
II. Lyndon LaRouche in Dialogue

October 10, 2008

Why the Economists Failed: Economy & Creativity

by Lyndon H. LaRouche, Jr.

The two items attached to this report, were prominent parts of a discussion conducted, on the subject of the role of creativity in today's crisis-wracked economies. That discussion was conducted among LaRouche PAC (LPAC) and the National Caucus of Labor Committees during this past week of October 7-10. Combined, this piece and the two items copied, below, from the pages of the internal U.S. Daily Briefing of the LaRouche movement,¹ have a crucial bearing on the principles of economy required to resist that general breakdown-crisis of the world economy which has been under way, in fact, since my international, LPAC Webcast of July 25, 2007. That crisis has now entered a most critical, global breakdown phase: it now reverberates world-wide, echoing as that kind of October-November hyper-inflationary breakdown, which struck down Weimar Germany exactly eighty-five years ago, in 1923.

We live, at this moment, in a world which, at this brief instant of its history, had been presently dominated by the approach of the ominous fiscal date of October 10. This already sick world's present financial system, has entered the threatened death-agonies of that present global system of Las Vegas-style gambling, called financial derivatives. The holders of financial derivatives *have* gambled on the virtual race-track called financial speculation, and have lost, and should not be paid off for that. Cancel their worthless "play money" claims; get on, so unhindered, with the business of the

1. "Change the Subject," (see page 27) Wednesday, Oct. 8, 2008, and "How the Human Mind Works," (see page 30) Oct. 8, 2008.

physically real economy of the world. Let the actual people of this planet live, whether Britain's Prince Charles and his batty World Wildlife Fund concur, or not.

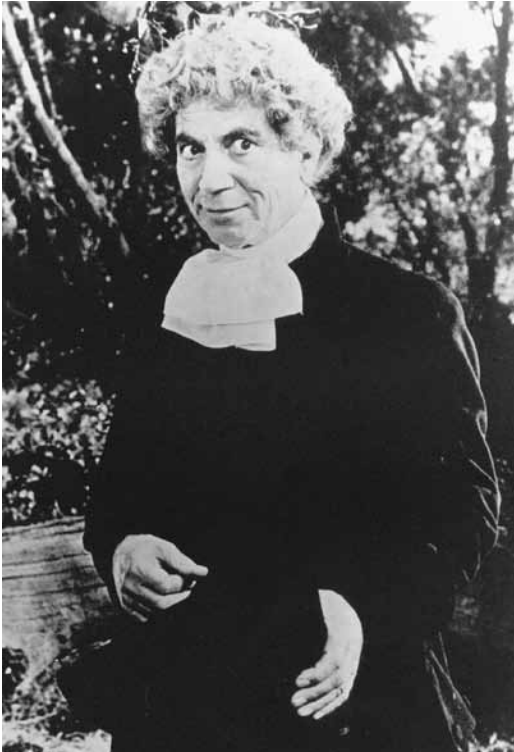
The question posed, thus, by this ominous October 10, is: "Where does the world go, from here?"

As I show in this summary report, the only proper response to that present challenge to civilization, is to be found under the heading of scientific creativity, as the proper meaning of that term *creativity* (as distinct from mere innovation) is defined in practice by the development of the original discovery of that principle of gravitation ruling the Solar System. That is a discovery which was made by no one other than Johannes Kepler, a devoted follower of Nicholas of Cusa. As John Maynard Keynes has warned: forget the fraudulent claims of the silly Isaac Newton; close the chest of Newton's wicked and worthless mere arcana! The discovery by Kepler, and no other person, was one more, outstanding triumph in that scientific method of Cardinal Nicholas of Cusa, the Platonic method which a profoundly inspired Cusa had re-introduced to modern European civilization in his *De Docta Ignorantia*.

Now, unless we use that approach to address the present, global economic breakdown-crisis, which grips the world today, there were no hope that our presently menaced global civilization would escape a sudden, deep, and prolonged collapse into a planetary new dark age.

Therefore, our report here proceeds as follows.

Right now, the entire planet is gripped by an accelerating, landslide-like, general, physical breakdown-crisis, a breakdown of not merely those financial mar-



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The silly Isaac Newton (left, portrayed here by Harpo Marx in a 1957 film) embodied the radical empiricist mindset, which makes actual scientific creativity impossible. That mindset caused the current financial meltdown, which the incompetent Treasury Secretary Hank Paulson (right) is failing so miserably to cope with today.

kets which are already hopelessly doomed under current rules. Every part of the world today is now also gripped by a financially-driven, onrushing, but essentially physical, if financially induced, breakdown of the presently crumbling physical means of human existence throughout our planet.

