

Toward China's 21st-Century economy

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There is no known case, in which a dominant civilization collapsed, except as a result of its people's stubborn refusal to abandon those customary beliefs, whose influence had guided them through that fateful pattern of decisions, the pattern which had brought doom upon themselves. So, the ancient empires of Mesopotamia crumbled into dust. So, the empires of Rome and Byzantium brought about their own destruction. So, the hegemonic textbook, classroom, and popular ideas about culture and economy, accumulated in the U.S., and elsewhere, during the recent thirty-odd years, now threaten to doom this civilization to a general collapse, a collapse caused by nothing so much as what has lately come to be accepted as "mainstream" opinion. Unless that popular opinion is changed, the end of this civilization were inevitable, a collapse of civilization which would follow a general financial collapse which would probably occur even earlier than the upcoming close of this present century.

As we have stated repeatedly, in earlier locations, the remaining options for escaping the approaching doom of our civilization are reduced, essentially, to the issue of certain forms of cooperation between the President of the U.S.A. and the government of China. The cooperation of other nations with both the U.S.A. Presidency and China, is the basis for saving our planetary civilization. This cooperation is virtually the only available cornerstone of actions which would prevent the present financial collapse from producing the kind of general economic collapse fairly labelled a planetary "new dark age."

The form of economic policy emerging from such cooperation would be similar in many respects to the form of monetary and economic cooperation which existed among member-states of the so-called "first world" during the 1946-1965 interval, a turn away from the trends in policy-shaping which have dominated the years 1966-1997 to date. However, certain additional improvements must be included if



An artist's conception of China's magnificent Three Gorges Dam project, scheduled for completion in about the year 2011. The project will provide flood control for the vast area surrounding the flood-prone Yangtze River, as well as navigation and electricity.

the economic recovery is to be general and durable. Some of those additional improvements are the subject of our attention here and now.

The most obvious causes of the presently onrushing collapse of the present form of civilization, are chiefly either economic, or are cultural impulses which are expressed in policies of economic practice. That point may be summarized as follows.

Succinctly stated, the most relevant evidence to be considered, respecting the presently ongoing collapse, is the following.

The high-point of growth of the world's population reached by the time of the Roman Empire, was several hundred millions living individuals. This ceiling was not raised significantly, until the emergence of the modern form of sovereign nation-state, in western Europe, during the latter half of Europe's Fifteenth Century. In consequence of changes in policy inhering in that institution of the modern sovereign nation-state economy, the actual population has grown to levels of over five billions persons, with an unrealized technological potential of an additional 20 billions attained by the close of the 1960s.

Until the middle of the 1960s, the characteristics of the modern sovereign nation-state, had featured a process of extended scope and development of education and science, to the included purpose of fostering investment in the infrastructure, agriculture, and industry, as required for demographic improvements through scientific and technological progress

in designs of products and of productive and closely related processes. Beginning the mid-1960s (for reasons adequately outlined in a number of earlier published locations), a sweeping change in policy was introduced, a change sometimes identified as a "cultural-paradigm shift." Over the course of the recent thirty-odd years, this mid-1960s "cultural-paradigm shift," has solidified itself, as a radically "neo-Malthusian," fanatical form of "post-industrial" utopianism.

Under present IMF "conditionalities" and other forcefully imposed supranational regulation, the sovereignty of most nation-states has been aggressively deconstructed, and, by these and related means the current economic capacity of the planet to sustain even presently existing levels of population and life-expectancies, has been savagely reversed. This latter trend is presently accelerating, as the case of the British Commonwealth's orgy of genocide and war in central Africa illustrates this trend.

Without that model of sovereign form of nation-state economy which such economists as Alexander Hamilton, Matthew Carey, Friedrich List, and Henry C. Carey termed "the American System of political-economy," the economic basis essential for sustaining modern population-densities and demographic improvements no longer exists.¹ It is nothing

1. The 1776-1783 American War of Independence and subsequent establishment, 1789-1797, of the U.S. Constitutional republic, was the image of the kind of nation-state which inspired the patriots of Europe and the other states of the Americas. Although the declared enemies of the United States were

ing less than the very basis for continued existence of most of the world's population, which is placed in jeopardy by presently far-advanced efforts toward eliminating the existence of the modern form of sovereign nation-state economy.

The result of the present "globalist" trend, can not be anything but an accelerating collapse of the world's potential relative population-density, toward approximately the ceiling-levels persisting over the period from the Roman Empire through Europe's mid-Fourteenth Century "New Dark Age." The breakdown of those economic mechanisms which could not exist without the sovereign form of modern nation-state economy, means accelerated spirals of global famine, spread of disease, and so forth; the level of population-potential will be ratcheted downward, accordingly. Collapse to levels of the Roman Empire period would require no longer than approximately two generations.

Although the interacting factors determining this presently ongoing collapse cover every aspect of planetary culture today, it is the economic expression of those interacting factors which is directly relevant to the point at hand. The manner in which sundry cultural factors determine trends in economic policy of practice, is the subject to be addressed here. To that purpose, attention is focussed here upon two of the most crucial, but least known determining principles of economic processes.

Two blunders of accounting

The most influential debate on matters of economic policy, whether in the university classroom, the published papers of the IMF or World Bank, in the national legislatures, the leading political campaigns, the Sunday morning TV interviews, or, the pompous Babbity of the financial pages, reminds one of illiterate patients proposing to reform the science of medicine. Especially during the recent two decades, the widespread toleration of such populist forms of economics illiteracy, and the additional fact, that economic and related policy-making is a subject of electoral campaigns, have tended to ensure that the candidate, whose ignorance of the actuality of economics is the greatest, such as Georgia's Newt Gingrich or Texas's Phil Gramm, will tend to win the election.

"Bring it down to my level," the populist insists; say nothing that a simple salesman or housewife would not readily understand. Compare this with those accelerated morbidity

Bentham's and Castlereagh's neo-Venetian British Empire, and also the profederalist forces of Clement Prince Metternich's Holy Alliance, the only serious rivals which existed for the U.S. model of sovereign nation-state republic, were those which grew out of the Jacobin tradition of Jeremy Bentham's agents Robespierre, Danton, Marat, and the related, Enlightenment model provided by the British system. As the American System itself was chiefly the result of the Seventeenth- and continuing Eighteenth-Century influence of the circles of France's Colbert and Europe's Leibniz upon Benjamin Franklin, et al., so the American patriots' Nineteenth-Century partnership with the circles of Gauss and Humboldt in Germany, provided the foundations upon which a continued existence of the mixed form of European national economy (partly oligarchical, partly American System) depended.

rates among patients, the which are the result of allowing accountants and mutual-funds managers to dictate the practice of medicine to physicians. That example is fairly comparable to the way in which the economic policy of the United States, and many other nations, is being dictated by the quack-academics of monetarism today. Like any other branch of physical science, economic science could be taught successfully to a majority among reasonably well-educated students; however, as with any branch of science, the beginning of wisdom is that student's willingness to escape from the delusions of illiterate popular opinion.

