LaRouche on Vernadsky and 'The Future of Brazil's Agriculture'

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The ABCs of Brazil's Noösphere

I must now summarize, very briefly, the underlying principles of my speciality, the science of physical economy. I reduce all economic functions to the terms of mankind's physical relations to nature. I describe all economic processes in the way implicit in a strictly anti-Euclidean form of Riemanian physical geometry. I define all essential such relations in terms of interaction among three distinct phase-spaces: 1.) Non-living processes, the so-called abiotic; 2.) The long wave of domination of abiotic by living processes, or what Vernadsky defined as the biosphere; and, 3.) Those functions of human cognition through which mankind exerts its rightful superior authority over the biosphere.

Despite the many points of agreement between my definition of these relations and Vernadsky's, there are two most crucial points of difference. First, where Vernadsky defines man's power over the biosphere in terms of individual discoveries of experimentally validated universal physical principles, I insist that it is the individual's use of such discoveries to transform the culture through which society acts on the biosphere, which is the primary expression of man's power over nature. Second, I have adapted Riemann's principles of physical geometry, as the way in which to conceptualize the functional relations among the three primary phase-spaces of abiotic, life, and cognition.

What I have done, through my own original scientific discoveries in this realm, has been to supply a much needed clarification of the reasons for the historically proven, absolute superiority, over the British free-trade system, of the American System of political-economy, as this is typified by Alexander Hamilton, Mathew Carey, Friedrich List, and Henry C. Carey. Notably, it was the U.S.A.'s turn away from that American System, as the American System is typified by Presidents Lincoln and Franklin Roosevelt, which made possible the global monetary, financial, and economic disaster which has been building up during the recent thirty-odd years.

My present summation of what I have called "the Cerrado syndrome," is an expression of the legacy of that American System which brought the U.S.'s rapid rise to the position of the world's leading economic power among nation-states, during the 1861-1876 period of the leadership of President Abraham Lincoln and economist Henry C. Carey. The most authoritative definition of that American System, is supplied by U.S. Treasury Secretary Hamilton's most famous reports to the U.S. Congress, on the subjects of public credit, a national bank, and manufactures.

Three principles dominate that American System: 1.) The absolute sovereignty of the nation-state republic, including its sovereign monopoly over the creation and management of its public credit and banking; 2.) The primary responsibility of the national and state governments for the development and regulation of basic economic infrastructure; 3.) The use of the means of sovereign control over public credit, banking, and basic economic infrastructure, to promote private entrepreneurship in agriculture, manufacturing, and related domains.

The importance of my work has been chiefly to clarify previously ambiguous features of such an American System. I apply these combined considerations now, to define "the Cerrado syndrome."

I measure the performance of national and world economy by a rule-of-thumb standard which I have described as potential relative population-density. This means the comparison of physical inputs and physical outputs as measured per capita and per square kilometer of surface area. These measurements should be measured in terms of functional cycles of not less than one to two generations, as I have illustrated that by the statistics referenced here.

In this long-term view of one or more generations, I assess short- and medium-term, and local changes in functional features of economies, in terms of their impact upon previously foreseen long-term cyclical patterns.

It is extremely important to emphasize, at this point, that the attempt to measure performance of national economies chiefly in terms of either financial accounting, or, worse, in terms of the sum-totals of individual firms and localities, is foolish, and even disastrous over longer terms. Hence, the standard national-income and national-product accounting employed in today's national and international assessments, are inherently misleading, and have been disastrously misleading over much of the recent three decades.

We must also proceed from long-term cycles, as functional units of accounting for entire economies, both national and international.

The simplest way to demonstrate that point, is to note that the relative net physical productivity of an individual enterprise depends upon such external factors as the relative state of development of basic economic infrastructure, such as transportation, power, and water management. Similarly, the quality and level of education, and prevailing physical and cultural standard of living of households, is a principal external determinant of the internal productive potential of the individual enterprise.

We see such effects repeatedly in study of the problem of underdevelopment in national economies. The introduction of advanced industries into national economies, is beneficial on principle; but, if the level of general development of the infrastructure and population is relatively poor, the performance of even advanced individual enterprises will be crippled by the poor development of the national economy as a whole.

This brings us to the matter of national credit, especially the use of such credit for mobilizing an economic recovery from a disastrous world depression, such as that of the early 1930s, or the worse collapse in progress today.

Credit Expansion

It is urgent that every government today look back to the crucial similarities between the recovery measures taken by President Franklin Roosevelt, and the recently famous proposals delivered to a secret 1931 Berlin meeting of the Friedrich List Gesellschaft by Dr. Wilhelm Lautenbach.

Given a situation, in which the physical economy of a nation has fallen to levels far below those required for long-term break-even, which is the state of every nation of the Americas and of Europe today. Given, the added difficulty, that a collapse of nominal financial capital, in the order of tens of trillions of U.S. dollars equivalent, has recently occurred, and that the bottom has by no means been reached, as today.

The obvious objective of governments and private enterprises, should be to increase employment in physical output, to levels above long-term break-even, and do that rapidly. Given the existence of idled labor-force and growing mass unemployment, where does one find the long-term credit, at between 1-2% annual simple-interest charges, needed to "prime the pump" of the economy?

