in decline for nearly three decades, is beginning to be revived under the new leadership of AFL-CIO President John Sweeney, this book by Msgr. George G. Higgins, written prior to Sweeney's election, sheds important light both on the vital historical role played by the social teaching of the Catholic Church in the U.S. labor movement, and on what that relationship must be in the future, for organized labor in the U.S. to play its indispensable role in serving the common good of the nation and the world, as we enter the new millennium.

Monsignor Higgins is one of the most qualified persons alive today to discuss this issue. He served for thirty-six years in the Social Action Department of the United States Catholic Conference, twenty-five of those years as its director. Even after his retirement from the Conference in 1980, he has continued to serve as "the chaplain of the AFL-CIO."

In his preface, Msgr. Higgins asks: "Will the Catholic Church, my Church, reclaim its heritage of support for the organization of average working people?" He answers: "I am afraid I cannot say for sure. In fact, the Church stands in danger of losing forever its tradition of cooperation with organized labor. It is for that reason, above all, that I wrote this book."

Higgins quotes from an article by Father John F. Cronin: "About 1966, there developed a sudden and dramatic turning away from the traditional methods of Catholic social teaching and social action. Encyclical courses were dropped from colleges and seminaries. Even updated books based on the social magisterium ceased to sell."

In contrast to today, when the Catholic laity are, in general, ignorant of the social teaching of their Church, Msgr. Higgins tells of the role of the Catholic Church and of the "labor priests," like himself, in defending the "God-given right of workers to organize" throughout the Twentieth century, especially during the Depression years, in alliance with Franklin Delano Roosevelt. During this time, the Catholic social action movement placed a high priority on instructing not only priests and Catholic laity, but the entire



Organized Labor and the Church: Reflections of a 'Labor Priest'
by Msgr. George G. Higgins, with William Bole
Paulist Press, Mahwah, N.J., 1993
245 pages, paperbound, $12.95

labor movement, in the encyclicals. Throughout the nation there existed Church-sponsored "labor schools," in which working people were exposed to the social teaching of the Church. Thus, Pope Leo XIII's encyclical *Rerum Novarum* effected a massive collaboration between American Catholicism and the labor movement.

Among the key priests in this movement identified by Msgr. Higgins were John A. Ryan and Raymond A. McGowan. Ryan drafted the bishops' *Program of Social Reconstruction,* issued in 1919, just prior to the creation of the first bishops conference, the National Catholic Welfare Conference. Thirteen years before the New Deal, the program, reflecting the social encyclicals, endorsed a minimum wage, subsidized housing, labor participation in industrial management, child labor laws, and social insurance for the jobless, sick, and aged. Ryan would serve as the director of the Conference's Social Action Department. McGowan was assistant director, until he replaced Ryan in 1945. Higgins succeeded McGowan in 1954.

In 1936, Ryan gave a radio speech titled "Roosevelt Safeguards America," in which he criticized Rev. Charles Coughlin of Michigan, an influential opponent of Roosevelt, by pointing out that Coughlin's economic theories and proposals "find no support in the encyclicals of either Pope Leo XIII or Pope Pius XI." Ryan twice gave the benedictions at FDR's Presidential inaugurations: once, in 1937, after helping to ensure his reelection, and again in 1945.

Organized Labor's Decline

Higgins identifies the state of the labor movement today.

In the mid-1960's, nearly a third of American workers were organized into unions. By 1992, that figure had shrunk to approximately seventeen percent—the lowest in any of the industrialized countries.

Union victories in elections supervised by the National Labor Relations Board have declined significantly, and attempts to decertify, or abolish, existing unions have increasingly succeeded.

Higgins then identifies one of the biggest problems confronting labor today, which is that organized labor no longer has an effective right to strike, and therefore lacks the right to organize.

