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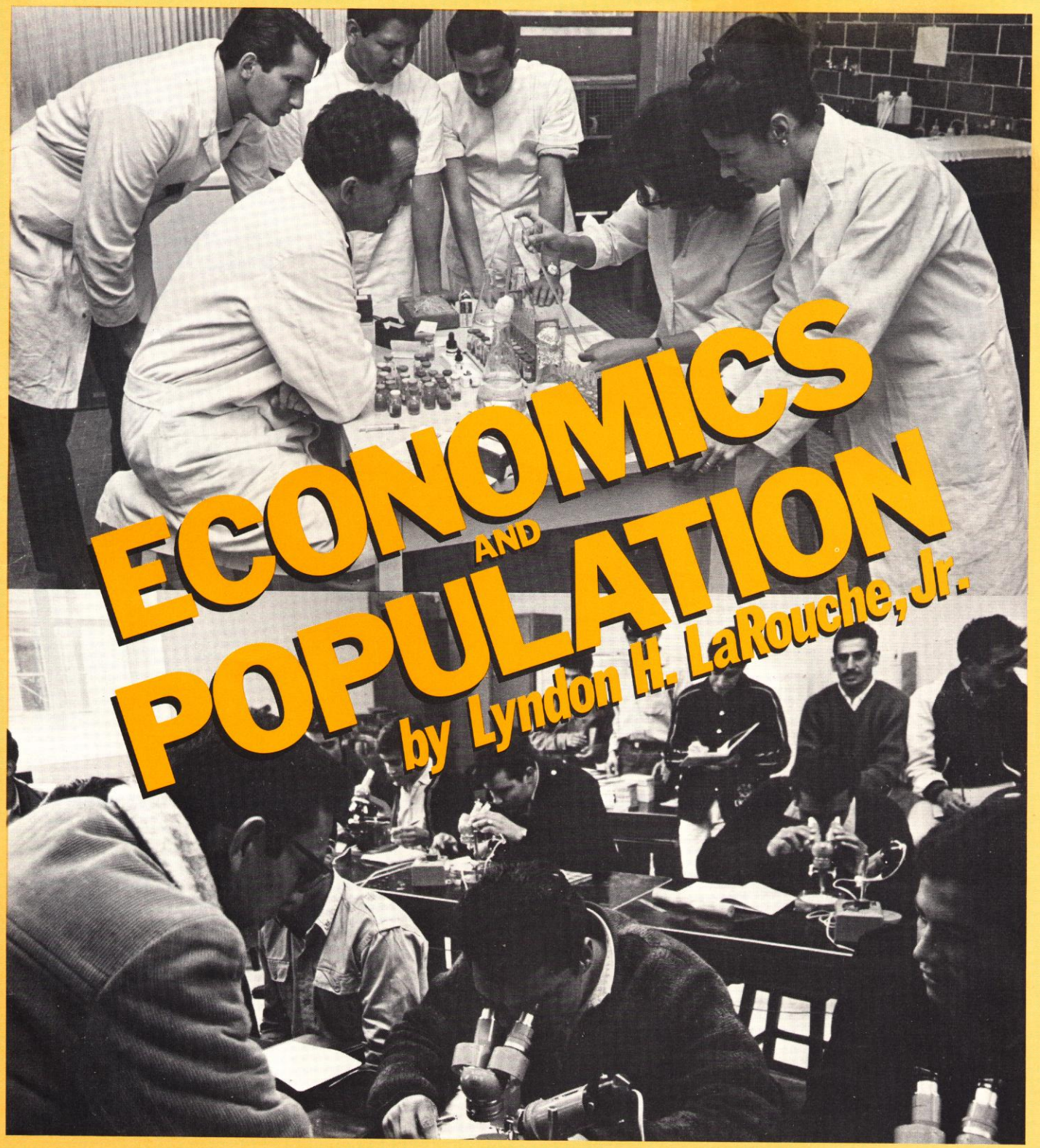

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by Lyndon H. LaRouche, Jr.

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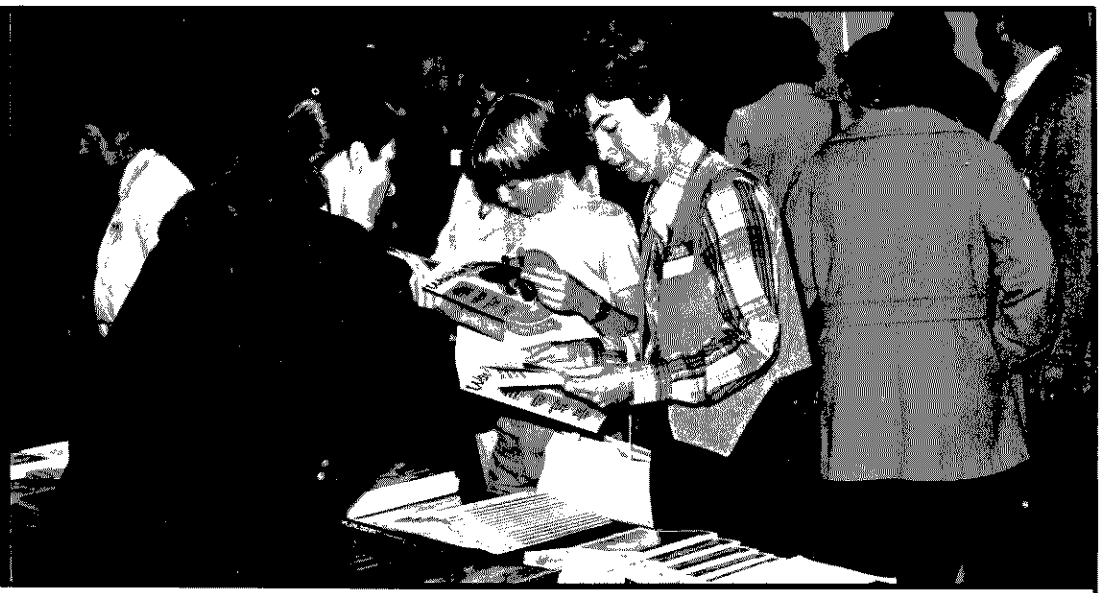

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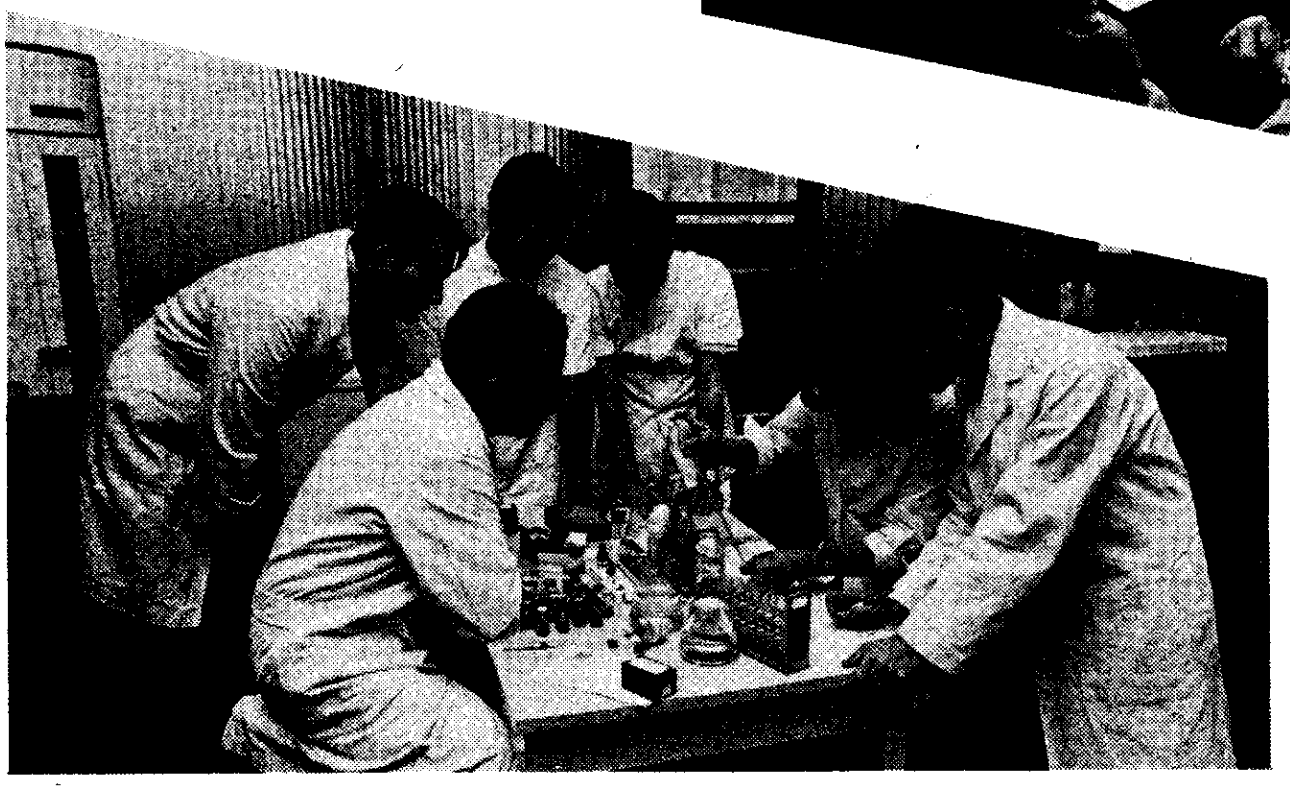

On the cover
Top: Veterinarians in training at Mexico's National University
Bottom: Students at the Chapingo National Agricultural Institute
Cover design: James C. Montalbano

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ECONOMICS AND POPULATION

by Lyndon H. LaRouche, Jr.

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March 8, 1981

Since the 1976 election of former U.S. President James E. Carter, over the course of the recent four years, there has been an increasing threat of general warfare. This has been a conflict spilling over from deteriorating economic situations among developing nations, to become an intensification of the preexisting strategic cleavage between the thermonuclear military blocs. In this way, a dangerous situation in Central America, exploited and aggravated by the combined forces from the Socialist International and the left-Jesuit Liberation Theologists, has become the indirect prompting for an intensified conflict between the Soviet Union and the State Department of my own United States.

It must be emphasized that the true cause for the danger of general warfare is not the now-traditional conflict between industrial-capitalist and socialist forms of society. Rather other forces, entirely external to the issues of capitalism versus sovietism, are imposing stresses upon the preexisting lines of strategic-military cleavage.

The true, underlying driving issue behind the present war-danger is a conflict between two policies, policies which overlap the established divisions between the military-strategic alignments. On the one side, there are forces within both the industrial-capitalist and socialist camps which adhere to the policy of sovereign nation-state institutions dedicated to technological progress. On the opposing side, there are the forces of both the capitalist and the socialist blocs which oppose the policy of the sovereign nation-state, in favor of a neo-Malthusian, world federalist return to the dominant philosophies and institutional outlooks of early fourteenth-century Europe.

