What Leibniz Intended

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Since Leibniz introduced the original use and definition of the modern term "dynamics," during the last decade of the Seventeenth Century, that echo of the principle which had been known to Plato as "dynamis," became widely misused later, as today, under the rubric of "dynamics," in musical and other settings, for meanings, such as "sensation,""amplitude,"or "percussive," which are worse than ridiculous, when compared with the scientific meaning of the term. In effect, what is one of the most richly profound conceptions, was thus reduced to the banal. The issue so posed has essentially nothing to do with a mere grammarian's definitions as such; the commonplace misuses of the term, tend toward some kind of mental disorder.

It is, also, as I have stated, repeatedly, that subsuming, unnamed, but, for me, clearly indicated, principle, the which is presented by the poet Percy Bysshe Shelley in the concluding paragraph of his A Defence of Poetry.

During the last two decades of the Seventeenth Century, the great Gottfried Leibniz was occupied with attempting to bring into order, an emerging, profoundly important discovery-in-progress of his own, a conception which he associated with the Platonic and related Classical Greek uses of the technical term identified by the name of *dynamis*. I came to recognize that principle clearly as what Leibniz named his own discovery, *dynamics*.

During those two closing decades of that century, and the last years of his life after that, Leibniz had already gone a long way toward ultimate success in defining this conception, of *dynamics*, with scientific clarity. However, it was not until the great discovery by Bernhard Riemann, as expressed in Riemann's 1854 habilitation dissertation, that, the deeper implications of Leibniz's concept of *dynamics,* tended to be clarified for me, by 1953. To the best of my own knowledge, the on-going process of his discovery has not yet been actually completed by anyone, up to the present day.

However, by now, it should be well known among relevant, leading professional circles in the Americas, Europe, and some other locations, that my own uniquely successful discoveries have been in development of the application of the concept of dynamics to define the field of a science of physical-economic progress. Those discoveries which were originally prompted chiefly by the work of Leibniz, have led me to some uniquely important advances in knowledge of the underlying principles of physical economy, in showing that specific role of human creativity which underlies the physical principles of economic progress. My progress on that account had contributed the accumulation of a few crucial steps of improvement in refining the function of *dynamics*.

I now summarize the significance of those discoveries as follows.

On background: over the millennia since such times

LaRouches's own discoveries of the underlying principles of physical economy were originally promted by the work of Leibniz, specifically, Leibniz's application of the Greek concept of dynamis, *which he called, "dynamics."*

as that of the crafting of the Great Pyramids of Egypt, up to those points in time, from Leibniz through Riemann, and from Riemann, through the fruits of the role of such among his followers as, most notably, the followers of Bernhard Riemann such as V.I. Vernadsky and Albert Einstein, science had come to be crippled by the persistence of viciously destructive implications of imposed, reductionist forms of systems of belief in a naive sense-certainty. This has included concoctions such as those akin to that of Aristotle, Paolo Sarpi, Descartes, and the Isaac Newton cult, or, of worse cases, that of contemporary behaviorists such as the followers of the avowed enemy of the American System, Adam Smith. Riemann's relevant, great contribution to scientific method generally, and to the understanding of dynamics, is to be represented here by several elements of argument, against the background of that continuing conflict.

Firstly, in both the opening two paragraphs, and the single sentence concluding that dissertation, Riemann swept the decks clear of the systemic absurdity of Aristotelean and comparable reductionist methods. Human sense-perception, which represents mere shadows of actual human experience, had been mistreated as sense-certainty, as had been done by a follower of Aristotle, Euclid. Thus, as Riemann emphasized in the concluding sentence of his 1854 habilitation dissertation, mere mathematics, which is, ontologically, among the mere shadows of that which it purports to describe, had tended to be worshiped as if it were a pagan god with magical powers.[1] This has been the same issue which had prompted Carl F. Gauss to resist endorsement of the work of Jonas Bolyai (and, implicitly, Lobatchevsky) on the subject of a non-Euclidean geometry; there is no relevant Euclidean or kindred geometry to be permitted within the competent practice of physical science; there is what became the Riemannian notion of physical space-time.

