

An alternative to neo-liberalism: the LaRouche-Riemann method

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The following speech was delivered on Mr. LaRouche's behalf in Guadalajara, Mexico on Sept. 18, at the Second "Conquering Frontiers" Congress on Foreign Trade, held at the Guadalajara campus of the Technological Institute of Advanced Studies of Monterrey. See article, p. 44, for more on Mr. LaRouche's intervention in Mexico.

Presently, the entirety of this planet is gripped by a great financial, monetary, and economic crisis. This represents the worst such crisis in the experience of modern European civilization since the so-called "New Dark Age" of the Fourteenth Century. That was the period during which half the parishes of Europe vanished, as economic collapse brought the level of Europe's population down to half of the level of a hundred years earlier. In today's economic policy, the only important question is: Can, and will some leading governments put the old, bankrupt financial and monetary systems into government-supervised reorganization? Can, and will this be done, in time to prevent a world-wide repetition of the kind of "New Dark Age" which Europe suffered during the Fourteenth Century?

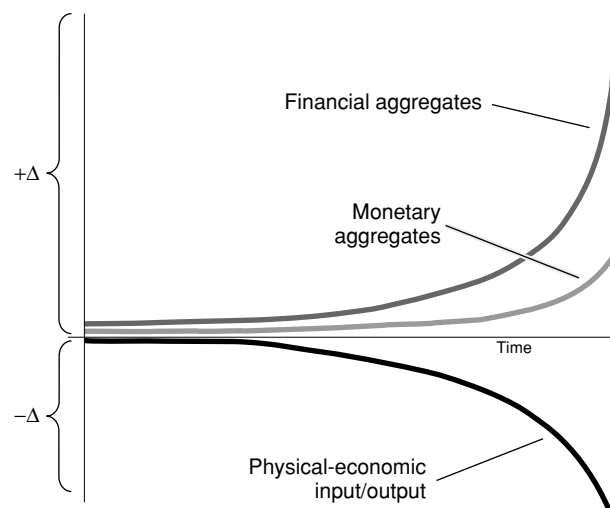
Figure 1 describes the crucial relations which have been leading up to the present crisis over the course of the recent thirty years. In this figure, I focus upon the cause of the present crisis: the interrelations among three changing values. First, the top-most of the three curves, represents the financial aggregates of the combined economies operating under the regulation of the International Monetary Fund (IMF). The second represents the turnover of monetary aggregates, upon which the growth of the total financial aggregates depends. The third represents the physical-economy upon which the emission of monetary aggregates depends.

This figure is simplified, to eliminate everything but the

two most significant facts concerning the causes of the present world-wide crisis. Fact number one, is the relationship among these three magnitudes, not their money-prices as such. Examine two ratios. Focus attention, first, on the ratio of financial turnover to the turnover of money; then, compare this ratio with a second ratio, the turnover of money, compared with the physical-economic magnitudes flowing out of current production. The second fact, is the rate of changes in these two ratios. For the long term, such as the past three decades, the fact of overriding importance, is not the exact value of these ratios, but, the directions in which the ratios are changing. In other words, the important thing, is not exactly when a crisis

FIGURE 1

A typical collapse function





A machine-tool factory in Queretaro, Mexico. "Given a commitment to high rates of investment in technological progress," LaRouche says, "the rate of progress will be determined by the rate at which new discoveries are being developed. This rate of progress is limited by the size of the ratio of people employed in research and development, including the machine-tool sector, relative to the total employed labor-force; the lower that ratio, the lower the potential growth of productivity."

will hit, but whether the direction of changes among these ratios, is bringing the world to the edge of what we term, in physics, a "boundary state," into what has been termed by some economists, earlier in this century, as a "general breakdown crisis."

Let us review these ratios. This time, consider the same curves in reverse order, beginning with the lowest, physical-economic magnitudes. This time, we define these magnitudes more precisely.

What should be understood by the term, "physical-economic magnitudes"? Essentially, this term signifies market-basket contents, per capita of total labor-force, per household, and per square kilometer of relevant surface-area. No money-prices are referenced; we merely compare one market-basket, physically, with another. There are three general types of market-baskets to be considered.