The neo-Malthusian, "one world" forces are typified in the capitalist sector by the Club of Rome, the Pan-European Union, the World Wildlife Fund, and the Aspen Institute and Ford Foundation of my own nation. In the Soviet bloc, and among Communist parties of the world, the neo-Malthusian one-worlders are led by the communist factions tied to the present-day continuation of the old Communist International intelligence apparatus, as is typified by the Soviet foreign intelligence institution known as IMEMO. These same views dominate Willy Brandt's faction of the Socialist International, are also represented by the cult forces of the left-Jesuit Liberation Theology movement, and are represented by such outgrowths of John Ruskin's pre-Raphaelite Brotherhood as the London Tavistock Institute and the supranational networks of the late H.G. Wells and Bertrand Russell.

It is the chaos and misery introduced to world order by those and allied forces of the neo-Malthusian one-worldist currents which are impelling the world toward a pre-Raphaelite "new dark ages" of wicked cults and neo-Malthusian genocide, modelled on the nightmare which dominated Europe during the early decades of the fourteenth century. It is that neo-Malthusian impulse toward creating a "post-industrial society," which is fostering the mixture of intensified strategic miscalculations leading the world in the

direction of general nuclear warfare.

Although it is not my purpose to deal with the issues of world federalism and neo-Malthusianism on this occasion, I have cited the foregoing matters that we might situate practically the substance of my report as part of the solution to the deadly dangers I have just summarized. If we are to stop the worldwide march of that massive genocide now destroying much of the continent of Africa, if we are to prevent nuclear war, we must implement economic policies of global economic recovery; we must implement policies which include the long-postponed tasks of establishing a new world economic order of the form required by developing nations generally.

Rather than dealing explicitly with the neo-Malthusian dogmas as such, I contrast my own contributions to economic science with those varieties of political economy which have brought the world up to the verge of the present threat of global catastrophes. I shall emphasize the leading issues of policy direction over the period since the end of the last World War.

The Decline of the United States

The United States emerged from World War II as the most powerful economy and military force of the world. Today, together with the rotting economy of Great Britain, in quality of output, the United States has become a second-rate economic power on the verge of profound internal economic and moral collapse, its conventional military forces significantly degraded to drug-using mercenaries.

The degree of internal decay is typified by two leading sets of facts about that economy.

At the beginning of the postwar period, 62 percent of the total national labor force of the United States was employed in production of goods. Today, although official statistics report unemployment to be approximately 8 percent of the labor force, the actual unemployment is about 20 percent. The false figures issued by official sources are based chiefly on grossly undercounting unemployment of youth, on failing to count reduction of many to a condition of part-time employment, and on dropping from labor force statistics persons who have exhausted their government unemployment benefits. Corrected figures show that the portion of the U.S. labor force engaged in production of goods has dropped from 62 percent to nearly 30 percent.

This percentile decline in the goods-producing sector of the labor force is not the result of technological progress. Except for the period of the Korean War, there has been only one period in postwar history of the U.S.A. during which significant rates of generalized technological progress occurred. The only period of significant technological progress in U.S. industry as a whole was during the interval 1962-1967, under the combined effects of the National Aeronautics and Space Administration (NASA) space program and the investment tax-credit program of that time. Today, obsolescence in basic U.S. industry is at the highest percentile of the postwar period.

The chief causes for this internal decline of the U.S. economy are symptomized by comparing the estimated market value of New York City real estate

with investment in goods-producing capacity. At an estimated one trillion U.S. dollars, New York City real estate is approaching twice the estimated value of the capital investment in goods-producing capacity.

The two symptoms of internal and moral decay reflect the consequences of almost consistently bad policies of the U.S. federal govenment in the areas of credit, banking, international monetary, and taxation policies. As the case of the New York City real-estate bubble illustrates, what has happened is that credit and savings have been sucked out of investment in goods-producing capacity, and diverted into higher after-tax profits available in both financial speculation and fictitious appreciations of ground-rent valuations of real estate. As the flow of credit and savings moves away from agriculture and industry to parasitical forms of speculation, these monetary flows shape the direction of shifts in patterns of employment toward labor-intensive forms of services, and away from technologically advanced modes of production of goods.

Although necessary forms of administration and services are unavoidable costs of a modern economy in both the public and private sectors, the fact remains that administration and services are not productive costs, but are part of the nonproductive overhead expenses of the economy, together with the spiralling overhead expense now represented by debt-service costs of both the public and private sectors.

As the percentile of the labor force employed in goods production decreases, without a compensating advancement in capital-intensive, technologically progressive modes of productive investment, the result is necessarily cost inflation.

What happens once the goods-producing source of ability to pay rent and debt-service contracts further under conditions of rising absolute costs of combined debt service and ground rent? Obviously the bubble of speculation in real-estate and financial instruments will be burst, leading quickly to a multi-trillion dollar bubble collapse internationally—the greatest economic depression since the fourteenth-century.

Is is said that whom the gods would destroy they first drive mad. On the record of postwar performance, the kind of thinking expressed in the monetary and economic policies of the United States is surely a form of collective insanity.

None of this decay of the United States has been objectively necessary.

Shortly after the end of the last world war, one of the sons of the deceased President Franklin Delano Roosevelt published an important little book. This book presented an eyewitness account of some of the important moments of Allied policy making during the course of that war: for our purposes, the accounts of the Alantic and Casablanca conferences between Roosevelt and Prime Minister Winston Churchill.

During those meetings, President Roosevelt warned Churchill that the United States was not willing to conduct another war to save the British Empire. Roosevelt informed an understandably apoplectic Churchill that the world had had more than enough of Britain's "eighteenth-century methods" for keeping what we call today the developing sector in a state of enforced relative poverty. The day for Adam Smith's colonialist doctrine of "free trade" had ended.

To illustrate his postwar policy, Roosevelt produced a map of Africa, showing Churchill how the United States proposed to deploy high-technology "American methods" to transform the arid Sahel into the breadbasket of that continent.

Unfortunately, somewhere between Casablanca and the Bretton Woods conference, Roosevelt's great policy was mislaid. The postwar world has been dominated by the same old British "eighteenth-century" methods denounced at Casablanca.

The outward forms of British imperialism have been modified. The imperialism of debt and "conditionalities" has superseded the naked insolence of the British Union Jack. Instead of the great outpouring of capital goods from the United States which Roosevelt indicated at Casablanca, from the beginning of the postwar period, the United States groveled disgracefully before Churchill's policy. Relative to the need, the potential postwar export of capital goods from the United States was pathetic.

If we examine the great common benefits to both the United States and Mexico implicit in the proposed "oil for technology" agreements, we see clearly that the economy and people of the United States gain absolutely no advantage in keeping developing nations relatively backward. Nothing is more desired by an enlightened firm's management than prosperous customers.

The leading industrialist interests of Japan, of France, and of the Federal Republic of Germany understand the importance of helping customer nations to become independently prosperous. There are even many intelligent business circles in my own nation who understand the same, sound principles. We of the industrialized nations do not need colonies; we need independently prosperous customers. We do not require, nor should we demand ownership of investments in developing nations; nor is our proper concern whether the industries of developing nations are state-owned or privately owned. Our sole proper

concern is that those customer nations, whether in industry or agriculture, should grow in independent prosperity as our trading partners. Whatever best serves the interests of developing nations in that way is also a proper perception of the vital foreign policy interests of exporting nations such as the United States

Why, then, do the industrial, farmer and trade union interests of industrialized capitalist nations continue to tolerate the "eighteenth-century" free-trade dogma of the British East India Company's Adam Smith? It is a policy directly contrary to the most vital material interests of the industries and citizens of the capital-exporting nations. They support policies contrary to vital interests not for rational reasons, but chiefly because those counterproductive practices have been institutionalized in the ideology of policy making.

The reason for the policy which has ruined the United States while oppressing developing nations is not to be found in the objective interests of the people of either group of nations. The reason for this grave error is predominantly subjective—policy makers and institutions generally have been conditioned into accepting ideologies directly contrary to their most vital interests.

Therefore, it is in the subjective realm of policy thinking that the underlying dangers of depressions and wars must be fought. The hegemony of notions of political economy responsible for the present mess must be eliminated, and proper conceptions of economic science must be substituted. Perhaps the very intensity of this crisis creates at present the special variety of circumstances in which necessary, overdue transformations in thinking about economic policy making can be at last successfully introduced.

Political-Economic Thought: Two Classes

Let us put to one side for the moment the special category of neo-Malthusian dogmas which have dominated policy making increasingly since 1967. Let us focus on the two species of directly contending economic policy thought which have dominated global developments over the entirety of the postwar period. I situate my own contributions to economic thought within the one of those two opposing currents which is sometimes called "mercantilist."

Putting aside neo-Malthusianism extremisms among persons literate in economic policy making, there are only two general schools of national economy. The one, including its Marxist offshoots, is that we properly associate with the British East India Company school of Adam Smith, Thomas Malthus, David Ricardo, John Stuart Mill, and with such outgrowths of those as the works of Jevons, Marshall, Keynes, the Viennese Positivists and Professor Milton Friedman. The opposing faction, which I represent, originated in its present form through the influence of the great protégé of France's Jean-Baptiste Colbert, Gottfried Wilhelm Leibniz, and was known during the nineteenth century as the American System of Alexander Hamilton, Friedrich List, Henry C. Carey, and President Abraham Lincoln.

Although the American System became almost unknown in the teaching institutions of the western hemisphere during this century, it continues to be the dominant institutional feature of Japan's industrial economy, and was the basis for organizing the nineteenth-century industrial revolution in Germany. Although it is widely attacked as outdated among English-speaking academic circles today, Leibniz's approach to economic science is not only the most advanced version of economic science: It is the only version which is competent to address such practical matters as successful implementation of an oil-for-technology agreement between the United States and Mexico today.

The differences between the two opposing approaches to political-economic analysis are in no sense merely academic. The two opposing sets of schools proceed from fundamentally irreconcilable conceptions respecting not only the proper ordering of human affairs, but the lawful ordering of the universe itself.

The Venetian school of political economy, made world-famous through the influence of the British East India Company, is not economics in the proper sense. It is the superimposition of a sociological dogma upon the appearances of certain limited aspects of economic phenomena generally. It is in this essential feature of British and Viennese economics that we find the keys to the systematic devolution of the postwar economy of the United States.

Venetian economics, to give the British school its proper pedigree, is consciously premised on Aristotle's *Nicomachean Ethics.* The Jesuit doctrine of "bioethics," and the curious doctrine of the present-day international Solidarist movement, are also direct products of that same Aristotelean dogma in its Venetian form.

If one wishes to trace he same Venetian dogma to older roots, it is a product of the pseudo-Christian philosophy known generally as Gnosticism, a cult with more ancient roots in the hermeticist dogmas of

the Babylonian "magicians." Once the implications of this Gnostic variety of Venetian sociology are understood both from a practical as well as historical vantage-point, there is no proper reason to be mystified by the disastrous consequences British economic dogmas have had for the postwar economy of the United States.

