

VII

'The One and the Many'

We have considered already the fact, that without those changes both in nature and in human social practice, which we associate with "scientific and technological progress," any culture is on the pathway toward, sooner or later, self-induced "entropic" collapse. Thus, the continued existence of the human species as a whole depends upon the relatively hegemonic influence of those cultures which uplift humanity as a whole, evermore, to higher plateaus of scientific and technological practice.

Thus, we have stressed, human existence taken as a whole requires, inclusively, but nonetheless absolutely, the generation, transmission, and efficient assimilation of scientific progress. This must occur to the specific effect of causing an increase in the human species' per capita power over nature. This principled policy defines the realm of Gottfried Leibniz's *science of Physical Economy*.¹

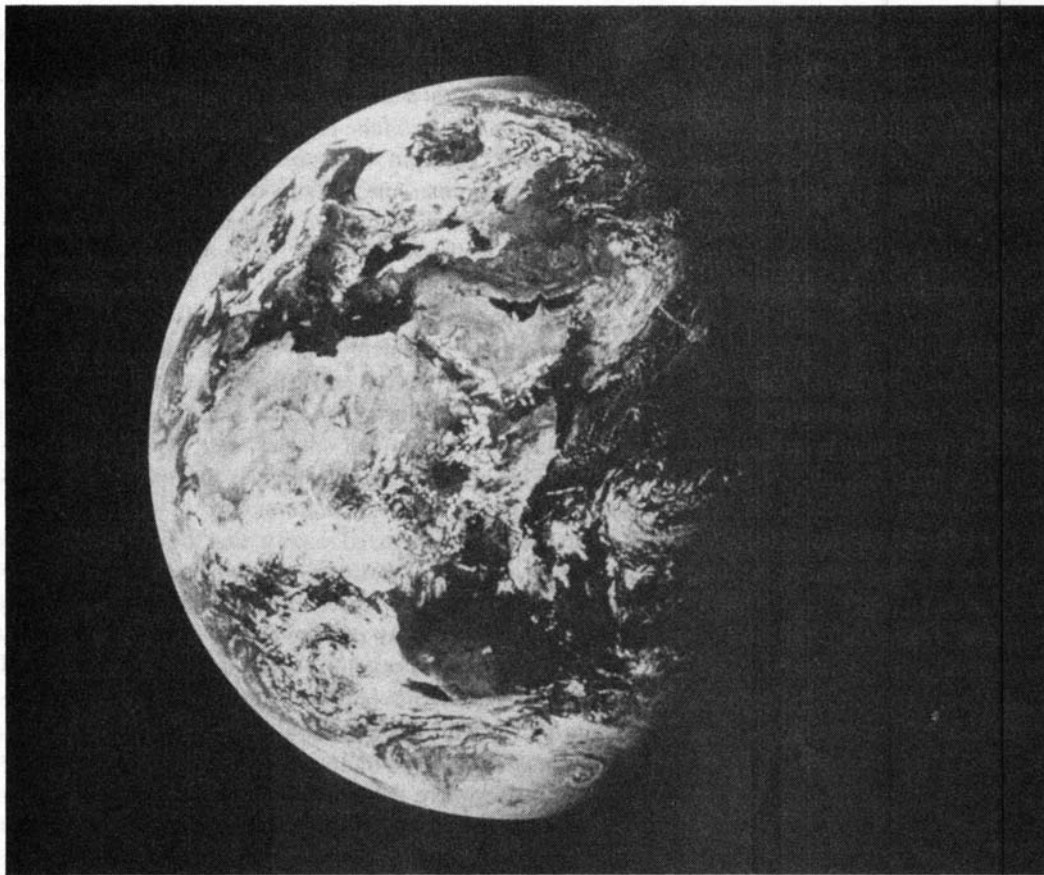
It should be recognized readily, that the empirics of such a *science of Physical Economy* are two-faceted. On the one side, *effects*, we study the increase in mankind's physical power over nature. At the same time, the *source* of this increase in power is scientific progress. So, at first glance, Physical Economy not only measures changes in man's per capita power over nature, but studies these changes as *the material effect of a spiritual (mental) cause*.

That descriptive definition of Physical Economy brings us, now, directly to the deepest among the common underpinnings of all classical European philosophy, and all physical science. We address directly the deepest of the quasi-axiomatic principles upon which the bare concept of the verb "to know" must be based.

Physical economy, as established in an exemplary way by Gottfried Leibniz, is the aspect of physical science as a whole, which addresses *most directly* this concept of principle. Inasmuch as Physical Economy is the science of social reproduction of mankind, it is the science of the way in which human survival is accomplished by the indispensable aid of scientific and technological progress. It is survival so effected, which is the test of the process of generating improved human knowledge, and thus, it defines the crucial experiments which must be referenced for a proper definition of the verb "to know."

As indicated earlier, this emphasis upon physical science has a twofold import. First, there is no principled distinction between the qualities of creative thought associated with valid fundamental discovery in physical science, and in classical humanist art forms. The widely popularized contrary arguments, such as those by Immanuel Kant and Karl Savigny, and others, are essentially absurd in fact. Thus, what is said of physical scientific activity is implicitly also true of all expressions of *agapic creative work*. Second, in Physical Economy, it is fundamental scientific discovery which is the most prominent causal feature of increase of the productive powers of labor.

In all of the literature of European culture's classical



The Earth, as photographed from the Apollo II spacecraft in 1978. "Truthfulness is expressed practically, only in a correct view of the reciprocal relationship between mankind as a whole and the universe as a whole."

NASA

philosophy, the most succinct statement of the related deeply underlying principle of human knowledge is *implicitly* uttered by Plato's *Parmenides* dialogue. That dialogue's *implicit* statement occurs not explicitly within the dialogue, but, rather, as a unique, required solution to the ontological paradox which the dialogue as a whole describes. Once that required solution is recognized, this implied definition of the verb "to know" is realized, without reasonable doubt. Physical economy is the empirical domain in which this solution to the Parmenides Paradox is most readily demonstrated.

The argument underlying the solution to that Parmenides Paradox is summarized as follows.

Any formal (deductive) system of argument is implicitly reducible to a deductive theorem-lattice derived from an original, integral (indivisible) set of (inseparable) axioms and postulates. Any idealized form of deductive mathematics is one such case; a deductive formalist's ideal mathematical physics is another such case. Deductive formalism prevails in academic practice, in most mathematical physics today; therefore, in present, customary professional practice, actual mathematical physics is treated, formally, as an imperfed approximation of a mathematical deductive theorem-lattice.²

The characteristic feature of such a theorem-lattice is what is often termed today an "hereditary principle." This principle can be described most easily in terms of the follow-

ing two corollaries.

A. No theorem of a deductive lattice may claim any essential quality or predicate of existence which is not already implicitly claimed by the underlying, integral set of "axioms and postulates," from which the theorem-lattice as a whole takes, putatively with perfect consistency, its origins.

B. Any theorem which is required by nature, which is not perfectly consistent with the underlying, integral set of "axioms and postulates," disproves each and all other theorems, hereditarily, and requires implicitly, a new, integral set of underlying "axioms and postulates" consistent with that theorem.

In actual scientific practice today, these two corollaries are at the center.³ The term "fundamental scientific research" is usefully circumscribed in use, to signify a special, higher class of experiments and crucial observations. This higher class of empirical studies is associated typically with the expression "crucial experiments." A "crucial experiment" is intended to test the kind of hypothesis (theorem) which has been rigorously defined to affirm or overthrow the theorem-lattice's underlying, integral set of "axioms and postulates."⁴

So, from the modern formalist's standpoint, the internal history of successful advances in fundamentals of physical science is defined implicitly by a succession of successful such, revolutionary "crucial experiments." Repeatedly, the

heretofore established scientific world-view is overthrown, replaced by a new one. The association of such revolutionary ("crucial") transformations is the formal representation of fundamental physical principles which, with resulting increased social-reproductive power of mankind, both per capita and per hectare, is the key to the formal proof and empirical definition of "scientific and technological progress."

In the case of successive scientific revolutions satisfying that practical requirement, we are confronted implicitly by three levels of scientific principle integral to a formalist (deductive) view of this process of successive revolutionary progress taken as a whole. Each of the levels of principle is represented by conceptions which are each *one* and *indivisible*.

1. On the lowest level, we have each of the one and indivisible "hereditary principles" associated, respectively, with each of the successive, each relatively successful theorem-lattices, A, B, C, D, E⁵

2. The fact that the empirically proven theorem-lattices are each and all ordered according to increasing per capita and per hectare powers of society, (A less than B less than C less than D less than E, less than . . .), defines the hereditary principle of each and all of A, B, C, D, E . . . as ordered commonly by a uniquely subsuming principle, which, in turn, is one and indivisible.

3. The existence of alternative orderings, on level 2, implies that the choices among each such are also ordered, as a set, according to a subsuming, ordered principle, which is *one* and *indivisible*.

Plato's *Parmenides* dialogue confronts us with a three-fold paradox. The elaboration of the dialogue confronts us with a problem in *knowledge*, a paradox defined in formal, deductive terms of reference. The dialogue taken as a whole defines an *ontological paradox*. Both facts taken together define a single paradox subsuming both others: a paradox respecting man's possibility of effecting a truthful, intelligible representation of the elementary nature of universal and subsumed (manifold) states of *being*.

Plato includes in that dialogue only one explicit clue to the required solution: that the formal argument has ignored the fact that *change* is an elementary condition subsumed by *being*.⁶ The significance of that reference to change, as a crucial feature of the dialogue as a whole, is not comprehended by most commentators. From the standpoint of Physical Economy, for example, the solution is derived more or less directly.

The connection may be represented as follows.

As in *In Defense of Common Sense*, A, B, C, D, E . . . is a series, in which each term represents a linear (deductive) description (approximation) of an indivisible *theorem-lattice* in encompassing the current technology of productive and related practice. Each successive term represents the twofold effect of a scientific revolution: 1) the replacement of one theorem-lattice by a second which has no formal consistency

with the predecessor; 2) the resulting increase in per capita and per hectare (physical) productive powers of labor (i.e., increase of *potential population-density*).

The combination of the two aspects, the ordered character of the formal change in theorem-lattice, and the increase of potential population-density, indicates that each member of the series, A, B, C, D, E . . ., when taken as a whole, is a member of a well-ordered series. That ordering-principle is thus an *indivisible unity*, a *transfinite one*, with a qualification that this is the lowest of the readily defined levels of transfinite ordering.

For most readers' benefit, the following qualifying observations are required here.

This strict usage of the term "transfinite," and earlier references to the "sovereignty of the individual's creative process," represent two coherent expressions of the same conception.

The easiest argument defining the indivisible unity of any truly *transfinite* conception, is the deductive case. For example, the "hereditary principle" specific to any deductive theorem-lattice is related to the associated, integral set of (inseparable) variously stated and implied axioms and postulates, and also to each and all subsumed theorems. Yet, relative to these two "Manys," the "hereditary principle" is *relatively transfinite*, and corresponds directly to a unitary notion which is indivisible; it is indivisible in the sense that it vanishes instantly the moment we might attempt to represent the principle itself as *composite* from the vantage point of either the axioms or subsumed theorems.⁷

In the illustrative case, referenced from *In Defense of Common Sense*, A, B, C, D, E . . ., the ordering-principle defining the series as a species of series, is the *change* determining each and all of the successors to each and every term of the array. This feature of our illustrative case is exemplary of the solution to the ontological paradox of Plato's *Parmenides* dialogue.

What "lies between" A and B, for example, is a "mathematical discontinuity" from a formal (deductive) standpoint. It is distinct and efficient, yet cannot be expressed by a theorem of any possible deductive theorem-lattice.

Its *ontological*, and *formal* character is, implicitly, "change." In the case of a well-ordered series, A, B, C, D, E . . . the "change" exists *ontologically* in the transfinite principle subsuming the ordering of the series as a whole.

If such an ordering does indeed define as subsumed a series corresponding to the *becoming*, the increase of potential population-density, the transfinite converges upon the principle which expresses the lawful ordering of the universe. That latter principle is also represented by the transfinite which subsumes the *becoming* of all series which converge so.

Thus, the proper definition of the term "science" ought to be limited to describing *efficient consciousness of those forms of consciousness which generate the kind of efficient*

transfinite convergence indicated here. In other words, consciousness not of discrete objects, but rather consciousness of revolutionary *change* as the proximate cause of increase of potential population-density.

Clearly, from this standpoint, we have already proven conclusively that no proposition consistent with any formalist theorem-lattice can state a *law of nature* explicitly, directly. It may reflect a law of nature, but it never states a law of nature.

Speaking most strictly, there are not *many* "laws of na-

There are not many "laws of nature," but, rather, what may appear as laws, are, ultimately, only reflections of a single One highest-ordered transfinite conception, which expresses a single, indivisible, universal law of nature. Leibniz's principle of least action points in the direction of the kind of physics conceptions subsumed by the relevant single, indivisible transfinite notion.

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Science is a matter of man's increasing mastery of the universe, a mastery expressed in such forms as increase of potential population-density, and accomplished through man's conscious ordering of his willful ordering of revolutions in scientific consciousness governing increase of the power of human practice.

There is no non-anthropocentric science, no so-called "objective science" in the positivist's sense of the latter term. What we know, is *not* that which we have experienced with our senses. What we know, are those principles for generating successive, successful, revolutionary advances in our mastery of fundamental laws of our universe; these are the principles that are efficient voluntary action upon the universe, by means of which actions we maintain and may increase the potential population-density of present and future generations of mankind as a whole.