After President Ronald Reagan fired 12,000 striking air-traffic controllers in 1981 during the PATCO strike, employers have increasingly utilized the 1938 Supreme Court ruling in *NLRB v. Mackay Radio and Telegraph* to bust unions. This decision allows employers to replace striking employees with permanent replacement workers.

During the 1980's, employers used the *MacKay* decision to fire striking workers and replace them permanently with strikebreakers. After twelve months, an employer may petition the NLRB for an election to decertify the union—an election in which the strikebreakers can vote, but the workers on strike can not.

Higgins points out that America is virtually the only industrialized country, along with South Africa, that permits this abuse.

Prospects for Rebirth

Nonetheless, Higgins argues that just as labor declined before 1932, and then came back over the following decades, "it is at least possible that an historical replay will happen in our own generation—probably less dramatically or, if you will, more incrementally than in the mid-1930's—if we can summon the will to enact a kind of and degree of labor law reform more radical than the pallid type of reform which narrowly failed enactment in the 1970's."

He argues that the key to a rebirth of labor is, that labor must "reach out to those who need help the most—the masses of unorganized Americans. . . . I am happy to say that the labor movement has already begun to throw open the windows of a new industrial era."

Higgins cites in particular the efforts of the SEIU, in 1993 headed by John Sweeney, whom he describes as "one of the new labor pioneers." He writes that Sweeney has launched a long-term organizing campaign among the nation's estimated one million custodial workers, called "Justice for Janitors." The campaign is aimed at a largely female and minority work force. The SEIU has also begun to organize maids and other domestic workers, and has set the pace in the movement for national health insurance and in the organization of hospital workers.

Higgins advises that the labor movement concentrate heavily on women in the workplace. Women make up nearly half of all workers, yet only a minuscule percentage of them are organized into unions. He also advises that labor pay significant attention to the problems of immigrant workers. "Without female and immigrant workers, the labor movement has no future in this country."

In the final chapter of his book, "Catholic Social Teaching and Action," Higgins argues that unions are not only legitimate, but indispensable. As he emphasizes, "every person is made in the image and likeness of God and endowed with a special dignity, which is not dependent upon accidental characteristics such as social status. This dignity finds expression in a set of basic human rights, economic as well as political.

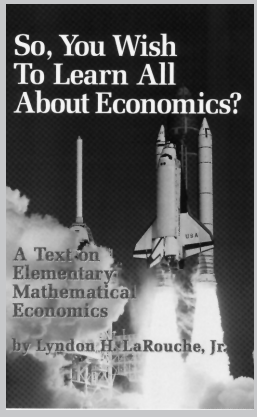
"Forgetting or despairing over the labor problem would amount to a betrayal of our American Catholic heritage. . . . And as in the Nineteenth and early Twentieth century, a significant number of these immigrants, if not most of them, are at least marginally Catholic. In our so-called 'upwardly mobile' Church, this is top secret: that we are still a Church of immigrants—millions of newcomers, principally from Asia and Latin America, who need the support for their economic rights that the Church gave to our European forebears."

As the ongoing global financial disintegration forecast by Lyndon LaRouche accelerates, the U.S. labor movement will play an increasingly important role in reversing the 30-year decline in the economy, and in contributing to social reconstruction. Monsignor Higgins' *Reflections* are a welcome intervention to revive the labor-Civil Rights coalition in this country, and to remind not only the Catholic Church, but all men and women of good will, of the importance of the Catholic social encyclicals as a basis for social action today.

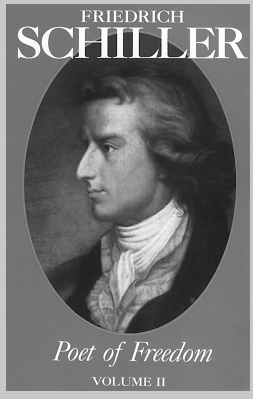
—William F. Wertz, Jr

Read
the great minds that shaped Civilization

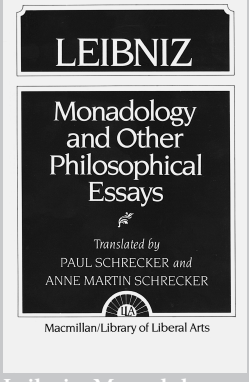
. . . and still do!



