



# History As Science



## America 2000

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**T**he year A.D. 2000 is less than two U.S. Presidential terms away, about the same distance as from the 1981 inauguration of Ronald Reagan to the sudden, 1989 collapse of the Soviet military alliance. Today, on the hind side of the Soviet collapse, the pace of global change is more rapid than during the Reagan years; the crisis is deepening, the pace is accelerating. If present trends are considered, we must ask whether the 1989-1991 collapse of the Soviet system might not be echoed by a late 1990's collapse of our United States?

The blow which struck Moscow during 1989-1991, is not the kind of blow which can be successfully avoided at the last moment. That Moscow collapse was already building up as early as the 1983-1985 interval, as this writer then reported repeatedly to the U.S. government officials and others with whom he was collaborating closely at that time.<sup>1</sup> The last opportunity to prevent a catastrophe of the sort which brought down Mikhail Gorbachov's regime is lost perhaps a

decade or so before the decisive crisis breaks into the open. So, the 1904 establishment of the Franco-British *Entente Cordiale* made inevitable the 1914 outbreak of World War I.<sup>2</sup>

That is the approximate situation of our United States today. Either we reverse, now, those presently accepted habits of policy-shaping which public opinion has adopted during the recent quarter-century, or, during the ten-year period ahead, the U.S.A. as we know it will proceed to disintegrate in a way which parallels the 1989-1991 collapse of the Soviet system.

Such a death of our republic is no longer some mere possibility; if currently accepted policy-shaping trends are not reversed radically, such a catastrophe is probable. Probable, but not inevitable. If the peoples of several selected, leading nations were to adopt certain remedial policy-initiatives now, the happy alternative to catastrophe were virtually certain. In that latter case, a full-scale economic recovery, and correlated tendencies toward political stability, could dominate our planet's affairs by near the close of this century. Putting those alternatives into a common focus: The danger is, that at this present moment of writing, the adoption of such needed, radical changes in policy do not appear likely.

The tradewinds of policy-shaping have been blowing in the wrong direction too long. They are blowing stronger than at any time since the eve of the last great war in Europe. Could such stubborn trends be changed so late in the voyage? That is the reason to fear; that is the source of our danger.

What are the means for bringing about such an early and rapid reversal of decades-old trends in public opinion? That question, posed in these terms, should point us to a subject-matter best described as *the science of history*. Pagan Rome rotted into moral self-extinction when the fans of the sports arena became the political parties of government, just as the sterile fanaticism of televised mass-spectator sports rots out the political morality of U.S. public opinion today. Such specific, culturally determining factors are among the leading topics of today's urgently needed, applied science of history.

Unfortunately, the study of a recognizable subject called "history," is virtually outlawed by the "politically correct" classroom of today. Yet, even had history not been expelled so, the history textbooks supplied during the 1920's through the 1960's were tendentiously misleading concoctions, typified by Charles Beard, Arnold Toynbee, or Carroll Quigley's *Tragedy and Hope*.<sup>3</sup> From such sources, or such lower extremes as Francis Fukuyama's banal exercise in Lockean utopianism, his *End of History*,<sup>4</sup> very little of use is to be learned for dealing with today's real history. The onrushing catastrophe of the 1990's requires that we define quickly, and accurately

the most essential principles of a useable alternative, an applicable science of history.

## What Is History?

In those earlier decades, the 1960's and earlier, when the business of respectable schools and universities still was education, the subject of *history* was introduced by calling the students' attention to the point, that we must understand the distinction between a mere chronicle of events and the taught subject which we named "history." In those past decades, in European civilization's Classical educational programs, we would be readily understood if we had said that the practicing of writing *history*, as distinct from mere story-telling, or chronicles, begins with the application of the conceptions of composition of Classical Greek tragedy to the study of causes for induced survival or collapse of entire governments, states, or even entire cultures.

In such professionals' circles of earlier times, it would have been regarded as admissible to draw up a short list of selected great tragedians, such as the following one: Aeschylus,<sup>5</sup> Marlowe,<sup>6</sup> Cervantes,<sup>7</sup> Shakespeare,<sup>8</sup> and Friedrich Schiller.<sup>9</sup> None of them would contest the outstanding relevance of Schiller for such a list. First, as to tragedy itself, Schiller was the only composer to render intelligible the principles employed by all great Classical tragedians.<sup>10</sup> Second, in his capacity as Jena University Professor of Universal History,<sup>11</sup> and otherwise, he was the first to render intelligible the unique connection between the methods of historiography and of composition of Classical tragedy.<sup>12</sup> In the present location, Schiller's notion of universal history is adopted implicitly.

Otherwise, the additional features of a science of history presented explicitly, and applied here, are chiefly the outgrowth of original discoveries which this author effected first over the period 1948-1952. Those discoveries, directly and centrally reflected in the author's contributions to economic science,<sup>13</sup> are also the same principles featured in several recently published papers.<sup>14</sup> The term "science" is employed here, in part because it is appropriate to stress the need for the quality of methodological rigor which that term connotes. The term is employed also to stress the author's relevant great debt to the most underappreciated scientific genius of the late nineteenth century, Georg Cantor, and to the most revolutionary discovery for physics and philosophy in general, Cantor's 1897 *Beiträge zur Begründen der transfiniten Mengenlehre*.<sup>15</sup> The historical process leading up to Cantor's discovery of his *Aleph*-principle for *physics*<sup>16</sup> serves here, in a fresh way, as a conceptual yardstick for historiography in general.

# 1.0



## The SDI: An Example Of History

**D**uring the evening of March 23, 1983, U.S. President Ronald Reagan delivered a nationally televised address which changed radically the course of history. This crucial event happened during the concluding five minutes of that short address; these concluding few, world-shaking minutes were devoted to announcing a Strategic Defense Initiative—otherwise referred to as “the SDI.”<sup>1</sup> As a predicted consequence of Moscow’s refusal to accept President Reagan’s offer of cooperation around SDI, a six-year process of chain reaction, of economic disintegration was set into motion within the Warsaw Pact system. Chiefly as a direct result of Moscow’s refusal to accept the SDI offer, beginning October-November 1989, the Berlin Wall crumbled into the past, and the Soviet system itself soon collapsed, during the summer of 1991.

This most memorable page from current history serves us now as the principal case-study of those principles underlying the proper treatment of history as a science. To that purpose, the relevant features and implications of the SDI are summarized now, before continuing with the main body of this paper.

### The SDI In Brief

This writer played a key initiating role in these historic developments. For more than twelve months, from February 1982 into February 1983, this writer conducted exploratory discussions on behalf of U.S. government agencies with Soviet representatives, on the subject of what President Reagan was later to announce as the SDI on March 23. When Soviet General Secretary Yuri Andropov violently, publicly rejected the SDI offer, on the following day, March 24, it was this writer who was then and thereafter repeatedly blamed for the SDI in the pages of the leading Soviet press.

During the period August through October 1986, leading Soviet periodicals demanded that the U.S. government commit itself to imprisoning this writer, as

a show of good faith for Reagan-Gorbachov “summit discussions.” Following those Soviet demands for this writer’s imprisonment, the U.S. government staged its October 6, 1986, 400-man-plus armed raid, against publishing organizations and persons associated with the present writer, just days before Reagan and Gorbachov were meeting for the Reykjavik “summit” of October 10, 1986.

At the end of that “summit,” Secretary of State George Shultz announced to the assembled, astonished international press corps, that the negotiation had broken down over President Reagan’s refusal to abandon the SDI.

The collapse of the Soviet system, the outcome of Moscow’s refusal to accept the SDI offer, came as no surprise to those who were at least somewhat familiar with this writer’s role in shaping the initiation of the SDI policy. During an early 1983 meeting, more than a month prior to the March 23 official announcement, this writer outlined to his Soviet opposite number the reason why acceptance of the SDI was the only alternative to an approximately 1988, chain-reaction collapse of the Warsaw Pact system. “About five years” was the estimate offered then. “Approximately 1988” was the date used later, in preparing *EIR*’s July 1985 *Global Showdown* report.<sup>2</sup>

Today, those persons who mouth the oxymoronic “Star Wars” (instead of SDI), or who, like “High Frontier” ideologue, Lt.-Gen. (ret.) Daniel Graham, insist upon strategically ineffective methods of “kinetic energy weapons,” instead of “new physical principles,” lack any basis for comprehension of how or why Soviet rejection of the SDI offer led to the economic collapse of the Warsaw Pact system.<sup>3</sup> Chiefly unreported by the leading U.S. news media, the proposal which this writer delivered to the Soviets, during the February 1982 through February 1983 interval, had three *interdependent* components. This package was what was offered by President Reagan. It is the package as a whole which is key to the 1989 collapse of the Warsaw Pact system.



The three elements of the package were:

1. Global, anti-ballistic missile *defensive* weapons-systems based upon what the relevant diplomatic lexicon classes as "new physical principles." This conception the Moscow channel accepted as valid.
2. That the economic spill-over effects of "new physical principles" technologies, from the military R&D sector, into the civilian economy, would foster increases in physical productivities of labor which would more than offset the costs of such a strategic defense system. To this conception, the Soviet channel also agreed.
3. That the nations should share these technologies for the benefit of all. This third feature of that 1983 policy-package is key to the 1983 Soviet refusal of the SDI, and is also key to understanding the 1989 chain-reaction collapse of the Warsaw Pact system.

The following element of the February 1983 interchange between this writer and Moscow's representative focusses attention on the nub of the matter.

In February 1983, the Soviet objection to the third, technology-sharing feature of what was soon to become the announced SDI policy-package, was the perception by Moscow that the Soviets could not match the U.S.A. in a "technology-driver crash economic program." They insisted that, on their own, "we will beat you" (the U.S.A.) "in developing and deploying an anti-ballistic missile strategic defense system."<sup>4</sup>

Moscow was not delivering an empty boast. As recently published studies of Warsaw Pact posture during pre-November 1989 East Germany show, up to the proverbial last minute, before the Berlin Wall was breached by the anti-communist freedom movement, the Soviet forces were committed to the ready capability for a full-scale *Blitzkrieg* launched against NATO without warning.

As I pointed out in my exploratory back-channel discussions, the Warsaw Pact economies, especially the superlooted economy of East Germany, were not prepared to take the strain of as much as approximately five years of a Soviet military build-up of the type implied by the back-channel message I received from Moscow in February of 1983. Soviet chiefs Andropov and later Gorbachov drove the already creaking economic machinery of the Warsaw Pact to the breaking-point, as I had forewarned in February 1983.

So, from this writer's view, and from the standpoint of the Reagan administration, the SDI proposal could not lose, either way. If Moscow had accepted President Reagan's SDI proposal, the danger of strategic military

confrontation was brought under control in one way. If Moscow refused the offer, the Warsaw Pact would disintegrate in about five years, plus or minus.

In this way, President Reagan's promulgation of the SDI changed the course of history. This success occurred despite the fact, that the combined political opposition within the U.S.A. and from Moscow prevented the SDI from actually being implemented. At the point of reading the close of this present paper, it should be comprehensible to the reader, why, as a matter of principle, the *SDI idea itself* set into motion the historical processes leading, over about six years, to the crumbling of the Bolshevik institutions.

There were two central elements in the process of setting the SDI proposal into motion.

The three-fold strategic-economic conception was originally this writer's work. However, it was President Reagan's adoption and persevering promulgation of that policy, under the name of "SDI," which assured the result occurring about six years later. If it were a matter of awarding credit, many persons shared in making valuable, even indispensable contributions to this writer's part in that matter. Many close to President Reagan and his administration were crucial in effecting and supporting the President's adoption of the policy. However, all of these other contributing efforts would have fallen short and failed, but for the respective, unique, personal roles of both this writer, on the one side, and of President Reagan, on the other.

The point being illustrated by this exceptional kind of example, is the crucial role contributed by individual ideas and by individual personalities in the shaping of history. That is the central topic in a *science of history*.

## Then, the Wrong Turn

To complete this summary description of the SDI as our illustrative case, brief highlights of the post-1989 developments must be included.

When the "Wall" began to come down, during the last weeks of October and of November in 1989, and into early 1990, the world was given the first genuine opportunity for building a durable, global peace among major powers, since the onset of World War I. Tragically, Britain's Prime Minister Margaret Thatcher and President George Bush ruined the twentieth century's greatest historic chance for peace.

Mrs. Thatcher's government made her guilty motives very obvious. As her slandering mouthpieces, Conor Cruise O'Brien and Nicholas Ridley spoke for her government, her motives were crude "geopolitics," straight from the dogma of Halford Mackinder<sup>5</sup>: the argument



of O'Brien, Ridley, *et al.*, was that the pending reunification of Germany made the threat of a "Fourth Reich" the principal enemy of Anglo-American and Soviet common strategic interests.

As always, since the 1850's, the greatest fear of Britain's imperial factions has been the establishment of close economic cooperation among France, Germany, and Russia; Britain's geopoliticians have especially feared cooperation along the lines sought by Russia's great turn-of-the-century statesman Count Sergei Witte.<sup>6</sup> Out of fear of Witte's diplomacy and his economic policies, British late nineteenth century and early twentieth century imperialism pitted czarist Russia against Germany over pan-Slavic issues, and pitted France against Germany through such influential French *revanchistes* as Théophile Delcassé.<sup>7</sup> Similarly, for the same reason, the Harriman-centered Anglo-American financier interests in London and New York put Adolf Hitler into power in Germany, not only to overthrow the Weimar Republic's von Schleicher government, but to prepare for a continentally ruinous future war between Germany and Russia.<sup>8</sup>

The Thatcherites' imagined "geopolitical" danger to Anglo-American strategic interests, was the natural tendency of a post-1988, de-bolshevized Russia to orient to the German economy as a leading source of investment, trade-goods, credit, and industrial technology for rapid reorganization of the shaky economy of Russia.

As this writer emphasized in his December 1989 "Productive Triangle" proposal, the approximate spherical triangle, the area of Europe bounded from Paris to Munich to Vienna, from Vienna to Prague to Berlin, and from Berlin to Paris by way of Lille, is the historically determined greatest concentration of physical-economic potential on this planet. This "Productive Triangle" is the fruit of the combination of certain natural advantages plus a secular trend in infrastructural and related economic development since the relevant initiatives of Charlemagne.<sup>9</sup> This stimulation of this "Triangle's" physical-economic potentials, combined with the development of logistical "galactic spiral arms" outward to the West, to the North, into Scandinavia, Spain, Italy, the Balkans, along the Danube, eastward to St. Petersburg, Moscow, Kiev and beyond, to Vladivostok and Japan, would prompt the most efficient, optimal rates of increase of the (physical) productive powers of labor, *per-capita* and *per-hectare*, throughout Eurasia, and beyond into other continents.

Had the leading continental European nations adopted this writer's "Productive Triangle" doctrine as late as Spring 1990, or even allowed this doctrine on the table for public policy-shaping discussion, the strategic

catastrophe launched by Mrs. Thatcher might have been avoided. The successive assassination attacks upon Deutschebank's Herrhausen, upon Detlev Rohwedder, and others, show the temper of those Western intelligence services dedicated to stopping the so-called "Fourth Reich." Instead of economic cooperation for physical-economic development of the East, to seize the opportunity created by "the collapse of the Wall," the forces around Thatcher and President George Bush launched the deliberately ruinous, carpet-baggers' policies of Harvard University Professor Jeffrey Sachs's wild-eyed "shock therapy," and savage I.M.F. "conditionalities." The economic and social effects upon the former Warsaw Pact nations were predictable, murderous, and, at the highest levels of authorship, intentionally ruinous.<sup>10</sup>

This was not all. Thatcher's London and Gorbachov's Moscow joined forces with such veteran Kissinger associates as President Bush's Lawrence Eagleburger and Brent Scowcroft, to unleash the Nazi-Communist Slobodan Milosevic's genocidal Chetniks upon the more peaceful ethnic strata of a disintegrating former Yugoslavia. This was a new, London-orchestrated Balkan war in the making, the old imperial geopolitical game of attacking the Balkan "soft underbelly" of Central Europe, and use of a Balkan war to lure Moscow into a pan-Slavic military adventure against Central Europe.

For this, Thatcher and Bush have earned a page of infamy in the history of the twentieth century, among the most malevolent as well as incompetent strategic bunglers of the twentieth century. Through their post-1989 economic and military policies, the greatest opportunity of this century has been turned into a forced revival of an emerging thermonuclear adversary-relationship between East and West.

Mrs. Thatcher and President Bush evidently overlook the fact that Russia, however humbled by its 1989-1991 experiences, is a Russia which views itself as a nation which has never been conquered since that nation emerged from under the yoke imposed by the Mongol conquests. Eastern European states which had accustomed themselves to a repeated past military occupation react differently than a Russia whose prideful culture admits no ability to tolerate enslavement.

Today, in looking back upon these dozen years in hindsight, we see clearly a pattern of change over the period, begun by President Reagan's first announcement of the SDI, a period which ends with the rapid, late 1989, early 1990 disintegration of the Warsaw Pact. The state of world affairs out of which this SDI announcement brought us, had been an increasingly hazardous thermonuclear standoff between Moscow and the An-

glo-American alliance. The New Dark Age, toward which Thatcher and Bush now have impelled the entire planet, since October 1989, is the prospect of an early new thermonuclear standoff, between a new Great Russia which is a weaker thermonuclear superpower than the old Soviet system but which confronts a collapsing Anglo-American world power in the West. The prospect, in such a case, is a planet dominated by all possible varieties of what is called "irregular war," of which the Chetnik war crimes against civilians in today's Balkans is but one variety. The awful prospect is a planet engulfed by many spreading outbreaks of irregular warfare, a

world-map in which the combined holocausts of war, famine, epidemic, and pestilence spread like many, growing forest fires, all threatening to converge into what becomes, in effect, a single fire covering the entire map, or at least, most of it.

This threat is the case for a needed fresh application of a science of history, to repeat the kind of intervention, to change the course of the flow of current history, as the 1983 promulgation of the SDI did before this time.

We shall return to the other relevant implications of this illustration, after presenting the principles upon which a practical science of history depends.

## 2.0



# What is 'History'?

A rigorous definition of the term "history" begins with the fact, that the continued existence of our human species is governed by a principle which does not exist in any other species of life. Relative to its environment, every other form has a limited, apparently genetically predetermined range of capability for acting to increase, or even merely maintain the present *potential population-density* of its own population.<sup>1</sup> This inferior species' potential population-density may be significantly increased or decreased, but not through its own willful choices of alterations within its characteristic species-behavior. The human species, alone, is capable of willful alteration of that characteristic behavior which we recognize as "culture," an alteration to the successfully intended effect of producing a relatively superior culture, this to the *intended* effect of successive, sustainable increases in mankind's potential population-density.

This increase in mankind's potential population-density requires changes in behavior which satisfy certain general constraints. These constraints are typified as follows.

The *physical standard of living*, and healthful quality of increased life-expectancy, must be increased, for both a typical person and for the child-rearing household. The power consumed, *per capita* and *per square kilome-*

ter, must be increased. The capital-intensity (ratio of production of producers' goods to households' goods) must increase. This process centers upon, but is not narrowly confined to increase of the physical productive powers of labor.<sup>2</sup> Thus, the role of scientific and technological progress is central, both explicitly and also paradigmatically, to enabling any nation, culture, and the entire human species to continue to survive. On the condition, that we regard the term "scientific progress," from the methodological standpoint common to Plato, Nicolaus of Cusa,<sup>3</sup> Leonardo da Vinci, and Gottfried Leibniz (not the contrary, mechanistic formalism of the Eleatics and Sophists,<sup>4</sup> Aristotle, Francesco Zorzi,<sup>5</sup> Francis Bacon, Locke, Hume, *et al.*), scientific progress is practically at the center of the physical-economic preconditions for continued human existence: for the "durable survival" of mankind as a whole.<sup>6</sup>

Thus, mankind is the only living species whose existence is characterized, in each and all of its successive generations, by a necessary, willful preoccupation with the possibility of *causing* an improved quality of existence for future generations. Indeed, persons and cultures which lack such domination by that characteristic motivation for progress, are to be termed, in the strictest use of the terms, "degenerate specimens" of our species. This

characteristically necessary preoccupation is expressed as the willful aspect underlying those acts, whether of commission, or omission, which one generation bestows, as cause, in generating the effects experienced thus by its successor generations. That willful, *subjective*, causal feature of mankind's predetermination of each culture's success or collapse, is the central, characteristic feature of the subject termed *history*.

So it is, as if by definition, that history exists as a subject of consciousness only for mankind, for individual persons—and for God. The animals, the inanimate processes, have no history for us, except as they appear to our consciousness as the subjects of mankind's history.

So, in turn, history is, essentially, the history of the generation of those special *kinds* (i.e., *types*)<sup>7</sup> of ideas which efficiently govern persistence and changes in the qualities of a society's species-reproductive and productive practice in general.<sup>8</sup> Although the domain of such a special quality of ideas is not limited explicitly to the realm named "physical economy," the history of crucial ideas of modern European science, if this is taken as an integral historical unity, is an elegantly appropriate place from which to launch a study of history in general.

The most crucial definitions to be supplied at this juncture are best presented against a background of theology.

Let us summarize the case for this employment of *rational theology*<sup>9</sup> in connection with the science of history, by aid of reference to Gottfried Leibniz's stunning discovery of the characteristic points of affinity between Christianity and the Confucius tradition within the language-culture of China.<sup>10</sup> A reference to that here includes the consideration, that literate Indo-European language-culture reaches back beyond 6,000 years,<sup>11</sup> and, that an inferred case to similar effect can be constructed for the language-culture of China. Consequently, the principles arising from Leibniz's comparison of these two cultures takes into account the vastly overwhelming majority of all persons who have ever lived.

Principally, two historically relevant sets of considerations bear upon this comparison. *First*, those cultures are each remarkable for their strength and durability. Among Indo-European strains, Christian civilization has been qualitative superior to all other forms of culture, as the most recent 550 years demonstrate this vividly. Yet, whenever China has been dominated by the *anti-Legalist*<sup>12</sup> tradition of Confucius and Mencius, impressive achievements have been realized. *Second*, like all known important cultures to date, those of Europe and China have been defined historically by a characteristic internal, epistemological conflict between good and evil. In the case of Europe, this is typified both, earlier, by the conflict

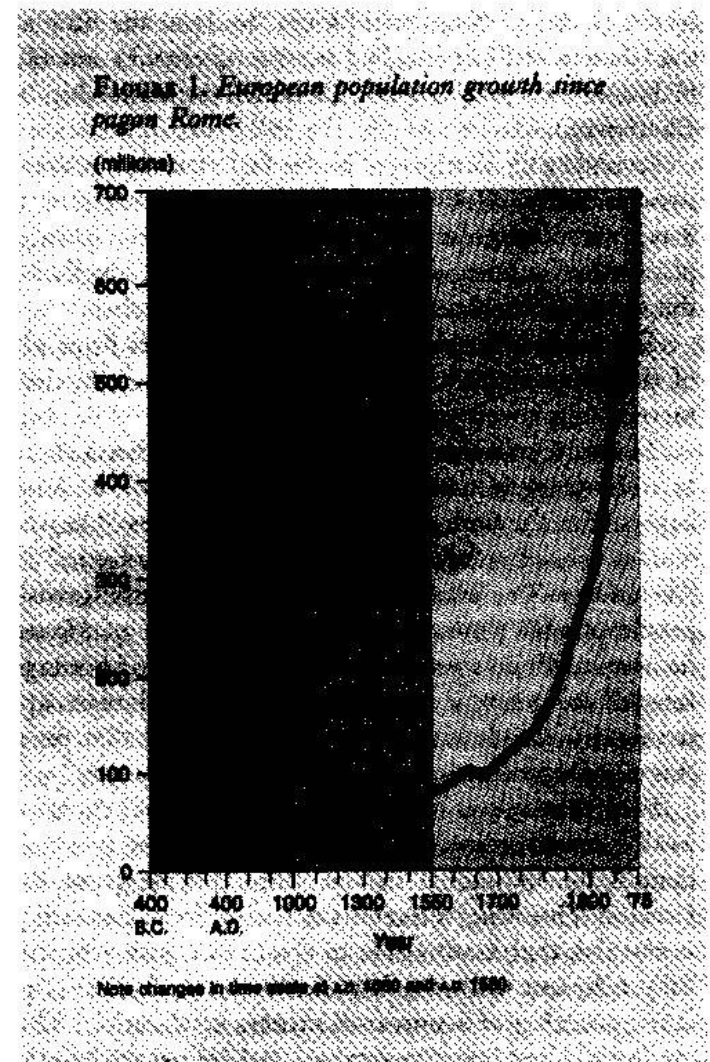
between Plato and his opponents, and, later, to date, by the battle between Christianity and what is called gnosticism.

Parallel issues of good versus evil, pit the Confucian tradition against both Taoism and Legalism.<sup>13</sup>

On this account, turn to the exemplary lessons to be learned from the most important positive development in modern European history, the Italy-centered, fifteenth-century *Golden Renaissance*.

## The Golden Renaissance: *Imago Dei*

From the customary standpoint of the physical scientist, the crucial demonstration of the surpassing power embodied within Christian culture, relative to all phenomena which might be compared with this one, is illustrated most vividly by a study of the general curve of population over the recent several thousands years. (SEE Figure 1)<sup>14</sup> The outstanding relevant feature of that curve, for a science of history, is the skyrocketing acceleration which began approximately 550 years ago, at about the time





of the 1439-1440 Council of Florence.<sup>15</sup>

The obvious objection which ought to be raised here is this. Since the Council of Florence occurred more than 1,400 years after Christ's murder by the Roman Imperial regime of Tiberius, how can it be argued, that the birth of modern science, in the Golden Renaissance, is typical of Christian culture? That is a useful objection, since it obliges us to bring two interrelated kinds of empirical evidence to bear upon this crucial point.

First, empirically there are numerous, major facets of history which demonstrate a series of kindred kinds of accomplishment of Christian culture over the many centuries preceding the Council of Florence.

For example, when Roman civilization collapsed tragically of self-imposed moral decay, first in the West, and later in the East, it was Christianity as typified by the influence of Augustinus of Hippo which enabled Western European culture to outlive the collapse of a Roman culture itself morally unfit to continue to survive. That was an earlier accomplishment and a significant one comparable to the Council of Florence in its own terms. Also, the great upsurge in culture and economy initiated by the circles of Nicolaus of Cusa, at about the time of the Council of Florence, had several precursors, notably including that which occurred under the leadership of Charlemagne.

Second, and conclusive, is the fact that the internal dynamic of the Golden Renaissance is, in every crucial way, a direct outgrowth of a specifically Christian principle, as the founding of modern science then, chiefly by the work of Nicolaus of Cusa,<sup>16</sup> exemplifies this.

The crucial fact referenced is the Christian principle of the "divine spark of reason" inhering in each, thus sacred, thus sovereign individual person.

This case, so summarized, offers the most direct route to uncovering a true science of history. The account begins with the time of Christ and his disciples; it begins with a crucial reference to Philo, called "Judaeus," of Alexandria. The idea of *imago Dei* came to the Jewish people of that time as the central principle of *Mosaic Judaism*, as Philo's work defines such a Mosaic heritage freed of the syncretic corruptions of the Babylonian captivities. For the Jewish followers of Christ at that time, this signified essentially the following two points.<sup>17</sup>

First, that man is typically<sup>18</sup> apart from, and superior to all forms of animal life, by virtue of that quality which defines the individual person as in the image of the Creator. This is not a likeness in bodily form, but rather in the fact that man is able to create in a way which is fully coherent with the lawfulness shown by the Creator's ordering of a universal process of Creation. This quality is called "creative reason," and defines the "divine

spark" within the person as a potential for developing the power for development of creative reasoning. Thus, for the Christian, Jesus Christ is God manifest in the bodily image of man, ministering so to man in the image of God, so that the latter might find thus the pathway of natural atonement with God the Creator.<sup>19</sup> Christianity has this specific root uniquely in the Mosaic form of Judaism, as Philo correctly identifies that root.

Second, the elaboration of creative reason could not go further than this without resorting to the method of Plato, as opposed to the methods of Aristotle, of the Eleatics, and of the Sophists.<sup>20</sup> This inevitable connection of Christianity to the method of Plato is early exemplified by the Gospel of John and the Epistles of Paul. Yet, Christianity is not "Platonism," but rather the work of Plato given that which it lacked, the Christian notion of *imago Dei*.<sup>21</sup>

The world of the Christian disciples was the Hellenistic world. This was the world of a single, Mediterranean-centered empire. This was an empire fused out of combining the protégés of the Latin cult of Delphi at Rome with the Syrian and Egyptian heirs of Alexander the Great's assassins. This is the empire which Octavian (later Caesar Augustus) had welded together, by compact with the Cult of Mithra rendered on the Isle of Capri.<sup>22</sup> The *lingua franca* of the eastern Mediterranean was Greek, and that of the western the Italian of the majority of the pre-Empire Roman legionnaires.

The literate aspect of the culture and language of Philo and the Apostles was predominantly thus Greek. The affinities of the Christian concepts of *imago Dei* and of the method of Plato, were so situated, contiguously in that time and place.

More fundamental than that contiguity is the fact, that without the method typified by Plato's paradoxical *Parmenides* dialogue, it is not possible to construct an intelligible representation of *creative reason*, as creative reason is apart from the inferior *type (species)*<sup>23</sup> of merely logical formalism. The method of Plato is therefore indispensable for intelligible representation of both Creator and of that creative reason which defines man as *imago viva Dei*.<sup>24</sup> This inseparable connection between Christianity and Plato's method may be termed *Christian Platonism*, and the usage of that term may be restricted to that specific meaning, as is done throughout this paper. It is the adoption, and application of such a view of Christian Platonism which characterizes the active principle of the Golden Renaissance, and which is key to the "skyrocketing" turn in the global population-curve circa A.D. 1440.

All of this writer's work, since his relevant crucial scientific discovery of the 1948-1952 interval,<sup>25</sup> has been

premised upon this methodological standpoint, but several relatively recent locations are of most immediate relevance for crucial features of this present report. These include the 1989 *In Defense of Common Sense*,<sup>26</sup> and the 1991 *Science of Christian Economy*, in which latter the first was an included section.<sup>27</sup> This list includes also, most emphatically, three pieces published in issues of *Fidelio* magazine: "On the Subject of Metaphor,"<sup>28</sup> "Mozart's 1792-1796 Revolution in Music,"<sup>29</sup> and, "On the Subject of God."<sup>30</sup>

Before returning to the theme of the Golden Renaissance's specific impact, we turn now to the argument presented in the "Metaphor" paper; we use Nicolaus of Cusa's revolutionary treatment of the impossibility of actually squaring the circle, to show as vividly and yet as simply as possible the active principle of history underlining the Golden Renaissance's upward inflection of the population-curve. We reference thus, most emphatically, Nicolaus of Cusa's 1440 *De Docta Ignorantia*, and *De Circuli Quadratura*, among other directly relevant writings.<sup>31</sup>

## 2.1 | Three Known Levels of Mathematics

Today, we know of (can construct) three distinct levels (*species*)<sup>32</sup> of mathematical physics. The first, and lowest, is the system of *algebraic* functions, such as those employed by René Descartes and Isaac Newton. The next higher level, implicitly discovered by Nicolaus of Cusa, but actually developed by the collaborators Christiaan Huygens and Gottfried Leibniz with aid of the Bernoullis,<sup>33</sup> is *non-algebraic*, or *transcendental* representations of function. The highest known, the third, is the specific domain of topology defined by Georg Cantor's discovery of the *Aleph-domain*.<sup>34</sup> The development of the *non-algebraic* functions, and implicitly the *Aleph-domain*, as well, begins with Cusa's revolutionary treatment of the quadrature of the circle. This case is paradigmatic for understanding the powerful genius of Christianity expressed as the fifteenth-century Golden Renaissance.

This illustration goes as follows:

By no later than the lifetime of Archimedes, it was well established, that useful estimates of the ratios of the circle to its diameter were made by simultaneously inscribing and circumscribing regular polygons of an equal, ever-increasing number of sides. Let the number of sides of both such a pair of polygons be some number designated by  $2^n$ . At  $n = 16$ , a very good estimate is obtained; continuing the process, to  $n = 128$ , gives us a

value of  $\pi$  of "supergalactic" precision.<sup>35</sup> Yet, Cusa stressed, that the sides of the  $2^n$  polygon could never come into coincidence with the circular perimeter. In other words, at  $2^{1024}$ , for example, there would still exist a calculable discrepancy between the two perimeters' magnitudes, that of the polygon, and that of the circle.

The development of all modern mathematical physics function-theory is derived "hereditarily" via Leibniz, the Bernoullis, *et al.*, from this proof. Cantor discovered a related proof, that even the modern function-theory cannot reach the limits of failed efforts to construct the solution for the problems explicitly posed by squaring the circle.

If we recognize that, (a) the polygons can never reach the circular perimeter asymptotically, but that, (b) the circular form *bounds externally* the polygonal constructions, we must recognize that we have proven, thus, that the axioms of so-called Euclidean geometry are inadequate for defining the lawful relations among geometric constructions in general. Thus, we discard axiomatic assumptions respecting the existence of a "point" or "straight line." We take, instead, the *isoperimetric* notion of "circular action" as the principal axiom of a new species of non-Euclidean geometry. Now, we develop theorems within the non-Euclidean geometry which define the constructibility of those phenomena we associate with notions of a "point" or "straight line." The first case, the formal Euclidean geometry, defines the *algebraic* domain; the second, the non-Euclidean geometry indicated, defines implicitly the *non-algebraic*, or *transcendental* function-theory of Leibniz and the Bernoullis, Gauss,<sup>36</sup> Riemann,<sup>37</sup> *et al.* This latter reaches then a limiting condition, at which a third mathematics appears.

In this second case, *circular action acting upon circular action*, is the ordering principle underlying all constructible theorems of such a mathematics. The most primitive expression of this, as stressed already by Cusa, is small circular action (*microcosm*) interacting with very, very large circular action (*macrocosm*).<sup>38</sup> This is our definition of a *cycloid*.<sup>39</sup> Increase of circular action uniformly ("self-similarly") is a conic function's generation. Interaction of conic functions with cycloid action, generates a new tier of theorems, and so on, through the hyperconics.

As Leibniz was completing his unique discovery of a true calculus,<sup>40</sup> he anticipated the inevitable supersession of transcendental functions by some new mathematics based upon still higher considerations. This notion he named *analysis situs*.<sup>41</sup> Later, in the same vein, Leibniz added his discovery of what he termed a "monadology."<sup>42</sup> These latter two discoveries come together again in Georg Cantor's discovery of the *Aleph-domain*, the super-

session of the *transcendental* by the *transfinite*.

At this instant, let us add a further historical fact to the pot we are stirring. Forty-five years after Leibniz's death, his *Monadology*<sup>43</sup> was attacked savagely by a man who was otherwise most indebted to Leibniz for nearly everything, Leonhard Euler.<sup>44</sup> Euler insisted that simple divisibility—as of angles, for example—was absolutely infinite on principle, and that therefore Leibniz's concept of a monadology was an absurdity.<sup>45</sup> (Georg Cantor was later to expose the absurdity of Euler's argument, apparently from a formal mathematical standpoint.)

Now, we identify the relevant kernel of these combined issues. We begin with *analysis situs*.

In ordinary functions, whether simply arithmetic, algebraic, or transcendental, we work under the assumption that ordering is given in terms of constantly greater, or constantly lesser magnitude.<sup>46</sup> In such cases, the situation which dominates the appearance of any magnitude is that it is greater or lesser than the relevant magnitude associated with the preceding event. So a set of various, subsumed types of *topologies* is defined.

What, then, of cases in which such ideas of magnitude are irrelevant to the ordering of the function, or even non-existent? Such a case appears to us in a well-defined way, in Cantor's preliminary elaboration of the principles of an *Aleph-domain*.<sup>47</sup>

Essentially, to limit ourselves here to the immediately relevant issues, Cantor employed a most ingenious construction,<sup>48</sup> to portray the condition of a seemingly continuous mathematical function in the smallest possible interval between two numbers of that function. He opened a window into an entire new number universe. However, these new numbers, the *Alephs*, do not correspond to the *analysis situs* of an ordinary mathematical theory of functions.<sup>49</sup>

Turn back to the case of Cusa's treatment of the attempted quadrature of the circle; locate Cantor's *Alephs* there.<sup>50</sup> If the process of increasing the number of sides of the polygon, without limit, never coincides ("becomes congruent") with a circular perimeter which lies between all circumscribable and all inscribable polygons, how "thick" is the circular perimeter which separates the external polygons *absolutely* from the internal ones? What is the thickness of that which separates concavity from convexity, negative from positive circular curvature?<sup>51</sup> Euler's false argument says "zero thickness"; but, *since this perimeter separates the external from the internal polygons absolutely, Euler's argument is plainly false.*<sup>52</sup>

Let us reject "zero," but admit a value, not zero, but one in the vicinity of "zero." Let us term this "virtual zero," as a transfinite value not "absolute zero." We class "virtually zero" within the *Aleph-domain*; this classifica-

tion presumes the special qualities of *analysis situs* which Cantor outlines for that domain.<sup>53</sup> As a consequence of these arrangements, we have a most exciting result, one whose fuller meaning for the science of history will be shown later in this paper.

Speaking mathematically, we have done the following. The ordinary notions of *analysis situs*, of greater than and lesser than, is adequate for the representation of *space-time* as non-algebraic function-theory presumes. What, however, is the significance of something whose existence is demonstrably efficient, but whose representation does not conform to the *analysis situs* of functional space-time? Is this the case, for example, for what may be termed the "matter" of physical space-time, as distinct from mere space-time?

If the latter were shown to be the case for the "matter" of physical space-time, for example, then such "matter" would externally bound non-algebraic space-time functions in a sense broadly analogous, *epistemologically*, to the way in which the non-algebraic domain of axiomatic circular action bounds externally the inferior algebraic domain. Those efficient singularities of "virtually zero thickness," which are characteristic of the microphysical *onta's* functional representation<sup>54</sup> would have to be regarded as the "externally bounding matter" of that function—apart from its included singularity—and that function must be otherwise a representation of the condition of space-time in the vicinity of that virtually zero-thickness mathematical discontinuity, that true singularity of the matter-space-time (physical space-time) field. That must be conceived as a singularity which externally dominates and determines the ostensible function with which it is associated, this in a sense analogous to the external bounding of a  $2^n$ -polygonal process by an isoperimetric circular action.<sup>55</sup> Such a singularity, one not generated asymptotically by the apparent function which it bounds, defines the apparent function as determined by, derived from the relatively primary existence of that singularity itself.

Such a singularity itself, must therefore appear to be the prime (relatively primitive) form of existence of discrete *matter* in that particular locality: a virtually "zero thickness singularity" associated with, dominating the apparent function with which the manifestation of that singularity is associated.<sup>56</sup>

The three successive levels of (lower to higher) mathematics may be represented in another, cohering way. Let all algebraic functions be represented by ("theorem-lattices") "A," all non-algebraic by "B," and functions subsumed by the *Aleph-domain* by "C." Hence, the series A, B, C, B is generated from A, as a point of departure, by eliminating the so-called "Euclidean" axioms respecting



"point" and "straight line," by replacing these with the axiomatic character of self-similar, multiply-connected, isoperimetric (circular) action. Similarly, *C* supersedes *B*, by introducing the notion, as axiomatic, of those differences in *analysis situs* which separate, *ontologically*, the domain of customary transcendental functions (*B*) from the *Aleph-domain* (*C*).

In each succeeding case, the successor domain is of a higher order than the predecessor, and the higher is for the inferior an externally bounding domain, this in the sense that transcendental (non-algebraic) circular action bounds externally the algebraic domain of the  $2^n$  polygonal processes. (In no case, is the external bound reached asymptotically by the inferior process.) Tracing this series (*A, B, C*) upward, there is no formal consistency bridging the transformation from the lower to the higher, although the higher, while never formally consistent with the lower, comprehends and determines the lower, but only from the axiomatic standpoint peculiar to the higher.

This arrangement should remind readers of our earlier locations, *In Defense of Common Sense*, and "On the Subject of Metaphor," of a similar series, *A, B, C, D, E, . . .* there.<sup>57</sup> The successive levels of technological progress (on condition that this corresponds to a secular, self-similar form of trend of increase of the whole society's potential population-density),<sup>58</sup> represent a series of the pedagogical form *A, B, C, D, E, . . .*, analogous to the series of three geometries.<sup>59</sup> The relevant argument representing the technology series goes as follows.

Any level of technology can be approximated formally in terms of the simplest integral set of axioms and postulates, which set, as a "hereditary principle," defines implicitly a formal theorem-lattice, *A*, adequately representing that level of technology. A higher level of technology requires an axiomatically different theorem-lattice, *B*, to the effect that some of the axioms and postulates underlying *B* must be different than those included in the set of *A*. So, continuing that, the technological progress associated with several or more successive increases in a society's potential population-density may be represented formally (in approximations), pedagogically, by a series of the description *A, B, C, D, E, . . .*. Since there is no formal (logical) consistency among such theorem-lattices, the "commas" separating the literal terms of this series are true discontinuities, true *singularities*; these commas thus identify the axiomatic changes generating a successor lattice from an inferior, preceding one.

In earlier locations, we have emphasized the way in which the respective Platonic notions of *hypothesis*, *higher hypothesis*, and *hypothesizing the higher hypothesis*<sup>60</sup> are

defined in respect to such a pedagogical series. The "commas" correspond, in each transformation, to *hypothesis* (a change of axioms); the succession of a series of such commas, if the succession is self-similar, has the quality of Cantorian equivalency,<sup>61</sup> and thus corresponds to *higher hypothesis*. The *hypothesizing of higher hypotheses* which are each relatively poorer or better in result, follows. These notions of hypothesis are at the center of a science of history.

In the simplest case of a general rise, or a general decline of a culture, our attention must be focussed upon those methods of judgment which persist through a succession of changes in underlying policy-shaping presumptions. In other words, we must distinguish between any one change of policy-shaping assumptions, or axioms (*hypothesis*), and those deeper assumptions (*higher hypotheses*) which govern successive changes in relatively short-term assumptions.

For an example of a higher hypothesis: "The individual person is in the image of God (*imago Dei*); therefore, individual human life is sacred." Under that higher-order assumption, a series of changes in assumptions may occur, in succession, none of which alters the corresponding underlying assumption, *imago Dei*.

Or, it may be assumed that knowledge is given to us primarily by our individual sense-experiences, *or*, on the contrary, that knowledge is obtained by adducing those principles of policy-change which lead, alternately, to a bettering or worsening of a society's capacity for durable survival.<sup>62</sup>

Thus, in rough, "higher hypothesis" corresponds to what some describe as a "cultural paradigm," and which they reference in speaking of "a cultural paradigm-shift," as the latter is distinct from a succession of policy-changes generated, as a succession, subsumed by that paradigm shift.

For example, beginning 1963-1965, a powerful group within the Anglo-American establishment, a group which has sometimes, accurately described itself as "the Aquarian Conspiracy,"<sup>63</sup> unleashed a mass recruitment drive among American youth, to win these young people to a "cultural paradigm shift" whose leading features included the "rock-drug-sex counterculture," rabidly anti-science "neo-malthusianism," and so on. These professed followers of such figures as Giuseppe Mazzini, Friedrich Nietzsche, Aleister Crowley, H.G. Wells, and the Heidegger-Adorno Frankfurt School, aimed to destroy two thousand years (approximately) of Christian civilization, and to introduce such pagan cults as the worship of Lucifer, Zarathustra, Isis, and Gaia.<sup>64</sup>

If this pattern of successive, downward changes, over the recent thirty years is not reversed, our planet, virtu-

ally as an entirety, will be plunged soon into a devastating "New Dark Age," back to barbarism, or even a worse condition. Without a reversed paradigm-shift, the United States as we know it will soon no longer exist, perhaps as early as not long after the upcoming turn of the century. The Golden Renaissance, whose central organizing event was the A.D. 1439-1440 Council of Florence, was such a "reverse paradigm shift,"<sup>65</sup> and is a model for the kind of radical historical change in direction wanted most urgently now. In other words a change of higher hypothesis.

The point of illustration immediately under our scrutiny here, the implications of Cusa's crucial discovery underlying a non-algebraic form of mathematical physics, reflects the qualities of mental processes by means of which a Renaissance is sparked. This is typical of that special quality of mental process by means of which upward cultural paradigm shifts are conceived and efficiently imparted to general social reality.

Examine Cusa's genius, as shown by his cited discovery, with the point just made in view. His act of genius in this particular matter was to recognize that the ultimate limit of expansion of the number of sides of a 2<sup>n</sup>-sided regular polygon could not be a polygon, but must be of a higher species of existence (ontologically) than any polygon. His correlated act of insight was to recognize that the higher species not only bounds externally but determines axiomatically the inferior species' existence. That is the leap from the so-called "linear," or algebraic domain, to the non-algebraic or transcendental.

This same set of rules of discovery, carries us upward again, from the transcendental, to the transfinite domain of Cantor's *Alephs*. In the first case, the replacement of axioms respecting points and straight lines, by an axiomatic quality of isoperimetric (circular) action, is a valid revolutionary hypothesis. By the same principle of discovery we may recognize the implications of the bounding of transcendental space-time by the transfinite *Aleph-domain*. Thus, two strictly defined hypotheses of a series are subsumed, determined by a single, higher method of discovery, a scientific method, this latter an *higher hypothesis*.

It may be said, that the two successive hypotheses are *methodologically self-similar*, and thus *equivalent* members of a *type*.<sup>66</sup>

To the degree that our children enjoy a competent education, they learn their mathematics, physics, and chemistry, not from textbooks, but from reliving mentally numerous among the most crucial original discoveries, to as far back as Pythagoras and Plato. In such a Classical (Christian) humanist mode of education, the student thus relives the methods of discovery successfully

employed in past history.<sup>67</sup>

That student, who were so educated, would have familiarity with the central role of such a *method of successive discoveries* (higher hypothesis) in the development of natural science. That student would also know that while modern science began approximately 550 years ago, its birth signalled by such influential publications as Nicolaus of Cusa's *De Docta Ignorantia*,<sup>68</sup> during the most recent four centuries the institutions of science have been wracked internally by an axiomatically incurable conflict between two diametrically opposing conceptions of method. This issue of *method* is most simply identified by reference to the three levels of mathematics just outlined. So seen, that issue of method is paradigmatic for all of modern European culture's history. This view of history goes directly to the question: *What is the human mind?*

## 2.2 | Psychology

It is a deliciously provocative irony, that no known contemporary school of professional psychology has succeeded in documenting a competent definition of "human mind." Among those professionals, competence is virtually limited to treating the vermin, not building the house which the vermin infest. The psychiatrist addresses the disorders, the vermin of individual mental life; the unscrupulous psychologist will misuse such knowledge to assist a public relations organization's deception of credulous public opinion.