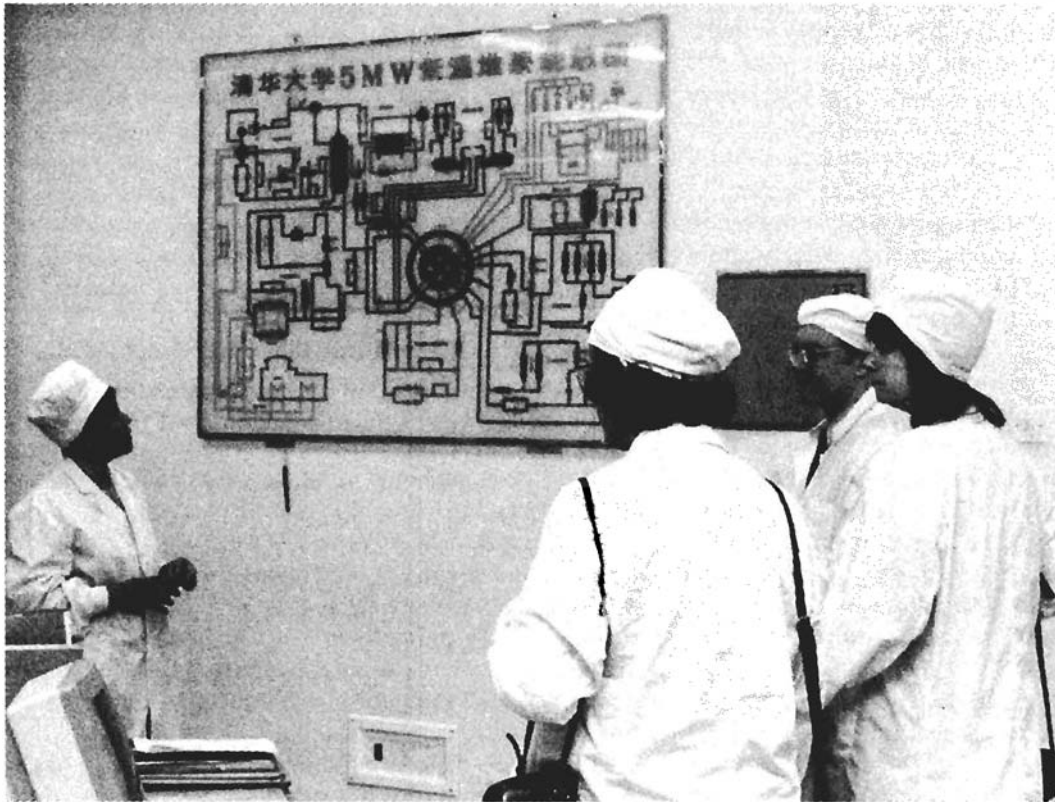
Will you continue to tolerate, as "mainstream opinion" on the subject, those prevailing ideas about economics, the which are destroying our nation, and most of civilization, today? Or, are you willing to think, as the image of Socrates sets a standard for thinking? Are you willing to strain yourself a bit, to come to know a few essential facts about the science of economics, under those present conditions, in which your nation's, and your family's survival may depend upon your efforts to learn at least a few of the most essential principles of this science? This brings us to the central fallacy of public debate on economics today, the fallacy of contemporary opinion about statistics.

The crucial issues of economic policy may be summed up with the following observation. If there is still a civilization during the first half of the 21st Century, that civilization will employ an economic science which has recognized that statistics are usually misleading, even when that deception is not intentional.

It must be said of the doomed economic ideas and practices which have continued to dominate the recent, thirty-odd years, that, whenever accounting, including national-income accounting, is stretched beyond its narrow area of competency: where it is applied as a substitute for the principles of production management, or for shaping the policies of a nation's government, the result must tend to be, sooner or later, a disaster for the relevant firm or economy. For reasons which have much to do with relatively superior, personal cultural development and personal character, but nothing to do with accounting as such, some accountants and economists rise above the generally accepted beliefs of their profession; but, accounting itself, as it is presently taught and practiced, never does.

The proof of this contention is elementary. Relevant case-histories, comparing the post-1966 downturn in managerial competence in the U.S. economy, with the commonplace causes of isolated cases of failed management performance from a relatively saner period, that of the 1939-1965 U.S. agro-industrial economy,² have crucial significance for de-

2. Lyndon H. LaRouche, Jr., "The U.S.A.-China Strategy," *EIR*, April 25, 1997. The clinical relations among finance, accounting, and production management are summarized under the sub-heading of "The war-economy paradox," pp. 49-52.



China's future requires high-technology development, including nuclear power. Here, a Schiller Institute delegation, headed by Helga Zepp LaRouche (right), tours the nuclear energy institute at Qinghua University in China, in May 1996.

fining a competent approach to study of the leading problems to be considered in such contexts as *EIR*'s continuing presentation of the various, prospective choices of long-term growth-patterns in the economy of China today.

The central feature of this matter is located by examining two crucial, but presently little-known features of economic science. One of these, the problem of *characteristics*, is unknown in university textbooks today. The second, sometimes referenced as *the horizon problem*, is sometimes, if rarely acknowledged, but very poorly understood, even among those who have presented econometric studies on this latter topic.

At first inspection, the definition of an *economic horizon*, at which to locate the efficient consequence of today's management decisions, is deceptively simple. Any method of accounting, which purports to judge present performance by means of accumulated statistics from the data representing the preceding period to date, is a fraud in principle. At best, such reporting can do no better than to highlight clinical evidence pointing toward what might have been failures of decision-making or performance from the past. The essence of management, is those choices of present action, the which change the consequences (and apparent statistical correlations) inherited from the past, to bring about a happy future. Thus, to judge which choice to enact, one must define and construct a function, free of efforts to impose past statistical correlations upon the future; by means of this required func-

tion, we must judge present performance in terms of a competent projection of the future outcome of those choices of trends in management decisions currently being considered.

In each case, in practice, there are many interacting choices to be considered. It is the interaction of all proposed changes, and non-changes, which must be examined for their common, future result. The choice of a future time, beyond which further projection does not appear to have significant bearing upon present choices, is the practical choice of a date, to which we may assign the title of "horizon," for the purpose of examining the true import of present decisions, or non-decisions.³

In reality, although the notion of "horizon" has been recognized by a minority among mathematical economists, the required method for constructing relevant projections rests upon profound, little-known, underlying principles of economic processes. These are principles beyond the comprehension of the economics profession as generally accepted professional standards define that subject-matter today.