The rudimentary feature of the sociological dogma of bioethics is that it argues that the only knowable determinant of human knowledge and behavior is the psychological perception of pleasure and pain in isolated interpersonal transactions. This was the empiricist dogma of Francis Bacon. It is the dogma of Bacon's secretary Thomas Hobbes, of David Hume, and Hume's subordinate in the service of the British East India Company, Adam Smith. Bacon's, Hobbes's, Locke's and Hume's empiricism was codified in the most naked form by Jeremy Bentham under the title of the "hedonistic calculus." During the nineteenth century, John Stuart Mill synthesized the dogma of marginal utility explicitly from Bentham's "hedonistic calculus," as did Jevons and Marshall. All subsequent British and Viennese dogmas of marginal utility are premised directly and entirely on Bentham's "hedonistic calculus."

The common axiomatic assumption of the modern econometric schools, including the Cambridge Systems Philosophy imported into Moscow by way of Vienna, is that the negotiated price of exchanges is a net result of the attempts of buyer and seller to express the degrees of perceived pleasure or pain experienced in isolated transactions. They assume that the monetary value assigned to the exchange converges statisitically upon a price congruent with the optimization of pleasure and pain experienced by both buyer and seller.

In other words, the British and Viennese schools ignore on axiomatic grounds the physics of the social-productive process. For them, capital investment in improved or in worse technologies is simply a by-product of monetary flows governed by price relationships. They deny the existence of any determination of value independent of a transactional determination of price selected in terms of perceived pleasure and pain of isolated parties conducting that transaction.

Professor Milton Friedman is only more radically a nominalist than other outgrowths of the same British East India Company schools, when he reduces the question of political-economic analysis to matters of after-the-fact statistical description.

To compare such political-economic sophistry with analogous cases within the realm of physics, certain British schools and their outgrowths reduce science to mere description in terms of numerical analysis. They ignore questions of ontology, and replace the notion of causation entirely by notions of statistical coincidence among appearances. Adam Smith's "invisible hand" sophistry is typical of such forms of radical nominalism. There is no "invisible hand" in real economics; there are only those who discover, on returning home, that they failed to detect the pickpocket's movements.

Leibniz and his followers take the directly opposite approach. The French followers of Leibniz employed the term *polytechniques* in place of the British term "political economy." Using the identical argument, the German followers of Leibniz invented and popularized the term *technology*. The fundamental question of economics is mastering the principles of practice which govern the relationship between capital-intensive advances in technology and increased productivity of society as a whole. As Leibniz expressed the point: The question is one of increasing wages and profits of goods-production simultaneously.

So, where the British demand that economies be regulated by monetary principles defined according to Bentham's sociological doctrine of the "hedonistic calculus," the school of Leibniz, which I represent, demands that the credit, banking, and taxation systems of nations order the monetary processes of the economy according to the requirements of a *science of technology*.

In other words, we so-called mercantilists begin with those fundamental features of economic processes which the British and Viennese schools axiomatically ignore. Hence, in our knowledge of economic processes, the British approach leads intrinsically toward recurring economic devolution. To use physics terminology, the British superimposition of empiricist sociology on economic policy making produces economic policy which is intrinsically *entropic*, or, if you prefer that term, *dissipative*, in its consequences for economies.

We among the heirs of Leibniz define the premise of economic science to be that form of progress in technology which expresses society's increasing mastery in practice of the lawful ordering of the universe. For us, economic science is properly viewed as a generalized expression of scientific progress otherwise defined. It is the study of scientific progress from the vantage point of those changes in technology which increase the productivity of labor, which is for us the fundamental premise of economic science. *For us, economic science is the science of technology.*

The Principles of Technology

My most recent contribution to economic science is associated with what is known today as the La-Rouche-Riemann method for computer-modeling of economic processes. This approach to computer analysis was undertaken, beginning December 1978, as the obvious next step of application of a discovery which I effected, with aid of Bernhard Riemann's work in physics, beginning 1952.

Although I am principally responsible for those specific innovations in economic science, there is nothing in those innovations which was not either explicitly or implicitly anticipated by Leibniz or by others among my great teachers, such as the early eighteenth-century Ecole Polytechnique or in the work of Riemann himself. I have strengthened the apparatus of the so-called mercantilist school of economic science: I have not given that school any direction not already sought among my predecessors. Consequently, I am properly at liberty to represent my own views and those of my faction more generally as interchangeable views. What I have accomplished, apart from some technical improvements in methods and procedures, is to make possible the reformulation of the previously established principles of my school on a more rigorously generalized basis.

Before plunging now into the technical kernel of this report, I should summarily restate the nature of my own contributions to this field.

My discvery of what is now termed the La-Rouche-Riemann method dates from 1952. In brief, a study of the work of Georg Cantor permitted me to gain more efficient insight into the 1854 habilitation dissertation of Riemann, *On the Hypotheses Which Underlie Geometry*. That disserattion showed me what has proven a feasible approach to determining the causal relationship between advances in technology and consequent rates of real economic growth.

Through teaching that method of analysis, I was fortunate to attract gifted students who became my collaborators, including a number with outstanding qualifications in matters pertaining to physics. Our combined interest in both economic science and also in matters on the frontiers of the contemporary plasma physics, led to a deeper appreciation of the exact connections between Riemann's 1854 habilitation dissertation and an 1859 paper of Riemann's, in which latter paper Riemann predicted the necessary production of acoustical shock-waves in experimental configurations of certain cardinalities.

That latter paper, denounced by British physicists up to the close of the last century, has been proven decisive for solving problems of rocket design and related matters of aerodynamics. It has had other crucial importances. It was the basis on which Erwin Schroedinger launched his successful attack on the electron's inner secrets; it is also crucial for the design of the triggering of devices such as hydrogen bombs; and it is crucial for mastering such frontier matters as the physics of relativistic beams. The most important accomplishment of my associates and myself, in connection with the topics of this paper, has been to show the necessary connection between the cited 1854 dissertation and the 1859 discovery. It is that work in the domain of scientific methodology which governs the more recent advances occurring in the elaboration of the computer applications appropriate to the La-Rouche-Riemann method.

The bulk of the published work on the physics side of the development is being provided by a team headed by Dr. Uwe Parpart and Dr. Steven Bardwell. Here, I shall stress features of the collaboration which are more emphatically my own particular contribution, limiting myself to the practical implications of an oil-for-technology collaboration between Mexico and the United States.

I now direct your attention to the axiomatic features of the problem of technology generally. With an eye to the necessary interconnection between petroleum and nuclear-energy development at this juncture of world history, I summarize the necessary proofs for a conception best labeled *potential relative population-density*. This conception, I shall demonstrate, is the sole premise of economic science.

I shall now argue that this notion of potential relative population-density is the fundamental metric to be employed for determination of the value of terms of mathematical functions describing economic processes, a value which can be rigorously determined without regard for any existing market-determination of prices. I shall demonstrate how economics, defined in this way, directly intersects and enriches the specialty known as thermodynamics. It is in that connection that the unique appropriateness of Riemannian physics for economic analysis is situated. I shall limit myself only by regard for the fact that most of you are not physicists. This will be no impossible difficulty, since the essential points can be demonstrated efficiently to any group of persons familiar with the problems of technology from the vantage point of economics studies.

I shall be profound, but I believe I shall also succeed in being simple.

I contend that all science begins with a personal comprehension of the implications of mortality. The awareness of our mortality leads us away from hedonistic values. We do not eat less, go naked, or adopt vows of chastity on this account; rather, we place the ephemeral moments of necessary consumption into proper moral perspective. We think of the outcome of our mortal lives both for the span of the present times and the duration of our posterity over generations to come. We adopt a purpose for our lives, and the development of our talents according to that adopted purpose. In that way, we ascend from the hedonistic "Inferno" described by Dante, upward toward the higher rationality described in the "Paradise" canticle of that same *Commedia.*

This world-historical outlook on the meaning of our individual lives is the form of conscience out of which rationality is developed within us. We are obliged to govern our judgement and actions in life according to an estimation of the outcome of our acts and acts of omission. We are obliged to discover some lawful ordering of the connection between our actions and the consequences over the larger, world-historical span and duration of reality in which we properly locate our true identities.

This point of view leads to the emergence of the scientific world outlook generally. It leads directly to discovery of the fundamental principles of economic science.

Insofar as we are concerned, in the narrowed sense, with the material side of human existence, we measure our individual life's value in terms of our contribution to humanity over the span and duration I have indicated. That desire to make our individual lives of moral worth confronts us with a twofold question.

First, how can we measure in advance what will be in fact a contribution to mankind? Second, how can we predetermine some efficient causal connection between our choices of personal action and the desired quantity of consequence?

The answer to those two questions is to be found in the following steps.

The general consequence of human activity is the production of human existence. The question of the consequences of our actions is the way in which those actions increase or diminish the power of our species to produce human existence. *This power is expressed in first approximation in terms of the number of individuals which can be self-sustained on an average square mile of habitable land.*

This encounters the practical difficulty, that not all land is equally habitable. Natural and man-altered conditions make one bit of land more or less habitable than another. We seek to express a *power,* a power whose results are proportional to the different qualities of inhabited land. Therefore, the power's results are relative to those alterable conditions. We must measure the power to effect a *relative population-density of self-sustaining populations.*

This confronts us with a further practical difficulty. It is not the number of persons self-sustained presently on land which we must measure. We measure, instead, the *potential* relative population-density.

This is not an imitation of the census projections used for the cruder forms of animal ecology. We are not considering a case in which some external means, or a hereditary range of behavioral potentials enables a certain number of biological individuals to exist on an area of habitable land. The population-density effected expresses a culturally developed *power* of those individuals.

The formal difficulty is that human existence cannot be defined in terms of mere biological necessities, as we might define the biological necessities for an animal or plant species. The more powerful the individual becomes as culture advances, the greater the relative cost of producing each individual of that power. In general, the more advanced the technology, the greater the cost of producing an individual adapted to employ that technology.

For example, as the technology advances, the necessary period of education and related development of youth prior to their entry into the labor force is advanced. The cost of producing a new productive member of the labor force qualified at the university level is obviously greater than in a child-labor-oriented mode or relative poor agricultural production. This increased cost of developing the individual places a greater value on the longevity of the individual. A relatively advanced culture requires a more advanced and costly form of hygienic expenditure and health care. More advanced technology requires greater expenditure of time and production output on those forms of lesisure which nourish the creative-mental powers.

Wages are not an arbitrary matter of negotiations between employer and employee. The proper minimum wage is determined by the level and rate of advancement of technology of production.

The considerations we have just outlined are indispensible but remain rudimentary, inadequate. We must advance another qualitative step.

