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## The Science of Physical Economy Today

The following is Mr. LaRouche's speech to a workshop on "The World Economy in Crisis: Need for a New Bretton Woods," at a conference on Dec. 12 organized by the Committee on Finance of the Hungarian Academy of Sciences (HAS) in cooperation with the international Schiller Institute and the Hungarian Economic Association. The conference took place in the Protocol Room of the Ministry of Finance. The initiator and organizer of the meeting was Prof. Béla Csikós-Nagy, member of the HAS, chairman of the Committee on Finance, who was unable to attend. The moderator was Prof. Tamás Bácskai, DSc. Among others who spoke, was Dr. Nino Galloni of the Italian Ministry of Labor.

As seen from the U.S.A. today, we are in the terminal phase of a physical-economic collapse of the presently bankrupt, post-1971 floating-exchange-rate monetary-financial system. Inside the world's leading power of the moment, the U.S.A., the Federal Reserve System is conducting desperately inflationary measures modeled in fact on the celebrated German hyperinflationary program of June-November 1923. Typical of the situation: 46 of the 50 U.S. Federal states are currently either bankrupt, or nearly so; the last significant remains of a ruined U.S. rail system could vanish, unless the President and Congress make sudden and radical changes in U.S. policy; the U.S. air-traffic system is at the brink of a general catastrophe; the leading U.S. banks are essentially bankrupt, and giant real-estate-mortgage bubbles are now ripe for bursting in both poor Cherie Blair's United Kingdom and the U.S.A.

I must warn you that, at the present moment, neither the U.S. government, the Federal Reserve System, nor the incumbent leadership of either the Republican or Democratic parties, have any competent commitments to deal with tectonic monetary and financial developments of the coming several months. I can not promise that those institutions will come to their senses, but I have strong reasons to believe that remarkable improvements in thinking might occur, even rather suddenly, just as we have, recently, averted a threatened new Middle East war, if only temporarily. There are growing numbers of leading U.S. circles inside and outside government who recognize the nature of the situation. For the moment, the problem remains, that the topmost strata of the relevant authoritative institutions, even among most of those who agree with my proposed reforms, are so far unwilling to take the available steps which could, in fact, bring the rising crisis under effective control.

Three conclusions are to be examined in defining what is in fact a presently global, historic disaster.

First, as long as the U.S.A. and other leading nations continued new, utopian trends in military, cultural, economic, and monetary policies launched during the 1964-1982 interval, the world was headed toward something which is not merely a new cyclical crisis, but a final breakdown, a breakdown built into the axiomatic assumptions underlying the world's presently hegemonic, 1971-2002, floating-exchange-rate form of monetary-financial system.

Since the Fifteenth-Century recovery of European civilization from the preceding Fourteenth-Century collapse into a New Dark Age, globally extended European civilization had repeatedly plunged itself into long periods of religious warfare and other disasters, but, until crisis developments of the 1961-1971 interval, that civilization had always emerged from threatened disasters as a society defined by goals of production. The adoption of these goals led repeatedly into developments in an overall upward direction. The net effect of changes which have taken over long-ranging trends, since the 1964-1982 interval, has been a new kind of system which must have led toward a general collapse of European civilization over a period of between one and two generations. A generation and a half later, that culturally-driven collapse is occurring as a generalized physical-economic collapse of the world's presently hegemonic monetary-financial system.

Second, although the existing monetary-financial system is hopelessly bankrupt, the world economy could be rescued, and a long wave of real growth could be begun quickly, but only under a return to a production-oriented, fixed-exchange-rate monetary system modeled upon the U.S.-sponsored European economic reconstruction of 1946-1958. In other words, without a return to something resembling that Bretton Woods model of fixed-exchange-rate, protectionist monetary-financial system, the world as we know it will be quickly doomed to a plunge into a prolonged new dark age throughout, at least, most of Europe, Africa, and the Americas.