So far, most of the psychological profession has stubbornly refused to recognize the crucial fact, that the term "human mind," should be employed only with a very special restriction: "human" distinguishes a most unusual species, a unique one. This mind is empirically the essence of that species, mankind, as we described it earlier here, in the several opening paragraphs of this Section 2.0, above.<sup>69</sup> It is these unique qualities of that mind which constitute, in turn, the root of a science of history. The refined definition of this historically functional uniqueness of that mind is bound up with those notions of the mathematical *transfinite* brought more clearly into focus by Cantor's *Aleph-domain*.

During the most recent several thousand years of Europe, there have been only two important attempts at an intelligible representation of the individual human mind. One is the failed, but influential attempt by Aristotle and his followers.<sup>70</sup> The second has been supplied by the integration of Plato's scientific method with the Christian form of Mosaic *imago Dei: man in the living image of our Creator*.<sup>71</sup>

The essential difference between these two opposing representations was presented to the internal history of modern England in A.D. 1525, by the influential Venetian Francesco Zorzi's (Giorgi's) attack upon the founder of modern science, Nicolaus of Cusa.<sup>71</sup> Through Zorzi's continuing influence upon the sixteenth-century Tudor hierarchy,<sup>72</sup> the Rosicrucian cult of Sir Francis Bacon, Robert Fludd, *et al.*, was established, the cult-root of neo-Aristotelian British *empiricism*. Thus, the A.D. 1525 attack on Cusa's Platonic science, by Zorzi, is key to the later conflict of the Newton-Clarke-Leibniz correspondence of the very early eighteenth century.<sup>74</sup>

The conflict between the Platonic and the Aristotelian representations of knowledge, mind, and history, is arguably the only well-defined, available set of speculative options in these matters. Is man as he is portrayed by Francis Bacon, Thomas Hobbes, John Locke, David Hume, and "moral philosopher" Adam Smith, utterly depraved, no better than an infantile egoist, by preference a spectator of brutish blood sports, a creature steeped in the reek of his own putrefying sensuality? Or, in the alternative, as Cusa proposes, is the individual person naturally both *imago Dei* and *capax Dei*?<sup>75</sup>

The British Aristotelian's rhetoric centers itself upon an appeal to the simple illiterate's preoccupation with his sensuality. He gives vent so to a sneering whine. "How could we know anything of the world about us, except through the perceptions given to us through our senses?" Lemuel Gulliver's hosts whinny archly, hoof pointing toward a nearby, revolting gaggle of rutting Yahoos.<sup>76</sup> The issue is not whether we experience sense-perceptions, but what underlies these mere phenomena; the most succinct statement of the paradox so posed, is Plato's *Parmenides* dialogue.

That *Parmenides* dialogue, demonstrates in the most concise and devastating way, the common folly axiomatically underlying not only the anti-Pythagorean, Eleatic dogma of *Parmenides*, but also of the Sophists, rhetoricians,<sup>77</sup> and, later, Aristotelians and Stoics.

The central feature of this dialogue is the same issue of ontology central to Cusa's *De Circuli Quadratura*<sup>78</sup> and earlier, larger *De Docta Ignorantia*.<sup>79</sup> The attempt to approximate the quadrature of the circle, by emerging series of matched-pair, inscribed and circumscribed  $2^n$ -polygons, is bounded *externally* by something which is no polygon of that series, no polygon at all, but rather a different, higher species of geometrical existence, isoperimetric (circular) action. The polygonal series belongs axiomatically to a formal Euclidean theorem-lattice *A*; the circular perimeter to an axiomatically non-algebraic, higher-order, distinct theorem-lattice, *B*. These two mutually distinct theorem-lattices, *A*, *B*, are commonly sub-

sumed under a unifying *higher hypothesis*, as we have indicated earlier for the series of three known levels of mathematics, *A*, *B*, *C*.

As Plato emphasizes during the elaboration of his *Parmenides* dialogue, the argument of the Eleatics repeatedly fails, as if in recurring nightmare, because it excludes the principle of *change* from consideration. The generalization of *change* in the case of the quadrature of the circle, is the unity of that single higher hypothesis which subsumes each and all individual members of the series of three known levels of mathematics, *A*, *B*, *C*.

For a more general view of the same point, consider so the series *A*, *B*, *C*, *D*, *E*, . . . employed repeatedly in the cited earlier published locations.<sup>80</sup> Each term of that series represents a level of technology, whose correlated *potential population-density* is less than that of the successor-term, but greater than that of the predecessor. (Focus upon the series of commas, each separating two successive literal terms of the series, as a continuing function.) Consider, then, each of the respective three types of innovative *thought-objects*<sup>81</sup> (i.e., *Platonic ideas*) represented by that series as a whole.

On the relatively lowest of the three types of levels of innovation, under the domain of any one theorem-lattice, new theorems are elaborated in agreement with the integral set of axioms and postulates of that theorem-lattice as a whole. In each of the three types of cases, whether the original generation of a valid new theorem within the lattice, an *hypothesis* generating a higher species of lattices, or of an higher hypothesis defining a self-similarly ordered series of such successive lattices, the generation of that original discovery as a *thought-object* occurs entirely within the sovereign confines of an individual human intellect. This *sovereign* quality of the process and act of each such type of valid original discovery, is also experienced in each successful transmission of the discovery from one sovereign intellect to another.

It is not the biological individuality which defines the person as a *human* individual; nor, does a person acquire human rights by virtue of possessing a living body. The moral basis for a person's human rights is found uniquely in the person's intellectual quality as *imago viva Dei*, in *capax Dei*. This quality of *imago Dei* is not found in the individual's adoption of a mere opinion, but is manifest only in those forms of change associated *typically* with the creation of a valid, scientific discovery. It is only in this aspect of the individual nature that the subject of history is rooted.

Reexamine the combined three known levels of mathematics psychologically, from the standpoint of the way in which the *Parmenides* dialogue poses its ontological



paradox. Let  $A$  of the series  $A, B, C$ , now approximate a linear, Aristotelian theorem-lattice's ordering of sense-phenomena, as the empiricists Zorzi, Bacon, Locke, Newton, Hume, or Immanuel Kant follow the principle of Aristotle's categories.

As Euclidean formalism illustrates the ontological crises of empiricism and of René Descartes, although the set of axioms and postulates has the effect of a quasi-integral<sup>82</sup> "hereditary principle," no comprehension of this set, or of the generality of its theorem-products can be achieved within its own terms. The comprehension of a linear (e.g., algebraic) domain becomes possible, even in imperfect approximation, only as we are able to define  $A$  as rigorously bounded externally by  $B$ , and  $B$ , in turn, by  $C$ .

Thus, all of the theorems of lattice  $A$  are false in that respect, and the ontological assumptions associated with these theorems are therefore also false. No *knowledge* can be derived by the standards of empiricism, or Kantianism. Knowledge respecting phenomena is achieved solely by aid of that higher hypothesis which subsumes the generation of the series  $A, B, C$ . It is thus the content of *change, change* as the ontologically primary content of hypothesis, which, not sensory experience *per se*, defines the possibility of human knowledge.

The very idea of a universe, a universal Creator, or an individual personality as a unit of identity, is possible only by replacing the empiricist's blind faith in phenomena, his notion of fixed objects buffeted about in empty space (or, "a universal ether"), replacing these crude notions by recognition of the ontological primacy of change, as we have defined a Platonic notion of change.

The psychological problem, the psychopathology, if you will, of empiricism, is twofold. First, it yearns for securely fixed, discrete objects hanging dreamily in infinitely empty-like space and time. Since it cannot prove these kinds of matter, space, and time to exist, empiricism consoles itself with the retreat into the virtual reality of Aristotelian *nominalism*; it adopts the labels called "phenomena" as substitutes for the objects it desires. It cannot accept *change* as *ontologically primary*.

Not arbitrary *change*, of course; only that quality of change which is represented typically by the higher hypothesis of the mathematical series  $A, B, C$ , even approximates an adequate idea of change for our purposes.

## The Indo-European Mind

Take into account implicitly three exemplary precedents for our arguments, respecting an *ontological* principle of *change*, here. Plato, Leibniz, and the notion of an *ontological transfinite* implicit within Cantor's treatment

of the transfinite *Aleph-domain*. All three, like this writer, are Platonists; the latter two, like this writer, are Christian Platonists in the tradition of the A.D. 1439, ecumenical Council of Florence—of the Golden Renaissance.

We have already considered a rigorously defined formal representation of this notion of an *ontological transfinite*. The recognition that the highest of the three levels of modern mathematics, the *Aleph-transfinite*, bounds externally, and thus defines the transcendental domain of space-time, defines a crucial distinction, in terms of *analysis situ*, between space-time and matter, such that the latter defines the functions attributable to the former. We have already restricted our definition of the highest, *Aleph-transfinite* domain to those cases in which we have, either actually or implicitly, defined a *true* singularity, a mathematical (geometrical) discontinuity whose existence is not congruent with any theorem of a transcendental or lower function. We have employed here, as an example of such a true singularity, the "virtually dimensionless" thickness of that circular perimeter which separates, absolutely, negative from positive curvature. For example, as Cusa points out, the circular perimeter is of an *ontologically* higher species than any of the inscribed polygons which it bounds—or the circumscribed ones.<sup>83</sup> That circular perimeter is an *external asymptote* of both those relevant polygonal processes, the inscribed and the circumscribed; but, that asymptote's *existence* is not congruent with any theorem of the theorem-lattice inclusive of the generation of the polygonal processes.<sup>84</sup>

These discoveries, of the three known levels of modern mathematics, are characteristic, as a *type*, of that revolutionary change by the Golden Renaissance which is reflected in the mid-fifteenth-century turn of the curve of potential population-density. The tracing of the root of the discovery and application of the two higher levels, of these three, to Cusa's fifteenth-century representation of the problem of quadrature, typifies the causal agency underlying the revolutionary turn in that historical curve. To situate that change adequately, we must situate that change within Western European culture more broadly, over very many generations preceding that revolutionary turn, in addition to studying the sweep of the five centuries following. We must situate Cusa's discovery of this, a new higher hypothesis, within the characteristics of the culture which was thus revolutionized.

In the obligatory, but narrower approach to defining such a larger historical sweep of cultural development, we must follow the epistemological pathway of development leading chiefly from ancient Classical Greece. However, Indo-European culture's principal feature, spanning more than 8,000 years to date, is the set of

characteristics of the Indo-European language group. Plato's work must be situated epistemologically within the characteristic features of Classical Indo-European philology in the broad sweep of more than 8,000 years. Only so, do we plumb the relevant psychology of the Indo-European mind. To satisfy what are, in this location, the most relevant such requirements, it is sufficient to focus upon a most typical product of very ancient Indo-European culture, solar astronomical calendars of 26,000 year, or longer, cycles.<sup>85</sup> We emphasize such calendars dating from much earlier than 6,000 years ago.

From ancient Indo-European settlements in Central Asia, no later than the interval between 4,000 and 6,000 B.C., we have, from the Vedas, the earliest systematic features of a known solar astronomical calendar.<sup>86</sup> There are traces of a yet earlier, Arctic calendar, indicated from the Persian Zend Avesta.<sup>87</sup> The point on which to focus at this moment, is a glimpse into the mind of a society, as that mind is reflected by the production of such calendars. What we do here, a tactic never employed earlier, to the best of our knowledge, is to examine the most crucial features of that calendar design from the standpoint of Cusa's treatment of the quadrature of the circle.

Rational "primitive cultures," or modern school-children's construction of a useful quality of calendar, begins with two sets of measurements within the scope of rudimentary instruments. Observe the sunrise, midday sun, and sunset by day, and compare these lines of sight with the points toward which they point on the nighttime star map. Such combined observations yield a solar year, usually pivoted upon the winter solstice or vernal equinox, and a sidereal year contained within not less than one long cycle, the circa 26,000 year equinoctial one.<sup>88</sup> If one adds a reasonably accurate measurement of the distance along the Earth's surface between two points along a North-South line, the size of the planet Earth is measured with the reasonable accuracy of the Toscanelli map, and so on.<sup>89</sup>

The aspect of this construction upon which our attention is focused here is the relationship between any such discovery of astronomical cycles and the paradox of circular quadrature as addressed by Cusa. From a polygonal series of angular measurements of sun, moon, stars, and so forth, a continuous, uniform, isoperimetric pathway of *causal* least action was adduced; that is the most elementary conceptual, ontological feature of any competently constructed solar astronomical calendar. From observations of the paradoxical features of the lower species of geometry, the necessity of the existence of the higher species, is recognized; this ancient Indo-European astronomers' leap to discovery is identical, as

a *type*, as a principle, to the unique solution for the ontological paradox defined by Plato's *Parmenides* dialogue.<sup>90</sup>

This is the method of Cusa, of his follower Leonardo da Vinci, of Johannes Kepler, and of that Gottfried Leibniz from whom this author learned this Platonic method slightly more than fifty-five years ago.<sup>91</sup> This is the *type* of method of discovery characteristic of known Indo-European cultural achievements in such a range of subjects as physical science, Classical music,<sup>92</sup> poetry,<sup>93</sup> drama,<sup>94</sup> and theology.<sup>95</sup>

Examine the crucial features of ancient Vedic astronomy from the standpoint of our exemplary treatment of the series of successively higher orders of mathematics, *A, B, C*. At the start of this examination, at this moment, reflect upon the content of such seemingly oh-so-simple words as: "those ancient astronomers recognized the existence of universal regular circular action."

Never forget the proverbial "devil in the detail." In the case of quadrature of the circle, Cusa was ostensibly the first to recognize (contrary to foolish Augustin Cauchy much later) the devilish, unbridgeable difference between the smallest relative size of a polygon's side and the circular perimeter. That devilishly small difference was the previously overlooked distinction between two species, of which the higher existence could never become a theorem of the lower. Consider the ancient astronomical cycles with that forewarning in mind; consider the difference between an enormous density of polygonal angles of daily solar and star-map observations, and the unobserved, but existent, higher species, the astronomical cycle. Perhaps 8,000 years ago, perhaps earlier, perhaps a bit later, some ancient Indo-European defined the notion of an astronomical cycle using the same principle of higher hypothesis employed by Cusa circa, now, slightly more than 550 years ago.<sup>96</sup>

Consider, next, the medium through which such discoveries have been transmitted. As a useful first approximation, examine the transmission of the astronomical knowledge contained within ancient Vedic hymns.<sup>97</sup> Strictly speaking, no idea of this higher species can be transmitted as the *content* of a language's grammatical expressions; strictly speaking, language plays an indispensable role in the transmission of all ideas, including those on the highest level of idea-species, but such higher ideas are not containable within the terms or constructions of the language itself.<sup>98</sup>

Cusa's treatment of quadrature typifies the highest class of included functions which qualifies a language as a literate one. We have supplied our own more rigorous definition of this *subjective* function of *metaphor* in earlier locations.<sup>99</sup> We illustrate the definition of this function

of metaphor as follows.

From the standpoint of the polygonal processes of both inscribed and circumscribed polygons, the circular perimeter is not of the polygon "species," and therefore, to the mind of all members of the polygon species, does not exist. Yet, Cusa's re-reading of Archimedes' construction shows the *necessity* for the circle's existence, and shows the *necessity* for superseding the Euclidean axioms of point and line by an axiomatic, isoperimetric principle of universal circular action, the latter expressed in root-form as the generalized cycloid of non-algebraic functions. From the standpoint of polygon grammar, the circle does not exist; it exists only subjunctively, only *metaphorically*. However, we show subjunctively, that if the circle does not exist, then the polygons and the axioms upon which these polygons lie are both absurd phantasms. If we give up the linear axioms, and proceed from the cycloid axiom instead, we have securely both the circle and polygons.

Thus, implicitly, does a literate geometry define a notion of the higher class of *metaphor*, a notion of the order of *hypothesis*, or *higher hypothesis*. By the same *type of means*, a literate form of language enables a speaker to impart the previously *unsayable* efficiently; by means of such a form of language, after the newly generated *Platonic idea*<sup>100</sup> has been imparted, the metaphor employed serves as a recognizable name for that idea.

These metaphorical functions of a literate form of language, are the aspect of that language which Leibniz would recognize as the language's relative *universal characteristic*.<sup>101</sup>

This is now the appropriate place to discuss a point which is of crucial importance for recognizing the way in which a language-culture's characteristic psychology is concealed from popular knowledge. To this purpose, consider a pervasive, stubborn and immoral form of populist illiteracy found among today's generations of even leading physical scientists. This illiteracy takes the form of a delusion, the positivist delusion that issues of science are to be settled by reliance upon application of data to a body of "generally accepted classroom mathematics."

Consider the mid-fifteenth-century founding of mathematical physics, by Cusa, *et al.*<sup>102</sup> We mean, by such a physics, a notion of a coherent body of measurement of the effects of *causal relations within our physical universe*, a systematic mathematical physics of the form elaborated by Cusa follower Johannes Kepler at the beginning of the seventeenth century.<sup>103</sup> Consider, then, the violent epistemological conflicts which began to shape the history of science since the beginning of the seventeenth century.

Modern science was founded by fifteenth-century Christian Platonists, who crushed the anti-scientific objections of their Aristotelian adversaries at that time. Into the first quarter of the seventeenth century, the Platonist tradition of the Golden Renaissance's Cusa, Leonardo, and Kepler, dominated Europe's rapid development of all of the broad foundations of modern science. It was not until the early seventeenth century, following the accession of King James I in England, that the neo-Aristotelian followers of Venetian ideologues such as empiricists Pomponazzi<sup>104</sup> and Zorzi gained sufficient political power in England and Netherlands to assault directly the authority of Cusa and Leonardo within the institutions of science itself.<sup>105</sup> Since that latter time, all institutionalized modern science has been in an alternately open or barely concealed civil warfare between these two irreconcilable factions: the faction of Plato, Cusa, Leonardo, Kepler, Leibniz, Gauss, *et al.*, against the gnostic hordes of academia's Aristotle, Pomponazzi, Zorzi, Fludd, Bacon, Locke, Newton, Hume, Kant, LaPlace, Kelvin, Clausius, Helmholtz, Maxwell, Rayleigh, Mach, and Russell.

What do our modern, miseducated academic professionals say of the violence with which the Venetian sex-counselor of a lecherous King Henry VIII, Francesco Zorzi,<sup>106</sup> demanded an empiricist uprooting of all those principles of (Cusa's) *De Docta Ignorantia* upon which the entirety of modern science was founded?<sup>107</sup> Why are the epistemologically illiterate academic advocates of "generally accepted classroom mathematics" so silent on such fraudulent attacks upon Leonardo da Vinci, or Fludd's, Galileo's, and Newton's fraudulent ("*hypotheses non fingo*") attacks upon the Kepler whom Newton plagiarized so shamelessly?<sup>108</sup> And, so it goes, onward, through Leibniz's exposure of the intrinsic incompetencies of Descartes and Newton,<sup>109</sup> the British and French Voltaireans' and Kant's eighteenth-century vendetta against Leibniz,<sup>110</sup> Bertrand Russell's fraudulent attacks upon not only Leibniz, but also Gauss, Weber, Riemann, and Cantor,<sup>111</sup> to include the vile attack upon Max Planck by the devotees of radical positivist Ernst Mach, and to the follies of the Solvay conferences of the 1920's.<sup>112</sup>

On the surface, even before attempting to resolve these fierce factional issues, why do almost none of today's relevant academics accept the fact that there has been such a fierce controversy over method during the entirety of the past four centuries? Is that oversight itself not a tacit, and crucial admission, either of simple fraud by these academics, or a kindred quality of shameless illiteracy in the subject-matter? In such matters, even relatively many among the nominally better achievers in twentieth-century science have behaved as such illiter-



ates, as a populist variety of immoral boor, who refuses, even hysterically so, to face the fact, that today's "generally accepted classroom mathematics" is permeated by the ruinous axiomatic fallacy of Francesco Zorzi *et al.*, an issue which nearly all of the leaders of the seventeenth through nineteenth century science, of both factions, defined as an issue of fundamental importance.

These leading illiterates refuse to consider the reality, that, respecting all among the presently crucial paradoxes of science, these are manifestly the recurrence of the persisting, classical factional issues which have dominated civilized European thought for approximately 2,500 years—since Pythagoras and Parmenides, and, most clearly, since the two factions were defined, respectively, by Plato and Aristotle. It is this latter which puts Pomponazzi and Zorzi against Cusa, and the Aristotelians Galileo, Bacon, Fludd, Locke, and Newton against Leonardo and Kepler. Can it be fairly described more kindly than "illiteracy," that relevant professors and others today propose to resolve those differences by appealing to that "generally accepted classroom mathematics" which is permeated and regulated axiomatically by the self-same fallacies at issue?

Examine the epistemological, and psychological characteristics of the Indo-European language-group, bearing in mind this pervasive illiteracy among so many modern mathematicians.

A language-culture as such has three principal facets (apart from gesturing): the *spoken language* itself is complemented by, and dependent upon two additional facets, *geometry* and *music*. By "music," we signify that which has developed out of Classical poetry, such as ancient Vedic hymns, through principles rooted in natural vocalization of the spoken phrase.<sup>113</sup> The comprehension of the two facets of *spoken language* and *music* is effected from the standpoint of the third, the visualization of physical space-time, *geometry*. By such a geometry, we signify a general notion of a constructive *synthetic geometry*,<sup>114</sup> a geometry premised upon a principle of *intelligible constructibility*, a principle consistent with the Cusa method of *docta ignorantia* which, in turn, is congruent with Plato's principle of *Socratic negation*. This overview of the three facets of a language-culture, is the basis for analysis and other representation of the functions performed by the use of the language. The basis for an adequate comprehension of the grammatical and other "structural" characteristics of a spoken language (in the narrow sense of "spoken language") is a geometrical comprehension of naturally (e.g., physiologically) determined principles of *tuning* and *vocalization* presented most clearly by a *well-tempered bel canto* mode of speaking and singing.<sup>115</sup>

As the fact has been identified in respect to the three levels of modern mathematics, geometry by itself cannot encompass physical reality.<sup>116</sup> Geometry enables us to situate events in a space-time framework: of past, present, future, and also of subjunctive past, present, and future; of indicative and subjunctive moods of spatial and analogous relationships among *phenomena* and presumed *noumena*. However, the principal forms of *analysis situs*, of greater than, less than, employed for the geometrical representation of space-time are not a representation of *physical space-time*, the latter which includes a higher species of existence, external to the analysis situs of space-time functions.

For this reason, the musical facet of language in the large is key to a language-user's ability to comprehend a lawful ordering of physical space-time. Hence, the line of development of known scientific method, from Plato, through Cusa, Leonardo and Kepler, to Leibniz, Jean Bernoulli, *et al.*, is crucial both for developing a competent mathematical physics, and for rendering adequately intelligible the fundamental, characteristic errors imbedded in "generally accepted classroom mathematics." This point is key to adducing the characteristics of 8,000 to 10,000 years of Indo-European language-culture.

To develop further this point respecting music, the following.

In his referenced habilitation dissertation, Bernhard Riemann emphasizes, that *metrical characteristics of a continuous manifold can be adduced only by aid of reference to physics*. An inferior geometry, the algebraic one, premised axiomatically upon arbitrarily presumed self-evident existence of a discrete infinitesimal point and of straightness of a shortest linear distance between two points, has a built-in *discrete metric*, for which there is no direct correspondence in the higher, cycloid-based, non-algebraic geometry of transcendental functions. At first glance, it may appear to us that the Golden Section, as a kind of "dimensionless constant," does indicate some metrical characteristic for a continuous, non-algebraic manifold; but that appearance persists only for as long as we avoid an adequately rigorous examination of the relevant "devil in the detail." Emphasis upon the role of the Golden Section is important, even indispensable, but the origin of that relevance, that importance, lies beyond the reach of any merely transcendental space-time; it lies, as we have stated above, among the Alephs.

Consider two relatively simpler illustrations of Riemann's cited observation first, and, after those, the deeper physical significance of music itself.

The attempt to derive a physics on the basis of principles of radiation, refraction, and reflection of light long precedes the fifteenth-century Renaissance<sup>117</sup>; however,

the work to this effect begun during the Renaissance by Brunelleschi, Cusa, Leonardo, *et al.* is of a qualitatively different character than that of preceding centuries. The crucial work of Leonardo da Vinci,<sup>118</sup> was premised upon not only upon Leonardo's assimilation of Cusa's *docta ignorantia* method of scientific inquiry, but upon the specific least-action principle first presented by Cusa in the setting of the Council of Florence.<sup>119</sup> All the crucial work on light, from Leonardo's studies of the correction of spherical aberration by the paraboloid,<sup>120</sup> through Leibniz's and Bernoulli's 1697 proof of a universal, non-algebraic principle of *least action*, is situated within the framework of Cusa's Platonic method and subsumed least-action principle.<sup>121</sup>

To use modern, Riemannian language, the recognition that the radiation of light was governed by a universal principle of *retarded potential for propagation* was already presented by Leonardo as part of his general theory of hydrodynamical forms of propagation of light and sound.<sup>122</sup> This view of Leonardo's informed the thinking of such successors as Kepler, Fermat, Huygens, Leibniz, *et al.* Thus, as soon as Christiaan Huygens, in 1677, received in The Netherlands news of Ole Rømer's successful Paris measurement of the speed of light, at 300,000 kilometers *per second*, Huygens elaborated his *Treatise on Light*.<sup>123</sup> The Rømer demonstration of Leonardo's principle is intrinsic to Huygens' definition of the envelope of reflection/refraction defined by any definite, relatively constant rate of retarded potential of light propagation. Bernoulli<sup>124</sup> and Leibniz<sup>125</sup> were able to prove, on this basis, that the propagation of light in our universe conforms to a non-algebraic space-time, *not* the algebraic space-time of Descartes and Newton.

Thus, did physics (crucial experiment with light) provide a metrical basis for the continuous manifold defined by axiomatically isoperimetric action, non-algebraic space-time. Rømer's good estimate of 300,000 kilometers *per second* is very important; but, for our purposes here, we must focus upon the deeper point. Rømer's crucial proof for Leonardo's principle showed that the relatively correct geometry for a mathematical physics is that of Cusa, Leonardo, and Kepler, *not* that of Descartes and Newton; it showed what kinds of geometry were permissible for estimating the metrical characteristics of space-time.

The second illustration is from the work of the great Wilhelm Weber so reviled by Maxwell, Russell, *et al.* Weber's work on electrostatic and magnetic reactions showed him, that at some degree of smallness the forces of repulsion called "Coulomb forces" are overwhelmed by "strong forces,"<sup>126</sup> a discovery which implicitly anticipated many of the conceptual challenges faced by today's

nuclear physics, including "solid-state fusion."<sup>127</sup>

Underlying both discoveries, of a needed principle for measurement of geometrical relations,<sup>128</sup> was a deeper, more fundamental *Platonic idea* respecting the *higher hypotheses* which must subsume the hypothesis of measurement which is to be generated by a mathematical physics. The implications of a *bel canto* singer's well-tempered scale brings us to a consideration which runs qualitatively much deeper than the referenced discoveries by Rømer and Weber.

The effects of elevating the pitch of musical performances, from the vicinity of 430 cycles for A, to as high as 442-446, or, even higher, has been a leading factor in reducing the number of leading singers from hundreds, at the beginning of the period following World War II, to a few handfuls today. Like the Keplerian Solar System, or electron orbits of quantum microphysics, the orbits of the *natural* singing tones are fixed in a few pre-designated, narrow band-passes, to such effect that elevating the pitch approximately a quarter of a tone above the central value of that band-pass has a destructive physiological effect upon the singing voice.<sup>129</sup>

These relatively "force-free" orbital pathways, which we associate today with the well-tempered scales of J.S. Bach *et al.*, are ostensibly values coherent with the Golden Section as this feature of the Golden Section was defined by Plato,<sup>130</sup> by Leonardo da Vinci,<sup>131</sup> and by Kepler.<sup>132</sup> Plato, and Leonardo after him, stressed that living processes are harmonically ordered in a way cohering with the Golden Section, whereas (on the ordinary macro-scale of direct sensory interaction with objects about us) non-living processes do not. Often, this point is misread, and profoundly misunderstood.

The quality of significance which these three—Plato, Leonardo, and Kepler—attribute to the Golden Section as a characteristic of certain self-similar processes, can be elicited only by deriving the Section not from simply circular constructions, but, rather, that equi-partitioning of the *interior surface* of a spherical shell which defines the uniqueness of the dodecahedron as the *type* of a series of polyhedral constructions. The Golden Section's unique significance is derived from its relationship to the dodecahedron so derived. The study of the formal proof of this construction is a field of mathematics in its own right, which is not required here for our present subject, beyond merely indicating the existence of such an elegant mathematical recreation to be taken up elsewhere.

The point of Leonardo's argument, where known, is usually misunderstood. That is to say, it is often assumed that Leonardo means to say that the action of self-similar growth of a living process is directly, *dynamically* condi-

tioned by a factor which is the Golden Section. On the contrary, we read the relevant significance of the Golden Section as a *reflection* of the existence of *field potential* in a *quantum field* or analogous physics.

Using Kepler's Solar System as such an analogue, suppose this following argument.

Suppose that, during the sun's fast-spinning youth, the sun sheds rotation in the process of producing a polarized plasma disc of rings around itself. In this polarized disc of plasma, at effective temperatures far higher than within the sun itself, a fusion process occurs generating the 92 elements of the Mendeleev periodic table.<sup>133</sup> This material being produced, by polarized fusion, is spun out from the disc in spiral-arm-like waves, such that the heavier elements are distributed among predetermined, nearer solar orbits, and the lighter combinations among the outer orbits. *The point illustrated, so, is the argument, that the pre-determined orbits come into existence as potential before there is any matter being put into them.*

Conceding today's generally accepted proposition, that no matter moves faster than the speed of light, *does such a limit apply to the propagation of the pre-determined, relatively "force free" orbits into which the planetary, and lunar material will be later distributed?* Put the same thought in different terms; can one know what the stable orbit of a new planet must be, long before that planet itself comes into existence? The human singing voice says implicitly that this is so.

Thus, the widely accepted, "Galileo" dynamical view of the universe is challenged; this, moreover, is no mere speculative conjecture.

## Astronomy and Music

It is our immediate, transitional point of argument here, that the so-to-speak "mathematical physical" principle of "quantum field" ordering of our universe is imbedded in our physiologically determined, *natural* way of vocalizing speech and song. By "natural," in this case, we mean the "most efficient," the method of vocalization which produces the relatively purest and maximum heard tone with the relatively minimal expulsion of air from the mouth. Thus, the methods of voice-training called "the Florentine *bel canto*"<sup>134</sup> defines the "natural" way of vocalizing. This *bel canto* experiment in turn, defines the relevant experimental evidence for the notion of a "quantum field" ordering of the *naturally* well-tempered ordering of the domain of *vocalization*. (SEE Figure 2: The "Quantum Field" of *Bel Canto* Vocalization)

We must read the role of the Golden Section in the

work of Leonardo and Kepler in that way. Review a relevant aspect of Kepler's work summarily from this standpoint.<sup>135</sup> The purpose of this illustration is to impart a clearer sense of our core argument: that, in the Indo-European language-culture (in particular), it is the implicit notion of a "quantum field," imbedded in the naturally *bel canto*/well-tempered ordering of vocalization, which supplies our mind a physics-reference for a natural ordering of the continuous field.

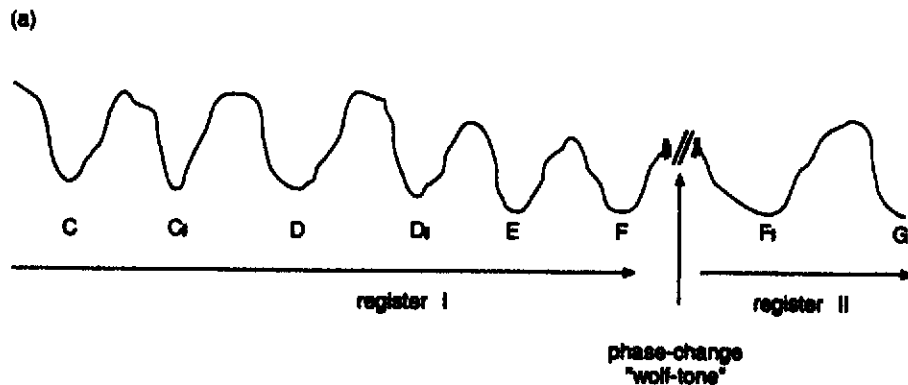
Initially, Kepler locates the respective orbits of the solar planetary field by means of successively circumscribed Platonic solids. (SEE Figure 3) He illustrates this by showing the congruence of this method with the Platonic intervals of a musical scale. This is, in both cases, the solar field and musical scale, only an included aspect of the correct determination of values, but it remains nonetheless an integral *conceptual* feature of whatever the ultimate, corrected value proves to be. That is, in both cases, the ordering in terms of Platonic Solids (e.g., Golden Section) is an integral feature of the *type* which ultimately determines a correct measurement.<sup>136</sup>

The import of music for the mathematical-physics potential of a language-culture will not be grasped adequately unless an additional point is made, dispelling an unfortunately very popular delusion. The customary, deluded way of teaching about music, is to impose a kind of Galileo dynamical scheme upon the relationships among pairs of notes. In fact, as the work of all the greatest musicians of all time—e.g., Bach, Haydn, Mozart, Beethoven, Brahms—shows, the success of musical composition is epitomized by the Classical composer's development of Haydn's original discovery of a *Motivführung* principle.<sup>137</sup> In effect, all great composers, artists, and conductors compose and perform "between the notes," so to speak.

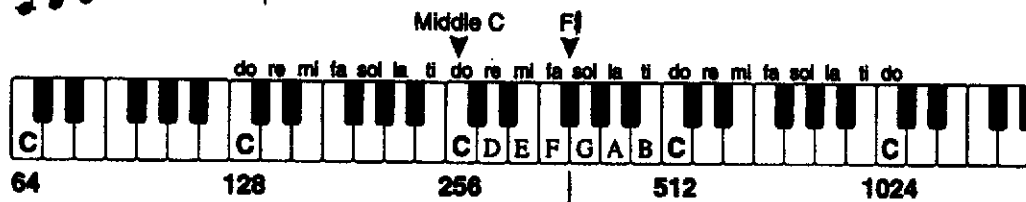
What the mind of the great Classical composer hears is not *primarily* individual notes, but, rather the *intervals* which, at first formal appearance, lie between the notes.

Choose any pair of tones within the full sweep of all the singing voice species' collective range of vocalization. This defines an interval in two ways. In upward sequence, and also a different implied interval in a downward sequence. A pair of intervals derived from a minimum of three such tones (*A, B, C*), yields the obvious intervals *AB, BC*, and also *CB, BA*, and *CA*. This set, taken as a whole, defines more or less ambiguously not only two key signatures but also a combination of keys, such as the C-major/C-minor of Mozart's *Motivführung* keyboard fantasy, K. 475.<sup>138</sup> In other words, a *mode*, as Beethoven illustrates this, his further development of Haydn's original *Motivführung* discovery in his last string quartets, such as his Opus 132 or *Grosse Fugue*, Op.

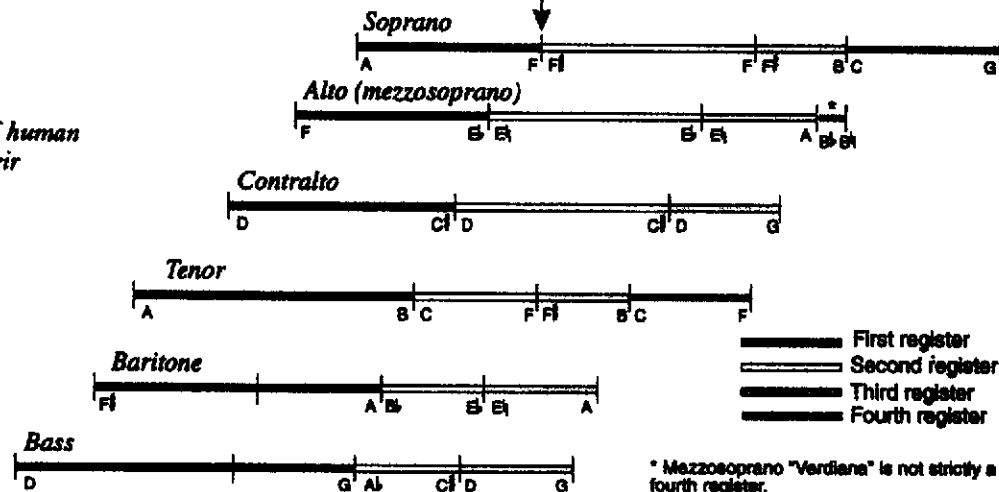
FIGURE 2. (a) The "quantum field" of bel canto vocalization. The bel canto voice is tuned to a well-tempered scale based on  $C = 256$  Hz, and exhibits resonant "wells" surrounding each note of that scale. If the performance pitch is raised or lowered by a significant amount from the natural scale, then the coherent resonance properties of every note are destroyed. Shown is the soprano voice, first to second register.



(b)



(b) The six species of human singing voice, and their registers.



133.<sup>139</sup> The development of further intervals lawfully, from such an initial set of the musical two intervals set by the three tones, defines implicitly, contrapuntally, the entirety of a four-movement Classical work in a sonata or string quartet, or symphonic form.<sup>140</sup>

At first glance, the novice musician might insist that the individual notes of this series—A, B, C—are primary, and that the intervals are recognized merely as a "distance between notes." That naive conceit is paradoxical; the paradox there might recall Plato's *Parmenides*

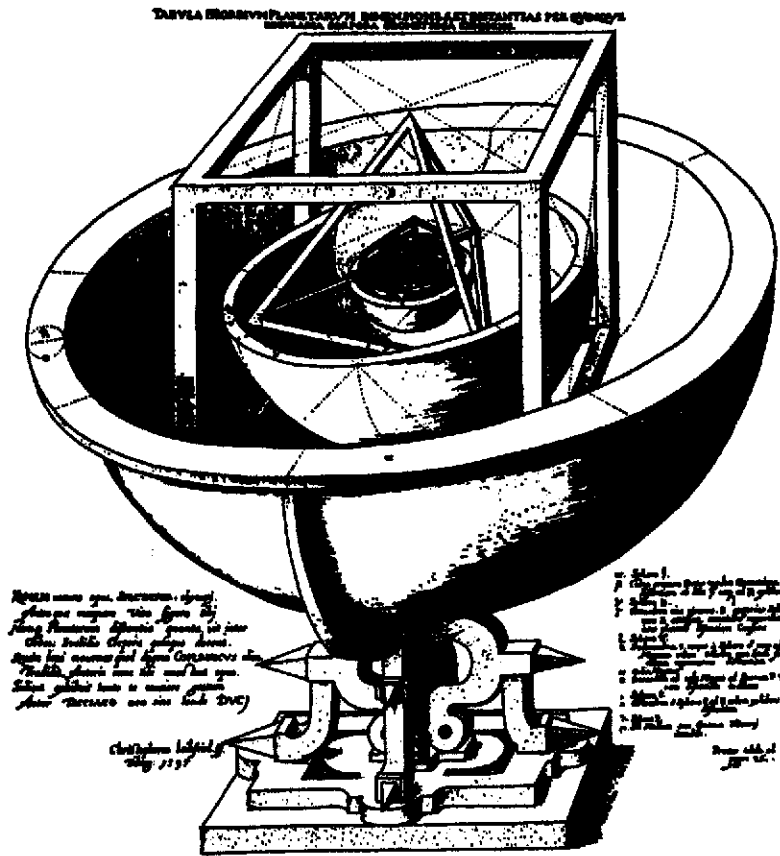


FIGURE 3. Kepler's model of the organization of the solar system according to the Platonic Solids (left), with a modern reconstruction (below).



dialogue to one's mind. The inability of a person to recognize the interval performed, is a widespread flaw which often shows itself to be at the root of a person's inability to exhibit a sense of how a musical passage should be phrased in the utterance. In any case, to cut short a relevant line of inquiry which belongs essentially, otherwise, to different locations, it is sufficient to recognize from study of the development of Haydn's *Motivführung* principle of coherent composition, that all among the great composers and musical performers defined music primarily in terms of a higher hypothesis-form of developmental relationship among intervals heard primarily as intervals *per se*. The notes associated with the performance of those intervals are the necessary notes, the derivative, *secondary* phenomena, occasioned—generated—by the primary reality of the relationship among intervals *per se*. Note, as a matter of emphasis, that in music, the interval *AB* is not the same as interval *BA*: the interval, taken in terms of the *analysis situs* which identifies the interval's species *per se*, is primary reality, and the note is, functionally speaking, but the shadow determined by the interval and the interval's

place in the musical domain as a whole.

In the relevant referenced work of Plato and Kepler, we witness not the application of geometry to musical matters, but the use of music to supply the needed metrical conceptions to mathematical physics, conceptions of ordering of intervals of a "quantum field." The axiomatic source of this metrical knowledge is the metrical characteristics reflected in the natural ordering of the physiology of natural (*bel canto* well-tempered) singing.

This consideration surfaces prominently in the matter of those Vedic hymns which convey much of our knowledge of the ancients' solar astronomical calendars prior to 4,000 B.C.<sup>141</sup>

The first appearance of written Sanskrit may have occurred as late as the second millennium B.C.,<sup>142</sup> yet the essential accuracy of the relevant calendar information is verifiable, and the dating to the vernal equinox in Orion is uncontested by relevant scientific scholars. So, if a written version of these poems were produced as early as during the second millennium B.C., there is still approximately 3-4,000 years minimally of an oral tradition, as the only apparent means of transmission of such



hymns and their content.

"How astonishing!" one hears. "These days, one can hardly get a good juicy rumor passed one time around the neighborhood block intact!" How can there be detailed accuracy in oral tradition passed down over thousands of years?<sup>143</sup> A famous musical quarrel between, on the one side, Friedrich Schiller, Wolfgang Mozart, Ludwig van Beethoven, and Franz Schubert, and, on the other side, Johann Goethe and Johann Reichardt,<sup>144</sup> points to an understanding of the essential role of *sung* poetry in sustaining a reliable oral tradition.

From the author's own modest experience years ago in composing bits of Classical poetry, he is able to say with certainty, that no serious Classical poet begins what he considers a successful poem, except as a kind of at-a-glance, "sparklike" mental image. From this mental image, and under its control, the workmanship essential to elaborating a competent poem is guided, as by its constant mere presence. One recognizes a kinship of the "spark" to the Haydn *Motivführung* as elaborated also by such others as Mozart, Beethoven, and Brahms. This "spark" is not merely a "One" constructed to represent a "Many;" it is the "One" from which flows the generation, creation of a corresponding "Many."

Consider the mnemonic qualities of Classical poetry, vis-à-vis conversational, or textbook prose. Consider the superior mnemonic qualities of Classical sung poetry. The key is, descriptively, the subordination of the selection and placement of the parts to the unfolding plenum of all the other parts, similarly selected and placed, is such a factor, that a partial memory of the composition is sufficient to prompt an accurate reconstruction of the detailed entirety.

Thus, Mozart's new form of song-writing, emulated by all great Classical<sup>145</sup> composers through, notably, Brahms' *Vier Ernste Gesänge* ("Four Serious Songs") Op. 131, exemplifies the connection between the poetic principle cited by Schiller and the Haydn-Mozart development of Haydn's *Motivführung* principle. On this account the species of such songs, beginning with Mozart's pioneering *Das Veilchen*, K. 476,<sup>146</sup> taken as a whole, serves today as a kind of "Rosetta Stone"<sup>147</sup> for comprehension of the common principle permeating Classical poetry, as defined by Schiller, and Classical musical composition.<sup>148</sup>

In this connection, Joseph Haydn's presentation, and first application of his *Motivführung* principle was a genuine fundamental scientific discovery. Yet, if we look at Mozart's use of J.S. Bach's "Musical Offering" in revolutionizing Haydn's own revolution, and examine Haydn's own struggles with the C-major/C-minor concept in his own pre-1780 compositions, we have a better view of the matter, a view relevant to the point immedi-

ately at hand in this location.<sup>149</sup> Think of the *Motivführung* principle of conscious practice as a Platonic higher hypothesis. Compare this discovery to Cusa's revolutionizing of Archimedes' quadrature of the circle. The principle, in both cases, was there all along, so to speak. The *discovery* lay in making that principle conscious; the *revolutionary* quality of the discovery lay in transforming practice according to the consciousness of that discovered principle, a principle of higher hypothesis. Yet, the discovered principle was always there, from the beginnings of spoken language.

Another aspect of this musical principle must be identified here. Music is the language of *rational* emotion, as opposed to the irrationalism of inarticulate emotion; it is not "soap opera" qualities of debased, maudlin sentimentality. Also, as Plato stressed, and as Classical Greek art is in accord with this, there is the central role of the Golden Section in defining artistic beauty in both music and plastic arts.<sup>150</sup>

So we have, *emotion* in correlation with *metrical characteristics of the continuum*, with the Classical definition of *beauty*, and with the ordering of the domain of *Classical musical composition*. This is also related to a principle of enhanced memory, as the case of solar calendars and Vedic hymns illustrate the case most forcefully.

Throughout the sweep of the history and known features of the prehistory of Indo-European language-culture, there is a manifest role of a principle of creativity, a principle typified by Cusa's ontological proof of the higher existence of the circular perimeter, a principle of higher hypothesis already manifest implicitly in the plain fact of discovery of astronomical-calendar cycles, thousands of years earlier.

## The Face of Evil

Yet, despite these good features of that language-culture, there is also the face of the Phrygian devil, Dionysus "The Deconstructionist," the drugged leer of dancing evil.<sup>151</sup> This, as we shall now consider this matter, is also the evil face of lecherous King Henry VIII's favorite sex counselor, the Venetian rogue Francesco Zorzi. This is also the face of Zorzi's English followers, the Rosicrucian devotees Francis Bacon, Elias Ashmole, John Locke, and David Hume.<sup>152</sup> This is also the face of such allied Delphic luminaries of the eighteenth century as Voltaire, Lord Shelburne, Adam Smith, Jeremy Bentham, and Immanuel Kant, and of such nineteenth-century sowers of bloody mischief as Giuseppe Mazzini, John Ruskin, John Stuart Mill, Thomas Huxley, and Bertrand Russell. Zorzi's cited philippic against the scientific method of

Nicolaus of Cusa is key to understanding the persisting root-cause of those spoiling evils which have afflicted modern European civilization.

*For the purposes of the historian, evil can be rendered intelligible as located within this problem of method.*

As Zorzi's attack upon Cusa illustrates this point, there are but two significant, mutually exclusive types of theories of knowledge—that is, of *method*—during the recent 2,500 years of European civilization. The one, exemplified by the referenced polemics of Zorzi and Bacon, emphasizes its asserted axioms of sense-certainty as the allegedly, exclusively primary source of individual knowledge; this it does as Aristotle did, and do all principal varieties of Aristotelianism. The opposite method, typified by Plato and the Christian Platonists, warns that sense-impressions are merely shadows of reality, mere phenomena, not the actuality which prompts those shadows. This latter, Platonic view of knowledge is the scientific world-outlook upon which basis the Golden Renaissance founded modern science, a century and a half before the original empiricist writings of Fludd and Bacon, or those of Galileo Galilei.<sup>153</sup>

The world-outlook consistent with Zorzi's empiricist dogma typifies the root of historical evil, as distinct from evil done by a relatively isolable person or small group of persons. In the same way, the Platonic standpoint, when merged with the Mosaic-Christian principle of *imago viva Dei*, typifies the search for truth, and thus for the Good.