We have begun to outline the answer to the first of our two questions. We desire to increase the power of future populations in terms of potential relative population-density. We have not yet circumscribed

the full meaning of that objective, but we have at least located the raw material of the idea to be refined. We must postpone the refinement until we have turned our attention for a moment to our second question.

If we are to know the consequences of our individual mortal life's self-development and actions, we must adduce some reliable principle of causality linking our actions to changes in the potential relative population density. *We must be concerned, therefore, to discover how increases in potential relative population-density are ordered.* This brings us to the outer aspect of the interconnection between technology and thermodynamics.

In the early life of our species mankind lived in the savage mode of existence broadly analogous to that of baboons, and had a global population potential of a corresponding quality. Today the human population exceeds four billion persons. Unless President Carter's genocidal "Global 2000" program of mass murder is continued, the population will reach six billion or more by the close of the century.

On condition that we deploy fully fission energy potentials, and also develop rapidly fusion-energy potentials, the present general range of technology at our command would permit a global population of tens of billions on a more comfortable basis than we find in the present population-density of Belgium.

During the next century, unless our species behaves as a collection of idiots, we shall be colonizing nearby space. My proposal to begin the "Earth-forming" of the Saturn moon known as Titan beginning the geophysical year 2057 A.D. is an eminently realistic proposition. We shall have major stations orbiting near Earth. We shall move in ferries to and from these stations and the surface of our planet. Immense fusion-powered spaceships, accelerating to tremendous velocities, will be capable of carrying stations to nearby planets and their moons. By the end of the next century, human exploring parties should have visited the vicinity of some nearby star.

So, the ordering of the population-density of our species can be traced over a span from the Pleistocene to just over a century ahead of our time.

In studying the various known modes of human existence up to the present time, we are able to reconstruct the characteristic ecological features of those cultures in terms of the mode of production of life. These modes can be ranked in ascending order of potential relative population-density. The correlative of such advances in technology is chiefly the twofold increase in the amount of average energy per capita required for each mode of production. Not only does the required energy per capita increase, but this increase proceeds more rapidly than the associated increase in potential relative population-density. In the language of the secondary-school student of chemistry, it appears that advances in technology correspond to increases in the per capita "reducing power" of cultures.

This brings us to the crucial question of economic science. How do we define the interrelationship between thermodynamics and technology? How do we define the sort of mathematical function in which thermodynamics and technology are equated in anything but the nominalist sense of mere numerical analysis? This problem obliges us to adopt the physics of Bernhard Riemann, rejecting the opposing views of Descartes, Newton, Cauchy, and Maxwell. It is only from the standpoint of Riemann and his preceding cothinkers that we are able to define energy rigorously in the terms required to equate it to ordering of technology.

To develop this point for the nonmathematical participant in this conference, something equivalent to the following pedagogical approach is required.

At first approximation, our inspection of the history of technology focuses our attention on such facts as the development of animal husbandry, an advance over hunting and gathering. In a similar way, we consider the development of simple gardening. In both instances, our attention is attracted first to the fact that the amount of usable energy per square mile is increased by these developments. We rightfully generalize from those two cases, to observe that as we proceed toward modern cultures, it is the development of so-called artificial energy sources, apart from captured sunlight currently impinging on the Earth's surface, which increases the usable energy per capita to make possible increases in population-density.

In that first-approximation view, it appears sufficient to measure energy in scalar units such as calories or watts. Looking at the matter more closely, we are soon obliged to reject what may have appeared to us to have been a natural, unavoidable way of thinking about energy. We are obliged to reject the commonplace belief that energy exists in the universe in a form designed to be measured in units such as calories or watts. Energy, we are obliged to recognize, is much more interesting.

We shall make two levels of correction in our initial view of the significance of the development of simple gardening. The first correction is more obvious, but it contains the germ of the notion which leads us soon enough to the second, more profound correction.

The case of simple gardening obliges us to think about energy on three levels. First, we consider the total number of watts of energy impinging on an

average square mile—and a pitiful amount it is. Then, we consider the portion of that total energy embodied in the plant life of the garden. Finally, we think of the portion of the energy used by plant life actually delivered for food and fiber of human consumption. We simplify this picture by examining energy systems of technology in a twofold way. We compare the total energy-throughput of the productive process with the portion of the energy-throughput which performs the desired useful work as an end result. The first, the total energy, we term conventionally the total energy of the system. The second, the energy expressed in the useful work accomplished as an end result, we term the relative free energy of the system.

What has occurred in the emergence of simple gardening is an increase in the ratio of relative free energy to the total energy of the system on which human existence depends.

We must speak of *relative* free energy, rather than simply of free energy. The way in which we define free energy is determined by the way in which we define net work done.

Since the question of causation being explored here is the lawful ordering of advances in technology, it is the advancement of technology (or, the same thing, the advancement of potential relative population-density), which is the only acceptable definition of net work done. Therefore, for economic processes, the free-energy component of the system is limited by definition to that margin of net work done in increasing the potential relative population density of practiced technology of production.

We treat the total energy-throughput of production as defining the total energy of the system. It is the ratio of free energy, as we have defined it, to the total energy of the system which becomes the key parameter for our empirical researches.

The importance of using that free-energy ratio, and not some other possible definition of free-energy ratio, is demonstrated by considering the case of "zero technological growth."

Any technology defines aspects of nature as altered by mankind as "raw materials" for essential production. Broadly speaking, such raw materials are relatively finite in extent. Although the absolute magnitude of such resources may be adequate, the amount of such resources which may be exploited at acceptable social costs of production is always relatively finite.

Consequently, even if a society were to maintain a fixed or even a reduced population, the continued existence of that culture depletes "raw materials," raising the social costs of production in a way which converges upon a rise of costs of production above the equivalent value of product produced. Therefore, any society following a zero technological growth policy has doomed itself to die. If that society chooses to revert to a simpler level of technology, it merely accelerates such decay with accompanying massive genocide. The potential relative population-density falls. When the potential falls significantly below the level of the existing population, famine, epidemic, and so forth cause a twofold effect: a genocidal shrinkage of population accompanied by cultural devolution.

For that reason, the "appropriate technologies" doctrines recommended to developing nations are inherently genocidal policies more savage in their consequences than the Nazi regime imposed upon the conquered territories and populations of wartime Europe. Similarly, the "small is beautiful" and related "environmentalist" doctrines are nothing but a prescription for mass murder on a vastly greater scale than the Nazis accomplished.

The same can be said for the opposition to deploying nuclear technologies. Without adding more than 5,000 gigawatts of nuclear process heat to world capacities over the course of the coming two decades, hundreds of millions, perhaps billions of human beings will die—a genocide potentially a hundredfold greater than that perpetrated by Hitler's regime.

To maintain a culture at a constant level of potential relative population density, a certain amount of technological progress must occur. The rate of progress required for this purpose must offset the increased materials costs intrinsic to using technologies for materials being relatively depleted. This portion of the increment in technology deployed is not net work done, is not free energy. It is an integral part of the cost of maintaining the total system of production in a condition equivalent to *status quo ante.*

It is useful at this point to emphasize that the indicated free energy of the system of a national economy is in mapping correspondence with a properly defined net operating profit of such a national economy, treating that economy as if it were a single agro-industrial firm. If we can assume that all of this net operating profit is converted into relative advancement of the productive technology of the society, such investment practices represent the required realization of free energy.

Now, let us return to make our second modifying statement concerning the illustrative case of simple gardening.

We warned that we are engaged in overthrowing the commonplace notion that energy can be measured fundamentally in terms of scalar units of counting,

such as calories or watts. Now, we emphasize the point that plant and animal food do much more than merely to concentrate solar energy. They are biological processes which transform indigestible sources of inorganic energy into the form of food. These processes transform low-grade inorganic energy, of low free-energy ratio, to high-grade organic energy, of a relatively high free-energy ratio. It is not the number of calories of solar radiation embodied in food which is crucial, it is the chemical organization of foodstuffs into forms of organization of energy which are relatively high in free-energy ratio with respect to the processes of human metabolism.

This example implies the kernel of Riemannian physics. In place of scalar notions of units of energy, we have insisted with aid of illustrations that it is the free-energy function of processes interpreted thermodynamically which defines the fundamental significance of energy. We are insisting, as Riemann does in his 1854 habilitation dissertation, that the definition of net work done in the universe is the work of transforming physical processes from processes of relatively lower to relatively higher orders of organization. To use specialist terms, the correlative of such transformations is, in terms of reference of physical space topology, an increase in the density of singularities. That same correlative is otherwise expressed in thermodynamics as leaps in the free-energy ratio.

By combining the notions of organization peculiar to physical-space topologies with functions in terms of free-energy ratios, we define the required general form of solution to the deterministic problems of the science of technology. This proper fusing of hydrodynamics with thermodynamics defines hydrothermodynamics, the necessary form of the science of technology.

Historical Roots

Before proceeding to our concluding points of this report, we must reassure the participants that the point of view we have just outlined is not extraordinary in the history of modern physics. We quickly identify some leading precedents for what we have done. Those specialists who wish to explore this aspect of the matter more deeply are referred to papers of my immediate collaborators on these indicated topics.

There is a line of development in modern physics, leading through Cardinal Nicholas of Cusa's seminal treatment of the work of the Platonic scientist Archimedes. This continues through Francis Bacon's immediate adversary, the great English scientist who discovered the magnetic plasma back in the late sixteenth century, William Gilbert. The main line continues with Gilbert's cothinker, Johannes Kepler, and through Leibniz and his followers. The heirs of Leibniz's methodological approach include the Ecole Polytechnique of Gaspard Monge and Lazare Carnot, and the German heirs of Leibniz centered in the eighteenth and nineteenth century Gottingen University, including Riemann, Karl Weierstrass, Georg Cantor, and Max Planck.

This line of scientific development is in contrast on all crucial issues of methodology to an opposing, Aristotelean school, which includes Descartes, Newton, Cauchy, and Maxwell. For what are essentially politically motivated reasons, the reputation of the Aristotelean faction is relatively hegemonic, and most school instruction today acknowledges the work of the Platonic current of Cusa, Kepler, Leibniz et al. only to the extent that accomplishments of the Platonic current are interpreted on terms methodologically acceptable to the Aristotelean school. As a result, even where the published work of Platonic scientists such as Kepler, Leibiz or Riemann is readily available and generally known, the essential methodology of the Platonic school is almost unknown even to most specialists.

It is sufficient to cite two classical examples of this, examples chosen because of their direct bearing on what we have just outlined above. Both cases will be inclusively treated in a forthcoming documentary text on Riemann's 1854 paper written and edited by Dr. Uew Parpart.

The basic principles of modern relativistic physics were implicitly developed in Kepler's great work. As Kepler devotes approximately half of his *Comsographicum* to proving, the solution to the determination of the solar orbits was accomplished by proving that the orbits were ordered in proportion to a series of Platonic solids. By this method, Kepler also proved the necessary existence of an additional planet in an orbit we presently associate with the asteroid belt.