Third, any successful effort to reverse the effects of the recent thirty-odd years degeneration of the economies of Europe, the Americas, and elsewhere, will rely upon long-term capital-intensive investments, chiefly in basic economic infrastructure. These will be investments, largely financed at between 1-2% simple interest, much of which will be over spans of from one to two generations: 25-50 years. Most of the initial capital required for this can come from nowhere except the use of long-term credit created by sovereign nation-states acting as leading trading partners.

This could be done only under a monetary system of fixed exchange-rates, probably requiring a new balance-of-payments reserve-system pricing monetary-reserve gold at about \$1,000 per troy ounce, or higher.

In some respects, the history of modern European civilization's earlier recoveries from crises, points to the leading measures needed to launch a general economic recovery now. Some steps in that direction are now being crafted in regions



Lyndon LaRouche (center) addresses the meeting at the Finance Ministry in Budapest on Dec. 12, organized by the Committee on Finance of the Hungarian Academy of Sciences, the Schiller Institute, and the Hungarian Economic Association. Inset: Dr. Nino Galloni of the Italian Ministry of Labor, who spoke on “Europe’s Contribution to the New Bretton Woods.”

of Asia. In my estimation, the presently proposed reforms of the world system are movements in an excellent direction, but nonetheless still lack certain crucial elements of success. What must be added is a new understanding of the indispensable symbiotic relationship which Colbert, Leibniz, Benjamin Franklin, Alexander Hamilton, Friedrich List, and Henry C. Carey saw, between the role of the nation-state in large-scale development of both scientific progress and basic economic infrastructure, on the one side, and, complementing that, a technology-driven quality of private entrepreneurship in what is sometimes called the *Mittelstand*, in agriculture, manufacturing, and related spheres.

During the coming two generations, probably half of the total allotment for national economies in their entireties, will be dedicated to developing and maintaining such forms of large-scale basic economic infrastructure as power generation and distribution, large-scale water management, land reclamation, mass transportation, urban infrastructure, and forms of universal health-care and educational facilities and programs. These infrastructure programs will be the principal immediate stimulus for urgently needed recovery and expansion in productive forms of employment, and will be the principal foundation for large-scale growth in employment in agricultural, manufacturing, and comparable entrepreneurships.

Typical of the great opportunities for global economic renewal and expansion, is the prospect of greatly expanded trading relations between Western and Central Europe, on the one side, and the presently ongoing emergence of a great Eurasian development effort being built up in Asia through the initiative of a strategic triangle of cooperation centered

now among Russia, China, and India.

I emphasize that the possibility of a genuine, sustainable economic recovery from the presently ruined state of the economy, requires long-term, large-scale investments, largely by public credit, over a period of one to two generations. We must learn the lesson of President Franklin Roosevelt’s U.S. recovery and build-up during the 1933-1945 interval; we must do something similar, but, this time, on a larger and longer-term, global scale.

### Can Economics Be a Science?

How, then, can we be certain that our choices of long-term investment will not be mistakes? The answer to that is: We must put the study and application of a science of physical economy in the foremost position in the economics departments of our universities and in the shaping of policies of and among governments. We must abandon the mistake of designing economies to meet the utopian requirements of radically monetarist schemes, and revive the intent of those, such as the authors of the U.S. Federal Constitution’s Preamble,

to design monetary and financial systems which steer production and investment into directions which promote the general welfare in and among nations.

Now, as on various earlier occasions, to illustrate what that means in practice, I have asked my audiences to focus upon certain practical implications of my proposals to develop a network of mass-transport-focussed economic development corridors across Eurasia, from France to Pusan, across Siberia and through China, India and Southeast Asia, into Japan, and beyond. These are corridors of between 50 to 100 kilometers width, which shall contain within them power, water, centers of urban development, and agriculture, mining, and manufacturing. Look at two fascinating internal features of such a Eurasian Land-Bridge development. Look at the vast mineral and related resources locked up in arid regions or tundra, which are presently not efficiently accessible. Foreseeable developments within the framework of that Land-Bridge will make these efficiently accessible. This development will have the lawful, included net effect of moving goods from Pusan to Rotterdam far cheaper and quicker by high-speed friction-rail or magnetic levitation transport than by ocean-going ships.