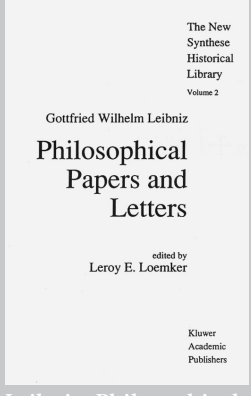
So, You Wish To Learn All About Economics? A Text on Elementary Mathematical Economics
by Lyndon H. LaRouche, Jr.
$10.00



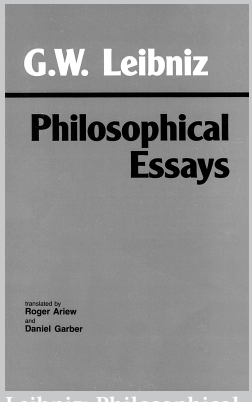
Friedrich Schiller, Poet of Freedom *Vol. II*
includes *Wilhelm Tell,* 'On Universal History'
$15.00



Leibniz: Monadology and Other Philosophical Essays $14.95



Leibniz: Philosophical Papers and Letters
$54.95



Leibniz: Philosophical Essays $15.95

Call or write us for *any* item mentioned in *Fidelio*—we carry works by Plato, St. Augustine, Nicolaus of Cusa, Leonardo da Vinci, Kepler, Leibniz, Friedrich Schiller, and many others—as well as the works of Lyndon H. LaRouche, Jr., and his associates.

Help us to make a new Renaissance!

	No. copies	Total
LaRouche: Economics Textbook $10.00	_____	_____
Friedrich Schiller, Vol. II $15.00	_____	_____
Leibniz: Monadology $14.95	_____	_____
Leibniz: Philosophical Papers $54.95	_____	_____
Leibniz: Philosophical Essays $15.95	_____	_____
Subtotal	_____	_____
Sales Tax (Va. residents add 4.5%)	_____	_____
Shipping ($4.00 first book, $.50 each additional book)	_____	_____
TOTAL		_____

☐ Enclosed is my check or money order, payable to Ben Franklin Booksellers, Inc.
☐ Charge my Mastercard Visa Discover Amex

No. _____ Expir. Date _____ Signature _____

Name _____

Address _____

City _____ State _____ Zip _____

Call (703) 777-3661 or Toll-Free (800) 453-4108

Ben Franklin Booksellers, Inc.
107 South King Street, Leesburg, Virginia 20175

Join the Schiller Institute!

The Schiller Institute has been fighting since 1984 to bring about a new Golden Renaissance out of the depths of the current Dark Age. Giants like Cardinal Nicolaus of Cusa, Leonardo da Vinci, and France's King Louis XI strove against evil to give the world the new birth of freedom and creativity that we know as the Golden Renaissance of Fifteenth-Century Europe. Today, too, it will take the work of key individuals, like you, to create a new Renaissance. JOIN THE SCHILLER INSTITUTE TODAY AND BE PART OF THIS GREAT EFFORT. Your membership will help finance the Institute's work in bringing Classical culture to America and combatting the evil of the Conservative Revolution. Help make a new Golden Renaissance a reality today!

CLIP AND SEND

Sign me up as a member of the Schiller Institute

❑ **$1,000** Lifetime Membership (includes LIFETIME SUBSCRIPTION to *Fidelio* and 100 issues of *New Federalist*—$35 value).

❑ **$ 500** Sustaining Membership (includes 20 issues of *Fidelio* and 100 issues of *New Federalist*).

❑ **$ 100** Regular Annual Membership (includes 20 issues of *Fidelio* and 100 issues of *New Federalist*).