FIGURE 1
Brazil's Cerrado Region

Admittedly, in the case of Hitler Germany, from March 1933 on, until the outbreak of war, the British and New York financier interests which had just recently put Hitler into power, allowed British agent Hjalmar Schacht to draw upon credit for the war mobilization which was then intended to lead to Germany's destruction by the Anglo-French allies at the point Germany was trapped in an intended Napoleonic invasion of the Soviet Union. Without such curious backing as of the type provided by Hitler's London and New York financial backers, where does a national economy go to find the credit needed to launch a general physical-economy recovery?

In such a conjuncture, the only possibility of gaining the needed long-term forms of credit, is the power of the sovereign nation-state, to put the existing financial system into bankruptcy-reorganization, and to issue long-term, low-price public credit for large-scale investments in development of basic economic infrastructure. The supply of income to the newly employed, the credits for purchase of needed supplies, and the stimulation of the market of vendors and the consumer market, provides the initial impetus for the needed avalanche of economic recovery.

Virtually every economy in the world, especially those of Europe and the Americas, is presently in such a desperate

TABLE 1
Potential Use of Brazil's Cerrado

	Area (million ha.)	Yield (tons/ha.)	Production (million tons)
Cereals (rain fed)	55	3.2	176
Cereals (irrigated)	10	6.0	60
Meat	55	0.2	11
Fruit	7	15.0	105
Total	127		
Area in use	61		
Area available	66		

TABLE 2
Cereals Production in Brazil's Cerrado
(Millions tons)

	1975	1980	1985	1990	1995
Soy	0.3	1.8	6.0	6.3	11.3
Maize	2.8	3.7	4.1	4.4	8.7
Rice	2.3	3.6	2.6	1.5	2.4
Beans	0.3	0.2	0.3	0.4	0.5
Wheat	0	0.1	0.2	0.1	0

situation, actually a situation much worse in its underlying features than that of the early 1930s. Brazil is by no means alone in this predicament.

Brazil should now view such matters in the following, two-fold way: domestically, and in its relationship with the neighboring states of the Americas. The infrastructural development of the Amazon riparian region, and of the Cerrado, typify the larger package of measures needed for a successful use of public credit.

These measures should be viewed from the vantage-point of the noösphere as I have summarily described it.

South America is a continent of vast, largely untapped natural resources. The principal obstacle to the physical development of those resources is the lack of basic economic infrastructure in categories of transportation, power, and large-scale water-management. The objective must be to define the continent as a unified noösphere, which its inhabitants must manage.

The objective of management is not to maintain the biosphere in its present state, but to raise it to a relatively elevated state of health, which only mankind can do. It must be viewed as a vast farm, which, like a wilderness, must be improved and maintained so that the riches flow while the source of such riches is increased in a healthy way. We must not think, foolishly, of man as a parasite hunting-and-gathering in a biosphere; we must think of man as transforming the biosphere, to raise it to higher levels of fruitfulness and good health than it could ever achieve without man's willful intervention.

That is, in fact, Brazil's only chance for long-term survival as a nation. It is the only chance for that presently imperilled continent as a whole.

The realization of the potential of the Cerrado typifies the kind of adopted sense of mission which is presently required for not only Brazil, but the continent as a whole. That is what I signify by "the Cerrado syndrome."

This brings us to consider the fourth, and most crucial element of basic economic infrastructure: education conceived and directed as a science-driver force for the economy as a whole.

The fundamental principle of a science of physical economy, is the principled notion of the distinction which sets man and woman apart from and above all other living creatures, the quality of non-deductive reasoning called cognition. In physical science, this signifies that life can not be derived from non-living processes, and cognition can not be derived from living processes in general. Each of these three are respectively distinct phase-spaces. To use precise scientific language, in Riemannian physical geometry, we speak of these as multiply-connected phase-spaces of an unfolding differential form of physical geometry. This was demonstrated experimentally by Vernadsky et al. in one way, by me in another.

In laymen's words, these three sets of principles always coexisted and interacted in the physical universe as a whole; their appearance in the modern forms of abiotic, living, and cognitive processes, is to be acknowledged as an expression of such ancient roots.

This function of cognition, is expressed by mankind in the typical form of an original discovery of an experimentally validated universal physical principle. It is through the sharing of the act of discovery, as through a Classical humanist mode of general education, that humanity builds up a repertoire of interconnected cognitive capabilities for imposing successful transformations in both human behavior, and in the universe on which man acts.

The possibility of increasing the rate of progress of mankind, in physical-economic and other terms, depends upon the degree to which this accumulation of cognitive knowledge of principles is maintained and accelerated to the advantage of the population in general. On this account, a system of education, so tasked with this mission, becomes the highest ranking of all public investment in maintaining and improving the basic economic infrastructure of the nation as a whole.

Projects conforming to "the Cerrado syndrome," would bring Brazil safely out of the present crisis. The mission of developing educational systems as the fountains of scientific, technological, and general cultural progress, will bring Brazil and the continent to a brilliant future.