Secondly, it was not until Albert Einstein's review of the essential accomplishments implicit in Johannes Kepler's uniquely original discovery of the principle of the system of Solar gravitation, that the deeper implications of Leibniz's discovery of dynamics became accessible. Einstein's emphasis on the two, ironically juxtaposed, terms *"finite" but "not bounded,"* in his assessment of the great discovery by Johannes Kepler, goes to the point, as I addressed that subject-matter within my report on the subject of **National Banking**:[2]

The existing universe is always "finite as if instantaneously," but that finite universe is not bounded in its inherently anti-entropic development as being, as if it might seem to be, momentarily, a finite state of the universe. That is to say, that there is a pervasive principle of scientifically validatable further action which exists beyond the limits of any immediately adduced, imaginable, finitely bounded state of the universe. That pervasive principle is what is to be recognized as reflected in Gottfried Leibniz's use of the term dynamics, and in

1. Restated, that crucially tell-tale, concluding sentence runs: "This [the matter of the habilitation dissertation], leads us into the domain of another science, the domain of physics, which the nature of the subject of today's proceedings [mathematics] does not permit us to enter." This is what brought on the attacks on Riemann's work by the positivists, the physicist Rudolf Clausius and the mathematician Hermann Grassmann (in the matter of the implications of Weber's electrodynamics, in which Riemann had participated with original and valid experiments).

2. **EIR**, December 25, 2009, Vol. 36, No. 50.

Albert Einstein's description of the universe as *finite, but not bounded*.

Thus, the *anti-entropic* principle of ongoing *qualitative* action, defines a principle of *dynamics* within the ontological medium of *a rate of change of action within*, and *by* what must be considered as, *unified physical-space-time*, as a great principle in the universe, as if from above what might be attributed to have been a finite aspect of an ongoing process.[3]

The deeper implications of that fact can not be approached directly except from the standpoint of a science of physical economy. For, it is only through the willful action of change in principles of the universe by man, that we are able to experience creativity's effects in the development of species in the domains of both animal and vegetable life, and in the evolution of the Stellar universe. Yet, in those three cases, our capabilities are bounded by the fact, that it is only the study of the role of creativity within the domain of human behavior, which enables us to examine that principle of physical creativity whose effects underlie creative evolution in the domain of living and non-living processes apart from mankind's action.

When we pass beyond the reach of financial accounting, to a science of physical economy, as I have done, the fundamental principle of relevant action is the effect of introducing voluntary discoveries of original physical principles in the universe through the action by human creativity.

This view of human creativity defines, not only all progress in the productive powers of labor, but also even the successive resistance to entropy, which can occur only through the impact of physically principled advances in economic practice. A scientifically "zero growth" society is, sooner, or later, a self-doomed culture.

In the science of physical economy, this is the principle which descends, as if from "above" any existing state of practiced economy, a principle which corresponds, in effect, to those principles which generate an increase in the productive powers of labor, per capita and per square kilometer in society. It is also the expression of true principles of discovery in Classical artistic composition.

This is the principle, the principle of the creative powers of the human mind in society, which, implicitly, underlies the required revision of the function of the calculus which is implicitly defined, by the present outcome of the collaboration of Leibniz and Jean Bernouilli.

The Case of Music, for Example

Therefore, all competent science must be premised ontologically, on a "property" specific to the cognitive functions of the individual human mind, functions which are not to be found as witting behavior among lower forms of life. This is a quality which shares both what current tradition distinguishes as the physical and cultural features of human action. As I have emphasized in sundry published statements, the function of human individual creativity is expressed in the form of Classical artistic composition, as that is typified by the function of true poetic metaphor.