Despite the overwhelming evidence in Kepler's own work, commentators trained in the Aristotelean standpoint rather consistently engage in the most awkward of intellectual contortions attempting to prove that Kepler's use of a series of Platonic solids has nothing to do with the determination of the solar orbits. Yet, once that simple, documented fact of Kepler's solution is acknowledged, we are obliged to recognize that the solar system is ordered hydrodynamically, is ordered in terms of *a geometrically-increasing density of singularities in its physical topology.*

This is heavily underlined by another implication

of Kepler's laws. Without considering the masses of the solar system, Kepler adduced laws which rigorously determine gravitational relationships within the solar system. That is, the work done in moving a body within the solar system—including throwing of a rock on the surface of the Earth—is to be measured as nothing but work done against the ordering of the solar system according to Kepler's law.

These two cited features of Kepler's work suffice to prove that the lawful ordering of the universe is hydrodynamic (hydrothermodynamic), and is not according to the terms of reference adopted by the modern Aristoteleans.

The second illustrative case is the widespread, erroneous belief among even specialists that the relativistic schema of Albert Einstein and Hermann Weyl is "Riemannian." The falseness of that opinion is conclusively demonstrated by two coherent errors in the Einstein-Weyl schema. First, there is the effort to reconcile the Aristotelean version of the theory of functions as typified by Cauchy with the irreconcilable notion of the theory of functions common to Riemann and to Cauchy's immediate adversary, Legendre. This is particularly horrifying, since Einstein's and Weyl's work was done after Max Planck had proved the Leibnitzian least-action principle (the quantum of action), a proof which totally discredits Cauchy's notion of physics. Second, Einstein and Weyl falsely represent as "Riemannian" the Pythagorean "tiling" of physical space in the very small. This latter error arises from the effort to reconcile a relativistic universe in the large with scalar notions of energy and fixed speed of light in the very small. Both features of the Einstein-Weyl schema reject explicitly every cardinal principle of Riemann's published work on physics and geometries.

As in the cited matters pertaining to Kepler's work, the Einstein program represents an effort to fit Platonic physics to the Procustean Bed of Aristoteleanism. The issue is the same as Leibniz's rejection of Descartes's fallacious conceptions of physical space in connection with the a-priorist Aristotelean notion of momentum used by Descartes. Cauchy's attack on the entirety of the work of the Ecole Polytechnique was nothing but an effort to conduct an inquisition against Leibniz's methodology in favor of Descartes's error.

The notion of hydrothermodynamics we have outlined in terms of economic processes above is not alien to physics, but only alien to Aristotelean intrustions of methodological error into the work of physics specialists.

The growing reputation of the LaRouche-Riemann model has been significantly the result of the successful projection of the consequences of introduction of the so-called "Volcker measures," a projection first published in an early November 1979 issue of the *Executive Intelligence Review*. This forecast analysis projected precisely the catastrophic effects of those high interest rate measures, in sharp contrast to the failure of every econometric study published during the same general period.

The spectacular success of the LaRouche-Riemann projection at that juncture was the result of the fact that this method treats as primary what are usually termed "nonlinear" transformations in economic processes. The combined effect of the Volcker measures of October 1979 and the immediately following and foreknown leap in petroleum prices, was to introduce a phase change in the state of the U.S. domestic and in the international economies. Although the LaRouche-Riemann method is inherently qualitatively superior to extant econometric method under all circumstances, the advantages are usually less remarkable in cases of ordinary short-term projections. It is in the case of longer-term projections, or under conditions of a phase change in the economic process, that the advantages of this method tend to take such relatively spectacular forms as in the case of the November 1979 published report.

The key to this qualitative advantage is inherent in the approach to the problem of so-called nonlinearities. This advantage does not originate in special procedures of numerical analysis. It originates in two features of the method used. First, the method distinguishes rigorously between productive and nonproductive categories of input and ostensible output, which no known econometric procedures so far attempt to do. Second, the analysis is premised on the functional correlation of the social and thermodynamic aspects of the process, as emphasized above.

We summarize these crucial distinctions before turning to our concluding arguments concerning the oil-for-technology option.

It is urgent that all economic policy makers recognize the deadly fallacies intrinsic to continued use of the Gross Domestic Product mode of national-income accounting. It is the peculiarity of that accounting-practice that a nation could close down its entire goods production and yet apparently increase its Gross Product simply by employing the unemployed at high nominal wages in nonproductive categories such as gambling, drug distribution, prostitution, and administration.

National economies must be treated as if the entire economy were a single agro-industrial firm. That is, administration, services and other non-goods-producing categories of employment and putative "output" should be viewed as overhead expense, and

goods input be viewed as the sole net output of the economy.

Secondly, we must demystify the notions of economic process nonlinearities.

In the Leontieff and analogous forms of input-output mapping of national economies, we list each sector of the economy twice. We list it once as a row, and once again as a column. The row shows the distribution of total output to consumption by other sectors. The column shows the ratios and sources of inputs. From the linear coefficients associated with those input-output relationships, systems of linear equations are adduced, which are employed for economic modelling.

The effect of technological change is to alter the composition of columns and rows, to alter the pathways, and to alter the values of the coefficients. It is the attempt to leap from a linear model representing the economy prior to such changes, to a linear model representing the economy after such a change, which causes the appearance of what are usually regarded as "nonlinear" transformations in the attempted mapping of economic processes.

The kinds of changes in the structure of "input-output" tables which trigger such nonlinear manifestations are of two general classes. The happier case is the effect of significant progress in productive technology. The development of the automobile may be a disaster for the buggy-whip manufacturers, but it is a boon for the economy as a whole. The other case is associated with devolution of the economy, such as leaps in costs of energy sources or the changes in real flows caused by leaps in interest rates.

As we have emphasized earlier, in real economies two processes are constantly occurring simultaneously. There is some degree of cumulative technological progress. Even the spread of preexisting relatively advanced technologies to replace more backward technologies has the general effect of technological progress. There is a contrary devolutionary tendency, caused by relative depletion of certain sorts of resources.

Both kinds of technological shifts involve the kinds of interconnections among social-productive and thermodynamic considerations we outlined above. Both involve at least a creeping change in the structure of the appropriate input-output matrix.

Over relatively short-term intervals it is often possible to project linear sorts of econometric estimates. These projections are fallacious on principle, but the degree of short-term error introduced by such fallacies may be relatively small. However, if the process of creeping change has brought the economic process to the verge of phase change, even short term econometric projections fail disastrously, as the cited case of the Volcker measures illustrates that point.

The solution to this problem of analysis is to select successive technological changes in the economic process as the primary data of analysis. In other words, define the economic process in terms of the net work done in terms of positive changes in the free energy ratio.

The implied proper approach for accomplishing this is to treat successive technological transformations of the economy in the manner Kepler solved the ordering of the solar orbits, as a succession of Platonic solids, a succession characterized by an increase in the density of singularities. This approach unifies the notion of structure of the economy with the notion of the simple free-energy ratio. It is that correlation which defines the economic process hydrothermodynamically.

The paradigm for such approaches to analysis of economic processes is the cited 1859 paper on accoustical shock-waves of Riemann. We treat the generation of successive, ordered phase changes in the economic process as what physicists term long-wave phenomena. These phase changes correlate directly with the cardinalities of the economic process. We treat the other, relatively ephemeral, epoch to epoch transformations as short-wave phenomena.

It ought to require nothing more than a startled act of recognition to discover that the kinds of structures we are specifying in such forms of economic analysis are statements of *required scientfic technologies,* specific kinds of *discoveries.*

The significance of that fact begs a question too often overlooked. Too often the business of economic analysis is falsely assigned the role of transforming a computer into a kind of crystal ball. The proper function of economic analysis is not to be a crystal ball edifying parasitical Olympians. The function of economic analysis is to forewarn us of what management actions we must take to shape the future.

What do we rightly demand of the future? We demand, properly, an increase in the potential relative population-density of our species. We wish to determine what are variously our necessary and optimal choices of action to bring about that increase in potential.

As each of us looks so at the needs of his or her nation, we are able to identify certain needs as being satisfied by investment of developed kinds of known technologies. Other needs are specified in terms of technologies which must be available in developed form perhaps five or ten years ahead, or perhaps even twenty. Both kinds of foreknowledge represent forward investment decisions as well as proportioning of

investment priorities. The second type of specified requirement reminds us properly of the United States' approach to the Manhattan Project or of NASA's successful organization of the moon landing. These are forewarnings to a corporation or national government of the need to concentrate scientific and related resources for development of the needed technologies on time.

What we ought to be measuring from moment to moment in the economic process is not so much short-term profit-and-loss variations, but the degrees of increase of future potential being accomplished by combined investments in technological development of production and research allocations for developing needed new technologies on time.

It is by settling the problems of long-wave analysis first that we develop the criteria for attacking management problems associated with short-wave analysis. One can progress easily from long-wave analysis to short-wave analysis. The problem with the very idea of econometrics as practiced today is that it ignores the decisive long-wave problem, partly because it is impossible to reach long-wave projections from the short-wave basis adopted by econometrics.

In summary, the way in which "nonlinearities" are incompetently defined by Cambridge and related varieties of systems analysts is the real problem of such "nonlinearities." It is not that apparent nonlinearities need to be solved by some clever bit of numerical analysis. What is needed is to abandon those fallacious marginal-utilitarian dogmas of short-wave numerical analysis on which linear modeling has been premised.

Oil-For-Technology

If the government of the United States were to adopt immediately the kind of oil-for-technology agreements earlier proposed by the government of President Lopez Portillo, two categories of benefits would quickly ensue.

The first class of benefits would be those economic and social-politcal advantages to the two trading partners. The second class of benefits are subsumed by the change in the global strategic geometry resulting, chain reaction fashion, from the establishment of such a relationship.

Let us assume, for purposes of discussion, that the projected increase in Mexico's production for oil exports to the United States were to reach 2.5 million barrels a day. Let us assume that this means that over the first decade of such an agreement Mexico would receive the current equivalent of $150 billions in high-technology capital-goods imports, in addition to other categories of purchases effected with the oil revenues.

It is not so impressive a figure when one notes that this is less than $2,500 invested for each Mexican living in the year 1991. Between $5,000 and $10,000 imported per individual would bring us much closer to the requirements for a developed national economy. If the United States were to generate the scale of long-term export credits to Mexico which Mexico's indicated levels of petroleum earnings would fully justify, a capital-goods import figure in the order of $5,000 to $10,000 per capita becomes feasible.

In terms of real economics, such an agreement would solve much of the most pressing problems of both nations. It would spark a capital-goods-producing employment boom in the United States, stabilize the U.S.A.'s long-term balance of payments, and ensure Mexico's fulfilling the goals it has set for the year 2000.