We shall return to the "horizon problem" at a later point here. Turn now to the first of the two common blunders of economics and accounting practice: the assumption, that an image of economies as wholes, might be represented by what

3. The standard of truthfulness for all cases, is that the author of the choice of "horizon," must state the set of axiomatic assumptions, from which the selection of that horizon is constructed.

might be fairly described as the “brick wall” method of statistical modelling. The blunder in that, is the assumption, that the whole economy is the sum of its parts. This brings us to the matter of *characteristics*. The simplest expression of the issue being argued, so, is aptly illustrated by the author’s stock classroom argument on this point: “the plumber problem.”⁴

Assume that a plumber working for a manufacturer, in 1965, was using skills and techniques little different from those he had acquired circa 1946. During the intervening decades, the level of technology employed by the firm, and the society around it, had been raised significantly. Is the plumber’s 1965 labor therefore to be assigned a value determined by comparison of the relative, 1946 and 1965 levels of technological change of his skill, relative to that of the firm, and of the economy in general? No. The value of the plumber’s labor is twofold: its necessary contribution to the functioning of the overall climate of technology to which the plumber’s contribution is applied, and, also, in first approximation, the cost of reproducing, from households, a necessary number of labor-force members with the skills and performance the plumber represents.

In the language of mathematical physics, the economic effect of action within an economic process as a whole, is not determined by the local action itself. The result of the local action, is determined by the *physical-economic space-time curvature* in which the current state of realized technological development situates that economic process considered as a whole. This notion of “curvature” corresponds to Leibniz’s usage of such various, equivalent terms as, “Analysis Situs,” “universal characteristics,” and “sufficient and necessary reason.” The elaboration of Leibniz’s notion in the form of modern mathematical physics, is the Gauss-Riemann notion of physical-space-time curvature, as this was set forth in elementary terms by Riemann’s 1854 habilitation dissertation, *On The Hypotheses which Underlie Geometry*.⁵

As an example, consider the currently widespread faith in “globalism,” which asserts longer-term advantages of “out-sourcing” from cheap-labor markets. This delusion depends upon the dupe’s ignoring this matter of characteristics of economic processes. Examine the suicidal folly of “out-sourcing,” both as this might be viewed, first, from Germany, and, second, from the standpoint of the national economic interest of the nation providing the “out-source” to Germany.

How a modern economy produces a profit

Most archeologists and other relevant professionals are equipped to show some among the important aspects of the relationship between technological progress, on the one side, and, on the other side, both the improvement of demographic

4. *ibid*, pp. 54-55

5. Bernhard Riemann, *Über Die Hypothesen, welche der Geometrie zu Grunde liegen*, *Bernhard Riemann’s Gesammelte Mathematische Werke*, H. Weber ed. (New York: Dover Publications Reprint, 1953).

characteristics of households and of society’s potential relative population-density. The role of certain inventions, to this effect, occupies a significant part of the relevant literature. In former times, a quarter-century or more ago, when graduates of respectable secondary schools and universities had been supplied at least a semblance of literacy respecting the history of civilization, the interaction of such inventions with the development of social institutions, was implicitly required knowledge for anyone elected or appointed to high office.

Nonetheless, even among those who commanded such literacy, there was uncertainty as to how such facts ought to be brought together for the purpose of showing something like a relevant cause-effect relationship. The basis for a general theory of the required sort was not provided, until Riemann’s revolutionary 1854 definition of a physical geometry; even then, that implication of Riemann’s work was not recognized until the present writer’s 1952 discovery of this connection. The fact that “out-sourcing” is among the most contemptible frauds, is readily shown by anyone with practical experience in capital-intensive modes of production. A rigorous proof of this same fact depends upon the following type of argument, from principles.

Begin with a question: How must we express what we mean, when we say, that it is sequences of identifiable inventions, which map the way in which man’s increasing mastery of nature increases the potential relative population-density of our species, at the same time that this improves the demographic characteristics of typical family households? We think we understand one another, when we speak of such effects of a process of successive inventions. Yet, when we speak of inventions in this way, our conversation usually emphasizes identifiable objects, rather than the efficiency of those processes by means of which those objects are generated.

The relevant shortcoming is, failing to recognize the significance of the fact, that an invention is a result of an action, an act of discovery. If we are going to express the notion of progress in the sense of a physical function, we must shift our focus from the object generated by an action, to that action itself. What is the difference between that quality of action which generates a validated invention, and those other forms of action which do not? How does the relevant quality of action differ from other species of mental action? This is the challenge which Riemann’s 1854 discovery implicitly solved; this is the central conception underlying the possibility for constructing a valid notion of function for a science of physical economy.⁶

In summary, Riemann’s 1854 argument shows, that we must replace the kind of aprioristic notions of space and time, which underlie the Euclidean mathematics and mathematical

6. Here lies the key to unravelling the logical-positivist fraud which provides the axiomatic basis for the Wiener-Shannon cult of “information theory.”

physics of Galileo, Descartes, Newton, Euler, Maxwell, et al. These must be replaced, by recognizing that every validated discovery of principle, such as those produced by experimental physics, constitutes an added “dimension” of a physical-space-time geometry; as Riemann argues, this includes the notions of space and time themselves.

However, there is an added mathematical consideration. Unlike aprioristic mathematics, a physical geometry must take into account the interrelations among the “n dimensions” of an “n-dimensional” physical-space-time geometry. This introduces the physical evidence to the effect, that any “n-dimensional” physical-space-time geometry has a *characteristic* curvature, by measurement of which we are able to define that specific physical-space-time geometry as of a distinct *type*.⁷ These notions of “type” and “characteristic” are central to the determination of relative economic value in a physical-economic process. This notion of “characteristics” satisfies a demand made earlier by Gottfried Leibniz.

Thus, with the implications of Riemann’s work so noted, in place of the term “inventions,” resort to a much stricter category of phenomena: validated discovery of those kinds of additional natural principles, the which each qualifies as a dimensionality of a corresponding, “n-dimensional,” Riemannian physical-space-time geometry. In this approach, each such geometry in such a series of geometries, represents an open-ended set of theorems, each set defined by a single, underlying hypothesis.⁸ That done, then, every invention to

7. The key is the use of Gauss’s new, revolutionary definition of the complex domain, as referenced by application of the notions of bi-quadratic residues to the anomalies which are to be found within the experimental domain. Riemann attributes his further development of this, chiefly, to leads provided by the work of Carl F. Gauss in the derivation of a general theory of curved surfaces from the development of a general theory of bi-quadratic residues. [Riemann, op. cit.] Notably, Gauss, in relevant discussions with both Wolfgang (Farkas) Bolyai and Wolfgang’s son John (Janos), references his own discoveries of a non-Euclidean geometry to a period implicitly antedating Gauss’s 1799 *Disquisitiones Arithmeticae*. The examination of the underlying argument ordering the development of that latter work, as viewed from Gauss’s applications of that argument to astrophysics, geodesy, and the Ampère-Gauss-Weber principle of electromagnetism, confirms the implied dating of Gauss’s discovery of a non-Euclidean principle. His life’s work in mathematics and experimental physics expresses nothing different than precisely the principle of a non-Euclidean physical geometry introduced by Riemann. Notably, Gauss’s development of the higher mathematics associated with bi-quadratic residues, employed an ancient principle traced to the definition of incommensurables by Plato’s Academy at Athens, a principle at the center of Nicolaus of Cusa’s proof of the existence of magnitudes we identify today as “transcendental.” Nor is there anything in this work, of Gauss, Ampère, Weber, and Riemann, which is inconsistent with the specifications for scientific method given by Leibniz earlier.