Take the case of the revolution in music by Johann Sebastian Bach and such followers of Bach as, for example, Joseph Haydn, Wolfgang Mozart, Ludwig van Beethoven, and Franz Schubert.[4]

With the discovery of the well-tempered singing-voice values at Middle-C at 256, the work of Classical composition no longer lies in actions merely between the notes, but in the continuity of a subsuming principle, as if "above" the notes, an intention which requires a moment of silence before beginning, and, again, after the completion of the performance, and the composition, or any work in the domain of musical composition.

Compare the Mozart K. 475 with the 457; the crucial difference between the two, demands that the mind envelop the concept of the earlier K. 457 with what has been now revealed by the K. 475. Space, matter, and time, no longer exist as absolutes; a unifying principle of development within physical-space-time, permeates, and reigns, also consciously, over the composition as a whole.

This is the same universal principle of action

3. This is, admittedly, "a mouthful," but that is not the actual problem to be associated with such a choice of terminology. Rather, that terminology is required for the included purpose of stating a principle whose existence can not be excluded from present use, but which we actually know, now, only negatively, and partially. Such is the need for nominating a concept which is not an "answer," but an admission of the existence we have yet to know: we know the footprint, at least in some degree, but what we have not yet defined is the species which has left what appears to be that undeniable print.

4. E.g., Schubert's last three keyboard sonatas, and his great last Symphony, whose score was delivered, from Vienna, to Felix Mendelssohn, by Felix's friend Robert Schumann.

The revolution in music made by J.S. Bach, and his followers (clockwise from top left): Bach, Joseph Haydn, Franz Schubert, Ludwig van Beethoven, and Wolfgang Mozart, represents a form of Classical artistic composition, in which "space, matter, and time no longer exist as absolutes; a unifying principle of development within physical-space-time, permeates, and reigns, also consciously, over the composition as a whole," LaRouche writes.

Portrait by Elias Gottlob Haussmann (1748)

Portrait by Thomas Hardy (1792)

Portrait by Barbara Krafft (1819)

Portrait by Joseph Karl Stieler (1820)

Portrait by Anton DePauly (1827)

summed up by Percy Bysshe Shelley in the concluding paragraph of his **A Defence of Poetry**. Dynamics appears there as in the form of systemic states of mind, as in the example presented there by Shelley, which, by reigning over the shaping of the efficiently expressed opinion of a portion of the population, defines the kind of human physical space-time whose influence shapes the movements within the relevant populations.

The same is expressed as that infinitesimal of the

Leibniz calculus which was feared so desperately by the animals of Abbé Antonio S. Conti's virtual human "zoo" filled with mathematicians, such as the reductionists Abraham de Moivre, Jean le Rond D'Alembert, Leonhard Euler, Adrien-Marie Legendre, as Pierre-Simon Laplace, and the sometime plagiarist Augustin Cauchy, et al. later; they could not grasp the notion of human creativity. Or, to state the point in other terms, Bach and his great pupils brought to bear, as what they adduced from a principle of the universe, to be the essential expression of the work in progress.[5]

In the discussion of music, poetry, and drama, for example, the principal stumbling-block to a truly human quality of successful performance, is the tendency to interpret the sensuous experience as such, rather than recognizing the systemic fallacy which takes over when attention is focussed primarily on physical effects as such.

That is not to suggest that "the heard music" must not be taken into account in its own terms. One must listen to Keats' famous Ode, for example, in which he insists that the reality often more concealed than revealed by the palpable must shift the focus of the mind to the active principle expressed as the supernal. There lies Keats' expression of genius in that piece; there is the principle of dynamics which, in fact, Shelley identified for practice in the concluding paragraph of his **A Defence of Poetry**. All successful practice of art lies, primarily, within the supernal, not the interpretation of the sense-phenomena as such.

This is a point most clearly demonstrated by recognizing the relationship between Classical artistic composition (as distinct from other varieties) and the principle of creativity, as creativity is demonstrated by the close examination of the discovery of an experimentally validated universal physical principle.

In that case, the competently ordered mind, is searching among the paradoxes presented for that arrangement of the process which is selected because it expresses what can not be found by deduction, but in which the human mind has found the sought key to the relevant "front door." Such is a nature of all true principles. The selected choice must expose the gap between the fallacious products of deduction, and the relatively miraculous correspondence of the success of the choice which could not be found by deduction.