Come back to reality! The present international financial systems can not be rescued! It is now too late for an attempt to rescue those markets themselves; they are far, far gone, and could not be brought back to life in their present form. Our only sane alternative, is to effect the continuity of day-to-day, physical-economic life of the planet, through a process of reorganization in bankruptcy: a reorganization which brings forth a global fixed-exchange-rate credit-system, freed from the carcass of a ruined, lunatic, floating-exchange-rate monetary-system.

It is the physical economy of nations which we must rally to resurrect, and that most urgently, while there are still physically real economies to revive. To bring off that needed rescue, a “Hamiltonian” credit system modeled upon the principle of the U.S. Federal Constitution, must be introduced as the kernel of a global fixed-exchange-rate system modeled upon President Franklin

Roosevelt’s 1944 Bretton Woods design.²

The crisis which grips the entire world today, is far worse than the crisis from which U.S. President Franklin Roosevelt led the world seventy-five years ago. However, the methods which President Franklin Roosevelt used, while he still lived, saved civilization from a plunge of the planet into a terrible “new dark age,” which the sometime pro-Nazi, British and other “free traders” of that time, such as the grandfather of the current U.S. President, would have installed, had they been permitted to do so. The breakdown-crisis today is far worse than that which confronted Franklin Roosevelt, but his outlook and passion could guide us successfully still today.

Your Personal Crisis

Presently, in the case of our United States, the onset of the currently accelerating avalanche of physical-economic decline, should be dated to an accelerating decline of the U.S. economy which began from as far back

2. Not the pro-imperialist monetary system which was introduced as a substitute for Roosevelt’s intended, anti-imperialist credit system, the pro-imperialist monetary system of John Maynard Keynes, which was introduced under the pro-imperialist admirer of Winston Churchill, President Harry Truman.

as what first emerged as a presently continuing, long-range trend of net physical-economic decline per capita and per square kilometer, since U.S. Fiscal Year 1967-1968. This was the beginning of a continuing net decline in the physical capital of long-term basic economic infrastructure, including highly significant cut-backs in the aerospace investments which had been the greatest factor of increased actual and potential physical productivity of labor at that time. Over the course of the forty intervening years, since the Spring of 1968, since President Nixon's 1971-73 wrecking of the Bretton Woods system, and since the ruin of the internal physical economy of the nation by the evil Trilateral Commission, there has been a continuous process of ratcheting downward, under one session of the U.S. Congress after another, all leading, as if remorselessly, toward the terrible, global economic catastrophe of now.

Now, under forty years of continuing, year by year, from President to President, of this decline, the net effect of trends in national policy-shaping has been not only the continuation of that failure of policy-shapers, but, there has been a trend of increase of the rate of net physical decline, that, without interruption, over the broad sweep of the four recent decades to date.

Despite the sheepish bleats of our presently hysterical, pompous Pollyannas in party leaderships and government, the principal causes of that forty-year decline should have been obvious to us all. That principal, but excludable factor from among the causes of this decline can be readily located, as follows.

1. A Difference Between Ape and Man

At first glance, it should be astonishing to many citizens, that, it could have been easily and broadly recognized, all along, throughout these forty years of folly: that, the foundation of the wealth of any national economy, and the world economy, depends upon increasing the physical productive powers of labor, per capita and per square kilometer. Yet, very, very few so-called "leading" economists of the Americas and of western and central Europe, have recognized, so far, that there was no possibility for actual success under the reign of what has been, for forty years, those presently continuing, prevalent, and silly theories of economic growth, delusions which were inherent in leading nations' con-

tinuing, ruinous policies of national practice of that time.

Any recovery now would depend absolutely on a return to that earlier kind of general increase of the science-driven, physical creativity, upon which any sustained increase in the physical, rather than mere monetary wealth of nations, measured per capita and per square kilometer, depends. This means, especially, an obligatory return to those policies of President Franklin Roosevelt which began to be uprooted by that President Harry Truman who shared some of the imperialist enmities of Winston Churchill, against what had been the actually successful recovery policies of President Franklin Roosevelt.