By implication, that definition of *science* defines the fol-

lowing paradox. Is the primary importance of creative scientific (and related artistic) discovery, that it is the indispensable means for fulfilling man's obligation to satisfy Genesis 1:28? Or, is it, that by satisfying that obligation, by this means, man is forced to recognize himself as in the living image of the Creator? Is it not, rather, the case, that the two are inseparable, an indivisible oneness? The two are thus portrayed as the mirror-image of the relationship between becoming and the Good.

We do not know truth in the form of sense-perception. We know scientific truth only by means of a socratic form of successively successful criticisms of our problem-solving interpretation of those aspects of our sense-experience which bear upon increasing the potential population-density of the human species as an indivisible whole. *Truthfulness* is expressed practically, only in a correct view of the reciprocal relationship between mankind as a whole and the universe as a whole. The essence of truthfulness, is situated in the eternal practical contribution which a sovereign individual creative-mental process may add to the potential population-density of the present, future, and past generations of mankind as a whole.

This locates scientific consciousness in the activity of our own critical consciousness of our own critical consciousness: We employ the term *self-consciousness* in this restricted sense. Insofar as such critical consciousness is occupied with what is termed here an *intelligible representation* of an ordered succession of successful revolutionary advances in the implicit integral set of deductive axioms and postulates of physical science, *self-consciousness* treats the indivisible ordering-principle of this series as an indivisible conception, an *object* of *self-consciousness*. This latter is a true *transfinite*.

It is the comparison of such transfinite objects of *self-consciousness* with the appropriate quality of crucial-experimental evidence, which serves as the center of focus for scientific truthfulness.

It is in that perspective that truthful concepts of universal concepts of universal physical law are situated. This rejects, obviously, the view, that "laws of physics" pertain to observation of what appear to be repeatable pairwise interactions among phenomena. This situation demands what is associated with Gottfried Leibniz as the notion of *necessary and sufficient reason*. It is not conclusive that pairwise interaction repeats; it is required that there be necessary and sufficient reason that it repeats, or not.

The "scientific law" is situated in the proven transfinite ordering principle subsuming successive successful scientific revolutions. This is not a perfect representation of "God's law"; it is therefore not *perfected truth*, but is, rather, *scientific truthfulness*.

There exists, clearly, a higher ordering which subsumes a positive ordering of successively less imperfect scientific truthfulnesses. Approach the concept of Good and Becoming in these terms of reference. To this immediate end, define a

few essential terms of distinction.

Begin at the relatively low end of the scale, with a *crucial* experimental *hypothesis*, an hypothesis of the quality associated immediately with a single successful scientific revolution. Consider what Bernhard Riemann has termed Lejeune Dirichlet's discovery of "Dirichlet's principle" of topology, as an example of such an hypothesis, or Kepler's hypothesis of Golden-Section-harmonic ordering of solar planetary orbits.

The transfinite which subsumes an orderable series of such crucial hypotheses is then termed an *higher hypothesis*.

The fact that the latter is demonstrably subject to imperfection, obliges us to hypothesize (crucially) upon the subject of perfection of the higher hypothesis.

That, in turn, demonstrates to us the *ontological negativity* of the relatively best higher hypotheses; in this way, scientific truthfulness, by recognizing that ontological negativity, knows the certainty of the Good as the changeless cause of the changes represented by the necessity for perfection of the higher hypothesis.

This relationship between Becoming (higher hypothesis) and the indivisible being of the Good, is also the conception of the *One and the Many*. The *One* is the cause of the necessity of the *Many*.

This adoption of scientific truthfulness were impossible, except as the individual is consciously self-defined for practice as a servant of the Good for the work of the perfection of human existence as a whole.

The function of society may be represented as the duty of society as a whole to develop sovereign individual creative minds who each develop society as a whole in this way. That, in the last analysis, is the mission, and the true definition of the science of Physical Economy. The truthful notion of *economic value* cannot be different than this moral one.

Physics, briefly

We conclude this penultimate chapter with some necessary observations on, first, the physical notions of cause-effect implicitly imbedded in that which we have just previously developed, and second, some historically illustrated implications of those physical principles for spacecraft in general.

To put the physics matter as simply as seems possible, we have argued earlier to the following effect. Given three relatively nearby, discrete bodies in space, we are implying that these bodies do *not* react with one another in terms susceptible of a simple pairwise analysis: rather, we have appeared to imply, that each discrete body might be a *monad*, which reacts *indirectly* to its neighbors, by interacting immediately with the universe as a whole. In other words, we defend the inference, that each body acts primarily by interacting with the universe as an indivisible entirety, and that it is through these interactions of each body with a whole, that

the bodies act indirectly upon one another.

Is that as wild a depiction of the situation as some critics might hasten to argue? Not really, not if a handful of elementary facts in the modern internal history of physical science are taken adequately into account.

A. Kepler versus Newton on gravitation

It is readily shown,⁸ that Newton's famous formulation for universal gravitation is simply a consistent algebraic manipulation of Johannes Kepler's Third Law, a manipulation which references not only centrifugal impulses but also the then-well-established inverse-square law for electromagnetic radiation. It is notable that Kepler, rather than Galileo or Newton, was, at least relatively, the original discoverer of universal gravitation. There is no deductive inconsistency in the derivation of Newton's formulation from Kepler's Third Law; however, in this simple algebraic derivation, there is a relevant problem.

In Newton's case, we incurred the notorious, insoluble paradox of the "three-body problem"; in Kepler's physics, this paradox does not arise. Given the demonstration, that Newton's algebra is consistently derived from Kepler's Third Law, how is it to be explained, that this paradox occurs in the copy, and not in the deductively consistent original? This takes us to the next, related point to be considered.

B. The orbital characteristics of the asteroids

Karl Gauss's successful demonstration, that the orbital characteristics of the asteroids Ceres and Pallas conform to Kepler's orbital calculation for the missing, exploded planet between Mars and Jupiter, proves that the axiomatic assumptions underlying the physical space-time of Descartes, Newton, et al., are absurd relative to Kepler's physics.⁹ The crucial-experimental point to make, is that Kepler's physics *as a whole* requires this planetary orbit, whereas the opposing, empiricist physics not.

These two anomalies, the three-body paradox and the asteroid orbits, cited thus far, combine to the following effect. Kepler's physics, as an entirety, depends, axiomatically, in a crucial, pervasive way, upon the preceding work of Leonardo da Vinci et al. on the subject of the Golden Section and related physics implications of the platonic solids: notably, that on the ordinary scale, the physical geometry of living processes is ordered in harmonic congruence with the Golden Section; whereas, on that same scale, non-living processes are not. This crucial empirical fact determines the attributable, axiomatic structure of Kepler's mathematical-physical method in its entirety. This is the feature of Kepler's physics most emphatically rejected by Galileo, Descartes, Newton, et al. The origin of the Newtonian three-body paradox lies in this axiomatic difference.

In Kepler, the available orbits, and their mutual harmonic

ordering, are determined by what we term, since Georg Cantor's work, a *transfinite* principle. Since the universe efficiently contains living processes, *the which are negentropically ordered*, the universe as a whole (a transfinite process of becoming) must become, according to Cantor's definition and proof, characteristically transfinitely ordered (negentropically). This notion of *transfinite negentropy* is expressed within the work of da Vinci, Kepler, et al. as *harmonic* (least-action) *ordering* cohering with a determination of the platonic solids.

There is no non-anthropocentric science, no so-called "objective science" in the positivist's sense of the latter term. What we know, is not that which we have experienced with our senses. What we know, are those principles for generating successive, successful, revolutionary advances in our mastery of fundamental laws of our universe; these are the principles that are efficient voluntary action upon the universe.

Thus, in Kepler, bodies are situated in those Planck quantum-like orbits determined by the kind of least-action principle cohering with the constructive determination of the platonic solids. In the Newtonian case, the availability of orbits is indeterminate.

In the Kepler-Gauss configuration, and also in a synthetic, electromagnetic "history" of our solar system's derivation from application of Kepler's laws to slowing of the rotation of our aboriginal Sun, the mass of (polarized-fusion) determined plasma shed as the slowing rotation of the Sun, is distributed among available solar planetary orbits according to the relevant Keplerian principle of harmonic ordering. Thus, implicitly, in this model, the Gaussian toroidal distribution of the mass of material along the elliptical torus of the orbit, forms a planetary mass as a singularity generated within the continuing action within that orbit as a whole.¹⁰

The contrast which the two referenced axiomatic schemas illustrate as existing between the Keplerian and Newtonian schemas, can be received as confronting us with the notion of a Keplerian curvature of physical space-time, as opposed to the linear matter, space, and time, of the Descartes-Newton schema.

C. Non-algebraic functions

In both of the instances just cited, the crucial issue is some physical evidence which affects rigorous scientific thinking in two ways. First, there is the physical evidence which forces us to construct an *hypothesis* upsetting established opinion; second, there is the crucial evidence supporting either that hypothesis or a modified version of it. The same principle applies to the additional examples now to be considered.

The great battle within mathematical physics during the seventeenth and eighteenth centuries, was between the neo-Aristotelian gnostics, including the Cartesians and the Newtonians, the so-called analytical faction on the one side, and, on the opposing side, the current of geometricians, followers of Nicolaus of Cusa, Leonardo da Vinci, and Kepler, through Christian Huyghens, Gottfried Leibniz, and the Bernouillians. By the end of the seventeenth century, the characteristic essential feature of this factional affray within mathematical physics, was the Leibnizians' emphasis upon the so-called non-algebraic geometrical functions, and the analytical school's rejection of this non-algebraic systematic view.

The systematic study of these "non-algebraic" geometrical functions, was most intimately associated with three classes of physical phenomena. First, from Leonardo da Vinci into the nineteenth century, the study of the phenomenon of electromagnetic radiation (e.g., light). Second, the manifestation of the crucial isochronic processes in nature corresponding to the cycloids and related non-algebraic functions (e.g., the tautochrone, brachistochrone, optics, and the relevant evolutes and involutes). The union of these matters of light and isochronism is found in the general (Leibniz) physical principles of *least action* (Figure 1).

The geometrical school of Leibniz et al., continues, by way of the circles of Gaspard Monge and Karl Gauss, through the nineteenth-century work of such exemplary figures as Bernhard Riemann, Eugenio Beltrami (negative curvature), and Georg Cantor (Figure 2). There, fundamental (e.g., axiomatic) progress in mathematical physics comes not to an end, but, a zone of rapidly attenuating rates of progress respecting the axiomatic issues. During the twentieth century to date, there has been significant progress in experimental work, but very little progress in established scientific doctrine respecting deeper axiomatic issues. Indeed, the very mention of those deeper issues, formerly central topics of all serious scientific discovery, is virtually banned under the rubric of "philosophizing."

The feature of this on which our attention is focused at the moment, at the point, that a principle of *least action* presupposes a definite, universal, nonlinear *curvature* of physical space-time. This is already clear, even if only the relative validity of Kepler's physics—relative to the Cartesian and Newtonian—is taken into account. The deeper implications of non-algebraic isochronism confront us more

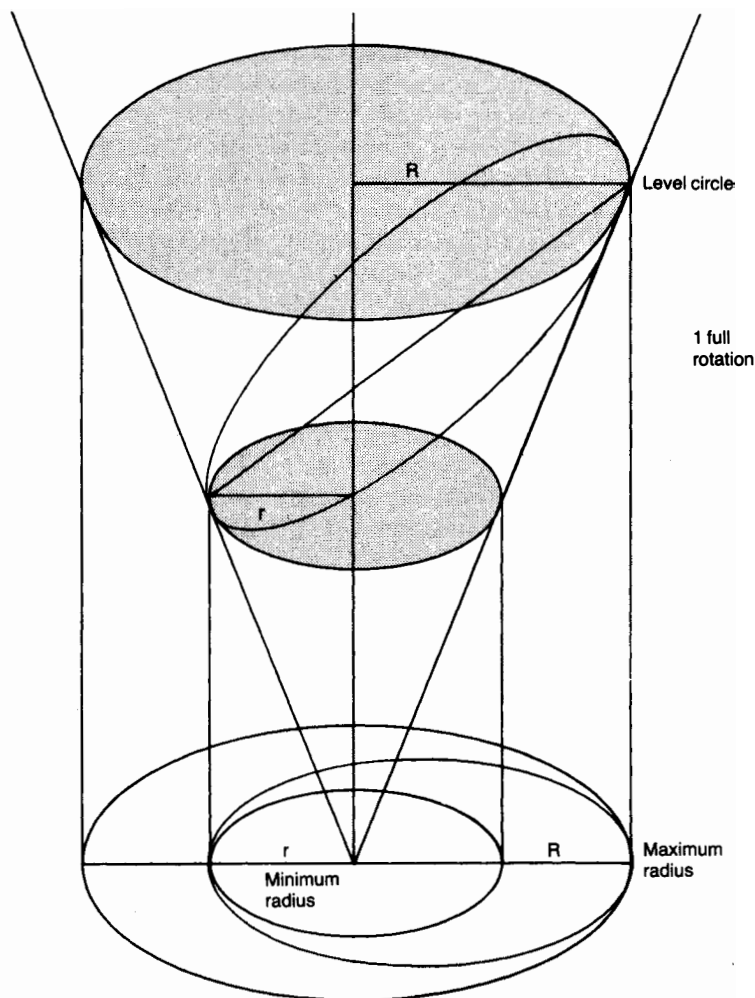


FIGURE 1

Contrary to the assertions of the so-called analytical faction within mathematical physics (the Cartesians and the Newtonians), real physical processes develop by conical rather than circular action, and on a cone, the least action is a logarithmic spiral. In one complete revolution, the spiral is bounded by two level circles. The axes of these circles can be projected onto a plane to give the minimum and maximum radii of an ellipse.