First, we have market-baskets represented by the costs of maintaining and bettering improvements in basic economic infrastructure, such as transportation, power generation and distribution, water management, sanitation, and the special infrastructure required for urban-industrial modes of life. The contents of this and other types of market-baskets, are defined either as goods which have been produced, or as goods, including gifts of nature, which must be replaced: to maintain the economy of the future on no lower level of productive output per capita and per square kilometer of area, as measured in market-baskets, than today's.

Second, similarly, we have production market-baskets,

representing the goods needed to maintain current or better levels of physical output of agriculture, mining, manufacturing, and so on. Once again, we count as necessary contents of those market-baskets, items which must be produced in the future, to maintain the economy of tomorrow on no lower level of physical output per capita, as measured in market-baskets, than today's.

Finally, we have household goods. These are measured in terms of the level of future replacements which will be required to sustain current or improved productivity of labor into the next generation and beyond. Again, these measurements are made by comparison of market-baskets.

Each of these three types of market-baskets contains two general types of contents. First, the obvious physical objects, including physical improvements, and the maintenance of those improvements. Second, a very limited roster of services; these are set apart from services in general, by the fact that they are indispensable for maintaining and improving the productive powers of labor: education, health-care, and science services. These do not include tourism, popular entertainment, or so-called personal services generally. All other costs, such as sales and administration, are considered as being, relatively, either merely fictional or even wasteful.

All market-baskets are measured as per capita of total labor-force and per square kilometer of relevant surface area. Household market-baskets are also compared as per household and per capita of labor-force.

Our objective in choosing those measurements of physi-

cal-economic magnitudes, is, first of all, to compare the total inputs with the total outputs of an economy in these terms. Our object is, to determine the levels of inputs which must be supplied to maintain a specified level of output of the same types of products. In other words, we must examine the economic turnover of a national economy, or region of that economy, in terms of a physical function, without considering money-prices.

For example. Measure the input and output of a national economy in terms of the list of contents of all varieties of market-baskets, measuring these market-baskets by the yardstick of per capita of total labor-force, and per capita of relevant surface area. Does the national output exceed the national input, both as measured in these terms? This supplies a physical-functional notion of the apparent, national profitability of the economy considered as a whole.

To estimate the profitability of a national economy, in physical terms, begin by thinking in the following steps. Think of measuring the total input and output of a national economy, solely in terms of per-capita and per-square-kilometer comparisons of market-baskets. Think of comparing the actual input to the total economy, as measured in market-baskets, without using money-prices. Think of measuring the profitability of a national economy, taken as an undivided unit, as the margin of output in excess of the total input.

Now, think of the difference between the apparent profitability and the real profitability. The apparent profitability would be the ratio of actual outputs to actual inputs. Now, introduce a concept from elementary thermodynamics: think of the term "energy of the system." That term signifies the work we must supply to the entire physical system to ensure that the system does not fall to a lower state at some time in the future. Think of the "energy of the system" of a physical economy, as the necessary inputs, as measured in market-baskets, ought to have been, to maintain some designated ratio of inputs over outputs. Thus, if we deduct this required "energy of the system" from the total output, we have the true profitability of the national economy, the ratio of "free energy" to "energy of the system," as distinct from what is merely the apparent profitability.

What, then, is the effect upon this profitability, of increasing the content of some parts of some market-baskets? Conversely, what might be the adverse effect of reducing the content of some of these market-baskets, if we measure such effects in terms of lost productivity suffered in the present, or the next generation? That, if we lower the rate of investment in infrastructure, in wages, and so on, we reduce the inputs to the economy. This may increase the apparent profitability in the short-term, but will collapse the productivity of the economy in the longer-term. This latter practice, the characteristic trend in practice in the world economy as a whole, during the recent thirty years, is the source of the presently ongoing collapse of the world's financial and monetary systems today.

Look again at Figure 1. The left-hand side of the figure corresponds to the U.S. economy in 1966. The lower of the three curves, references physical-economic output as we have just described those measurements. By assigning current money-prices to the costs of the goods, in the three kinds of market-baskets, we can compare market-baskets with turnover of money, and turnover of money with prices of financial turnover.

Since 1970, the real net physical-economic output of the U.S. economy, including deterioration of basic economic infrastructure, has collapsed at an average rate in excess of two percent, each and every year, up to the present time. The only sources of apparent net physical profitability in the entrepreneurial sectors of the economy, have been cannibalizing of either past U.S. domestic investment in infrastructure, production, and labor-force, or looting foreign countries, such as those of Central and South America, through aid of foreign-exchange and related manipulations made possible by the 1971-1972 shift to a "floating exchange-rate" monetary system.