Those introductory remarks on evil summarize the argument next developed.

The naive acceptance of some self-evident authority for "generally accepted classroom mathematics," typifies the axiomatic, wicked fallacies spawned by the empiricist dogmas of Zorzi *et al.* As has been underscored throughout this section thus far, the limit of even a transcendental (non-algebraic) theory of functions is defined formally by such equivalent proofs as Leibniz's *monadology* and Cantor's *Alephs*. In a merely negative way, Professor Kurt Gödel's sweeping exposure of the radical-positivist frauds of Russell and von Neumann,<sup>154</sup> warn the honest mathematician, that the theory of functions is reliable only as long as its inferior status is kept clearly in view.

At its best, all formal mathematics, or positivist mathematical physics, is the locating of actual or conjectured phenomena within a bare space-time lattice. This lattice is a supposed space-time, upon which such a mathematical physics projects the axiomatic assumption of those limited varieties of *analysis situs* which are delimited by notions of "greater than," "less than." We have already made reference here to proofs of the inherent fallacies which pervade super-densely such a mathematical phys-

ics, for which the related cases of Leibniz's *monadology* and Cantor's *Aleph-domain* have been designated as exemplary. On account of such proofs, the attempt to attribute the possibility of prime causality to such a mathematical function, is intrinsically, epistemologically, a fraudulent act—even for the case that the fraud may occur as the unintended folly of the unwitting perpetrator.

In modern times, the worst of the academically popular forms of such positivist ontological hoaxes, are the implicitly Rosicrucian algebras of René Descartes and the "Newtonians."<sup>155</sup> The attempt to define as a "classical physics," the lowest form of consistent mathematics, a mere algebra, is a hoax *per se*; this point was already ably demonstrated, crucially, by Leibniz *et al.* at the close of the seventeenth century.<sup>156</sup>

The absolute superiority of Leibniz, Gauss, *et al.* over their celebrated adversaries, such as LaPlace, Clausius, Helmholtz, *et al.*, is shown adequately in its essential features by acceptance of the elementary crucial evidence of the A.D. 1440-1697 period (e.g., hydrodynamics, speed, and refraction of light), which showed that, relative to a formal, Euclidean space-time geometry, the alternative, non-algebraic geometry, premised axiomatically upon circular (isoperimetric) least action, maps rather effectively, up to the limit of the *Aleph-transfinite, space-time position* of crucially singular phenomena (through space-time discontinuities). However, as stressed above, whenever the modern mathematician asserts falsely that all such apparent discontinuities can be reduced ultimately, each to some theorem of a transcendental mathematical physics, that false assertion discloses the pervasive unscientific element of incompetence in that mathematician's method as a whole. Those true singularities, which belong to a different *analysis situs*, therefore cannot be reduced to non-algebraic theorems, let alone algebraic (e.g., "classical Newtonian") ones; this shows the more brightly the fact, that non-algebraic notions of space-time also have such external limits; such space-time is bounded externally, ontologically, by existent processes whose existence is reflected paradoxically as "within the *Aleph-domain*."

This same ontological predicament was, and continues to be the fraud imbedded in the central axiom of Aristotle's method. Aristotle was, and is essentially a *nominalist* who substitutes for reality the fancied interplay among images of mere discrete sense-phenomena. Calling the same Aristotle a "materialist," as numbers of Marxists and others have claimed him to be, would be fair comment; all materialists are nominalists for the same axiomatic reason Aristotle the nominalist is also fairly described as a "materialist." Dwell briefly, now,

on this matter of the epistemological equivalence of materialism and Aristotelian nominalism; the usefulness of doing this will soon be made apparent.

The professed "materialist" prides himself in his belief in "solid empirical facts," otherwise called mere "phenomena." What are such phenomena? They are mental images of sense-impressions, perceptions. Such mental images, perceptions, of sense-impressions are the primary names which our perceptual apparatus gives to stimuli. These sense-impressions (*phenomena*) are used by the mind as substitutes for that which caused the stimuli, the latter termed the *noumena*. In other words, such sense-impressions are a substitute for reality; they are not reality. Conceded, that substitution of a sense-impression's image for reality, is not the same form of nominalism as substituting a mere word, a mere name, and its dictionary definition, for the image of a sense-impression. Yet, that much conceded, in both cases, the *nominalism* consists of the substitution of the "grammar" of a language for the causal relationships existing in reality. The *analysis situs* represented by grammatical relations is not congruent with the *analysis situs* of the causal relations in the reality "behind" the sense-impressions.

To illustrate the simplest aspect of this argument, refer once again to those famous primitive, but crucial experiments upon which Leibniz, the Bernoullis, *et al.* premise their justified ridicule of the mathematics of Descartes and Newton. (SEE Figure 4)

To repeat, in summary here. The description of this classroom demonstration of the principle of isochronism, the following:

Given, a two-channel raceway, for rolling balls, in the curved shape of an inverted cycloid [Figure 4(a)]. The lowest point of this cycloid is designated as Point 0 [Figure 4(b)]; Given, different Points *A*, *A'* along the higher reaches of the curve of the raceways. At Point *A*, attach a straight line raceway otherwise attached at Point 0, as seen in Figures 4(a) and (b); this defines the raceway channels now linking Point *A* to Point 0. Points *A'* and 0, however, are linked only by the two curved raceway channels.

Release two balls simultaneously at Point *A*, one along one of the two curved channels, the other down the straight-line channel. The ball rolling along the curved, longer pathway, will reach Point 0 first. Now, race two balls simultaneously upon the two curved paths, starting one from *A*, and the second from *A'*; both will reach Point 0 at the same time, whatever the position of *A'* along the cycloid-curved channels.

Add to this mechanical illustration of *isochronism*,<sup>157</sup> the fact that refracted light, moving at the relatively

constant speed of light, is governed by the same geometrical principle of isochronism.<sup>158</sup> This case for light was crucial proof for Leibniz's principle of *universal least action*, and, as noted, the absolute refutation of not only the algebraic formalism of Descartes and Newton but also the entire empiricist argument of Francesco Zorzi and his followers, the British empiricists as a whole.

It was asked, "Does light move universally in a straight-line pathway, as Euclidean algebra's axioms imply? Does the universe thus act under the kind of dynamical relations which Aristotle, Pomponazzi, Zorzi, Bacon, *et al.* attribute to "material 'phenomena' "? Are cycloids and Golden Sections, rather, the phenomenal form of reflection of the results of causal action? The latter, precisely; the experimental evidence presented in 1697 settles those questions conclusively.

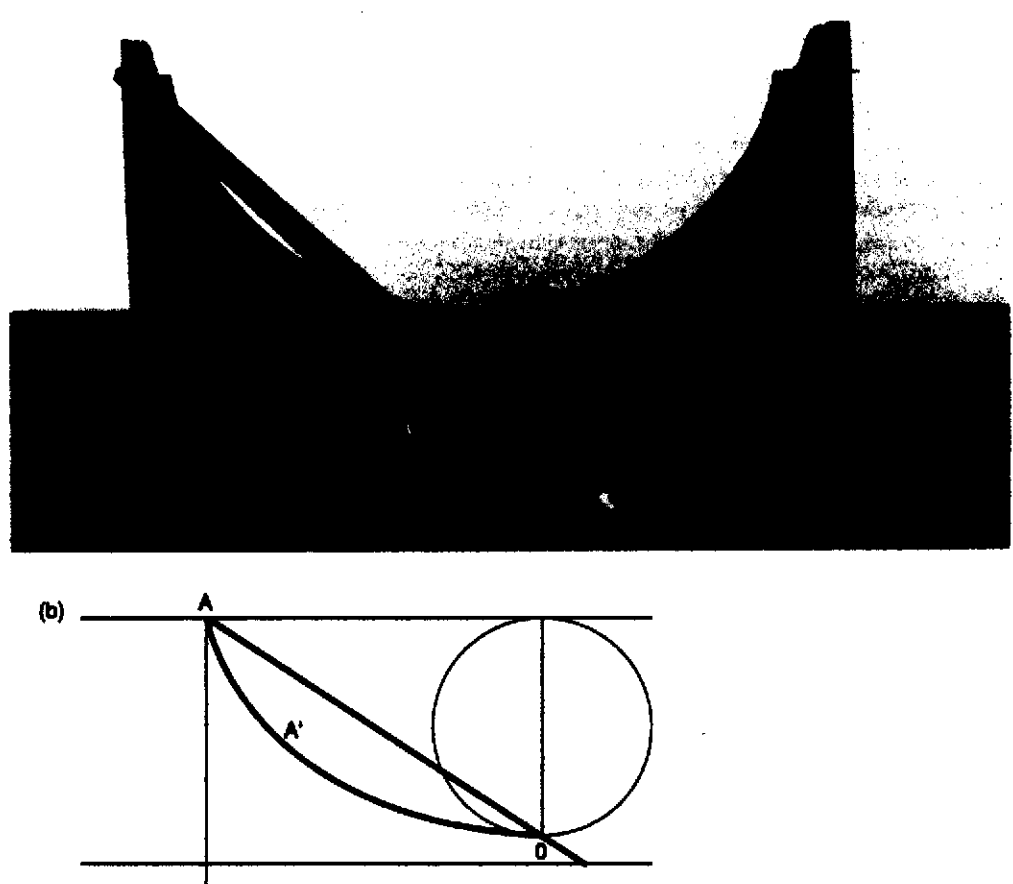
Once we had, thus, established the Aristotelian method to have been a nominalist hoax, how do we assess the evidence of our senses? How do we know, then, *with relative efficiency*, that *causal reality* which our senses do not permit us to see directly? Once we have discovered the necessary means for overcoming the perplexing difficulty, how do we then assess the evidence supplied through our senses?

It is possible to solve this paradox of realism, only from a Christian Platonic standpoint. On this account, pre-Christian Platonism and the standpoint of Confucius and Mencius have one, twofold principled defect; they lack the Mosaic-Christian notion of *imago Dei*, and the correlate, Christian principle of *capax Dei*.<sup>159</sup>

From the standpoint of the Confucian, like the Christian,<sup>160</sup> you and I, as individual persons, are accountable to all mankind past, present, and future, for both the intent and practical outcome of our actions, as this outcome affects the fruits of mankind's past labors and the conditions bequeathed to even distant future generations. "For God so loved the world, that He gave his only begotten Son, that whosoever believeth in Him, shall not perish but have everlasting life."<sup>161</sup> For the Christian, every day is our "Gethsemane," a time when, in some fashion or another, the cup of personal, individual responsibility for the *outcome of past, present, and future* is presented to us. This is a time when such a question obliges us, afresh, to examine ourselves most deeply, each day, to discover what known, and also hitherto unknown personal capabilities and resources might lie, either within us, or within our legitimate reach, for the purpose of meeting this new, personal challenge of history as a whole.

The motivation for such a response is supplied to the Christian by a quality which the Apostle Paul and the disciple John knew as *agapē*; love of the Creator and of

FIGURE 4. The principle of isochronism. (a) Model: inverted cycloid and straight-line raceways for rolling balls. A two-channel cycloid raceway enables comparison of the times for balls released simultaneously from different starting positions (A, A') to reach the bottom of the curved track, as shown in diagram (b).



mankind, a quality of self-known *imago Dei* and *capax Dei* informed by the image of Christ's Gethsemane and Crucifixion.<sup>162</sup> Yet, like the true follower of the wisdom of Confucius, the Christian venerates his ancestors, Christ in their midst, as the manifest, presence of conscience within the individual's memory; and, so, we consider present generations, and their posterity, into the indefinite future. Such is the standpoint of Plato, and the Socrates of Plato's dialogues<sup>163</sup>; yet, without the strict proof of the sovereign individuality of the person, and the notion of this *sovereign individuality* as microcosm, as the agency through which all humanity acts, uniquely upon the macrocosm, to change the macrocosm, the wisdom of Confucius, and scientific genius of Plato cannot be efficiently *capax Dei*, cannot be the willful shaping of the past, present, and future history of mankind.

Only from the Christian Platonist's standpoint can the answers to the underlying challenges be provided in an intelligible form. (True, formally correct answers, at least in part, may be uttered by Christians who are not Platonists in method; but their arguments cannot

be truly intelligible ones. Only a Platonic form of intelligibility of the principles of *imago Dei* and *capax Dei* is possible; otherwise, by use of Aristotle's methods, for example, the formalist argument must drift, necessarily, as it did for René Descartes and Immanuel Kant, into the direction of Manicheanism.)<sup>164</sup>

Consider, now, in review, several of the fundamental considerations distinguishing the Christian Platonist method.

1. *Imago Dei*: Man as a sovereign individuality in the image of the Creator. The person has this quality by virtue of nothing other than an inborn potential for a form of *creative reason* which imitates the Creator's process of creation. This quality of the person is *typified* by those *valid, revolutionary scientific discoveries* which are to be seen formally as rooted in successful *axiomatic transformations in scientific method*. In this matter, one should emphasize the notion of the succession of three *ontologically* distinct levels of mathematics, as described above.<sup>165</sup>

This quality of *creative reason* is shown rigorously

to be a *sovereign* characteristic of the solitary individual thinker, by the observation that all new creative *thought-objects* are generated originally within the mind of a solitary person, and are transmitted from one person to another, not as the *content* of a communication, but by the paradoxical stimulation of a solitary act of sovereign creative reason within the mind of another, the hearer.<sup>166</sup>

2. *Capax Dei*: The individual, *sovereign* person participates in the work of the Creator by means of acts which are *products of creative reason* motivated by *agapē*. These acts must be of a scientific-revolutionary *type*, whether in physical science, fine art or other dimensions.
3. The ontological principle of *change* (e.g., a notion of the *ontological transfinite*). That, valid expression of continuing, axiomatically revolutionary change, as a universal process of *continuing creation*, is a uniquely characteristic phenomenon which reflects, with relatively least inaccuracy, the causal principle underlying all phenomena.
4. The individual "soul," and its characteristic activity of agapic creative ("axiomatically revolutionary") reason, is the location of the true self-interest of each and all persons.
5. The proper business of society is the successful reproduction, development, and useful employment of such sovereign individual souls, each according to his or her such true self-interest, and to an overall effect which may be fairly described as centered practically on the effect of generalized, continuing, unending scientific and technological progress.<sup>167</sup>

Knowledge of reality cannot be obtained, except by employing that standpoint which is typified by the five, numbered points just listed. We state this case, after interpolating an indispensable introduction to the strict use of key terminology which we must now employ in this connection.

### 'Becoming' and 'Absolute'

From Plato, by way of such as Leibniz, and including Georg Cantor,<sup>168</sup> we Platonists make a strict distinction between the universe as it exists only for the Creator, and that same universe as it must appear, imperfectly, to the best of the capacities of mortal man. The highest form of elaborated, intelligible representation of the universe which may be made accessible directly to the consciousness of mortal man, is termed the *Becoming* (Plato)

or *Transfinite* (Cantor). This *Becoming*, or *Transfinite* stands in relationship to the Creator's mind as the polygonal process of quadrature stands with respect to the relevant ontologically higher existence, the circular action which bounds the polygonal process externally. The higher form, externally bounding the *Becoming*, is named the *Good* (Plato) or *Absolute* (Cantor). If the formal and ontological distinctions between *Transfinite* and the *Absolute* are recognized, what we shall say, thereafter, on the *Transfinite* should not be badly misunderstood by the careful reader.

One key to intelligible grasp of this ontological distinction has been supplied by our reference to *isochronism*. E.g., given a falling (e.g., rolling) body, whose descent is constrained by a track in the form of an inverted cycloid: the time required for the ball to reach the 0 point is independent of the distance which that ball must travel. Since the premise of retarded propagation of all electromagnetic radiation is coherent with the principle of isochronism *this isochronic principle of least action* is a universal characteristic of *physical space-time*.

That notion of isochronism is the first of two crucial facts to be considered in clarifying the distinction to be made, here between Cantor's *Transfinite* and *Absolute* (as between Plato's *Becoming* and *Good*). The second notion is the idea of *change* as seen in conjunction with isochronism.

The terms "Becoming" and "Time" are interconnected. "Becoming" is change occurring in time. "Becoming" is, thus, a notion which is situated for us in a space-time the which is intelligible for us in terms of an ordering by "greater than," "less than." What then of isochronic change? For all points,  $P_i$ , on the cycloid which are not coincident with 0, the lapsed time of constrained "free fall" from each of all points  $P_i$  is a constant?

Attack that formulation by aid of the following simplified, extreme case. Return to Figure 4(a). Imagine that the straight incline is joined to the cycloid track at the upper extremity Point  $A$ . Let this straight-line track be significantly greater than a light year in length. Now, locate Point  $A'$  on the curved track, a minute's "free fall" time from 0. Does an object traverse the cycloid pathway  $A0$  in a minute's time, as the isochronic principle might be misread to argue? If it does not mean that, how do we reconcile this apparent anomaly? Since we are referencing "speed of light" ("light years"), what occurred in Jean Bernoulli's 1697 domain of refraction of light to reconcile the apparent contradiction?<sup>169</sup> Is a singularity generated perhaps? When, where, and how?<sup>170</sup> For these and other examples of the notion of isochronic least action, the necessity of an *Absolute*



external bounding of space-time is generated according to the same principle of *higher hypothesis* permeating Cusa's, Leibniz-Bernoulli's, and Cantor's solution to the paradoxical effort to square the circle. This gives us not a perfect, but nonetheless, an intelligible if negative conception of the ontological necessity for the existence of an Absolute externally bounding *space-time*.

The ontology of physical space-time is *change*, the quality of change typified by the original discovery of a valid, axiomatic-revolutionary improvement in scientific method. This is the ontological quality of that *change* which is the defining event, defining the occurrence of Becoming in space-time. The generalization of such change, is the generality of hypothesizing changes in the higher hypothesis. This is also the basis in negation for an external oneness bounding all such change.

These two, imperfect but nonetheless intelligible approximations of the notion of an absolute, have the immediate merit of making intelligible to us the difference between the microcosm of our view of our efficient actions in the Transfinite of physical space-time's Becoming, and the Creator's view of the same efficient actions in the terms of reference of the Absolute which bounds externally space and time. With those cautionary observations on the Absolute, we may now concentrate upon history as Becoming within the Transfinite domain of physical space-time.

## Microcosm and Macrocosm

The relatively most obvious point of convergence, between what we have indicated as the Confucian standpoint<sup>171</sup> and Christianity, is the situating of oneself, consciously, and axiomatically, efficiently in the unified real history of past, present, and future. This standpoint is the keystone of the book which founded modern science, Nicolaus of Cusa's *On Learned Ignorance (De Docta Ignorantia)*; the relevant terms which Cusa employs there, are *Microcosm* and *Macrocosm*.<sup>172</sup> This standpoint is key to the possibility of true human knowledge; it is also the key to understanding the practical root of the difference between good and evil.

Within Cantor's Transfinite domain of (implicitly) physical space-time,<sup>173</sup> the mortal individual senses permit the emergence of but two ostensibly rational types of mutually opposed, alternative theories of knowledge.<sup>174</sup> These two theories are typified, respectively, by the Platonic and Aristotelian methods. As Leibniz and Sun Yat-sen tend to show, the moral mutual opposition of these two Indo-European types, is paralleled by the conflict between the Confucian and Taoist-Legalist heritage within the history of China.<sup>175</sup>

Although there is no competent rival to the tradition of Platonic method in the work of science, fine arts, etc., it was Christianity which transformed Plato's heritage into a still yet higher form, by subjugating Plato's scientific method to further development, according to the principles of *imago Dei* and of *capax Dei*. This correction defines the human agency of universal, ontologically transfinite *change*, the human agency which generates hypothesis and higher hypothesis, to be situated entirely within the sovereign individual creative personality. This creative person, if so developed, is the *microcosm*; successful change in upward development of mankind's self-reproductive, self-developing relationship to the universe as a whole, is the unperfected reflection of, empirically, the corresponding *macrocosm*.

If one denies such a primary, immediate relationship between the sovereign individual personality and the well-being of (past, present, and future) mankind, as do the Aristotelians, the empiricists, the existentialists, the Taoists and Legalists, or the Zen Buddhists, those who reject that primary connection of *microcosm* and *macrocosm*, oblige themselves, as John Locke did, to fall to the lower depths of human sensuality, to near the level of human individual *qua* animal, to a morally depraved condition represented by a supposed *tabula rasa*. Such an unfortunate wretch is thus self-obliged, at best, to delimit the definition of the word "knowledge," to a more or less Kantian, ostensibly rational form of constructions, using only sense-certainties as building-blocks. This, exemplified by the empiricist follies of the immoral John Locke, is fairly described as a formalist guise for the root of all evil, the poisonous fruit of China's Legalist heritage included. In brief, this evil has two quasi-categories of interrelated expression; first, the motivational, and, second, the method for defining knowledge. Examine the case for the latter aspect of the matter first.

By means of that same faculty of creative reason, which enables the student to follow Cusa in recognizing circular action as ontologically a higher form of existence than mere algebraic ideas, we may recognize that certain types of sovereignly individual personal thought and action are characteristically beneficial to the vital self-interest of past, as well as present and future generations. By means of the same "divine spark of reason," we may reach higher, to discover that these beneficial types of thought and practice all flow from both the original generation and related regeneration of "axiomatic-revolutionary" changes in the existing state of scientific or related method (in the Classical fine arts, for example).

If the student has enjoyed a Classical humanist form of secondary education in the Groote-Schiller-Humboldt

tradition, the student has relived the act of reproducing many important original discoveries, tracing from original sources the successive, rigorous steps of Socratic reasoning which lead through the posing of a crucial paradox, to the thought-object which is a replication of the original breakthrough itself.

The intermediate result of such a preferred quality of education is aptly compared to the "One, Many" ontological paradox of Plato's *Parmenides* dialogue. We restate, as succinctly as seems allowable, a point we have made repeatedly in other locations.<sup>176</sup>

The student's developing situation is this. Each time the student starts from an original source, or equivalent source, to replicate an original "axiomatic-revolutionary" discovery, the student is generating, in his or her own mind, the state of mind experienced perhaps hundreds, or even thousands of years earlier, in the consciousness of the original discoverer. Since the discovery involves explicitly the creative powers of mind, of both the student and original discoverer, not only does the student replicate some relatively more important living moments of the life of the original discoverer, but the mental relationship to that discoverer, thus constructed, is of a most exceptional quality. Thus, that original discoverer's consciousness, so replicated lives on in the student's mind; so, such reconstructed conscious moments of numerous original discoverers come to populate the mind of that student.

The matter does not end there. The internal history of Platonic science<sup>177</sup> has an isochronic ordering. This ordering is premised upon the *analysis situs* principle of "necessary successor" and "necessary predecessor." So, level of mathematics *A* is the necessary predecessor of *B*, and *B* the necessary successor of *A*. Without the paradox, intrinsic to *A*, *B* could not be prompted; *B* is the only available solution of *A*'s characteristic paradox<sup>178</sup> which can be accessed directly, as Cusa did, from *A*. Thus, *B* is the necessary successor of *A*. All valid scientific discoveries form implicitly a lattice of creative-reason's "non-linear" linkages, in terms of this type of *analysis situs*. Consequently, from this standpoint, that lattice is implicitly a unity. So the solution-principle for Plato's *Parmenides* is echoed for this case, the solution-principle which is of the form of higher hypothesis.

Such a preferred form of Classical humanist education poses to the student, in this way, the task of applying the same creative reason which that student has employed to master each of the original discoveries reviewed, to integrate these many individual discoveries into a *One*. Thus, the student is challenged, to rise from creative reason in its form as axiomatic-revolutionary hypothesis, to its ontologically higher, externally bounding species-

form, higher hypothesis.

It is the same in Classical music as Platonic natural science; the same kind of *analysis situs* applies to the lattice of Classical forms of musical composers, from Bach through Brahms.<sup>179</sup> Familiarity with scores will not do. One must treat musical discoveries, such as that of J.S. Bach's "Musical Offering," or Joseph Haydn's revolutionary *Motivführung* as was indicated for original discoveries in Platonic science.<sup>180</sup> In the case of Classical music, the existence of an axiomatic-revolutionary lattice is marked out for us through the wide radiation of Wolfgang Mozart's unification of Haydn's *Motivführung* with the crucial contribution of Bach's "Musical Offering."<sup>181</sup> One must learn the axiomatic-revolutionary characteristic of works—or, of groups of works—by a Classical composer, otherwise the essential features of Classical composition will never be apprehended.

*Scientific progress* is ontologically the change represented by every development which conforms to the special kind of *analysis situs* we indicated for a lattice-ordering of original axiomatic-revolutionary scientific discoveries. This scientific progress, so defined, is a *One*. By aid of this view of the matter, the student graduating from the preferred quality of Classical humanist education is enabled to situate his or her own individual scientific practice with respect to past, present, and future science as a whole, and to society past, present, and future as a whole.

We see thus the unavoidable interdependency of morals (motivation) and scientific practice. Scientific practice, in turn, can be nothing other than axiomatic-revolutionary development of scientific method in the global-historical "lattice form" ordered by the *analysis situs* of "necessary successor," "necessary predecessor." This defines persons as *relatable* in science solely upon the basis of the same axiomatic-revolutionary quality of creative reason which defines the lattice's *analysis situs*, and which defines the sovereignty of the individual person. Thus, such a person's essential self-interest is knowledge for practice which meets this lattice's global-historical standard.

We have now situated the type of proof which shows these principles of knowledge to subsume science, music, and geometry. This type of proof shows why the linear grammatical structures inherent in any spoken language cannot contain, in any explicit or symbolic way, the class of ideas—"Platonic ideas" or "thought-objects"—which correspond to characteristic acts of creative reason. The relevant function of language in the service of creative reason, is to generate true paradoxes, genuine *metaphorical singularities*. Thus, the communication of reason is only reflected upon the use of spoken language, by *metaphor*.<sup>182</sup>

Evil begins with the rejection of the efficient interdependency between the creative reason of the sovereign individual personality (microcosm) and the macrocosm; then, feral cleverness substitutes itself for reason. Evil is Adam Smith's doctrine:

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 entrusted 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.* [emphasis added]<sup>183</sup>

This is not merely evil; the acceptance of that social outlook destroys the social basis for arriving at knowledge. We do not know because of sense-certainty. We know to the degree nature's changed response to mankind accords with the intent of our changes in scientific method and related practice.

To know the changes in scientific method, we must know the scientific method of successful successive change, as that is embodied uniquely in the higher hypothesis. That requires the historical view of the internal history of scientific discovery typified by a preferred quality of Classical humanist education. That requires also an assessment of the benefit of scientific progress for those parts of humanity who have access to this. Without the standpoint of microcosm/macrocosm, scientific knowledge is not possible. Rather, science is degraded to the sterile linear grammatical principle of the syllogism, and scientific practice is replaced by the mere administration of subjugated people and objects.

There is a worse degree of evil than the Locke-Smith standpoint: the outrightly satanic impulse of destruction of civilization typified by Friedrich Nietzsche, the "Frankfurt School," and the "Aquarian" existentialists generally. The first degree of evil is Voltairean libertarianism, asserting one's insolent disregard for moral authority—the intelligible authority of natural law; the

substitution of mere ethics for morality, is an illustration of this degree of immorality.

"You are not a moral man." "Aha. But, I am ethical."

Contrast the immediately foregoing picture with that widespread, quasi-Manichean view, which separates personal morality, that latter as a matter of church-goers' profession of faith, from politics. Perhaps, arguably, more evil is done by such "moral" citizens' *sins of political omission*, than by all the criminally certifiable thieves and murderers combined. The sobriquet "Manichean" is mandatory for such cases as nominally Catholic Michael Novak's apologies for Adam Smith's explicitly gnostic religious dogma of "free trade."<sup>184</sup> Novak's shameless paganism reflects the root of that savagely self-destructive, insanity which has impelled a procession of the United States' now-vanishing "Midwestern farmers" to disappear, like sheep at the slaughter-house door, into the Moloch-maw of the grain cartel.

We stress again now, that a defensibly "Christian" form of belief is derived exclusively from the union of the Mosaic-Christian notion of *imago Dei*—of man's creative reason in the image of the Creator—with the method of creative reasoning as typified by the anti-Aristotelian method of Plato. As we have indicated, the central feature of an *intelligible* form of belief in a Creator is the famous *ontological proof*, ostensibly original to Plato, and affirmed for modern times by Leibniz.<sup>185</sup> This ontological proof is, we indicated earlier, identical in *type* with the proper solution to that ontological paradox posed, as the One-Many problem, by Plato's *Parmenides* dialogue. Our example of the three levels of modern mathematics typifies all of the arguments which define the verb "to create"; the interdependency of "change," as that latter term is applied to the paradox of *Parmenides*, with this definition of "to create," is the basis for the proof of the *necessary existence* of God, the Creator. No other type of intelligible proof is available to the mind of mortal man; all other assertions are professions of "blind faith," not susceptible of proof.

Formally, the teachings of "blind faith" may appear to coincide, as *instruction*, with a truth which cannot be known by mere "blind faith," but only through the intelligible processes of creative reason. The essence of Adam Smith's (and Michael Novak's) flagrant, Manichean heresy,<sup>186</sup> is not merely that it conflicts with the explicit instruction of the Christian church down through the ages. The essence of the issue is not merely a formal matter of teachable dogma, but, rather, a practical matter of creative, e.g., Platonic, *intelligible* reason. The issue is not that Novak's opinion is nominally opposite to that of the church to which he professes to adhere. This is an issue of truth versus falsehood, of evil, which

goes beyond any mere "difference of opinion." Adam Smith's argument, e.g., Novak's, is premised axiomatically upon an evil assumption, a rejection of that macrocosmic accountability of each microcosm, the which is the indispensable root of a *type* of policy upon which the continued, longer-term survival of civilization depends absolutely.

It is only as we define the actions of the individual person so, that the principle of history is rendered accessible to our understanding.

Insofar as individuals merely repeat the traditional practice of their society, as in production, for example, there is little to nothing visible in the character of their behavior to distinguish them from mere brutes. In that case, there is no progressive *change* in the axiomatic character of a progressively developing body of ideas governing the reproductive practice of that society as a whole. Such is a form of a degenerate culture, a form of culture which must be destroyed (but, obviously not the persons trapped within it) to ensure the survival of mankind.

When the individual recognizes his or her contribution to the generation and regeneration of progressive (creative) axiomatic changes in ideas for practice, as his or her essentially human activity, and when that person comprehends such individual activity in terms of the microcosm/macrocosm interdependency, not only does that individual become a moral, true person—not a degenerate, but on the basis of his orientation of personal practice, and on the basis of a correlate sense of personal social identity within an integrated past, present, and future, that person becomes capable of true human knowledge. For that person, morality is not a matter of "blind faith," but is, rather, an intelligible morality.

In contrast, the person who adopts the rejection of creative reason, and rejection of the macrocosm/microcosm standpoint, is as Novak's following of Locke, Hume, and Smith expresses this degeneracy,<sup>187</sup> and is not capable of being, at the same time, either a moral person, or of understanding that Platonic standpoint in scientific method common to Plato, Cusa, Leonardo, Kepler, Desargues, Fermat, Pascal, Leibniz, Riemann, *et al.*

It is the combining of three features of our view of this matter, through which these issues of history are rendered not matters of blind faith's opinion, but, rather, intelligible objects of creative reason. The three are, once more, as follows:

A. Creative reason as the successful generation of axiomatic-revolutionary forms of change in the lattice-theorem form of ideas efficiently governing human prac-

tice in respect to the integrated whole of past, present, and future.

B. That axiomatic-revolutionary change is located, according to the Platonic principle of hypothesis, in a corresponding, *transfinite* view of the efficient place of individual's creative reason in the *oneness* of integrated past-present-future.

C. That *knowledge* is the effort to perfect the process of hypothesizing the higher hypothesis, by means of locating the corresponding development of one's own powers for creative reason as a Classical humanist education does, in the view of one's creative-reasoning self, as microcosm, in an efficiently reciprocal relationship with the macrocosm.

Without the sense of personal self implicitly defined by those three, interdependent facets of one's active existence, there can be no *intelligible* form of proof for *morality (natural law)*, nor a valid scientific comprehension of empirical results.

The locating of individual creative reason in this efficient relationship of microcosm to macrocosm, is the transfinite form of practice which is intelligibly bounded, externally, by the necessary existence of that Cantor *Absolute* which corresponds to Plato's *Good*.

Only a person so self-defined can be a truly moral person. Only a matured form of such a moral person can become what Plato identifies as "a philosopher-king."<sup>188</sup> Only such a "philosopher-king" can be adept as a leader in the willful, effective shaping of the historical process. Only one qualified in this fashion, to address the axiomatic features of that implicit higher hypothesis which governs the present course of history's development, is able to devise the means in action for effecting the needed axiomatic-revolutionary changes in implicit higher hypothesis.

## Transforming Evil Into Good

Perhaps the best of those followers of Leibniz who grasped Leibniz's "best of all possible worlds," was the historian-tragedian Friedrich Schiller. Schiller's greatest tragedies were artfully successful by design, in causing calamities on the Classical stage to transform the members of the audience into better people. So, the death of a dear one, or a great personality, prompts us to value the true, durable accomplishments of an individual mortal life all the more; like audiences from the theater where the Schiller tragedy had been performed in the Classical manner, the wise mourners leave the requiem better people, letting death enrich life.

So we must view our populist wretch of a fellow-citizen, whose immoral, Lockean form of individualist sense-certainty works politically to arguably criminal effects upon the United States, and other parts of this planet. Let our recognition of the evil permeating this fool's self-righteous posturing prompt us to love the microcosm/macrocosm interdependency the more. Let us also recognize the specific kinds of axiomatic-revolutionary change which must be induced in our populace, to transform them into moral persons.

More broadly, it is by taking the negation of life, the conditions which must be changed, more or less promptly, and urgently, that we are led to discover those among the implied axioms of presently prevailing opinion which must be uprooted, that as a precondition for averting the disastrous consequences inhering in currently prevailing trends of opinion-shaping. Thus, respect for popular, or for putatively authoritative opinion, is often the surest sign of the sincere immorality of the credulous person. Thus, the beginning of wisdom, and hallmark of morality, is discovery of that radically anti-populist, radically anti-Lockean, radically anti-positivist fact, that neither prevailing popular, nor official opinion contains intrinsically a measure of truth, or even of mere good taste.

Such a radically anti-populist, radically anti-positivist morality is expressed in a practical way by those sorely needed economic-development programs, the which address the cruel evil of global want. Such is the moral quality of those long-overdue, crucial scientific breakthroughs which demolish the disgusting smugness of academic teaching of the imbedded fallacies of current peer-group opinion.

That type of radical negation is not arbitrary, not capricious. It has no kinship whatsoever with the blind, irrational insolence of the fascists, the radical Zionists, or other effluvia of existentialist philosophical anarchism.<sup>189</sup>

The *motivation* for our choice of radical negation springs from a commitment to the principle of *imago Dei*. The *form* of our radical action flows from *capax Dei*, the accountability of each of us, as *imago Dei*, as *microcosm*, for the outcome of the integrated past, present, and future of all mankind, the *macrocosm*. Thus, we know, does the Becoming, the Transfinite, aim efficiently toward atonement with the Good, the isochronically timeless Absolute. Such is the *desideratum* which properly guides the individual in his or her contribution to the making of history in its entirety.

Thus, creativity for its own sake, as *imago Dei*, is the motivation of the moral person in history. Thus, do Leonardo da Vinci, Kepler, Leibniz, Johann Sebastian Bach, Haydn, Mozart, and Beethoven stand out, far

above their putative professional peers, as essentially moral persons. Yet, despite moral persons, evil occurs, evil exists. How is the occurrence of evil possible, in this "best of all possible worlds"?<sup>190</sup>

As we have considered this question, in other locations, the paradigmatic illustration of the proper answer, is the spectacle of members of an audience emerging from a Classical theater better persons than when they entered, by means of a tragedy of Friedrich Schiller. Evil, as the subject of the tragedy, has challenged the creative powers of the individual members of that audience. This eminently desirable effect is not accomplished by the evil as such. Evil is horror, it is disgusting, altogether repulsive; to accommodate pragmatically to the reality of evil is self-degrading, not ennobling. The miracle of the Schiller tragedy is, as Schiller explains this, the principle of the *punctum saliens*,<sup>191</sup> the "jumping-off place," from whence, in space-time, the prevailing opinion might have been successfully violated, overturned, this to the effect that the ugly, tragic outcome might have been averted.

In the tragic drama of real life, offstage, the curious but efficient collaboration between this writer and President Ronald Reagan, the SDI back-channel negotiations of 1982-1983, and the March 23, 1983 televised announcement, was a Schilleresque *punctum saliens*, as this writer described Reagan's pending announcement in a public address given by himself at the close of 1982.<sup>192</sup> Similarly, the collaboration, centered upon the relationship between this imprisoned writer and his wife, in the closing months of 1989, launched the "Productive Triangle" program.<sup>193</sup> That "Productive Triangle" remains, to this day, a Schilleresque *punctum saliens* in the ongoing sweep of current history.

The refusal by some to face the reality of evil, as occurring in this "best of all possible worlds," is a useful illustration here.

For those who have grasped the nature of our individual relationship, situated mortally within the Becoming, to the Absolute, Schiller's view of tragic evil is more or less readily comprehensible, and therefore also acceptable to our understanding. Unfortunately, most persons, still today, are immorally selfish, even in what many of them would describe as their "personal relationship to Jesus Christ." Typical populists, their primary concern is "what can God do for me?" They delude themselves, that they might possess, or obtain a business-like "covenant" with God, replete, perhaps, with the Creator's notarized signature. Nothing is so remote from such greedy little populist's land-grabbing souls, as our notions of *imago Dei* and *capax Dei*. For almost anything which annoys these shrunken little souls, they are about



as wont to blame God, as they do ritually, senselessly, "those politicians in Washington." Essentially, these miserly whiners will do virtually nothing, with the slightest perceived risk involved, to remedy the evils of which they complain so bitterly, so ritually. Above all, as rapturously as such Lilliputian souls profess to seek Paradise, they would be horrified by the climate of the Absolute. They do not wish to live forever with the Creator, as Cusa and Leibniz do today, within His timeless Absolute; they wish Him to provide their infantile mortal selves a perpetual playpen, an ethereal refuge for the endless perpetuation of their small-minded utopian fantasies. They thus reject the timeless Absolute, for an endless procession of time, a "bad infinity" called "eternity."

Of the macrocosm, these poor folk wish to know nothing. For them, God is not the Creator, but rather, the manager of their bank accounts, their love affairs, their personal health, and sundry other local matters. Thus, they do not pray to God so much as they wish to prey upon His limitless toleration for their pathetic little selfishnesses.

Such poor-spirited, professedly Christian populists, and like-minded atheists, are an ever-ready constituency of fools for the sundry "free trade" cults of today. They have proven themselves, repeatedly, to be likely dupes of any loud-mouthed buncombe artist of the "Elmer Gantry" pulpit-type, such as Professor Milton Friedman or Senator Phil Gramm, who purport to explain almost anything, from astrophysics to ribosomes, with disgustingly crude household recipes. Their credulousness of this type is rooted, symptomatically, in their still-lingering, compelling, childish impulse to raid mother's cookie-jar. As their propensities for disgusting gossip reveal nothing so much as their own sick souls, they are obsessed by an empiricist's delight in his own putrefying sensuality, his stoicism, his degraded epicureanism, his pathetic, but persistent sexual whimsies and kindred thoughts. To dwell for all time, above time, in the Creator's timeless Absolute, has no attraction for such poor fools.

If evil, which may take, inclusively, the form of occasioning one's own suffering, prompts the Classical audience of a real-life Schiller tragedy to become better people—by the Creator's yardstick—that latter gain means nothing to the typical, selfish populist, including among the latter the professedly Christian types. That imagery illustrates our working point here.

Consider, in this same context, two relevant, mutually related terms, "rights" and "freedom." Then, we shall return to our "best of all possible worlds."

For the Christian Platonists, all rights of persons are derived from a naturally intelligible body of *natural*

*law*.<sup>194</sup> In that way, all inviolable rights of individual persons, of family households, and of sovereign nation-states are derived from the naturally intelligible, complementary, and interdependent notions of *imago Dei* and *capax Dei*, as these terms' meaning has been elaborated above. Without those concepts, you have no *recognized* human rights; in any society which rejects the notion of *imago Dei*, you have no human rights under the law of *that* society.

To the point, perhaps the most wicked act perpetrated during the recent history of the United States government, was the appointment of Freemasonic Ku-Klux-Klaner Hugo Black to the U.S. Supreme Court.<sup>195</sup> Black, whose crucial actions on that court's bench reflected the treasonous, satanic professions inhering in the Confederacy's Pike Freemasonry, attempted, with significant ultimate success, to obliterate the existence of any notion of a *natural* human right for you, your family, and even our sovereign federal, constitutional republic, by his promulgation of a literally Luciferian dogma of separation of *Christianity* from state.<sup>196</sup>

Only the Mosaic heritage of *imago Dei*, as represented otherwise by apostolic Christianity<sup>197</sup> and Islam, recognizes human rights as an Absolute of *natural law*. Without that natural law, you have no personal human rights of that sort, but only a poor substitute, a fragile Lockean covenant enacted by the convenience of a state. Without acknowledgement of God the Creator, the "inalienable rights" of our U.S. federal constitutional law cease to exist in principled U.S. legal practice. Atheists, in short, are persons who have implicitly denied the existence of "inalienable human rights," leaving only those "animal rights" precariously perched upon the spear-point of tribal hunting customs.

The notion of *freedom* is just so situated, too. Under natural law, "freedom" does not mean "choice"; "freedom" signifies a *natural law* right, the *naturalness* of those types of *creativity* echoing the Creator's nature as the only fit moral condition of knowledge-seeking for man as *imago Dei*. You do not have a natural-law right to be of mistaken opinion; truth is not degraded to be on a par with falsehood. You have, rather, not the "right to err," but the right to use error as an instrument of discovery of truth. We supply what should be the obvious illustration at hand; refer to our discussions of the three levels of mathematics.

Is *A*, the algebraic lattice, wrong? If we insist on placing it on an equal footing with *B*, it is wrong. However, insofar as we employed it, by such included means as posing the quadrature paradox, to reach *B*, it is not wrong in that way. It is not wrong to teach *A* in that way to children in school, provided that the teaching

method employed is the Classical humanist method, as typified by the work of Groote, Thomas à Kempis, Schiller, and Wilhelm von Humboldt.<sup>198</sup> The truthfulness of opinion, in this respect, lies in regarding the direction of development of opinion as a unity of a manifold process of Becoming.

Opinions are not politically equal. Superior to all contrary opinion is that which is consistent with the implications of *imago Dei*, the unifying creative process of perfection of faulty manifold opinion. Truthfulness lies in a method reflecting that creative principle from which all natural-law right is derived.

From this standpoint thus underscored, the notion of a "best of all possible worlds" is accessed with considerably less difficulty.

Whether one chooses to acknowledge this fact, or not, all persons are demonstrably possessed of that potential for creativity which is exemplified pedagogically by Cusa's use of the Platonic principle of *necessary existent* in solving the paradox of circular quadrature. All persons are *imago Dei* in this fashion; the human race is those individual human beings who share this essential quality of being human, being *imago Dei*; those living entities which lack that quality of *actual potential* are, by definition, not human. There are no human "races"; there is only the one human race. All who teach to

the contrary lie.

Thus, all persons are potentially capable of responding to error as Cusa *et al.* responded to the manifest error of algebraic mathematics (*A*), to generate the anti-Descartes, anti-Newtonian, non-algebraic physics of Leibniz *et al.* This is the right Classical-humanist principle of all education of the young, the right principle of all scientific, artistic, theological, and political deliberation. This human capacity to respond to error, as Leibniz condemned the errors of Descartes and Newton, is the proof that ours is "the best of all possible worlds." Even the error of evil is not immune from such conquest by the creative principle of *imago Dei, capax Dei*.

That is the kernel of Leibniz's "best of all possible worlds"; that is the key to Schiller's principle of the *punctum saliens* in tragedy, and real-life history.

The comprehension of the essential unity of this process of discovery, of Becoming, so defined here, up to this point, is the kernel of a unified knowledge of history. Ignorance, want, and suffering, become the goads which prompt the relatively noblest persons among us to develop the good which is scientific and technological progress, and to develop those anti-usury programs of economic development which are indispensable for conquering the evils of ignorance and want throughout our planet, and beyond.

## 3.0



# China's Role in The Twenty-First Century

For reasons stressed by relevant specialists, we cannot rely upon putatively original literary sources for an internal account of the cultural history of China.<sup>1</sup> Here, the deductive methods of Sherlock Holmes are plainly even more useless than is customary for them; the contrary methods of Edgar Allan Poe's fictional, and the Ecole Polytechnique's original Auguste Dupin must be employed instead.<sup>2</sup> Or, in place of the worthy Dupin, his teacher's real-life teacher, Gottfried Leibniz.<sup>3</sup> The problem for understanding China's integrated, potential past, present, and future is a paradox in method.

The precondition for any European's study of any culture foreign to him, is the preparatory work of painfully rigorous, Socratic study of the past 8,000 years of his own, combined Indo-European and Christian culture. Otherwise, lacking such prerequisite competency, he should not meddle much, and never present himself as an expert on India, or China, or other Asiatic cultures in particular. Leibniz's own approach to the subject of ancient China, illustrates the required method, and is paradigmatic for us today. The approach taken by such followers of Leibniz as the famous von Humboldt brothers illustrates the way the internal features of Indo-

European language-culture, and of other cultures, too, should be approached.<sup>1</sup> That is the approach developed also, skeletally, in the preceding section, here.

Once these prerequisites are satisfied, we should begin our study of ancient China's culture from the standpoint of Indo-European astronomy as did Leibniz, and as Tilak approached the study of the Vedas.<sup>5</sup> The manner in which a culture constructs and develops a solar astronomical calendar into a long-cycle elaboration, is the principle for selecting our first choice of evidence in our efforts to map the characteristic features of the Chinese mind's best traditions.

Our method, in short, is the method for addressing an operating *type* of higher hypothesis. It is the method for solving the *One-Many*, ontological paradox of Plato's *Parmenides* dialogue. It is the method of "the necessary existent" associated with the ontological proof for the existence of God, of Cusa's non-algebraic solution for the Archimedean (ontological) paradox of quadrature of the circle, and the method of "necessary and sufficient reason" of Leibniz. We proceed as did Leibniz, with the work upon China's astronomy by the relevant missionaries.