Similarly, while a significant portion of the economics profession acknowledges some kind of sense, true, or false, of something of the importance of basic economic infrastructure in maintaining the productive powers of labor, most of them today overlook the crucial fact of the matter of the actual role of infrastructure in a viable form of economy. The truth is, that, for science, *this needed benefit occurs, when it occurs, only as it amplifies the productive powers of labor at the point of both production of physical goods, and of the effect of essential services on increases of the physical-productive powers of labor of those employed in science-driven increase of physical productivity at the point of production.*

What is required in the time of today's international breakdown-crisis, is a global de-emphasis on the false doctrine which Karl Marx proudly claimed to have copied as axiomatic from none other than British imperialism's Adam Smith. In fact, it were better to eliminate Adam Smith's poisonous influence entirely, and to replace it with the same Leibnizian principles of the American System of physical economy which the first Treasury Secretary of the United States, Alexander Hamilton, described in his famous three letters to the U.S. Congress. This is the same American System of political economy whose political authority is still, today, implicitly embedded in the practical implications of the anti-Lockean Preamble of the U.S. Federal Constitution.³

This American System has a certain history, since its root-origins in the legacy of Plato, and, more recent, modern origins in the role of the great ecumenical

3. As to the problems of the U.S. economy since 1968, only a fool would blame the rape-victim for her consequent pregnancy.

Council of Florence, and in the consequent rise of the first model modern nation-state physical economies under France's Louis XI, and Louis' admirer, King Henry VII of England.⁴

Indeed, in the history of the United States, as, still today, the principal English-speaking adversary of the inherently wicked, global, imperialist British system, there is embedded in the founding of our republic, an essential, continuing cultural factor in world history, the factor of our U.S.A. as, at its root, the most efficient opponent of that imperial, Anglo-Dutch Liberal, financier-oligarchical system, the continuing, presently world-hegemonic British financier-oligarchical Empire of 1763-2008. We represent, thus, a U.S.A. for whose continuing role there is still no cultural substitute in history thus far. Without our revival of this factor, this legacy of our United States, it would be impossible to establish the needed, workable, global agreement among nations without which a presently immediate plunge into a prolonged, global "new dark age" could not be avoided now.

Europe Since Charlemagne

The most urgent political task among nations today, especially the trans-Atlantic ones, is to trace out the most essential elements of those methods of the Augustinians, such as Isidore of Seville, and the kindred pre-



Charlemagne (747-814 A.D.), shown here in a painting by Albrecht Dürer, did much to develop the physical economy of Europe. Crucial features of his contributions lived on and helped to shape the later emergence of the Renaissance.

decessors of that Cardinal Nicholas of Cusa, who had brought the spark of what would become the successful expressions of a modern European civilization built upon the form of the great reforms launched by Charlemagne.

Despite the wrecking, after his death, of much of what Charlemagne had done, done by the wrecking by both his own foes of that time, and among those who came after him, the most crucial features of his contributions lived on, as physical improvements and also directions of policy-thinking which would be revived during the founding of modern Europe by Europe's Fifteenth-Century Renaissance of Nicholas of Cusa et al. So, similarly, the United States' constitutional system, forged in resistance to the evil culture of the 1763-2008 Anglo-Dutch financial-oligarchical imperialism, was a resistance which had conveyed its unique accomplishments to serve as the heritage supplied to us by the Council of Florence's mid-Fifteenth-Century Renaissance.⁵

Focus attention, for a moment, on those crucial features of Charlemagne's reforms to which our attention must be turned, in search of remedies for today's crisis, now.

Look at the principled role of true economic infrastructure (not the inherently ruinous, Mussolini-modeled frauds tendered by such wicked wretches as Felix Rohatyn, George Soros, and New York's Mayor Bloomberg).

Under Charlemagne and his influence, for example, the greatest increase of the productive powers of labor, per capita and per square kilometer, was achieved through such prominently featured means as the launching of a system of rivers and canals which

4. This is either poorly understood, or not at all, among generations born, either here or abroad, since 1945. In the U.S.A., for example, there are virtually no competent professors of history active in U.S. universities today. In their place, we have what are actually more or less honest chroniclers who interpret facts as mere data, and who therefore confuse such exercises with the vastly more profound and serious work of the qualified historian who examines the historical process from a standpoint of reference to the Classical notion of tragedy as a characteristic determination of the course of unfolding processes spanning successive generations. The fact that the U.S. economy has been in an uninterrupted physical decline during each and all of the recent forty years, illustrates the case.