Source: Fusion

directly with the evidence of the pervasively ruling efficiency of that principle of curvature.

When we situate our working definition of the term “curvature of physical space-time” so, in respect to such notions as tautochrone and brachistochrone, we ought to begin to see the argument here more readily, more clearly, with a geometrical-experimental insight. The very term “curvature of physical space-time,” were either gibberish, or, at best, mere license of romantic poetizing, if it meant anything other than the startling statement of principle we have cited above: *Reactions among bodies are determined as secondary features of each body’s primary immediate interaction with the universe as a whole.* The refraction of a composite beam of light, composed of several distinct frequencies, is an illustrative image of this statement’s import for the novice. The (Leibniz) principle of least action exemplifies implicitly the content of the statement.

It is by means of the sovereignly individual agency of individual creative reason, a *spiritual* force emanating from the person as *monad*, that the universe as a whole is altered

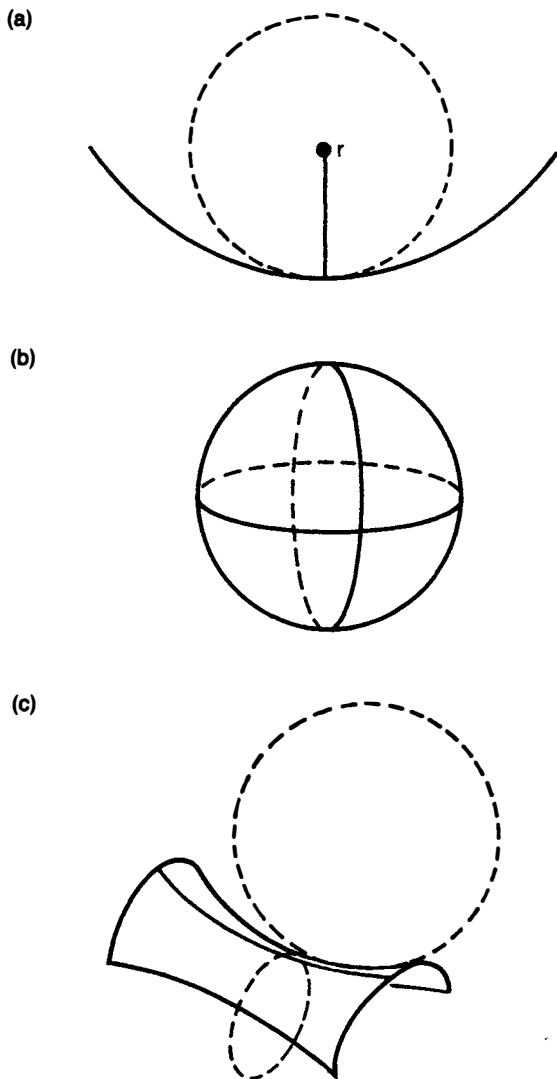
isochronically, by means of that generation, communication, and assimilation of valid fundamental discoveries, which, individually and cumulatively, increase the power of the entire human species over the universe.

This “entire human species” is not a finite, nor a “potentially infinite” collection. It is represented, in first approximation, as a transfinite magnitude. It is isochronic, in the specific sense that the relevant forms of present action affect the past as efficiently as the present and future. For, valid fundamental scientific discovery, for example, acts principally upon the outcome of a generation’s activity, and thus the present efficiently changes the past by altering its relevant quality of *outcome*.

The true self-interest of the individual person, and of the society, are so made known to law-giving reason.

The individual person is a sovereign individual person by virtue of that *divine spark* which we recognize in such form as the capacity for super-logical, creative reason to generate, to communicate, and to assimilate efficiently valid revolutionary transformations in science and technology. It is only

FIGURE 2



Source: 21st Century Science and Technology

Curvature: negative and positive. Curvature is measured by the radius of a circle that most approximates a curve (a). On a surface, the curvature is measured by two such circles approximating the curvature at the maximum and minimum extremes. These extremes, it turns out, are always perpendicular.

The curvature of a surface is positive when these two curves lie on the same side of the surface, as in a sphere (b) or torus. On a surface of negative curvature, the two circles will lie on opposite sides of the surface, as in the saddle curve (c).

from that standpoint, that a person, or nation, has the quality and rights of sovereignty.

The relationship of the sovereign personality, and of the properly sovereign state, to the universe as a whole, is ostensibly ambiguous, at least this seems to be the case at first

impression. For, from the standpoint of potential population-density, we can show that the individual sovereignty, as *One of Many*, locates its superior *One* practically in the relevant, subsuming scientific-historical process of *becoming* potentially a society of increased population-density. This *becoming* is a true *transfinite*, as we elaborate the proof of this in *In Defense of Common Sense*. It is therefore *not* the Good. Thus, the apparent ambiguity of connection to the *becoming*, and also to the *Good*. We must clear up this ambiguity.

It is sufficient, for purposes of this aspect of statecraft, to note the following. The process of change defining a transfinite *becoming*, defines perfection in terms of lessening imperfection, and thus identifies as unchanging an ordering principle of lessening imperfection. (This ordering-principle is equally congruent with the difference among any three, arbitrarily chosen, successive elements of the series, and is therefore a true transfinite.) The Good were such a transfinite, which is everywhere equal to every aspect of itself considered as part of a continuing process.

Thus, our reason grasps the meaning of the Good less unclearly than otherwise from the standpoint of the *becoming*; but we do not perceive the Good directly. We perceive and know its efficient reflections in the *becoming*. We know it as that which is reflected by the becoming. Thus, from day to day, and place to place, as we express our true self-interests in our work, the becoming, as typified by the increase of potential population-density, has for us the character of the pathway which the Good, and the Biblical book of Genesis, oblige us to follow.

Adam Smith and Karl Marx

Among other uses, the immediately preceding set of tightly interconnected sub-topics permits us to address with more devastating force, and greater relevance, the principal, twin economic pestilences of this century: British liberalism's ruinous cult-dogma of "free trade," and also Adam Smith's terrible grandchild, the economic doctrine of Karl Marx. The examination of that connection, from the standpoint of the immediately preceding topics, demonstrates a broader principle of statecraft to which we attribute great importance for reference here.

To begin, consider the superficial history of the connection between the "free trade" dogma of Adam Smith, and Karl Marx.

Smith (1723-90) was a follower of the British Secret Intelligence Service's David Hume (1711-76) in the teaching of an immoralist concoction perversely named "moral philosophy."¹¹ When, about 1763, Smith came directly into the employment of the Second Earl of Shelburne's British East India Company,¹² Shelburne et al. provided Smith access to Hume's old physiocrat and Rousseauvian cronies in France and Geneva. Out of this latter apprenticeship in the French physiocrats' dogma came Smith's famous 1776 apology for

the established anti-French and anti-American policies of his narcotics trafficking employer, the British East India Company: *The Wealth of Nations*, 1776.

It is relevant to the consideration of the Smith-Marx connection, here, that Smith's *Wealth of Nations* has been viewed as, substantially, a parody of Turgot's published work of that period.¹³

Karl Marx, recruited to the Mazzinian Freemasonry's "Young Europe" association by no later than the early 1840s, ended up, beginning a few years later, in London under the protection and virtual control of the same Lord Palmerston who maintained British secret intelligence service's connections to Mazzini's continental "Young Europe" through such channels as the British Museum's David Urquhart. Urquhart was noted by Marx as among those who steered Marx into indoctrination in the fraudulent myth of Britain's supremacy in scientific progress, British East India Company economics included.¹⁴

Thereafter, Marx always professed his intellectual debt in economic thinking to Smith, Smith's follower David Ricardo, and to Smith's instructors among the French physiocrats, Dr. Quesnay most notably. Marx, in addition to Friedrich Engels, was always thereafter vile in his praise of the British East India Company's usury-based political-economy, especially in his attacks on the American System of Leibniz,¹⁵ Hamilton, the Careys, and Friedrich List. In summary, he attributed the origin of "scientific economics" to the physiocrats and to the East India Company's usurers; and, the relevant British academics, especially the Fabians, have accepted this view by Marx without remarkable quibbling on the point.

Now, re-examine the same historical connection from the vantage-point of our earlier discussion of curvatures of physical space-time. Let us recognize thus, that the approximate simultaneity of the collapse of the Anglo-American and Muscovite economic systems shows the convergence of effects of the two systems sharing in common certain among the most flawed axiomatic assumptions implicit in each.

The history of European civilization, including the post-1492 Americas, is essentially, as Schiller portrays this,¹⁶ the struggle of *republicanism* (such as Solon's reforms in Athens) against the barbaric heritage of ancient Mesopotamia, usury-ridden oligarchism. British philosophical liberalism, the root of Hobbes, Locke, Hume, Bentham, Mills, and Smith's "moral philosophy," and of eighteenth-century British (Haileybury) political-economy, is in all essential features, a utopian *pantheistic* ethical dogma, modeled chiefly upon pagan imperial Rome, but also upon the ancient, pantheistic Delphic cult of Gaia, Python-Dionysus, and Apollo. The principal forerunners of Delphic oligarchism in Ancient Greece, is the so-called "Babylonian" model of ancient Mesopotamia and Canaan.¹⁷

To adduce the relevant common axioms implicit in the collapses of the British and communist political-economies,

it is perhaps sufficient to compare British and communist dogmas of national and super-national economic practice with the following reference-points in ancient and Renaissance history. We begin with the succession of usury-caused collapses of the ancient Mesopotamian "bow-tenure" system of agriculture. We include reference to the circumstances of Solon's anti-usury reforms in Athens. We examine the crucial, related issues associated, successively, with the Flammarian and Gracchi reforms of pre-imperial Rome. We include the process of collapse inhering in the axiomatic features of the pagan imperial Rome of Augustus, Tiberius, Nero, and Diocletian.

We examine the reasons for the upsurge of economic power generated by the Golden Renaissance, and view this with a reflection upon the great enterprises set into motion by Charlemagne earlier.

Two opposing features of these cases are emphasized: the role of usury, and the issue of increase of the per capita productive powers of labor, scientific and technological progress.

The forms in which usury's systematic taking of unearned income (i.e., "theft") occurs may be reduced to three general sub-classifications. First, there is *simple usury*: payment taken on account of debt, whether the original principal amount of that nominal debt may have been created in payment of money or real value advanced, or simply imposed upon the debtor either by fiat, or kindred means. Second, there is the role of monopolies (e.g., the international grain cartel), in exacting usuriously unearned income from both producers and consumers of some essential commodity. Third, there are the sundry guises of *ground-rent usury*. We include among these the evolution in the modern British model of central banking, and related forms of public indebtedness, from roots in ancient (e.g., Mesopotamian) tax-farming.

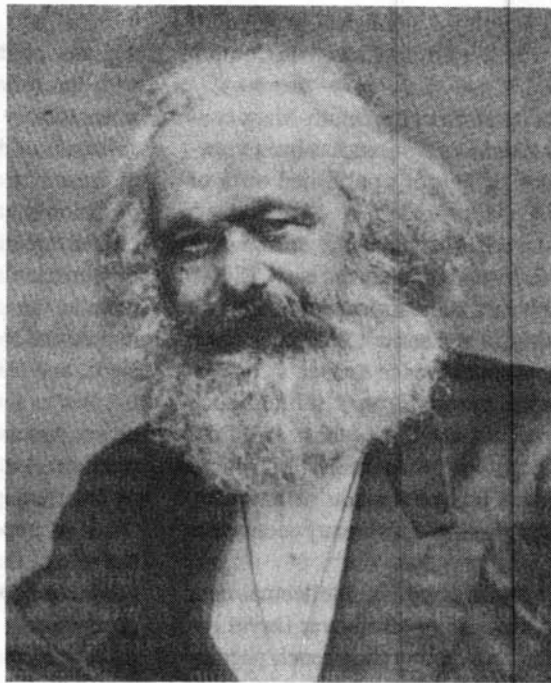
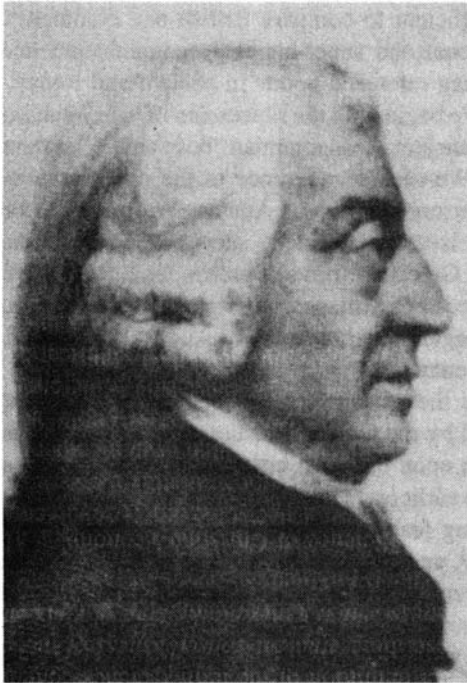
We counterpose *earned profit of physically productive enterprise* to the merely nominally "earned" *profit and interest* of usurious activities. We explain the necessity and functional basis for this distinction.

For various reasons, including the durability of clay cuneiform tablets, the earliest good accounting record of physical economies is our knowledge of ancient lower Mesopotamia.¹⁸

What we know of the economic history of the region shows that the critical physical factor causing the depopulating collapse of society after society successively in this region, was the effect of usury. This pattern extends from the most ancient cases known, through the usury-caused collapse of the post-Abbasid Baghdad.

Without the anti-usury referenced reform of the type introduced by Solon, Athens as a center for classical Greek culture would never have come into existence.

The monstrous failure of the pagan Imperial Rome of the emperors Augustus, Tiberius, Nero, and Diocletian, serves us as probably the best available case in point for



The British East India Company's apologist Adam Smith (left) and his terrible grandchild, Karl Marx.

classroom and related uses.