8. In geometry, the term *hypothesis* signifies a fixed set of interdependent definitions, axioms, and postulates, as the case of Euclid’s geometry illustrates that usage. An “n-dimensional” physical-space-time geometry is, therefore the outgrowth of a succession of hypotheses. No theorem of any single theorem-lattice of this succession can be fully consistent deductively with any theorem of any other theorem-lattice of that series. The succession of hypotheses thus defines a series of discontinuities, such that there exists

be considered is either an implied theorem of some type of geometry, or corresponds to the kind of validated experimental discovery of principle which requires a new geometry. Thus, for our purposes, the emphasis is upon the series of those validated discoveries of principle which are representable by a corresponding series of Riemannian geometries.

This can, and must be generalized, to reach beyond the scope of a mathematical representation of an experimental physical science. For example, the notion of the sovereign nation-state and the type of economic development so generated, is the fruit of a long history, which, to all practical purposes, begins with study of the Homeric epics, the work of Solon of Athens, the tragedies of Aeschylus (for example), and Plato’s dialogues and surviving letters. This idea of the nation-state has an efficient function in determining the possibility for man’s continued physical mastery of nature. Clearly, then, one can not limit the source of progress in demographic characteristics of population, to the mathematically representable features of experimental physical science. Those qualities of ideas which are characteristic of the Classical art-forms of poetry, music, tragedy, and the plastic arts, are essential expressions of the same principle, of *Analysis Situs*, which governs the scientific and technological side of demographic progress. It was essential for the writer’s original discoveries in economic science, that the epistemological problem of reconciling Classical art-forms with physical science, be solved.

It is not appropriate to recapitulate the writer’s life’s work here. It is sufficient, for immediate purposes, to summarize the relevant points. All valid discoveries of those qualities of ideas which qualify as principles, have their origins in the form of mental activity which Classical usage identifies by the term *metaphor*. We identify that significance of the term, and then proceed directly to the promised argument on “outsourcing.”

Given, a set of beliefs which govern the way in which one chooses between believable and unbelievable phenomena and ideas. Along comes a stubbornly persistent occurrence, whose authenticity one must accept according to one’s existing standard for belief; yet, everything one has believed up to that time says that that stubbornly persistent occurrence should never happen! The paradoxical juxtaposition of those two, conflicting aspects of one’s belief, is the metaphor. In Classical poetry, or tragedy, for example, the posing of the metaphor obliges the individual mind, among the audience, to resolve that paradox. The successful resolution of that “puzzle,” constitutes the new idea, so prompted by the metaphor: *Analysis Situs* in its most general sense. Metaphor, employed in that way, to that effect, is the highest, most powerful, and most precise form of use of language. No original commu-

an implicitly enumerable density of discontinuities in any mathematical representation of the physical space-time corresponding to such an “n-fold”, succession of physical geometries.



China's next generation will require Classical forms of education to optimize the increase of the productive powers of labor. The emphasis must be upon knowing, rather than mere learning: The student must relive the great discoveries upon which human civilization depends.

nication of an important idea was ever conveyed by algebraic formulas, or by literal meanings in written prose; only metaphor can meet that requirement.⁹

Under the type of sovereign nation-state economy associated with the influence of the American System of political-economy, the interface among state direction of education, infrastructure, and national currency, and predominantly private investment in agriculture, mining, and urban industry, orders technological progress in the following general, *anti-entropic* way.

Classical forms of education typify the principle of education required for optimizing increase of the productive powers of labor. This preferred form of education is best typified by

9. The commonplace, fraudulent ways in which this significance of metaphor is most commonly avoided, is, either as Thomas Hobbes demanded, by outlawing metaphor, as an undesired inhabitant of the domain of speech, or, by the cultish attribution of symbolic meanings. Thus, Tweedledee says of the Bible, "God intended me to read this in the King James Authorized Version, therefore, this passage means what the plain words of the text signify to me. God would never permit a text to be presented to me, whose meaning would not be exactly what I would believe the meaning of that passage to be." His theological opponent, Tweedledum, argues, "No, there are hidden, symbolic meanings here; it is intended, that only those who have been initiated into those symbolic codes would understand the true meaning of this passage." [Both should have spent more effort to learn Christianity from the Apostle Paul's *I Corinthians* 13]. The same pathologies litter the pages of the concert-goers' program notes, and so on, and on, and on. The worst lot, are those who follow the deranged Jacques Derrida into the Laputan virtual reality of pure written text.

the successful economic development of 1876-1914 (and the 1946-1963 reconstruction of) Germany, which saw the Eighteenth-Century development of the *technische Hochschule*, under the influence of Gottfried Leibniz, and the Nineteenth-Century, Schiller-Humboldt model of humanist education. The emphasis in those superior modes of education, as Alexander Dallas Bache and others promoted this in the United States, is upon *knowing*, rather than mere *learning* of qualifications for future employment.¹⁰ The student must relive the experience of original discoveries of principle, by reenacting them in a manner as near as practicable to the actual paradox which led both to the original discovery and its experimental (or, equivalent) validation.

It is important that the student learn the discovered, validated principles upon which the historically determined practice of civilization presently depends; it is more important that the student know those principles, by rediscovering them, rather than merely describing them, or merely rehearsing some among the procedures which those discoveries subsume.

The existence of the relevant cognitive powers is universal to all persons whose brain-function is not damaged suffi-

10. Schiller famously ridiculed the latter form of educational policy with the indelible term *Brotgelehrte* (taught the rules which one must follow, to earn a wage in some choice field). See Friedrich Schiller, "What Is, and to What End Do We Study Universal History?" in *Friedrich Schiller, Poet of Freedom*, Vol. II (Washington, D.C.: Schiller Institute, 1988), pp. 253-72.

ciently to virtually suppress such potentials. Even the students who gain "A's" from merely learning the taught rules, show relatively mild expressions of the benefits of cognitive potentials. In contrast to such "A" students, better students will refuse to "learn" any "rule" which they have not derived for themselves by means of individual, independent employment of their cognitive powers. Unfortunately, too often, even the better students in the latter category, are not efficiently aware of the nature of the creative mental activity which they summon to resolve the metaphorical paradoxes they have mastered in this way.¹¹ In Platonic epistemology, such as that of Leibniz and Riemann, the thinker has come to know this method of metaphor (the Socratic method), and makes that method itself the primary subject-matter of reference in addressing any important paradox. Hence, the qualitative superiority of the Classical Humanist method, such as that developed by Friedrich Schiller and Wilhelm von Humboldt, over other choices of educational policy.