Now, turn to the second of the three curves. Although the real net physical-economic productivity of the U.S. economy has been negative, throughout the past twenty-five years, the long-term trend in monetary aggregates, has been upward. The domestic growth in money-supply, has come chiefly from purely fictitious capital, from monetizing, as nominal capital, marginally increased rates of indebtedness by various branches of the U.S. Federal, state, and local government, and indebtedness of businesses and households. This growing indebtedness on account of fictitious capital, feeds upon the shrinking real physical-economy in the manner of a parasite.

Turn to the third curve. Over the recent twenty-five years, since 1971, the principal source of domestic profit in the U.S. economy has been from financial speculation. This trend has accelerated since October 1979, when a policy known as "controlled disintegration of the U.S. economy" was introduced to Federal Reserve System practice by then-Chairman Paul Volcker. Since the U.S. stock-market crash of October 1987, the rate of such speculation has accelerated, like the Seventeenth-Century tulip bubble in the Netherlands, or the early Eighteenth-Century, "John Law" financial bubbles in Britain and France, to levels beyond anything seen in earlier history.

Presently, the world's short-term debt is now more than several times the total annual net output of all of the world's economies combined. In other words, matching short-term debt with income for the same period, the world's financial system as a whole is now hopelessly bankrupt.

Thus, to maintain the system described by the relationship among these three curves, the general pattern, since the August 1971 collapse of the old Bretton Woods monetary agreements, has been increasingly savage austerity. The purpose of this austerity, has been to loot the physical economies of nations, in order to maintain the debt-spiral upon which the



A scene in Mexicali, Mexico. Under the banner of "free trade," Mexican living standards have been slashed. "When the liberal economists, such as the neo-feudalist Mont Pelerin Society, or the Wharton School, speak of 'freedom,' they are speaking of the freedom of the financial parasite from the control of its host, and victim, the modern nation-state economy."

fictitious capital values of a cancerously expanded financial speculation has depended. This pattern of the past quarter-century, is otherwise known as the expression or an unchecked orgy of what is called either monetarism, or the economic liberalism of Britain's right-wing Mont Pelerin Society. This doctrine is sometimes known as the dogma of that Society's Professor Milton Friedman and the Wharton School, or, more recently, known as "Thatcherism."

The functional interrelations among these three curves, so described, may be regarded as the dominant characteristic of the world's economy over the course of the recent thirty-odd years. Under these conditions, beginning the U.S. stock-market collapse of October 1987, the present mode of world economy entered its end-phase. This is shown in the figure as the region of the top curve in which the total magnitude of financial assets skyrockets upward at ever-steeper rates. This is the end-phase of the world system, which France's Nobel Prize-winner Maurice Allais characterized as a "*Casino Mondiale*," a shift away from investment in production and trade, into domination by the wildest forms of speculation.

In this gambler's system, which has dominated the world's economy during the past ten years, a general financial collapse could be postponed only under two temporary conditions. First, that the ratio of "financial leverage," the ratio of financial assets to monetary inflows into financial markets, zoomed ever-higher. Hence, the artificially low Federal Reserve interest-rates of the recent years under Alan Greenspan,

without which the financial markets would have been blown out, by what is called "reversed financial leverage," years ago. Second, to keep the bubble from imploding in a chain-reaction of reversed financial leverage, the flood of money into speculation had to be increased geometrically. At the point these conditions could not continue to be met, a chain-reaction collapse of the financial system was inevitable. Under present stretched conditions, such a chain-reaction collapse threatens to bring down the entire monetary system, in addition to financial markets.

We have, thus, reached the end-point of the process portrayed by Figure 1. This is the point at which, hyperbolic ratios among the three curves, define a critical region of absolute discontinuity. We have entered the self-generated "boundary layer" of the process which has been in progress, world-wide during the past thirty-odd years.

Understand what is meant by the boundary layer, by comparing the present international financial system to the famous maelstrom whirlpool, which sometimes forms in the straits separating Denmark from Norway and Sweden. The American writer Edgar Allan Poe, dedicated one of his stories to this subject. What happens to a ship which finds itself suddenly trapped in this maelstrom? That whirlpool has similarities to the way in which the present boundary-layer affects the financial and monetary processes trapped within the present condition of international markets: until the maelstrom ends, no movement through it is possible; ships trapped within it,

are doomed; people who cling to those ships, are also doomed.