Whatever else may be said of the Gracchi and their proposed reforms, something akin to their leading proposal was the mandatory alternative to the nightmare which gripped Italy for centuries following the Gracchian faction's defeat.

Essentially, insofar as the returning farmer, from the ranks of Rome's legions, was settled productively on his farm, the aggregate families of Italy produced significantly more than Italy consumed. This, relatively speaking, represents a state of prosperity.

If that same returning legionnaire is denied his farm, and is relegated, instead, to the company of a proletariat enflaming the Roman *piazzas*, internal physical-economic bankruptcy grips ancient Roman Italy. As the engorged mass of a parasitical Roman idle rich gobbles up the formerly productive farmlands, to establish and to enlarge a sybarite's unproductive slave plantations, ancient Italy depends increasingly upon looting by force from the subjugated foreign colonies and satrapies, which provided, as tribute, the needed grain and other prime necessities.

This was the circumstance of the breakdown of the Roman republic, the condition of the civil wars and imperial designs of Julius and Augustus Caesar. Thus, like the bankrupt United States and Britain of 1990-91, the Romans of the first century B.C., rather than remedying the evil policies ruining the nation at home, prolonged their reign at home by foreign adventures. A parasitical mask of global imperial grandeur adorned that portion of the imperial capital abutting a sea of slum-helotry. Thus, then, as the Washington and London of 1990-91, did the rise and persistence of an Imperial Rome, rotting at its core, accomplish the general ruin

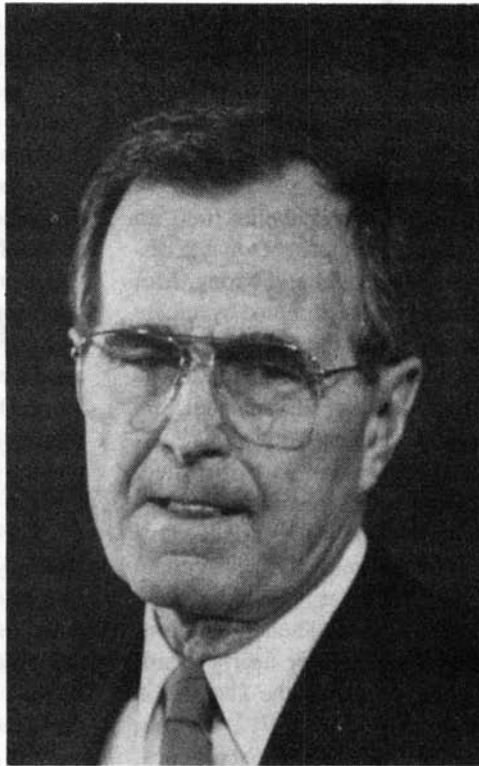
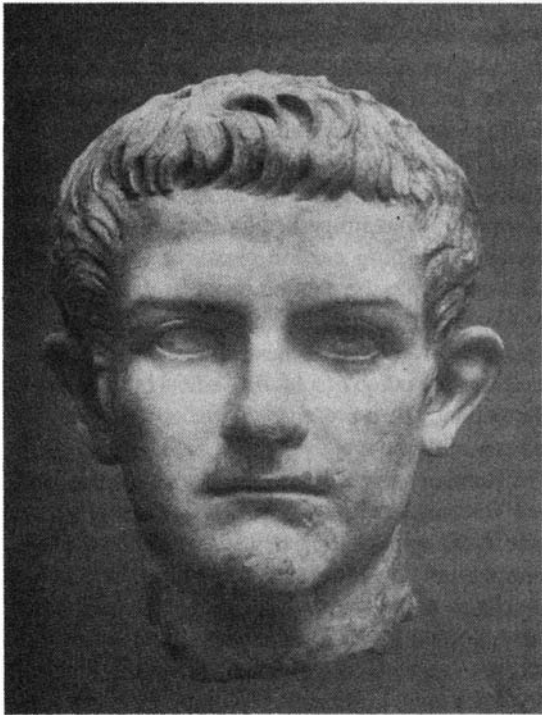
of not only Italy, but those colonies upon whose looting depended the Roman helotry's TV-like diversions at such places as the Circus Maximus.

So, the U.S.A. of 1991 is gripped, like the rotting Victorian British Empire before it. By permitting the internally rotting imperial British Empire of Castlereagh, Palmerston, Russell, Mackinder, and Milner to drag European civilization into the ruinous new Thirty Years' War of 1912-45, a war which London orchestrated against the Eurasian development perspective of France's Gabriel Hanotaux, the complicit governments of France, Germany, Austro-Hungary, and the United States (among others) did bring a monstrous ruin upon themselves, and upon the planet as a whole.

As a self-bankrupted ancient Rome sought an empire based upon naked force, thus to postpone the inevitable time of social-economic collapse at home, so the Anglo-American Liberal Establishment, the fanatical proponents of Smith's lunatic "free trade" dogma, have based their policy upon establishing a world-wide "Pax Americana" (directed from London), a "World Federalist," "one world," "new world order," a utopian's parody of the imperial pagan Rome of Augustus, Tiberius, Nero, and Diocletian.

To understand adequately the controlling impulses of the relevant neo-imperialist, Anglo-American liberals, we are obliged to study the rise, especially in eighteenth-century England and France, of the corrupting influence of so-called "Enlightenment Liberalism."

In Britain, this included most prominently the doctrinaires Francis Bacon, Thomas Hobbes, John Locke, David Hume, Adam Smith, the second Earl of Shelburne, Jeremy Bentham, and Thomas Malthus. In France, this must include



Stuart Lewis

The mad Roman Emperor Caligula and President George Bush. The Anglo-Americans' concept of a new world order today is a parody of imperial Rome.

René Descartes's neo-Aristotelian formalism as well as such shamelessly romantic figures as Montesquieu, Voltaire, Rousseau, the reactionary, oligarchical physiocrats of the Jacobin's salon of free-trader Jacques Necker and his notorious daughter, the Madame de Staël. Considering such exemplary cases, we trace the manner in which the axiomatic features of pagan Roman imperialism were imbedded in the "mind-set" of the modern liberal, fascist, and communist.

From that latter vantage-point, we may see more clearly, not only the true nature of the genetic links of Adam Smith to Karl Marx, but we see also why this connection is of such importance for understanding the common roots of the almost simultaneous collapse of the Muscovite and Anglo-American political-economic systems.

The pagan Roman imperial model of "new world order" adopted by the Thatcher-Bush circles of 1990, is, like most things of pagan Rome, a parody of someone else's earlier designs. Two precedents are of outstanding relevance. The nearest was the Cult of Apollo at Delphi and Delos in Greece. Ultimately, all significant European oligarchism and pantheism are either ancient Mesopotamian or Dravidian in traceable origins. By examining Mesopotamian and Delphic pantheism as the relevant models for modern liberalism and anti-republican oligarchism generally, we show how the archetypical oligarchical religious idea, ancient *pantheism*, is the axiomatic root of such modern phenomena as *gnosticism* and *satán-worship*, in religion; *liberalism*, *fascism*, and *communism* in social philosophy; *positivism* in legal philosophy of

practice; and *imperialism* in statecraft. Also, most directly to the point, oligarchism is impelled axiomatically not only to the parasitical practice of usury, but is impelled as if by instinct to destroy any society which bases itself upon the fostering of investment in scientific progress for increase of the productive powers of labor.

The known root of ancient pantheism is the cult of an Earth-Mother-fertility goddess, known variously as *Shakti* (Dravidian "Harrapan"), *Ishtar* (Chaldean), *Athtar* (Sheba-Ethiopia), *Astarte* (Canaan), *Isis* (Hellenistic Egypt), *Cybele* (Phrygia), or *Gaia* (Delphi). She is associated with a *satánic* male deity, a phallus-serpent deity known as, for example, *Siva* ("Harrapan"), *Python* (Delphi), *Dionysus* (Phrygia), or *Osiris* (Hellenistic Egypt). Probably, the earliest of the known origins of the Earth-Mother/Phallus cult was "Harrapan," spreading through "Harrapan" maritime colonies of the "black-headed people," such as Sumer and Sheba, to appear as such Semitic and Hellenistic utterances of "Shakti," as "Ishtar," "Astarte," and "Isis."

It is relevant in several ways, that these ancient Satánic (serpent/phallus-) worshipping cults are associated with the Moon-goddess and the lunar calendar, rather than the solar astronomical calendars of the earlier, Central Asian Indo-European cultures. The gods of the pagan pantheistic cults are, like imperial Roman emperors, apotheoses of the most degraded forms of lustful, existentialist, cupidity-ridden irrationalism. These pantheisms' ministry is the cult of fear, not agapic love; their so-called "law," is but the *ukase* of power's

capricious passing whim.

The endemic political impulse of pantheism is seen in the instances the gods of the new vassal are induced to submit to the gods of the conqueror. So, Anglo-American imperialism today demands submission to the Supreme Architect of Usury, and to the cult-dogma of universal "free trade."

The syncretic fusion of many pagan deities into an "Olympian" ethical Pantheon, prohibits any reasonable distinction between truth and falsehood, right and wrong. Morality is prohibited. And its place is fully occupied by a mere ethics, as Aristotle's *Ethics* and *Politics* show this.

Here is the pantheistic root of British liberalism and its political-economy; here is that axiomatically pantheistic¹⁹ feature of liberalism which leads consistently toward its self-expression in such forms of manifestation as British neo-Roman imperialism, fascism, and communism.

Two historical illustrations of this point are supplied here now. The first case is the apparent anomaly, that certain leading U.S. and British financier circles, including those associated with Morgan, Harriman, and Theodore Roosevelt, should have been not only actually or nearly "card-carrying Bolsheviks" during the course of the years soon following the so-called October Revolution of 1917, but also, later, supporters of the Mussolini and Hitler fascist regimes. The second case, is the common characteristics of Karl Marx's political-economy and the "malthusian" socialistic decrees of the Roman Emperor Diocletian.

During the period 1917-27, certain among the most powerful financiers and related political circles, chiefly in Britain and the U.S.A., were not only partners of the young Soviet governments, but also "co-owners" of those sections of the Communist International (and its communist spy service) later known variously as the "left" and "right" Comintern "oppositions," including circles associated with the U.S.A. "neo-conservative" extremists of today. In those terms, 120 Broadway in New York City's Lower Manhattan was a leading center of the obvious capitalist-Bolshevist entente.

Later, the same Harrimanite circles who were once associated so with Trotsky, Stalin, and so forth, moved to provide very significant support for both Benito Mussolini's and Adolf Hitler's neo-Roman cult of fascism.²⁰ The latter included the Harriman circle's public support for the Nazi Party's "racial purification" dogma,²¹ and the key role of Harriman's company, as bankers, in moving funds to aid Hitler's "legal coup d'état" in Germany in 1932-33.

The second historical reference, is the connection between the characteristic feature of Roman Emperor Diocletian's repressive, "malthusian" socialist decrees, and the most crucial among the attributable axioms imbedded in the formal side of Karl Marx's political-economic doctrine.

Although the establishment of romantic liberalism in Britain began with the evil circles of Francis Bacon and Thomas Hobbes, and although liberalism was formally established as the state philosophy of the United Kingdom with

the accession of the first Duke of Marlborough's King George I, for all practical immediate purposes here, we begin with Castlereagh's role in establishing London's institutionalized control over the internal affairs of continental Europe, by means of the 1815 Treaty of Vienna and the Holy Alliance.

Although it had been the German friends of anti-oligarchic Friedrich Schiller, who had led in bringing about the downfall of an entrapped Emperor Napoleon Bonaparte, it was London and Hapsburg carrion crows of usurious oligarchism who carved up the spoiled peace at the 1815 sessions of the Congress of Vienna. The infamous Holy Alliance's instincts were an echo of the malthusianism of Gian Maria Ortes and of the odious "socialist" edicts of the Roman Emperor Diocletian. The repressive "Karlsbad Decrees" expressed the essence of the matter.

The 1832 Hambach event signaled a de facto reversal of the Karlsbad Decrees, and the approaching erosion of the Holy Alliance itself. Against the renewed threat of a nationalist's effort for an anti-Jacobin republican renaissance in the domains of science and economy, the challenged oligarchy unleashed its own neo-Jacobin, Dionysiac forces of chaos, forces which soon came to be centered around the Mazzini Freemasonry of "Young Europe."

U.S. President Abraham Lincoln's qualified defeat of London's Confederacy, was a crucial turn in the post-Holy Alliance world order. Not only had republican, agro-industrial, mercantilist progress triumphed over London-backed chattel slavery and usury. Defeat of London in this affair, and the doom of that bloated British special constable, Napoleon III of France, had been ensured by the intervention of Russia's Czar Alexander II, threatening the use of Russia's naval and land forces against London and Paris, should those capitals carry through their intention, not only to invade and loot Mexico, but to intervene more directly in military assistance to London's otherwise doomed puppet, the Confederacy.

At the same time, Czar Alexander continued to reverse the barbaric devolution of Russia's social and economic life, under his two predecessors, and to reform Russia along the lines of the reforms which Peter the Great had launched on the prompting of Gottfried Leibniz.

Moscow's action for European neutrality in the U.S. Civil War of the 1860s, was one of the three major developments of the second half of the nineteenth century which impelled London to unleash the "new Thirty Years' War" of 1912-45 in Europe, and which prompted also the strange 1920s cohabitation between the Harrimans and the Bolsheviks. The other two developments were, first, the friendship between Moscow and Bismarck's Germany, and second, the efforts of France's great statesman Gabriel Hanotaux, to establish an anti-British bloc of North Eurasian cooperation for economic development.