5. The principle of history so expressed is known among theologians as "the simultaneity of eternity." The reference is to the great ecumenical Council of Florence, which celebrated Filippo Brunelleschi's stroke of genius in applying the physical principle of the catenary to craft the cupola of Santa Maria del Fiore.



Xvolks

France's Canal du Midi creates a shortcut between the Atlantic and the Mediterranean. Charlemagne had commissioned a study of the strategic, but difficult, project, as did several other French kings. It was finally built in the 17th Century.

became the principal means of Europe's inland waterborne transport. The role of such systems of rivers and canals was, later, both superseded and assimilated by the development of transcontinental railway systems during the late Nineteenth Century, beginning with that legacy of the Presidency of Abraham Lincoln. Similarly, later, during the period preceding so-called "World War I," Edison's development of the electrical motor, in lovely defiance of the *New York Times* at that moment, resulted in a general increase in productivity in manufacturing, even without comparably significant improvements in the methods of production otherwise.

In the language of the great, Twentieth-Century Russian scientist Academician V.I. Vernadsky, the principal cause of the increase of the productive powers of labor; occurs through situating production and transport of goods and services within that essentially supporting framework of mankind's qualitative improvement of the Biosphere, an improvement which is effected through the qualitative improvement of the Noösphere as such.

The germ of these general benefits to the conditions of life and productivity, *lies within the effect of fundamental discoveries of physical principle, as all such fundamental discoveries are rightly typified by the*

uniquely original discovery of universal gravitation by Johannes Kepler.

The significance of this most essential feature of any competent view of the physical principles of economy, is made clear, most efficiently, by contrasting the characteristic rates of increase of potential relative population-density of successful forms of society, to the relatively fixed potential relative population-density of either any type of animal species, or of so-called "traditional cultures." The *increase of potential relative population-density of societies*, which is accomplished by the creative powers of the human mind, has no comparable expression within the bounds of the lower forms of life. Man's willful power to increase the "ecological" potential of our human species, is a kind of "ecological" effect which can be compared, among the lower forms of life, only with the processes of anti-entropic, biological evolution.

That, stated in physical-economic terms, is the proper meaning of the term *discovery of universal physical principles*.

The Nature of Creativity

Thus, with the advent of our human species on this planet, a progressive evolution of *human ecology*, has been produced only by the processes of development which are expressed, uniquely, by the creative powers of the individual human mind. In "human ecology," it is the discovery, and adoption of universal physical principles by the individual human mind, and, thus, by society, which is the only competent, anti-entropic, form of human "ecology" available. Any anti-growth human "ecology" is, in and of itself, a tragic failure to perform in the manner appropriate for human beings, and, is a failure which thus serves as the motive for a crime, against humanity generally, such as that of Prince Philip and his World Wildlife Fund.

Mankind is the only willfully creative species known today, excepting only the Creator presented in *Genesis* 1, a Creator whose nature we are instructed, there, to mimic, as that which we are obliged to do according to *Genesis* 1, but which is also an expression of our net knowledge of both the obligation and power of our species. Mankind's normal, healthy distinction as being a higher species, is that of a species which evolves

into becoming itself a higher species, with no biological change otherwise, through its self-transformation through the impact of the actual creative powers identified as the discovery and revolutionary application of universal physical principles.

This distinction of man from such as ape and mouse, is what is properly termed *potential human individual creativity*. For whoever might be a competent, present-day economist, the understanding of this principle of specifically human creativity may be located within the modern European, bitter conflict between the followers of Paolo Sarpi and Rene Descartes, on the one side, and, on the opposing side, Cardinal Nicholas of Cusa, and such followers of Cusa as Leonardo da Vinci, Johannes Kepler, and Gottfried Leibniz and Bernhard Riemann.⁶

The issue of that difference is to be identified, categorically, as the *ontological equivalence* of Leibniz's concept of the *ontologically infinitesimal*,⁷ that in opposition to the intrinsic incompetence of such adversaries of Leibniz's concept (of the *universal principle of physical least action*) as de Moivre, D'Alembert, Euler, Lagrange, and of the Nineteenth-Century schools of Cauchy, Clausius, and, later, both the positivist Ernst Mach and the more radical, numerologist form of positivism associated with hoaxsters such as Bertrand Russell and his slavishly perverted devotees Norbert Wiener and John von Neumann.