As we have shown the reader thus far, the key to the primary division between a culture's internal tendencies for good and for evil, centers respectively, of necessity, upon the acceptance, or rejection of the Platonic principle of *necessary existence*, even as Vedic astronomical cycles demonstrate the employment of that principle. Thus, a lunar calendar, in place of a solar-astronomical one, is sufficient proof of the dominant influence of evil during the relevant period of that culture's prior history. Worse, the degeneration of the notion of cycles into those cabalistic lunacies we associate with present-day astrology cults, is a clear rejection of any lucid scientific principle. For the case of China, the problems popularly ascribed to *The Book of Changes*, are of similar historical significance.<sup>6</sup>

As Leibniz did, in adducing an ancient binary system for China's culture, we seek out the best residues we might centrifuge from old cultural artifacts, for our own included advantage. Yet, the most important thing, in the case at hand, is to discover those "cultural levers," by aid of which a true cultural Renaissance of China might be effected.

The essential, most conclusive historical-scientific fact, from which our researches must originate, is the fact that the Christian Platonic, or "Golden" Renaissance, erupting during the middle decades of the fifteenth century, is the highest level of *rate of growth* of cultural achievement which has occurred in the history, or adducible pre-history of the global human species. We must

seek within the culture of China those points of epistemological access by means of which a revolutionized China culture, may emulate the quality, and achievement of the A.D. 1439-1440 Council of Florence.

In the course of such an undertaking, as we propose it here, we shall be initiating, probably for the first time anywhere, a valid science of cultural anthropology.<sup>7</sup> We situate that proposed undertaking within the task-oriented, strategic setting of an economic-programmatic approach to the center of twenty-first century development of our planet as a whole, the littoral of the combined basin of the Pacific and Indian Oceans.<sup>8</sup> We consider the challenge of a true developmental solution for the entire population of China, a solution which prohibits the Auschwitz slave-labor methods of mass population-reduction, using "coolie-labor enterprise zones." We address certain crucial features of our cultural studies, each in its appropriate place in our outlining of the task-orientation for that Basin as a whole.

Any citizen of China who has studied Belgium, is qualified to reassure us, that China is neither presently overpopulated, nor in immediate danger of becoming so. The problem, as shown by the vastly underpopulated nations of colonized and then neo-colonized Africa, is technological underdevelopment, an underdevelopment otherwise described as a cruel want of scientific and technological progress, as applied *per capita* and *per hectare*.

In general, both extremes, China and Africa, require the quality and quantity of energy-intensity and capital-intensity of production, *per capita* and *per hectare*, congruent with that of the mean of Japan, West Germany, and the United States of America, *circa* 1967-1969. As an indispensable prerequisite for such a productive development, these developing nations of China and Africa require the comparable development of water systems, modern rail systems, power infrastructure, sanitation infrastructure, public education, and combined public and private health systems.

If we regard all of east and southern Asia by this programmatic standard of urgent goals for rapidly accelerating economic development over the coming two generations, then the indicated basin becomes the center of increasing concentration of total world trade (in both weight and man-hours) for the twenty-first century.

Or, in the dismal alternative, if such development were prevented, then the rates of epidemic disease and death among the increasingly immune-compromised masses of congested Asian very-poor would transform those masses into the planet's primary incubation-medium for proliferation of old and new varieties and species of epidemic diseases. These and related implications of such a hideous alternative deter all but the most

lunatic or evil men from impeding the direction and quality of economic-programmatic, "dirigistic" development we propose.

### 3.1 | The Global Breakdown Crisis Now in Progress

We must next, first situate the Basin of today within the current developments and trends in the global economy. We must take into account the interplay of bad policy-making and the physical trends, downward, which those prevailing economic policy-shaping assumptions are keeping in motion. We begin by referencing a disgusting, but truly exemplary case.

The World Bank recently demanded that Poland close down, and flood, its most modern coal mines in Silesia, to the purpose of importing cheaper-priced coal which Australia was temporarily unloading upon Poland's coast, at dumping prices. Incredibly, that bank insisted that this would result in an anti-inflationary saving for Poland! Now, instead of earning foreign exchange by export of high-quality Poland coking-quality coal, Poland will both lose foreign exchange—by needlessly importing coal, and by increasing unemployment, while shrinking the *per-capita* productivity and tax-revenue base of Poland, as a whole, at the same stroke. Lunacies of this sort are to be expected from economists of the genre of Professor Jeffrey Sachs or Senator Phil Gramm. Yet, exactly such murderous follies have plunged even the formerly most prosperous industrialized economies of the world into a global, accelerating spiral of collapse of net (*per capita, per hectare*) physical productivity, converging upon a now-imminent point of outright physical-breakdown crisis. Such have been the dominant, global policy-trends under International Monetary Fund (I.M.F.), Bank of England, and U.S. Federal Reserve leadership, during a period of now more than twenty-five years to date.

Similarly, under "shock therapy" and "I.M.F. conditionalities," since 1989, the former COMECON economies of non-Soviet Eastern Europe have collapsed to reported, estimated levels one-third those of 1989.<sup>10</sup> During the same period, the Russian economy has been collapsed similarly, in a parallel fashion, although so far still short of the abysmal levels to which George Soros' Anglo-American-looted Poland has fallen.<sup>11</sup>

Not only in Western Europe, nor in the post-industrial rust-bucket called England, but also in the United States of America, present post-modernist policy-making assumptions, and their inevitable physical conse-

quences, are collapsing an already-ruined physical economy. Unless there appears soon a revolutionary sort of radical overturn of monetarist "free market" and of anti-scientific, anti-industrial dogmas, the very government of the United States will soon, during the coming few years, disintegrate for economic reasons, and the nation as a whole fall into a virtual state of ungovernable anarchy.

As for developing nations outside the two former super-power blocs, the policy of the leading monetarist faction of the Anglo-American power is still intent to wreak genocide upon these "neo-colonialized" regions, as was the intent of the neo-malthusian Club of Rome<sup>12</sup> and U.S. Secretary of State Henry A. Kissinger's 1974 National Security Study Memorandum (NSSM 200).<sup>13</sup>

Such are the policy-conditions which must be reversed soon, if there is to be any civilized region still remaining anywhere on this planet during the early decades of the twenty-first century. More narrowly, the presently visible policy-trends in mainland China must also be radically reversed, if China is not soon to be collapsed into its worst dark age in perhaps the past three thousand years or more.

The current policy of mainland China coheres with the same kind of bungling ignorance witnessed in the World Bank's ruinous collapsing of Poland's best coal mines. Masses of displaced, unemployed workers from the interior of China, are being herded into streams of desperate nomads, seeking coolie-wages employment, into the "Auschwitzes" of the littoral's "enterprise zones." (By about the beginning of the next century, this could also become the fate of tens of millions of future nomad "coolies" within the present U.S. population.) At those wage levels, under the prices for goods and housing within such China *maquiladoras*, the nomad labor will die at accelerated death-rates; *perhaps not as rapidly as slave-labor from wartime Auschwitz, but according to the same principle.* At those prices, China could not reproduce the quality of labor it consumes in production, although some China entrepreneurs will become prosperous (for a while) from the dying heap of bodies of used-up such "nomad" labor.<sup>14</sup>

It is in face of such inevitable results of continuing present policy-structures, that this writer, writing now in his capacity as economist and historian, projects a Renaissance for China. Without a thoroughly radical revolution in economic policy-shaping assumptions, a new, global "dark age" is presently an early inevitability, perhaps beginning only a few years ahead. Yet, here we are proposing a most optimistic economic-development program. The point of this merely apparent contradiction is, that without such "dirigist programs," in the



tradition of the Fifth Republic's Charles de Gaulle, Germany's Friedrich List, and U.S. Treasury Secretary Alexander Hamilton, a global collapse of civilization, breaking out into anarchy a very few years ahead, would be inevitable.

As in Friedrich Schiller's tragedy-guise for Leibniz's "best of all possible worlds," evil provokes the *imago Dei* within us to do good (*capax Dei*), so, the evil of presently deepening, global physical-economic collapse prompts all honorable men and women to launch a moral (e.g., dirigistic) form of economic-programmatic commitment to increase of the "Hamiltonian" application of the "artificial labor" of scientific and technological progress<sup>15</sup> to the increase of "the productive powers of labor."<sup>16</sup> So, in economy, are good and evil (want, usury) counterposed, as otherwise. In the transfinite, physical space-time domain which is Plato's realm of the Becoming, economic good appears ever as mankind's rescuer from such evils as the usurious, physiocratic "free trade" dogma of Adam Smith.<sup>17</sup> So, the comprehension of an ongoing, global economic catastrophe, and a programmatic form of remedy for that catastrophe, must be treated as a unified subject-matter, just as Cusa's use of the principle of "necessary existent" to solve Archimedes' quadrature paradox, brought together that axiomatic fallacy of Aristotelian folly and the revolutionary discovery of the solution, non-algebraic forms of physical science. The problem cannot be understood except from the higher, outside vantage-point of the solution, as Poe's Dupin insisted, as Aristotelian Sir Arthur Conan Doyle's London Metropolitan Police could never discover the prominent identity of the real-life "Jack the Ripper."<sup>18</sup>

The practical question which confronts all good statesmen during this global-breakdown crisis now in progress, is: *How do we reduce both this ongoing debacle and its programmatic alternative to the common terms of an administerable form of approximation, for purposes of measurement?*

The essence of measurable economic science is the relationship between rates of scientific and technological progress, as cause, and the increase of the productive powers of labor, as result. This involves the most sophisticated aspect of mathematics, upon which we have touched, respecting the three levels of mathematics, in the preceding Section 2.0. How does an intellectual action, the idea,<sup>19</sup> represented by an axiomatic-revolutionary, Socratic discovery of principle, cause the material effect which is an increase of the productive powers of labor, *per capita* and *per hectare*? Typically, the refined design of that crucial experiment which proves an axiomatic-revolutionary type of hypothesis, is the model for the new principle of tool design which bears directly upon

the physical act of productivity.<sup>20</sup> This causal relationship involves transfinite functions, as was shown in the preceding section.

We must employ our knowledge bearing upon such transfinite physical causation, to guide us to safe, practical assumptions using the mathematics of linear inequalities as the general frame of reference. In this way, we are able to reduce the day-to-day mathematics of management to an administerable form. However, in doing this, we must never step into the nominalist error of assuming that our simplified mathematics represents in any way the causal sequence of developments we are merely describing in such simplified terms.

The system of linear inequalities (as presented in earlier published locations)<sup>21</sup> used for this approximation center upon demography, social division of labor, households' and producers' market-baskets of goods, and both level and rate of change of technology employed. These measures are reduced to simplified statistical terms of power-flux-density, and physical output and consumption *measured in market-basket units, measured per capita and per hectare* (or, *per square-kilometer*). All calculations are based upon comparison of rate of change to rate of change, and, secondly, to rate of change of rate of change. The linear inequalities used as approximations are so constrained to treat rate of change as the primary datum.

Economies are scaled, and the inequalities, therefore, similarly, by use of bench-mark standards. The comparison of the *physical economies* (not money measurements) of Japan, West Germany, and the U.S.A. for the period 1967-1969, is the standard presently chosen. This Japan-Germany-U.S.A. standard is contrasted with the China-India performance for a comparable period. The task of bringing an India-China economy up to parity of physical-economy standard of 1967-1969 Japan-Germany-U.S.A., is a rough standard for defining an analytical physical-economy image of programmatic (e.g., "dirigist") transformation of an underdeveloped economy into an equitably modern one.<sup>22</sup>

Those terms of approximation are those to which we refer implicitly in the following discussion of Basin development perspectives.

For example, human personal consumption, agriculture, and industry demand usable qualities and quantities of water. The quantities of such water required increase as productivity rises.<sup>23</sup> Similarly, the quantity and technological quality of power supplies, *per capita* and *per hectare* must be increased as productivity rises.<sup>24</sup> With water, rail, and highway transport, there is a set of optimal balances, varying with unit-distant increments used, and value and perishability of freight *per ton*.

However, water transport must dominate relatively low unit value bulk freight, and rail must have precedence over highway for all relatively long-haul loads. Violation of these rules of thumb generates obvious, major losses to an economy.<sup>25</sup>

Similarly, without schools and modern medical care, a high-productivity, technologically progressive labor-force is not possible.

Thus, basic economic infrastructure (water, power, transport, general communications, education, public health, etc.), are public economic responsibilities (e.g., government or regulated public utilities). As population-density increases, these public infrastructural expenditures increase in cost *per* hectare but decrease relatively *per capita*—for obvious reasons. If we combine *per capita* and *per hectare* rates into a function of reasonably good statistical approximation, this factor of cost is administrable in that way.<sup>26</sup>

So, for any level of productivity/standard of living, the percentile of the total labor force required to be employed in each category of infrastructure, and all combined, is an estimable constraint.

In production, apart from infrastructure, we have first, the farmer-land/urban ratio function. The U.S.A. in its 1790 census showed more than ninety percent rural.<sup>27</sup> We have a shift in composition over the succeeding U.S.A. decennial censuses (see Figure 5). In very ancient archaeological instances, such as Harrapa,<sup>28</sup> knowing the urban population, as estimated from site characteristics, and knowing agricultural technology, we can determine several things, with broadly reliable rough estimates, such as rural/urban rates of population, and

number of hectares of rural land (plus reserve land) required to sustain the indicated urban population.

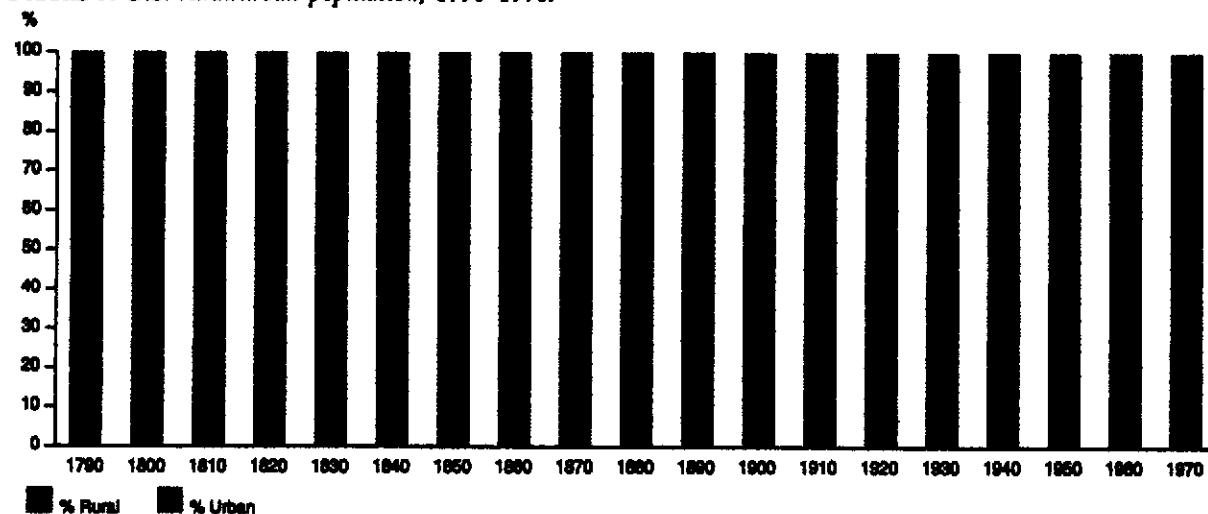
The urban sector's internal development (apart from infrastructure) then captures our attention. Most significant is the necessarily increasing ratio of (physical) goods-producing operatives employed in producing producers' market-basket goods, to those producing to fill households' market-baskets.<sup>29</sup> This is associated with a coordinate increase in the relative content of each class of market-basket, and with the life-expectancy of members of households of employed persons.<sup>30</sup>

The additional, crucial constraint, is this. Let us accumulate all of physical productive output, plus output of essential categories of infrastructure, including scientific work. Let us call this "the energy of the system." This quantity is what must be expended, *as work*, to maintain the physical economy in approximate productive equilibrium.

Let us compare the cost ("energy of the system") with total output (in physical units plus science). The difference, less "energy of the system," is "gross operating profit of the society taken as a whole." Now, deduct other expenses, excepting investment in expanded and improved capacity for science and physical production, from that "gross operating profit." The difference is "free energy." So we have, as a rule of thumb, the ratio of "free energy," to "energy of the system," as correlated with *per-capita* and *per-hectare* power throughput.

The standard required is: *the free-energy ratio must increase, although the "energy of the system," per capita and per hectare, must also increase.* The achievement of that kind of growth, gained through the causal action of

FIGURE 5. U.S. rural/urban population, 1790-1970.



Note: In 1950, the definition of urban was changed; and in other years other geographic changes were made.

Source: see footnote 27, Section 2.

scientific and technological progress, we call the relative *negentropy* of the economy.<sup>31</sup> This *negentropy* function is equivalent to a function of the comma-hypothesis in the functional series, or *type*, *A, B, C, D, E, . . .*, as presented earlier. This latter points to the transfinite function, the function of the higher hypothesis.

With one important exception, those principles of physical economy upon which we have drawn in this description were formerly rather well known to the world's leading eighteenth- and nineteenth-century economists, from Gottfried Leibniz,<sup>32</sup> through Friedrich List,<sup>33</sup> and Henry C. Carey.<sup>34</sup> To a large degree, those principles were at the center of the administration of U.S. Presidents George Washington,<sup>35</sup> James Monroe, John Quincy Adams, and Abraham Lincoln. On the opposite side, the anti-Hamilton, "free trade" crowd dogmas of such of today's rabid monetarists as Professor Milton Friedman, Senator Phil Gramm, and the Project Democracy were, in Adams' and Lincoln's time, the virtually anti-American teachings of the United States' most deadly adversaries, Lord Palmerston's London-directed faction of international Freemasonry, and that faction's treasonous U.S. component, August Belmont's accomplices at the head of the racist Confederacy.<sup>36</sup>

The notion of a science of physical economy was the original work of Leibniz, over the interval 1672-1716.<sup>37</sup> Leibniz invented the concept of *technology*, and designed the principles of an industrial revolution centered around the technology of the heat-powered machine.<sup>38</sup> Leibniz's followers, including economist Benjamin Franklin, Alexander Hamilton, the Carnot-Monge Ecole Polytechnique, the Careys, and Friedrich List,<sup>39</sup> elaborated the application of Leibniz's principles, but did not alter significantly the axiomatic basis bequeathed to them by Leibniz's original work. Perhaps, because of the degeneration of taught political economy, over the course of the late nineteenth century and the twentieth, the most important of the unresolved crucial features of Leibniz's economic science were not directly addressed until this present writer's work of the 1948-1952 interval, and the initial discoveries of 1952, which provided the basic type of solution to the unresolved problem in Leibniz's notion of *technology*.<sup>40</sup>

The issue which this writer addressed, initially during that 1948-1952 interval, was a proposition provoked by anger at the absurd dogma of "information theory" included within Professor Norbert Wiener's *Cybernetics*.<sup>41</sup> The crucial issue posed by the impulse to refute that mechanistic abomination of Wiener's was, how can a "mere" ineffable quantity, the "pure" idea represented by an original scientific discovery (for example), be the efficient cause of a massive physical effect, the radiated

effect of an increase in the productive powers of labor?<sup>42</sup> It was Cantor's *Beiträge*,<sup>43</sup> which, read in the light of such preceding works as Riemann's habilitation dissertation,<sup>44</sup> provided the clue to a solution of this unresolved issue of economic science.

Although the elaboration of this writer's discovery enhances the capabilities of Leibnizian, or "American System"<sup>45</sup> economic science, this change does not invalidate any of the body of that science as built up by Leibniz's followers over the course of the eighteenth and nineteenth centuries.

The point to be stressed in identifying these historical connections, is that the misuse of the term "classical political economy" to signify Adam Smith, David Ricardo, *et al.*, is outright fraud. The modern roots of economic science date to early-to-middle fifteenth-century Florence, Italy, to such writers as George Gemisthos, a.k.a. "Plethon."<sup>46</sup> Over the course of the sixteenth and seventeenth centuries, out of those Renaissance beginnings, there emerged a body of teaching of statecraft called "cameralism," which featured, as an included major component, what is captioned in later times as "political economy." Leibniz was a leading cameralist, who revolutionized that subject by establishing physical economy, a branch of physical science, as the foundation for the mastering of political economy. So-called British political economy did not appear until a century after Leibniz's first discoveries in physical economy, in Adam Smith's British East India Company, anti-American propaganda tract, the 1776 *Wealth of Nations*.<sup>47</sup> To make matters worse for the British, Smith's work was chiefly plagiarized from French and Swiss physiocrats. Meanwhile, before Ricardo's writings,<sup>48</sup> a form of economy far superior to Britain's, had taken hold in the young United States, called "the American System of political economy." That "American system," of Franklin,<sup>49</sup> Hamilton,<sup>50</sup> the Careys,<sup>51</sup> Friedrich List,<sup>52</sup> *et al.*, was chiefly a reflection of Leibniz's influence radiated to such pre-founders and founders of the U.S. Federal constitutional republic, as Spotswood, Hunter, Franklin, Washington, and Hamilton.<sup>53</sup> A comparison of the literacy, productivity, and real incomes of the citizens of the young United States, to the inferior England of that time—approximately double that of Britain on all counts—suggests the obscenity of passing off such counterproductive fools as Adam Smith with a caption "classical political economy."<sup>54</sup>

Over a hundred-fifty years ago, in his *The Olive Branch*<sup>55</sup> and his addresses to the Philadelphia Society,<sup>56</sup> economist Mathew Carey,<sup>57</sup> the father of Henry C. Carey,<sup>58</sup> anticipated the analysis which must be made of that "free trade" policy which has caused the collapse

of the U.S. physical economy into its presently ruined condition, over the course of the recent quarter-century to date. For most of the economic crises of the United States, since the follies of President Thomas Jefferson's government, the classical, "Hamiltonian" criticism offered by American System economists could have sufficed to address the economic cycle as such. The present economic crisis has an added, dominant dimension, for which the present writer's original, 1952 contributions to Leibnizian economic science have become an indispensable addition.

Today, under the corrosive impact, over a recent quarter-century, of the so-called "post-modern," or "Deconstructionist"<sup>59</sup> counterculture, nothing less immodest than a radical cultural reversal, a virtual new Golden Renaissance is required. For that, the science of history is indispensable; economic science is crucial, but without situating even good economic science within a science of history, even the best economics would be inadequate to overcome the obstacles to be met in practice.

Take as an example the cultural and political problems to be overcome by even the best economic-development policies, policies premised upon the best levels of existing science and technology.<sup>60</sup> Consider the present best levels of science and technology world-wide. Consider also the fact that the military-economy sector of Russia contains perhaps the largest single reservoir of frontier science work of any nation today. Can even the best economic policy, by itself, induce the Russian population generally to assimilate available technological progress efficiently, to surpass traditional habits in this way? Consider the same challenge of backwards-inclined traditionalism as found elsewhere.

Turn to a broad overview of modern history for an informed response to that question.

## Venice, Cusa, and Abraham Lincoln

Unfortunately, in today's English-speaking parts of the world, the popular view of history is some illiterate's parody of the empiricism of Locke, Hume, *et al.*<sup>61</sup> For those persons, "facts" are degraded, axiomatically, to the class of mere individual's sensual perceptions. For such persons, history begins with such a definition of so-called "human nature." For such persons, the construction of a picture called "history" begins from such "facts" of pairwise, interpersonal transactions, and proceeds stepwise, "inductively," in the small, through the chaos of the "Invisible Hand's" "asymptotic freedom,"<sup>62</sup> to whatever result might be thus portrayed on the aggregated scale of the relatively very large.

So, for example, we have Francis Fukuyama's child-

ishly foolish dogma, *The End of History*.<sup>63</sup> He proceeds from Adam-Smith-like, arbitrary doctrinal assumptions respecting a moral "freedom of choice" in the small, to a consequent democratic utopia in the large. Less crudely, Carroll Quigley explains history also mechanistically, although in a much less silly fashion, as a concert of opinion and action among powerful financier families, according to those classical handbooks for the powerfully wicked, Aristotle's *Ethics* and *Politics*.<sup>64</sup> Compare these two illustrations with the genre of twentieth-century, British philosophical liberal writers such as utopian ideologue Charles Beard. Beard's labored, biasing fallacy of composition is underlain axiomatically by the same Lockean empiricism shared by all the textbooks of the same genre.

We have already argued the crucial point, that, contrary to such sundry empiricist dogmas, history is shaped by the impact of higher hypothesis.

That, under such types of higher influence, although the secondary postulates of policy-shaping may be replaced, successively, that series as a whole is determined by a governing, subsuming, higher-order set of axiomatic assumptions. We have shown our argument, that, to change the direction of history, one must address directly this higher influence, and change its axiomatic assumptions.

Our method is, thus, directly opposite to that of the empiricists in every respect. Our method proceeds from the efficient interaction between the sovereign individual personality (the Cusa microcosm) and the whole society, past, present, and future (the macrocosm). This latter interaction is, for us, the primary, most elementary phenomenon; that is our choice, directly opposite to the empiricist's choice of the pairwise emotional-sensual interaction as elementary. It is that latter choice by the empiricists, and kindred types, which implicitly obliges Locke to propose his notion of *tabula rasa*. On the contrary, our method obliges us to adopt a notion of *rate of increase of potential population-density*, a rate determined by a *type* of rate of *fundamental* scientific and related progress, as the metrical expression of the elementary interaction between microcosm and macrocosm.<sup>65</sup>

In accord with our standpoint, an assessment of this present, worldwide breakdown-crisis must reference three critical points of long-term change in recent medieval and modern European history, thus to define, the watersheds of modern-European, and recent global history. These three critical turning-points locate the two, mutually opposing qualities of hypothesizing the higher hypothesis which have shaped recent world-history until the present moment.

The first of these three critical points is the so-called "New Dark Age" of the post-Dante Alighieri, mid-fourteenth century Europe.<sup>66</sup> This is the last gasp of medieval European history. The second is the beginning of the post-medieval, modern history, that fifteenth-century "Golden Renaissance" pivoted upon the A.D. 1439-1440 Ecumenical Council of Florence. The third, is the beginning of the march of this planet toward the two "world wars"—and, now, possibly the onset of a third—during the present century, a period inaugurated by the murder of British imperialism's most efficient foe, U.S. President Abraham Lincoln.<sup>67</sup>

Beginning approximately the time of the death of Holy Roman Emperor Frederick II Hohenstauffen, the usurious power of a Venice-centered financier oligarchy, looted its way to predominance in Western Europe, unleashing the fabulous "Four Horsemen of the Apocalypse." Venetian usury, abetted by the poisonous spread of Aristotelianism from the East of Venice, unleashed a spiral of wars, famine, epidemics, and pestilences. A century after the oligarchy's defeat of Frederick II's heir, the number of parishes of Europe had been approximately halved, with the loss of about one-third of Europe's population during the middle decades of the fourteenth century itself. The "Babylonian captivity" of the Papacy, during that "New Dark Age,"<sup>68</sup> marked the end of the "Middle Ages," between the collapse of the empire of Rome in the West of Europe, and the fifteenth-century birth of a new Papacy, and a new political form of European society at the Council of Florence.<sup>69</sup>

The American Revolution against that Venetian evil which ruled eighteenth-century Britain,<sup>70</sup> was the imperfect, but valid reflection of the Leibniz type derived from the Golden Renaissance.<sup>71</sup> From the beginning of that open U.S. struggle for sovereign forms of civil, economic, and religious liberty under the influence of Leibnizian natural law,<sup>72</sup> during the 1763-1766 period,<sup>73</sup> London was committed to crush the American patriots to "Third World" status as virtual "Yahoos," virtual chattel.<sup>74</sup>

This imperial British commitment to destroy the United States, by aid of treasonous Freemasonic subversion, continued through, and beyond the U.S. Civil War of 1861-1865.<sup>75</sup> The Democratic Party under van Buren and, most emphatically, August Belmont's leadership was a party of treason under British Freemasonic guidance, and in British interests. As Belmont's own letters attest, for example, the Confederacy was a British plot, using the Scottish Rite Masonry, to break the U.S. into several quarreling entities, the way Britain lately has unleashed Serbia's fascist party to rape and mass murder against their South Slavic neighbors.<sup>76</sup> These British anti-

American developments came to a boil during the middle of the nineteenth century. Lord Palmerston, who owned a somewhat ungrateful Karl Marx, for example,<sup>77</sup> brought the schemes of his predecessors, Pitt,<sup>78</sup> Castlereagh,<sup>79</sup> and Canning,<sup>80</sup> to a high pitch. The relevant events leading up to and accompanying the U.S. Civil War include the following examples. The Palmerston-Mazzini unleashing of the revolutions of 1848-1849, breaking up Britain's former ally, the Metternich Holy Alliance.<sup>81</sup> The installation of Palmerston's personal puppet, Louis Napoleon Bonaparte, first as president and then as Emperor Napoleon III of France.<sup>82</sup> The Palmerston "Opium Wars" against China.<sup>83</sup> The events surrounding the so-called Sepoy Rebellion in India. The U.S. War with Mexico, orchestrated on both sides, President Polk and Wellington's Santa Anna, from London.<sup>84</sup> The London-directed revolt by the treasonous-satanic racists who led the Confederacy.<sup>85</sup> Palmerston's use of his French political catamite, forerunner of Théophile Delcassé, Napoleon III of France, to conquer and loot Mexico under the Emperor Maximilian.<sup>86</sup>

The U.S. Civil War was, at bottom, the third war against its British oppressor. U.S. President Abraham Lincoln led the U.S. to victory, against what seemed, initially, "all odds," for principally two reasons.

First, and foremost, the leading role of one of modern history's greatest statesmen, Abraham Lincoln, aided by military geniuses such as William Tecumseh Sherman,<sup>87</sup> and a U.S. citizenry willing to die for the crushing defeat of chattel slavery. Second, because of allies such as so many of the world's German-speaking population and Russia's Czar Alexander II.<sup>88</sup>

The United States emerged, united from the Civil War, a major world economic power, and the greatest military land power, and also potentially the greatest naval power of this planet. For London, the danger was, that an alliance, based upon the economic principles of the anti-"free trade" American System (of Hamilton, the Careys, Friedrich List, and Lincoln),<sup>89</sup> between U.S. President Abraham Lincoln and Czar Alexander II of Russia, would engulf both continental Eurasia and the Americas in a railroad-building wave of scientific and technological increase of the productive powers of labor, *per capita* and *per hectare*. The British assassination of Lincoln, and the later British-inspired assassination of Russia's Czar Alexander II, typify the measures London employed to subvert the victorious U.S.A., and to begin a process of plunging all of (initially) the northern regions of continental Eurasia into ruinous, almost apocalyptic, British-orchestrated, "balance of power," or "geopolitical" wars and complementary revolutionary upheavals.

By the turn of the century, imperial Britain's geopolitical determination to exterminate even the memory of the anti-Smith "American System" exploded with a fury against such European figures as, foremost, Russia's Count Sergei Witte,<sup>90</sup> and such Witte discussion-partners as France's Gabriel Hanotaux,<sup>91</sup> and within Germany. Britain's immediate fear was that the superior scientific and economic culture of Germany, in cooperation with leading anti-British elements in France, would ally in a continental economic cooperation with Russia. In the latter case, the British Empire would collapse. To prevent such a prospect of continental economic development, London's geopoliticians organized World War I, and then substituted those Versailles Treaty-institutions which, given continuing British policy itself, made a predictable World War II almost certain.

Such, in short, were the three critical turning-points to which we referred. Although those Christian Platonist forces which were behind the Council of Florence were soon thrown on the defensive by the Venice-led oligarchical Aristotelian counteroffensive,<sup>92</sup> the Renaissance's establishment of the modern European form of nation-state, and the institution of science, supplied European culture a vastly superior power over nature, *per capita* and *per hectare*, relative either to other contemporary cultures, or to cultures of earlier times.

The program of global Christian evangelization, established by the leaders of the Council of Florence, transformed our planet, such that the superior power of political organization and scientific capability which the Renaissance had infused in post-Renaissance European civilization, ensured the successful Western European catalysis of a truly planetary history unlike anything of which we know today from earlier times of human existence. Thus, after A.D. 1440, European history became rapidly the increasingly central feature of the history of this planet as a whole.

At the moment the so-called "Black Guelph" power of oligarchical usury appeared to emerge in unchallenged superiority over mid-fourteenth century, post-Staufer Europe, England repudiated her usurious debts to the House of Bardi, *et al.*, setting off a chain-reaction collapse of the "financial derivatives" bubble of that time. Thus, by consuming its hosts, the parasite of usury brought deadly famine upon itself; the parasite of Venice-led usury nearly died choking on its own greed. This weakening of the satanic power of triumphant usury gave maneuvering-room to the political heirs of Dante, such as Petrarch, and to the Christian humanist movement, such as Groote's and Thomas à Kempis's Brothers of the Common Life. From the latter types of impulse came a powerful Christian Platonist insurgency, typified

by the Council of Florence; with that, there emerged the realization of new political forms of society which had been sought by Dante, and, also, the birth of coherent, unified notions of scientific discovery and knowledge.

These features of that Christian Platonists' Golden Renaissance represent what Tavistockians would prefer to term a "cultural paradigm."<sup>93</sup> More rigorously, that Renaissance taken as a whole, typifies an higher hypothesis; since the authors of that institution were avowed Platonists, avowedly adversaries of Aristotle, we are obliged to say that they intended that the Renaissance should be viewed as expressing an higher hypothesis.

The role of such usury-party Aristotelians of Venice as the soul-less Pomponazzi<sup>94</sup> and his followers, such as Francesco Zorzi and Gasparo Contarini, constitutes a counter-paradigm to that Renaissance. This Aristotelian counter-paradigm is a continuation of the policy which had caused the earlier collapse into the fourteenth-century "New Dark Age." That counter-paradigm is the origin of the religious schisms, of an upsurge of neo-Aristotelian empiricism and of cabalistic Freemasonry which bloodily wracked Western Europe's sixteenth and seventeenth centuries.

Since the time of the League of Cambrai,<sup>95</sup> all of European civilization, in Europe and world-wide, has been the interplay of ongoing cultural and bloody warfare between these two opposing cultural paradigms, the Renaissance and that opposing, oligarchical-usury party centered upon the Rialto and Padua schools of Venetian Aristotelianism. Since the time of Venice's notorious Paolo Sarpi,<sup>96</sup> the Venetian power has relocated itself, away from the more vulnerable upper Adriatic, into the Anglo-Dutch base lately better known as the City of London financial center and British Empire/Commonwealth. Thus, the 1714 victory of Marlborough's British liberals, the "Venetian Party" of England, in placing the Venice dupe George I on the British throne, has made not-so-merrie-England the new royal residence of the old Satan of the Adriatic.

The key to understanding the ongoing warfare between these two, opposing "cultural paradigms," is the underlying issue of method. The method of Christian Platonism is engaged in mortal, uncompromisable warfare with the opposing, usurious oligarchical evil of paganist Aristotelianism. This is the method of knowledge (Platonism) versus Francesco Zorzi's method of crude sense-certainty.

For reasons which are obvious in some respects, but otherwise widely essentially misunderstood, the pivotal feature of conflict in method is an irreconcilable difference in axiomatic features of economic policy.



## Morals and Economics

The gist of today's widespread form of practice of the ancient art of usury, is a submission of corrupted states to the whims, caprices, and looting of government treasuries by powerful central banks which are government-chartered, but privately owned, and managed for the principal benefit of private financier interests. Such is the blatantly unconstitutional U.S. Federal Reserve system.<sup>97</sup> The crude, but now widely popular sophistry employed as apology for such massive private looting of the public treasury, is the dogma of "free trade."

The formal issues of economic doctrine posed by the conflict between a Christian and a "free trade" model, are to be judged properly only by reference to society as the macrocosm of integrated past, present, and future. Economics can become a science, by definition, only as it is defined in terms of the task of *successful, durable* human survival.<sup>98</sup> By "science," one must signify "knowledge," as that (Platonic Socratic) function of the mind which bounds externally the processes of mere rationality, in the same fashion as the higher hypothesis bounds externally a succession of theorem-lattices *A, B, C, D, E, . . .*<sup>99</sup> Thus, it is the *negentropic* social reproduction of the human species, that species defined *isochronically* as the conceptual, functional integrity of combined past, present, and future, which is the primary subject and object of all human knowledge, and of all branches of human knowledge. The judgment of all matters of knowledge is necessarily subject to this view of human reproduction; otherwise, the use of the term "knowledge" is farcical. It is in this way, and according to those requirements, that economics as the economic science of *political direction for physical economy*—true "political economy"—serves as the measure of morality, the measure which makes intelligible to us the essential, natural-law difference between right and wrong.

The essence of such an economic science is the functional relationship between man as *imago Dei* and man as set apart from, and absolutely above all inferior forms of life by willful increase in the productive powers of labor. Those increases are functionally dependent upon certain forms of absolute increase in *per-capita* life-expectancy, and in *per-capita* market-baskets of consumption of both households' and production of goods. This *imago Dei* is defined uniquely, if twofold, as those creative powers of reason which are typified by valid, axiomatically revolutionary changes in scientific knowledge; it is knowledge insofar as its discovery is associated with efficient *agapic* love for both Creator and mankind, that, in each occurrence, such discoveries are generated, or regenerated only within the sovereignly independent

personality, is key to all human knowledge, economic science emphatically so.

Economics is exemplified by the causal relationship among axiomatic-revolutionary discovery (a Platonic "idea," or "thought-object"),<sup>100</sup> a perfected design of a crucial experiment corresponding to that hypothesis (*idea*), and the application of that machine-tool or equivalent type of principle, according to that hypothesis (*idea*), as a cause of increase of society's net productive powers of labor. (By "net," we signify an included increase of raw productivity *per capita* and *per hectare*; but, we also require an implicit potential increase of the ratio of "free energy" to "energy of the system.")

*Economics* is man's power over all things in the universe, an increased power *per capita* and *per hectare* (or, equivalent), accompanied by an increase of the number of such persons. To satisfy "increase of ratio of 'free energy' to 'energy of the system,'" the required absolute increase in household consumption must be a diminishing percentile of the total "energy of the system," although the *per-capita* standard of household consumption, relative to earlier levels, must increase absolutely. A society which fails to satisfy such constraints will degenerate, is not capable of durable survival, and thus shows itself a culture defective in its "cultural paradigm," *its inferior culture*.

The capacity for satisfying those constraints inheres, on principle, in each person as *imago Dei*. However, that person can provide this assistance to his or her society only by acting efficiently, as microcosm, immediately, directly, upon the integrated past, present, and future of that society as a whole. This immediate action is a form of personally expressing needed, valid ideas, *valid* because they contribute to society's mastery of the never-ending challenge of changing itself in the next step needed to stay along the pathway of durable successful survival. The individual ideas which function causally, so, in the microcosm-macrocosm relationship, are of the form of valid axiomatic-revolutionary hypotheses (*ideas*), either originally generated, as a discovery by that author, or regenerated in others, as by a good teacher, by aid of the work of the proximate author of that regeneration.

The quality of creative reasoning and *imago Dei* are interdependent conceptions. Without that quality of individual creative reason, otherwise typified by valid axiomatic-revolutionary scientific discoveries, man does not walk in the image of the Creator. It is such creative discovery which rigorously defines the existence of the individual personality as sovereign—as an individual "soul"—a soul which no consistent Aristotelian could claim to possess. Without such a sovereign quality of *imago Dei* in the individual person, a society could not

achieve and maintain a quality of durable survival; a society would not represent a form of culture fit to continue to exist indefinitely. So, a so-called "traditionalist," anti-technological-progress form of culture, such as that prescribed by the Roman Emperor Diocletian's "socialist," "zero-growth" decrees, founding the Byzantine Empire,<sup>101</sup> is not morally fit to exist, and will destroy itself, if it does not change its nature.

At this date of writing, recent years' events have proceeded as this writer warned repeatedly since the events of October-November 1989.<sup>102</sup> As the governments of the socialist world disintegrated, the governments of the Western powers were marching toward a similar fate, unless they changed their policies of that moment radically, axiomatically. The forecast disintegration of the Western powers has, unfortunately, come to pass—at least, nearly so. Speaking of this in proverbial terms, it is perhaps ten, or five minutes before midnight. Unless all of the policy-assumptions of the U.S. Bush administration, and of the Thatcher and Major governments of Britain, are overturned radically, very soon, the late-1980's collapse of the socialist economies will be echoed by a breakdown-collapse of the Western powers during the middle through late 1990's.

The proximate cause for this now virtually global collapse of our nations' leading political, and other public and private institutions, is rooted in the radically monetarist lunacies reflected in recent and current policies of the International Monetary Fund (I.M.F.) and World Bank, for example. That stink of moral decay presently pervading the economic policies of virtually every present government of this planet, is exemplified by the runaway metastatic cancer known as "the derivative bubble."<sup>103</sup> This monetarist bubble, whose growth and revenues of "risk management," are praised as the proof of "economic recovery," has been represented as a praiseworthy substitute for all forms of physically productive employment, for increase of *per-capita* levels of combined producers' and households' market-baskets, has been adopted as a substitute for disastrously collapsing levels of basic economic infrastructure, of agriculture, and of industry, world-wide. Such toleration of that metastatically ballooning cancerous bubble, such willful murdering of the real economy which is sacrificed on the Moloch's altar of manic monetarist speculation, bespeaks the mass-insanity of not only the academic economists and elected governments, but also the rampant manic lunacy of the "post-modernist" generations now assuming control over the principal public and private institutions of the economy and policy-shaping generally.

As long as governments refuse to overturn, or to violate openly, those axiomatic policy-assumptions asso-

ciated with monetarist dogmas of "free trade," "privatization," "deregulation," "central banking" of the Federal Reserve system type, and anti-scientific, "neo-malthusian," "post-industrialist" utopianism, there is no policy, no law, no budget which could be enacted by government without far more disastrous consequences than the circumstances would be without such "reforms." That, combined with the continuation of the geopolitical Versailles institutions and mythology, is the reason every government in the world is at the brink of collapse at this moment of writing.

Until a government is willing and able to take "dirigistic" forms of programmatic economic action which violate directly, and fundamentally the mythologies of "I.M.F. conditionalities," "neo-malthusianism," "post-industrialism," and "free trade," that government will go from bad to worse, in rapid succession. For such reasons every government of this planet is presently near the brink of collapse, and perhaps the disintegration of its nation. The indicated economic issues are either explicitly, or implicitly the central feature of the worsening loss of the moral authority to govern, worldwide.

This brings us to our concluding observations on the subject of China.

## 3.2 | China and the Great Basin

Focus now upon that great body of water, westward toward the east coast of Africa, bounded on the western side by the Americas. For brevity, call this "the Great Basin."<sup>104</sup> Include in that Great Basin the nations which bound these waters of the Indian and Pacific Oceans, from Argentina and Chile on the west, Australia and New Zealand in the east, northward. Focus upon China and the cultural history of China within this geographical context.

The object of such a contextual focus upon China is, in part, to defeat the presently onrushing threat of a long-term, planetary New Dark Age. To accomplish that, to provide the urgently needed alternative, we must draw upon the whole planet's present concentrations of most-advanced science and technology, upon that reservoir of scientific progress which the world's most mass-murderous racists lately describe as "dual-use technology."<sup>105</sup> This reservoir lies chiefly in a northerly part of the planet's Northern Hemisphere, from within the scientific-military institutions of the former Soviet Union and the Atlantic Alliance powers.

To this global problem before us, we must apply "dirigistically" the principles of a Leibnizian science of physical economy. The best-known political expression

of such a science of physical economy is the anti-British,<sup>106</sup> "dirigistic" form of political-economy which U.S. Treasury Secretary Alexander Hamilton termed "the American System of political economy," as that political form is represented typically by the work of Hamilton, the Carnot-Monge Ecole Polytechnique of 1794-1814, the Careys, Friedrich List, Count Witte, and the Fifth Republic's President Charles de Gaulle.

This urgently needed political application of economic science must be based upon certain matching Renaissance political principles, as typified by the work of Nicolaus of Cusa: the scientific intelligibility of the Creator's universal natural law for mankind, the principle of the sacredness of individual human life (as *imago Dei*), the principle of the sovereign nation-state republic, the principle of scientific progress, the principle of national political economy, and the principle of *Concordantia Catholica*, a universal, ecumenical accord among sovereign nation-states on behalf of their common interests in the successful, universal application of these principles.

From the standpoint of economic science, the global crisis assumes the following form most emphatically. The effect of recently unbridled usury, compounding prior looting of the subjugated, so-called colonial regions of our globe, has been to lower the human species' potential population-density to levels far below the levels of existing population. The obvious "marker" of this genocidal policy of practice is the increase in deadly epidemic and related diseases caused by the suppression of large, growing deprived populations in highly unsanitary and immune-compromised conditions of physical being.

This physical state of growing nations of the world's population, is aggravated subjectively by a collapse of education within the northern tier of formerly industrialized states. This has gone to such extremes as the adoption of "politically correct" programs even among once-leading universities, programs which tend to ensure that university graduates will be intellectually and emotionally unqualified for even a level of employment as low-paid as sweeping out corporation parking-lots. At the kindergarten and elementary levels in the U.S.A., for example, more and more children are being abused intellectually and emotionally by "post-modernist" forms of "outcome-based" programs fairly described as "spiritual child-molestation."<sup>107</sup>

Thus, we face a twofold form of economic challenge. We must rally the qualities of scientific and technological progress needed to raise the potential population-density far above extant levels of population. We must foster in the population a corresponding capacity to generate, and to regenerate those ideas which correspond to the specific

discoveries represented by the required levels of potential population-density. It must be recognized, that this latter, required capacity includes the preferential motivation to generate and to employ those discoveries/technologies. It is in this aspect of the matter that level of culture as such is crucial: *If one presents a people with the ideas and tools upon which their very survival depends, will that people use them effectively, or will they even use them at all?*

Take these matters, as they affect China within the Great Basin, in that order. First, the technological physical economic considerations as such, without yet considering cultural determinants. Second, then, consider the interaction of the technology with the subjective aspect of the process, with culture.

If we might assume that the nations rimming the Great Basin escape the presently onrushing threat of a New Dark Age, *per-capita* factors of this rim will tend strongly to determine the Basin's weight in the planetary economy of the twenty-first century. However, that presumes that the monstrous technological backwardness of the South and Eastern Asia mainland is overcome.

The cultural backwardness of India and China is best understood after one has referenced our recommended bench-marks of physical-economic standards from the 1967-1969 interval, for Japan, West Germany, the U.S.A., China, and India. That is the best statistical bench-mark available, since the U.S. and Germany's physical economies have decayed greatly, if at different rates, during the recent twenty-five years. Although China and India have both modern and semi-modern sub-sectors of their developed economic geography, the *per-household* and *per-capita* values of productivity, infrastructure, and standard of living for the society as a whole are monstrously debased. The net changes in China and India since 1970, on this account, are for the worse in overall absolute physical-economic parameters.

To make these yardsticks sufficiently intelligible to the layman in economics, the following illustrations should be adequate here.

Circa 1967-1969, the U.S.A., West Germany, and Japan were comparable in productive technology. However, the population-densities were most varied from each case to the others. Thus, for example, Japan invested much more *per hectare* in infrastructure, including energy; however the Japan cost of those investments *per capita* was much less.<sup>108</sup> (SEE Table I) Obviously, the greater the population-density, the more efficient the productive use of land *per hectare*.