The Fabians' Britain of Cecil Rhodes, Milner, and MacKinder,²² caused World Wars I and II for the same, deeper,

geopolitical motives, which, more recently, prompted the Britain of Margaret Thatcher, British agent-of-influence Henry A. Kissinger, Nicholas Ridley, and Conor Cruise O'Brien to launch what might very well become the plunge into World War III.

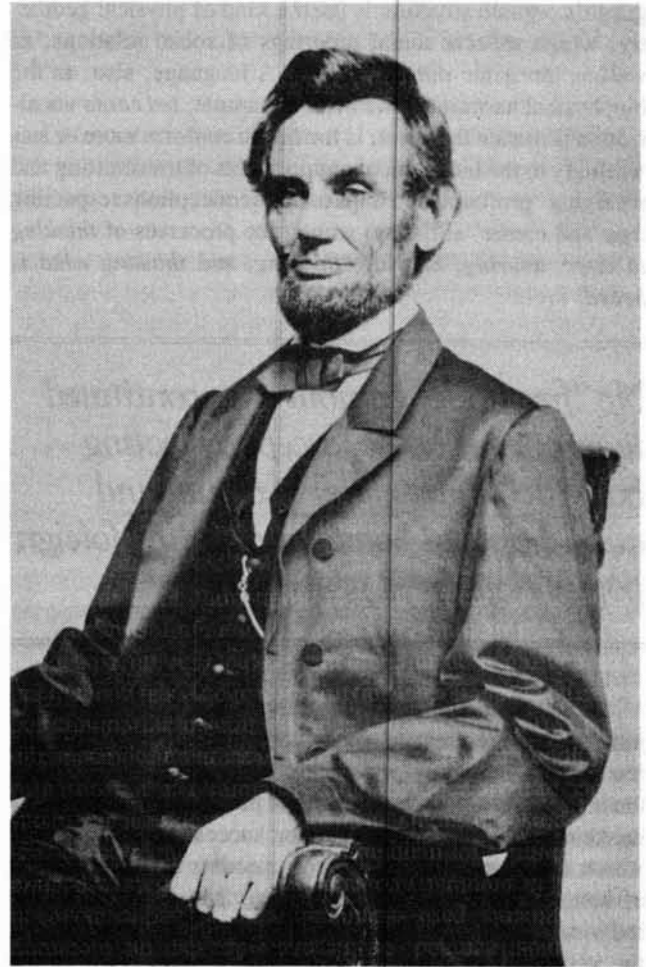
Britain then responded to the cooperation between Moscow and Bismarck's Berlin, by seeking war between Russia and Germany, more or less as Prime Minister Margaret Thatcher's circles reacted to German reunification in 1990. The convergence of Hanotaux's Paris upon continental European general cooperation with Sergei Count Witte's and, later, Stolypin's Moscow, brought from London a more profound reaction: World War I.

The Western oligarchical interests used traditional special channels into the old, anti-Petrine boyars generally, and into such institutions as the Third Section and Okhrana in particular, to unleash *raskolniki* forms of madness and terrorism against those institutions of Russia, from the czar on down, responsible for the friendship with Bismarck's Berlin and Hanotaux's France. This is the key to the anomalies of Averell Harriman's Broadway.²³

London's perception of this 1880-1900 threat of Eurasian continental economic development and cooperation, impelled the circles associated with Milner and Mackinder not only to corrupt France successfully with the *Entente Cordiale*, but to use the "messianized" *raskolniki* followers of Fyodor Dostoevsky and Nikolai Bakunin to destroy from within a czarist Russia which might seek cooperation with both Germany and France against Britain's control of the continental "balance of power." The greatest threat currently to civilization as a whole is, that the pattern of Mrs. Margaret Thatcher's apparent "Svengali-like" control over the United States' George "Trilby" Bush might persist, even under a change of the specific personalities occupying those official positions. If so, then as the pre-history of Britain's authorship of World War I was re-enacted during 1990, against the implications of Germany's reunification, so the danger of a "new Thirty Years' War" threatens the planet with a plunge into a "New Dark Age" by the outbreak of this coming century.

Before turning to the second of the two historical examples, let us underscore a crucial lesson demonstrated by the case just outlined.

The popularized, ignorant opinion of history presumes axiomatically the misanthropic Hobbes-Locke-Hume-Smith notions of peoples as hedonistic, instinct-ridden little *homunculi*, each born—bestial instincts apart—a *tabula rasa*. For such poor dolts, real history never existed, but, rather, nothing more than a "Zeno's Paradox" sort of "Achilles and the Tortoise" kind of separated, short intervals of current events. History for them is a succession of kinescopic still photographs, within which "current events" are determined with little or no regard for the cultural heritages of the preceding kinescopic frames.



President Abraham Lincoln, whose defeat of the Confederacy was a blow to Britain's scheme for a new world order. Under his leadership, the principles of the American System of Political-Economy were used to generate the investment and production needed to win the war.

The simplest, empirically-based disproof of the cited British man's Hobbes-Locke view of history, emphasizes two interrelated sets of facts. The first fact is the known, millennial, philologist's history of those languages in which all contemporary conscious behavior is molded. The second fact, is the relationship between a language-family's classical poetry, and the singing of that poetry under the influence of harmonic principles of vocalization genetically intrinsic to all healthy specimens of the human species, regardless of race or national origin.

No person ever existed as a *tabula rasa*. What is transmitted to each new member of society from preceding generations, includes not only that which is transmitted by the memory-medium of language, but those ideas which are characteristic of the developed grammatical and other structure of the spoken language itself. It is shown that a lan-

guage's organic structure is itself a kind of physical geometry, which reflects actual orderings of social relations, as well as inorganic ones generally. A language, also, as the biophysical harmonic laws of, for example, *bel canto* vocalization illustrate the point, is formed to conform more or less wittingly to the biophysical requirements of transmitting and receiving "profound and impassioned conceptions respecting man and nature" (Shelley) among the processes of *thinking to utter, uttering, hearing, thinking, and thinking what is heard*.

No "free trade" economy has continued to prosper at home, except by looting both an "under-class" of actual and quasi-helots at home, and looting foreign populations most generously.

In real history, like the most important, millennia-spanning example referenced, the underlying structure determining today's crucial events reaches back across centuries. In the more adequate view of historical processes, it is the transmission of embattled ideas, over successive generations, which determines the course and outcome of each moment of history taken in the shorter term. The free will of the individual is not a matter of indifference in the process, but the individual free will is historically efficient only to the degree that its action, wittingly or not, alters the quality and interaction of those ideas which pour, like a mighty avalanche of political-cultural traditions, out of the long past, into each momentary present.

Schiller argues that European history in totality can be understood as essentially a millennia-spanning, continuing conflict between but two historical-cultural traditions, *oligarchism* as typified by Lycurgus's Sparta, and *republicanism* as typified by Solon of Athens. Our example references directly the span 1812-1990; implicitly, we trace the same conflict to the end of the sixteenth century (Francis Bacon); we could have traced it to the times of Socrates and Solon, or, with increasing fuzziness of vision, to more remotely ancient times.

Given the fact, that the free will of individuals does alter the course of what is in the long term a culturally determined history, history is not determined by simple ideas as such. Determinism exists in the long-span cultural determination of history, not in terms of simply fixed kinds of ideas, but in terms of the transfinite principle which expresses the continuing characteristic of a cultural-factional body of thought throughout the multi-century span of the many changes introduced to it by action of sovereign individual free will.

Thus, it is types of cultural ideas, as, for example, oligarchism or classical-humanist republicanism, which act efficiently upon history. The sovereign individual free will acts upon such cultural ideas, that is, upon the efficient, transfinite characteristic of such ideas, to the effect of rendering the power of such ideas relatively greater or less.

This brings us to the case of the second historical example, the common axiomatics of the economic doctrines of Adam Smith, Karl Marx, and the Emperor Diocletian.

If we consider Marx's four-volume *Capital*, and his related writings, only in their narrower aspect, as a system of political-economic analysis as such, Marxian economics can be reduced essentially to a set of simultaneous linear inequalities purporting to represent a linear mathematical model of what Marx terms "extended reproduction." Two explicitly adopted assumptions of a formally axiomatic-deductive quality are then shown to be direct points of equivalency between Marx, on the one side, and, on the other side, Adam Smith and his physiocratic teachers.

First, Marx not only accepts, and defends fanatically Adam Smith's "free trade" model of competition; he adopts it as a method of linear statistical determination of the marginal distribution of what he terms "exchange value." He is virulently anti-mercantilist, and a faithful apostle of Adam Smith and the physiocrats on this account. He is, otherwise, an avowed, pro-British adversary of the American System of Political-Economy, as he underlines this in connection with his vile defamation of Friedrich List and Henry C. Carey.

Second, Marx observes, accurately, that in his constructing linear inequalities intended to describe "extended reproduction," he has ignored both technological progress and what Henry C. Carey describes as the "economy of labor" determined by technological progress. (Although Marx does seek to bring in technology as a depreciator of price, after the fact, in *Capital*, Volume III). In respect to principles of Physical Economy, it could be said that Karl Marx is a "knuckle-headed" populist, and a physiocratic one at that.

Among the relevant other absurdities in *Capital* which cohere with these two axiomatic assumptions, are Marx's—in fact, pro-usury—distinctions among *profit, rent, and interest*, and his fool's-errand quest for the "primeval hoard" of money.

The better approach to recognizing the disastrous folly of the two axiomatic assumptions, is to reflect upon the practical significance of what they require implicitly be excluded from policy-shaping considerations. The summation of this line of argument is partly repetition of points made earlier in this text, but usefully so: We see, one hopes, more clearly, how the issue of "the One and the Many" bears directly upon the determining connection between physical-economy and statecraft in general.

Since the practice of statecraft must be concerned with the *durable survival*²⁴ of the society and its included most essential social institutions,²⁵ there can be no competent

statecraft whose practice fails to address efficiently the requirements of a science of Physical Economy. Diocletian's decrees, the physiocrats, Adam Smith, and Karl Marx demand, on common included ground, that political-economy evade those conditions which are indispensable for the *durable survival* of a society.

We have indicated that a transfinite positive ordering of increase of an entire society's potential population-density is the general precondition for durable survival. We know, by definition, that the capital-intensive, energy-intensive investment in scientific and technological progress in both basic economic infrastructure and production of basic physical goods of producers' and households' consumption, is required policy and practice.

We can show, either on the basis of the physical geometry of those seemingly simple principles, or by reference to appropriate, crucial empirical evidence, or both, that the following set of general inequalities must be satisfied.

1. The per capita leisure and physical consumption of the family household must be improved, but under the condition that the per capita and per hectare physical output of the whole society increase more rapidly than the per capita household goods consumption.

2. That, with technological progress, the school-leaving age must increase asymptotically toward an average upper limit. This requires corresponding increases in health and longevity.

3. That, with technological progress, the ratio of required employment in physical production and manufacturing and basic economic infrastructure must increase relative to agriculture and related activity, up to a lower asymptotic limit for the latter.

4. With technological progress, physical-productive employment in producers' goods must increase relative to that in physical production of household goods.

5. That, with technological progress, we must increase not only the quality of energy available per capita area of potential population-density; we must increase the effective intensity of the applied energy.

That is enough detail for our immediate purposes. It is clear that successful growth must take into account the ration of the labor force trained for employment in each category, and must establish correlated priorities for fostering credit and capital to admit realization of such goals. This requires corresponding forms of "mercantilist dirigism" in the economy, otherwise no rational result will occur. Indeed, no "free trade" economy has continued to prosper at home, except by looting both an "under-class" of actual and quasi-helots at home, and looting foreign populations most generously.

While the "free-traders" howl loudly of their freedom to steal, they deny real freedom, the freedom to create, and to obtain the conditions of family and general social life needed

to foster the creative potential of the individual and his expression. This true freedom is exemplified by a truth-seeking commitment to valid, fundamental scientific progress, to related creative work in classical-humanist art forms, and so forth.

Without doubt, the Soviet political system denied true human freedom. Without doubt, as long as Moscow was perceived a credible strategic adversary, there was still much greater political freedom in the West, than in Soviet society.

We should add, relevantly, that the best Soviet scientific workers lived and worked at the rim of a chasm of political dissidence on this account. Part of the depth of the crisis in the U.S.S.R. today, is that the pre-1917 stock of Russian intellectual capital has been almost used up, in science as in the eradication of those productive farmers who used to be named "kulaks."

One is reminded thus from Soviet history, of the "malthusian" socialist decrees of the Emperor Diocletian.

The situation in the "free trade" West is not generally much better. Only by exception, such as following the leadership of a de Gaulle, Adenauer, Mattei, or John F. Kennedy, some genuine long-term growth was promoted during the postwar period. Otherwise, as in the case of occupied and quasi-occupied postwar Germany, the net relative productive potential has been declining from the high point reached, about 1944, during the course of World War II.²⁶ In general, apparent short-term growth has been realized by resort to what Marx, Rosa Luxemburg, and Yevgeny Preobrazhensky termed "primitive accumulation."

Look at the picture of the world from Japan circa 1983-84. Japan, which had made good use of purchase of otherwise idle U.S. patents, was faced with the collapse of U.S. expenditure in research and development, together with a catastrophic decline in quality of top-ranking U.S. science graduates. Thus, if Japan at that time were to maintain its rate of growth in "economies of labor," it had to increase rapidly and substantially its percentage of national employment in research and development.

Without "dirigist" decisions of that sort, in R&D, in basic economic infrastructure, and in education and employment generally, there can be no true opportunities for exercise of human freedom in the society.