It is of special importance, that merely "theoretical" explanations not be substituted for experimental methods. Typical of destructive practices, is the presumption that any mathematical-physical principle might be derived from existing mathematics, as at the blackboard. Since all discoveries of principle overturn pre-existing mathematics axiomatically, to pretend that the discovery might be deduced from the pre-existing mathematics, is a fraud, by definition. As Riemann concludes his 1854 dissertation: *We must leave the domain of mathematics for the domain of physics*. The object of education, is not to produce learned commentators on texts, but knowers, those who have relived, again, and again, the Socratic method for solving metaphors, the method by which man achieves otherwise impossible, successful, valid solutions, through experimentally-referenced discovery and validation of new principles. A universal, compulsory education, based upon this principle of education, is the foundation of modern society, the precondition for its prosperous, and morally healthy growth.

Thus, the practice of science and the conduct of higher education, must be a seamless fabric dense with perfect discontinuities. From this combination of education with science, two leading results are produced for the relevant econ-

11. For example, in the transition from plane to solid geometry, in secondary schools, the sliding over of the fact that an act of rotation has been introduced, is usually overlooked, in both the design of the lesson-plans, and in the mind of the bright student eager to gain an "A" in the course. The "A" student often slides through the crucial paradox, rather than confronting it. The extension of that habit of "hand-waving" one's way around crucial paradoxes, is among the commonplace causes of intellectual failure among otherwise skilled professionals. Recently, the present writer has introduced a series of scheduled pedagogical exercises in elementary arithmetic and geometry from the advanced standpoint of Carl Gauss et al., for the specific purpose of prompting associates to recognize this problem of "sliding through." As one among his contributions to this work, Dr. Jonathan Tennenbaum has supplied an elegant pedagogical exercise on the subject of the solid geometry case, to appear in a forthcoming issue of the *New Federalist* newsweekly.

omy. On the one side: From the experimental validation of principles, as embedded in the interconnections of higher education and scientific research, the refined proof-of-principle experiment provides the germ of the means, through which to translate a discovered principle of nature into new principles of machine-tool design. This latter is characteristic of the strategic machine-tool-design sector of the most advanced economies of the Nineteenth and Twentieth centuries. On the other side: in his, or her function within a productive enterprise, the graduate of such education has the developed potential for readily assimilating the new designs of products and productive processes, which flow in streams from the well-springs of the strategic machine-tool-design sector.

The most dramatic distinction between the healthy modern agro-industrial economy, and the wretchedness of the economy which is subordinated, through cheap labor, to a role as "out-source," lies in these interconnections of universal humanist education and the machine-tool sector. The crucial thing is the intensity, the frequency of innovations in design of products and productive processes, effected through the intersection, of a high density of interventions from the strategic machine-tool-design sector, and of a labor-force which knows, rather than merely learns.

In effect, it is the increase in "Riemannian cardinality" of action, effected by a cumulative succession of discoveries of validated new principles of nature (in Classical art-forms and physical science), which enables labor to increase the per-capita level of density of the economy's capital-intensive, power-intensive "energy of the system," while always increasing the ratio of the society's margin of "free energy," relative to the per-capita increase of "energy of the system." In short, the anti-entropy of the economic process.

Notably, as Henry C. Carey educated leading Americans, including President Abraham Lincoln, to grasp this fact: the U.S. economy made no profit on the use of African-Americans as slaves. The slave-owner parasites, and the British and related manufacturers of cheap cottons, such as England's Frederick Engels, lived more or less richly by looting slaves; but, the U.S. economy as a whole was substantially ruined, almost bankrupted, by the effects of slavery and the slave-system. The ability of an economy, as a whole, to produce and sustain a profit, depends absolutely upon the development of the productive powers of its people, its labor-force most emphatically.

Look at the ruinous effects of "out-sourcing" upon the national economies of the U.S.A. and Germany. Focus upon the Germany case.

Out of its post-war reconstruction, Germany, once again, developed a relatively high standard of living. Cheaper labor in other economies, could not compete with German labor, either in productivity, or in quality of product. The reason: the effects of the traditions of *technische Hochschule* and the Humboldt education reform (until it was destroyed under Chancellor Willy Brandt), combined with the economy's em-



The ruinous effects of "out-sourcing": German coal miners demonstrate against layoffs in the Ruhr region, January 1997.

phasis upon its strategic machine-tool-design sector within the middle-industry sector (*Mittelstand*).

When imported labor of guest-workers was introduced, the quality was maintained, because those temporary immigrants were working within a German cultural and technological environment. The high density of technological interventions from the strategic machine-tool-design sector, kept the quality of the product-design high, and the quality of the productive process progressive. This was also advantageous to the nations whose citizens had been employed as German guest-workers, not only because of the remittances to the home country, but because, on condition that suitable economic infrastructural environments were developed in the home country, the returning guest-workers provided impetus for healthy economic development in their native country.

When "out-sourcing" into cheap-labor markets is conducted, the result should remind us of the ruinous economic effects of the pre-1865 U.S. slavery system, and similar effects of looting of colonies through employment of cheap local labor in plantations and mining. The low standard of family life, and education, the lack of adequate basic economic infrastructure, and the lack of a significant, indigenous development of the strategic machine-tool sector, place the "out-sourced" production into an infertile economic environment. While the German economy withers, while its vital machine-tool sector is ravaged, Germany's production-quality is polluted by the technological-attribution factors of the national environment of the cheap-labor market. The result is ruinous for Germany (and the United States); it is also ruinous for the country upon whose premises and labor the "out-sourc-

ing" is conducted. The result is comparable to the effects of slavery upon the U.S. economy: some slave-owners became rich, some British and Yankee textile magnates were enriched by slave-produced cotton, but the wealth of the nation as a whole was depleted. In the neo-colonialism of today's "out-sourcing," some fast-buck operators make money from such cheap-labor operations, but the nations involved, both exporter and importer, suffer massive net losses.

Characteristics

To begin with, competence in economics throws to one side all of those concoctions which start with money and prices. The function of money, credit, and prices, within an actual economy, is limited to the function those man-made fictions play within the bounds defined by the real economy, the physical economy. The most essential characteristic, upon which a science of physical economy is premised, is that to which we have referred above, as in the previous week's treatment of the role of the nation-state economy.¹² The most characteristic feature of economy is the effect of economic policies of practice in terms of improvements in the demographic characteristics of households, as correlated with increase of mankind's potential relative population-density.

The central topic of a science of physical-economy, is, therefore, the means by which mankind increases our species' relative per-capita power over the universe. This means, which is unique to the human species, is the individual's de-

12. "Miniver Cheevy," loc. cit.

velopable capacity for posing and resolving metaphors, the common characteristic of both valid physical science and Classical art-forms.

Indeed, physical science is not competently understood, until it is recognized as a Classical art-form in the sense provided by Plato's dialogues and letters. This signifies metaphor as it appears, presented as paradox, at the center of the paintings of Leonardo da Vinci and Raphael, as at the center of the Classical tragedy of Aeschylus, Shakespeare, and Friedrich Schiller, in great Classical poetry, and by Mozart's derivation of thorough-composition, according to the principle of metaphor, from the development of well-tempered counterpoint by J.S. Bach. It is this principle of metaphor, the central feature of Plato's Socratic method, not formal mathematics, which is the subsuming characteristic of the method of fundamental scientific progress. It is the method of what Leibniz sometimes described as *Analysis Situs*.

