III. From Lyndon LaRouche

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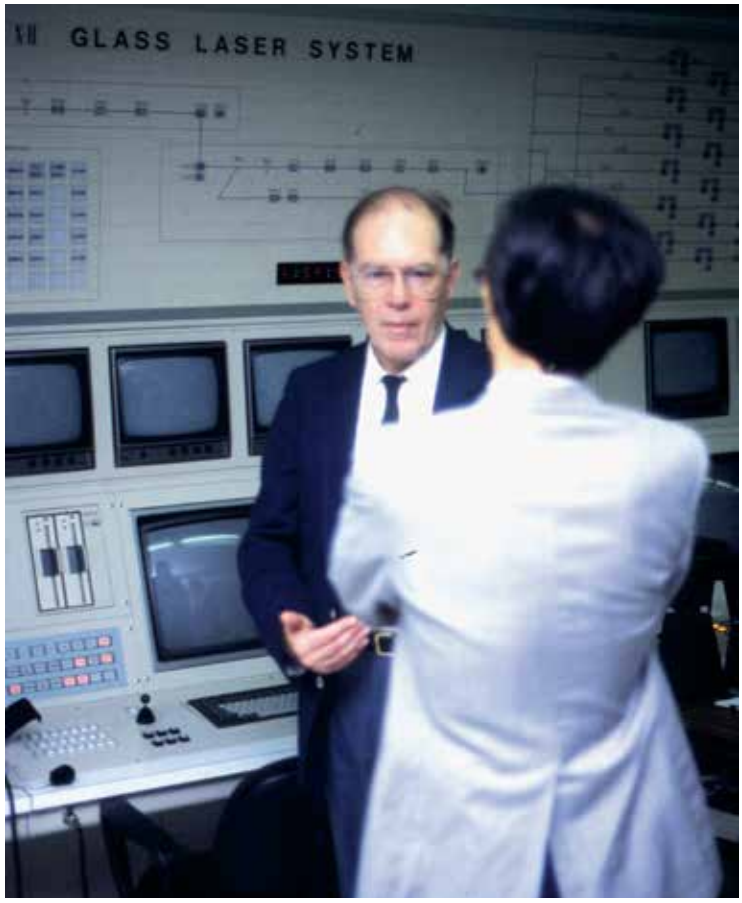
An Unmet Challenge: 'Third World' Economic Development

by Lyndon H. LaRouche, Jr.

Mr. LaRouche, the founder of EIR, *ran as an Independent Democrat for the Presidency of the United States in 1984. He and his wife, Helga Zepp-LaRouche, toured Japan in September 1984, and participated in high-level meetings with political, business, and military leaders. This speech was delivered Sept. 14 before the Japanese Institute for Developing Economies.*

In the United States, in particular, our fascination with the strategic issues involving the Soviet Union tends to cause us to underrate the threat to the general security of the world, erupting from the effects of insufficient economic development of the so-called developing nations. In the United States, in particular, we appear to have forgotten the warning issued by President Franklin Roosevelt during the period of the last World War. I quote from a book written by his son, Elliott, published in 1946, *As He Saw It*. Roosevelt said to [UK Prime Minister] Winston Churchill:

> I am firmly of the belief that if we are to arrive at a stable peace, it must involve the development of backward peoples.



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Lyndon LaRouche in the control room of the GEKKO XII inertial confinement fusion device at Osaka University's Institute for Laser Engineering, Osaka, Japan, Sept. 1984.

Although we have granted nominal political independence to the former colonies of European imperialism, that has become, increasingly, independence in name only. The problems left over from the period of colonial status, especially the economic and related social problems, have been at best only partially resolved. Now, with the presently worsening monetary and economic crises in international markets, increasing numbers among these states are sinking back into the equivalent of the old colonialist

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conditions. In this circumstance, internal and regional instabilities among these states are becoming the prevailing condition.