So, the increase of China's population-density is a great potential economic gain. Nonetheless, unless China reaches rapidly *per-unit-potential-population-density* levels of development of public infrastructure ap-

TABLE I. Comparison of productive technology as measured in energy utilization\* per capita (in per household units) and per hectare (of used area), for the U.S., West Germany, Japan, India, and China, 1967-69.

	Per Household		Per Ha Used Area		Per Unit Population Density (Product per Household × per Used Area Values)	
	(1000 Kwh)	(Million Kcals Fuel)	(1000 Kwh)	(Million Kcals Fuel)	(1000 Kwh)	(Million Kcals Fuel)
U.S.	22.519	272.5	2.899	35.089	85.29	9,581.99
West Germany	8.868	129.2	12.333	179.733	109.37	23,227.60
Japan	9.715	85.4	32.432	285.193	315.08	24,364.58
India	0.418	7.4	.282	4.624	.165	34.08
China	0.455	11.8	.183	4.783	.146	56.32

\*Electricity as a percentage of total energy used for these countries: U.S. 7.1%, West Germany 5.9%, Japan 9.8%, India 4.9%, China 3.3%.

Source: EIR. See footnote 108, Section 3.

proaching that of 1967-1969 Japan and West Germany, the situation of China's economy is virtually hopeless. This vast gap of China's technological underdevelopment of basic infrastructure (water management, modern rails, power, etc.) can be remedied at geometric-spiral rates, but only if the most advanced (e.g., "dual use") technologies are applied on a broad scale. (The same general observation is applicable to India, *et al.*)

This also requires "dirigist" attention to the fact, that a peculiar "spectroscopy" of optimal division of labor, of the total labor-force of a society, corresponds functionally to, variously: the level of productive technology generally employed, physical productivity of labor, *per capita*, and potential population-density. "Basic economic infrastructure" (water management, rails, power, etc.) form a principal category, and should represent an increasing, major portion of the total labor-force as the economy rises in technology and productivity.

There exists no possibility that this "spectroscopic" (structure of the division of labor) characteristic could be usefully determined by the mythical "asymptotic freedom" of "market forces." The lunacy of human behavior in an Oriental bazaar belongs to what one would hope is a safely departed pre-industrial past. The required statistical values for infrastructure, for example, are determined with the relatively precise methods otherwise employed to define the process sheet and bill of materials of a line of manufactured goods. Or, to similar effect, one may think of a computerized "critical pathway" mapping of a complex, multi-vendor endeavor, such as building and launching a manned moon landing.

This avoidance of "market forces" arguments is emphatically applicable to basic economic infrastructure.

For example, if West Oshkosh's level and classes of production requires so many tons weekly shipped in by rail, and so many tons out, then the requirements of development and maintenance of an operating rail system for that area are predictable accordingly. For related reasons, sensible modern governments assign basic economic infrastructure either to a governmental corporation, or a privately owned but publicly regulated public utility.

Given a level of technology, the range of minimum and maximum prices allowable is essentially predetermined, at least in terms of labor cost standards of physical measurement. (It is as undesirable that prices fall below that minimum, as that they exceed that maximum.) The essence of competition (in a healthy economy) is not price *per se*, but choice of use of (investment in) an application of better technologies in a better way. Essentially, the better technology is one which reflects a more advanced technology, a more advanced scientific discovery. Thus a sane political-economic system treats basic economic infrastructure as the "public sector," and production and distribution (otherwise) of farm and manufactured goods as chiefly the business of the private sector.

It is clear, in this connection, that most of the current generation of academic economists, the monetarist professors most emphatically, are "ivory tower" fanatics, with no knowledge of even the rudiments of the productive process.

Coupled with the issue just addressed, the relevant greatest, most popular folly of Asia, and of putatively expert advisers on Asian development, is a widespread, obscene, inhuman admiration for the alleged virtues of "very cheap labor." The same delusion, in a slightly

different guise, doomed the economy of the former Soviet Union.

The ability to generate, and to assimilate the ideas of scientific and technological progress, requires not only a certain quality of formal education; a certain household standard of living, including personal parental nurture, is indispensable. The ongoing process of break-up of the heterosexual nuclear family in the U.S.A. of the past two-and-a-half decades, and the shift of growing segments of the labor force into the vagabond itinerant labor of an emerging nomad horde, means degrading a large ration, ultimately nearly all, of the U.S. population to the cultural and skill potential of homeless, nomad coolies of Asia. The cost incurred by the quality of family life required to produce modern, technologically qualified labor of a certain productivity, is the proper "minimum wage," the standard minimum household market-basket.

From a critical study of the evolution of the "spectroscopy" of division of labor in modern European history, and in the cases of the U.S.A. and Japan, the required evolution of China's economy can be broadly predefined. Two conditions must be satisfied to realize such scheduled goals. First, the level of technology required to put China on a sufficiently steep upward curve of "free-energy to energy of the system" must be provided. Secondly, the cultural development needed for efficient generation and assimilation of that gradient of technological progress must be assured. Turn to the latter, cultural feature, before summing up our portrait of the Basin's coming development.

## The Education of Peoples

We come thus to the subject of shaping history by means of the education of peoples. In that aspect of education, we signify not simple textbook-levels of education, but rather, education in principles of valid axiomatic-revolutionary discovery. We signify, thus, "higher hypothesis." We signify thus the capacity to generate and to assimilate valid scientific, or comparable true discoveries. We signify thus a volitional, a conscious control of such one's own capacity.

This requires a type of person who is wittingly *imago Dei*. That is the secret of the Golden Renaissance. That is the reason modern science was begun by the authors of that Renaissance. That is the key to elevating the Confucius tradition of China to its fullest potential for the task facing the Basin of the coming century. Review briefly some essential points.

The *intelligibility* of the individual person's nature as *imago Dei* requires a conscious coincidence of the quality

of world-citizens' love for mankind (*agapē*), with that specific definition of *creative reason* which is strictly limited to a rigorous notion of valid, axiomatic-revolutionary scientific discoveries as a *type*. The economic durable survival of society depends upon governance of society's behavior (in the large) by these two, interdependent qualities of personal motivation. The true law, which is *natural law*, is that immediate relationship of individual to macrocosm, that relationship become an intelligible subject of personal conscious reflection.

Look into a mirror, and see there a person who is motivated to act by *agapē*, who acts consciously upon the macrocosm, and whose characteristic acts to that purpose are of the quality of valid, axiomatic-revolutionary scientific discoveries. That mirror reflects *imago Dei*, he or she who is impelled to, and is capable of acting efficiently, and in an immediate way, upon the condition of integrated past, present, and future of mankind: *capax Dei*. That is the powerful "secret" of the Golden Renaissance.<sup>109</sup> That mirror unveils the great, ultimate mystery and power of sovereignly individual mortal human life. This is key to the hope of a noble future for China.

Two aspects of such a cultural standard are to be emphasized here. *First*, it is more apparent to most, that there is an exemplary causal impact by a Classical humanist form of education, and by a complementary quality of nurture of the young, upon the scientific and technological potentiality for higher productivity by the adult. *Second*, there is a corollary impact by a climate of rising physical productivity, itself caused by dedication to scientific and technological progress, upon the quality of society's nurture and education of the young. Conversely, we should reflect upon the presently catastrophic level of decline in both the young, and in a growing ration of adults of younger and middle years, in the U.S.A., and also in continental Western Europe, as an outcome of the past twenty-five years' trends of counterculture, post-industrial utopianism, and accompanying spread of deepening cultural pessimism.

These two aspects of the matter are unified, to be taken as a single principle, if we but define a climate of scientific and technological progress as both a result of a certain quality of nurture, and as a climate of opportunity to practice such progress.

For example, during the general period the Council of Florence appeared, to prepare the general missions and initial maps<sup>110</sup> for Europe's great transoceanic out-thrust of the late-fifteenth and sixteenth centuries, China had had a relatively magnificent maritime capability, a fleet which was destroyed by a foolish decree, and a maritime profession sent to rot in nearly hesychastic isolation. Thus, did generations of China suffer over

centuries of creeping backwardness, in consequence of China's toleration of the foolish, anti-science spirit which had spawned such a cruelly self-destructive policy as that.<sup>111</sup>

The immediate victims of that foolish decree, China's maritime explorers, represented scientific and technological progress. The decree suppressed the practice of that progress by the people of China; thus, the progress and knowledge in China were stifled. A similar state of affairs exists today, in the neo-malthusians' and usurers' suppression of scientific progress in Western Europe and the Americas. As two successive generations of youth have been victimized by the political power of the anti-science counterculture in the U.S.A., the U.S. population is on the road toward becoming a race of illiterate, lunatic *Yahoos*, unless, very soon, there is an abrupt and radical reversal of cultural trends of doctrine and daily practice in economy, science, and in public and university education.

Conversely, a lively climate of scientific and technological progress is indispensable for fostering a vigorous scientific progress. If technological stagnation is the rule in daily practice, the general population suffers a tendency for brutish stupidity, as the decadence of the post-1963, "post-industrial" Britain exemplifies the moral, intellectual, and economic collapse of a nation.

The great periods of any national or regional culture, are found in their inspiring times of truly great works in proliferation of Classical<sup>112</sup> art-forms, of city-building, of large-scale improvements in development of basic economic infrastructure, and of an always correlated widespread inclination for great enterprises of exploration in knowledge generally, in technological improvements, and in geographical and astronomical explorations.<sup>113</sup> Like lively intellectual conversation in the good fellowship at a dinner among family or friends, a climate of general innovative accomplishment in change in a nation or region, fosters an infectious happiness, a joy in participation in the works of creative change in works of widespread great benefit, such as the development program unleashed by the regime of Charlemagne.

There are only three notable examples of such happy moments during the past fifty years. First, in order, was the joyous effect of President Charles de Gaulle's temporary rescue of France from the despair of moral and economic decadence, an uplifting typified by a great, "dirigistic" program for uplifting not only France itself, but also a Europe too long under actual or virtual occupation by Anglo-American ("Atlanticist") geopoliticians. Second, was the temporary, 1960's uplifting of the majority of the population by the Kennedy "crash program" approach to a manned landing on the moon.<sup>114</sup> The third,

although momentary, was the few months of spiritual uplifting of the population of continental Europe by the so-called "collapse of the Berlin Wall." De Gaulle pointed implicitly to the common characteristic of all three of these, as he wrote of France's need to find her true self in a needed service for the cause of perpetuating civilization as a whole<sup>115</sup>: *agapē*, the relationship of the particular person or nation to the macrocosm, is the key to the possession of true knowledge, and to the mustering of the best of our true powers as *imago Dei*.

Consider the Asian population of the Basin today. Unless there is, very soon, the type of radical change we propose, it were soon impossible to prevent widespread extermination of hundreds of millions, or more of combined levels of population of China, India, *et al.*, during the first half of the twenty-first century. The visible disintegration of those nations could begin as early as within the present decade, unless the proposed, pro-science, anti-monetarist changes in global and regional policy prevent such an unprecedented holocaust.

The germ of that threatened genocide is advertised in a popularized fraud, raising the estimated rank of China's economy to third place. The ruse behind that hoax was the substitution of an estimated value of "purchasing power" for the far less than awesome data on productive output *per capita*.<sup>116</sup> The discrepancy between the two figures would have alerted any competent observer to the fact of the hoax.

The appearance of China's growing prosperity is borrowed from the temporary success of the wartime I.G. Farben plant based near Auschwitz.<sup>117</sup> The output for market of certain enterprises in Shanghai, Guangdong, and Hainan is being counted without considering the vast hidden cost of the armies of quasi-slave-labor being used up in these *maquiladoras*-style "enterprise zones" of the China coastal region.<sup>118</sup>

Like the fraudulent accountings exaggerating China's purchasing power, Hitler did not concern himself with the costs of reproducing the millions of Polish and other victims of slave-labor "enterprise zones" such as Auschwitz. China's "enterprise zones," are melting down the many millions of China's population from the interior, for the profit of a relatively few entrepreneurs engaged in the *comprador* enterprises along the coast. It is that bloody, Hitlerian profit, which, by the positivists' logic of price-earnings multipliers, provides that fictitious wealth, the purchasing power of the popularized hoax.

Such are the Auschwitz-like accounting principles of Karl Popper's American admirer George Soros, the latter the patron of Jacques Derrida's shameless dogma of "deconstruction," in Poland, Hungary, and elsewhere in Europe today.<sup>119</sup>



Such evil, such as I.M.F. "shock therapy" and the Hitlerian accounting principles of George Soros and Jeffrey Sachs, must provoke the *imago Dei*, within each of us, not merely to denounce and combat such evil, but also, to adopt the alternative good.<sup>120</sup>

We have three tasks before us. To provide an alternative to the presently looming collapse of China *et al.*, we require three elements:

1. We must introduce adequate rates of scientific and technological increases of the *per-capita* and *per-hectare* physical-productive powers of labor, to reverse the collapsing of potential population-density to values far below actual population-density.
2. We must induce adjustments in "cultural paradigms," to the effect of motivating popular generation and assimilation of effective scientific and technological advances in productive and related practice.
3. We must foster that "cultural paradigm" with large-scale projects which provide the needed climate of progressive change in mankind's *per-capita* mastery over nature.

This latter must include a set of *priorities* for investment, placing the emphasis upon scientific progress, and upon increasing capital-intensity and energy-intensity concentrations as consistent with scientific progress. These are priorities for allocation of relatively scarce resources of investment and credit under relatively more favorable terms.<sup>121</sup>

## The Curse of Democracy

It is no accident, that the recent, most rapid loss of individuals' civil liberties inside the United States should have proceeded under the hypocritical banner of "Project Democracy."<sup>122</sup> Under the "democracy" of Carl Gershman's neo-conservative (i.e., fascist) cronies, a majority individual opinion is all-powerful, except those opinions of which Carl's cronies or the Frankfurt School "deconstructionists" do not approve. So, under the same banner, did the Democratic Party of Athens perpetrate the judicial murder of Socrates. That same democratic "cultural paradigm," of Athens' Miletus, *et al.*, gave us France's early 1790's Terror. Two among Robespierre's Freemasonic accomplices, Danton and Marat, were not only sent into Paris as assets of British Intelligence's Jeremy Bentham, but Adam Smith's co-thinker, Bentham was, at that time, not only the leading British advocate of pederasty<sup>123</sup> and usury,<sup>124</sup> but also the leading philosopher of British liberalism.<sup>125</sup> Prophetically, a few years earlier

in the 1780's U.S.A. debate on the preferable form of Federal constitutional government, Tom Paine successfully warned the majority of the electorate, that democracy, by its very nature, could tend toward even worse forms of tyrannical oppression of individual liberties than even monarchy.<sup>126</sup>

The currently rising tendency toward fascism shown by the moral decay of the U.S. legal system, is derived chiefly from the widespread influence of such followers of Francesco Zorzi as Thomas Hobbes and John Locke. This influence, reinforced by that kindred spirit of Immanuel Kant<sup>127</sup> radiated through the conquered cronies of treasonous Albert Pike,<sup>128</sup> is the axiomatic basis used by modern radical positivist philosophy in shaping the specific kind of fascism recently corrupting the U.S. legal system into some of the highest levels.

More broadly, consider the ongoing destruction of both U.S. public and higher education, by the lunatic, mind-destroying fads of Jacques Derrida's "Deconstructionism."<sup>129</sup> This cult of "text," spread through corrupt conduits such as the Modern Language Association (M.L.A.), National Education Association (NEA), and Anti-Defamation League (ADL) "World of Difference" packagings, is both a fascist philosophy, and a direct attack against the capacity of young Americans to think rationally.<sup>130</sup> It is this "deconstructionist" notion which is the fascist doctrine of practice at the center of Carl Gershman's Project Democracy.

The relevant characteristic feature of Locke's liberalism, like that of Hobbes before him, is the so-called doctrine of *tabula rasa*, the notion that, saving the kind of bestial instincts upon which Adam Smith predicates his "free trade" and moral dogmas of "asymptotic freedom,"<sup>131</sup> the human individual is treated as born with a "blank slate" of a mind, governed by no more than biologically hereditary forms of primitive, bestial instincts. This doctrine of *tabula rasa* is derived directly from Venetian neo-Aristotelian Francesco Zorzi's doctrine of empiricist sense-certainty; it is a denial of the existence, and, therefore, the authority of an intelligible body of *natural law*. All radical ideas of democracy, from Miletus of Athens, through Locke and Robespierre, to Carl Gershman's fascistic, "social imperialist" Project Democracy, are based upon this pragmatic substitution of arbitrary opinion for *natural law*.

Here lies the clue to the inevitably disastrous results of tolerating a doctrine of "free trade." If the determination of "value" in the "market-place" is left to a Locke form of "asymptotic freedom" for primitive bestial instincts, the purchaser will always view all goods as "overpriced" by whim of greedy producers and other sellers. The pragmatic object of such a market is to drive the

price of commodities to a level way below the cost of production, if possible. In the entire history of the matter, even centuries before Adam Smith,<sup>132</sup> "free trade" has never been anything but the looting of the credulous by the unscrupulous.

The recent looting of Poland, and of other parts of eastern Europe, and of China, by George Soros or like-spirited modern "carpet-baggers," illustrates the following point.

The failures of communist dictatorships, and also of liberal economies, have more than that one axiomatic feature—assured failure—in common. Neither permits the rational participation of the citizens in the shaping of national economic and related policy. (Voting foolishly, or on misguided impulse, for policies one does not understand, is not rational participation, but more like the foolish outbursts of childish enthusiasms by spectators at Nero's or present day sports spectacles.)

Liberal democracy, whose utopian ideal is Lockean faith in the non-existent god called "asymptotic freedom," prohibits a rational form of individual participation in the forming and implementation of national policy. It is the kind of individual participation which liberalism prohibits, which must be provided, if the survival of the now-threatened people of China is to occur. The nature of the dangerous, axiomatic folly of empiricist liberal democracy must be addressed accordingly, on this account.

The axiomatic root of the issue, is the empiricist denial of any *a priori* existence of a body of intelligible *natural law*. The argument, bearing on participation, goes as follows.

The subject of any rational deliberation on the forming or implementation of policy, is the foreseeable outcome of the proposed decision. That is to say, that all responsible policy-shaping must have the character of a scientific deliberation on matters of cause-effect; otherwise, the policy-shaping is irrational, more or less lunatic, essentially irresponsible. Sane deliberation must proceed from *intelligible principles*. In matters of statecraft, the body of such intelligible principles is termed *natural law*.

*Natural law* may be rendered adequately intelligible from a Christian Platonist standpoint; however, it is also true, that if one understands this Christian Platonist proof, one is also able to show how and why any rational form of culture, the Confucian current of China included, can come to fruitful, ecumenical agreement with the Christian on an important, if partial list of points of agreement. Consider some highlights of the Platonist argument from this vantage-point.

Begin, once again, with the type of Classical humanist education identified earlier: Let us present history to the

child and adolescent by means of the student's reliving acts of axiomatic-revolutionary discovery, in the order of "necessary predecessor," "necessary successor." Apply these to physical science, mathematics, Classical fine-arts forms, and modes of infrastructure-building and of rural and urban production. Then, situate history for the student, using the sundry discoveries relived (by the student's mind) as bench-marks for that chronology.

That kind of emphasis, upon relived mental experiences of original axiomatic-revolutionary discovery, supplies the student a proper referent for Heraclitus' famous "nothing is constant, but change."<sup>133</sup> This kind of change, axiomatic-revolutionary discovery, not sensual things, is then shown to be the event, the experience, the "fact" which correlates directly with the durable form of successful survival of mankind (increase of potential population-density). Then, consider the point: the durable survival of society is *change*, is the primitive form of manifestation of the notion of *existence* of mankind. It is not the sensual actuality of physical bodies of persons, nor any other counting of mere sensory objects, which measures the quality of human existence. That *change* which is necessary to perpetuate society's existence indefinitely, is *the primitive ontological* existence upon which one must premise the notion of a *function* of human existence.

That *change*, typified by that necessary existence, higher hypothesis, which subsumes valid cases of axiomatic-revolutionary discovery, becomes the well-defined pre-condition for durable forms of human existence. This fact then becomes the cornerstone of arguments showing the intelligibility of natural law.

There are two crucial considerations, added to the recognition of the primitive *ontological transfiniteness* of *such* change, which make the core of the larger argument. The first of these two is the demonstration that the generation and regeneration of those *ideas*, or *thought-objects*<sup>134</sup> corresponding to valid axiomatic-revolutionary, and related types of discovery, occur solely as a sovereign quality of creative action by an individual mind *qua individual*. The second is, that this individual's action cannot act directly upon the relationship between society and the universe in which we live, except in one way: the individual, through *types* of *ideas* corresponding to *creation* of an ordering of axiomatic-revolutionary discoveries, acts through that higher idea, that *higher hypothesis*, upon that *macrocosm* which is the integrated past, present, and future of all mankind.

Thus, does the individual know creative reason as a palpable subject of consciousness, as a member of a higher class of ideas for which there is no sense-certainty other than the crucial-experimental demonstration of

the "necessary existence" of a principle of *ontological change* in nature. This knowledge of the *thought-object*, "creative," in this way of hypothesizing the higher hypothesis, is the premise for the demonstrable intelligibility of the *natural law* concept *imago Dei*. This could be demonstrated only through those forms of interaction between individual creative reason and the *macrocosm* which are themselves direct participation in shaping the *outcome* of combined past, present, and future of mankind. This participation must be for the benefit of all such mankind: Hence, the consubstantiality of *imago Dei* and *agapē* is demonstrable in terms of *capax Dei*. That is the inner core of *natural law*.

One must recognize, that the generation and regeneration of such *ideas* is not only the source of that new knowledge, upon which the continued existence of mankind depends. The population, by the same faculty within each of them, must be motivated and able to regenerate those ideas in productive and other practice; that recognized, the need for *participation* is thus shown.

Not all individual opinions are equal. Some are morally *right*; some are morally *wrong*: the measure of that distinction is intelligible natural law. Some moral forms of individual opinion are far better than commonplace; some, according to the same yardstick of natural law, are pathetically inferior. These differences in opinion must be settled by an agency of *value judgment*. That agency must be the embraced obligation of society to judge such matters according to natural law.

Instead of that foolish, dangerous, immoral thing, called liberals' "democracy," we have the inalienable rights of the individual person, in his capacity as *imago Dei*, according to natural law. Since the individual human life is thus *sacred (imago Dei)*, absolutely above all inferior species, we have the sacred right to human life, which cannot be denied for the convenience of any person, nor for the convenience of any government. This life has a natural-law right to that which pertains to his or her development and useful functioning.

On the same premise, the family is sacred, and enjoys natural rights which may not be infringed upon for the convenience of any person or government. These are rights which inhere in, and are derived from the conception, birth, and nurture of the young until they shall become matured adult citizens. In the same fashion, the sovereignty of the nation-state republic is shown to be sacred under natural law.

All of these rights pertain to a constitutional form of society whose constitution is under the rule of intelligible natural law. This proper form of self-government of a sovereign nation-state under natural law, centers around the fostering of the citizen's participation in the form

of policy-shaping which subordinates the positive law and related action of nations and their governments to *intelligible* natural law.

Nations or their current governments may, of course, refuse to accept these conditionalities. They refuse at their own peril; the penalty for defiance of natural law has often been awesome; we have entered a time when nations which defy natural law may soon disintegrate.

Within the envelope of reason, not only do programs of economic progress borrow the authority of natural law; it is immoral, and dangerous therefore, not to subject one's nation's economic affairs *always* "dirigistically" to some moral purpose, an efficiently chosen outcome cohering with increase of potential population-density, both nationally and globally. Thus, "free trade" is an intrinsically immoral, and dangerous policy.

The core of the issue with the "free traders," or the Legalist current of China, is this issue of *natural law*. Locke denies such natural law, denies *imago Dei*, as did Hobbes before him; that is the essential immorality of their teachings, of their followers, and of the influence of both.

Unless the people of China become engaged in participation in furthering the benefits of investment in scientific and technological progress, China cannot be rescued from the devastating hecatomb of economic collapse threatening it but a few years ahead. The posing, and implementation of great infrastructural and other projects, is the crucial economic-policy decision upon which the success or inevitable doom of the twenty-first century Basin pivots.

Formally, the rescue of China may be calculated in terms of programmatic development premised upon investment in universalized scientific and technological progress. Without the participation of an inspired people of China in the generation and regeneration of the axiomatic-revolutionary ideas of such progress, the stink of Taoism and Legalism will drown the best program in national suicidal cynicism and the hecatombs which ensue from the persistence of the Legalist tradition.

### 3.3 | Three Crucial Tasks

There are three categories of topics upon which point the development of the Basin's physical economy depends. These are the correlation of changes in: (1) *division of labor*, (2) *physical correlation per capita and per hectare*, and (3) *direction of advances in technology required as potential population-density is increased*. A summary of these three types now should make clearer the way in which the concept of a science of history determines the

concreteness of certain practical tasks of statecraft at each new juncture.

*Division of Labor:* The division of labor in society is, in first approximation, primarily among essential and non-essential, productive and non-productive, and urban and rural modes of employment of members of the total labor-force of the society. The *required* composition of this division of labor, e.g., in percentiles of the total labor-force, undergoes foreseeable direction of transformations as the level of practiced technology is raised or lowered. Any marked deviations from that optimal "structure," or "spectroscopy" of the division of labor indicated for a level of practice technology results in a corresponding decline in productivity, and, therefore, in potential population-density, relative to the optimum.

For known forms of ancient, medieval, and modern societies, this transformation in "structure," or "spectroscopy" of that division of labor may be approximated successfully for statistical approximations by a system of superficially linear form of (inequalities) constraints, which have been elaborated in sundry published locations.<sup>135</sup>

The presentations of these constraints is built up synthetically by considering the relationship of the biological-cultural family, and the education of the young members of that family, to the generation and maintenance of *per-capita* and *per-hectare* values of production of the physical output contained in *per capita-per hectare* "market-baskets" of required households', producers', and infrastructural consumption. This productive-consumption cycle is considered as a function of increasing "negentropy," as defined by the required condition that the rate of "free energy" to "energy of the system" must rise, despite necessary increases in "energy of the system" *per capita* and *per hectare*.

Thus, the "profit" of a physical economy is the "net free energy" after deducting "waste," "friction"; the profit is invested in the economy to the purpose of simultaneously increasing the scale of the system, and the *per capita* "energy of the system," while employing investment in technological progress to increase further the "free energy" ratio.

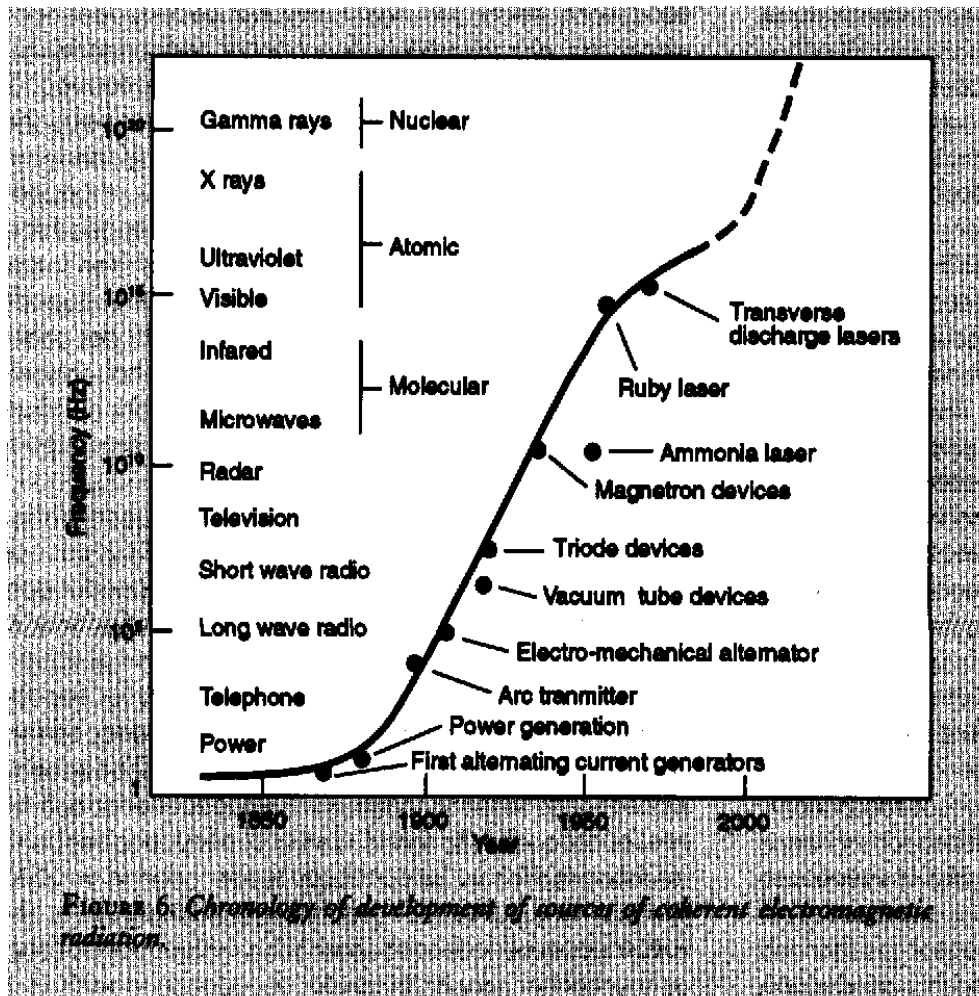
A proper measure of *economic value* must eliminate all monetary considerations. Only physical-economic data may be employed for constructing the "bench-marks" and comparisons required. These data are: (1) relationship between *total population* and *available labor-force*, as determined by the (child-conceiving and nurturing) *family demographics*, as adjusted for age-intervals by cultural-technological considerations; (2) the *spectroscopy* of the *categorical division of labor of the labor-force*, according to *level of productivity per capita and per hectare*, and by *relative level of technological culture*; (3) as corre-

lated with *power per capita and per hectare*, and with *energy-flux density relative to a level of technological culture*; (4) *water through-put per capita and per hectare*; (5) transportation (in total and rates) of *ton-miles-hours, per hour, per capita, per hectare*; (6) *market-baskets of producers' goods plus physical-scientific and engineering services, per capita of labor-force, per capita of population, per hectare, for infrastructural improvements and maintenance, and for producers' goods*; (7) *market-baskets of households' goods, including education and health infrastructure, per capita and per hectare*; (8) output of *combined and separate producers' goods and households' goods, per capita of labor-force, and per capita of total population, and per hectare*; (9) subdivisions of these measurements.<sup>136</sup>

The study of this complex of physical-economic data should be conducted *initially* in the form of a critical-pathway network's constructions.<sup>137</sup> This network's portrayal should subsume the aforementioned features of the physical-economic productive process as a whole. This data-base may be constructed *initially* as for the application of input-output analysis based upon hierarchies of *process sheets* and *bills of materials*. The process studies and bills of materials take into account both *applied time*, and *the lapsed time* of process and materials movement within both the *particular process* and the *network as a whole*. The task implicitly posed by the construction of such a data base has a certain resemblance to attempts to square the circle; this construction is thus to be regarded as forcing us to conceptualize the *necessary existence* of higher-species, "non-linear" transformations, being treated indirectly, paradoxically, by aid of successive, ultimately impossible efforts at linear asymptotic approximations.

This construction of an initial data base reduces the ostensible material inputs to: productive labor, power, power-flux-density, water, and required improvement-maintenance of land area. In addition to this material input, we must account for science, education, medical care, and engineering (as "intellectually productive labor" other than physical labor). Administration is treated as a labor-cost, but not as "productive."

On this basis, we apply to each successive state of such a changing network, so described, a set of constraints (inequalities), covering labor, productivity of labor, changes in "spectroscopy" of the division of labor, and of power, power-density, water, and required improvements of land- and water-area. We apply to this image of a network whose change is in flux, that non-Boltzmann notion of "negentropy" referenced above: a rising rate of "free energy" to "energy of the system," the latter under the condition, that the total and *per capita* "energy of the system" are both rising *per hectare*.



from the molecular to the nuclear scale of wave-length, is a mechanically equivalent case.<sup>138</sup> (SEE Figure 6) Those two true singularities<sup>139</sup> of non-linear radiations (e.g., "solitons"),<sup>140</sup> represent a different quality of the same general equivalence. In general, the *technologies* so portrayed by this notion of equivalence, are a correlate with a species of crucial-experimental scientific principles, principles of valid axiomatic-revolutionary discovery.

All "crucial," or better said, "axiomatic-revolutionary" experiments,<sup>141</sup> are equivalent to the critical experiment which place non-algebraic above the algebraic domain, and, also, the transfinite above the non-algebraic. The method involved is, as in the illustrative treatment of Archimedean quadrature of the circle, to drive an assumption to its outer limit of paradox, and beyond that. This defines a true paradox, akin to the principled ontological paradox of Plato's *Parmenides* dialogue. The form of the required solution is

This approximate "model of reference," used to describe, as simply as possible, the transformations occurring in the integrated data base of our changing network, implicitly poses to us the issues of *technology*. For this purpose, consider the paradox posed by Leibniz's image of the *per-capita* increase in output *per* hour achieved by increasing the power supplied to a heat-powered machine.

Given two heat-powered machines, each performing the same type of work, using the same power, operated alternately by the same operator. One of these constantly yields an approximately constant higher rate of output than the other. If this difference is shown, by elimination, to be attributed only to some principle of tool-design in the more productive of the two machines, the superiority is attributable not to the amount of power used, but to a difference in *technology*. The idea of *technology* is the generality subsuming such and equivalent cases.

One such case, is the sharpness of a blade of a knife. The use of this tool, by the same user, yields a higher rate of output; the difference is concentrated in a form equivalent to *power-density*; the impact of the principle of laser "self-focusing," as we move upward in frequency

also, implicitly, so defined.

In respect to physical processes, all principles must be ultimately tested, and proven (at least, implicitly) for three qualities of cases: *astrophysics*, *microphysics*, and *living processes*. The results in any of these three domains must cohere with the results in the other two.

Thus, for example, the Keplerian determination of the solar harmonic orbits as a quantum field, must be echoed on the relevant microphysical scale, and in a characteristic feature of living processes in general. This is in opposition to the pseudo-classical Newton-Maxwell mechanistic system, which proceeds from an Aristotelian reading of the assumedly principal facts of sense-certainty, taken in some pairwise, linear relationships, attempting to build up a deductive-inductive picture of astrophysics, life and quantum mechanics from the macro-scale of primitive sense-certainty.

It is implicit from such lessons of historical physical economy, that the highest rates of increase of physical productivity *per capita* and *per* hectare (e.g., potential population-density) are to be obtained by "dirigistic science-driver" programs, recently typified by President de Gaulle's program for Fifth Republic France, and for

the Kennedy administration's launching of the manned moon-landing program of the 1960's. The best such programs, like the U.S. Manhattan Project, or the Apollo Project, are what are termed loosely "crash programs."

In a "crash program," the estimated rate of completion of the targetted result is premised upon the virtual certainty that an array of included discoveries can be effected, each in time, in a sequence of "necessary predecessors," "necessary successors," to supply the required benefit to the timely completion of the program.

There are two distinguishable, if interdependent, categorical features of such a "crash program." First there is the most critical limiting pathway through the chains of scientific discoveries to be made. This type of critical chaining is defined, as we have just observed, by the cases for which one or more such discoveries must be completed as a necessary predecessor to one or more necessary successors. Second, there is the benefit of technological progress in fostering both feasibility and rate of scientific progress. If these two factors, scientific and technological, are driven at relatively high rates, a non-linear acceleration of benefits is the result.

Another way of describing this, is to view it as a case of highly accelerated *technological attrition*. This drives downward rapidly the physical replacement cost of superseded technologies. This beneficial result is accomplished, by accelerating the rate of growth of productivity still further, as by-products of a main-line crash program are "spun off" into the broader economy, and as the "frontier technologies" of the rapidly-advancing main lines of the project become the beneficial, "slightly used hand-me-downs" for a broader economic sector.

Throughout the Basin, if we are to evade now-impending "Dark Age" effects, it is indispensable that we maximize the rate of realized scientific and technological progress to near the limits of possibility. This requirement is implied by the size of the gap which we must overcome, between actual population-density and the much higher levels of minimal tolerable potential population-density. Consider one illustration of this point: the importance of rapid development of ultra-high-speed, sea-going freighters, using magnetohydrodynamic drives, as an alternative to mechanical modes of propulsion.<sup>142</sup>

For this discussion, the cost of freight transport has three most relevant factors. First, the *cost per ton-kilometer*; second, the *cost of handling incorporated into the movement*; and, third, the *inventory costs incurred by lapse of time inhering in the choice of transport-medium*. Relative availability of each type of medium put momentarily aside, those three elements of cost-variability, taken together, are the principal considerations of physical cost

effecting a choice of mode of transport,<sup>143</sup> as among ocean freight, coastal or inland waterways, rail, highway, and air freight. As a corollary implication, these cost considerations, the relative availability and physical efficiency of these modes determine arteries of trade, may, in turn, even determine suitability of a local area, or of a region of the planet, as a viable site for investing in production.

In brief, in the Basin generally, it is of crucial importance that we bring coastal and sea-going freight *lapsed-time rates* into competition with rates for overland rail transport. The far reaches of the Pacific, and into and out of the Indian Ocean, dictates such a technological revolution in sea-going transport. The internal development of the highly maritime economy of the ASEAN region represent a related need. This is needed for transport of perishable and seasonal goods in particular. It is required, generically, for all goods of relatively high *per-ton value*.

This included factor of lapsed-time inventory-cost should not be measured in terms of interest-rates or money-capital tied up by goods in transit. It should be measured in terms of the margin of increased *physical cost* of maintaining the enlarged stream of production in queue to cover the delayed goods' arrival at their next point of production or consumption. This preferred measurement is then to be translated into terms of impact upon the "free-energy ratio."

Similarly, in choice of modes of production, or transport, we must always apply the presently much-neglected notion of "energy pay-back," and analogs of that kind of estimation. National, regional, and global economic policies must be coherent with a choice of these physical parameters, independent of price considerations, which determine the cumulative, medium-term to longer-term effects of a choice of mode of energy production, water supply, transportation or of productive technology. These choices always lead one to require the highest level of technology for the medium- to longer-term, and to development of yet-more-advanced technologies. *Higher, ever-higher energy-flux-densities* is typified by the necessity for early medium-term conversion of all sea-going transport of Basin freight to a magnetohydrodynamic drive.

The large-scale projects of infrastructure-building form, as a whole, the "market" needed for an expanding investment in output by vendors of the equipment, materials, and supplies which these projects require. Such infrastructure-building projects are coupled with accelerated development of agriculture, manufacturing and those construction ventures which lie outside the infrastructure projects as such.



To a very limited, diminishing degree, we must absorb as fully as possible the otherwise unemployed, available pools of labor at that labor's present level of skill-learning potential. We must not allow such a necessary temporary practice to become a "cheap labor policy." We must draw labor, increasingly, predominantly away from employment in work of low *per capita* "energy of the system," toward investments in "frontier technologies." This must be policy for even regions which are ostensibly the poorest in development.

Put the argument against the "cheap labor policy" of Auschwitz, NAFTA, and the China *maquiladoras* in the following terms. A cheap-labor economy is one in which the *per capita* "energy of the system" is characteristically low. This is a poor quality of culture, in which both the *per capita* absolute "free energy," and also the "free energy ratio" are very low relative to successful cultures. Under present circumstances, such a policy signifies for mainland China, for example, an inevitable, early, rapidly accelerating collapse into the worst "Dark Age" in the history of China's culture.

Our purpose ought to be, to bring the nations of the Afro-Asian side of the Basin up to a skyrocketing rate of gain in "free-energy ratio." That result can be achieved by no other means than a rapidly increasing *per capita* ration of "energy of the system." Those results could be effected only through "crash program" strategies. This requires an increasingly capital-intensive and energy-intensive mode of investment in applications of frontier qualities of scientific and technological progress. This means an included goal of about ten percent of the total labor-force employed in scientific and technological

progress as such.

The key to the principal requirement of participation by the people, to transform such an indispensable program of "dirigistic" development into its successful realization, may be fairly described, in first approximation, as a kind of feeling of joy, like the turning on of a light in the mind. This is the affective state of individual, shareable joy which occurs as one is first assured that he or she has solved, in his or her own mind, the discovery of Cusa's *De Circuli Quadratura*.<sup>144</sup> This is the characteristic, symptomatic, affective state of mind which appears in all genuine moments of original, or regenerative axiomatic-revolutionary, and related, valid scientific discovery, either as master, or as student.

This is also the characteristic aesthetical emotion evoked by great masterpieces of Classical forms of fine arts (as opposed to the erotic self-degradation prompted by Romantic works, such as those of Richard Wagner). This is that musical "spark" of creative insight, initially indefinite, which Friedrich Schiller's artist elaborates then into a poem or a great, poetic musical composition.<sup>145</sup> It is the joy associated with achieving this state of mind, through morally beneficial contributions to nation and to mankind, which is typical of that motivation wanted to prompt effective participation by the population in a true Renaissance.

This is, then, exemplary of the real-life practice of the science of history, that science of history which is shaping history through the instrumentality of true Platonic *ideas* of the second and third order, of higher hypothesis and hypothesizing the higher hypothesis.

This is what we must now do.

## NOTES

### Prologue

1. February 1983, "back-channel" discussions of SDI proposals, on behalf of the U.S. government, with a designated Soviet official; also, *EIR Special Report: Global Showdown, The Russian Imperial War Plan for 1988* (Washington, D.C.: Executive Intelligence Review, July 1985), *passim*. The author stressed on both occasions that Soviet rejection of a U.S. offer of SDI-pivoted cooperation in sharing "new physical principles of technology" would virtually assure a Warsaw Pact economic debacle by approximately 1988. Cf. March 23, 1983, SDI address by President Ronald Reagan. Compare *Global Showdown*, pps. 1-26, 227-234, 242-259.
2. The 1898-1904 establishment of the French-English *Entente Cordiale*, the fall of Count Sergei Witte's government in Russia, and the role of U.S. President Theodore Roosevelt made the outbreak of Britain's geopolitically motivated holocaust called

World War I virtually inevitable by approximately ten years before the outbreak of that war.

For example, World War became virtually inevitable over the 1898 Fashoda incident through 1904, the period Britain's Lord Grey, and his French "political catamite" Théophile Delcassé, established the Anglo-French *Entente Cordiale*.

3. Carroll Quigley, *Tragedy and Hope, A History of the World in Our Time* (New York: Macmillan, 1966).
4. Francis Fukuyama, *The End of History and the Last Man* (New York: Free Press, 1992).
5. Aeschylus (525-456 b.c.); greatest of the Classical Greek tragedians.
6. Christopher Marlowe (1564-1593); his *Jew of Malta* and *Dr. Faustus* are the tragedies implicitly referenced here.
7. Miguel de Cervantes (1547-1616); his *Don Quixote* is a prose

- guise for a composition fully in accord with the principles of composition of Classical tragedy: the failure of both those fools, Philip II, and of the alternative, the Sancho Panzas of sixteenth-century Spain, who were too occupied with their personal sensuality to govern themselves.
8. William Shakespeare (1564-1616); this famous Marlowe protégé became the greatest of the English-language tragedians.
  9. Friedrich Schiller (1759-1805): German poet, dramatist, philosopher, and historian.
  10. See Friedrich Schiller, "On the Use of Chorus in Tragedy," *Fidelio*, Vol. II, No. 1, Spring 1993, pp. 60-64. See also "On the Reasons We Take Pleasure in Tragic Subjects" (Schiller Institute, unpublished trans. by George Gregory) (German original: "Über den Grund des Vergnügens an tragischen Gegenständen," in *Friedrich von Schiller, Sämtliche Werke in Sechs Bänden* (Stuttgart: Phaidon Verlag, 1984), vol. 5, pp. 127-140), and "On Tragic Art," (Schiller Institute, *ibid.*) (German original: "Über die tragische Kunst," *ibid.*, pp. 141-162). See also "On the Pathetic" and "On the Sublime," in *Friedrich Schiller, Poet of Freedom*, Vol. III, ed. by William F. Wertz, Jr. (Washington, D.C.: Schiller Institute, 1990). For Schiller on Shakespeare, see "On Naive and Sentimental Poetry" in the same volume.
  11. See Friedrich Schiller, "What Is, and To What End Do We Study, Universal History?" (Inaugural Lecture as Professor of History, Jena University, May 26-27, 1789); and "The Legislation of Lycurgus and Solon" (Lecture, Jena University, August, 1789), in *Friedrich Schiller, Poet of Freedom*, Vol. II, ed. by William F. Wertz, Jr. (Washington, D.C.: Schiller Institute, 1988).
  12. For Friedrich Schiller on the role of the *punctum saliens* in tragedy, see, e.g., the "Introduction" to his *History of the Revolt of the United Netherlands Against Spanish Rule*, in *Friedrich Schiller, Poet of Freedom*, Vol. III, *op. cit.*, pp. 177-191. See also footnote 191, Section 2.
  13. During 1948-1952, the author applied his earlier defense of Leibniz against Immanuel Kant's *Critiques*, to refuting the objectionable, "neo-Kantian" features of Professor Norbert Wiener's *Cybernetics* dogma of "information theory." The result of this work was the author's original contributions to advancement of Leibniz's science of physical economy, as reported in Lyndon H. LaRouche, Jr., "The Science of Christian Economy," in *The Science of Christian Economy and Other Prison Writings* (Washington, D.C.: Schiller Institute, 1991).
  14. Lyndon H. LaRouche, Jr., "The Science of Christian Economy," *op. cit.*; "On the Subject of Metaphor," *Fidelio*, Vol. I, No. 3, Fall 1992; "Mozart's 1782-1786 Revolution in Music," *Fidelio*, Vol. I, No. 4, Winter 1992; "On the Subject of God," *Fidelio*, Vol. II, No. 1, Spring 1993.
  15. Georg Cantor, "Beiträge zur Begründung der transfiniten Mengenlehre," in *Georg Cantors Gesammelte Abhandlungen*, ed. by Ernst Zermelov (Hildesheim, 1962), pp. 282-356; English translation: *Contributions to the Founding of the Theory of Transfinite Numbers*, trans. by Philip E.B. Jourdain (1915) (New York: Dover Publications, 1941).
  16. It is a fair statement, that for most mathematical-physics formulas, and other relevant academic professionals, Cantor's domain of the "*Alephs*" is conceded to reference the discovery of a proper part of the domain of existent numbers, but represents a part of the number domain which has no efficient correspondent to the domain of physics as such. That view, and similar ones, are mistaken. Cantor's development of his general theory of transfinite numbers, including the notion of the *Aleph*-transfinite, carries the principle of change according to a *type* of equivalent form of change, or self-similar change, forward in the direction which is explicit in Plato, in asserting the ontological primacy of change as the *hypothesis of the higher hypothesis*. Thus, Cantor's notion of change as expressed by the *Aleph*-transfinite is precisely that which is attacked by Parmenides and his successors in the Eleatic School and others, the Rhetoricians, Aristotelians, and Stoics.