Where cartels are permitted to loot agriculture, by the dropping of government parity-price protection for farmers, free agriculture vanishes, and, sooner or later, hunger enters. Where ultra-competition under conditions of reckless deregulation prevails, small industries, the bulwark of economic freedom, fail, and the margin available for freedom—technological progress—drops to below zero percent of the cost of sales.

Without real growth in potential population-density for the society taken as a whole, there is a net real decline, perhaps temporarily concealed by primitive accumulation, which means a disaster in the longer term.

For the most efficient route to uncovering the common,

principal axiomatic characteristics of Adam Smith, Karl Marx, and the Diocletian decrees, turn attention next to the common physiocratic features of each. Following that, place emphasis upon the explicitly immoral, populist form of irrationalism, which is professed repeatedly, with shameless openness, by Smith, and which is his sole premise for his esoteric “Invisible Hand” dogma of “free trade.”

As a matter of principle, the doctrine of “free trade” begins in history as the lunatic’s²⁷ worship of the Whore, or Earth-Mother goddess, Shakti, Ishtar, Gaia, et al. As for the

Kepler’s physics, as an entirety, depends, axiomatically, in a crucial, pervasive way, upon the preceding work of Leonardo da Vinci et alia on the subject of the Golden Section and related physics implications of the platonic solids. Notably, that on the ordinary scale, the physical geometry of living processes is ordered in harmonic congruence with the Golden Section; whereas, on that same scale, non-living processes are not.

Diocletian decrees, also for the pagan physiocrats, and Adam Smith, the source of *profit*, *interest*, and *rent*²⁸ is the mysterious “bounty of nature.” The neo-Aristotelian René Descartes, assists us perversely in decoding this esoteric pagan dogma, implicitly placing the “bounty of nature” among matters under the more general heading of *deus ex machina*.

Read Adam Smith on this:

The administration of the great system of the universe . . . [and] the care of the universal happiness of all rational and sensible beings, is the business of God and not of man. To man is allotted a much humbler department, but one much more suitable to the weakness of his powers, and to the narrowness of his comprehension: the care of his own happiness, of that of his family, his friends, his country. . . . But though we are . . . endowed with a very strong desire of those ends, it has been intrusted to the slow and uncertain determinations of our reason to find out the proper means of bringing them about. Nature has directed us to the greater part of these by original and immediate instincts. Hunger, thirst, the passion which unites the two sexes, the love of pleasure, and the dread of pain,

prompt us to apply those means for their own sakes, and without any consideration of their tendency to those beneficent ends which the great Director of nature intended to produce them.²⁹

We find a relevant observation in the work of Sir Isaac Newton, the apotheosized god of science among Britain’s pagan imperialists. Newton confirmed that his formal physics contained the patent absurdity, of portraying the universe, mathematically, as running down in the fashion of a mechanical timepiece. He observed, that this faulty mathematical construction gave the appearance, that for the universe to continue to exist, God must rewind it periodically. This is Newton’s fair representation of Descartes’s dogma of *deus ex machina*. Newton qualified his argument, by confessing that his faulty choice of mathematics was the only one he found acceptable.³⁰

Notably, Gottfried Leibniz referenced this “clock-winder” matter in the Newton-Clarke-Leibniz correspondence. The Cartesians’ and Newtonians’ fanatical refusal to accept the reality of *non-algebraic functions*, and to refuse to consider, therefore, a competent calculus, shows that Newton was indeed aware that a mathematics schematically different from his own, was an available choice.³¹

Newton’s fictional “clock-winder god,” is Descartes’s *deus ex machina*, and the omniscient, but impotent post-Creator of Aristotle’s schema.³² This pagan deity of Aristotle and Descartes is also the mechanistic Enlightenment’s Freemasonic concoction of Robespierre’s Jacobin Supreme Being cult. The quarrel of Leibniz with Kepler’s adversaries among the Cartesians and Newtonians, shows the crucial point at issue in the readily most intelligible, and historically actual form.

Over the decades, from the late seventeenth century through to the beginning of the twentieth, this issue is embodied in the mathematical guises of the geometric magnitudes, the “non-algebraic,” “transcendental,” and “transfinite;” each, successively, represents but progress in comprehension of the same matter already addressed by the preceding usages. For reasons which we have already considered above, the possibility that an intelligible representation of the lawful ordering of both the *becoming* within physical space-time, and human knowledge of that *becoming*, lie within the scope of combined notions of an underlying, harmonically ordered curvature of physical space-time, and the employment of those geometrical forms of mathematics associated successively with “non-algebraic,” “transcendental,” and “transfinite,” to represent the ordering of events within that curvature.

Thus, the mechanistic axiomatics of Cartesian and Newtonian are the persisting source, not only of the cited, Newtonian “clock-winder” delusion, that our universe is entropically ordered. The same, Aristotelian folly, termed the deductive/inductive method, is the sole rationalist form of

operation responsible for the belief in a *deus ex machina*. It is also, in the same way, the rationalist sophistry employed to support the physiocrats' version of the gnostic,³³ "fundamentalist," populist faith in the mysterious "bounty" of the Earth-Mother goddess Gaia, otherwise named "Mother Nature."

Like the ancient Aristotelian *organon*, the modern deductive/inductive method permits no consistent schema, but a universe of constantly linear physical space-time curvature, a universe of linear pairwise interactions among bodies in linear space and linear time. The corollary of this, in a linear system situated within a constantly linear physical space-

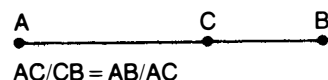
time, can be supplied a consistent representation within the terms of the deductive/inductive method.

That Aristotelian, or "neo-Aristotelian" method could not represent the lawfulness of our real universe in general, or, most emphatically, a living or living-thinking process.

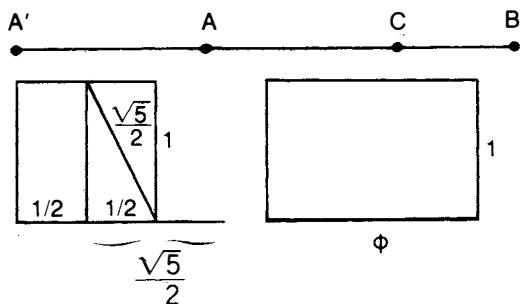
This is a corollary of the fact that the inevitably failed effort to understand the real universe, or living processes, or human thought from an Aristotelian, or neo-Aristotelian standpoint, must lead ultimately to something like a Cartesian or a Newtonian gnostic's occult phantasm, the *deus ex machina*. The Cartesian and Newtonian's rejection of the non-algebraic form of a *valid* calculus³⁴ illustrates the manner

An algebraic construction of the Golden Section

The Golden Section, or Golden Mean, divides a line into two segments, such that the ratio of these segments is proportional to the ratio of the whole length to the larger of the segments.



This being the case, when the length AB is extended by the segment AC, the ratio of the original to the new length, $A'B/AB$, will also be proportion to the Golden Section ratio.

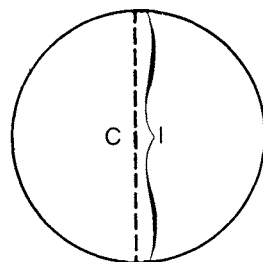


$AC/CB = AB/AC = \phi$
 (ϕ is the traditional symbol for the Golden Mean)

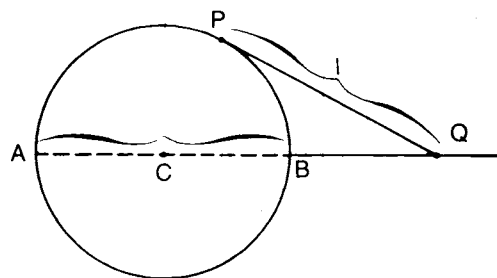
The Golden Section ratio is $(1 + \sqrt{5})/2$, which is approximated by the number 1.61802. A simple construction of the ratio $(1 + \sqrt{5})/2$ can be determined from the Pythagorean Theorem. Construct a square on an extended line. Draw a diagonal through one half of the square, and mark this length on the line. The extended line will be in the Golden Section ratio to the length of the side of the original square.

A geometrical construction of the Golden Section

The Golden Section can be constructed directly from a circle, as follows: Take any circle, and determine the length of its diameter by folding it in half. Now produce a tangent from any point on the circumference of the circle, which is extended so that it has the same length as the diameter. Connect the endpoint of the tangent to the center of the circle, and continue this new line until it reaches the opposite half of the circumference. This line will be cut in the Golden Section proportion (ϕ) by the diameter.



diameter length, l
 line $PQ =$ line AB
 line $\overline{PQ}^2 = QB \times QA$
 $QA = AB + QB$
 $\overline{AB}^2 = (AB + QB)QB$ and
 $AB/QB = (AB + QB)/AB = \phi$



The relationship $\overline{PQ}^2 = QB \times QA$ can easily be shown by noting that PQB and PQA are similar triangles.

the gnostic's occultism slithers through the cracks inhering axiomatically in the deductive mind-set.

Most simply, the *non-algebraic* domain has two ostensibly equivalent modes of existence, a geometric one, and a physical one. At this moment, it is sufficient to prove the case, to limit attention to the vicinity of the cycloid.

Formally, there is the demonstrable geometric existence of the cycloid, and the system of related evolutes and involutes. These define non-algebraic functions which live within the cracks of the algebraic ones. Hence, even on formal

While the "free-traders" howl loudly of their freedom to steal, they deny real freedom, the freedom to create, and to obtain the conditions of family and general social life needed to foster the creative potential of the individual. This true freedom is exemplified by a truth-seeking commitment to valid fundamental scientific progress, to related creative work in classical-humanist art forms.

grounds, the argument which suggests the existence of something functionally efficient outside the scope of algebraic functions, obliges that the non-algebraic functions be preferred to an irrationalist, occultism-ridden *deus ex machina*.

Physically, we have already indicated some of the crucial-experimental features of physical space-time which correspond to the cycloid and nearby forms of function. Since such conclusive crucial evidence is beyond doubt, to propose to maintain a representation of physics in stubborn defiance of this evidence, is a gnostic's arbitrary, occult irrationalism.

So, we cannot exclude these functions, even on formal grounds alone, since they came into formal geometrical existence by methods of construction whose authority could not be denied without throwing out all of geometry. Not only do these functions possess a formal existence within mathematics; they are functions with a unique mathematical correspondence to elementary physical principles; so, no truly rational physics could exist without taking this non-algebraic domain into a leading position of authority. Finally, these functions address directly the location within which the gnostic Cartesians and Newtonians insist that the "Maxwell demons" of the *deus ex machina* lurk; to ignore the transfinite in that case, is not a mistake but a willful fraud.

Not only is the transfinite conception of a "becoming" indispensable to a rational representation of even an hypothetical inorganic physical space-time. There can be no rational comprehension of living or of thinking processes without it. This was already proven implicitly by the work of Leonardo da Vinci et al., as the harmonic ordering of living processes, in morphology of geometrically self-similar growth and function, in congruence with the Golden Section. As we have noted earlier here, this was made, successfully, the basis for determining the curvature of physical space-time by Kepler. The morphology of successful economic growth, measured so in terms of increase of potential population-density, has the same morphological harmonic characteristics. Thus, the creative mental processes, which cause such growth, define a function of the same general harmonic characteristics.

The highest form of functional activity which is known to exist within a process, is therefore the minimal level of form of activity characteristic of that inclusive process as an entirety. Thus, if the universe includes lawfully living, e.g., *negentropic* processes, the *minimal* characteristic of the lawful ordering of the universe as a whole, is that that universe is negentropically ordered as a whole. Thus, since efficient creative reason among sovereign individuals, is a characteristic of a successful society's relationship between man and nature, the minimal characteristic of the universe is represented by a transfinite ordering of *becoming* congruent with the definition of individual human creative reason.

That latter consideration, then, in turn, becomes the basis for assessing the conjecturable axiomatic congruence among sub-phases of the universe generally, or human behaviorisms in particular. So, finally, the coincidence among the Diocletian decrees, the physiocrats, Adam Smith's "free trade" dogma, and Karl Marx is to be adjudged.

Some common immoralities

That forerunner of President George Bush's long-standing, malthusian policies on population control, the Emperor Diocletian's decrees, prescribed a de facto ban on technological progress and a de facto fixing of a ceiling upon population totally, by limiting its growth locally. Yet, the population of the same region was far greater, far denser, more long-lived, and less impoverished 1600-odd years later. Indeed, it was the blocks on population-growth and against fostering technological progress, which characterized the collapse of the Roman Empire in the West, and also later in Byzantium.

Similarly, beginning approximately in the year of the assassination of President John F. Kennedy, the Dionysiac "New Age" of the neo-malthusian rock-drug-sex-irrationalism counterculture was launched into a mass-recruiting mode, from Aleister Crowley's Britain, into the United States of America. Under President Kennedy's successors, the U.S. economy and its population's intelligence level were



The rise of the rock-drug counterculture in Sweden: Alice Cooper in concert in Stockholm, 1989; and young fans at an Ozzie Osborne concert in Solna practice making "the sign of the devil."



systematically, intentionally destroyed by successive policy changes in the direction of a "pro-ecology," "anti-technology," "anti-nuclear family," "post-industrial" society.

Hence, from approximately 1967-68, there has been a visible, overall accelerating decline in useful physical output per capita and per hectare. This began, during the 1966-68 interval, as an average decline in the rate of growth of physical productivity, and became an absolute decline by approximately 1968-70.

Official U.S. opinion chose to see this in contrary terms. Since the old economic yardsticks of the 1950s showed decline, the U.S. government and other institutions adopted newly designed yardsticks, designed to measure decline in accord with a new definition of growth. These changes in yardsticks were of the form of the change of behavior which managed to replace the statement, "My family is going hungry," by "We have succeeded in eating less."