The exact figures are not the issue on which to focus here. The point of all policymaking is to view the matter in terms of the proper orders of magnitude. If the United States were to improve its policies toward Mexico in that fashion, there would be chain reaction effects throughout the world. Together with such export-oriented partners as France, the Federal Republic of Germany, and Japan, the United States would be setting a pattern for new relations with not only Colombia, Brazil, and India, but with developing nations generally.

The case of Brazil illustrates the crucial points. Brazils' development has been frustrated chiefly in two ways. Brazil's monetary system creditors have not only looted that economy at accelerating rates, though usurious refinancing arrangements. Under conditionalities doctrines, Brazil has been forced to resort to such counterproductive measures as a destruction of the Amazon rain forest, which has caused incalculable costs to many nations through disastrous shifts in global weather patterns consequent upon shifts of the Amazon High into the Atlantic. Brazil requires a rescheduling of its foreign debt at low interest rates, and approximately twenty initial gigawatts of process-heat from nuclear-energy sources. There are many other needs, but the need for massive infusion of nuclear-energy installations is outstanding.

Apart from those specific problems, Brazil is exemplary of the too-little understood problem now affecting all of the semi-industrialized developing nations. These nations can not become economically and socially stable in the world market unless the rate of capital investment reaches at least a level we may usefully describe as a *break-even point.*

In every developing economy, the relatively developed subsector is burdened by massive drag of relatively large impoverished subsectors. The impoverished subsectors include large populatons which are not currently sufficiently productive to produce enough even to maintain the current minimal standards of income of those households. These costs of marginal sectors of production and population drain off massive portions of what might otherwise be investable capital funds developed by the relatively developed subsector.

The developing nation's economy must not only face the same problem as an industrialized economy, to keep the rate of realized technological progress above the level of entropic tendencies. It must invest in developing the economy at rates sufficient to offset and reduce the drag of its impoverished subsectors of production and population.

The commonest major problem is the effects of British Commonwealth and United States' practices of dumping agricultural products at low prices on the world market. On the surface, cheap food appears to be charitable policy. However, when food is bought from farmers at a price below what is properly defined as a parity price, agricultural development—the overcoming of hunger—becomes almost impossible.

In the case of the United States, since the 1790 census the rural labor force has been reduced from 90 percent to less than 4 percent today. Less than 4 percent of the U.S.A.'s labor force produces the food and fiber sufficient for good nutrition of the entire population—with a substantial exportable surplus in addition. This has been accomplished with vast amounts of industrially produced energy in the form of fertilizers, trace elements, irrigation, and mechanization. This technology requires family-owned farms in the order of hundreds to thousands of hectares per farm.

To transform a backward nation, such as the People's Republic of China with three-quarters of the labor force mired in backwardness of rural production, to a modern nation with less than 10 percent of the labor force producing the required food and fiber, means massive capital inputs into the rapid modernization of agriculture in extensive modes. It requires rapid development of modern industrial workplaces to meet agricultural requirements and to absorb portions of the labor force shifting from rural to urban forms of employment.

It also requires a parity price paid to farmers to cover the operating and capital costs of modern production.

We must set targets which aim to bring all middle-range national economies' rural labor force to less than 20 percent by the end of this century, and preferably to less than 10 percent by that time or a few decades later. We require investment programs of a magnitude adequate to meet the combined agricultural and industrial needs such a population shift implies.

We must end the policy of bringing the price of food down to the reduced income level of marginally productive households. We must, instead bring the earned income of households up to the level needed to secure food supplies priced on the basis of parity prices paid to agricultural producers. The process of bridging the gap involves, as we know very well in Mexico, a significant interim expenditure of national revenues on subsidies to marginally incomed consumers. This cost must be viewed as a capital-investment cost, an included overhead charge against the cost of producing the entire national output. It becomes truly a capital investment rather than a Roman "bread-and-circuses" cost only if it is complementary to adequate rates of investment in improving the scale and technologies of agricultural and industrial production.

Once we take such critical factors of development into our accounts, we begin to see what ought to be understood as break-even rates of investment in developing economies such as Brazil.

The major feature of global investment over the coming several decades must be nuclear technologies. We all should know that the neo-Malthusians' warning about petroleum shortages are greatly exaggerated. The world has vastly greater reserves of petroleum than the recent Carter administration was willing to permit anyone to report. We also have vast reserves of coal. However, the assumption that we can postpone nuclear-energy investment because of such so-called fossil-fuel reserves is a dangerous fallacy.

First, as we should recognize without need to debate the fact, the cost of exploiting petroleum reserves and coal reserves must rise significantly in respect to present technologies. Since agriculture and industry are as sensitive to short-term rises in energy costs as to rises in interest rates, we will require increasing emphasis on alternative, cost-stable sources of energy. Only nuclear-energy capacities can meet that need. In any sanely ordered state of world affairs, over the next decades there will be an accelerating shift in uses of fossil fuels, from use as fuels to use as petrochemical raw materials. Our basic sources of energy will become neutrons, protons, and electrons—nuclear process heat (neutrons), hydrogen gas as fuel (protons), and electricity generated by these two sources (electrons). If we develop nuclear sources

at a sufficient rate, we shall experience results like those which space exploration introduced to the development of computers. During a recent period, the cost of processing a unit of data in computers has approximately halved each year. Improvements in costs of nuclear energy will not be quite as spectacular, but the rate of improvement can easily become considerable.

Cost is not the most urgent reason for development of nuclear technologies. To achieve the free-energy ratios we shall require over the coming decades, we require primary sources of energy at energy flux densities way beyond those achievable with fossil-fuel programs.

Three examples are sufficient for our purposes here.

The world is confronted with a crisis in fresh-water supplies. We must desalinate water on a vast scale at costs consistent with converting even deserts such as the Sahara to habitable agricultural regions. In general, desalination at acceptable costs on such a scale requires very high energy-flux-density sources of process heat.

The chemical fuel of the future must be hydrogen gas produced chiefly by the reductive disassociation of water. This becomes economical only with very high energy-flux-density sources of process heat.

To meet impending bottlenecks in supplies of minerals, we must begin now to implement a method of extraction of costly metals known as isotope separation. This is a technology which becomes economical within the orbit of thermonuclear science.

This does not permit us to be satisfied with fission-energy technologies. Fission energy is to be viewed essentially as an indispensible bridge to the period in which fusion technologies become the dominant source of the world's energy supplies. We must increase fission types of nuclear-energy supplies vastly over the coming two decades, during which period initial commercial use of fusion technologies can be brought on line. We must continue to deploy fission technologies as a complement to fusion technologies for perhaps two or three decades into the next century, until our needs can be satisfied more or less fully by second-generation classes of fusion-technology sources.

However, even to reach adequate levels of fission-energy deployment, we require certain initial steps in the field of fusion-energy technologies.

The world will require more than 5,000 gigawatts of nuclear or equivalent added energy sources over the coming two decades. Estimating that each gigawatt means something in the order of one ton of radioactive fuel to be reprocessed, we must recognize the massive scale of fissionable fuel and its reprocessing that this involves. Approximately 95 percent or more of fuel charges reprocessed can be recycled, but the 3 percent or more undesirable radioactive residue becomes a significant problem in terms of 5,000 gigawatts of energy production. Purely fission approaches can not supply adequate amounts of fuel or handle the accumulation of undesired waste. Fusion technologies are needed for both.

Every nation which intends to have a technological future, including most of the semi-industrialized developing nations, must now begin to develop nuclear technologies. In addition to the tens of gigawatts of nuclear energy required by nations such as Mexico or Brazil over the immediate decades ahead, these nations must become masters of thermonuclear technologies, developing the research and training programs required, as Pemex has done in connection with petroleum technologies. Along that road of Riemannian physics one finds the quickest road to the future.

The proper development of industry, agriculture and urban life over the coming decades is achieved by outlining the skeleton of energy production at levels consistent with year 2000 A.D. levels of per capita energy utilization and energy flux densities. Government, industry and agriculture must then string the required specific industries and technologies to that energy skeleton like beads on a string. We must think of plugging in industries, like attachments, to the skeleton of energy supplies.

The problem for Mexico, from the standpoint of economists in the footsteps of Leibniz, is that of trading its twentieth century surplus resource, petroleum, for the technologies of the 21st century. If I were advising the government of Mexico, I would whisper to the ears of my friends in Mexico: "Mexico must have not only nuclear plants, it must have also a reprocessing capability, and must have educational and research centers through which thousands of Ph.D.-equivalent physicists and chemists specializing in advanced plasma physics technologies are developed over the coming two decades."

Mexico would benefit. It would be exchanging a surplus of a potentially obsolescent energy source, petroleum, for twenty-first century energy technologies as well as up-to-date twenty-first century industrial and agricultural technologies. The equivalent of 300 billions 1981 U.S. dollars in capital investment over the coming decade would be about the order of magnitude I would desire for Mexico were I required to make a recommendation.

The United States would benefit considerably. The Caribbean coast of the United States would

blossom with new superports at places such as Galveston, New Orleans, and Mobile. The riparian transport systems, the railroads, and air freight capacities would blossom anew. All this would be catalyzed by the need to process capital goods and related traffic with Mexico and other nations. The export of $150 billions or more of capital goods from the United States to Mexico would accelerate investment and capital turnover in the most advantaged basic industries of the United States, accelerating technological progress in those industries, as well as increasing productive employment in the United States. A government of the United States which rejected Mexico's offer of an oil-for-technology program would be a government which ought to be certified to a mental hospital on clear grounds of galloping insanity.

Such a relationship would be fully equitable to both nations. Neither is picking the pocket of the other. The blossoming of wealth in both nations arises not from taking from another pocket, but from the leaps upward in productivity of the labor force of each. As Alexander Hamilton wrote in 1791, in laying down the basic principles of the American System, it is only from advances in the productive powers of labor that the wealth of nations is derived.

Financing Oil-For-Technology

We have now reached the concluding point to be considered in connection with oil-for-technology. How do we organize credit, banking, and taxation policies within and between nations in such a fashion as to ensure the orderly trade and the economic development required? The kernel of the solution is provided by Alexander Hamilton's reports to the U.S. Congress on credit and banking.

In matters of monetary practice, as in economic science, the difference between a free-trader and a dirigist is summed up in the fact that the dirigist makes a policy distinction between a productive farm and a house of prostitution. Professor Milton Friedman has agreed to this distinciton, and most emphatically, if from the opposite view.

The way to avoid the inflationary disaster which has been destroying the United States is to ensure that taxation and credit for investments in productive ventures are greatly cheaper than for nonproductive forms of speculation. This can not be efficiently accomplished unless the sovereign government of a nation exerts a monopoly in the creation of credit in excess of the lending of savings. It is through a combination of taxation policy and national banking that any sovereign republic orders properly its fiscal and monetary affairs.

The principle of credit creation is summed up in the following manner.

By definition, the net operating profit of a national economy consists of a combination of productive capacity and useful goods in excess of the total costs and expenses of production. This margin of net operations profit corresponds to a deficit in the pre-existing supply of money in the national economy. To circulate the capacity and goods corresponding to that margin, an additional supply of money must be placed into circulation.