## Section 1

1. See Lyndon H. LaRouche, Jr., "The Cultural Determinants of an Anti-Missile Beam Weapons Policy," a speech delivered to a Dec. 31, 1982 conference of the International Caucus of Labor Committees and reprinted in *New Solidarity*, Jan. 14, 1983, Vol. XIII, No. 86, pp. 4-5, for a presentation of the historical significance of the adoption of what would later be called the "Strategic Defense Initiative."

On Jan. 17, 1983, the author held a press conference in New York at which he exposed a "very dirty game" which was being played to put a halt to the Reagan administration's commitment to developing defensive space-based beam weapons. See "LaRouche Charges: British Sabotage U.S. Beam Weapon Policy," *New Solidarity*, Jan. 24, 1983, Vol. XIII, No. 89, p. 1; "Beam-weapons sabotage: Heritage boosts Andropov," *Executive Intelligence Review*, Feb. 1, 1983, Vol. 10, No. 4, p. 54; "Global 2000 Maniacs Aim To Wreck U.S. Defense," *New Solidarity*, March 7, 1983, Vol. XIV, No. 1, p. 1; "LaRouche: Beam Weapons, the Military Policy for Peace," *New Solidarity*, March 18, 1983, Vol. XIV, No. 4, p. 8.

As Soviet officials had reported privately during February 1983, some of the highest levels of the Democratic Party had promised Moscow that they would prevent President Reagan from adopting LaRouche's proposed ballistic missile defense policy (which President Reagan announced as "Strategic De-

fense Initiative.)" It was these same Democratic Party circles which created and circulated the silly, oxymoronic term, "Star Wars."

2. *Global Showdown*, *op. cit.*, footnote 1, Prologue.
3. Graham, who campaigned vigorously against the SDI during late 1982 and early 1983, suddenly claimed patronage of the concept shortly after President Reagan's March 23, 1983 announcement. Graham peddled an obsolete, "kinetic" weapons concept from the 1962-1963 period.
4. This system, recently offered for the Yeltsin-Clinton "Vancouver Summit" is the main system under Soviet development as reported by *EIR* in its *Global Showdown* and related reports of the 1983-1988 interval. See, for example, *Global Showdown*, p. 234, *op. cit.*

On April 2, 1993, the Russian newspaper *Izvestia* carried a policy proposal which it said would be offered at the upcoming Yeltsin-Clinton summit in Vancouver, Canada. The article, titled "On the Eve of Vancouver—Russia Proposes to the U.S. a Joint Plasma Weapons Experiment," called for a cooperative program of development of anti-missile "plasma weapons," and in its key characteristics, reflected the author's original policy design of a shift to effective defense against nuclear attack based on scientific breakthroughs. A full report with excerpts from the *Izvestia* article can be found in *Executive Intelligence Review*

Vol. 20, No. 15, April 16, 1993, pp. 26-29. See Charles B. Stevens, "The probable design parameters of the nuclear-powered x-ray laser," *Executive Intelligence Review*, Vol. 15, No. 45, Nov. 11, 1988, pp. 26-29; see also Jonathan Tennenbaum, "Russia's new SDI offer heralds scientific and strategic revolution," *Executive Intelligence Review*, Vol. 20, No. 17, April 30, 1993.

5. For Mackinder on "geopolitics," see Halford J. Mackinder, *Democratic Ideals and Reality*, ed. by Anthony J. Pearce (New York: W.W. Norton, 1962), including "The Scope and Methods of Geography," "The Geographical Pivot of History," and "The Round World and the Winning of Peace."
6. Sergei Witte (1849-1915), Russian Finance Minister (1893-1903) and Prime Minister (1905-6); entered government service in 1870, where he learned about railways "from the ground up." It was Witte as director of railways in 1889 who ensured that the Trans-Siberia Railway project got under way. Witte conceived of the project as one link in a continental network of rails that would unite the Eurasian continent from Paris to Berlin to Moscow to Vladivostok, encompassing China and Japan as well. Witte's grand design would have linked the industrialized Western European countries to the less-industrialized and underdeveloped areas of Russia and China, and could have become the basis of Eurasian economic growth and stability. When the Russian Revolution of 1905 broke out, Witte helped to author a constitution which was reluctantly approved by Nicholas II. But as Rasputin and the hardline imperialist circles came to influence Nicholas more and more, the Czar soon reneged on the constitution, thus making Witte's position as head of the State Council untenable. Witte left government service and went into exile in Switzerland.

For Witte's autobiography, see *The Memoirs of Count Witte*, trans. and ed. by Sidney Harcave (New York: M.E. Sharpe, Inc., 1990). Harcave's is the first complete translation of Witte's

*Memoirs* into English.

7. See Jacques Cheminade, "Will We Repeat the Blunders That Led to World War I?" *Executive Intelligence Review*, Vol. 18, No. 48, Dec. 13, 1991, which presents a translated and edited version of the author's original "Fachoda, Quand les nuées portent l'orage (Fashoda: When there are storms in the clouds)," in *Regard sur la France républicaine* (Paris: Editions Alcuin, 1991), chap. 9.
8. See Webster Griffin Tarpley and Anton Chaitkin, *George Bush: The Unauthorized Biography* (Washington, D.C.: Executive Intelligence Review, 1992), pp. 26-44.
9. Charlemagne initiated major infrastructure projects throughout the extensive area of Europe incorporated into his Holy Roman Empire, centered chiefly around the development of inland waterways for transport, and the potential to establish settlements derived from such a transport system. The key projects were a Rhine-Main-Danube canal, and a canal to link the Moselle with the Saône, and thus the Mediterranean. By Christianizing the Saxons, he pushed the frontier from the Rhine to the Elbe-Saale line, past Berlin; the Rhine-Meuse line was the core of the Empire; the Elbe-Saale line leads to Prague, and thence across the Bohemian mountains to Vienna, whence the Danube. For contemporary accounts of Charlemagne's building projects, see *Two Lives of Charlemagne: Einhard and Notker the Stammerer*, trans. with intro. by Lewis Thorpe (Harmondsworth, England: Penguin Books, 1967).
10. For a complete rundown of the devastation caused by the looting policies of Harvard Professor Jeffrey Sachs in Eastern Europe and the former Soviet Union, see "Towards a Lasting Peace in Europe: Policy-Makers Meet in Bonn, Germany June 4-5, 1993," printed in *The New Federalist*, Vol. 7, No. 23, June 21, 1993.

## Section 2

1. See Lyndon H. LaRouche, Jr., "Subject of God," *op. cit.*, pp. 24-28.
2. For the productive powers of labor, see Alexander Hamilton, "Report on the Subject of Manufactures (Dec. 5, 1791)," in *The Political Economy of the American Revolution*, ed. by Nancy Spannaus and Christopher White (New York: Campaigner Publications, 1977), pp. 386-388.
3. See Nicolaus of Cusa, *De Docta Ignorantia (On Learned Ignorance)*, trans. by Jasper Hopkins as *Nicholas of Cusa on Learned Ignorance* (Minneapolis: Arthur M. Banning Press, 1985). Also see trans. by William F. Wertz, Jr. of Nicolaus of Cusa's "On Conjectures" and "On Beryllus" in *Toward a New Council of Florence* (Washington, D.C.: Schiller Institute, 1993). In the latter essay Cusanus writes that "man is the creator of rational entities and artificial forms. ... He measures his intellect through the power of his works and from this he measures the divine Intellect, as the truth is measured through its image."
4. For texts and commentary on the Eleatics and Sophists, including Parmenides, Xenophanes, and Zeno, see G.S. Kirk and J.E. Raven, *The Presocratic Philosophers: A Critical History with a Selection of Texts* (London: Cambridge University Press, 1964).
5. The Venetian Francesco Zorzi (or Giorgi) was the founder of a gnostic cult in England during the period of the 1518 fight in which Henry VIII voided his marriage to Catherine of Aragon. It was Zorzi, Venice's premier cabalist scholar, who provided the justification that Henry's marriage to Catherine

was never valid, as the Pope had had no right to grant dispensation for the marriage in the first place. This marked the beginning of the direct Venetian takeover of England.

Writing in his 1525 *Harmonia Mundi*, Zorzi attacked Nicolaus of Cusa's *De Docta Ignorantia* as follows: "Those who retreat from the direct knowledge of the universe will retreat into the *Docta Ignorantia*" [as quoted in Francis A. Yates, *The Occult Philosophy in the Elizabethan Age* (London: Routledge and Kegan Paul, 1979)]. Hence, Zorzi's gnostic cult, which claimed Robert Fludd and John Dee as members, and which formed the basis for the Rosicrucians and later, by way of the influence of Francis Bacon, inspired the Royal Society of Isaac Newton, had been the enemy of Nicolaus of Cusa from the beginning. See footnote 106, Section 2.

6. See Lyndon H. LaRouche, Jr., "In Defense of Common Sense," chap. II, in *The Science of Christian Economy*, *op. cit.*
7. This is *types*, as used in the sense stipulated by Georg Cantor. Cf. "Metaphor," *op. cit.*, pp. 23-36.
8. LaRouche, *ibid.*
9. "Rational theology" signifies "scientific theology" with the qualification, that only that Platonic method which uses *the method of higher hypothesis* to show the necessary existence of a higher species from the paradoxes of the lower species (e.g., Leibniz's ontological proof of the necessary existence of the Creator) is competent to treat the topics of theology.
10. Gottfried Wilhelm Leibniz, *Discourse on the Natural Theology*

- of the Chinese, trans. by Henry Rosemont, Jr. and Daniel J. Cook, Monograph No. 4 of the Society for Asian and Comparative Philosophy (Honolulu: University Press of Hawaii, 1977). See also Michael O. Billington, "Toward the Ecumenical Unity of East and West," *Fidelio*, Vol. II, No. 2, Summer 1993, pp. 4-37.
11. See Lokamanya Bal Gangadhar Tilak, *The Orion; Or, Researches into the Antiquity of the Vedas* (1893), 5th ed. (Poona: Shri J.S. Tilak, Tilak Bros., 1972), for astronomical evidence of the antiquity of Indo-European language-culture as preserved in the Vedas.
  12. Billington, *op. cit.*
  13. Billington, *ibid.*
  14. Data for Chart 2 are taken from Colin McEvedy and Richard Jones, *Atlas of World Population History* (Middlesex, England: Penguin Books, 1978); see also LaRouche, "Subject of God," *op. cit.*, pp. 25-28.
  15. For the role of the Council of Florence in initiating the scientific renaissance, see Helga Zepp-LaRouche, "Nicolaus of Cusa and the Council of Florence," *Fidelio*, Vol. I, No. 2, Spring 1992, pp. 17-22; and Nora Hamerman, "The Council of Florence: The Religious Event that Shaped the Era of Discovery," *ibid.*, pp. 23-36.
  16. Nicolaus of Cusa, *De Docta Ignorantia*, *op. cit.* Principal writings on the subject of scientific topics by Cardinal Nicolaus of Cusa, composed after *De Docta Ignorantia*, include: "On Conjectures (De coniecturis)," "On Beryllus (De beryllo)," "On the Game of Spheres (De ludo globi)," "On Quadrature of the Circle (De circuli quadratura)," "On Mathematical Complements (De mathematicis complementis)," "On Geometrical Transformations (De geometricis transmutationibus)," "Quadrature of the Circle (Quadratura circuli)," and "The Golden Proposition in Mathematics (Aurea propositio in mathematicis)."
  17. Philo ("Judaeus") of Alexandria, "On the Account of the World's Creation Given by Moses" ("On the Creation"), in *Philo*, Vol. I, trans. by F.H. Colson and G.H. Whitaker, Loeb Classical Library (Cambridge: Harvard University Press, 1981).
  18. See footnote 7, Section 2.
  19. LaRouche, "Metaphor," *op. cit.*, pp. 17-50, *passim*.
  20. Epistemologically, the methods of the Eleatics, Aristotle, the Isocrates School of Rhetoric, and the Sophists generally, are of the same type. The attack on the Pythagoreans by the Eleatics (Parmenides *et al.*), set the stage for the emergence of the various doctrines of the method of sense-certainty, such as those of the Rhetoricians, Aristotle, and the Stoics. The essential feature, is the denial of the principle which Plato implicitly affirms by posing the problem of the ontological paradox of the One and Many, as he does in his *Parmenides* dialogue in addressing directly the problem posed by the fragmentary Poem of Parmenides. What the Eleatics do, and they do this very specifically, is to deny the principle of change. All of Aristotle's work is premised on the tradition of the Eleatic opponents of Pythagoras and Plato, as this was transmitted through Isocrates and his School of Rhetoric. See footnote 4, Section 2.
  21. Plato, *Timaeus* in *Plato: Timaeus, Critias, Cleitophon, Menexenus, Epistles*, Loeb Classical Library, trans. by R.G. Bury (Cambridge: Harvard University Press, 1929), pps. 30c-31a; 48e-55c; and the conclusion at 92c: "And now at length we may say that our discourse concerning the Universe has reached its termination. For this our Cosmos has received the living creatures both mortal and immortal and been thereby fulfilled; it being itself a visible Living Creature embracing the visible creatures, a perceptible God made in the image of the Intelligible, most great and good and fair and perfect in its generation—even this one Heaven sole of its kind."
  22. At a time that Mark Antony was replaying the Rome-Alexandria alliance with Cleopatra, Julius Caesar's heir met with the priest of the Syrian Cult of Mithra on the Isle of Capri negotiating a Rome-Mithra alliance against Anthony and Cleopatra. The results were the military defeat and death of Anthony and Cleopatra, the establishment of an imperial "new world order" under the rule of the Roman legions, and the dedication of the Isle of Capri to the Cult of Mithra and to the perpetual possession of the Caesars.
  23. The term "species" is used here in the sense of a "Platonic idea," or a *Type* as Cantor defines it. See LaRouche, "Metaphor," *op. cit.*, pp. 40-42; "Mozart's Revolution," *op. cit.*, pp. 13-25; and "Subject of God," *op. cit.*, pp. 17-48.
  24. See Nicolaus of Cusa, "On Conjectures" and "On the Filiation of God," in *Toward a New Council of Florence*, *op. cit.* In the former, Cusanus distinguishes between Aristotelian logical formalism, the hereditary principle of which is the "law of contradiction," and creative intellect, which intuits the "coincidence of opposites." In the latter, Cusanus writes: "Just as God is the actual essence of all things, so is the intellect, separated and united in itself vitally and reflexively, a living similitude of God."
  25. An early adolescent adoption of Leibniz's standpoint, in such works as the *Monadology*, *Theodicy*, and *Leibniz-Clarke Correspondence*, came to the fore in a 1947-1948 reaction against the reductionist notion of "information" as included by Norbert Wiener in his *Cybernetics*. The result of the writer's 1948-1952 devotion to an epistemological refutation of "information theory," was his so-called LaRouche-Riemann discoveries in physical economy. The *Beiträge* of Cantor played a central role in effecting the central discovery of this project. This present report is, among others, an outgrowth of those discoveries dating from 1952.
  26. Lyndon H. LaRouche, Jr., *In Defense of Common Sense* (Washington, D.C.: Schiller Institute, 1990).
  27. LaRouche, *Christian Economy*, *op. cit.*
  28. LaRouche, "Metaphor," *op. cit.*
  29. LaRouche, "Mozart's Revolution," *op. cit.*, pp. 9-17.
  30. LaRouche, "Subject of God," *op. cit.*
  31. Nicolaus of Cusa, *op. cit.*; see footnote 16, Section 2.
  32. In these instances, the "Platonic idea" otherwise identified as a "species," is of the form and order of *higher hypothesis*. *Species* is used here, and following, once again, in Cantor's sense of *type*. For our purposes, in this published location, the definition of species shall be that exemplified by our treatment of the *specific* differences among the three levels (*types*) of mathematics in the ascending order of superiority given here.
  33. See G.W. Leibniz, "History and Origin of the Differential Calculus," in *The Early Mathematical Manuscripts of Leibniz*, trans. by J.M. Child (LaSalle: Open Court Publishing Co., 1920), pp. 22-58; LaRouche, *Christian Economy*, *op. cit.*, App. XI, pp. 407-417; and Johann Bernoulli, "Curvatura radii in diaphanis nonuniformibus. . ." ("The curvature of a ray in nonuniform media, and the solution of the problem to find the brachistochrone, that is, the curve on which a heavy point falls from a given position to another given position in the shortest time, as well as the construction of the synchrone or the wave of the rays"), *Acta Eruditorum*, May 1697; trans. in D.J. Struik, *A Source Book in Mathematics, 1200-1800* (Princeton, N.J.: Princeton University Press, 1986), pp. 391-396.
  34. Cantor, *Beiträge*, *op. cit.*
  35. LaRouche, "Metaphor," *op. cit.*
  36. Carl Friedrich Gauss, "Fürst der Mathematiker," in *Briefen und Gesprächen*, ed. by Kurt-R. Biermann (Munich: C.H. Beck, 1990). On Janos (John) Bolyai's discoveries in non-Euclidean

- geometry, see pps. 27, 137, 139-140, 176. Note Gauss' March 6, 1832 letter to Janos' father Varkas (pp. 139-140), to whom Gauss confides his desire to keep secret Gauss' own, decades-earlier discoveries in non-Euclidean geometry. Even several years before the celebrated case of the "Göttingen Seven," Gauss was acutely sensitive to the danger of arousing the wrath of the ruling Welf royal house of Britain and Hanover. Cf. footnote 40, *infra*, for the work of Charles Babbage and Gauss' friend John Herschel, *The Principle of Pure Deism in Opposition to the Dotage of the University* (1811).
37. Bernhard Riemann, "Über die Hypothesen welche der Geometrie zu Grunde liegen," in *Mathematische Werke*, 2nd ed. (1892), ed. by Heinrich Weber in collaboration with R. Dedekind. English translation: "On the Hypotheses which Lie at the Foundations of Geometry," in David Eugene Smith, *A Source Book in Mathematics* (New York: Dover Publications, 1959), pp. 411-425.
  38. See Nicolaus of Cusa, "On Conjectures," in *Toward a New Council of Florence*, *op. cit.*, p. 127, where he writes: "Man is therefore a microcosm or a human world. The region of humanity therefore embraces God and the whole world in its human potentiality." See also Cusa, *De Docta Ignorantia*, *op. cit.*, p. 131. "Now, human nature is that [nature] which, though created a little lower than the angels, is elevated above all the [other] works of God; it enfolds intellectual and sensible nature and encloses all things within itself, so that the ancients were right in calling it a microcosm, or small world."
  39. See LaRouche, "Metaphor," *op. cit.*, pp. 18-22.
  40. A much repeated classroom myth alleges groundlessly, that Leibniz and Newton discovered the calculus independently of one another. Leibniz's initial completion of a Keplerian differential calculus was completed in Paris, submitted to a Paris printer for publication, in 1676. Newton's "Fluxions" appeared not earlier than 1687. Furthermore, Newton's "Fluxions," an extension of "infinite" series, is not a calculus. What is represented today as a "Newtonian calculus," is the early nineteenth-century reworking of the Leibniz calculus by Augustin Cauchy. See Leibniz, "History and Origin of the Differential Calculus," *op. cit.*; "The Controversy between Leibniz and Clarke," in *Gottfried Wilhelm Leibniz Philosophical Papers and Letters*, Vol. II, ed. by Leroy E. Loemker (Chicago: University of Chicago Press, 1956), pp. 1095-1169; and Charles Babbage and John Herschel, *The Principle of Pure Deism*, *op. cit.*, for an early nineteenth-century British view of the uselessness of Newton's pseudo-calculus "Fluxions."
  41. G.W. Leibniz, "On Analysis Situs," in *Philosophical Papers and Letters*, *ibid.*, Vol. I, pp. 390-396.
  42. Gottfried Wilhelm Leibniz, *Monadology*, trans. by George Montgomery (LaSalle: Open Court Publishing Co., 1989); see also *Theodicy*, trans. by E.M. Huggard (LaSalle: Open Court Publishing Co., 1985).
  43. G.W. Leibniz, *Monadology*, *op. cit.*
  44. See LaRouche, "The Science of Christian Economy," App. XI, *op. cit.*, pp. 407-425.
  45. Cf. Leonhard Euler, "Letters to a German Princess," 1761. See LaRouche, "The Science of Christian Economy," *ibid.*
  46. In a desperate effort, inclusively, to refute Georg Cantor's *Beiträge*, Alfred North Whitehead and Bertrand Russell composed their notorious *Principia Mathematica*. This *Principia* is premised throughout on the effort to limit mathematics axiomatically to the crudest possible forms of *analysis situs*, those of greater than, less than.
  47. Cantor, *Beiträge*, *op. cit.*
  48. Cantor develops a method to compare infinite aggregates—which cannot be compared in terms of "greater than" and "less than"—by seeing if they can be placed in one-to-one correspondence with each other, in which case they can be said to have the same transfinite cardinal number. The first cardinal number, called by Cantor *Aleph-zero* ( $\aleph_0$ ), represents infinite aggregates that can be counted or placed on a list (i.e., "denumerable"); these include the set of all even numbers, the set of all counting numbers, and the set of all prime numbers, amongst others.
  49. Cantor develops an ingenious proof, known as the "diagonal proof," to demonstrate that the infinite aggregate known as the continuum, cannot be placed in one-to-one correspondence with *Aleph-zero*, and hence must be of a higher order than that of the denumerable infinities. This is done by assuming that the continuum can be made into a countable list, and then proving that the list cannot possibly include all the numbers in the continuum, i.e., the assumption that the continuum could be made into such a countable list must be false. (See LaRouche, "The Science of Christian Economy," Appendix VII, *op. cit.*, pp. 386-388.) The proof requires that this newly created list refer back to itself and generate numbers of the continuum which were not originally included on it; this method of making a system talk about itself is the precise method used by Gödel later, in more general terms, to show the limitations of all axiomatic systems. Cf. Kurt Gödel, "Über formal unentscheidbare Sätze der *Principia Mathematica* und verwandter Systeme," in *Monatshfte für Mathematik und Physik*, 38, (1931), pp. 173-198 [English trans.: *On Formally Undecidable Propositions of Principia Mathematica and Related Systems* (New York: Dover, 1992)]; "The Consistency of the Axiom of Choice and of the Generalized Continuum Hypothesis," *Proceedings of the National Association of Science U.S.A.* 24 (1938), pp. 556-557. These discoveries by Gödel, reflecting Cantor's *Beiträge*, were a devastating refutation of the leading work of not only Russell and Whitehead, but also of "information theorist" John von Neumann.
  50. The "power set" is the set of all subsets of a given set. Cantor applied this idea to his transfinite cardinal numbers, and proved that the power set of a given transfinite cardinal number would generate a new, higher-order transfinite cardinal. Cantor's first transfinite cardinal, which he calls *Aleph-zero* ( $\aleph_0$ ), represents the countable infinities (see footnote 48 above). The power set of *Aleph-zero* is the continuum, Cantor's second cardinal number, *Aleph-one* ( $\aleph_1$ ). The power set of the continuum generates Cantor's third cardinal number, *Aleph-two* ( $\aleph_2$ ); and so on. The capability to generate higher and higher transfinite cardinal numbers is equivalent to Plato's concept of "hypothesizing the higher hypothesis."
  51. On Cusa's treatment of the quadrature of the circle, see LaRouche, "Metaphor," *op. cit.*, pp. 18-22, and "Subject of God," *op. cit.*, pp. 34-43.
  52. See Louis Poincaré, *Memoire sur les Polygones et les Polyèdres* (*Memoir on Polygons and Polyhedra*) (Paris: 1809), trans. by Laurence Hecht, *21st Century Science & Technology*, unpublished manuscript. See also footnote 45 above.
  53. The Cantor *Aleph* is that refutation. See also Kurt Gödel's "Richardian paradox," in Kurt Gödel, *On Formally Undecidable Propositions*, *op. cit.*; see also Ernest Nagel and James R. Newman, *Gödel's Proof* (New York: New York University Press, 1958), pp. 60-63, 66, 85-86.
  54. I.e., the power set; see footnote 49 above.
  55. See Winston Bostick on the *onta*, in his "The Pinch Effect Revisited," *International Journal of Fusion Energy*, Vol. 1, No. 1, March 1977, and *EIR*, Feb. 8, 15, and 22, 1991, Vol. 18, Nos. 6, 7, and 8; and also his "The Morphology of the Electron," *International Journal of Fusion Energy*, Vol. 3, No. 1, Jan. 1985, p. 9.

55. As a spherical surface's internal curvature defines the dodecahedron's uniqueness.
56. We can see that this implies such statements as, that "quantum mechanics" paradoxical qualities show, thus, that "quantum field theory" would have been the correct alternative choice of doctrine sixty to seventy years ago. This coincides with other evidence, that matter-space-time is paradigmatically "Keplerian" in the microphysical, as well as astrophysical and musical domains.
57. LaRouche, "In Defense of Common Sense," chap. IV, in *Christian Economy*, *op. cit.*, pp. 21-26; and "Subject of God," *op. cit.* pp. 24-28.
58. LaRouche, "The Science of Christian Economy," chap. VI, in *Christian Economy*, pp. 241-246.
59. That is, of a similar (Cantor) *type*, as defined by the ordering of the discontinuities separating the nominal terms of the theories.
60. LaRouche, "Subject of God," *op. cit.*, pp. 38-42.
61. The use we have made here, above, to show the self-similarity of method for discovery of the unified series, the *non-algebraic* and *transfinite* domains, respectively, by common reference to quadrature of the circle, is an illustration of this notion of self-similarity.
62. LaRouche, "In Defense of Common Sense," in *Christian Economy*, *op. cit.*, chap. II, pp. 18-20.
63. Marilyn Ferguson, *The Aquarian Conspiracy* (Los Angeles: J.P. Tarcher, 1980).
64. Although the temple of the oracle of Delphi is usually identified with the cult of Apollo, even in Classical Greek times, Apollo was only one of the three pagan deities with which the complex was associated. The original deities of the site were, quite literally, Satan and his mother, known respectively by the local aliases, *Python* and *Gaia*. Python also used locally his Phrygian alias, *Dionysus*. In ancient times, through the time of the famous Delphi priest of Apollo, the biographer Plutarch, the oracle was a priestess who was assigned the name of *Pythia*, signifying her position as a priestess of Python. She delivered her utterances at the grave-site of Python-Dionysus. Later, after the service, the priests of Apollo provided the explanatory "spin" on the oracle's enigmatic messages. Python-Dionysus was equivalent to the Indian sub-continent's *Shiva*, the Semitic *Satan*, and the Hellenistic *Osiris*; this Dionysus was the Satan worshipped by that forerunner of New Ager Adolf Hitler, self-avowed anti-Christ, Friedrich Nietzsche.
- For Nietzsche's profession of being Dionysus the anti-Christ, see Friedrich Nietzsche, "Why I Am a Fatality" and *passim*. in "Ecce Homo," in *The Philosophy of Nietzsche* (New York: Modern Library, 1954), pp. 923-933.
65. "Paradigm-shift" used here is a broad way of describing an axiomatic change in the underlying, determining, integral set of assumptions.
66. In this and similar cases, the description of *higher hypothesis* as subsuming a series of *self-similar hypotheses*, signifies the *Platonic idea* of an integral such series to exist by virtue of satisfying the requirement of a distinct *species* or *type*.
67. LaRouche, "Subject of God," *op. cit.*, pp. 18-20.
68. Nicolaus of Cusa, *De Docta Ignorantia*, *op. cit.* See footnote 5, Section 2.
69. See p. 16.
70. Four currents of Western European Aristotelians from the thirteenth through sixteenth centuries are key: the Averroists, the Paris School, and the Venetian Rialto and Padua Schools. Although many modern British empiricists, such as Francis Bacon, have evaded the truth in this matter, Bacon, Locke, Hume, and Immanuel Kant, for example, are merely anti-Platonic imitators of Aristotle's method, as are also the nineteenth and twentieth century's positivists. For reasons to be made clearer below, the Aristotelian or kindred formalism cannot deal with those *absolute discontinuities* of formal logic, the singularities (change of axiomatic hypothesis), which are the substance, the characteristic feature of human creative mentation.
71. Philo, *On the Creation*, *op. cit.*
72. See footnote 5, Section 2. Zorzi's influence in Tudor England soared through his role as sex counselor to the lecherous King Henry VIII. Hence, his key role in founding the British empiricism of Bacon, Locke, *et al.*
73. For the Leibniz-Clarke correspondence, see "The Controversy between Leibniz and Clarke," footnote 40, Section 2.
74. See Nicolaus of Cusa, "On the Filiation of God," *Toward a New Council of Florence*, *op. cit.* Cusanus writes that the intellect is "a living similitude of God" and that all men are capable of becoming adopted sons of God through the exercise of creative reason in harmony with His Word.
75. Jonathan Swift, *Gulliver's Travels*, Part IV, "A Voyage to the County of the Houyhnhnms," in *Gulliver's Travels and Other Writings*, ed. by Louis Landa (Boston: Houghton Mifflin, 1960).
76. See footnote 20, Section 2.
77. Nicolaus of Cusa, *De Docta Ignorantia*, *op. cit.*
78. LaRouche, "In Defense of Common Sense," *op. cit.*; and "Metaphor," *op. cit.*
79. LaRouche, "In Defense of Common Sense," *op. cit.*; "Metaphor," *op. cit.*; "Mozart's Revolution," *op. cit.*; and "Subject of God," *op. cit.*
80. LaRouche, "Metaphor," *op. cit.*, pp. 17-18; "Mozart's Revolution," *op. cit.*, pp. 9-13; and "Subject of God," *op. cit.* pp. 17-23.
81. Given an array of axioms and postulates, so defined such that, for all theorems derived from any part of that initial, axiomatic array, each of all theorems must not be inconsistent with any axiom or postulate of the initial array. Thus, "quasi-integral."
82. See Nicolaus of Cusa, *De Docta Ignorantia (On Learned Ignorance)*, Book I, *op. cit.*; also, "De Circuli Quadratura" ("On the Quadrature of the Circle"), trans. into German by Jay Hoffman (Mainz: Felix Meiner Verlag).
83. We also include among such true singularities, implicitly, the virtual point-singularity, for example.
84. The equinoctial cycle, or Precession of the Equinoxes, is an astronomical observation resulting from a wobble in the earth's axis of rotation, which measures the difference in the solar and sidereal years as it accumulates in the changing position of the sun against the stars of the Zodiac as determined at the equinox during the annual revolution of the earth around the sun. This differential is extremely small (approximately 50" of arc per year), so one full cycle of this apparent motion requires approximately 26,000 years for completion. Accurate knowledge of solar and celestial calendars implies familiarity with this long-term astronomical cycle. For a standard exposition of the astronomical phenomenon, see William Liller and Ben Mayer, *The Cambridge Astronomy Guide: A Practical Introduction to Astronomy* (London: Cambridge University Press, 1985), pp. 88-89. For a discussion of the knowledge of the equinoctial cycle in ancient Indo-European culture, see Tilak, *The Orion; or Researches into the Antiquity of the Vedas*, p. 19, 227, *op. cit.*, footnote 11, Section 2.
85. Tilak, *The Orion; or, Researches into the Antiquity of the Vedas*, *ibid.*
86. Lokamanya Bal Gangadhar Tilak, *The Arctic Home in the Vedas, Being Also a New Key to the Interpretation of Many Vedic Texts and Legends* (1903) (Poona: Tilak Bros., 1956).
87. Keith G. Irwin, *The 365 Days: The Story of the Calendar* (New



- York: Thomas Y. Crowell Company, 1963), an introductory work for young people, includes the construction of solar calendars by observation.
89. See Rick Sanders, "The Science Behind Columbus," and also Ricardo Olvera, "Columbus and Toscanelli" in the symposium "The Discovery of the Americas and the Great Scientific Project of the Renaissance," *Fidelio*, Vol. I, No. 2, Spring 1992, pp. 37-50. Toscanelli, in estimating the circumference of the Earth in order to construct his map of the westward ocean expanse from Europe to Asia, relied upon the method, discovered by Eratosthenes, of simply taking different angle shots of the Pole Star at a distance along a meridian. Currently fashionable attacks on Columbus' science, based on modern interpretations of the definition of the length of a cartographic league during Columbus' time (see, e.g., Eugene Lyon, "The Search for Columbus," *National Geographic*, Vol. 181, No. 1, Jan. 1992, p. 17) are answered by Sanders.
  90. On the *Parmenides* "One, Many" paradox as an *ontological* paradox, see LaRouche, "Subject of God," *op. cit.*, pp. 17-23.
  91. At the ages of 14-15, approximately 55 years ago, this writer learned the rudiments of Socratic method in epistemology from Leibniz's *Monadology*, *Theodicy*, and the *Leibniz-Clarke-Newton Correspondence*.
  92. For a definition of "Classical" music, see LaRouche, "Mozart's Revolution," *op. cit.*, pp. 7-9.
  93. *Classical poetry*, like Classical music, is based upon the Greek (e.g., Platonic) notion of rational beauty.
  94. *Classical drama* is modelled upon Aeschylus, Sophocles, Marlowe, Shakespeare, Schiller, *et al.*
  95. E.g., Christian Platonic theology.
  96. Astronomical observations recorded in certain amongst the ancient Vedic hymns place their date of composition at an outside limit of approximately 6,000-4,000 B.C. (Tilak, *The Orion*, *op. cit.*) More speculative indications of earlier, Arctic astronomical observations in these sources, would push back fragments of these hymns to the period no later than the climate shift accompanying the ending of the last Ice Age. (Tilak, *Arctic Home*, *op. cit.*)
  97. Tilak, *The Orion and Arctic Home*, *op. cit.*
  98. LaRouche, "Metaphor," *op. cit.*, pp. 26-27, 46-47.
  99. *Ibid.*, pp. 36-37.
  100. Plato discusses his theory of "ideas" (*eide*) throughout the corpus of his dialogues, and the dialogue *Parmenides* is wholly devoted to its investigation. Primary locations, in assumed general chronology of composition, include: *Meno*, in *Plato: Laches, Protagoras, Meno, Euthydemus*, trans. by W.R.M. Lamb, 81b-87c; *Phaedo*, in *Plato: Euthyphro, Apology, Crato, Phaedo, Phaedrus*, trans. by H.N. Fowler, 72c-80d; *The Republic*, in *Plato: The Republic*, Vol. II, trans. by Paul Shorey, 505a-520a; *Parmenides*, in *Plato: Cratylus, Parmenides, Greater Hippias, Lesser Hippias*, trans. by H.N. Fowler, *passim.*; *Theatetus*, 184b-186e, and *The Sophist*, 284a-258c, both in *Plato: Theatetus and The Sophist*, trans. by H.N. Fowler. All editions are Loeb Classical Library (Cambridge: Harvard University Press); page numbers given are used universally, and will appear as marginal notations in most editions. See LaRouche, "Metaphor," *op. cit.*, pp. 20-22; "Mozart's Revolution," *op. cit.*, pp. 9-13; "Subject of God," *op. cit.*, pp. 17-20.
  101. On Leibniz's *characteristica universalis*: Leibniz refers to an art of combinations—that is, the science of forms, of similar and dissimilar—as little different from a general science of characteristics; hence algebra, the logical calculus, cryptography, and *analysis situs* or *geometry of situation*, are only applications of the universal characteristic, which is the language through which concepts and things can be put into beautiful order. This language would include both the art of discovery and the art of judgment. Leibniz envisioned using the principles underlying these areas to create a language such that characteristic numbers could be used to evaluate ideas; he outlined the cornerstones of developing such a universal characteristic as the principle of contradiction and the principle of sufficient reason. See G.W. Leibniz, "Letter to Walter von Tschirnhaus," *Philosophical Papers and Letters*, *op. cit.*, Vol. 1, pp. 294-298, and "On the General Characteristic," *ibid.*, Vol. 1, pp. 339-350. See also Cantor on *type*, *Beiträge*, *op. cit.*
  102. Nicolaus of Cusa, *De Docta Ignorantia*, *op. cit.*
  103. See Johannes Kepler, *Harmonice Mundi* (On the Harmony of the World) in *Opera Omnia*, vol. 5, Frankfurt (1864), of which Book V, trans. by Charles Glenn Wallis, is included in the *Great Books of the Western World* series (Chicago: Encyclopaedia Britannica, Inc.); *Mysterium Cosmographicum* (*The Secrets of the Universe*), trans. by A.M. Duncan (New York: Abaris Books, 1981); *New Astronomy*, trans. by William Donohoe (London: Cambridge University Press, 1992).
  104. Pietro Pomponazzi (1462-1525), philosopher who undermined Christianity; he enjoyed the patronage of the Contarini family, and studied and taught at the University of Padua. Pomponazzi took Averroes as his point of departure, and by dichotomizing discourse into the philosophical and the religious, he argued that according to reason the soul must die with the body, but according to the teaching of Christianity, we know it to be immortal; this argument appears in his major work, *De Immortalitate Animae* (*On the Immortality of the Soul*) (Bologna: 1516). He was a precursor of Paolo Sarpi, who carried his thought much further toward atheism in writings not meant for publication; see David Wootton, *Paolo Sarpi: Between Renaissance and Enlightenment* (London: Cambridge University Press, 1983). See *The Renaissance Philosophy of Man*, 3ed. by Ernst Cassirer, Paul O. Kristeller, and J.H. Randall (Chicago: University of Chicago Press, 1948); also see *Studi su Pietro Pomponazzi* ed. by B. Nardi (Florence, 1965). See footnote 92, Section 3.
  105. Characteristic leaders of the empiricist assault were Bacon, Fludd, and Galileo.  
Francis Bacon (1561-1626), nephew of William Cecil, Lord Burleigh; English lawyer (eventually Attorney General and Lord Chancellor); a correspondent of the Venetian Paolo Sarpi, he aspired to become a "second Aristotle" and authored a *Novum Organum* (*New Organon*) to modernize the *Organon* of Aristotle. Bacon continued the Rosicrucian cult which formed during the years of Zorzi's stay in England coordinating a secret society vaguely reported in his *New Atlantis*. A political enemy of England's greatest scientist William Gilbert, through his efforts and those of Elias Ashmole, the Rosicrucians set up the British Royal Society as a battering ram against the Christian Platonist current of Cusa and Kepler.  
Robert Fludd (1574-1637), English physician and mystical philosopher who coordinated occult networks in England. He carried on the Rosicrucian tradition after the death of John Dee, by writing *Utriusque Cosmi Historia*, a compendium of occult sciences. Remarkably, Fludd the mystic attacked Kepler with a charge of "mystical astronomy," claiming that Kepler was not skilled in the numerology required to penetrate the secrets of nature. See footnote 153, Section 2, and also Max Caspar, *Kepler* (New York: Abelard-Schuman, 1959), pp. 290-293.  
Galileo Galilei (1564-1642), Tuscan professor of mathematics at the University of Padua; author of the *Dialogue Concerning the Two Chief World Systems* (1632) championing Copernican astronomy from an empiricist standpoint (rather than that of Kepler, for whom the planetary motions were causally deter-

- mined by the geometric ordering of the universe); and the *Dialogue Concerning Two New Sciences* (1638), whose empirical "dynamics" described the motion of bodies in the earth's gravitational field by axiomatically assuming the primacy of pairwise interaction. A close friend of Paolo Sarpi, he ran afoul of the Roman Catholic Church in a conflict which mirrored the Reformation/Counter-Reformation clash, in which both sides espoused different versions of Aristotelianism.
106. Francesco Zorzi, a Franciscan friar descended from the patrician Zorzi family of Venice. Authored *De Harmonia Mundi* (1525), a mystical work with elements deriving from the Cabbala. Zorzi supported the arguments of King Henry VIII of England when Henry sought the annulment of his marriage to Catherine of Aragon, and he was called to the English royal court, where he remained active between 1531 and his death in 1540. Zorzi was a proponent of a satanic and pseudo-Platonic school of mysticism called Rosicrucianism, which became an important component of English and British Freemasonry. See footnote 5, Section 2.
  107. Zorzi's "Those who retreat from the direct knowledge of the universe will retreat into the *Docta Ignorantia*." See footnote 5, Section 2.
  108. Sir Isaac Newton, in his *Mathematical Principles of Natural Philosophy (Principia)* states "*hypotheses non fingo* (I don't make hypotheses)," and explains his reasons for this on grounds of induction versus hypothesis. See *Sir Isaac Newton's Mathematical Principles of Natural Philosophy and His System of the World*, revised trans. by Florian Cajori (Berkeley: University of California Press, 1960), General Scholium, pp. 546-547. For Newton's plagiarism of Kepler, see LaRouche, "The Science of Christian Economy," *op. cit.*, App. V, pp. 374-377.
  109. For Leibniz's attacks on Descartes, see "Critical Thoughts on the General Part of the Principles of Descartes" (1692) and "A Brief Demonstration of a Notable Error of Descartes and Others Concerning a Natural Law" (1686), in *Gottfried Wilhelm Leibniz Philosophical Papers and Letters*, Vol. II, pp. 629-676 and Vol. I, pp. 455-463. *op. cit.*, see footnote 40, Section 2. Leibniz's exposure of Newton's incompetence can be found in the Leibniz-Clarke-Newton correspondence (1715), where he writes, "Sir Isaac Newton and his followers have also a very odd opinion concerning the work of God. According to their doctrine, God Almighty wants to wind up his watch from time to time; otherwise, it would cease to move." See "The Controversy between Leibniz and Clarke," in *ibid.*
  110. Voltaire's immoral *Candide* was written to ridicule Leibniz through the person of the moronic philosopher Dr. Pangloss, who at the occasion of every disaster intones the Leibnizian maxim that ours is "the best of all possible worlds." Kant's writings, including the *Critique of Pure Reason* (1781), *Prolegomena to Any Future Metaphysics* (1783), *Critique of Practical Reason* (1788), and *Critique of Judgment* (1790), are devoted to attacking Leibniz's Christian Platonism from the standpoint of the agnosticism Kant shared with John Locke and David Hume. See the *Critique of Pure Reason*, sec. A41-44 and A268-280. Kant writes that accepting the view of Leibniz would "render our whole doctrine useless and empty." He writes further that "deceived by the amphiboly [ambiguity] of reflective concepts, the celebrated Leibniz erected an intellectual system of the world." Kant explicitly attacks the "Leibnizian monadology" writing that "Leibniz's celebrated doctrine of space and time . . . arose entirely from the same delusion of transcendental reflection."
  111. Bertrand Russell, "On some Difficulties in the Theory of Transfinite Numbers and Order Types," *Proc. London Math. Soc.* 4, 29-53, 1907, and also *An Essay on the Foundations of Geometry* (1897) (New York: Dover Publications, 1956).
  112. The Machians' attacks on Planck during the war years effectively confined the development of quantum theory to the Newton-Maxwell model espoused by Bohr, Heisenberg, *et al.*; which prompted Albert Einstein's famous rejoinder, "God does not play dice." See Uwe Parpart, "The Theoretical Impasse in Inertial Confinement Fusion," *Fusion Magazine*, Vol. 3, No. 2, November 1979, pp. 30-40; see also Morris Levitt, "Linearity and Entropy: Ludwig Boltzman and the Second Law of Thermodynamics," *Fusion Energy Foundation Newsletter*, Vol. II, No. 2, September 1976, pp. 3-18, and "The Original Mystery of Blackbody Radiation, Its Relevance to Fusion Today," *Fusion Magazine*, Vol. 4, No. 3, January 1981, pp. 45-55.
  113. Cf. *A Manual on the Rudiments of Tuning and Registration*, Vol. I (Washington, D.C.: Schiller Institute, 1992), chaps. 10 and 11, pp. 173-228.
  114. Jacob Steiner (1796-1863) held chair of Geometry at the University of Berlin from 1834 until his death, a position established for him through the aid of Wilhelm von Humboldt, whose son he tutored, Humboldt's brother Alexander, and Steiner's friend the mathematician Karl Jacobi. Orinally of a Swiss farm family, Steiner's formal education had begun at age 18, when he attended the school of the educational reformer Pestalozzi.  
Steiner's method in geometry was entirely synthetic. He hated algebraic approaches and instilled a love of the constructive method in his students, making frequent use of the Socratic method that he had learned from Pestalozzi's lectures. Major works include: *Geometrical Constructions with a Ruler, Given Fixed Circle with Its Center* (New York: Scripta Mathematica, Yeshiva University, 1950) (English of translation of the first German edition, 1835); *Systematische Entwicklung der Abhängigkeit geometrischen Gestalten von einander (Systematic Development of the Mutual Dependence of Geometric Forms)* (Berlin: 1832); and "Sur le maximum et le minimum des figures dans le plan, et sur la sphère dans l'espace en général," *Crelle's Journal*, Vol. 34, 1842.
  115. *A Manual on Tuning, op. cit.*, chap. 10, pp. 173-197.
  116. Cf. Bernhard Riemann, "On the Hypotheses which Lie at the Foundations of Geometry," pp. 422-25, *op. cit.*, footnote 37, Section 2.
  117. The laws of reflection and use of polished mirror surfaces had been mastered during the Hellenic period. The Arabs, notably Alhazen (Ibn al-Haitham, d.1070 A.D.), made important progress in optical theory and the practical uses of lenses during the eighth through eleventh centuries. Witelo translated Alhazen's work into Latin in 1270, which became a crucial influence on Kepler three centuries later. The central problem addressed by Grosseteste (1175-1253) and his student Roger Bacon (1214-1294) was the development of a dioptrics (the science of refractive lenses), which required a correct formulation of the laws of refraction; this eluded them, despite Roger Bacon's philosophically rigorous application of the concept of "multiplication of species" to light as a form of radiant energy. It was three centuries before the Dutch mathematician Willebrord Snell succeeded in formulating the correct law of refraction (1621), recognizing that it was the *sines* of the angles of incidence and refraction which remain constant when a light ray passes from one medium to another.
  118. See Nicolaus of Cusa, *De Docta Ignorantia (On Learned Ignorance)*, *op. cit.*, Book I, chap. 4, pp. 53-54. "Therefore, if you free maximum and minimum from quantity—by mentally removing large and small—you will see clearly that maximum and minimum coincide. . . . For example, to say 'God, who is Absolute Maximality, is light' is [to say] no other than 'God is maximally light in such way that He is minimally light.'" Leonardo's experimental observations and hypotheses concerning the wave

propagation of energy are reviewed in detail in Dino de Paoli, "Leonardo da Vinci and the True Method of Magnetohydrodynamics," *Fusion*, Vol. 8, No. 1, Jan.-Feb. 1986, with reference to drawings which appear in various of the Leonardo Codices. For Leonardo's investigation of the caustic curve caused by spherical aberration, see footnote 120 below.