OR

I wish only to subscribe to *Fidelio*

❑ **$ 20** for four issues

NAME _____

ADDRESS _____

CITY _____ STATE _____ ZIP _____

e-mail _____

TEL NO. _____

Occupation/Affiliation _____

_____

Clip and send together with check or money order to:

Schiller Institute, Inc.

P.O. Box 20244, Washington, D.C. 20041-0244

Call for Emergency Mobilization

Save the Lives of One Million Refugees In Eastern Zaire!

The Civil Rights Movement–Solidarity, the German political movement associated with Schiller Institute founder Helga Zepp LaRouche, released the following appeal on October 31.

Dear President Clinton, and Americans of Goodwill,

The Civil Rights Movement–Solidarity from Germany appeals to you to take urgent action to save the lives of one million refugees in Eastern Zaire. As was the case in Goma in 1994, only a resolute action on your part can avert the human catastrophe that is in the making.

First, an emergency airlift into the region is needed to deliver food and medicine to hundreds of thousands of refugees displaced by the war, which broke out ten days ago.

We Germans will never forget, how the Berlin airlift in 1949 saved the people of an entire city. Now we see with horror, how one million refugees in the heart of Africa will soon be out of food, clean water, and medicine. The dying has already begun. Soon, there will be tens of thousands dead, if nothing is done. Especially, in light of the fact that international institutions have again failed to take appropriate action, we appeal to you, as President of the United States of America, to act and order your military to organize such an airlift. We trust that you will act. Others may find excuses to explain away their refusal to face the challenge, but America, the country of Abraham Lincoln, Franklin Delano Roosevelt, John F. Kennedy, and Martin Luther King, cannot allow one million Africans to vanish simply because governments refused to deliver the help which could have saved them.

Secondly, it is well known that the United States government, together with Great Britain, exerts the greatest influence on the governments of Uganda, Rwanda, and Burundi. The war in Zaire is not an "ethnic war"; in fact, it started as an invasion of forces from Rwanda and Burundi with the support of the government of Uganda, who are playing the ethnic card. **We appeal to you, Mr. President, and to the people of America, to use the influence of the United States government—with or without the consent of the government of Great Britain—to pressure the forces in power in Kampala, Kigali, and Bujumbura to stop the invasion of Zaire, withdraw their forces, and re-establish the territorial integrity of Zaire.** If this is not done, this war could easily spread and engulf the entire region of the Great Lakes, affecting more than thirty million people.

The rationale offered for the attacks on the refugee camps in Zaire was the search for "Hutu genocidalists." While it is true that in the refugee camps, there were also people who participated in the murders in Rwanda in 1994, it is not tolerable that one million refugees—80% of whom are the elderly, women, and children—now be taken hostage for them and starved to death. This would amount to a counter-genocide committed by forces who, in the tragic last years of the conflict in Rwanda and Burundi, have already been guilty of mass death.

Mr. President, beyond the immediate relief for the humanitarian catastrophe, we appeal to you also to use the weight of your office, to help facilitate serious negotiations between the current governments in Rwanda and Burundi, and their opposition forces. This most tragic history of never-ending cycles of violence and mass murder between the Tutsi and Hutu can only be broken, if the parties in question are able to negotiate a peaceful common future.

Remember, that one million lives hang on your actions at this moment. Even Boutros-Ghali of the United Nations has called the U.N. decision to delay action on this matter until November 20, "genocide." The Nuremberg Code which was applied by the United States in trying Nazi war criminals after WWII, must be the standard by which its own institutions—whether governments, churches, labor unions, universities, or other—are judged, for inaction in the face of such mass murder.

Hessisches Landesmuseum, Darmstadt

Pieter Bruegel the Elder, "The Magpie and the Gallows" (1568).