It is my hope that my own country will enter into a new kind of special relationship of cooperation with Japan, especially cooperation dedicated to improvement of the conditions of nations on the shores of the Indian and Pacific oceans. It is in our mutual, vital, economic and long-range strategic interest to do just that. It is my concern and my dedication, therefore, to do as much as I am able, to foster a new consensus of opinion on this subject among influential circles in both our countries.

Instead of fighting between ourselves on such matters as trade quotas, we ought to be collaborating to expand third markets among developing nations. We ought to discover what changes in presently prevailing monetary and economic policies are needed to expand the developing-sector nation's imports of capital goods by $200 or more billion annually, and reshape our relations of trade and related technological cooperation with each other in such a way that we are better able to meet the challenge of supplying that expanded market.

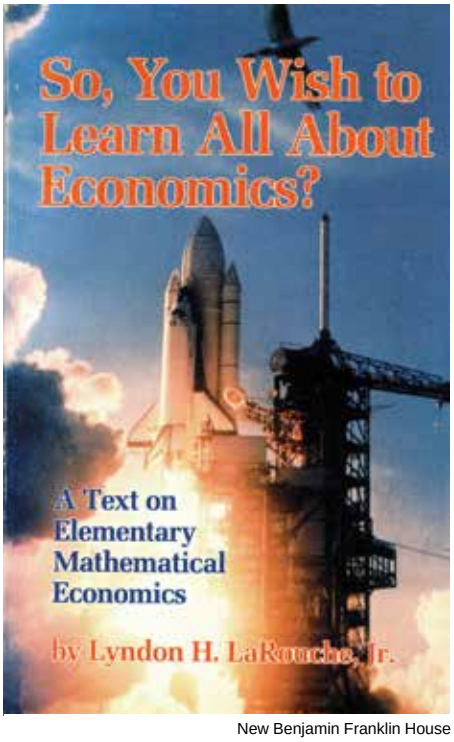
To make such desirable relations a diplomatic reality, we must create the necessary climate of opinion among influential circles in both our nations. We must reach agreement on the definitions of common objectives. I suggest to you that the most essential areas for such agreement on definitions of common purposes are the following:

1) We both require urgently the creation of durable stability among the nations bordering the Indian and Pacific oceans, and require that Western Europe be brought into close cooperation with us in this effort.

2) We must define rather precisely what we mean by the term "development" of the nations of this area. This is the principal subject to which I devote my brief remarks here today.

3) We must situate our definition of "development" among the developing nations of the region within the direction of economic development we intend of our own industrialized nations, looking twenty to thirty years into the foreseeable future. I shall include a few observations on that subject.

As a matter of background to my remarks, I recommend to you a textbook of mine, *So, You Wish to Learn All About Economics?*, recently published on the elements of mathematical economics. If some of the specialized terms I used here today require some explanation, I can reply to questions on those terms, of course; but if you require a more systematic explanation, the textbook will be the most convenient reference.



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LaRouche's 1984 textbook on elementary mathematical economics.

What Is 'Development'?

By "economic science," I mean what Gottfried Leibniz, the founder of economic science, termed Physical Economy, as Alexander Hamilton, the two Careys, [Matthew and Henry C.,] and Friedrich List later defined the principles of the American System of political economy. I mean the increase of the power of labor to produce the useful physical goods essential for human existence.

The proper measurement of the productive powers of labor involves two elementary measurements. First, we measure the average number of square kilometers of land required to support the life of one individual. Second, we measure the market basket which society requires to maintain itself at any given level of technology of productive existence.

For example, mankind in the most primitive condition, of simple hunting and gathering of food, required up to ten square kilometers to support one individual, which would mean a total human population worldwide of about ten million. Today, we have nearly five billion people, a five hundred-fold increase in the productive powers of labor.