The latter, same Cartesian form of the moral corruption of the intellect, is typified by all of the known publications on the subject of method of the notorious Adam Smith, a connection shown in the clearest way in despicable Smith's 1759 *The Theory of Moral Sentiments*.⁸

The significance of my introducing the subject of the aforesaid empiricist miscreants here, is to make clear the issue of the systemic suppression of actual creativity in the pattern of Liberals' behavior respecting scientific matters. Such suppression is typified by that

6. I leave the so-called "Scholastics" out of consideration in focussing here on the Cartesian elaboration of the Ockhamite method of the empiricist and other followers of Paolo Sarpi.

7. I.e., rather than the merely mathematical infinitesimal of the empiricists after de Moivre, D'Alembert, Euler, Lagrange, et al.

8. Smith's 1776 anti-American tract, *The Wealth of Nations*, was, to a large degree, a plagiarism of that work of France's A.R.J. Turgot which was later published in Turgot's *Reflexions*. This refers to *The Theory of the Moral Sentiments*, rather than Smith's 1776 anti-American tract, *The Wealth of Nations*, the latter which is largely cribbed by plagiarist Smith from a too-trusting Turgot's own original, and faulty, work.

assortment of followers of the empiricist method's axiomatic characteristics. My following discussion of this just stated matter of scientific (and anti-scientific) method, will pose difficulties for some readers, just because of the unavoidably scientific nature of the required discussion; but, if anyone is to actually understand competently the implications of the degree of breakdown experienced, internationally, on this date, the subject of these scientific matters can not be avoided.

Before turning to that next chapter, briefly consider the problematic case of Adam Smith.

The Case of Adam Smith

The most significant, persisting cause of tragedies of entire modern cultures, such as that of the present world monetary-financial break-down crisis, is met in the effects of the inherently tragic, culturally hereditary influence of the ban on tolerance for popular creativity among what are usually presumed to be the lower social classes, a ban to be found among sundry varieties of cultures, including that of much of higher education in the U.S.A. and Europe today.

The typical presentation of this idea of such a ban, is that to be found in the tragedian Aeschylus' *Prometheus Bound*, in which the evil tyrant, the Olympian Zeus, condemns Prometheus to perpetual torture for allowing ordinary human beings to enjoy access to scientific knowledge of the use of that same "fire" which we should associate, today, with such subject-matters as nuclear fission and fusion. Zeus' charge is, that Prometheus has committed that specific offense against the Olympian tyranny, of revealing the secret of man's use of fire, such as nuclear power, to the Olympians' serf-like subjects, the ordinary human beings.⁹

Adam Smith's theory of society, his *Theory of the Moral Sentiments*, on which his economics dogma is entirely premised, reflects not only the same doctrine of rule by the Olympian Zeus of the *Prometheus Bound*, but also that dogma of the medieval irrationalist William of Ockham on whom the Venetian reformer Paolo Sarpi had premised what was to become the characteristic Liberal dogma of the modern, Anglo-Dutch Liberal system.¹⁰

European civilization has had a foretaste of this type

9. So, it were proper to think of the anti-nuclear "environmentalists" of today as "Satan's mass-murderous, slimy little helpers."

10. For pedagogical reasons, I have reserved the treatment of this crucially significant connection to a place in the report below.

of force of tragedy exerted across the span of successive generations of a culture, in the relationship of the Homeric argument of the *Iliad*, to the common, subsumed subject of what are called, today, ancient, Classical Greek tragedies.

The individual in history, as portrayed in the *Iliad* and its echoes in later Greek tragedy, is not, in reality, a Cartesian-like building-block; rather, the individual is an expression of a truly dynamic process, as the ancient Pythagoreans and Plato employed the notion of a scientific method premised on the same dynamics (e.g., *dynamis*) affirmed by Gottfried Leibniz, that against the fraud inherent in the method of Rene Descartes, and also against that reductionist method of Paolo Sarpi and his follower the Cartesian Antonio Conti, and also Conti's followers, such as the neo-Cartesian Isaac Newton, Voltaire, de Moivre, D'Alembert, Euler, Lagrange, Laplace, Cauchy, Clausius, et al.

Having said that much on this matter thus far, if we are to actually understand the root of the crucial issues of world economy today, we must set forth the two, respectively distinct, but interrelated issues which flow from the conflict of the scientific method of Cusa, Leonardo da Vinci, Kepler, Fermat, and Leibniz against the methods of both the medieval Aristoteleans and the followers of that doctrine of that medieval figure, William of Ockham, whose intellectual model was adopted by the Paolo Sarpi from whom the modern Liberal philosophy of post-February 1763 Anglo-Dutch imperialism was derived, from that time, to the present day's world crisis.