The Invention of Perspective

Color, and how color evolves through space, was to Leonardo yet another means to free the composition from linear constraints. Hence Leonardo's work on *aerial* (*atmospheric*) or *color perspective*.

In this manner, we begin to leave behind formal perspective, wherein objects have characteristics, such as magnitude or color, which are fixed, and move rather towards a physical perspective, where the changes are taken into account, acccording to the subjective conditions of where the object is to be located. Space has ceased to be an empty place, to become a field of interaction, and the elements of a landscape are painted taking into account their physical interactions, which interactions had lain almost entirely outside the field of linear perspective.

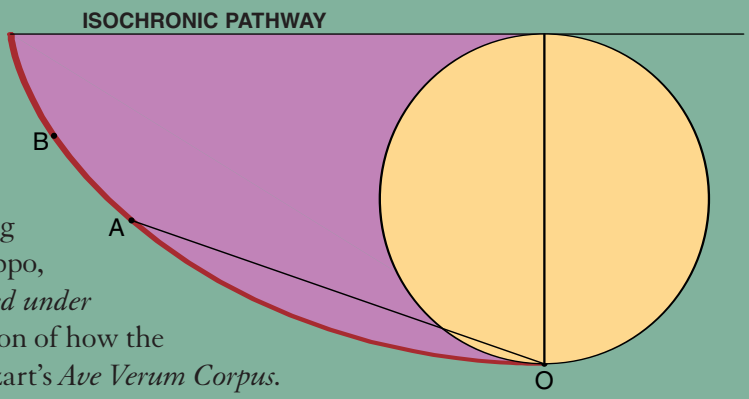
It is from our awareness of those actual physical principles, that there springs a sense of having seen, not reality as such, but rather *Truth*.

Linger a moment on Pieter Bruegel the Elder's painting, "The Magpie and the Gallows," shown above. A marvellous landscape stretches before us, painted in accordance with Leonardo's rules for aerial perspective. Oblivious to that vaster plane, their sight hindered by trees and thick hedgerows, rural bumpkins dance about, only to perish somewhere between the cross and the gibbet. —May this not tell us something of the purpose of sight in our own lives?

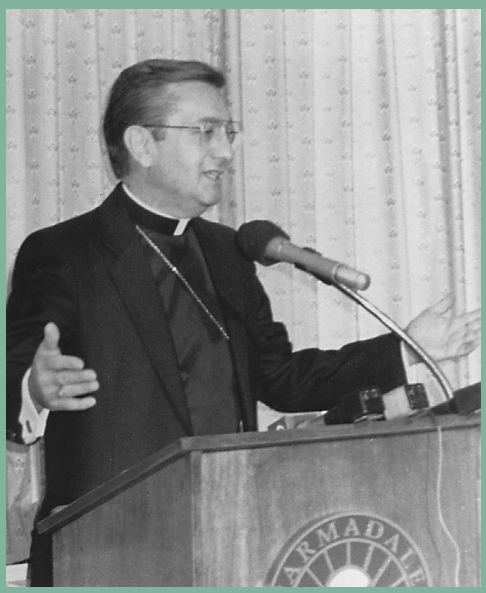
—Karel Vereycken

In This Issue

The Essential Role of 'Time-Reversal' In Mathematical Economics



'When' is the future? In this groundbreaking essay, Lyndon H. LaRouche, Jr., writes: 'The answer to this seeming paradox, was already known by Plato, by Augustine of Hippo, and, therefore, also, Thomas Aquinas: *All time is subsumed under a general regime of simultaneity!*' And, in a musical illustration of how the future shapes the present, Mindy Pechenuk examines Mozart's *Ave Verum Corpus.*