It is the capacity of the developed cognitive potential of the individual member of the human species, to pose, and to derive validated resolutions for metaphorical forms of paradox, which is the root-principle separating human economies from the ecologies of the lower species. The willful improvement of demographic characteristics of the human species, by means of changes in both nature and human practice, is the sole basis for constructing a valid study of economic processes. The realization of the willful capacity of the individual, to contribute to this process of physical-economic development, is the *universal characteristic* of all valid comprehensions of economic processes. That characteristic is the *necessary and sufficient reason* for the existence of economies.

Once that characteristic is so located for study, the chief practical concern in shaping of economic policy, is to define and realize those changes in the conditions, the which are required for both the development of those cognitive potentials, and their realization as increased productive powers of labor. This includes the development of the preconditions for production, such as basic economic infrastructure, in addition to the methods and branches of production itself. It must stress, as emphasized above, the central role of universalized education, preferably Classical humanist forms, and the relationship among such education, science, and the strategic machine-tool-design sector, as the "driver" upon which sustained progress in the economy depends.

The supply of those prerequisites, and their relatively optimal realization, defines a physical economy with an assignable characteristic "physical-economic space-time curvature." The overall object of management of the economy, and its quasi-autonomous parts, is to bring about advance to an economy of relatively higher characteristic "curvature."

From this vantage-point, monetary processes come into consideration, showing us that money is a product of credit, rather than credit a product of money. The case of the development of a local currency by the Seventeenth-Century Massachusetts Bay Colony, is a most relevant illustration.

The Commonwealth of Massachusetts incurred a debt in

the form of an issue of paper currency for legally restricted use within the Commonwealth. This debt was used to facilitate exchanges of goods which would not have occurred otherwise; by this means, the conversion of otherwise underutilized productive potential into additional physical-economic wealth, greatly accelerated the economic development of the Commonwealth, until London, in 1688-1689, suppressed that colony's autonomy.

Nonetheless, the lessons of that Massachusetts experience with a paper currency, maintained through the work of Cotton Mather and Benjamin Franklin, are embedded in the design of the U.S. Federal Constitution, and form a key element of U.S. Treasury Secretary Alexander Hamilton's specifications for the "American System of political-economy." Therein lies the central axiomatic difference between the American System of national banking, and the British financial-oligarchical tyranny of so-called "central banking."

The use of money to create credit, tends to the evils of usury. The American System's use of the sovereign nation-state's power to create credit, as the basis for the issuance and regulated circulation of money, requires only that this money's value be defended by restricting ("dirigistically"!)

the primary use of such credit, to applications which generate greater new value of real wealth produced than the value assigned to the currency issued.

Systems pertaining to the sovereign nation-state's creation and regulation of credit, money, taxation, trade, and tariffs, situate money and credit in their proper place, as merely fictions, which differ among one another as they are more or less useful, or even detrimental to that expansion of physical-economic process which they ought to assist. Thus, the subject of credit, money, tariffs, and trade-regulation, must be situated under the higher authority implicit in the notion of physical-economic characteristics.

The combination of the two sets of considerations presents us with two interacting kinds of characteristics. The first, which we might agree to identify as the technological, or physical characteristics of the real economy, are those features which are independent of the assumptions incorporated in the legal and other fictions encountered as property-right, monetary, financial, and related classes of restrictions superimposed on the administration of the real economy. It were convenient to identify the first, the real economy's structure, by the term *technological characteristics*, and the second as *operating characteristics*.

The horizon

Approach the second of our two topics, by situating it in the framework of several, nested, anecdotal observations.

How far into the future must the effects of present decisions be projected? Should the span be: from the typical number of years after marriage a birth to that new household occurs, until the outer range of life-expectancy of that new individual: ninety or more years, for today's U.S.A.? For, is not the new individual the product of the formation of the

family in which that birth occurs? Is it not the case, that “investments” in the development of that household and its environment unfold over the course of the lifetimes of the persons born to it?

Look at the same matter in a slightly different way.

The present writer’s grandparents were born during the 1860s, the first of those born circa 1860. This is 1997, and, at last glance, the present writer was still an active influence among all among the planet’s continents (excepting, perhaps, Antarctica). In his childhood, he had one direct personal contact with a great-grandparent, and the most influential U.S. public figure was a great-great grandfather, an Ohio-based, anti-slavery Whig, born about the same time as Abraham Lincoln. The traditions associated with the latter, were presented as living memories around the dinner table of the maternal side of the family. Similarly, there are a significant number of persons still living today, whose grandparents had been slaves under the Confederacy. These influences affect the bearer in a way which does exert impact upon the current decision-making processes of the living. These cultural influences are thus physically efficient presences within the decision-making which affects the physical economic and related state of affairs.

Contrary to the mechanistic tradition of Galileo, Hobbes, Mandeville, Adam Smith, et al., the future of mankind is not only the influence of the past upon the present; man is a voluntary creature, who, in significant degree, chooses his future. Man’s ability to foresee, at least to significant degree, the consequences of his commissions and omissions, becomes a means by which the future shapes both our present conditions, and also, in a similar way, determines the effective outcome of our past. We are presented, in this and related ways, with a most paradoxical metaphor respecting the nature of causality: *Much as some would define “causality” as the past’s action upon the present and future, we must also acknowledge the efficiency of the future’s impact upon the present.* In short, the paradoxical prospect of a calculable expression of time-reversal.¹³

This notion of “time-reversal” is no chimera; historically, it is a well-established, rigorous scientific conception, since more than two thousand years of European civilization. This conception was given a deeper meaning by the development of the notion of a general, non-Euclidean relativity of physical space-time, which grew out of Riemann’s 1854 habilitation dissertation. The arguable strangeness of the conception is entirely a reflection of the influence of the mechanistic world-outlook permeating axiomatically, virtually every subject-matter of the university undergraduate classroom today. The relevant explanation is supplied in three degrees of successive approximation.

First, in chronological order: Among the known historical

treatments of efficient time-reversal, the earliest is that intrinsic to Plato’s Socratic method. The root-idea inheres in the notion of hypothesis, as even the hypothesis of Euclidean geometry typifies this in the relatively simplest way. In the case that the lattice of theorems which may be deduced from even such a simple hypothesis, forms a sequence of theorems, we have the following. The sequence corresponds to elaboration in time; yet, the hypothesis which underlies each and all members of that theorem-lattice, exerts its command, simultaneously, upon each and all of the members of the sequence.

Similarly, for the case of higher hypothesis, the sequence of hypotheses forms an hypothesis-lattice, in respect to which the relevant, underlying higher hypothesis (e.g., ordering principle) exists, as an efficient agency, acting simultaneously upon each and all of the hypotheses of that sequence.

Second, in medieval Christian theology: Similarly, for Plato, the Good, which underlies the valid generation of hypothesizing the higher hypothesis, exists simultaneously with all occurrences in the universe. This, Plato’s notion of the simultaneity of the Good, was employed by Christian theologians, with included reference to Plato’s *Timaeus*, as the basis for the Platonic ontological proof of the existence of God. This notion of simultaneity is met, for example, in the work of Thomas Aquinas.