The first of these issues is the modern method of competent physical science, a method derived, largely through the modern intervention by Nicholas of Cusa in his *De Docta Ignorantia*, but echoing the ancient scientific method of the Pythagoreans and Plato.

2. On The Subject of Human Creativity

The follower of the dogma of Aristotle, Euclid, had worked to destroy the Classical science of his time, by co-opting, and reworking theorems developed by more competent and honest earlier discoverers, into a scheme under which all of that earlier knowledge was reified to conform to the a-priori presumptions which Euclid employed as definitions, axioms, and postulates. The fraud of Euclid's method was employed by the Roman era's

hoaxster, Claudius Ptolemy, for crafting an intentionally fraudulent representation of Classical Greek astronomy.

A new version of a similar reification of practical knowledge was introduced to modern European culture through the adoption of a more wildly irrationalist scheme associated with the medieval figure of William of Ockham. This scheme was adopted, and promulgated by the new Venetian faction of Paolo Sarpi and by Sarpi's lackey Galileo Galilei. The result of this became what is known as empiricism and its derivatives, such as positivism, today.

The intention underlying Sarpi's role in this matter, was twofold. First, to provide the Venetian faction with a rationale for allowing some forms of technological innovation which the Aristotelean dogma of that time forbade, but without permitting the subject of the actually creative processes of the human mind to come into play. This so-called empiricist dogma of Sarpi, Galileo, Rene Descartes, Antonio Conti, et al., provided the basis for what John Maynard Keynes was to expose later as the morbid hoax of "black magic" speculator Isaac Newton.

The key to understanding the effect of this dogma of Sarpi on physical science and economic practices, is found in the fact, that the common characteristic of ancient Euclidean dogma and the new, modern Sarpian dogma of empiricism, is *the exclusion of consideration of actually universal physical and comparable principles* through the device of adoption of exclusionary a-priori assumptions such as those of Euclid and Descartes, respectively. Instead of discovering actually universal physical principles, as this is illustrated by the work of Johannes Kepler, the empiricists substituted a form of description known as a mathematical formula, or something comparable, even an outrageously wild hoax, such as the mechanistic positivism of Ernst Mach and his follower Ludwig Boltzmann, or the wildly insane numerology of Bertrand Russell's *Principia Mathematica*, and such of its derivatives as the hoaxes of Russell devotees Norbert Wiener and John von Neumann, instead of an actual physical principle of nature.

To understand the modern positivism of the likes of Mach's and Russell's devotees, it is useful to compare these with the devices and effects of the earlier Euclidean hoax.

In both types of cases, the place which should be occupied by experimentally validated discoveries of universal principle, is occupied by arbitrary appeals to the

popularity of the idea of sense-perception as a substitute for reality. In ancient Euclidean modalities, the definitions, axioms, and postulates are assigned this function. In the case of Sarpi's empiricism, the crafting of a convincing composition of arbitrary presumptions became a more complicated undertaking. The result of the latter problem was the mystical doctrine of a-priori forms, on which the fraudulent mathematics of Descartes was grounded. All generally adopted modern empiricism and its derivatives are premised on Descartes' underlying notions of an a-priori roster of forms.

In turn, then, Descartes and his devotees, such as Conti, Voltaire, de Moivre, D'Alembert, Leonhard Euler, and Euler protegee Joseph Louis Lagrange, emerged as the principle devotees of a Sarpian, anti-Leibniz cult of empiricism, of which the neo-Cartesian, allegedly Newtonian, British school of empiricism was merely a derived trademark. The "begats" of that breed are as amusing as any popular comic page to read, but few among such readers actually know anything important about what they pride themselves in appearing "to talk about" in a mockery of a learned dialogue.

The essential feature of Sarpian empiricism is brought to the fore, after Sarpi's lackey Galileo, by Descartes, whose mathematical dogmas are merely a projection, from Descartes' reduction of modern empiricism, to a system of a-priori mathematical forms.