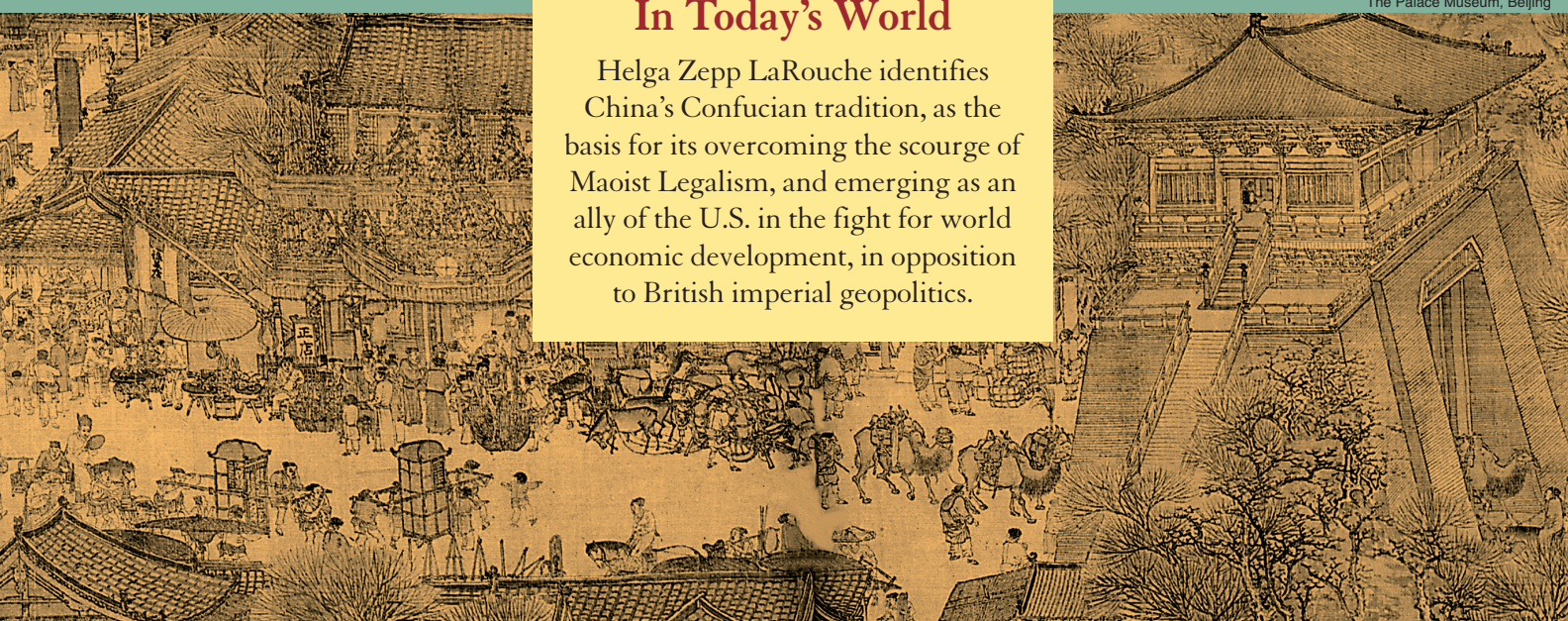
'We don't believe in future life, we believe in eternal life—and we're already experiencing it'

Interviews with Bishops Anthony Pilla and Howard Hubbard
Commentary by Lyndon H. LaRouche, Jr.

In a wide-ranging interview, Bishop Pilla, president of the National Conference of U.S. Catholic Bishops, emphasizes how we experience eternal life in the temporal present, by acting now to bring about justice, eradicate poverty, and reduce violence; and Bishop Hubbard contrasts the social teaching of the Roman Catholic Church, to the views of the Christian Coalition. In 'My Body Told Me To Do It,' Lyndon LaRouche comments on an interview theme.

China's Confucian Legacy In Today's World

Helga Zepp LaRouche identifies China's Confucian tradition, as the basis for its overcoming the scourge of Maoist Legalism, and emerging as an ally of the U.S. in the fight for world economic development, in opposition to British imperial geopolitics.



The Palace Museum, Beijing