Not all land is of the same quality, of course. Land varies in fertility of use for rural and urban life. By improvements in basic economic infrastructure, mankind

improves that land's fertility, or by failing to make such improvements, depletes its fertility. So, what we must measure is the relative fertility of land for various kinds of human habitation. We measure the productive powers of labor as *potential relative population-density*.

In studying the development of societies, we must measure *the rate of increase* of this potential. Therefore, "rate of increase of potential relative population-density" is the basic measurement we must use whenever we speak of "development."

To assemble statistical information for the study of development, we should work our way through the following steps of successive approximation.

First, we gather facts about land-areas. We divide land areas into the following major categories: 1) Total land-surface area; 2) surface-area represented by lakes, ponds, streams, and rivers; 3) wastelands; 4) land used for forests; 5) agricultural land, both arable and pasture land; 6) land used for urban industries; 7) land used as urban residential land; 8) urban land used for other purposes, other than transportation; and 9) land area used by transportation.

Second, we study the fertility of these land-areas so classified. These land-areas are improved in potential fertility by improvements in basic economic infrastructure. These improvements include: 1) fresh-water-management; 2) the production and distribution of energy-supplies; 3) transportation; 4) capital investments in improvement of land fertility for agriculture; and 5) capital investments in basic urban infrastructure—e.g., municipal infrastructure.

These improvements are the preconditions which must be supplied before initiating production at any given level of technology. In developing economies generally, insufficient development of basic economic infrastructure is the principal bottleneck obstructing efforts at economic development.

Since Leibniz's founding of economic science, given the appropriate level of development of infrastructure, we know that we must study increases of the productive powers of labor in terms of both capital investment per employed operative, and amount of energy consumed per employed operative. So, in order to guide the collection of preliminary statistics, it is useful to construct a three-dimensional graph.

The first coordinate of this graph, the X-axis, measures increasing physical output per operative.

The second coordinate, the Y-axis, measures capital investment per operative, by measuring the amount of labor required to produce and maintain that capital.

The third coordinate, the Z-axis, measures the energy consumed, by measuring the cost of labor required to produce that supply of energy.

It is the general case, that X increases as a function of increase of both Y and Z.

We must then proceed to take into account other considerations.

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LaRouche: "The more coherent the energy is in its organization, and the higher the effective energy-flux density, the more work one kilowatt of energy will accomplish." Here An ultra-high precision laser metal cutting machine tool.

Energy and Technology

Imagine the hypothetical case, that an operator may use either of two kinds of machines for the same kind of physical output. Imagine also, that both machines consume the same amount of energy per hour. However, the operator using one machine produces more output than using the other. Such differences in the internal organization of the machines Leibniz defined as technology. So, we must add a fourth dimension to our chart: technology.

This brings to our attention another decisive consideration. One kilowatt of energy is not the same as another kilowatt of energy. One kilowatt may be in the form of what is called random heat-energy; another

kilowatt may be in the form of highly organized radiation of energy, such as alternating current or the beam of a good laser. Also, it is very important to know at what temperature or equivalent this energy must be provided. Instead of temperature, let us use a more general kind of measurement; let us say energy-flux density, as this might be measured as the number of kilowatts passing through a square meter of cross-sectional area of a process. Generally, the more coherent the energy in its organization, and the higher the effective energy-flux density, the more work one kilowatt of energy will accomplish.

Think of coherent energy as in the form of a spiral of constant pitch along the surface of a cylinder. Now, measure the wave-length of that spiral against the speed of light. Then, the number of turns the spiral makes in a unit of time, compared with the cross-sectional area of the cylinder, gives us a good standard of measurement for energy-flux density. The degree to which any form of energy used is chaotic relative to such a perfectly coherent beam, measures a relative poorness of quality to do work of one kilowatt's equivalent of such energy.

So, we must add this definition of "energy" to our statistical picture.

Therefore, given appropriate levels of development of basic economic infrastructure, it is technology which is the determining variable in increase of the productive powers of labor. The ration of capital investment required, and the quality and amount of energy required, are both determined by the level of technology used.