119. *De Docta Ignorantia* was the first systematic treatment of the subject.
120. The caustic curve caused by spherical aberration, and the correction of the caustic by parabolic mirror surfaces, are shown in illustrations by Leonardo which can be found in *Leonardo e la tecnica* (Istituto Geografico de Agostini, 1978), chapter on "L'Optica di Leonardo," p. 55. See Lyndon H. LaRouche, Jr., *Cold Fusion: Challenge to U.S. Science Policy* (Washington, D.C.: Schiller Institute, August 1992), p. 52, citing presentations by Dino de Paoli.
121. The axiomatic basis of circular action is the isoperimetric principle (minimal line, or minimal surface, bounding maximal area, or maximal volume). This is implicitly an axiomatically "hereditary" route of a principle of least action.
122. See Dino de Paoli, "Leonardo da Vinci and the True Method of Magnetohydrodynamics," *op. cit.*
123. See Poul Rasmussen, "Ole Rømer and the Discovery of the Speed of Light," *21st Century Science & Technology*, Vol. 6, No. 1; see also Christiaan Huygens, *Treatise on Light* (1690), trans. by Sylvanus P. Thompson (New York: Dover Publications, 1962).
124. See Johann and Jakob Bernoulli, "The Brachistochrone," in D.J. Struik, *A Source Book in Mathematics, 1200-1800*, pp. 391-399, *op. cit.* footnote 33, Section 2.
125. *Ibid.*, p. 393, for references to the work of Leibniz and Huygens.
126. Wilhelm Weber, *Electrodynamic Measurements, Sixth Memoir, Relating Especially to the Principle of the Conservation of Energy*, English trans. in *The London, Edinburgh, and Dublin Philosophical Magazine and Journal of Science*, Vol. XLIII-Fourth Series, January 1872, pp. 2-6, 199ff. Having deduced all the essentials of what later became known as the Rutherford atom, Weber shows that for two charged particles of the same kind, repulsion will turn into attraction when their distance apart ( $r$ ) is such that:

$$r < \frac{2}{cc} \frac{\varepsilon + \varepsilon'}{\varepsilon \varepsilon'} ee',$$

where  $\varepsilon$  is the mass, and  $e$  the charge of the particle, and  $c$  the constant for the electromagnetic potential which is  $\sqrt{2}$  greater than the velocity of light.

127. A more precise term than "cold fusion," is "solid-state fusion"; cf. "Solid-State Fusion Comes of Age," *21st Century Science & Technology*, Vol. 6, No. 1, Spring 1993, p. 67.
128. Riemann, *op. cit.*
129. See below, p. 29 and Figure 2; see also, Carlo Bergonzi, New York Seminar, sponsored by the Schiller Institute at Weill Recital Hall at Carnegie Hall, April 8, 1993 [SEE p. 86, this issue].
130. Plato, *Republic*, *op. cit.*, 509d-513e; *Timaeus*, *op. cit.*, 32a, 35b-36b, 54d-55c.
131. See Luca Pacioli, *De Divina Proportione* (1497) (Vienna: 1896), whose geometrical diagrams of the Golden Section-determined regular solids were drawn by Leonardo da Vinci. Reproductions of these drawings appear in *The Unknown Leonardo*, ed. by Ladislao Reti (New York: McGraw-Hill Book Company, 1974), pp. 70-71.
132. Johannes Kepler, *On the Six-Cornered Snowflake*, trans. by Colin Hardie (Oxford: Clarendon Press, 1966), reprinted by *21st Century Science & Technology*, 1991, p. 21; also *Harmonice Mundi*

(*On the Harmony of the World*), in *Opera Omnia*, vol. 5, Frankfurt (1864) and unpublished trans. by Christopher White *et al.*, Book I, propositions 26-29, 50, and as referenced in Book V, *op. cit.*, pp. 1012-1013, see footnote 103, Section 2.

133. See, for example, Daniel R. Wells, "How the Solar System Was Formed," *21st Century Science and Technology*, Vol. 1, No. 3, July-August 1988, pp. 18-28. See also unpublished presentations and discussions at the 1985-1986 science seminar series held with the author at Ibykus Farm, Leesburg, Virginia.
134. It is a fact cut, quite literally, in stone, that the teaching of *bel canto* to church choirs was well established in Florence, Italy before the 1430's. The 1431 sculptures by Luca della Robbia in the choir stalls of the Florence cathedral Santa Maria del Fiore, show the children singing in the mode we know today as the Florentine *bel canto*. Unfortunately, during the seventeenth and eighteenth centuries, a pseudo-*bel canto* arose in Venice and elsewhere, a "Venetian *bel canto*" designed for *castrati* and not recommended for would-be tenors today. See Nora Hamerman, "The Council of Florence: The Religious Event That Shaped the Era of Discovery," *op. cit.*, and unpublished research on the Venetian pseudo-*bel canto*.
135. See Kepler, *Mysterium Cosmographicum*, *op. cit.*, footnote 103, Section 2, for the Platonic Solids determination of the approximate solar-orbit series.
136. Kepler, *Harmonice Mundi*, *op. cit.*, Book III, and Sylvia Brewda, "The Science of Johannes Kepler," *New Federalist*, Vol. VII, No. 4, Jan. 25, 1993, pp. 6-7, for a summary of Book III of the *Harmonice Mundi*; see also, Kepler, *Mysterium Cosmographicum*, *op. cit.*, chap. XII and Kepler's notes for that chapter in the second edition.
137. LaRouche, "Mozart Revolution," *op. cit.*
138. *Ibid.*, pp. 19-20, and footnote 62, pp. 28-29.
139. Beethoven, like Mozart, conceived of a key-signature as implicitly defined by the transformation required to derive that key-signature from the "fundamental" mode of C-major/C-minor, and from the way the human vocal register shifts organize that mode. The key-signatures of F-major and F-minor were particularly fruitful in that regard, because of their inverse relationship with C-minor and C-major, respectively. Take the sequence of intervals of an ascending C-major scale. Then, beginning on C, play the same intervals in *descending* progression. The intervals of F-minor are obtained.



Similarly, inversion of the ascending intervals of C-minor will obtain F-major. Beethoven's thinking along these lines is clearly evident if one compares his Piano Sonatas Op. 13 in C-minor ("Pathétique") and Op. 57 in F-minor, with Mozart's keyboard Fantasy in C, K. 475, his Fugue in C for Two Pianos, K. 426, and his later rearrangement as the Adagio and Fugue in C for strings, K. 546. See LaRouche, "Mozart's Revolution," *op. cit.*, pp. 19-21.

In his String Quartet Op. 132, Beethoven greatly expanded the potential of *Motivführung* with respect to mode, by working outwards from F, while retaining a crucial feature of C-major/minor, namely, its "leading tone." He did so by replacing the standard fourth degree of the F-major scale—i.e., B<—with B $\natural$ , thus creating anew what in medieval music was called the "Lydian" key-signature. The quartet's third movement is written explicitly in this key-signature; Beethoven's instructions at the beginning read "Heiliger Dankgesang eines Genesenen an die Gottheit, in der lydischen Tonart" ("A convalescent's sacred song of thanks to the Godhead, in the Lydian key").

Throughout the composition's four movements, the most important key-signatures, which together comprise the mode, are either "Lydian" or an inversion of "Lydian." In the first movement's opening key-signature of A minor, the "Lydian" interval-sequence (whole-step, whole-step, whole-step, half-step) is taken downward from E instead of upward from F, thereby building B $\flat$  into the A-minor key-signature, in place of the usual B $\natural$ . In the second movement, the "Lydian" D $\sharp$  is incorporated into A-major; and in the D-major sections of the third movement, G $\sharp$  is prominent.

For his *Motivführung*, Beethoven selected the intervals between his note-pair intervals accordingly. The first movement opens with



If we label the four notes 1, 2, 3, and 4, then 1-2 and 2-3 are half-steps, one ascending and one descending. Moreover, these two intervals are situated with respect to the (transposed) mezzo-soprano voice, such that the first pair lies in the lower or "chest" register, while the second pair changes to the middle register. Above this, we also have the cross-voices which together delineate the intervals *between* the intervals, namely, 2-3 (rising minor sixth), 1-4 (rising minor sixth), 1-3 (rising diminished seventh), and 2-4 (rising fifth).

It is from the standpoint of this higher-order interval that Beethoven constructs the interval-pair of the "heiliger Dankgesang" in the third movement:



Again labeling the notes with numerals, the interval 1-2 is a rising major sixth—a "resolution" to the rising diminished seventh in the first movement's opening statement. It is also a register shift in the soprano voice. Interval 3-4 is a rising fourth, but also contains the very strong implication of a descending fifth down to the modal F—a tension which is reinforced by the cross-interval 1-4, which is a C-C octave. The descending whole-step interval 2-3 is the difference between the largest and smallest cross-intervals in the first movement's opening theme.

140. Volume II of the Schiller Institute's *A Manual on the Rudiments of Tuning and Registration*, *op. cit.*, now in preparation, deals in depth with the rapid advances in *Motivführung* following Haydn's early 1780's breakthrough with his Op. 33 "Russian" quartets. In this set of six compositions, Haydn succeeded in eliminating arbitrary figured-bass and inner-voice scaffolding in the string quartet medium, to such an extent that all four voices (violin I, violin II, viola, violoncello) could freely participate in representing a movement as a single thought-object. Mozart and Beethoven extended the principle to entire three- and four-movement works.
141. Tilak, *Arctic Home*, *op. cit.*, footnote 87, Section 2.
142. See footnote 96, Section 2.
143. This observation reflects the author's discussion with numbers of scholars at Poona in India, during a visit there in the year 1983, as well as other materials.
144. *A Manual on Tuning*, chap. 11, *passim*.
145. The term "Classical" should be restricted in use to signify a Cantor type of *fine-artistic*, or scientific work coinciding with the design-principle of the Acropolis as a whole, and Plato's treatment of the Golden Section. This signifies a work composed according to a rigorous standard of rule by creative reason, as the role of the Golden Section typifies rigor, either explicitly or implicitly.

146. *A Manual on Tuning*, chap. 11, pp. 206-208.
147. This author first used "Rosetta Stone" to describe the Classical *lied's* interface between music and poetry in 1952, in connection with a project refuting Norbert Wiener *et al.* on "information theory." Forty years later, the metaphor is still the preferred one.
148. *A Manual on Tuning*, chap. 11, pp. 200-203.
149. See footnote 138, Section 2.
150. See footnote 130, Section 2.
151. "Deconstructionism," such as that of the "politically correct" Modern Language Association's (M.L.A.'s) current French darling, Professor Jacques Derrida, is derived, like Hitler's Nazism, from the satanic existentialism of Friedrich Nietzsche's worship of the Phrygian/Delphic Dionysus, the latter the Indo-European for Satan-Lucifer.
152. See Francis Yates, *The Occult Philosophy in the Elizabethan Age*, p. 33, *op. cit.*, footnote 5, Section 2.
153. Exemplary of the works of these empiricists are Fludd's *Harmonia Mundi* (1527), Francis Bacon's *Novum Organum (New Organon)* (1620), and Galileo's *Dialogues Concerning Two New Sciences* (1638).  
In response to the *Harmonia Mundi* of Fludd, Johannes Kepler added an Appendix as Book VI to his *Harmonice Mundi*, in which he says of Fludd: "One can also see that he takes his chief joy from incomprehensible riddle-images about reality, while I proceed precisely from the standpoint of throwing the bright light of knowledge upon things in nature that are wrapped in obscurity. The former is the business of the chemist, the hermetic, and the Paracelsists, the latter, on the other hand, the task of the mathematician." Johannes Kepler, *Harmonice Mundi*, quoted from the German translation: *Weltharmonik*, trans. by Max Caspar (Munich/Vienna: R. Oldenbourg Verlag, 1982), p. 362. Bacon's *New Organon* asserts: "There are and can be only two ways of searching into and discovering truth. The one flies from the senses and particulars to the most general axioms. . . . [T]his is now in fashion. The other derives axioms from the senses and particulars, rising by a gradual and unbroken ascent, so that it arrives at the most general axioms last of all. This is the true way, but as yet untried." Aphorism XIX, in *The New Organon and Related Writings*, ed. by Fulton H. Anderson (Indianapolis: Bobbs-Merrill Company, 1960).
154. See footnote 48, Section 2.
155. The economist John Maynard Keynes identified Newton as "the last of the magicians, the last of the Babylonians and Sumerians," whose alchemy was "wholly devoid of scientific value." Keynes had purchased a chest of Newton's papers, but was shocked to discover their occult content, as he reported in "Newton the Man," in the Royal Society's *Newton Tercentenary Celebrations* (Cambridge: Cambridge University Press, 1947), pp. 27-34. For a detailed discussion of Newton's occultism, see Chris and Carol White, "The Royal Society, British Queens of Science, Part 2," *New Solidarity*, October 7, 1977, p. 4.
156. See footnote 109, Section 2, for Leibniz's attacks on Descartes.
157. Christiaan Huygens had shown in *The Pendulum Clock* (1673) that a pendulum constrained to swing in the path of a cycloid curve, beats equal times independent of the amplitude of the swing. Similarly a rolling ball, as in Figure 4. This is the principle of *isochronism*, or equal time. The fact that the cycloid is also the path of *least time* for a falling object was proven by Johann Bernoulli in 1696; see footnote 33, Section 2. This quality is illustrated by comparing the times taken by a rolling ball following the straight-line path, and that of a ball released at the same time along the cycloidal channel. Although the distance of the straight-line path is shorter, the time of travel is least along the cycloid curve. Thus does the cycloid embody an

- essential quality of the curvature of space-time.
158. As Christiaan Huygens affirms the idea first propounded by Pierre de Fermat. See Christiaan Huygens, *Treatise on Light*, pp. 42-42, *op. cit.*, footnote 123, Section 2. As the example in footnote 157 above illustrates, isochronism and least-time are complementary cases for both the propagation of light and the motion of a falling body.
  159. See footnote 75, Section 2. See also *Nicholas de Cusa, The Layman: About Mind*, trans. by Clyde Lee Miller (New York: Abaris Books, 1979), p. 67. "Mind uses itself in this most exalted way insofar as it is the very image of God. God who is everything is reflected in mind when it, as a living image of God, turns toward its exemplar by assimilating itself with all its effort."
  160. For the coherence of Confucian and Christian outlooks, see the views of G.W. Leibniz, as presented in Michael O. Billington's "Toward the Ecumenical Unity of East and West," *op. cit.*, footnote 10, Section 2.
  161. Holy Bible, King James Version, Gospel of St. John 3:16.
  162. *Ibid.*, Epistles of St. Paul, I Corinthians 13 on *agapē*.
  163. All are unified, above time, in the timeless Absolute, Plato's *Good*; there is only "necessary predecessor," and "necessary successor," such that this successor is also the cause of the predecessor.
  164. The denial of *imago Dei*, which is for Immanuel Kant a root of *synthetic judgment a priori*, defines an individual as without a soul, an intrinsically depraved wretch. The hermetic separation of the miracle of creation from the possibility of human understanding leads to the Cartesian *dew ex machina* of Kant, hence, *Manicheanism*.
  165. See Section 2.1 above, pp. 19-21.
  166. LaRouche, "Metaphor," *op. cit.*, pp. 44-47.
  167. The action of the sovereign, individual soul, is the form of action which defines its existence as sovereign. This is in opposition to the Venetian Aristotelian Pomponazzi and his followers, who illustrate the impossibility of the existence of individual souls under Aristotle's system. Thus, the soul acts as a soul only through *agapic* forms of truly creative acts, such as furthering the revolutionary ideas of applied scientific progress.
  168. Cantor, *Beiträge*, *op. cit.*
  169. Johann Bernoulli, *op. cit.*, footnote 33, Section 2.
  170. The action of light upon anything, or anything efficiently upon light, generates a singularity, in the sense that the late Professor Winston Bostick listed the photon among the array of well-defined "onta." The fact that the universe is organized such that gravity cannot produce such an anomaly of least action, only shows that our universe has a "bounded" character, in the sense that the non-algebraic domain bounds externally the algebraic domain, and the transfinite, similarly, bounds the transcendental.
  171. Michael O. Billington, *op. cit.*, footnote 10, Section 2.
  172. See footnote 38, Section 2.
  173. Relatively often, the acknowledgement of the validity of Cantor's discovery of a generalized transfinite was limited to acceptance of this as the discovery of a general class of non-denumerable numbers, or, in other words, a "mathematical transfinite." From close reading of Cantor's work, it appears that he had made the discovery much earlier than his 1897 publication of his *Beiträge*, perhaps, in some crucial degree, as early as the 1883 period. In any case, he did hold back publishing the ideas included in his *Beiträge* during much of the post-1883 period during which he came under savage persecution from Leopold Kronecker *et al.* The point is, that despite the formal excellence of the *Beiträge*, it lacks the epistemological rigor of earlier works, and of the *Mitteilungen*, for example. In any case, the physical, *ontological* implications of the *Beiträge*'s content are not satisfactorily elaborated by Cantor. The fact remains, that, on the basis of relevant applications, as we have illustrated the implications of the circular perimeter in Cusa's "De Circuli Quadratura," it is demonstrated that Cantor's work provides sufficient basis for not merely a formalist *mathematical transfinite*, but, rather, as we have insisted, since 1952, an *ontological transfinite*.
  174. See pp. 22-24.
  175. Michael O. Billington, *op. cit.*, pp. 23-28.
  176. See LaRouche, "Metaphor," *op. cit.*, pp. 26-32; "Mozart's Revolution," *op. cit.*, pp. 14-17; and "Subject of God," *op. cit.*, pp. 19-20.
  177. This signifies the "necessary predecessor/necessary successor" sequencing of topics, beginning ancient (Vedic) solar astronomical calendars, through Pythagoras and Plato, through Cusa, Leonardo da Vinci, Leibniz, *et al.*, in opposition to the method of sense certainty of empiricists and dynamicists, etc.
  178. "Characteristic paradox" could be otherwise termed the *type* of a paradox.
  179. For Brahms as a Classical composer, see LaRouche, "Mozart's Revolution," *op. cit.*, p. 22 and footnote 70.
  180. E.g., *analysis situs* in ordering of intervals.
  181. Mozart's uses of Bach's "Musical Offering," especially the six-part Ricercare, served as a model for Beethoven's mastery of the Haydn-Mozart *Motivführung* principle, to such effect that the Mozart treatment of the Royal Theme is a central thread of Classical composition, from Mozart on. Compare "Mozart's Revolution," pp. 17-22 and footnote 62, pp. 28-29, *op. cit.*, footnote 14, Prologue. A partial listing of Classical works which use the Royal Theme includes Mozart, Fantasy in C-minor, K. 475; Sonata in C-minor, K. 457; Fugue in C for 2 Pianos, K. 426, and Adagio and Fugue for Strings, K. 546; Beethoven, Sonata for Piano in C-minor, Op. 13 ("Pathétique"); Sonata for Violin and Piano in C-minor, Op. 30, No. 2; Sonata for Piano in C-minor, Op. 111; String Quartet, Op. 132; Schubert, Sonata for Piano in C-minor, D. 958 (Posthumous); and Chopin, Sonata for Piano in B-minor, Op. 35.
  182. LaRouche, "Metaphor," *op. cit.*, pp. 46-47.
  183. Adam Smith, *Theory of the Moral Sentiments*, 1. (1759) (Glasgow: Liberty Classics, 1984).
  184. Rev. Richard Neuhaus, *Doing Well and Doing Good: The Challenge to the Christian Capitalist* (New York: Doubleday, 1992) is reviewed in *Fidelio*, Vol. II, No. 1, Summer 1993.
  185. See G.W. Leibniz, *Monadology*, Article 45, *op. cit.*, footnote 42, Section 2; see also footnote 109, Section 2.
  186. The acceptance of Smith's moral depravity (as the quoted passage from the 1759 *Theory of the Moral Sentiments* indicates), defines a Manichean world-view, both for Smith and for Smith's devotee, Novak.
  187. We use the term "degenerate" to signify a member of a species which has lost an essential characteristic of that species.
  188. See Plato, *Republic*, 473dff., *op. cit.*, footnote 100, Section 2: " 'Unless,' said I, 'either philosophers become kings in our states or those whom we now call our kings and rulers take to the pursuit of philosophy seriously and adequately, and there is a conjunction of these two things, political power and philosophic intelligence, while the motley horde of the natures who at present pursue either apart from the other are compulsorily excluded, there can be no cessation of troubles, dear Glaucon, for our states, nor, I fancy, for the human race either. Nor, until this happens, will this constitution which we have been expounding in theory ever be put into practice within the limits of possibility and see the light of the sun. But this is the thing that has made me so long shrink from speaking out, because I saw that it would be a very paradoxical saying.' " See also *Republic* 499b, 540d; "Epistle VII," 324b, 326a-b, 328a-b, in

- Timeaus, Critias, Cleitophon, Menexenus, Epistles, op. cit.*
189. All of these forms of irrational insolence are associated with Freemasonic cults of the recent four centuries: Mazzinism generally, the philosophy of the treasonous U.S. Confederacy, Zionism, anarchism, and fascism, like "deconstructionism," have an explicitly, specific Freemasonic origin.
  190. For Leibniz's development of the concept of the "best of all possible worlds," see G.W. Leibniz, "Discourse on Metaphysics," Art. 3-5, in *Gottfried Wilhelm Leibniz Philosophical Papers and Letters*, Vol. 1, pp. 466-469, *op. cit.*, footnote 40, Section 2; see also "Correspondence with John Bernoulli, Feb. 21, 1699," *ibid.*, Vol. 11, p. 833.
  191. See Schiller's letter to Goethe, October 22, 1799 in *Der Briefwechsel Zwischen Schiller und Goethe*, ed. by Emil Staiger (Frankfurt am Main: Insel Verlag, 1977), vol. II, p. 819. See also footnote 12, Prologue.
  192. In a Dec. 31, 1982 speech to the International Caucus of Labor Committees Conference, the author stated, "The real fundamental *punctum saliens* has not passed. And that *punctum saliens*, as I argue, is the proposal that the United States take the initiative in the development of anti-missile beam weapons to bring to an end the age of thermonuclear terror." See Lyndon H. LaRouche, Jr., "The Cultural Determinants of an Anti-Missile Beam Weapons Policy," Dec. 31, 1982 Speech to the International Caucus of Labor Committees Conference, printed in *New Solidarity*, Jan. 14, 1983 pp. 4-5, Vol. XIII, No. 86.
  193. Beginning November-December 1989, the author began dictating parameters for a "Productive Triangle" solution to the problem of the economies of the former East Bloc and the former Soviet Union. The first detailed discussion of what was then called "the Third Way approach" appeared in "A program to rescue Poland and secure peace," *Executive Intelligence Review*, Vol. 17, No. 3, Jan. 12, 1990, pp. 22-33. This laid the basis for what later came to be called the "Productive Triangle" program. See also "Message of Lyndon H. LaRouche to the European Food for Peace Conference," pp. 36-37 of the April 1993 *EIR White Paper: The Crucial Role of Lyndon LaRouche in the Current Strategic Situation* (Washington, D.C.: Executive Intelligence Review, 1993).
  194. See *The Catholic Concordance*, by Nicolaus of Cusa, trans. by Paul E. Sigmund (Cambridge: Cambridge University Press, 1992), Book II, chap. XIV, p. 98: "All legislation is based on natural law and any law which contradicts it cannot be valid. Hence since natural law is naturally based on reason, all law is rooted by nature in the reason of man."
  195. Justice Hugo L. Black, who was a 33rd Degree Scottish Rite Grand Cross Freemason, also held a lifetime, secret membership in the Ku Klux Klan. According to author Paul A. Fisher, shortly after Black's 1925 resignation from the Klan, a *Pittsburgh Post Gazette* reporter attended a Birmingham, Alabama Klan meeting at which Black accepted "the Klan's gold card, or 'grand passport' of life membership." See Paul A. Fisher, *Behind the Lodge Door: Church, State and Freemasonry in America* (Washington, D.C.: Shield Publishing, 1988; subsequent editions by Tamm Publishing), pp. 112-115 and *passim*.
  196. Black, like his fellow Freemasons, used his position on the Supreme Court to target Christianity for extermination. As a Justice in a Supreme Court dominated by Scottish Rite Masons of high degree, Justice Black rendered the majority opinion in the landmark 1947 case *Everson v. Board of Education of Ewing Township, et al.*, which rewrote the intent of the Founding Fathers in the establishment clause of the First Amendment

prohibiting government establishment of religion, as follows: "In the words of Jefferson, the clause against establishment of religion by law was intended to erect a 'wall of separation between church and state.'" This "wall of separation" is a mere sophistic trick, as none of the Founding Fathers present at the Constitutional Convention advanced such an idea.

Through case law precedents Justice Black and allies like the Anti-Defamation League of B'nai B'rith (ADL) have literally marched God out the front door of schools, courts, and government, while ushering the Luciferian "New Age" theocracy of Freemasonry in the back door. Since *Everson*, the Freemasons and the ADL have argued cases that include: arguing against released time on a voluntary basis to participate in Bible study; fighting any kind of aid to parochial schools (even for handicapped students or teaching state-mandated curricula); combatting prayer in school or at graduation ceremonies of a non-sectarian, non-proselytizing kind; banning Christmas carols, hymns and spirituals from all facets of public life unless they are sung "without celebration"; denying Jewish and Christian organizations the same equal access to the open forum of schools as would otherwise be enjoyed by communists, anarchists, atheists, and so forth; and most recently, banning the Bible from public display in schools. See Paul A. Fisher, *op. cit.*, pp. 159-160 and *The Ugly Truth About the ADL*, by the editors of *Executive Intelligence Review* (Washington, D.C.: Executive Intelligence Review, 1993).

197. See Nicolaus of Cusa, "On the Peace of Faith," in *Toward a New Council of Florence: 'On the Peace of Faith' and Other Works by Nicolaus of Cusa*, trans. by William F. Wertz, Jr. (Washington, D.C.: Schiller Institute, 1993).
198. Gerhard Groote founded a religious teaching community called the Brothers of the Common Life in The Netherlands in 1376, on the basis of a rule of personal piety known as the *devotio moderna*. The movement followed the precepts expressed by Thomas à Kempis in his *The Imitation of Christ*; à Kempis also wrote "The Life of the Reverend Master Gerard the Great, Commonly Called Groote." Nicolaus of Cusa received his early education from the Brothers of the Common Life community at Deventer, and the influence of the movement was also conveyed through the works of Erasmus of Rotterdam. See Albert Hyma, *The Brethren of the Common Life* (Grand Rapids: Eerdmans, 1950).

Wilhelm von Humboldt's educational reform program is described in two works he wrote for the schools in Prussia, "Preliminary Thoughts on the Plan for the Establishment of the Municipal School System in Lithuania," and "School Plan for Königsberg," which are summarized in Marianna Wertz, "Wilhelm von Humboldt's Classical Education Curriculum," *New Federalist*, Vol. VII, No. 10, March 15, 1993, p. 8; see also *Wilhelm von Humboldt, Humanist Without Portfolio: An Anthology of the Writings of Wilhelm von Humboldt*, trans. by Marianne Cowan (Detroit: Wayne State University Press, 1963).

Humboldt's reform program was directly influenced by his long association with Friedrich Schiller. See "On Schiller and the Course of His Spiritual Development," by Wilhelm von Humboldt, and Schiller's "What Is, and To What End Do We Study, Universal History?" in *Friedrich Schiller, Poet of Freedom*, Vol. II, *op. cit.* See also Schiller's "On the Aesthetical Education of Man," in *Friedrich Schiller, Poet of Freedom*, Vol. I, ed. by William F. Wertz, Jr. (New York: New Benjamin Franklin House, 1985).



## Section 3

1. One of the greatest problems obscuring the history of Chinese philosophy has been the widespread practice of interpolation and forgery carried on by the partisans of various schools. H.G. Creel writes in his *Confucius: The Man and the Myth* (New York: John Day, 1949): "It is clear that forged documents were written in China at least as early as the beginning of the Chou dynasty. But the flourishing period of this type of manufacture did not begin, it would seem, until around or shortly after the time of Confucius. By Mencius' day, as we have noted, there were so many dubious works that he said, 'It would be better to have no historical documents than to believe all of them.' Yet the forgers went busily on. . . . In the *Book of History*, for instance, only about one fourth of the documents were really composed when they are alleged to have been, while the rest are forgeries. . . . The result for the understanding for Confucius was disastrous. Not only were the facts about his life and thought completely distorted; much worse, his whole historical background was so falsified that it was no longer possible to see him in perspective." (p. 189) Creel elaborates that "the real harm done to Confucianism by Legalism was not its suppression, but its perversion. . . . The real triumph of the Legalists . . . was the injection of their ideas into the very heart of Confucian literature." (p. 218) Confucian classics for which Creel finds evidence of interpolations include *The Doctrine of the Mean*, sections of *The Analects*, *The Great Learning*, and the *Historical Records*. The notorious corruption of these texts has been widely recognized in the course of Chinese history.
2. Auguste Dupin appears as the fictional detective in three amongst the most popular stories by Edgar Allan Poe: "The Murders in the Rue Morgue" (1841), "The Mystery of Marie Roget" (1842), and "The Purloined Letter" (1844); *The Complete Tales and Poems of Edgar Allan Poe*, intro. by Hervey Allen (New York: Random House, The Modern Library, 1938). The real-life Charles Dupin (1784-1873) was a French mathematician and economist, a member of the French Academy who held positions as Counselor and Minister in the French government and served in the French legislature and Senate over the period from 1831 to 1852. A student of Gaspard Monge at the Ecole Polytechnique, he made original discoveries in geometry, authored numerous books (*Développements de géométrie pure*, 1813; *Applications de géométrie et de mécanique*, 1822), and from his position as Chair of geometry and mechanics at the Conservatory of Arts and Trades, he devoted himself to fostering popular scientific education.

Poe, a key figure of the U.S. counterintelligence service against the British enemy from the 1820's through his death in 1848, was closely linked to the Marquis de Lafayette networks and to the Ecole Polytechnique faction of Gaspard Monge and Lazare Carnot. Dupin, whose accomplishments included contributions to physical economy, was one of Platonist Poe's heroes, especially on the issue of scientific method.
3. The Ecole Polytechnique was a successor to the Royal French Academy of Science founded by Colbert, of which Gaspard Monge had been a leading figure prior to the French Revolution. Both of these institutions—the Royal Academy of Science of France and the Ecole Polytechnique—were dominated by followers of Gottfried Leibniz. The Ecole Polytechnique under Gaspard Monge's leadership, was a center of Leibnizian science in opposition to the neo-Aristotelian cabalism of the Royal Society of London.
4. The brothers Wilhelm (1767-1835) and Alexander (1769-1859) von Humboldt were both scientists, scholars, philologists. They

were both trained in Leibnizian philosophy at Göttingen University, and both became close friends of Friedrich Schiller, who greatly influenced their thinking on questions of language and culture.

As a statesman, Wilhelm served as Prussia's ambassador to the Vatican and to Vienna; to the Congresses of Prague (1813) and Versailles (1815); and was a signator of the Treaty of Paris. In 1808, he was appointed as privy councilor and director of education for the Prussian state, from which position he crafted what is generally considered to be the finest educational system ever developed, in which the study of Classical languages, geometry, and higher mathematics formed the basis for the maximum development of the character and creative potential of the student. His writings include the seminal study in the philosophy of language, *Linguistic Variability and Intellectual Development*; a study of the ancient Kawi language of Java; and numerous other volumes of writings on linguistics, poetry, and essays.

Wilhelm's brother Alexander specialized in the natural sciences. At age 23, he reorganized the mining system of Prussia. He spent 1799 to 1804 exploring Central and South America, covering 6,000 miles, including the tropics and mountains of Colombia, Peru, Ecuador, and Mexico; the Humboldt Current off the west coast of South America is named after him. From 1804 to 1827 he published the geographical, botanical, and meteorological data derived from these explorations in 30 volumes. In 1829 he toured Russia, Siberia, and Central Asia at the request of the Czar. While serving as professor of physical geography at the University of Berlin, he spent the last 25 years of his life writing *Cosmos* (1859), a comprehensive account in four volumes of the structure of the physical universe as it was known at that time. Other works include *Personal Narrative of Travels to the Equinoctial Regions of the New Continent During the Years 1799-1804*, 7 vols. (1814-29), and *Central Asia*, 3 vols. (1843).

5. Tilak, *Orion and Arctic Home*, *op. cit.*
6. See Michael O. Billington, "Ecumenical Unity of East and West," p. 24, *op. cit.*, footnote 10, section 2.
7. Cultural anthropology originated as a product of post-Ecole Polytechnique positivism under the label ethnology. The rise of French positivism coincides with a racism in France as exemplified by the case of Lord Palmerston's French political catamite Napoleon III and his imperialism. On the English-speaking side, the affinities of positivism and empiricism came forth in a name-change in which French ethnology was called British anthropology. At a later point within France, the same positivist tendencies centered around Emile Durkheim invented a domestic, contemporary form of ethnology/anthropology which was called sociology. Modern psychology, most emphatically its behaviorist current, is derived chiefly from the same positivist degeneracy of the post-Monge French science establishment majority.
8. Lyndon H. LaRouche, Jr. *EIR Special Report: A Fifty-Year Development Policy for the Indian-Pacific Oceans Basin* (New York: Executive Intelligence Review, August 1983).
9. The use of the term "dirigistic" refers most immediately to the economic policy of France's Fifth Republic under President Charles de Gaulle. However, the tradition of this approach to economy in France is derived from the work of the great minister Colbert. The introduction of this method into the Fifth Republic, rescued France from the degeneracy into which it had fallen under the misleadership of the notorious Fourth Republic. The attack on "dirigism" begins with the oligarchical

- landowners and serf-owners, the French Physiocrats and their admirers later, including Lord Palmerston's unwitting mind-slave, David Urquhart's Karl Marx.
10. The precipitous drop in the physical output of the economies of Eastern Europe is highlighted in *The Economic Survey, 1992-93*, published by the Economic Commission of Europe of the United Nations, and released in preliminary draft form in Geneva, Switzerland in mid-April 1993; a similar report has been issued by the Wiener Institut für Internationales Wirtschafts Vergleich.
  11. As George Soros reports in his *Underwriting Democracy* (New York: Free Press, 1991), he hired Harvard Professor Jeffrey Sachs to develop an I.M.F. "shock therapy" program for Poland, which "had three ingredients: monetary stabilization, structural changes, and debt reorganization. . . . The I.M.F. approved. . . . It was very tough on the population, but people were willing to take a lot of pain in order to see real change." Soros later wrote that "[i]nflation has been reduced but the outcome still hangs in the balance because structural adjustment is slow in coming. Production has fallen by 30%, but unemployment by only 3%." At the same time, both Soros and Sachs worked with the I.M.F. to develop a similar program for Yugoslavia; an apology by Soros for his role in destroying Yugoslavia appears in his Nov. 18, 1992 speech to the Harvard Club of New York entitled "Nationalist Dictatorships vs. Open Society."
 

In his hometown of Budapest, Hungary, Soros encountered greater resistance to these programs. His business partner R. Mark Palmer, former U.S. Ambassador to Hungary and protégé of then-Deputy Secretary of State Lawrence Eagleburger, was forced to relocate the operations of the Central European Development Corporation (CEDC) from Budapest to Berlin, when schemes to turn Budapest into a "Tangiers" that would be the financial service sector hub for all of Central and Eastern Europe became known. Palmer was the link between Soros and sections of the U.S. intelligence community. See *Executive Intelligence Review*, "The spreading web of George Soros," Feb. 5, 1993, and "Probe Eagleburger role in East Europe looting scheme," March 12, 1993, Vol. 20, Nos. 6 and 11.
  12. One among the instigators of the Malthusian Club of Rome, former director of the Organization for Economic Cooperation and Development (OECD) Dr. Alexander King, revealed his racist motives in a 1981 interview as follows: "We are just at the beginning of the new tide of great migrations, there will be millions of people on the move to the West, a lot of them will be shot down, lots of them will die of starvation, but lots of them will get through. . . . I think that inevitably there will be terrible tragedies. We are past the time when that could be stopped. . . . Look at the number of foreigners already. The United Kingdom is no long a white country! The whole of Europe is changing. And even at the present rate, the white race is finished." See "Club of Rome founder Alexander King discusses his goals and operations," *Executive Intelligence Review*, Vol. 8, No. 25, June 23, 1981, pp. 18-29.
  13. National Security Study Memorandum NSSM 200 is excerpted in *EIR Special Report: The Genocidal Roots of Bush's "New World Order"* (Washington, D.C.: *Executive Intelligence Review*, May 1992), pp. 53-61.
  14. See "Final Solution: The Schachtian Economy of the Third Reich," in *Campaigner, Journal of the National Caucus of Labor Committees*, Vol. 8, No. 4, March 1975, pp. 14-41.
  15. For Alexander Hamilton on "artificial labor," see his "Report on Manufactures," *op. cit.*, p. 388, footnote 2, Section 2.
  16. For Alexander Hamilton on the "productive powers of labor," see his "Report on Manufactures," *ibid.*, p. 388.
  17. For a thoroughgoing critique of the Adam Smith "free trade" dogma, see the American economist Mathew Carey's "Addresses of the Philadelphia Society for the Promotion of Industry" (1819), reprinted in W. Allen Salisbury, *The Civil War and the American System: America's Battle with Britain, 1860-1876* (Washington, D.C.: Executive Intelligence Review, 1978; reprinted 1992).
  18. Sir Arthur Conan Doyle educated the London police during the time of the Jack the Ripper investigation in the methods of Sherlock Holmes, an education which succeeded in preventing the Metropolitan police from detecting the perpetrator. Conan Doyle had aimed to use the Sherlock Holmes stories to discredit the influence of Poe's detective character "Dupin." As quoted by Pierre Nordon in his biography of Conan Doyle entitled *Conan Doyle, A Biography* (New York: Holt, Rinehart & Winston, 1964), a draft monologue by the fictional Holmes in the first Sherlock Holmes story, "A Study in Scarlet" (1886), reads: "Lecoq was a bungler. Dupin was better. Dupin was decidedly smart. His trick of following a train of thought was more sensational than clever, but still. . . ."
  19. LaRouche, "Metaphor," *op. cit.*, pp. 18-22 and *passim*.
  20. LaRouche, *Cold Fusion*, pp. 100-108, *op. cit.*, footnote 120, Section 2; see also "Subject of God," *op. cit.*, pp. 24-25.
  21. Lyndon H. LaRouche, Jr., *So, You Wish To Learn All About Economics? A Text on Elementary Mathematical Economics* (New York: New Benjamin Franklin House, 1984).
  22. See Table I, p. 55, and footnote 108, Section 3.
  23. For water requirements, and how to meet them, see *Executive Intelligence Review*: "Fresh water is never too expensive," by Marcia Merry, Vol. 19, No. 50, Dec. 18, 1992, pp. 14-37; "Create new water supplies before time runs out," by Chris White and Marcia Merry, Vol. 18, No. 24, June 21, 1991, pp. 24-37; and "Man-made rivers and lakes, key to saving Middle East," by Jonathan Tennenbaum and Marcia Merry, Vol. 17, No. 37, Sept. 28, 1990, pp. 26-37.
  24. For power requirements, see Chris White *et al.*, "Build infrastructure to launch an economic recovery," *Executive Intelligence Review*, Vol. 19, No. 22, May 29, 1992, pp. 16-37.
  25. For comparative costs of modes of transportation, see Chris White, "The case for Maglev: paying more is cheaper," *Executive Intelligence Review*, Vol. 19, No. 44, Nov. 6, 1992, pp. 14-31; Jonathan Tennenbaum and Lyndon H. LaRouche, Jr., *Ein Wirtschaftswunder für Osteuropa; The "Productive Triangle" Paris-Berlin Wien als Lokomotive der Weltwirtschaft*, (Wiesbaden: Böttiger Verlags, 1991); and Christopher White *et al.*, "Build infrastructure to launch an economic recovery," *op. cit.*
  26. See Table I, p. 55, and footnote 108, Section 3.
  27. The first U.S. census enumeration was made in 1790, and conducted decennially since that time. A summary of time series tables for all census results 1790 to 1970 can be found in *Historical Statistics of the United States, Colonial Times to 1970*, Parts 1 and 2 (Washington, D.C.: Bureau of the Census, U.S. Department of Commerce, 1975) (93rd Congress, House Document No. 93-78, parts 1 and 2).
  28. This refers to the ancient, "pre-Aryan" urban-centered culture of present-day Lower Pakistan, which was contemporary with, and probably antedated, the pre-Semitic Sumer cuneiform culture of Lower Mesopotamia. The Harappa, Mohenjo-Daro sites provide good estimates of the urban population-capacity, and, thus, implicitly of rural population and extent of land-area occupied by the "Harappan" culture.
  29. LaRouche, *So, You Wish. . .*, *op. cit.*, chap. 2, pp. 28-30; chap. 4, pp. 73-76.
  30. LaRouche, *ibid.*, chap. 4, pp. 73-76; chap. 8, pp. 147-165; also "The Science of Christian Economy," *op. cit.*, chap. VI.
  31. It must be stressed, that although we are obliged to use the

- recognized term in established currency, "negentropy," our definition of the actual phenomenon addressed by Boltzmann, Wiener, *et al.*, owes nothing to those positivists in general, or to the Boltzmann *H-theorem* in particular. For us, thermodynamically, *negentropy* is the primary phenomenon, and *entropy* the mere negation of negentropy. Negentropy is defined by us in thermodynamical terms of reference as both the two following conditions as fulfilled: (a) the ratio of "free energy" to "energy of the system" rises self-similarly, and (b) the *density* of "energy of the system" also increases.
32. Gottfried Wilhelm Leibniz (1646-1716), philosopher, scientist, and statesman, the greatest universal genius of the modern age; born two years before the end of the Thirty Years War which had devastated most of Europe, he studied at the Universities of Leipzig and Jena. While in the service of the Elector of Mainz, Leibniz was dispatched to Paris from 1672 to 1676, where he studied mathematics with Christiaan Huygens and established himself in the intellectual life of Europe, of which Paris, centered around Colbert's Royal Academy, was the center at that time; during this stay he discovered the differential calculus and constructed a calculating machine. On his return to Germany, he accepted a post under the Duke of Hanover; his nominal duties included librarian, jurist, and official historian. From this position, however, he developed and maintained an international network of political and scientific collaborators. In his philosophical and theological writings, such as the *Discourse on Metaphysics*, the *Theodicy*, and the *Monadology*, Leibniz distinguished himself as a Christian Platonist opponent of both the British empiricist philosophy of Thomas Hobbes, John Locke, and Isaac Newton, and of the French rationalist philosophy of René Descartes.
  33. Friedrich List (1789-1846), German economist, republican leader. List emigrated to the U.S. in the early 1820's, forming a tight personal circle with Mathew Carey, president of the Bank of the U.S. Nicholas Biddle, and Henry Clay. This group revived Hamilton's economic program, organizing America's transformation to manufacturing in the 1820's-1840's. List returned to Germany as U.S. consul in 1830, created the *Zollverein* (tariff union), and launched the railroad development which at length created the unified German nation. List's *National System of Political Economy*, begun in Pennsylvania and published in Stuttgart in 1841, is the foremost work of the American System school of political economy.
  34. See footnote 58, Section 3 below.
  35. George Washington (1732-1799), the political heir of Lt. Governor (1710-1722) Alexander Spotswood's nation-building faction in Virginia, became the leading figure in opening the territories beyond the Allegheny Mountains for economic development.
  36. U.S. Rothschild representative and Democratic Party chief August Belmont, explained to a Southern associate in 1860 that his faction would try to take New York out of the Union when the South seceded: "New York, in such a catastrophe, would cut loose from our kind, but somewhat exacting Southern friends, she would open her magnificent port to the commerce of the world. As an independent city state, New York would become to the Americas what Venice was once on the sluggish lagoons of the small Adriatic." See David Black, *The King of Fifth Avenue: The Fortunes of August Belmont* (New York: Dial Press, 1981), pp. 199-200; see also Anton Chaitkin, "Bring Down the Pike Statue Now: Why the KKK National Monument Must Fall," *New Federalist*, May 3, 1993, Vol. VII, No. 16, p. 5.
  37. Leibniz's direct influence over the republican nation-building faction in the American colonies is documented in detail in H. Graham Lowry's *How the Nation Was Won: America's Untold Story (Vol. I: 1630-1754)* (Washington, D.C.: Executive Intelligence Review, 1988), *passim*.
  38. See G.W. Leibniz, "On the Establishment of a Society in Germany for the Promotion of the Arts and Sciences" (1671) and "Society and Economy" (1671), *Fidelio*, Vol. I, No. 2, Spring 1992 and Vol. I, No. 3, Fall 1992.
  39. Leibniz's heirs formed the core of the republican movement in American and Europe through the nineteenth century. These included the scientific/political networks of Benjamin Franklin, including the du Pont family and the Marquis de Lafayette; of the French Ecole Polytechnique of Lazare Carnot and Gaspard Monge, which was transplanted to the military-engineering center at West Point by its founder Commandant Sylvanus Thayer; and which formed the basis of the school of American System political economy of Mathew Carey, his son Henry C. Carey, and Friedrich List. See Anton Chaitkin, "American Prometheus," a three-part series in *New Solidarity*, Vol. XVII, Nos. 42, 48, 64 (Aug. 1, Aug. 22, and Oct. 20, 1986); and "The Secret History of the Industrial Revolution," a three-part series in *New Federalist*, Vol. III, Nos. 10 (March 3), 20 (May 12), 22 (May 26, 1989); Stephen E. Ambrose, *Duty, Honor, Country; A History of West Point* (Baltimore: Johns Hopkins Press, 1966), pp. 64-67, and unpublished *EIR* research by Pamela Lowry; and W. Allen Salisbury, *The Civil War and the American System*, *op. cit.*, footnote 17, Section 3.
  40. The otherwise irreducible difference in relevant qualities of productivities among machines employed for the same kind of work-output, is the difference in sum, or several applied machine-tool principles employed. This kind of machine-tool principle, in application, is properly termed "technology."
  41. Cf. Norbert Wiener, *Cybernetics, or Control and Communication in the Animal and the Machine* (New York: John Wiley, 1948); 2nd ed. (Cambridge, Mass: M.I.T. Press, 1961).
  42. Alexander Hamilton, "Report on Manufactures," *op. cit.*, footnote 2, Section 2.
  43. Cantor, *Beiträge*, *op. cit.*
  44. See footnote 37, Section 2.
  45. W. Allen Salisbury, *op. cit.*, *passim*.
  46. George Gemisthos, a.k.a. "Plethon" (c.1355-1450/52), adviser to the Paleologues on social and economic policy, later collaborator, in Florence, of Cosimo de' Medici, the "Great," the latter the sponsor of the convening of the 1439-1440 Council at Florence.
  47. Adam Smith, *An Inquiry into the Nature and Causes of the Wealth of Nations* (1776), reprinted as *The Wealth of Nations*, ed. by R.H. Campbell and A.S. Skinner (London: Oxford University Press, 1979).
  48. David Ricardo (1772-1823), British monetarist economist; follower of Adam Smith, friend of John Mill, Jeremy Bentham, and Thomas Malthus; his "Iron Law of Wages" (against any attempt to improve the real income of workers) and "tendency of the profit rate to fall" (denying scientific and technological progress) were adopted by Karl Marx in his economic works; major text, *Principles of Political Economy and Taxation* (1817).
  49. See Benjamin Franklin, "A Modest Inquiry into the Nature and Necessity of a Paper Currency," Philadelphia, 1729; reprinted in Nancy B. Spannaus and Christopher White, *The Political Economy of the American Revolution*, *op. cit.*, pp. 249-264.
  50. Alexander Hamilton, "Report on Public Credit" (1790); "Report on a National Bank (1790); "Report on the Subject of Manufactures" (1791); all reprinted in Nancy B. Spannaus and Christopher White, *The Political Economy of the American Revolution*, *op. cit.*
  51. Principal works by the Careys include: Mathew Carey, *Collected Pamphlets of Mathew Carey*; "Addresses of the Philadelphia Society for the Promotion of National Industry (1819)," in *The*