Thus, thirty years after the mid-1960s downshift in the economic policies of the U.S. and other leading nations, we have reached the point, that, either, we scrap the economic liberalism which has dominated international markets increasingly during the past thirty years, or economic liberalism will be the death of civilization throughout this planet. Only if several leading nations, led by President William Jefferson Clinton, act to put the old, sick financial and monetary system into bankruptcy-reorganization, and launch a new monetary and financial system, could the world avoid a general collapse of civilization, into a "New Dark Age:" a collapse of civilization like that which accompanied the collapse of the Lombard banking system, during the middle of the Fourteenth Century.

We have reached the point that the world system of the past thirty years can not be saved. The only important question is: How can the nations be saved from the presently ongoing collapse of the present international system? The question is: What is the alternative to the British system of economic liberalism, the system which U.S. President Franklin Roosevelt held in contempt, as "British Eighteenth-Century methods!"

The 'American System' alternative

The only way in which such a collapse of civilization could be prevented, would be the adoption of the kind of anti-liberal economic system, upon which the Federal constitutional republic of the United States was founded. Decades before the U.S. War of Independence, through the influence of Gottfried Leibniz upon a leading circle of North American patriots centered around Benjamin Franklin, a new model of economy came into being, a constitutional form of economy which the first Treasury Secretary of the United States, Alexander Hamilton, named "The American System of political-economy."

This "American System" was associated with such world-famous names in political-economy, as Mathew Carey, U.S. Speaker of the House of Representatives Henry Clay, the German-American economist Friedrich List, Henry C. Carey, and the President Abraham Lincoln under whose initiatives the U.S.A. emerged as the leading, and, technologically, most advanced economy of the world, during the 1860s and 1870s. This is the U.S. economic model directly copied by Germany, beginning 1876. It is the model which was followed by the great nation-builders of Russia, such as D.I. Mendeleyev and Count Sergei Witte. It is the U.S. model directly copied by Japan, beginning the late 1860s. It is the model adopted by China's Dr. Sun Yat-sen.

Either the world dumps liberalism in economy, to return to the American System, or there is no chance for avoiding a general collapse into a New Dark Age, a New Dark Age which would destroy every existing nation on this planet during the course of the coming forty to fifty years ahead of us now.

It is on that system that I now focus our attention.

What we mean by 'physical economy'

During the early Eighteenth Century, a fight erupted against those, in both the United Kingdom and North America, who followed the empiricist doctrine of England's Thomas Hobbes and John Locke, by those, like Benjamin Franklin and most of the other leading founders of the U.S.A., such as Alexander Hamilton, who chose Leibniz, against Hobbes and Locke, as their guide in principles of natural law and economics. Leibniz's principle of "life, liberty, and the pursuit of happiness," became the U.S. principle of law embedded in the U.S. 1776 Declaration of Independence and the Preamble of the 1789 U.S. Federal Constitution. Since that time, this anti-Locke principle, introduced from Leibniz, has been the policy of the leading U.S. patriots, while the pro-British doctrine of Locke's and Adam Smith's followers, "Life, Liberty, and Property," has been the doctrine characteristic of such perennial "Tory" traitors to the U.S.A., as the British East India Company's partners, New England opium-traffickers, the Manhattan bankers in the tradition of Jeremy Bentham's agent Aaron Burr, and the treasonous, southern slave-owners and filibusters of the Caribbean region, who formed the British-sponsored Confederate States of America.

Over the years 1671-1716, Leibniz had founded what became the first, and only, scientific school in economy, a branch of physical science known as "physical economy." Leibniz's principles of economic science, not only informed the design of the U.S. Federal Constitution. Treasury Secretary Hamilton's reports to the U.S. Congress on public credit, a national bank, and manufactures, represent the standpoint of Leibniz, in opposition to the liberal doctrines of the British East India Company's Adam Smith and Jeremy Bentham. These economic principles were then reintroduced to Europe from the U.S.A., first by the German-American economist Friedrich List, and, later, by the world's leading economist of the middle Nineteenth Century, Henry C. Carey.