One of the first general indicators of a secular decline toward a new U.S. depression, was a net decline in per capita quality of maintained basic economic infrastructure, from 1970-71 onward. The precedent was the manner speculators earlier turned the New Haven Railroad into junk: nearly all maintenance of roadway and rolling stock was terminated. In the short run this curtailing of New Haven maintenance expenditures was employed to increase disbursements for New Haven stockholders' dividends. The price of New Haven stock shot up on markets. Later, the controlling New

Haven speculators sold out the stockholding at a vast nominal profit, leaving the railway company resembling a bankrupt scrap-heap. This is what has been done to the U.S. physical economy as a whole over the interval 1965-90.

The same principle of "business management," exemplified by the looting of the New Haven Railroad, can be applied to populations. Close down what appear to be relatively less profitable production facilities, thus presumably increasing the average nominal profitability of the surviving enterprises. Then, increase per capita incomes, by mass extermination of the unemployed and the poor: true "social Darwinism" at its most consistent. We have seen such "social Darwinism" practiced during 1990 against the new states of the Federal Republic of Germany, at the insistence of the co-thinkers of Margaret Thatcher and her anti-Germany trade and industry minister, Nicholas Ridley.

In the less extreme case, there is the national economy, in which the appearance is, that some are wealthy and some are poor. In the extreme case, some social Darwinists might propose to increase the per capita level of wealth, by eliminating a requisite ration from among the poor; that was done, in effect, to the eastern new states of the Federal Republic of Germany during the second half of 1990. In another extreme case, a nation, as the United States of America did over the 1970s and 1980s, most notably, shut down more and more employing industries and farms, in order to use cheap labor abroad to increase the profitability of sales of goods to pur-



Chris Lewis

An abandoned railway line in Pittsburgh, Pennsylvania, 1985. The decline of basic U.S. infrastructure from 1970-71 onward was one of the first indicators of the coming depression.

chases within U.S. markets! The insanity of policy of practice illustrated by each of these examples ought to be apparent immediately.

Let us adduce the common principle characterizing such insane and immoral economic policies of practice.

The prosperity of a nation is, at first inspection, a matter of self-generated physical well-being per capita and per hectare. This requires not merely an average level of development of the productive powers of labor; it requires that, from each and all cases to another, the productive powers of labor not fall below a certain minimum. This latter requires that the standard of the nuclear family not fall below some minimum, from case to case. Thus, the general prosperity of a nation is not just a function of its average productive potential, but must also take into account as a determining variable term, each of both the minimum and also the maximum upper and lower ranges inclusive of the proverbial 99% of the nuclear-family households.

In summary of this point, it is the relationship of each hectare to all hectares, and the productive potential of each individual to that of all individuals. It is such a relationship between the individual and the economy taken as a whole.

It may be the passionately asserted opinion of some, that

what we're saying is either not true or is virtually irrelevant even if true. So much the worse for their mistaken opinions. We are addressing here adducible principles of Physical Economy.

A man may leap from a precipice to demonstrate his contempt for the principle of gravitation; the principle of gravitation responds to this by ignoring that man's opinion, with the relevant resulting consequences. So it is with the issues immediately at hand here. It is the inevitable consequence of the Diocletian decrees, "free trade," and Marxian doctrine which exposes most conclusively the common axiomatic flaws of each and all of the opinions we've attacked here.

Thus, reality responds to those common axiomatic features of all three follies with consistent kinds of effects, as we see in the near-simultaneous collapse of the communist and Anglo-American economic systems today.

The greatest economic crime is to devalue that which sets sovereign individual human personality absolutely apart from, and superior to each and all beasts. This crime includes the devaluation of the society's, and each individual's own duty to foster the development of that divine spark of potential for creative reason which makes man absolutely superior

to all beasts. That required development is not limited to the powers within the individual, but includes the appropriate environmental conditions for fruitful expression of that productive potential.

The benefit occurs for society, not as the arithmetic sum-total of individual case-by-case; it occurs as the individual participation in the benefit to the society as a whole.

The reflection of the "One and the Many" into this phase-relationship, presents itself at first in a twofold way. In the one way, it is the society as an indivisible sovereign unity, which stands as analogous to a *One* in relationship to the *Many* individuals of which the society in this contrary aspect, as a mere aggregation, is apparently composed. In the second way, the sovereign creative processes of the person are the *transfinite* surrogate for the *One*, and the society is treated in its aspect as the *Many*. Finally, the two views are subsumed by the corresponding higher vantage-point.

In other words, we have, at first encounter, both the development of the individual, as of the *Many*, by the society, as *One* again, and, also, the transfinite corresponding to the ordering of the continuity of the *Many* successive phases of the development of the society, as determined by the action of the developing sovereign creative potential of the individual personality.

This, twofold, reciprocal relationship implicitly defines that which integrates the two views, by subsuming both under one.

The true wealth of a society, is only ephemerally its eroding, depleted current, static form of wealth in the process of vanishing through consumption or other attrition. The true wealth of society is the rate, per capita and per hectare, at which the potential population-density of the future society is being generated.

To augment a part, at the expense of some other part, is what Luxemburg and Preobrazhensky recognized as primitive accumulation. It is what the U.S. Liberal Establishment, and its relatively moronic, Friedman-like "conservative" fellow-travelers regard as their market-oriented "social Darwinism," their own Marxian "primitive accumulation," which has thus ruined the Anglo-American imperial economies at home, as the Roman Caesars and their forebears used similar means to collapse, first, the internal economies of Italy, and, then, the colonies which they looted to supply temporarily a ruined economy of Italy.

The *science of political-economy* is not less than overthrowing, by means of absolutely crucial proof, the *materialist* delusions of the British and French-speaking occultists' Enlightenment of René Descartes, John Locke, Isaac Newton, Adam Smith, and Bertrand Russell. *The continued existence of the human species has depended upon the efficient spiritual cause fostered by aid of the material effects of that cause.* The efficient relationship, the essential, efficient ontological consubstantiality of the true material and the true spiritual, is the crucial evidence provided by historical human

existence to date. In no other way, and certainly by no contrary way, could our species continue to exist.

Notes

1. For Leibniz's writing on Physical Economy, see Gottfried W. Leibniz, "Society and Economy," pp. 12-13, in *EIR*, Vol. 18, No. 1, Jan. 4, 1991. See also "On an Academy of Arts and Sciences," *Leibniz Selections* ed. by Philip P. Wiener, (New York: Charles Scribner's Sons, 1951).

2. Lyndon H. LaRouche, Jr., *In Defense of Common Sense*, (Washington: Schiller Institute, 1989), Chapters 3-5.

3. To leave no reasonable margin for scholarly objections from relevant mathematical specialists, the issues represented by the two cited corollaries can also be represented in different terms, differently posed, but equivalent to what we have just said above. We summarize this alternative representation of the paradox of formalism, and then leave the reader to resume the argument in progress.

No formal, deductive system of argument, or thought could ever escape two devastating formal problems: *ambiguity* and lack of *completeness*. For the purpose of recognizing this twofold formal problem it is important to adopt the older sort of conventional distinction between *axioms* and *postulates*. In other words, the basis for the entire deductive theorem-lattice system is located within the *integralness of a set of axioms*, and the postulates are other arbitrary, unproven assumptions, which address the problems of ambiguity and completeness inhering in the set of axioms. This should forewarn us, that no deductive mathematics could ever support a durable form of valid mathematical physics.

The author's preference for the two corollaries he supplies above, over the more traditional emphasis on paradoxes of *ambiguity* and *completeness*, is prompted by the fact that the problems of *ambiguity* and *completeness* are not containable within the arbitrary domain of mathematical formalism. They are, in the first instance, reflections of *physics*: It is the physics of such relatively crucial matters of non-algebraic functions as isochronism, harmonic orderings, least-action, and so forth, which forces the overthrow of a deficient, analytical formalism, in favor of a constructive-geometric generation of functions cohering with such crucial physical actualities. In the second degree, physics itself is incompetently defined as subject-matter, as long as the deluded quest for a "non-subjective" form of physical knowledge is tolerated. The two corollaries given above, thus appear a more efficient way of representing these issues of formalism.

4. The distinction, *crucial* experiment, references most directly Riemann's habilitation dissertation published in 1854, which in English is "On the Hypotheses Which Underlie Geometry."

5. Lyndon H. LaRouche, Jr., *In Defense of Common Sense*, Chapters 3-5; and Lyndon H. LaRouche, Jr., *Verteidigung des gesunden Menschenverstandes, Kommentar*, (Wiesbaden, Germany: Dr. Böttiger Verlags-GmbH, 1990), pp. 157-193.

6. Ultimately, *being* is a quality which resides in the *Good*, not the becoming. The Good is *the changeless being of universal change*, the former One, the latter the generation of the *manifoldness* of the universe. *Being* is thus the residence of the highest which is higher than the transfinite ordering of change: the constant Good is this constant cause of change: *matter* is thus generated (created) continuously by the Good (being).

7. One example of this is the eruption of the "three-body" paradox, caused by the Newtonian parody of Kepler's three laws as the Newtonian Gravitation = $(km_1m_2)/r^2$. The paradox, which does not exist in the Keplerian original, is introduced by substituting mechanistic, pairwise interaction-at-a-distance for the unified Keplerian harmonic ordering principle. See also the German edition of *In Defense of Common Sense, Verteidigung des gesunden Menschenverstandes*, pp. 160-163.

8. The derivation of Newton's inverse square law of gravitation from Kepler's Third Law is as follows: Kepler's Third Law states that the cube of the mean radius (a) for any planet, divided by the period (T) of the planet squared equals a constant (k).

(1) Kepler's Third Law:

$$a^3/T^2 = k$$

(2) The speed or velocity of a planet in terms of the radius of the circular orbit (assume circular rather than the almost circular elliptical orbit of the planets) and the period is:

$$v = 2\pi r/T$$

where v = speed of planet;

r = the radius of a circular orbit;

T = period time for one revolution.

(3) Christian Huyghens had shown centrifugal acceleration to be:

$$A = v^2/r$$

where A = acceleration.

(4) Since $F = mA$, $F = mv^2/r$

where F = force;

m = mass;

A = acceleration.

From equation (2):

$$v = 2\pi r/T \text{ thus } v^2 = 4\pi^2 r^2/T^2$$

From equation (1):

$$a^3/T^2 = k \text{ or } T^2 = a^3/k$$

Since the orbits of the planets are nearly circular, assume $a = r$, so

$$T^2 = r^3/k$$

By substituting this value for T^2 into the value for v^2 —i.e.,

$$v^2 = 4\pi^2 r^2/T^2$$

the result is

$$v^2 = 4k\pi^2/r$$

Now take this value for v^2 and substitute it in the value for $F = mv^2/r$. The result of this final substitution gives you the inverse square relationship in Newton's law of gravitation. So

$$F = 4\pi^2 km/r^2$$

The preceding derivation shows how the inverse square laws and Newton's law for Universal Gravitation can be derived from Kepler's Third Law, assuming the orbits of the planets are circular, rather than the nearly circular ellipses that they are. It is generally accepted that Kepler's Second Law of constant areal velocity had indicated to Newton that whatever forces were acting on the planets were directed toward the Sun instead of tangentially to their paths.

Furthermore, Kepler had proposed this proportionality of masses and a force relationship in his 1609 *Astronomia Nova*. Kepler writes, "If two stones were removed to any part of the world, near each other but outside the field of force of a third related body, then the two stones, like two magnetic bodies, would come together at some intermediate place, each approaching the other through a distance proportional to the mass [moles] of the other." E. Hoppe claims the concept of mass, not for Newton, but for Kepler, who designates it by the word *moles*.

9. In the summer of 1801 the great mathematician Karl Gauss became acquainted with the astronomical discovery of the small planet Ceres. After Ceres, coming too close to the Sun, became invisible, Gauss developed new methods for calculating the orbit of Ceres. Gauss applied his new methods to the discoveries of other small planets, Pallas in 1802, and Vesta in 1807.

Gauss, recognizing that there are no two-body problems in the solar system, but n-body problems where other planets attract a given planet, and perturb the elliptical orbit, applied his mathematical genius to the problems. In 1818, Gauss published a paper on the theory of perturbations. Gauss determined the distribution of mass on the circumference of the ellipse by assuming a distribution of the mass according to Kepler's Second Law, the law of constant real velocity: Equal amounts of mass will be distributed on that length of the ellipse that requires equal times.

Pairwise interactions and point masses—Newton's method—did not and could not predict the existence of Ceres and Pallas, as Kepler's method did. For Newton, mass is primary and the size of the two masses determines the orbit of the planet. For Kepler, the mass is determined by the orbit and the orbit is determined by the curvature of physical space-time. For Kepler musical harmonies and the uniqueness of the five Platonic solids were the keys to determining why certain orbits were permissible, and others not. From these conceptions, Kepler developed his three planetary laws. God's universe flows from a principle of sufficient reason, which has manifested itself in the universe through the musical harmonies and the Platonic solids. From this standpoint, Kepler developed his three laws by exploring least-action/least-time/isoperimetrical qualities that the Creator has built into His creation. Kepler's solutions work for the multi-body problem presented by our planetary system.

Newton's point-mass/pairwise interaction approach falls apart as soon as the three-body problem appears. It also falls apart if we think of the simple problems presented by modern spectroscopy. Electrons revolving around a nucleus of an element in the gaseous state emit and absorb light at definite frequencies, which are characteristic of the element making up the gas. This is how spectroscopy can identify the gaseous elements of which planets are composed. There are many possible orbits around a nucleus. In some orbits electrons circle faster than in others. Why do electrons only circle in those orbits which have the assigned frequencies, and why do orbits only have an assigned frequency? Furthermore the collisions of atoms in a gas are occurring at 10^{12} times per second, which creates a large amount of heat energy. The impacts are powerful and should change the orbits of the electron completely in respect to size, shape, and frequency, were Newton's force prescriptions to apply. This does not occur, because the orbits are determined by a more fundamental process, the curvature of physical space-time, and not some simplistic notion of pairwise interactions of point masses.