Obviously, in committing ourselves to such large-scale development programs over one to two generations, we must know in advance what long-term, global effects we are producing. For this purpose, let us look at what I have just said about the regions of Central and North Asia from the standpoint of Vladimir Vernadsky’s concept of a *Noösphere*.

Although Vernadsky’s work had no part in the original development of my discoveries in the science of physical

FIGURE 1  
Eurasia: Main Routes and Selected Secondary Routes of the Eurasian Land-Bridge



LaRouche's program calls for the initiation of development corridors along the Eurasian Land-Bridge, which shall contain within them power, water, centers of urban development, and agricultural, mining, and manufacturing.

economy, there is nothing in his argument with which I disagree, as far as he goes. To derive a needed economic science appropriate to Vernadsky's work, we must apply the principles of a Riemannian physical geometry to economy as large-scale social-economic systems, but must also locate the function of the mind of the needed type of individual private entrepreneur more precisely. The following summary of my view of the present great relevance of Vernadsky's work for the development of a Eurasian Land-Bridge, permits me to state the case for physical economy within the constraints of this present occasion.

Now, to make those points respecting long-term forecasting, in this concluding portion of my report, I shall now focus on summarizing briefly, in succession, five, functionally interrelated, crucial topics of a science of physical economy. First, I show how I situate the lessons of Vernadsky's notion of Biosphere and Noosphere within a science of physical economy. Second, the role of the private entrepreneurship of the *Mittelstand* type within modern physical economy. Third, the relationship between the nation-state's role in basic economic infrastructure and the increase of the productive powers of labor, and capital investment, in the private sector.

Fourth, I refer to Vernadsky's concept of the Noosphere to identify, as Leibniz did, the urgency of basing the role of human nature in the economy on rejecting the bestial mis-definitions of human nature associated with Hobbes and Locke. Finally, I emphasize the key to all competent long-range economic forecasting, in which we must at last abandon those medieval methods of Claudius Ptolemy's failed astronomy, in favor of applying instead the modern scientific methods of forecasting introduced by Johannes Kepler and his followers.

Vernadsky's conceptions of Biosphere and Noosphere should be made obligatory studies in all training of economists for the relevant missions before mankind today. Not only did he lay the basis for approaching more rigorously problems such as the long-range economic development of the vast tundra and arid regions of the Asian continent. His development of those conceptions conveys to the student of economics an efficient sense of the proper meaning of the term "physical principle" in the successful aspects of the development of all modern experimental notions of physical science. This view of the definition of physical principle from the standpoint of the work of Vernadsky provides the serious

forecaster a means of escape from the disastrously failed, post hoc ergo propter hoc statistical follies of such celebrated figures as Professor Milton Friedman.

Vernadsky divides the experimental evidence of universal physical principles among three categorical types. First, those effects which the experimental standpoint of physical chemistry defines as reflections of abiotic principles. Second, those effects which physical chemistry defines as products of anti-entropic universal principles which are produced only by living processes: the Biosphere. Third, those anti-entropic effects which are produced only by what Vernadsky terms the “noëtic” powers of the individual human mind: the “Noösphere.” For Vernadsky, geobiochemistry shows him that life is cumulatively more powerful an influence for cumulative changes in the physical universe than abiotic processes, and that the “noëtic” powers of the human mind are cumulatively more powerful than those of biology as such. This is the view to be applied to forecasting long-term effects of adopted policies of economic development within the tundra and arid regions of Asia, for example.

Clearly, Vernadsky’s work must be featured in any training in the science of physical economy today.