This is properly accomplished in a manner similar to that specified by Hamilton's outline of the American System. A national bank must print the additional supply of gold-reserve-based money, which that bank then lends directly or indirectly in the form of secured loans to purchasers of the margin of productive capacity and goods involved.

The most prudent means for such lending to private persons and business entities is through participation in loans issued by private banks. The private bank loans savings against security offered by creditworthy borrowers. A portion of the total loan is provided to the private bank at nominal interest rates by the national bank. This loan-participation by the national bank is limited to designated categories of borrowing. Those categories are properly limited to instances of productive investments defined as national priorities by the government.

Granted, if the government prints banknotes for governmental direct purchases of goods and services, such issues do become inflationary when the amount circulated is either excessive, or in cases for which the flow of the issue is to nonproducive categories. However, if the policies of national banking outlined are followed, the effect is deflationary.

Since the loans issued are secure loans, and since proper categories of national bank participation (except for emergency conditions of disaster loans) involve investment in advancement of productive technologies, these loans promote increases in national productivity, and are therefore deflationary in effect.

There is no need for the national bank to predetermine the exact amount of currency to be loaned in this manner. By restricting the categories of loan-participation, and by relying upon participation from private banks, the government's and national bank's actions are limited to ensuring an adequate supply of lending for the demand represented by the private banks' applications for such participation. In other

words, the national bank lends up to the limit of its rules of participation in private bank lending to worthy borrowers investing in approved categories of investments.

Provided that such national-banking policies are followed by the government, the sole remaining source of danger of monetary inflation comes from the multiplier processes of private banking. This involves two problems. The first problem involves directly the domestic private banking system. The second problem area is foreign banking intrusions into the domestic market.

The multiplier effect of domestic private banking is controlled by regulation of the categories of reserve requirement imposed upon private banks. All but cash deposit debits must be held at very high reserve ratios, making the national banking system the sole major source of new credit generation in excess of savings of cash.

Today the major problem of developing nations is the flow of fiat-credit generated by offshore, unregulated Eurodollar banking into refinancing of external debt of nations, as well as into purchases within the national sector. The Eurodollar sums lent are essentially either drug runner's debits or fictitious money, and do not represent real values deposited with the lending banks. The use of such funds for usurious refinancing arrangements and as leverage for substantial, nonproductive categories of purchases within developing economies, is the principal source of monetary inflation throughout the developing sector as a whole. The morbid spectacle of the Cayman islands lending large sums of fictitious value at usurious rates to the United States illustrates the insanity of such practices.

We require a new international rediscount arrangement, based on the use of reserve gold at parity prices of production for monetary-gold reserves. Such new facilities—which could be constructed around the launching of the proposed European Monetary Fund—must bypass and collapse the prevailing, hyperinflationary usury of the Eurodollar market.

Pending such long-overdue junking of the decayed vestiges of the Bretton Woods system, sovereign states must exert their sovereign powers of defense against such abuses. On condition that high rates of profitable investment are maintained within a national economy, defensive measures of exchange controls are legitimate and sometimes indispensible protection of national sovereignty against modern Caribbean and Hong Kong monetary pirates. In addition, a foreign financial institution seeking to do business within a nation must either make its foreign home operations subject to acceptable standards of banking, or forego the privilege of participating in the affairs of the nation's economy.

An important, present alternative to being usuriously victimized by the international Eurodollar pirates, is the organization of credit relationships on a state-to-state basis. In the case of the United States, the Export-Import Bank is the obvious vehicle for facilitating oil-for-technology agreements. This requires that the U.S. Congress authorize increases in the capital of the Export-Import Bank up to the level of combined petroleum-earnings deposits and additional credit extended to Mexico.

In other words, each dollar earned by Mexico's export of petroleum to the United States would be paid to Mexico directly in an account in the Export-Import Bank. An Export-Import Bank overdraft to Mexico's credit could be added to the deposit value of that same account. The petroleum companies purchasing that oil would buy the purchased delivery contracts from the Export-Import Bank. The entire contract negotiated between the two governments would then establish Mexico's line of credit for agreed categories of purchases.

In that way, Mexico could immediately begin importing capital goods required against the value of the contract.

If I were advising the government of Mexico on such matters, I would strongly recommend the adoption of the kinds of national-banking and taxation policies I have indicated as complements to the negotiation of the oil-for-technology contract state to state. Such measures would expose fully the purely mythical argument of Professor Lawrence Klein that oil exports must in some miraculous way inflate Mexico's economy.

Such arrangements represent in principle the model for a new economic order in North-South relations. Mexico enjoys the special world-historical importance of being among those leading developing nations whose special circumstances enable it to bring the beginning of such a new economic order into being.

The internationally active economic scientist Lyndon Hermyle LaRouche, Jr., is most widely known as a prominent challenger for the 1980 U.S. Democratic Party presidential nomination, opposing Senator Ted Kennedy and James Carter. His present official position as a U.S. political figure is advisory committee chairman for the influential National Democratic Policy Committee.

Apart from his functions as a political figure, he is chairman of the board of directors of an international political intelligence news service, Executive Intelligence Review Research, Inc., and is a member of the board of directors of the scientific association, the Fusion Energy Foundation.

LaRouche's Oil-for-Technology Program

In his address March 9 to the Monterrey Institute of Technology's "International Symposium on Economics," Lyndon LaRouche outlined an "oil-for-technology" initiative that is provoking broad interest among policy makers on both sides of the border.

Based on agreement between the governments of the United States and Mexico, LaRouche reported, the oil-for-technology approach would "represent in principle the model for a new economic order in North-South relations." Mexico, he continued, "enjoys the special world-historical importance of being among those leading developing nations whose special circumstances enable it to bring the beginning of such a new economic order into being."

In follow-up discussions with industrialists and economists in Monterrey and Mexico City, LaRouche has detailed specific features of the initiative which would bring enormous economic and political benefit to Americans and Mexicans alike. These proposals include:

1 Increased Mexican production of oil for export.

"Let us assume, for purposes of discussion, that the projected increase in Mexico's production for oil exports to the United States were to reach 2.5 million barrels per day," said LaRouche. "Let us assume that this means that over the first decade of such an agreement Mexico would receive the current equivalent of $150 billion in high-technology capital-goods imports, in addition to other categories of purchases effected with oil revenues.

"It is not so impressive a figure when one notes that this is less than $2,500 invested for each Mexican living in the year 1991. Between $5,000 and $10,000 imported per individual would bring us much closer to the requirements for a developed national economy. If the United States were to generate the scale of long-term export credits to Mexico which Mexico's indicated levels of petroleum earnings would fully justify, a capital-goods import figure in the order of $5,000 to $10,000 per-capita becomes feasible. . . .

"Mexico would benefit. It would be exchanging a surplus of a potentially obsolescent energy source, petroleum, for 21st century energy technologies as well as up-to-date 21st century industrial and agricultural technologies. The equivalent of 300 billion U.S. dollars in capital investment over the coming decade would be about the order of magnitude I would desire for Mexico were I required to make a recommendation."

2 $100–$150 billion in U.S. exports over 10 years.

The "oil-for-technology" agreement with Mexico, without considering desirable, similar arrangements with other semi-industrialized nations like India, "would spark a capital-goods-producing employment boom in the United States, stabilize the U.S.A.'s long-term balance of payments, and ensure Mexico's fulfilling the goals it has set for the year 2000," reported LaRouche.

"The export of $150 billions or more of capital goods from the United States to Mexico would accelerate investment and capital turnover in the most advantaged basic industries of the United States, accelerating technological progress in those industries, as well as imcreasing productive employment in the United States. A government of the United States which rejected Mexico's offer of an oil-for-technology program would be a government which ought to be certified to a mental hospital on clear grounds of galloping insanity."

3 Upward revision of annual Mexican growth targets to 12 percent.

The Mexican government's current economic development program envisions annual growth rates of from 7 to 8 percent. Computer simulation of the Mexican economy on the LaRouche-Riemann model shows that such growth rates, while high relative to most nations, are still inadequate to overcome the bottlenecks in such areas as transportation, education, and agricultural productivity that Mexico must overcome to fully industrialize by the twenty-first century.

Such high rates of growth, he pointed out, are not inflationary, provided that the combined rate of increase in industrial and agricultural output for reinvestible surplus is greater than the rate of credit expansion required to sustain the rates of investment required for increased output. That is assured by reliance on the most advanced technologies, in particular, nuclear energy sources.

4 Mexico must go nuclear.

"The major feature of global investment over the coming decades must be nuclear technologies. . . Since agriculture and industry are as sensitive to short-term rises in energy costs as to rises in interest rates, we will require increasing emphasis on alternative, cost-stable sources of energy. Only nuclear energy capacities can meet that need," LaRouche stated.

"Every nation which intends to have a technological future, including most of the semi-industrialized developing nations, must now begin to develop nuclear technologies. Nations . . . such as Mexico must become masters of thermonuclear technologies, developing the research and training programs required, as Pemex has done in connection with petroleum technologies."

LaRouche has also proposed that Mexico complement nuclear with advanced MHD natural-gas-based energy production—especially in the eastern parts of Mexico where natural gas is plentiful. He has recommended that American companies agressively join the international bidding for such nuclear and MHD contracts.

5 Modernization of Mexican agriculture.

At present, a vast part of Mexico's farm sector is poverty-stricken subsistence agriculture, representing an "overhead" cost drain on healthier economic sectors because of its inability to generate even sufficient income-equivalent output to maintain itself. An immediate development objective, therefore, must be to eliminate subsistence agriculture, not to subsidize its continuation.

"In every developing economy, the relatively developed subsector is burdened by massive drag of relatively large impoverished subsectors," LaRouche reported. "The impoverished subsectors include large populations which are not currently sufficiently productive to produce enough even to maintain the current minimal standards of income of those households . . . draining off massive portions of what might otherwise be investable capital funds developed by the relatively developed subsector. . . .

"We must set targets which aim to bring all middle-range national economies' rural labor force to

less than 20 percent by the end of the century, and preferably to less than 10 percent by that time or a few decades later. We require investment programs of a magnitude adequate to meet the combined agricultural and industrial needs such a population shift implies.

"We must end the policy of bringing the price of food down to the reduced income level of marginally productive households. We must, instead, bring the earned income of households up to the level needed to secure food-supplies priced on the basis of parity prices paid to agricultural producers. . . . This enables massive capital inputs into the rapid modernization of agriculture in extensive modes. It requires rapid development of modern industrial workplaces to meet agricultural requirements and to absorb portions of the labor force shifting from rural to urban forms of employment."

6 Expansion of Mexican educational institutions and manpower training.

One of the principal "bottlenecks" confronting Mexican development is the lack of skilled manpower and trained scientific and technical personnel required to man modern industrial facilities. LaRouche cited the state oil company, Pemex, which has taken care to set up special programs to train manpower for the growing oil industry, as a model for what must be done for the Mexican economy as a whole.