Later, in the course of my 1948-1952 project for refuting the positivist dogmas of two acolytes of Bertrand Russell, Norbert Wiener's so-called "information theory," and the "systems analysis" of John von Neumann, I developed a series of original discoveries of physical principle, theories for which I later found a mathematical basis in the work of the great Bernhard Riemann. My own work in physical economy, when added to the foundations supplied by Leibniz and the empirical experience of the American System, represent the current state of the art in that field.

This brings us to the main topic of today's presentation: a summary of the two crucial lessons from my work in that branch of science. First, I shall summarize the evidence in support of the principle upon which the science of physical economy is based. After that, I shall show how this principle is expressed by the most successful phases of modern economies in the tradition of Treasury Secretary Hamilton's "American System," by the so-called "science-driver" models of economy, like that used by U.S. President Franklin

Roosevelt's war-time mobilization, and by the U.S. space-program of the 1960s. This is the only alternative available to today, the alternative to which all those nations which will survive will now turn.

Man is not a primate

All forms of human culture which are shown to have been morally fit to survive, are based upon the principle of practice which places men and women absolutely apart from, and above all species of animals, including the so-called "higher apes." This is the principle, often overlooked by economists such as Adam Smith, Karl Marx, John von Neumann, and the Wharton School, upon which even the mere possibility of net economic growth depends absolutely.

Turn your attention to **Table 1**. Here we compare the population-densities achievable by chimpanzees and gorillas, with the generally accepted academic estimates for the growth of human populations and population-densities. I have some differences with some of these figures. For example, I object to the use of "Homo Erectus," on the basis of the fact that we know, from the excellent design and workmanship of throwing spears dating from over a half-millions years ago, in what is now Germany, that the intellectual type of modern mankind was already flourishing then. Nonetheless, despite differences with some of the data which the academic consensus has supplied to our table, the figures supplied, by that consensus among sources, are accurate enough for the point we draw from such estimates.

That point is this. Compare man physiologically with any and all among what are called the great apes: chimpanzees, gorillas, orangutans, gibbons. Compare man also with the baboon. Hear what the biologists say about the comparison of the genetic material of man and the chimpanzee. If we limited ourselves to those comparisons, we would estimate the potential relative population-density of the human species as being nearly that of those great apes who are better equipped for gathering food and defending themselves, than human beings are. Yet, we see the increase of the world's human population to the order of hundreds of millions, beginning the Hellenistic period of Mediterranean civilization, and, from several hundreds of millions at the beginning of Europe's Fifteenth Century, to reach a world population of over one billions during the Nineteenth Century, and over five billions today. Not only was the potential size of the population increased, to more than 1,000 times the size of the total world population of great apes of all varieties; the life-expectancy of the individual, was also increased.

The question is: How? What is the difference between men and great apes, which enables mankind to act, by will, to increase the potential population-size and life-expectancy of the human species? To locate the answer, turn to **Figure 2**. Here, we shall discover the principle which is responsible for the vast superiority of the performance of Alexander Hamilton's "American System of political-economy" over every

other form of economic policy which has ever existed, including its vast superiority over the failed, liberal economic doctrine of Adam Smith and his followers.

Until the middle of Europe's Fifteenth Century, in every known form of culture, over ninety-five percent of the total population lived in a condition of "human cattle:" as slaves, as serfs, as the victims of the Aztec human sacrifices, or even like wild baboons. Like cattle, the ninety-five percent, were herded, and often culled, by the privileged few, and their lackeys, who ruled over them.

There were a few bright, Promethean lights in the prevailing darkness of these pre-Fifteenth-Century millennia. There were a few, like Solon of Athens and Plato, who conceived a form of state in which all men enjoyed justice. Christianity, which adopted Plato's contributions, was the first belief which demanded that each and every person be regarded as *Genesis* 1:26-28 stipulates, as each, man and woman, made in the image of the Creator of this universe, a mankind intended to exert dominion over all things in this universe.

However, it was more than 1,500 years after the birth of Christ, that the first modern nation-state appeared, around King Louis XI's 1451-1483 reconstruction of France, and, in 1492, a similar effort, around Queen Isabella in Spain, and, in the same general period, among those circles we associate with Erasmus, in the England of Henry VII.