Third, in modern physics: Riemann’s revolution in geometry, relocated the notions of space and time, removing both from the realm of aprioristic speculation, to dimensionalities, like any other validated physical principle, premised upon validated discoveries of experimental-physical principle.

Each and all of these notions already implied a retarded rate of potential for propagation of light (for example), and, similarly, for propagation of gravitation. Leonardo da Vinci, contrary to the misguided critics of his work on propagation of sound and light, already commanded effective insight into crucial features of such connections. The agreement of the principle of isochronicity, first, for the gravitational field, as determined by Christiaan Huyghens, and, later, for refraction of light, by Jean Bernoulli and Gottfried Leibniz, during the Seventeenth Century, set the precedent for the work of Riemann, and of the notions of a general physical-space-time relativity arising out of Riemann’s discoveries. From any literate standpoint in the history of science, time, like space, does not correspond to that simplistic, mechanical notion of simple extension, which popular opinion would prefer, still today.

Here, our attention is focussed upon a more narrowly defined aspect of this fascinating topic: that, *the idea of the future, as that idea affects the present decisions of persons, exerts, thus, an explicitly physical influence upon the present choices shaping the course of future events.* Examine the matter before us from that standpoint.

How accurate might we make our estimates of the future? Obviously, the ability actually to know the future, does not depend upon charismatic inspirations. It depends upon the

13. Lyndon H. LaRouche, Jr., “The Essential Role of ‘Time-Reversal’ in Mathematical Economics,” *Executive Intelligence Review* Oct. 11, 1996.

principle of hypothesis; it depends upon the validity of the axiomatic assumptions which underlie the choice of scientific method employed to project future consequences of present decisions. This takes us directly back to Plato's principle of hypothesis: if a supposed principle of nature is validated, then the principle is valid for the future, as well as the present. The qualification is, that this principle may be passed along from one hypothesis to the next; nonetheless, although this means that Prometheus' vision has limited penetration into the future, we can make approximations for a significant distance ahead, with a reasonably minimal margin of error.

Unless we assume, contrary to all evidence, that the universe changes its principles capriciously, we can not say that discovered principles are valid only for the immediate time-frame in which they have been validated experimentally. The evidence is, that the nature of the principle persists, even in the case that it is incorporated into new hypotheses. Furthermore, the principle of increasing cardinality, as applicable to the underlying sequence of hypotheses, also persists, with a high degree of approximation over the medium-to-longer term. The working point is, that since such underlying principles persist, albeit with these qualifications, we can fairly estimate the principles underlying a state of society a significant period ahead (i.e., "simultaneity in universality").

As an illustration of the point, consider four of the relatively few economic and other forecasts (all more or less successful) which the present writer has made.¹⁴

First, during the years 1959-1961, and beyond, this writer forecast,¹⁵ that if the international economic policy-shaping trends experienced during the Eisenhower Presidency's period, persisted into the 1960s, that (a) during the second half of the 1960s, a series of monetary crises would erupt, leading into (b) a breakup of the existing Bretton Woods agreements. This forecast was realized during the interval beginning with the 1967 Autumn crisis of sterling, and concluding with the 1971-1972 introduction of an international system of "floating exchange-rates," ending the pre-existing Bretton Woods agreement.

The second of the four forecasts referenced here, was made in August 1971, immediately following the August 16 collapse of the U.S. dollar.¹⁶ He forecast the (a) immediate introduction of a series of austerity measures echoing the 1931 pro-fascist austerity measures of the Bruening government in Germany, and the Tony Blair-prefiguring, Ramsay MacDonald Labour-led government of Britain, and (b) that if these trends in austerity were continued, they must converge upon a threatened general financial and economic collapse of civili-

zation into a planetary "new dark age."

The third of the four forecasts, was made following the Spring 1987 repeated forecasts of an October 1987 major stock-market crisis.¹⁷ The writer thereafter forecast, during his 1988 campaign for the Democratic Party's U.S. Presidential nomination, that (a) the post-1987 U.S. physical economy was in the process of ratcheting downward, like a "bouncing ball," toward a new major crisis,¹⁸ and (b) that it must be expected that the Soviet-bloc economy would begin to break apart in the immediate future, with the prospect of the early reunification of Germany, with Berlin its designated future capital.¹⁹

Actually, the writer's first forecast of the threatened early collapse of the Soviet bloc economy, was made at the beginning of 1983, when he forecast, that if President Ronald Reagan were to propose to Moscow the writer's design for a strategic ballistic missile defense (as the President did, a few weeks after this forecast), and if the Soviet government were to refuse that offer by President Reagan, that the Soviet-bloc economy would proceed to unravel, approximately five years down the road: the collapse erupted approximately six and a half years down the road.

These anecdotal cases illustrate the feasibility of pre-determining "economic horizons" with a high degree of reliability. Such forecasts should never be viewed as "predictions;" their value lies almost entirely in their importance as guides to present choices of policy-shaping trends. They are not based upon statistical correlations. They are based upon adducing both (a) the nature of the technological and operating characteristics of present trends in shaping policies of practice, and (b) the definition of an "horizon" on the basis of assuming that those considerations might be treated as a working hypothesis respecting the nature and results of trends in future policy-shaping.

The significance of the "economic horizon," increases as the (physical) capital-intensity of investment in basic economic infrastructure, production, and physical distribution of product. This correlates with increases in the complexity and span (in space and time) of the social division of labor. It increases as the school-leaving age is advanced, and as life-expectancy increases.

Those implications ought to be more or less obvious. However, since the principle of nature involved is not only unfamiliar to most, but contrary to the philosophy of practice underlying virtually all secondary and university undergraduate curricula today, resistance to accepting the meaning of those implications will tend to be both pervasive and emotion-

14. This list does not include a number of forecasts which this writer never made, but which some self-styled "critics" have alleged him to have made.

15. First circulated during 1959, and first published in 1961. Later, the subject of a one-semester course in economics, as taught at several campus locations during 1966-1971.

16. Lyndon H. LaRouche, Jr., *New Solidarity*, Aug. 30-Sept. 3, 1971.

17. Statement issued by Lyndon LaRouche on May 27, 1987, published in *EIR*, June 5, 1987.

18. See Lyndon LaRouche Presidential campaign TV broadcast, "The Test of Fire," April 12, 1988.

19. See Lyndon LaRouche Presidential campaign TV broadcast, "The Winter of Our Discontent," Oct. 31, 1988.



The Schiller Institute performs Bach's St. John's Passion on Good Friday, March 28, 1997, in Germany. The fundamental principle of Classical musical composition, LaRouche writes, is identical in nature with the principle of forecasting associated with the notion of "economic horizon."

ally strong. For that reason, the present writer has found it virtually indispensable to introduce the comparative standpoint of Classical musical, motivic thorough-composition, as this was developed by W.A. Mozart on the basis of the prerequisite development of well-tempered polyphony by J.S. Bach.²⁰

In summary of relevant points of the musical case. The perfection of well-tempered polyphony, by J.S. Bach's resort to principles of *Analysis Situs*,²¹ perfected the contrapuntal principle of overlapping, modal inversions in sense of direction of implicitly heard intervals. This implication of Bach's discoveries is typified by his *A Musical Offering* and *The Art of the Fugue*. The first of those Bach works was explicitly referenced by W.A. Mozart's development of motivic thorough-composition, and, probably, also the second.