"If I were advising the government of Mexico, I would whisper to the ears of my friends in Mexico: 'Mexico must have not only nuclear plants, it must have also a reprocessing capability, and must have educational and research centers through which thousands of Ph.D.-equivalent physicists and chemists specializing in advanced plasma-physics technologies are developed over the coming two decades'."

LaRouche proposed the adoption of France's eighteenth century Ecole Polytechnique as the model for integrated scientific and industrial centers to be established across Mexico.

7 Port expansion on both sides of the border.

To handle the influx of capital goods and technology involved, Mexico needs a major expansion of port facilities on both its Pacific and Gulf coasts—even more ambitious than that now contemplated by the Mexican government. The same applies to now-languishing U.S. port facilities. "The Caribbean coast of the United States would blossom with new superports at places such as Galveston, New Orleans, and Mobile," said LaRouche. "The riparian transport systems, the railroads and air freight capacities would blossom anew. All this would be catalyzed by the need to process capital goods and related traffic with Mexico and other nations."

8 Financing U.S. technology exports through the Eximbank.

The United States has immediately at hand the institutional means to provide credit for the capital goods this program requires Mexico to import from America. The key, said LaRouche, "is the organization of credit relationships on a state-to-state basis. In the case of the United States, the Export-Import Bank is the obvious vehicle for facilitating oil-for-technology agreements. This requires that the U.S. Congress authorize increases in the capital of the Export-Import Bank up to the level of combined petroleum-earnings deposits and additional credit extended to Mexico.

"In other words, each dollar earned by Mexico's export of petroleum to the United States would be paid to Mexico directly in an account in the Export-Import Bank. An Export-Import Bank overdraft to Mexico's credit could be added to the deposit value of that same account. The petroleum companies purchasing that oil would buy the purchased delivery contracts from the Export-Import Bank. The entire contract negotiated between the two governments would then establish Mexico's line of credit for agreed categories of purchases.

"In that way, Mexico could immediately begin importing capital goods required against the value of the contract."

LaRouche Tells Washington Seminar of U.S.–Mexico Trade Plan

If the Reagan administration accepts Mexico's recent proposals to trade oil for advanced American technology and capital goods, America's entire economic and foreign policy can be put back on the right track.

This was the message delivered March 26-27 by former Democratic presidential contender Lyndon H. LaRouche, to a high-level Washington audience of over 100 diplomats, administration representatives, and members of the business and intelligence communities. LaRouche was speaking at a two-day seminar entitled "The U.S. and Mexico and Central America: Conflict or Cooperation?" sponsored by the *Executive Intelligence Review,* the prestigious political analysis newsweekly he founded in the early 1970s.

"We now have a real strategic possibility for change," LaRouche told the attentive gathering, if the U.S. helps Mexico fill its "shopping list" of high-technology goods it needs to meet its ambitious industrialization goals. This is the best way for the U.S. to abandon the "Global 2000" anti-growth policy being pushed by the Haig State Department, LaRouche elaborated.

Alexander Haig and Federal Reserve Chairman Paul Volcker "want to halt technological progress," the Democratic Party leader charged. "This is a policy of genocide, of bringing the world population down from 6 billion projected in the year 2000 to 4 billion. This is 100 times worse than Adolf Hitler."

LaRouche, who currently chairs the Advisory Board of the National Democratic Policy Committee, told the gathered policy-makers and implementors that, in addition to the late-April Reagan-López Portillo summit, the upcoming visit of West German Chancellor Helmut Schmidt to the U.S., and the Ottawa economic summit of Western government heads of state, were the three key opportunities available during April and May for shifting the U.S. away from the Global 2000 doctrine of population reduction and economic collapse. If these opportunities are missed, he said, it will be much more difficult to succeed later—America should not take that gamble.

Haig On The Ropes

LaRouche's political pummeling of Haig came as the secretary of state was already hanging by the thinnest of threads. The nation's capital has been swept by rumors that policy disputes between Haig and the Reagan White House would soon lead to Haig's removal from the cabinet.

Haig's prospects were not helped, either, by the second day of the EIR seminar, which denounced the secretary of state for "deliberately lying" about the true source of terrorism in Central America, by covering up the decisive role of the Socialist International and the Society of Jesus in destabilizing the region.

Washington is not the only capital listening closely to LaRouche's advice. The day after he spoke, five of Mexico's leading newspapers ran extensive coverage of LaRouche's proposals for U.S.-Mexico relations, including the semi-official daily *El Nacional.* The Mexican papers ran a UPI wire which focused on LaRouche's special emphasis on Mexico's need to develop nuclear energy:

"LaRouche, who is an energetic proponent of his country's exchanging technology for oil with Mexico, stressed that 'only the capabilities of nuclear energy can satisfy the necessities' of Mexican devel-

opment. . . . As far as the U.S. is concerned, if it reached an agreement with Mexico, it 'would produce an increase in employment in the production of capital goods, which would stabilize for a long time the U.S. balance of payments and would guarantee that Mexico would achieve its objectives by the year 2000.' "

LaRouche recently returned from a 10-day tour of Mexico, where he discussed his oil-for-technology initiatives at length with Mexico's business and government policy-making elites. His recognized influence among these Mexican layers is one of the reasons why official Washington turned out in force to hear his views on the subject.

Present at the EIR seminar were representatives of the White House; Defense, Agriculture, Commerce, Treasury, Labor, and State Departments; the Army Corps of Engineers, the Naval Reserve, and the Nuclear Regulatory Commission; diplomatic representatives from European, Asian, African, and a half-dozen Latin American embassies; and various participants from think tanks and intelligence agencies from the Washington area.

But Can We Produce Enough?

LaRouche's keynote address to the EIR seminar came after a morning session had heard Dr. Uwe Parpart, the director of research of the Fusion Energy Foundation, present a detailed profile of the prospects for Mexico's rapid economic growth. Dr. Parpart, who recently completed a path-breaking study of the Mexican economy based on the LaRouche-Riemann econometric model, argued that Mexico would in all likelihood be purchasing upwards of $150 billion in capital goods imports over the decade of the 1980s, in order to fuel an 11-12 percent growth rate. "We can sell Mexico the $100 billion in capital goods over that time period," Parpart claimed, if the right bilateral political relations are established between the two countries. Parpart argued that the U.S.'s major problem would be that Volcker's wrecking policy against the U.S. economy had left it physically unable to match Mexico's demand—and that a prompt reversal of those policies was required.

Parpart was followed by Dr. Joseph Dietrich, a former president of the American Nuclear Society and chief scientist at Combustion Engineering, who discussed how U.S. nuclear policy had to be changed in order to take advantage of export markets like Mexico's; and by Dennis Small, EIR's Latin America editor, who reviewed the politics of U.S.-Mexico relations and the needed steps to improve those ties.

Full discussion followed the three presentations, with the audience asking for details on the political and economic feasibility of the oil-for-technology proposals outlined. Is it possible to modernize Mexico's agriculture reform tradition? Will the U.S. be able to compete with Europe and Japan for the Mexican market? Will Mexico's next president follow in López Portillo's prodevelopment footsteps?

Who Runs Terror?

The worsening civil war in Central America, which threatens U.S.-Mexico relations and hemispheric stability as a whole, was put under a microscope on the second day of proceedings. In particular, the controversial question of who *really* runs terrorism in Central America was asked—and answered in detail.

Criton Zoakos, editor-in-chief of the EIR, explained that the key to understanding the entire chaotic situation in Central America was to know State Department *policy* in the area. It is that policy which is shaping the supposed "ideological dispute" between "left" and "right" there. And that policy, Zoakos charged, is deliberate genocide, depopulation as per the Global 2000 report.

"Ideologies are manipulated to create this policy result," Zoakos explained, "and there are fools in Latin America who aid and abet this population policy."

Zoakos also discussed how Nicaragua and El Salvador are run, from left to right, by the proponents of this policy, and that the intended purpose of the "Salvadorean revolution" is intentionally *not* to have anyone win, but to reduce that country's population.

Zoakos was followed by Paul Goldstein, contributing editor of *Investigative Leads* and a counterintelligence specialist who has studied Central America closely. Goldstein flatly characterized Haig's charge that *only* the Soviets and Cubans run terrorism as "a lie." The State Department has 18 pounds of documentation on the role of organizations like the Socialist International and the Jesuits in El Salvador, but they have released only a tiny portion which concerns the Soviets and Cubans. "Why are they covering up?" asked Goldstein.

He proceeded to present a detailed dossier on the role of the Socialists and Jesuits, "to give you the grand jury evidence. You decide whether there is probable cause for indicting the Jesuits and the Socialist International for promoting this insurgency," Goldstein challenged the audience.

Stabilizing Central America

The final panel, which focused on posing solutions to the Central American crisis, was of special interest because it laid bare for those present the nature of policy disorientation inside the Reagan administration

itself. Al Zapanta, a member of the Reagan transition team with responsibility for Mexico and Central America, who is currently a vice-president at ARCO Ventures, argued Haig's line that Central American instability was due entirely to Cuban and Soviet activities—making no mention whatsoever of the Socialist or Jesuit role. On Mexico, the Reagan adviser urged the adoption of a "North American Accord." And for a model of U.S. ties with area nations, Zapanta urged a close association with the new Seaga government in Jamaica.

EIR Latin America Editor Dennis Small attacked Zapanta's North American Accord approach as a sure loser with Mexico—whose government has publicly stated that they view the idea as a threat to their industrialization plans.

Small also blasted the idea of Jamaica as a model. "Seaga's 'free enterprise' approach has meant legalizing Jamaica's large marijuana exports to the U.S., and the financial flows from it. "This is no ally of America," he charged, "this is a bill of goods we are being sold."

The EIR editor then counterposed to this a U.S.-Mexican relationship based on LaRouche's oil-for-technology proposal, saying that this was the basis for economic and political stability throughout the region. Politically, the U.S. should follow Mexico's lead in Central America—and that of France, whose leaders have shown a sensitivity to Third World development often absent in Washington.

Small ended with a four-point program for stability in Central America:

1) U.S.-Mexican joint economic development projects in the region. Mexico could build a natural gas pipeline through Central America, and spin ancillary industries off it—such as fertilizer and direct reduction steel plants—with the cooperation of other Latin American nations like Venezuela and Brazil.

2) U.S. low-interest credits to Central America could finance such projects. Simultaneously, the area's nations must shut down the offshore banks in the region, which finance the drug trade.

3) The U.S. and Mexico could also cooperate to stop drug production and transshipment through Central America. The DEA and the Mexican authorities worked together successfully in the past on significantly reducing Mexico's drug trade.

4) Support a negotiated political solution within this context of economic growth, and guarantee that *all* sides stop arms shipments into the area. Keep the Socialist International and the Jesuits out of the negotiations. In fact, the Jesuits should be expelled from the region altogether, just as they were in the 18th century under the Bourbon king, Charles III.

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