These happy, Fifteenth-Century developments began a still-ongoing struggle against the feudal relics of landed aristocracy and usurious financial nobility. This was a struggle to bring education to all the young, a struggle for fostering of technological progress in all aspects of life. The case of Leonardo da Vinci demonstrates the result: the rate of scientific discovery and technological progress unleashed in Fifteenth-Century Europe, with the accompanying participation of an increasing percentile of the population in this progress, had the effect of unleashing from within more and more of the individual members of society, that creative-mental power which sets the human species absolutely apart from, and above all inferior forms of life.

Read Figure 2, together with Figure 1, in the following way:

Define the human species as that form of hominid which demonstrates the capacity for that kind of individual creative mental life, the which began to flourish during Europe's Fifteenth Century. The conclusion based upon known evidence is, that the human species, so defined, has existed on this planet for not less than one millions years, and probably as long as two millions years. I referred a moment ago, to the recent discovery, from a stratum which has been buried for about 600,000 years, in a deep site in a cave in Germany's Hartz Mountains, of a human site featuring well-crafted, well-balanced throwing spears of a type still commonplace in Europe's so-called "Paleolithic" sites into less than 50,000 years ago. Such craftsmanship is typical of the mental abilities of modern human types.

TABLE 1

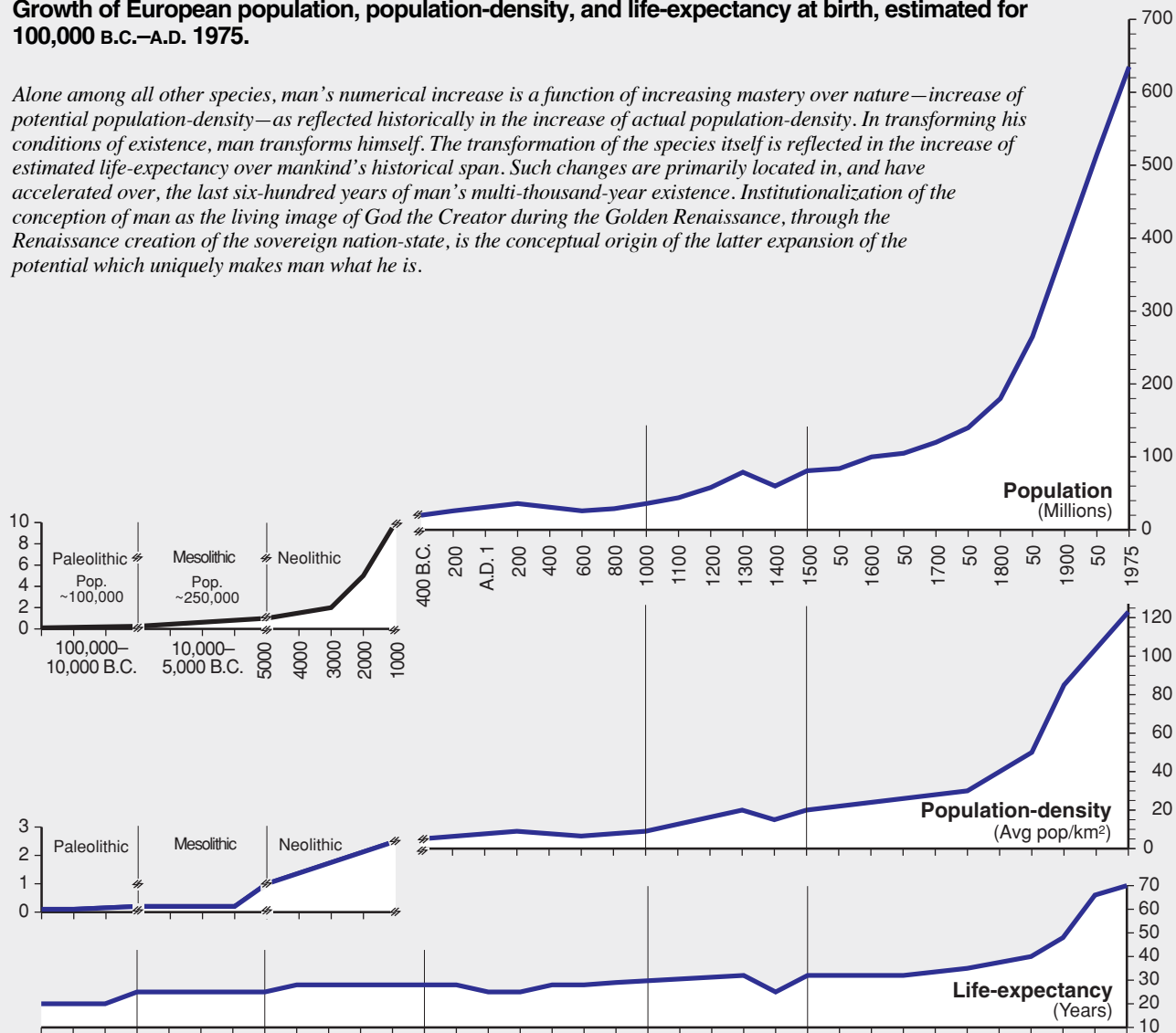
Development of human population, from recent research estimates