To understand the role of the Mittelstand entrepreneur, we must define what Vernadsky chooses to name “noësis,” the “noëtic” principle. Here is the point at which the devotees of so-called historical materialism have usually begun screaming the epithet “voluntarist” at me. Vernadsky uses the Greek terms “noësis” and “noëtic” as appropriate choices of synonyms for Plato’s use of “hypothesis.”

To introduce the notion of “hypothesis” to students on the university level today, I have found it best to focus upon the Classical Greek geometry’s precedents for Carl Gauss’s 1799 report of his original discovery of the fundamental theorem of algebra, in which he correctly provides a physical definition for the complex domain, in refuting the mistaken views of d’Alembert, Euler, and Lagrange. Those associated with me in introducing this matter to students, emphasize the connection to Plato’s argument in his Meno and Thaeatetus dialogues and the Archytas solution for the doubling of the cube by construction. I combine this with the case of Kepler’s discovery of universal gravitation, Leibniz’s catenary-based definition of a principle of universal least action, and Riemann’s deriving a generalized, anti-Euclidean physical geometry, as the physical-science-based definitions of “noësis,” “hypothesis,” and “cognition” used by me.

These examples of creativity are the basis for a functional definition of “creativity” employed in a science of physical economy. This, in turn, situates my definition of the “voluntarist” role of the typical entrepreneur in increasing the per-capita physical value of the productive powers of labor in society. That entrepreneur’s characteristic role is an offshoot of the same function performed in the partnership between the original discoverer of an hypothesized universal physical principle and the team of designers of crucial-experimental processes by which those hypothesized principles are given

the quality of test which Riemann defines as a unique experiment. In my writing I have emphasized the way in which technologies are derived from the implications of unique qualities of experiment, as the typification of the machine-tool sector of the Mittelstand.

So, the educational development of cadres of persons qualified in the scientific/engineering domain of unique experimentation, is the crucial driver for the increase of the productive powers of labor-in-general, in design of products and of productive processes. This is true for agriculture as for manufacturing, and for engineering in the domain of public basic economic infrastructure. This connection, as reflected in such roles within the Mittelstand, is the exemplification of the way in which “noësis” transforms the world and its physical economy, from lower to higher states of the Noösphere.

However, much of the net increase of the productive powers of labor within private enterprises, for example, is generated from outside particular private entrepreneurship, as in improved transportation systems, for example. Take the case of the development of the infrastructure of the Eurasian Land-Bridge as an example of this. The action of movement of goods by ship does not increase the intrinsic value of the goods shipped. However, when land routes as such become economically interactive with transport, the net cost of transport from Rotterdam to Pusan may even be negative: the increase in wealth generated as a by-product of interaction between transport and production along the route, will be among the principal sources of gain from the operation of the Land-Bridge as a land-route of high-speed transport.

The discovery and realized application of a new physical principle, is the typical action which sets the human species categorically apart from and superior to all other living species. It is cooperation rooted in this specifically human quality, which separates human beings from such creatures of The Island of Dr. Moreau as the sub-human creatures of Hobbes’ and Locke’s philosophy. This point is well illustrated by considering the effects of Kepler’s original discovery of gravitation, as detailed in his The New Astronomy, with the intrinsically failed Aristotelean, post hoc ergo propter hoc systems of Claudius Ptolemy, Copernicus, and Tycho Brahe.

The fact that Kepler’s measured orbit was neither circular, and of constantly non-uniform rates of motion, showed that the Solar System is not ruled by kinematic ricochets, but by principles which predetermine the lawfully defined future position of the body. That is the lesson which must be used to rehabilitate today’s economic statisticians, and to bring the matter of forecasting the effects of willfully variable human behavior under the domain of science. I attest, that competent long-range forecasting, in which I have excelled during the recent several decades, follows the model of Kepler’s treatment of long-term orbits, not the failed, post hoc, ergo propter hoc of all too many, much too celebrated recent statistical forecasters.

Thank you.