- Civil War and the American System*, op. cit., pp. 385-427; *Autobiographical Sketches in a Series of Letters Addressed to a Friend Containing a View of the Rise in Progress of the American System, the Efforts Made to Secure its Establishment, the Causes Which Prevented Its Complete Success* (Philadelphia: John Clark, 1829); and *The Olive Branch; or Faults on Both Sides, Federal and Democratic, A Serious Appeal on the Necessity of Mutual Forgiveness and Harmony to Save Our Common Country from Ruin* (Philadelphia, Nov. 1814) (Freeport, N.Y.: Books for Libraries Press, 1969). Henry C. Carey, *Principles of Political Economy* (1837) (New York: Augustus M. Kelley, 1965); *Principles of Social Science* (1858), 3 vols. (New York: Augustus M. Kelley, 1963); *The Past, The Present and The Future* (Philadelphia: Carey & Hart, 1848) (New York: Augustus M. Kelley, 1967); *The Harmony of Interests: Agricultural, Manufacturing, and Commercial* (1851) (New York: Augustus M. Kelley, 1967); and *The Slave Trade, Foreign and Domestic: Why It Exists and How It May Be Extinguished* (1853) (New York: Augustus M. Kelley, 1967).
52. Friedrich List, *The National System of Political Economy* (Stuttgart: 1841) English trans. by Sampson S. Lloyd (1885) (New York: Augustus M. Kelley, 1966).
  53. H. Graham Lowry, *How the Nation Was Won*, op. cit., passim.
  54. British East India Company propagandist Adam Smith (1723-1790), is universally cited by today's economics teaching profession as the founder of the "classical" school of economics. For example, a popular college textbook states: "Classical economic theory has developed in almost a straight-line from Smith to Ricardo to Marshall to Pigou." Quoted from C.E. Ferguson and Juanita Kreps, *Principles of Economics* (New York: Holt, Rinehart and Winston, 1962), p. 376.
  55. See footnote 51 above. *The Olive Branch* was first published on Nov. 8, 1814, and went through numerous enlarged editions over the next several years. In 1820, a fully expanded edition was issued as *The New Olive Branch* (Philadelphia: M. Carey & Son, 1820).
  56. W. Allen Salisbury, *The Civil War and the American System*, op. cit., footnote 17, Section 3.
  57. Mathew Carey (1760-1839), Irish nationalist leader and U.S. immigrant, a close collaborator of Benjamin Franklin. Mathew Carey was a fearless opponent of Adam Smith, and attacked the British secret service promotion of anti-U.S. secessionists. Carey and his economics student Henry Clay revived the principles of Alexander Hamilton, created an American nationalist political movement, and coordinated with republican nationalists worldwide.
  58. Henry C. Carey (1793-1879), son of Mathew Carey, was the principal source for the economic doctrine studied by Abraham Lincoln and implemented by Lincoln's administration. Carey's works were translated into many languages and, with those of Friedrich List, were the main republican economics texts in the nineteenth-century nationalists' struggles against the British imperial "Free Trade" doctrines. The Carey political circle in Philadelphia directly initiated many of the great U.S. industrial projects, both private and public.
  59. See Webster G. Tarpley, "Deconstructionism: The Method in the Madness," *Fidelio*, Vol. II, No. 2, Summer 1993, pp. 48-54.
  60. "Science" is that process of discovery subsumed by axiomatic-revolutionary changes in knowledge of principles. Technology is the applied machine-tool principle derived from a design of a successful crucial scientific experiment.
  61. The two most influential of the British empiricist philosophers. John Locke (1632-1704), foremost of the Enlightenment thinkers in England, protégé of Lord Ashley (1st Earl of Shaftesbury, Lord Chancellor 1672); a member of the entourage of the Venetian-controlled William of Orange's 1688 Glorious Revolution, he was the recognized intellectual leader of the British Whig "Venetian party." Through his position on the Council (Board) of Trade and Plantations, Locke advocated revoking the colonial charters, forcing complete economic subjugation of the American colonies. Major works: *An Essay Concerning Human Understanding* (1689), which shows the influence of the French Cartesian Pierre Gassendi accumulated during Locke's 1675-1679 years in France, is an attack on the Christian Platonist concept of *Platonic ideas*, arguing that man's mind, lacking "innate ideas" and hence an efficient connection to the universal (God), is but a blank slate (*tabula rasa*) on which knowledge and ideas arise merely as the result of sense impressions; and that even in the realm of intellectual perception or intuition, knowledge of the inner nature of the physical world is not possible. "Let us then suppose the mind to be, as we say, white paper, void of all characters, without any ideas; how came it to be furnished? . . . To this I answer, in one word, from *experience*; in that all our knowledge is founded, and from that it ultimately derives itself. Our observation, employed either about external sensible objects, or about the internal operations of our minds, perceived and reflected on by ourselves, is that which supplies our understanding with all the materials of thinking." (Book II, chap. I.2) In political theory, Locke's *Second Treatise on Government* (1690) defined the role of government as "making laws . . . for the regulating and preserving of property," a concept rejected by the American Founding Fathers in the Declaration of Independence.
  62. David Hume (1711-1776), Scottish philosopher, close friend of the British East India Company's Adam Smith, and sometime patron of Jean-Jacques Rousseau; secretary to the British Embassy in Paris (1763-66) and Undersecretary of State (1766). Hume extended the empiricism of Locke *et al.* to extreme philosophical skepticism, arguing in his *An Enquiry Concerning Human Understanding* (1748) that belief in cause-and-effect relationships was based on habit, but could not be known with certainty; hence, science was *per se* impossible. Directly influenced Jeremy Bentham and John Stuart Mill; Immanuel Kant's *Critique of Pure Reason*, ostensibly a refutation of Hume, becomes by accepting its essential categories, not a refutation, but a more sophisticated restatement of its fundamental premise.
  62. In the physical sciences, "asymptotic freedom" refers to the axiomatic assumption that phenomena are determined by the pairwise interaction of solitary particles, rather than that the potential action of such particles is determined by the environment or field in which they are situated. (See footnote 131, Section 3 below.) Adam Smith's "Invisible Hand" expresses this view; economics is reduced to the sum of the pursuits by all persons of their own hedonistically defined self-interests: "[e]very individual generally, indeed, neither intends to promote the public interest, nor knows how much he is promoting it. . . [H]e intends only his own gain . . . and he is . . . led by an invisible hand to promote an end which was no part of his intention. . . By pursuing this own interest he frequently promotes that of the society more effectually than when he really intends to promote it." (Adam Smith, *The Wealth of Nations*, op. cit., p. 456.) Smith's immorality has found maximum expression in the twentieth century by Milton Friedman; cf. Friedman's *Freedom to Choose* (Chicago: University of Chicago Press, 1979). Monetarist Friedman openly advocates the legalization of cocaine as an essential feature of man's "freedom."
  63. See footnote 4, Prologue.
  64. Aristotle, "Nicomachean Ethics" and "Politics," in *The Basic Works of Aristotle*, ed. by Richard McKeon (New York: Random House, 1941).

65. See footnote 38, Section 2.
66. Dante Alighieri, 1265-1321.
67. Lincoln's assassin, John Wilkes Booth, was an agent of the Confederate-states intelligence service run by Great Britain through Scottish Rite Freemasonry and its masonic subordinate, the International Order of B'nai B'rith. The National Park Service displays, at the murder site in Ford's Theater in Washington, D.C., a decoding sheet seized by police from Booth's possessions; the display text explains that police also seized from Confederate Secret Service chief Judah Benjamin's office a matching encoding device. Booth had previously been an international courier for Benjamin, who despite his emigration and United States citizenship, remained a loyal British subject for his entire life.
- John Wilkes Booth was an intimate friend of the B'nai B'rith Washington, D.C. chief, Simon Wolf, and a long-time associate of B'nai B'rith's president, Benjamin Peixotto. Peixotto was an editor of the anti-Union ("copperhead") *Cleveland Plain Dealer*, both he and Wolf serving the Cincinnati B'nai B'rith boss Isaac Wise, a virulent enemy of Lincoln's war effort and top Scottish Rite Mason. Simon Wolf, an exalted Scottish Rite Mason, revealed in his memoirs that he had drinks and intimate personal conversation with assassin Booth the morning of the Lincoln murder. See Anton Chaitkin, "Why Albert Pike's Statue Must Fall: The Scottish Rite's Ku Klux Klan Project," *Fidelio*, Vol. II, No. 1, Spring 1993, pp. 4-13, and "The Pike-Mazzini Correspondence," in "Bring Down the Pike Statue Now: Why the KKK National Monument Must Fall," *op. cit.*, footnote 36, Section 3.
68. See Barbara Tuchman, *A Distant Mirror: The Calamitous Fourteenth Century* (New York: Knopf, 1978); see also Carol White, *The New Dark Ages Conspiracy* (New York: New Benjamin Franklin House, 1980).
69. Nicolaus of Cusa's *Concordantia Catholica* (1433) is the principal source outlining these proposed changes which characterized modern European civilization. See *Nicholas of Cusa: The Catholic Concordance*, ed. and trans. by Paul E. Sigmund (New York: Cambridge University Press, 1991).
70. H. Graham Lowry, *How the Nation Was Won*, *op. cit.*, pp. 74-77 and *passim*.
71. *Ibid.*
72. For Leibniz's refutation of the views of Pufendorf, Grotius, and Locke, see G.W. Leibniz, "Meditation on the Common Concept of Justice" and "Opinion on the Principles of Pufendorf" in *Leibniz: Political Writings*, ed. by Patrick Riley (Cambridge: Cambridge University Press, 1989).
73. Benjamin Franklin was the senior scientific adviser to the Lunar Society of Birmingham, a group of republican scientists, inventors, and industrialists who organized the Industrial Revolution in England. Members Joseph Priestly and James Watt were sponsored by Franklin to go to France and collaborate with Franklin's French scientific and political colleagues of the Leibnizian tradition, including chemist Antoine Lavoisier and mathematician Gaspard Monge. Franklin thus mediated the scientific and technological development of Europe, and turned these projects to the advantage of American Independence.
74. For the origin of the term "Yahoos," see Jonathan Swift, *Gulliver's Travels*, *op. cit.*, footnote 76, Section 2.
75. Anton Chaitkin, *Treason in America: From Aaron Burr to Averell Harriman*, 2nd ed. (New York: New Benjamin Franklin House, 1985), *passim*.
76. Leading British circles have encouraged Serbian aggression as a "geopolitical" counter to what they propagandize to be an emerging German "Fourth Reich." The "Fourth Reich" line was put out immediately following the fall of the Berlin Wall

in November 1989, by such prominents as Anglo-Irish commentator Conor Cruise O'Brien, and then-Trade Minister in the Margaret Thatcher government Nicholas Ridley. It was thought by highest-level British circles, that a Serbian war of aggression in the Balkans would hit Germany on a "flank," in the southern "soft underbelly" of Europe. Insofar as corrupted French elites could be recruited to this strategy, these Britons thought the resulting Anglo-French "Entente Cordiale" would effectively impede a new era of Franco-German cooperation in Europe.

The use of Serbia against Germany was instrumental to the Yugoslavia diplomacy of former British Foreign Secretary Lord Carrington, acting in his capacity as European Community "mediator." The pro-Serbian Carrington has blamed Germany as responsible for the war in ex-Yugoslavia. Carrington's geopolitical design in the Balkans has been consistently backed by former U.S. Secretary of State Henry Kissinger, Carrington's erstwhile business partner at Kissinger Associates, as well as by Kissinger's U.S. underlings Lawrence Eagleburger (former U.S. Ambassador in Belgrade) and Brent Scowcroft.

According to the well-informed Oxford University historian Norman Stone, an important contribution to building a "Serbia Lobby" within British Establishment circles, was the 1937 book about Yugoslavia by Dame Rebecca West, entitled *Black Lamb and Grey Falcon*, which glorified the Serbs. Dame Rebecca had been, from approximately 1912 into the mid-1920's, the mistress of H.G. Wells, Britain's most important proponent of fascist social-engineering in this century.

77. Palmerston controlled Karl Marx through British Museum director David Urquhart, whose patronage Marx openly acknowledged. Urquhart was Palmerston's agent in respect to being the virtual secretary of the Mazzinian ring operating out of the British Museum Library, through which he controlled Young Europe assets from throughout the Continent. See Carol White, *The New Dark Ages Conspiracy*, *op. cit.*, pp. 326-327.
78. Lord Palmerston, Henry John Temple III, (1784-1865) was Britain's Foreign Secretary (1830-1834, 1835-1841, 1846-1851) and Prime Minister (1855-1858, 1859-1865) during the period of the breakup of the Holy Alliance, the European revolutions of 1848, the British Opium Wars against China, and the U.S. Civil War. In addition to his government posts, Palmerston headed British Freemasonry and in that capacity was a pivotal figure behind the Young Europe Movement which destabilized rival governments all across Europe, into Turkey, and even the United States. Through these British Freemasonic-sponsored "Jacobin" upsurges, the British Crown hoped to replace the "Concert of Europe" alliance arrangements forged at the Congress of Vienna, with a British-dominated Europe.
- As the consequence of this policy, Palmerston inadvertently sowed the seeds of a revival of the League of Armed Neutrality, under which Russia and other continental European powers had aided the American Revolution against Britain. Following the British and Confederate defeat in the U.S. Civil War, the Palmerston circle resorted to assassination, murdering both Lincoln and Alexander II as a means of stalling Reconstruction in the United States and the development of a Eurasian economic development process, based on trans-Eurasian rail lines and other forms of infrastructure development.
79. Robert Stewart Castlereagh, the 2nd Marquess of Londonderry (1769-1822), was British Foreign Secretary from 1812 to 1822. He was the architect of the Congress of Vienna (1815), which, following the defeat of Napoleon, sought to establish an alliance of European powers to maintain a precarious "balance of power," using Russia as the "policeman of Europe" to block any emergence of republicanism on the European continent, particularly in the German states. Castlereagh was a master

manipulator, whose preference for secret diplomacy was later praised by Henry Kissinger as his role model. At the end of his career, Castlereagh began to engage in the breakup of the Concert of Europe by quietly supporting Freemasonic-led revolutions in many of the states of continental Europe; these policies would be embraced later by Palmerston. Among the most virulent critics of Castlereagh was his contemporary Percy Bysshe Shelley, who wrote of him in "The Masque of Anarchy: Written on the Occasion of the Massacre at Manchester":

"I met Murder on the way—  
He had a mask like Castlereagh—  
Very smooth he looked, yet grim;  
Seven blood-hounds followed him:

"All were fat; and well they might  
Be in admirable plight,  
For one by one, and two by two,  
He tossed them human hearts to chew  
Which from his wide cloak he drew."

80. British Foreign Secretary George Canning proposed in August 1823, that the United States and Britain jointly declare Latin America off-limits to the continental European powers in the Holy Alliance, thereby making the U.S. a protectorate of the British Empire. U.S. Secretary of State John Quincy Adams said no: "I remarked that ... [we had] a very ... convenient opportunity for us to take our stand against the Holy Alliance, and at the same time to decline the overture of Great Britain. It would be more candid, as well as more dignified, to avow our principles explicitly to Russia and France, than to come in as a cock-boat in the wake of the British man-of-war." Adams' nationalist, anti-British, anti-imperialist conception was drawn up by President James Monroe in a speech in December 1823, which became known as the Monroe Doctrine. See *Memoirs of John Quincy Adams*, Philadelphia, 1874-77, vol. VI, pp. 178-79, entry of Nov. 7, 1823, referenced in Samuel Flagg Bemis, *The Latin American Policy of the United States* (New York: Harcourt, Brace, 1943), p. 62. See also, Lyndon H. LaRouche, Jr., *The Case of Walter Lippmann, A Presidential Strategy* (New York: Campaigner Publications, 1977).
81. Not only was Henry Kissinger a big fan of British Foreign Secretary Castlereagh, but in his Harvard doctoral dissertation, *A World Restored: Metternich, Castlereagh and the Problems of Peace, 1812-1822* (Boston: Houghton Mifflin, 1973), Kissinger waxed eloquent about Germany's Count Metternich, who was a principal ally of the British in administering the Concert of Europe following the Congress of Vienna that ended the Napoleonic Wars. This was a period of intense British machinations to snuff out the threat of spreading republicanism on the European continent following the American Revolution.
82. One among the many puppets sponsored by Palmerston in the diverse revolutionary movements of Europe during his years as Foreign Minister (1830-41; 1846-51) was Louis Napoleon Bonaparte, who from London exile repeatedly attempted to overthrow the French King Louis Philippe. In 1836 and 1840, Louis Napoleon landed in France with a band of followers, attempting to proclaim a new Bonapartist empire; in 1840 the French government formally protested that Palmerston was behind Napoleon's actions. Finally, in 1848, Palmerston's revolutionary societies succeeded in toppling Louis Philippe. Louis Napoleon soon became President, and in December 1852 he installed himself as Emperor Napoleon III in a coup d'état.
- Already in August 1850, Queen Victoria, disturbed by her Foreign Minister's embarrassingly public revolutionary actions, drew up an unprecedented secret memorandum demanding

that she be informed of all his actions. Palmerston's immediate notification of approval of Napoleon's coup to the new French government, contradicting Victoria's demand that England refrain from support, led to his dismissal later that month. But by 1855, Palmerston was back in power, this time as Prime Minister, where he remained (except for a one-year interruption in 1858) until 1865.

Once in power, Louis Napoleon acted loyally on behalf of British interests. In October 1861, while the U.S. Civil War raged, British, French, and Spanish troops invaded Mexico. Their purpose was to prepare for a possible invasion of the U.S. on the side of the Confederacy. While British and Spanish troops soon withdrew, France remained, and in June 1863 proclaimed Maximilian, brother of the Emperor of Austria, as Emperor. Only the Union victory in the Civil War forced France to leave Mexico, with Maximilian soon executed. In September 1870, Napoleon III was forced out of a power and fled to England, where he remained until his death.

83. See Michael O. Billington, "China's Taiping Rebellion: The International Diplomacy of the Confederacy," *The New Federalist*, Vol. VII, No. 22, June 14, 1993, p. 5.
84. As early as 1806, the Duke of Wellington (Arthur Wesley, Sir Arthur Wellesley) (1769-1852) was advocating a British military action to take Mexico. Foreshadowing events that would transpire nearly a half-century later, Wellington wrote to the Cabinet in 1806: "The French gentlemen who have turned their thoughts to this subject have recommended that one of the French princes should be established as king in New Spain, and the English and Spanish writers have recommended an independent government..." Wellington laid out detailed plans for a military invasion of Mexico from British bases in Jamaica. Wellington's invasion was ultimately carried out by Palmerston's Napoleon III.

Antonio López de Santa Anna (1791-1876) was the Spanish Royalist military commander who joined with Augustín de Iturbide when the latter proclaimed Mexico's independence in 1821. With the support of the Duke of Wellington, Santa Anna became a dictator and the arbiter of Mexico's two political factions controlled by British Freemasonry: the Scottish Rite (or centralists) and the Yorkists (or federalists). He occupied the Presidency eleven times between 1833 and 1853, and imposed both centralist and federalist governments.

On February 13, 1846, while in exile in Cuba, Santa Anna sent his agent Alejandro Atocha to meet with U.S. President James Polk to offer him all Mexican territory north of the Rio Bravo, in exchange for Polk's support for helping him return to the Presidency of Mexico. Polk sent Admiral Alex Slidell MacKenzie to meet with Santa Anna in Havana on July 6, 1846. The two agreed that Commodore Conner, who commanded the fleet of U.S. warships then blockading the port of Veracruz, would let Santa Anna through to return to Mexico, while Confederate agents inside Mexico overthrew the existing government in order to install Santa Anna as President; Santa Anna would then lead the war against the U.S.! Details of the meeting between Santa Anna and MacKenzie are given in *Santa Anna, el hombre (Santa Anna, the Man)*, by Mexican historian José Fuentes Mares.

85. See Anton Chaitkin, *Treason in America: From Aaron Burr to Averell Harriman*, *op. cit.*
86. On Feb. 17, 1862, Emperor Napoleon III and his ministers, and the British ambassador, visited the "stupendous" French estate of Baron James Rothschild for a party. The previous month, with the U.S. tied down by the Civil War, French and British troops had invaded Mexico. The Emperor was seeking the financial favor of the British-based Rothschilds to keep the



Mexican adventure alive. The partygoers shot 1,231 head of game in the Rothschild park that afternoon, and hundreds of government and private servants helped oil the Anglo-French alliance. In April, France went ahead with a declaration of war against Mexico.

James Rothschild had long been a supporter of the Palmerston-run Mazzinian revolutionary movements in Europe. In 1840, the exiled German poet Heinrich Heine, with his usual biting irony, had accurately characterized Rothschild's behind-the-scenes role in the semi-autobiographical book *Ludwig Börne—Eine Denkschrift*. Heine complained that the revolutionaries of his day were being unjust in denouncing Rothschild, since "I see in Rothschild one of the greatest revolutionaries who founded modern democracy. For me, Richelieu, Robespierre, and Rothschild are three terrorist names that signify the gradual annihilation of the old aristocracy. . . . To be sure, [Rothschild] founded a new aristocracy, but this one, based on that most unreliable element, money, can never have the long-term deleterious effects as did the former. Money is thinner than water, lighter than air, and we gladly pardon today's monied nobility for its impertinences, once we consider its transience: It dissolves and evaporates before you even know what's happening."

87. Sherman's military genius was shown in his execution of the flanking maneuver of the great campaign marching through Atlanta into the Carolinas. See Count Alfred von Schlieffen, *Cannae*, (Berlin: 1936), 3rd ed.; English trans. *Cannae* (Fort Leavenworth, Kansas: Command & General Staff School Press, 1931).
88. For Czar Alexander II's diplomacy in aid of Lincoln, including his dispatching of vessels of the Russian fleet to New York City and San Francisco Bay in support of the Union against France and Britain, see Konstantin George, "The U.S.-Russian Entente that Saved the Union," *Campaigner, Journal of the National Caucus of Labor Committees*, Vol. 11, No. 5, July 1978, pp. 5-33.
89. For Abraham Lincoln as an exponent of the American System of economics, and his direct debt to Henry C. Carey, see W. Allen Salisbury, *The Civil War and the American System*, *op. cit.*, pp. 32-36; Lincoln's "Discoveries and Inventions," "Address at Pittsburgh, Pennsylvania (Feb. 15, 1861)," and "Annual Address to the U.S. Congress (Dec. 3, 1981)," all dealing with the principles of political economy, are reprinted in this volume.
90. For Witte's biography, see footnote 6, Section 1. Among Witte's most significant writings on political economy was his two-volume *Lectures on Private and State Economics*, which was published in German translation in 1913. See Count Sergei Witte, *Vorlesungen Über Volks- und Staatswirtschaft*, Vols. 1 and 2, trans. by Josef Melnik (Stuttgart and Berlin: Deutsche Verlags-Anstalt, 1913).
91. Gabriel Hanotaux (1853-1944) was Foreign Affairs Minister in France from 1894-95 and then again from 1896 until 1898. His factional opponent in government was Théophile Delcassé (1852-1923), Foreign Minister from 1898 through 1905, and the architect on the French side of the anti-German Franco-British "Entente Cordiale." See Jacques Cheminade, "Will We Repeat the Blunders That Led to World War I?" *op. cit.*, footnote 7, Section 1. Lord Edward Grey (1862-1933) became England's Foreign Secretary in 1905 and actively pursued anti-German policies during the years leading up to World War I.
92. Pietro Pomponazzi lectured on Aristotle at the University of Padua between 1487 and 1509, and also taught at Ferrara and Bologna (see footnote 104, Section 2). One of his students was Gasparo Cardinal Contarini (1483-1542), a descendant of the Venetian oligarchical family, who became the most important

Venetian operative during the period of the Protestant Reformation and the initial Catholic Counter-Reformation. Another influence on the young Contarini was Francesco Zorzi (Giorgi), who became his close friend. Among Contarini's close associates were Gregorio Cortese, the Abbot of the Benedictine Monastery of San Giorgio Maggiore, Reginald Cardinal Pole, a sometime-pretender to the English throne, and Gianpietro Caraffa, later Pope Paul IV. Pole and his friend Vittoria Colonna were central figures of the Italian crypto-Protestant movement called the "Spirituali."

Contarini served as Venetian ambassador to the court of Charles V, observing Luther at the Diet of Worms and returning to Venice in 1525. At this time he delivered a report to the Venetian Senate in which he warned that the power of a united Germany would be enormous, but that divided Germany was impotent; see Francesco Alberi, *Le relazioni degli ambasciatori veneti al Senato durante il secolo decimosesto* (Florence, 1853). In 1537, Cardinal Contarini chaired the Holy See's Council on the Reform of the Church, which issued a decree citing Aristotle and condemning Erasmus, thus initiating the process leading to the Council of Trent, and in 1539 he was instrumental in securing the approval of Pope Paul III for the creation of Ignatius of Loyola's Society of Jesus, the Jesuit Order.

How Venetian diplomacy promoted the wars of religion of the sixteenth and seventeenth centuries is described by Webster G. Tarpley in "The Role of the Venetian Oligarchy in the Reformation, Counter-Reformation, Enlightenment, and Thirty Years War," a three-part series in *New Federalist*, Vol. VII, No. 11 (March 22), No. 12 (April 5), and No. 13 (April 12, 1993).

93. The Tavistock Institute of Human Relations (formerly the Tavistock Clinic), located in London, England, has been the psychological warfare arm of the British monarchy and Freemasonry for more than seventy years. Tavistock's Freudian and neo-Freudian brainwashers have studied the axiomatic assumptions governing how people think—calling this a "cultural paradigm"—for the purpose of shifting such paradigms to induce more neurotic, and therefore more easily controlled, behaviors. For example, in the early-to-mid-1960's, under a grant from NASA, Tavistock directed a "profiling" study of the psychological effects on the U.S. population of the Kennedy-era "crash" program to place a man on the moon. While much of that study, known for its author Robert Rapoport as the Rapoport Report, remains classified, that portion published in 1966 in Tavistock's journal *Human Relations* reveals the evaluation that the space program was producing respect for science and reason in the population, manifesting itself in the desire of children to become scientists. The report called for the elimination or scaling back of the crash program, which was promptly done by the political forces allied with Tavistock. See *Stop the Aquarian Conspiracy*, pamphlet issued by Citizens for LaRouche, May 1980, pp. 26-27.
94. See footnote 104, Section 2 and footnote 92 above.
95. The War of the League of Cambrai was waged against Venice by a coalition of the most important European states beginning December 1508. Members of the League included Pope Julius II, Emperor Maximilian I of the Holy Roman Empire, Louis XII of France, and Ferdinand II of Aragon. The kings of England, Hungary, and Cyprus, and the dukes of Mantua, Ferrara, Milan, and Florence were also at war against Venice. By May-June 1509, French land forces routed the Venetians, Venice lost all of its possessions on the Italian mainland, and the destruction of the Venetian oligarchical state appeared imminent. The tide turned beginning 1510, however, when first Pope Julius II della Rovere and later Ferdinand II of Aragon



joined forces with Venice. This experience of near-extinction impelled the Venetian oligarchs to launch the Protestant Reformation, splitting Christian Europe along religious lines and ushering in a century and a half of wars of religion which weakened the nation-states, thus permitting Venice to survive until the time of Napoleon.

96. Paolo Sarpi (1550-1623), a former Procurator General of the Servite religious order, was appointed state theologian of Venice in 1606. He was a leading theoretician of the "new houses" (*i nuovi* or *i giovani*—"the young") of the Venetian oligarchy, which took power in 1582. The *nuovi* faction proposed: (1) an all-out assault against the Church at Rome and Rome's allies, Spain and the Hapsburg dynasty; and (2) a major redeployment of Venetian financial power north into England and Holland. See David Wotton, *Paolo Sarpi, op. cit.*, footnote 92 above; see also Sarpi, ed. by Peter Burke (New York: Washington Square Press, 1967), pp. xv-xvi.
97. The Constitution of the United States states in Article I, Section 8 (which is the section dealing with the powers of the Congress): "The Congress shall have power to coin money, [and], regulate the value thereof." Thus, control of credit and credit issuance is explicitly delegated to the Congress. Beginning 1913, however, that power has been usurped by the Federal Reserve system. Although the Federal Reserve's Board of Governors appears to be a public institution, the stock of the Federal Reserve system's twelve Regional Reserve Banks, which are the operating part of the system, is wholly owned by the nation's commercial banks, with the fifty largest money-center banks owning the lion's share. Thus, the Federal Reserve system is nothing but a privately owned club of usurers, albeit with enormous power. Through its all-encompassing ability to set interest rate and reserve requirement levels, and to draft and enforce banking regulations, the Federal Reserve board unconstitutionally dictates U.S. credit policy.
98. See LaRouche, "In Defense of Common Sense," in *Christian Economy, op. cit.*, chap. II, pp. 8-12.
99. *Ibid.*
100. LaRouche, "Metaphor," *op. cit.*, pp. 18-22.
101. The decrees of the Roman Emperor Diocletian (284-305 A.D.) attempted to freeze the economic crumbling of the Roman Empire by fixing prices and wages by law. This led in the fourth century to the reforms of the Emperor Theodosius, which established legal enforcement of the occupation which each Roman citizen was forced to follow for his entire life. These Malthusian reforms were the earliest attempt to impose socialist decrees by totalitarian government. See *Global Showdown*, §2.3 (Washington, D.C.: Executive Intelligence Review, 1985), on the edicts of Diocletian and his successors; see also Lyndon H. LaRouche, "Yuri Andropov, 'Czar of Holy Mother Russia,'" p. 4, *New Solidarity*, Vol. XIV, No. 27, June 10, 1983.
102. See Lyndon H. LaRouche, Jr., *The Great Crisis of 1989-1992: Foreword to the LaRouche Campaign Platform Declaration*, July 4, 1989, printed by LaRouche for Justice, 1989, pp. 12-15.
103. See "Finding a cure for derivatives, the market cancer," *Executive Intelligence Review*, Vol. 20, No. 21, May 28, 1993, pp. 24-37.
104. LaRouche, *Fifty-Year Development Policy for the Indian-Pacific Oceans Basin, op. cit.*, footnote 8, Section 3.
105. The fraud in the proposal to deny "Third World" nations those technologies which might also have a military use, is that every technology has a potential military use. The "dual use" dogma is plainly a plot to strip "Third World" people into the Stone Age of virtual, genocidal extinction.
106. "Anti-British" signifies opposition to the policies and institutions of a British East India Company, Barings Bank, the Welf British monarchy, and the Liberal Party of England. It is essentially correct to say, that the U.S. War of Independence was fought against those policies of the British East India Company presented in that Company's agent's writing Adam Smith's *Wealth of Nations*.
107. The prime target of this charge of "spiritual child molestation" is such forms of "political correctness" as the multi-cultural "outcome-oriented" programs. "Spiritual child-molesters" include relevant "deconstructionist" fanatics of the Modern Language Association (M.L.A.), of the National Education Association (NEA), and the Anti-Defamation League's (ADL's) "World of Difference" package.
108. Table I was calculated by the author in 1987 using data drawn from the *EIR* data base. This data base was assembled over the 1985-87 period by an *EIR* research team, using public and internal-use data compilations and estimates from international organizations such as the United Nations and the World Bank, as well as data compiled and made available by public and private agencies on their own countries; the information used was specific to particular countries, rather than regional. In general, the statistics chosen for inclusion in the data base reflected the physical and productive characteristics of these economies, for example: population, age and family structure, land use by category, production and consumption of raw materials, semi-finished and finished goods and energy by type, workers involved in various types of productive and other activities, plus information on health and education.
109. See Nicolaus of Cusa, "On Equality," in *Toward a New Council of Florence, op. cit.*, p. 368. Cusanus writes that the human intellectual soul is "timeless time" and "in its essence sees the past and future as present and names the past memory, the present intellect, and the future will."
110. See footnote 89, Section 2, for references to the scientific work, including the Toscanelli map used by Columbus, which arose as an outgrowth of the policy of that Council of Florence.
111. F.W. Mote, writing an essay in the exhibition catalogue *Circa 1492: Art in the Age of Exploration*, ed. by Jay A. Levenson (New Haven: Yale University Press, 1991), states that "China had been the world's greatest maritime power in the first half of the fifteenth century," and describes the numerous trips of the Admiral Zheng He between 1405 and 1433, who toured India, the East African coast, the Red Sea, and the Gulf of Arabia. Chinese seafaring, which had a rich interchange for centuries with Arab and Persian navigators, led the world in navigational techniques such as use of the compass, as well as many aspects of naval architecture. Zheng He's ships in the 1420's were three times as big as Columbus' and his fleet twice the size of the Invincible Armada of 1588. These voyages were inexplicably halted by a policy shift in the 1430's, never to be revived.
112. See footnote 145, Section 2.
113. For example, Toscanelli, Kepler, *et al.*
114. *Cf.* footnote 93, Section 3 above.
115. See Charles de Gaulle, *Memoirs of Hope: Renewal and Endeavor* (New York: Simon and Schuster, 1971), p. 3ff.
116. On May 19, 1993, under the headline "China World's Third Largest Economy," the Reuter news service reported that "[t]he International Monetary Fund has concluded that China's economy is more than four times larger than previously measured, making it the world's third largest economy behind the United States and Japan, the *New York Times* reported today. . . . [u]nder a new method of measurement, national output is determined by the goods and services a country's currency will buy at home compared with the purchasing power of other countries' currencies. . . . The new method increased China's output last year from about \$400 billion to \$1.7 trillion. . . ."

117. The I.G. Farben plant at the Nazi concentration camp Auschwitz, which was called I.G. Auschwitz, was a factory producing synthetic fuel. Its slave labor workforce, with a calculated average of three months before death by starvation or gas chamber, was drawn from the neighboring concentration camp. At the Nuremberg trial, the corporate leadership of I.G. Farben, including Chairman Heinrich Butefisch and Board Member and chief legal official August von Knieriem, claimed ignorance and were exonerated over Judge Herbert's loud protests. Actually, Butefisch and von Knieriem, who was the cousin of Olof Palme's mother, Elisabeth von Knieriem, had personally inspected I.G. Auschwitz, as is documented in "Who is Olof Palme Really?" (Stockholm: European Labor Party, 1984).

What was being covered up was the tie to Anglo-American circles. Throughout the 1930's, and continuing through World War II, I.G. Farben had remained an intimate financial and intelligence partner of Rockefeller's Standard Oil in the U.S. and Imperial Chemical Industries (ICI) in Britain, on whose Board sat Neville Chamberlain. In fact, aided by the Dulles brothers, von Knieriem had founded the American company American I.G., which after Pearl Harbor was renamed GAR, and represented a covert ownership of Nazi German assets in the U.S.

118. On the conditions in the Mexican *maquiladoras* and the *colonias* (shantytowns) surrounding them, see *EIR Special Report: Auschwitz Below the Border; Free Trade Pact is George 'Hitler' Bush's Mexican Holocaust* (Washington, D.C.: Executive Intelligence Review, May 1991), pp. 19-22.

119. According to an interview he gave to the Public Broadcasting System (PBS), while George Soros' family was being hidden from the Nazis by a prominent Budapest attorney, his father placed him with the Gestapo agent responsible for confiscating "wealthy Jewish estates," and George assisted in this activity; according to Soros, the "subterfuge" he learned there became a basis for the methods he later used in his financial looting operations.

Despite his Nazi collaborator role, Soros was able to leave Hungary after the war. He gained entry to the London School of Economics in the 1950's, where his two mentors were British Aristotelian Society leader Sir Karl Popper and "Free Market" ideologue Friedrich von Hayek. He spent a year in a tutorial with Popper, where he imbibed the "open" and "closed" society doctrine; he eventually emigrated to New York, giving up philosophy to make money.

Soros founded his flagship Quantum Fund NV in 1969; he founded his Open Society Fund in 1979; since then Soros network affiliates have been established throughout Eastern Europe and the republics of the former Soviet Union, as well as China and South Africa.

The Central European University (C.E.U.) in Budapest was founded by Soros in 1991 with the assistance of then-U.S. Ambassador to Hungary R. Mark Palmer. According to reports in Soros' *Open Society News* newsletter, Deconstructionist Jacques Derrida has been brought there to lecture former East Bloc students. The director of the C.E.U.'s Institute for Nationalism and Ethnic Conflict Research is Ernest Gellner, who has written on subject attuned to Derrida's Deconstructionism; e.g., Gellner's *Postmodernism, Reason and Religion* (1992).

120. See footnote 11, Section 3.

121. This references not monetary limits but rather the finiteness of physical resources, including labor.

122. Project Democracy was created in late 1983, when Congress, acting at the behest of the Reagan administration, founded the National Endowment for Democracy (NED). From its inception, the NED apparatus was dominated by the neo-con-

servative faction of the U.S. foreign policy establishment—people such as Lane Kirland of the AFL-CIO, and Carl Gershman, who cut his political teeth working for the ADL's Fact-Finding Division under dirty tricks spymaster Irwin Suall, served as executive director of Social Democrats, USA, and then became the NED's executive director, and, currently, its president.

The NED's stated goal was to encourage "democracy" and "free elections." But, as its record testifies, "democracy" was merely the cover through which the NED octopus carried out various covert operations, mostly in the Third World, aimed at destabilizing governments which did not strictly toe the Anglo-American policy line; for example, the NED network played a crucial role in Ollie North's Iran-Contra enterprise. See *EIR Special Report: Project Democracy, The "Parallel Government" Behind the Iran-Contra Affair* (Washington, D.C.: Executive Intelligence Review, April 1987). Since Irangate, the NED has increasingly become a subject of controversy. Former U.S. Attorney General Ramsey Clark, for instance, told a conference in Geneva in 1990, that the NED "should be called the National Endowment for the Destruction of Democracy" because it uses "U.S. funding for the subversion of democratic processes in other countries. . . ."

In June 1993, the House of Representatives cut off funding for the NED, acting on an amendment sponsored by Rep. Paul Kanjorski (D-Pa), who blasted the organization as "an American foreign policy loose cannon." Shortly before the funding cut-off, Linda de Hoyos of the Schiller Institute gave testimony to the House Appropriations subcommittee on foreign operations, in which she called for the "immediate cessation of all funding" to the NED. "In countries around the world," de Hoyos stated, the Project Democracy apparatus "is seen as merely yet another way to interfere in the internal affairs of other nations" and as "an extension of operations of the U.S. Central Intelligence Agency."

123. Jeremy Bentham, "In Defense of Pederasty," in John Bowering, ed., *The Works of Jeremy Bentham* (Edinburgh: William Tait, 1843).

124. Jeremy Bentham, "In Defense of Usury," in *The Works of Jeremy Bentham, ibid.*

125. Jeremy Bentham, "Introduction to the Principles of Morals and Legislation," in *ibid.*

126. For Tom Paine on the twin evils of monarchy and democracy, see Thomas Paine, "The Rights of Man," Part 2 (February 1792), reprinted in *The Life and Major Writings of Thomas Paine*, ed. by Philip S. Foner (Secaucus: The Citadel Press, 1974), chap. 3, pp. 363-375, *passim*.

127. See footnote 110, Section 2.

128. Albert Pike was a principal organizer of the secession of the Southern states, of the Ku Klux Klan, and of Scottish Rite Freemasonry in America. Born and raised in Massachusetts, Pike was chosen by the "blueblood" families to represent them and British Empire strategy within Southern politics. He created a Scottish Rite Supreme Council consisting of treasonous government officials and international bankers and merchants, including the U.S. Vice President and Treasury Secretary, which directed the Southern insurrection. A Luciferian, Pike specialized in the manipulations of American Indians and Southern white supremacists. His Ku Klux Klan assassinated tens of thousands of loyal Americans. See Anton Chaitkin, *Treason in America*, chap. 10, *op. cit.*, footnote 75, Section 3, and "Why Albert Pike's Statue Must Fall," *op. cit.*, footnote 67, Section 3.

129. See footnote 59, Section 3 above.

130. Under "Outcome Based Education" (OBE) teaching methods, increasing portions of classroom time are devoted to psychologi-

cal attacks on the students modeled on "group therapy" techniques, whose goal is forced adherence to the relativist, "multicultural" behavioral norms espoused by the "Deconstructionist" authors of the programs; meanwhile, the role of instruction in the historic academic curriculum has been dramatically decreased. OBE programs are now operating in twenty-six states. The Anti-Defamation League of B'nai B'rith has produced a model instructional kit called "A World of Difference," which uses psychological conditioning to suggest to the child that all cultures and opinions are equally valid, and that any belief in an absolute value for scientific truth, especially if it is based on parental instruction or religious teaching, is a form of "prejudice." This program is linked to the ADL's campaign for totalitarian "hate crimes" laws, a campaign which is otherwise strongly tied to the homosexual lobby. Behind the facade provided by the "World of Difference" program, the ADL operates with the school system to defend the pro-sodomy propaganda produced by their allies in the homosexual movement.

131. "Asymptotic freedom" is the assumption that at small enough distances apart from each other, the tiny imagined quantities called "quarks" must behave as if they were each an independent particle. Thus, they become subject to the known laws of interaction of physical bodies. For critical comments by a particle physicist on this theory, see the "Interview with Giuliano Preparata," *21st Century Science & Technology*, Vol. 6, No. 2, Summer 1993, pp. 68-73. Preparata seeks some sort of guiding principle or geometry—a "quantum field theory" in physics language—by which the behavior and even existence of the particles is fundamentally determined. Underlying the search is the belief that the existence of matter is not fundamentally explained by the random interaction of seemingly distinct and free particles.

The current fad of "Chaos theory" is based on an assumption that random interaction of "free" particles leads to order. While the more sophisticated chaos theorists actually accept the existence of ordered states of matter, which violate the "law of entropy," their efforts are typically hindered by the attempt to reconcile such order with today's commonly accepted mathematical-physics practice, in which the assumption of fundamental disorder is built into the system. Hence, the application of iterative mathematical procedures, such as those which generate fractals, or Mandelbrot sets. For a critique of the underlying fallacies in this approach, see Dino de Paoli, "A Refutation of Artificial Intelligence: Georg Cantor's Contribution to the Study of the Human Mind," *21st Century Science & Technology*, Vol. 4, No. 2, Summer 1991, pp. 36-54.

132. Starting no later than the twentieth century b.c., colonies of Assyrian merchants dominated the economy and trade of pre-Hittite and early Hittite Anatolia. A network of these "merchant ghettos" reported directly to the Assyrian capital at Assur in northern Mesopotamia, controlling a trade out of Anatolia of primarily metals, and an importation of textiles and other manufactured goods—a trade on which the metal-deficient Assyrian empire vitally depended. The financial settlement of trade accounts was conducted by means of the oldest known forms of bills of exchange, letters of credit, and similar instruments, in the form of cuneiform statements on baked clay tablets enclosed in similarly inscribed clay envelopes. The Mesopotamian merchants generally charged the Anatolian natives a 100% markup over the price of goods purchased in Assyria or elsewhere, and

offered preferential credit terms to their own network over local borrowers. Collateral demanded for credit on trade might include the entirety of a local's property, including wife and children.

The chief Assyrian colony, Kanesh, was excavated over a period of some fifteen years starting the late 1940's, as summarized in Tahsin Özguç, "An Assyrian Trading Outpost," *Scientific American*, Feb. 1963; see also Seton Lloyd, *Early Anatolia* (Harmondsworth: Penguin Books, 1956); and Georges Roux, *Ancient Iraq* (Harmondsworth: Penguin Books, 1966).

133. As cited by Plato in *Cratylus*, *op. cit.*, 402a, footnote 100, Section 2; see G.S. Kirk and J.E. Raven, *The Presocratic Philosophers*, pp. 184-187, 197-198, *op. cit.*, footnotes 4 and 20, Section 2.
134. LaRouche, "Metaphor," *op. cit.*
135. LaRouche, *So, You Wish to Learn All About Economics?*, *op. cit.*, footnote 21, Section 3.
136. *Ibid.*
137. The Critical Path Method (CPM) of management was developed by NASA in the early 1960's in order to manage the large aerospace projects such as Apollo. A study prepared for NASA by the University of Denver titled "Aerospace Management Techniques" (Denver: Denver Research Institute, 1971) describes CPM as the "use of a logic network diagram which shows both the sequence and dependence of activities and events (that is, which activities must be complete before others can start)" (p. 148). By tracing paths through the network, the *critical path* which controls the completion of the program can be determined. The major reference for this method is *NASA PERT and Companion System Handbook* (Washington, DC: National Aeronautics and Space Administration, 1962).
138. Figure 6 is taken from *Beam Defense, An Alternative to Nuclear Destruction*, by the Scientific Staff of the Fusion Energy Foundation (Fallbrook, Cal.: Aero Publishers, 1983), p. 47.
139. A true singularity again, as referenced above, is a boundary condition which cannot be attributed to any congruent form generated by any transcendental function. Like the circular perimeter in Cusa's treatment of Archimedean quadrature, not a theorem of the theorem-lattice defining that which is bounded by the singularity.
140. A classic soliton is the shock wave generated according to Bernhard Riemann's paper "On the Propagation of Plane Airwaves of Finite Magnitude," *International Journal of Fusion Energy*, Vol. 2, No. 3, 1980, pp. 1-23. For a general description of solitons, see Alwyn C. Scott *et al.*, "The Soliton: A New Concept in Applied Science," *Proc. IEEE*, Vol. 61, pp. 1443-1483.
141. Our use here of "axiomatic-revolutionary" must be compared to Riemann's use of the term *unique (einsig)* experiments within his famous habilitation paper "On the Hypotheses which Lie at the Foundations of Geometry," *op. cit.*, footnote 37, Section 2.
142. See Marsha Freeman, "MHD: Technology for the 21st Century," *21st Century Science & Technology*, Vol. 5, No. 3, Fall 1992, pp. 46-55.
143. These estimates of cost pertain to "physical cost," not price.
144. Nicolaus of Cusa, "De Circuli Quadratura," *op. cit.*, footnote 83, Section 2.
145. Friedrich Schiller, "On Naive and Sentimental Poetry," in *Friedrich Schiller, Poet of Freedom*, Vol. III, p. 405, *op. cit.*, footnote 10, Prologue.