10. The fact that 90-odd elements were known to exist in our solar system seemed impossible, if the elements had been generated by the kind of simple thermonuclear fusion which was usually thought to have occurred within our Sun, and that process was thought to have been the source of the material for these planets with 90-odd elements. However, if we assign the process of fusion generally, less to the interior of the Sun, and rather mostly to polarized-fusion occurring in the indicated plasma envelope around the Sun, under the indicated early conditions, 90-odd elements are implicitly accounted for by action within our solar system.

11. Adam Smith, *Theory of the Moral Sentiments*, 1759, (Glasgow: Liberty Classics, 1984). *Man, according to this Calvinist's argument, is not morally responsible for the consequences of his actions for humanity in general.* If his blind indifferentism to morality, in following nothing but his hedonistic impulses, causes cruelty and other great harm to large numbers of humanity, then God is to be blamed for having provided such a Calvinist with his hedonistic instincts.

12. The Smith family biography documents transactions between the Second Earl of Shelburne and Adam Smith, during a 1763 carriage journey. Shelburne coopted Smith as his personal agent, and instructed Smith on the axioms of a program for destroying the economy and semi-autonomous governments of the English colonies in North America. To train Smith for this activity, he was sent by David Hume to Switzerland and France for education in political economy by such Swiss bankers' assets as Quesnay and the circles of Voltaire. The content of Smith's anti-American *Wealth of Nations*, chiefly a plagiarism of A.M. Turgot, reflects the anti-Colbert Physiocratic elements of his indoctrination by Hume's cronies in Switzer-

land and France.

See also Lyndon LaRouche and David P. Goldman, *The Ugly Truth About Milton Friedman*, (New York: New Benjamin Franklin House, 1980); and *EIR Special Report* "The Trilateral Conspiracy Against the U.S. Constitution: Fact or Fiction?" Sept. 30, 1985.

13. Adam Smith's *Wealth of Nations* was considered by many (including eighteenth-century economist Pierre du Pont de Nemours) to be a rehash of French physiocrat Turgot's *Reflections on the Formation and Distribution of Wealth*. However, "Everything added by Smith is inaccurate," stated du Pont de Nemours.

14. When Karl Marx was offered free access to the British Museum, its director, David Urquhart, fed convenient documentation to Karl Marx. Urquhart is best described as the "St. John Philby of his day." Carol White, *The New Dark Ages Conspiracy*, (New York: New Benjamin Franklin House, 1980), pp. 326-27.

15. During the eighteenth century, the influence of Leibniz's economic science was strong in many parts of Europe, and spilled into circles around Benjamin Franklin in America. Over the period from 1791 through about 1830, Leibniz's economic science became identified worldwide as the *American System of political-economy*. This name was coined by U.S. Treasury Secretary Alexander Hamilton, in 1791, within a U.S. policy document submitted to Congress entitled "A Report on the Subject of Manufactures."

16. Friedrich Schiller, "The Legislation of Lycurgus and Solon," trans. by George Gregory, in *Friedrich Schiller Poet of Freedom, Vol. II*, (Washington: The Schiller Institute, 1988) pp. 273-307.

17. Cf. St. John's "Revelation," or "the Apocalypse," in the Bible. If the Apocalypse is read in terms of the concrete realities of the century when it was written, there is no part of that book which is either allegorical or symbolic. The same kinds of forces which St. John identified as arrayed in support of the "Whore of Babylon" then, are the concrete forces of Evil in the world of today.

The personality of Evil is clearly and concretely identified as "the Whore of Babylon." This is no symbolism; it is the name of a very specific mother-goddess, whose priestesses practiced prostitution as part of religious ritual, to such effect that the names of Ishtar, Astarte, Isis, and Venus, are venerated as the goddesses of the lesbian's and the whore's professions into modern times. The source of these whore-goddesses' cults, in Mesopotamia, in Sheba-Ethiopia, in Egypt, in Palestine, and among the Phrygians, is the worship of the whore-goddess Shakti by ancient "Harrapan" culture of the Indian subcontinent, introduced to Mesopotamia through the "Harrapan" colony at Sumer. The Satan-figures of ancient Mesopotamia, Sheba in Ethiopia, and of Osiris, Apollo, and Lucifer, are, like the Phrygian Dionysos, derivatives of the "Harrapan" Siva. The most powerful forms of this satanic cult then, was the Syrian Magicians' cult of Mithra, which had been established as the leading cult of the Roman imperial legions, through an agreement reached between Augustus and Syrian magicians at the Isle of Capri.

In the Apocalypse, St. John attacks the question: To what consequence must the war between Good and Evil ultimately lead? Evil's persistence must bring the very existence of mankind into jeopardy, through such features as wars and pestilences. Evil must reach such a state, that it prizes its gains in power so much, that it would prefer to allow humanity to be destroyed, rather than compromise the policies promoting such apocalyptic destruction. The men and women who then adopt the cause of Evil, and support its policies, by that adoption adorn themselves with the designating mark of the beast, and seek to exterminate the men and women who are resistant to the policies of Evil.

This conjunction of the struggle between Good and Evil must emerge, because the essence of Evil leads it to no other result than this one. Evil cannot possibly be a permanent condition within the human species. The increase of power at the disposal of Evil, will, by itself, cause Evil to reach the point that it becomes, immediately, the cause of threatened extermination of the human species. That is Armageddon and the Apocalypse.

18. Contrary to that slovenly act of British "Biblical archaeology" go-

phers, who treated the tablet collections which they uncovered in the most immorally reckless fashion, civilization first came to Mesopotamia very late in ancient times, probably first introduced by the "black-headed people" (i.e., Dravidians) who established their maritime colonies at Sumer, Shebe, Ethiopia, and (according to Herodotus) Canaan. Furthermore, the practice of lunacy in ancient Mesopotamia shows the early civilized Semites of that region to have risen to a much lower cultural level than the Vedic peoples of Central Asia had reached, those responsible for the solar astronomical calendars referenced by Tilak from the Orion Period interval of 6,000-4,000 B.C.

19. For the axiomatically pantheistic feature of British liberalism, see Carol White, *The New Dark Ages Conspiracy*, Chapter 8, "The Roots of British Radicalism," and *passim*.

20. For the truth about the sponsorship of Hitler and Mussolini, see Carol White, *The New Dark Ages Conspiracy*. See also the Schiller Institute, *The Hitler Book*, ed. by Helga Zepp-LaRouche, (New York: New Benjamin Franklin House, 1984); and *EIR Special Report* "Project Democracy: The 'Parallel Government' behind the Iran-Contra Affair," April 1987.

21. On the racial purification dogma of the Nazi Party, and the agreement of Averell Harriman with that dogma, see Anton Chaitkin, *Treason in America, From Aaron Burr to Averell Harriman*, second edition, (New York: New Benjamin Franklin House, 1984), Chapter 19.

22. Cf. Carol White, *The New Dark Ages Conspiracy*, Chapters 1-3, and *passim*.

23. Allen and Rachel Douglas, "The Roots of the Trust," unpublished MS., 1987. The standard accounts of pre-1917 Russian history, in which a dreaded Czarist secret police (from 1826 the Third Section, then after 1881 the Okhrana) struggled heroically against bands of "proletarian" terrorists to defend the Czar and state, are entirely mythological. The Okhrana was controlled by 102 highly intermarried Russian noble families, known historically as the *boyars*, whose bitter opposition to the Czar and Russian state dated back to the establishment of a Western-style state by Peter the Great in the early eighteenth century. These families deployed the terrorist bands such as the Socialist Revolutionaries and the Bolsheviks, virtually all of whose leaders, e.g. Stalin, were Okhrana agents, to overthrow that state. The *Raskolniki* ("Old Believers"), a seventeenth-century splitoff of the Russian Orthodox Church, were also fanatically opposed to Peter's Westernizing reforms, and in the late nineteenth and early twentieth centuries, financed the Bolsheviks.

The noble families and *Raskolniki* collaborated with Western oligarchical interests to first overthrow Westernizing institutions in Russia and then, after 1917, to use the Soviet state as a battering ram against Western civilization more generally. A Western command center for these efforts was the Equitable Life Assurance building at 120 Broadway in Lower Manhattan, dominated by the Harriman and J.P. Morgan interests, and home of the notorious Sidney Reilly. Reilly was an Okhrana agent pre-1917, a Soviet intelligence agent afterwards, and an agent of the British Secret Intelligence Service throughout.

24. Cf. LaRouche, *In Defense of Common Sense*, Chapter 3.

25. The nuclear family is obviously one of those essential institutions.

26. William Manchester, *The Arms of Krupp, 1587-1968*, (Boston: Little, Brown and Company, 1967), p. 455 and p. 639 make this point. This is contrary to the usual nonsense in the U.S., that the U.S. built up German industrial potential after the war.

27. "Lunatic" in this case refers to those societies which base themselves on the lunar calendar, as opposed to the solar calendar.

28. Karl Marx, *Capital*, Vol. III (New York: International Publishers, 1984).

29. Adam Smith, *Theory of the Moral Sentiments*, 1759.

30. Cf. Carol White, *The New Dark Ages Conspiracy*.

31. Leroy E. Loemker, editor, *Gottfried Wilhelm Leibniz Philosophical Papers and Letters, Vol. II*, "The Controversy between Leibniz and Clarke," (Chicago: University of Chicago Press, 1956), pp. 1095-1169.

32. Philo, *On the Creation*, (Cambridge: Harvard University Press, 1981), pp. 134-137.

33. The Emperor Constantine's reforms, "legalizing" Christianity under the traditional authority of the emperor as "pope" (*Pontifex Maximus*) of all legalized religious bodies, reflected the failure of the Roman emperors since Nero and Tiberius, to crush Christianity by crude Gestapo methods of mass-murder, and reflected most emphatically the strength of Apostolic Christianity among heirs of Plato's tradition within the Greek-speaking population. This "Constantinian reform" meant: "Let them worship the name of Christ with as much devotion to that name as they may choose; we will control what they believe about Christ." Bishops appointed by the emperors of the Eastern Empire (Byzantium) used their authority in matters of doctrine and liturgy, to introduce into Christianity the doctrines of the "Roman mystery religions," and even the priests were assigned to wear costumes of the Ptolemaic cult of Isis. This evil practice is often termed, euphemistically, "syncretism"—the fusion of Christianity with elements of pagan cults, like the Jesuits' "Liberation Theology" and "Christian-Marxist dialogue" of today. The practice is better described as "gnosticism," the transformation of Christian doctrine by saturating taught doctrine with the cult-beliefs of the Roman "mystery" cults, "gnosis."

The gnostics degrade persons, from creatures in the image of the living God, to children of the soil, creatures of immediate and original hedonistic instincts. Man exists, therefore, for the pleasure of other men, the ruled for the pleasure of those who rule, and the people of one race or nation for the pleasure of the rulers of another.

34. The calculus of Leibniz consists of analytical methods for the solution of problems about curves using variable geometric quantities as they occur in such problems. The starting point of curves for Leibniz can be seen in his theory of envelopes, where curves are viewed as a locus of tangents. Leibniz's "characteristic triangle," which he uses in the transformation of quadratures, came out of his study of Pascal's work on the cycloid. The characteristic triangle, generated by ordinate, tangent, and sub-tangent, or ordinate, normal, and sub-normal applied generally, gave Leibniz the ability to find relations between quadratures of curves and other quantities, such as moments and centers of gravity. The importance of the involute-evolute relationships in the theory of envelopes, together with the study of the

cycloid, and caustics, placed the non-algebraic higher curves at the center of the calculus.

Bernoulli's method of integrals used the "inverse method of tangents," where a curve is determined from a given property of its tangents. Bernoulli teaches, that the property of the tangent has to be expressed as a differential equation. The method of integrals applied to this differential equation will yield the curve itself. So once again, the curves are seen from the standpoint of the theory of envelopes.

Bernoulli applied himself to arc length and quadrature problems involving caustics, cycloids, the catenary, logarithmic spirals, and the form of sails blown by the wind. The brachistochrone-tautochrone properties of the cycloid made it rich in least-action, least-time qualities of self-organization as did the other higher curves, which made them the appropriate foundation for examining the calculus. They combined geometrical and physical principles.

Huyghens, in exploring the isochronic property of the cycloid and the fact that the evolute of a cycloid is another cycloid, discovered that he could design a pendulum clock that wrapped around sheaths in the shape of a cycloid, which would be perfectly isochronic and therefore keep accurate time.

The proof that the path of quickest descent is the cycloid, was a *tour de force* for the Leibniz-Huyghens-Bernoulli faction against the Newtonians and Cartesians. Johann Bernoulli's solution combined three different areas—the motion of light, the laws of free fall, and the mechanical laws for a rolling circle. By looking at the laws of refraction for light and shining a light through a changing medium, Bernoulli was able to come up with a curve. Since light takes the fastest possible path of optical time, and since light changes its speed as it travels through media of varying density, Bernoulli changed the speed by varying the density according to the laws of free fall. Each of these light rays, changing direction as the media changes its density, is tangent to a curve. The curve is the envelope of these tangents. The curve that Bernoulli gets is the cycloid. The use of light traveling through a non-homogeneous medium demonstrates that gravitational pathways do not have to be determined by an innate quality of mass, but, in fact, can be a reflection of the curvature of the physical universe, which defines least-action pathways throughout nature.