For reasons which I shall not attempt to demonstrate in the short space of time available here today, technology can be rather precisely measured. This means that one species of technology is intrinsically superior to another, and that this difference is implicitly measurable. To be more precise, the mathematical physics of Bernhard Riemann provides a way of making such a measurement. In general, however, in collecting and studying statistics, we measure technologies by the general level of productivity of labor to which they correspond.

So, when we use the term "development," we ought to agree that we mean the things I have listed here: 1) land-use; 2) basic economic infrastructure, as the development of the potential of land-use in terms of requirements of some level of technology; 3) technology of production; and 4) rations of capital investment and energy per operative required for production of physical goods at a given level of technology.

Ethiopian Embassy

The hydroelectric Grand Ethiopian Renaissance Dam and reservoir on the Blue Nile River will regulate water for irrigation and produce more than 6 gigawatts of electrical power.

For example, we might say that Antarctica is the most underpopulated continent of the world today. After that, we would say, Australia is the most underpopulated. However, in both cases, we do not possess the levels of technology at present which would be needed to change their environment adequately to bring those continents up to the levels of population-density the word "underpopulated" might suggest. For example,

we could not yet produce sufficient water at economical costs to make the great Australian desert habitable.

As a practical matter, Africa is the world's most underpopulated continent today. The primary problem of Africa today is a lack of basic economic infrastructure; water-management, transportation, and production and distribution of energy are the indispensable improvements which must be made to bring the potential fertility of land-use up significantly. It is almost useless to speak of agricultural and industrial improvements in most of black Africa today, without speaking first of the needed development of basic economic infrastructure. The same is true, more or less acutely, in all developing nations today.

Just because these nations have very large populations in many cases, they are potentially rich markets for imports of capital goods. Here, a modest amount of fertilizer would increase agricultural output by 50% or more. There, even a simple machine would raise the level of productivity significantly. In those terms, capital goods investments will pay for themselves. Unfortunately, without the development of basic economic infrastructure, the use of these improvements will tend to fail.

Therefore, governments of both industrialized and developing countries must combine their resources to concentrate on basic economic infrastructure, especially large-scale water management, transportation, and energy projects. The capital advanced by governments for infrastructure-building will come back to those governments in the form of income from investments in capital goods, investments which are not truly economically practical without the building of basic economic infrastructure.

The Agricultural Problem

In most cases, the great obstacle to sustained economic development is the relatively large portion of the total labor force trapped in marginal agricultural occupations. To a significant degree, the agricultural problem is a heritage of the colonial period, when much of agriculture was oriented to the export-requirements of the colonial powers, and the internal needs of the local population were put aside to a significantly greater or lesser degree. Improvements in agricultural technology depend upon water-management, transportation and energy-supplies; this applies not only to agricultural output per hectare itself, but to the orderly transportation of product to markets with minimized spoilage.

Once the outputs and incomes of the rural sector increase, the increased income represents increased demand upon the economy's industrial sector. The industrial sector's output for rural purchases alone must be increased approximately in proportion to increased real income of the rural segment of the economy. In economies with large rural components and relatively small industrial sectors, the weight of the production for the rural sector is a very significant portion of the total production of the industrial sector.

In this connection, it is often thought among economic policy-shapers that developing economies must rely upon relatively labor-intensive modes of manufacturing. Such proposals seemed justified by the relatively large proportion of unskilled, low-income manpower among present and potential members of the urban labor force. In fact, the low productivity of urban labor forces, and a tendency for excessive growth of labor-intensive unskilled urban services, are a major contributing factor in preventing successful development. The supporting argument is that these economies, with limited total purchasing power for imports of capital goods, must spread that purchasing power thinly across the available labor force.

In fact, such policies lead toward disaster. The output of the manufacturing sector is unable to keep pace with even the needs of the rural sector. Rural development is aborted. Relatively excessive expansion of non-productive categories of administrative and labor-services employment weighs heavily upon the economy, lowering the effective rates of productivity of labor in the national economy, and fostering a deadly spiral of inflation.