Johannes Kepler's discovery of the system of organization among the Solar planets which he considered, is to be favored as a demonstration of a principle which subsumes scientific and Classical-artistic creativity, rather than deductive approximations. That method of Kepler is crucial, as a method of both competent physical science and Classical artistic composition and its performance, for understanding the principle of dynamics treated by Leibniz.

Thus, we should recognize the virtually criminal implications of any attempts at a categorical separation of Classical science from Classical art. That is to emphasize, that the attempt at a principled separation of science from Classical art, or the reverse, is a potential catastrophe. The methods of empiricism do evil in all cases. It is the universality of creativity in its character as a principle, which is the essence of the notion of dynamics.

The Notion of Human Science

What I have presented here thus far, should warn us that the customary idea of "physical science" is inherently false, in the respect that, first, we know what we regard as competent physical science only through the application of human action to induce practicable notions of changes in the universe which we do not experience otherwise, especially respecting those principles which do change the form of the behavior of the experienced universe through actions generated by man's willful use of discovered principles.

It is that view of the matter which defines a competent notion of physical science. That is to speak of man's behavior which changes the behavior of the universe in such a fashion that the universe is different than in that aspect in which man's revolutionary action is absent. Since, accelerations achieved through thermonuclear-fusion technology bring us into the realm of man's introduction of relativistic flight within interplanetary space, the point is then presented forcibly to the imagination.

In that sense, it can, and must be said, that man's developed presence within the universe is willfully changing the effective result of the operations in that

5. When the possessions of a then deceased Augustin Cauchy were assessed, the "long-lost" paper of Niels Abel was found there, annotated by Cauchy himself: the work which Cauchy had plagiarized so flagrantly, publicly, while it was being proclaimed to the world that that Abel paper had been, mysteriously, "lost."

STS-129 Crew, NASA

"Man's developed presence within the universe is willfully changing the effective result of the operations in that universe." Shown: The Sun, a crescent Earth, and the long arm of a solar panel visible outside a window of the Space Shuttle Atlantis as it visited the Space Station in late November 2009.

universe. Only that quality of specific changes effected by mankind's willful action qualifies meaningfully as physical principles.

In the case of economy, man's success in surviving in population-levels above those attributable to the higher apes, depends upon the use of anti-entropic development to offset the tendency for entropy (e.g., population-reduction through attrition, or other means, combined with a slide into relative savagery).

Those considerations provide a broad definition of the meaning of a science of physical economy.

However, the only source of the creative powers so expressed, lies outside of mathematics and simple experiments as such. Only changes in the lawful organization of the processes reigning, minimally, in some aspect of physical space-time, or space-time generally, constitute true science, and, therefore, a valid notion of a science of physical economy.

Moreover, all economy depends upon considerations traceable to such a physical geometry, so defined.

Thus, from the standpoints of, first, man's ability to exist in the universe through anti-entropic effects of application of discovered universal principles, science is man's mastery of the universe as the case for man and woman is stated in **Genesis** 1. This means, that science is defined as a process of successive, characteristically anti-entropic improvement of the universe through mankind's application of the mission of husbandry to the universe we inhabit. It is the discoverable rules for such behavior by mankind, which is true scientific practice.

However, on this account, there is no morally permissible separation of what is regarded as the domain of the subject-matter of so-called physical science, and the powers of discovery of universal principles of science through the agency of what is called Classical artistic insight, a process of insight otherwise described as man's insight into the human creative behavior on which the definitions of so-called physical-scientific creativity depend.

Hence, the virtually Satanic criminality of practical, reductionist philosophies such as behaviorism and existentialism, as the cases of evils such as the influences of the "Frankfurt School," the European Congress for Cultural Freedom, and Positivism typify. By disallowing creativity at the origin of its expression, Classical artistic creativity, we undermine, and tend to destroy the possibility of scientific progress in providing the preconditions for the health and progress of human life.