In that method, of motivic thorough-composition, the composition is derived, conceptually, from a "germ," a germ which is represented by a pair of intervals. From the contra-

20. Lyndon H. LaRouche, Jr. "The Essential Role of 'Time-Reversal' in Mathematical Economics," pp. 19, 23-24.

21. The method by which the values of the intervals for the well-tempered scale are determined, is not algebraic, but, rather, in fact, an expression of Gottfried Leibniz's implicitly Keplerian notion of *Analysis Situs*. It is the full set of natural species of singing voices, for the case that those voices are trained in the Florentine form of *bel canto*, which determines, implicitly, the precise value of the well-tempered scale. The implicit determination lies in the domain of modal inversions, most notably inversions of intervals which lie across the singing-voice parts of the composition.

puntal pathways so implicitly generated, a series of transitions is produced. These transitions, marked by relative "dissonances," define the separation of a series of modal forms of hypotheses in that compositional/performance domain. The characteristic ordering principle underlying that succession of transitions, then serves as the idea of the composition taken as a whole, an idea which therefore exists in the mind as a virtual simultaneity of every interval of the composition, with every other, with respect to the universality of the composition as a whole. Thus, the composition is to be performed under the controlling influence of that underlying principle of development which represents the composition taken as a whole. The effect so achieved in performance, is that identified by the conductor Wilhelm Furtwängler as "performing between the notes."

This principle of Classical musical composition, and performance, is identical in nature with the principle of forecasting associated with the stated notion of "economic horizon."

For clarification of the foregoing line of argument, we interpolate now a summary of the leading contrary view.

The contrary view

The contrary view of science, and of aesthetics, as derived from Paolo Sarpi, Galileo, Francis Bacon, Thomas Hobbes, and John Locke, is the satanic notion of "freedom" associated with such Enlightenment figures as the Mont Pelerin Society's avowed choice of "anti-Christ," Bernard Mandeville, and such followers of Mandeville's "evil causes good" doc-

trine as François Quesnay, Giammaria Ortes, Pierre-Louis Maupertuis, Adam Smith, Jeremy Bentham, John Stuart Mill, and system analysis's John von Neumann.

All of these religious gnostics insist, as does Immanuel Kant, that the improvement of any process occurs through the action of a mysterious metaphysical principle, a principle which exists beyond the reach of reason, in the nightmare realm of statistical foreplay. This principle is supposed to function to best effect when random interactions among the individual lusts of mechanical objects or persons are free from prescriptive interference in the process from "outside agencies." This became the central axiom of what is known as "philosophical liberalism."

This was philosophical arch-liberal John Locke's defense of enslavement of Africans; John Locke's argument was the central principle which set the evil Constitution of the Confederate States of America apart from all civilized forms of human existence. This Tory doctrine of "philosophical liberalism," was never accepted by the authors of the U.S. Declaration of Independence and Federal Constitution, nor by any patriotic faction in U.S. history. It was not until the unleashing of the present-day counterculture, during the mid-1960s, that this radical "free trade" dogma of the fascistic Mont Pelerin Society, was allowed to roam freely in these United States, or any civilized nation of the world.

In all moral forms of society, dirigism is the predominant principle of what is termed "macroeconomics" today. Our patriots' philosophical difference with the Soviet Union on this account, was never that the Soviet economy was dominated by planning in the state sector. The Federal republic of the U.S.A. was formed, largely, for reason of the perceived need for the role of the Federal government in managing interstate commerce, foreign trade, and the development of major elements of national basic economic infrastructure. The crucial fault in the Soviet economic system, was, that the Soviet system refused to recognize the role of individual creative leadership in fostering of investment in scientific and technological progress in a private sector which must come to dominate agriculture, mining, manufacturing, and related aspects of the economic process as a whole.

One of the notable ironies of modern history, is that the Bolsheviks came to power in ruined Russia, as the Menshevik rivals complained, because V.I. Lenin was what Russia's lexicon terms a "voluntarist," rather than an obedient serf under the monotonous, social-democratic rule of "historical objectivity" flowing through the mysterious will of the masses. The failure of Lenin's economic system, was that it made no allowance for the indispensable role of the same individual quality, of "voluntarism," in the leadership of productive enterprises outside the domain of basic economic infrastructure and military production. The irony of the Soviet economy, was, that its greatest economic achievements were in the science-driven military and aerospace industrial sectors, as contrasted with the lumbering economic tragedies of the large,

state-owned civilian enterprises. It was in the science-driven military-aerospace sector, that the voluntarist element of individual scientific and related creativity, drove enterprises to achievement. It is the tragedy of post-Soviet Russia, that the only leading economic potential of the entire system, the science-driven military-aerospace sector, has been virtually obliterated by the relevant, foreign occupying power, the International Monetary Fund.

As we have stressed this point in several earlier, leading locations, it is for related reasons, that the only periods of this century, during which the leading nations of Europe and North America have enjoyed significant rates of net economic growth, are those periods, during which the perceived threat of general warfare, or actual warfare, has impelled those nations' governments, as under President Franklin D. Roosevelt, to mobilize their strategic machine-tool-design sectors for accelerated investment in scientific and technological progress. It was the spillover of such progress in the domain of military logistics, into increasing the productive powers of labor more generally, which supplied the impulse for growth, in western Europe and North America, as in the former Soviet Union.

The relevant point is the fundamental principle of law of the U.S.A., as set forth in the Preamble of the Federal Constitution:

" . . . provide for the common defense, promote the general Welfare, and secure the blessings of Liberty to ourselves and our posterity. . ." [emphasis added]

We are accountable to the future, by law. To be accountable, means, first of all, to foresee the future consequences of present choices of action (or, inaction). To be accountable, means, secondly, to direct our actions according to that foresight. Economic planning, including governmental responsibility for the basic economic infrastructure which the present bequeaths to the future, is required by our rightly chosen, fundamental principle of law. The difficulty lies in today's continuing, general ignorance of the essential principle upon which all economic planning must be premised: the fact, that the distinction between bestiality and humanity lies within the unique potentials of the developed *individual* creative intellect.

That individual potential, which Plato and the Apostle Paul situate under the title of that creative passion known as *agapē*, the passion for truth and justice, is the goodness within the individual person. The function of a civilized society's economic planning is to ensure the opportunities for development and useful expression of that individual quality of goodness. Therein lies our difference with the satanic sort of erotic passions of Hobbes and Mandeville, the evil of philosophical liberalism. Therein lies the secret of the economy of a civilized 21st Century, the economy toward which China is reaching, with its partners, today.