The proper weapon against inflation is technology. It is indispensable to employ a high percentile of the urban labor force in manufacturing, at the expense of growth of administrative and labor-services employment. It is necessary to reject the philosophy of using labor-intensive methods to employ as much labor as possible; instead, we must place the emphasis upon raising the productivity of employed manufacturing labor as high as possible, while employing the labor for which manufacturing places are not yet available chiefly in building basic economic infrastructure.

As part of the necessary approach, we must foster the establishment of some relatively advanced

industries in even the least developed economies, even if those industries are initially small in scale. We must have transmission-belts within each of these economies through which to introduce increasingly advanced forms of production technologies; even a relatively very small advanced industry within a national economy serves to implant the skills and values of advanced technology within the economy. In this connection, the development of schools of science and engineering within those economies is indispensable.

In Their Interests, and Ours

The next two points to be summarized, as my concluding remarks, help to show the practical significance of what I have just outlined.

In the United States and Japan, it ought to be seen as our national economic interest to have the greatest proportion of the expansion of our exports in the form of capital-goods exports, rather than consumer-goods exports. By expanding the size and increasing the rate of capital turnover in our capital-goods industries, we accelerate the rate of technological progress in our capital-goods production. By doing this, we increase the rate of increase of productivity in our domestic production generally. So, even if we export capital goods on very generous credit terms, the indirect benefit to our domestic economies is potentially very large.

Therefore, it is in our fundamental interest, that the developing nations should give priority to importing our capital goods over our consumer goods. It is advantageous to us; it is also more advantageous to them. We require, and they also require, advanced qualities of capital goods.

Today, there are three areas on the frontiers of scientific research which will determine the future of our economies for the next fifty years or more. The first is the development of controlled thermonuclear plasmas. The second is the development of directed-energy systems. The third area is within biology, especially a field now named "non-linear spectroscopy."

Under conditions of high rates of capital investment in our two industrialized nations, the early fruits of these areas of research could increase the levels of productivity of manufacturing labor by two or three times by the end of this present century. If we progress in these areas at rates which are quite conservatively estimated between now and early during the next century, then early during the next century the average manufacturing operative will command more sheer productive power than some entire nations during the course of the nineteenth century. This may sound fantastic, but it is, I assure you, a very conservative estimate.

It should be our desire that the developing nations of the Indian and Pacific shores be able to assimilate these new kinds of technologies as we develop them for export. At the same time, we should not overlook the fact that some among these nations have already skilled scientific manpower which is being underutilized at present, which could make a significant contribution to joint efforts in scientific research. India is presently outstanding in this respect; in the field of agronomy, in the nuclear field, and others, India's scientific and industrial potential is most significant. Smaller nations of the rim also have more modest but significant numbers of scientific personnel.

In addition to my duties as chief executive for an international newsweekly, [*Executive Intelligence Review* (*EIR*)], I am a member of the board of directors of a modestly influential scientific association, [the Fusion Energy Foundation], which publishes scientific magazines in English, Spanish, French, German, Italian, and Swedish, at the present time. Recently, I have persuaded my colleagues to expand a scientific journal we publish, [*International Journal of Fusion Energy*], to provide the international scientific community with a degree of coverage of the three frontier-areas not presently available in any other single source. To this purpose, we are drawing into our common efforts not only scientists from the United States and Europe, but also from the developing nations of the Americas and Asia.

This work on the scientific frontiers ultimately converges with the work of my international newsweekly in promoting fresh approaches to economic policies for development. Personally, I find working simultaneously in both aspects not only beneficial but even indispensable to the best work in each of the two areas. The most practical approach to economic development today is the approach which prepares for the future, a generation ahead. In that way, by keeping our eyes on the direction in which technology must be developed, we know which must be the direction in which development today must be aimed.