In both cases, that of Euclid and Descartes, the subject of deliberation is a set of a-priori mathematical forms, forms which are attributed to sense-perception, not actually physical principles. In the case of Descartes, for example, knowledge is limited, as a possibility, as a matter of a set of a-priori, quasi-sense-perceptual forms. The explicit argument by Descartes, who echoes the Euclideans that far, is that man's knowledge of the universe is limited to such a set of a-priori forms. In this, Descartes imitates the swindle of Euclid and the Euclideans; both schools assume that an impenetrable barrier exists, separating this side of the experience of such forms, which was presumed to be correct, but prohibiting the human mind's access to the underlying reality which exists only on the other side of sense-perception, a side which the empiricists deemed inaccessible to human mental experience.

The distinction which I have just underlined in that manner, is between science as defined by both the ancient Pythagoreans and Plato, on the one side, which locates the experience of perception as merely the shadow cast by the instruments of our sense-perceptual

powers, as distinct from the standpoint of those experimentally discoverable universal principles which have cast the shadows which we may recognize as merely sense-perceptions. The power of human creativity which distinguishes human powers absolutely from those of beasts, is the basis for the systematic knowledge given to us from the ancient Pythagoreans and Plato, and of modern European physical science since the fundamental discoveries in science by Nicholas of Cusa and such among his followers as Luca Pacioli, Leonardo da Vinci, Johannes Kepler, Fermat, Leibniz, Bernhard Riemann, and such Twentieth-Century moderns as Max Planck and Albert Einstein.

The complementary feature of this distinction is that the actual comprehension of universal physical, and of equivalent principles, actually exists only as the actually efficient substance on the ontologically "other side," opposite to sense-perception. The corollary point, as to truth, is that no actual universal physical principles exist, ontologically, within the domain of sense-perception as such. Universal physical principles exist only as experimentally definable, efficient universals. This definition is best illustrated for the modern classroom, by the way in which Kepler presents the discovery of universal gravitation in his *Harmonies*, as that which is neither the perception of sight or (harmonic) sound, but is made apparent by the ontological contradiction projected as by the experimental coincidence of the two.

The result of such true discoveries of efficiently universal physical principles, expresses that power of efficient discovery of actually universal physical principles which is specific to the human individual among all known living species.

The Subject of Immortality

Thus, Kepler's account of the problem of defining a principle of universal gravitation reigning in the Solar System as a whole, brings our attention to the related point made by Albert Einstein, and, in that way, makes clear the actual meaning of the *infinitesimal*, as that latter term is defined and employed by Gottfried Leibniz. The discussion of this connection of the work of Kepler follower Leibniz to Einstein's appreciation of Kepler, defines the proper use of the term "infinitesimal" in the practice of physical science.

"Infinitesimal," employed as a term in that context, is not what the hoaxster Leonhard Euler alleges, fraudulently, to be "smallness in space-time." The relative

smallness of an interval of action in a gravitational field is actually the relationship of the size of the universe defined by the principle of universal gravitation, relative to any degree of smallness or brevity of the observed part of the local action one has chosen to measure. In that sense, and only in that sense, the smallness of the chosen interval of action considered, is a reflection of the fact that the principle encloses the universe in the manner which Einstein emphasizes as characteristic of a universe which is finite, but unbounded by any efficient external consideration.

All competently defined notions of universal physical principle present us with the same irony which Einstein recognized in Kepler's founding of the only valid approach to the founding of a universal, experimental physical science.

Thus, in Leibniz's (and also Einstein's) rejection of a Cartesian manifold, the universe is not defined by unknowable forms sealing off the mind from that which is not merely sense-perception. It is the discovery of universal physical principles which bound the universe, with respect to some principle, as Einstein states that case for the universe as a system in the likeness of the portrait of physical processes provided by Kepler's discovery of universal gravitation.

It is through that method of discovery, the method traced from the ancient Pythagoreans and Plato, through the fundamental discoveries of Nicholas of Cusa and his followers among the leaders of valid modern European science, that man transforms what Vernadsky defined as the Noösphere, as if from the top, down, thus creating the general environment within which individual human action for change is situated.

It is only the mind whose approach to economy is physical, rather than financial accounting practices, which is capable of understanding, and accounting for the relative values generated by economic processes.

The summation of the progress of mankind thus far, is associated with the work of Bernhard Riemann, a Riemann to be considered as Einstein did, in his department of work, and as I have done in mine. For both of these approaches, a certain essential result is the same: the revolutionizing of human practice of society through the nurture of the creative powers of discovery uniquely specific to the human mind. Progress is not the fruit of habits, but of revolutions in habits of society as a whole, as I have indicated in the memoranda featured in the leads of the briefings for this past Wednesday and Thursday.