	Life expectancy at birth (years)	Population density (per km ²)	Comments	World population (millions)
Primate Comparison				
Gorilla		1/km ²		.07
Chimpanzee		3–4/km ²		1+
Man				
Australopithecines B.C. 4,000,000–1,000,000	14–15	1/10 km ²	68% die by age 14	.07–1
Homo Erectus B.C. 900,000–400,000	14–15			1.7
Paleolithic (hunter-gatherers) B.C. 100,000–15,000	18–20+	1/10 km ²	55% die by age 14; average age 23	
Mesolithic (proto-agricultural) B.C. 15,000–5,000	20–27			4
Neolithic , B.C. 10,000–3,000	25	1/km ²	"Agricultural revolution"	10
Bronze Age B.C. 3,000–1,000	28	10/km ²	50% die by age 14 Village dry-farming, Baluchistan, 5,000 B.C.: 9.61/km ² Development of cities: Sumer, 2000 B.C.: 19.16/km ² Early Bronze Age: Aegean, 3,000 B.C.: 7.5–13.8/km ² Late Bronze Age: Aegean, 1,000 B.C.: 12.4–31.3/km ² Shang Dynasty China, 1000 B.C.: 5/km ²	50
Iron Age , B.C. 1,000–	28			50
Mediterranean Classical Period B.C. 500–A.D. 500	25–28	15+/km ²	Classical Greece, Peloponnese: 35/km ² Roman Empire: Greece: 11/km ² Italy: 24/km ² Asia: 30/km ² Egypt: 179/km ² * Han Dynasty China, B.C. 200–A.D. 200: 19.27/km ² Shanxi: 28/km ² Shaanxi: 24/km ² Henan: 97/km ² * Shandong: 118/km ² * * Irrigated river-valley intensive agriculture	100–190
European Medieval Period A.D. 800–1300	30+	20+/km ²	40% die by age 14 Italy, 1200: 24/km ² Italy, 1340: 34/km ² Tuscany, 1340: 85/km ² Brabant, 1374: 35/km ²	220–360
Europe, 17th Century	32–36		Italy, 1650: 37/km ² France, 1650: 38/km ² Belgium, 1650: 50/km ²	545
Europe, 18th Century	34–38	30+/km ²	"Industrial Revolution" Italy, 1750: 50/km ² France, 1750: 44/km ² Belgium, 1750: 108/km ²	720
Massachusetts, 1840 United Kingdom, 1861 Guatemala, 1893 European Russia, 1896 Czechoslovakia, 1900 Japan, 1899 United States, 1900 Sweden, 1903 France, 1946 India, 1950 Sweden, 1960	24 32 41	41 43 40 44 48 53 62 73	90+/km ² Life expectancies: "Industrialized," right; "Pre-industrialized," left	1,200 2,500
1970 United States West Germany Japan China India Belgium	59 48	71 70 73 180/km ² 183/km ² 333/km ²	1975 26/km ² 248/km ² 297/km ² 180/km ² 183/km ² 333/km ²	3,900

FIGURE 2

Growth of European population, population-density, and life-expectancy at birth, estimated for 100,000 B.C.—A.D. 1975.

Alone among all other species, man's numerical increase is a function of increasing mastery over nature—increase of potential population-density—as reflected historically in the increase of actual population-density. In transforming his conditions of existence, man transforms himself. The transformation of the species itself is reflected in the increase of estimated life-expectancy over mankind's historical span. Such changes are primarily located in, and have accelerated over, the last six-hundred years of man's multi-thousand-year existence. Institutionalization of the conception of man as the living image of God the Creator during the Golden Renaissance, through the Renaissance creation of the sovereign nation-state, is the conceptual origin of the latter expansion of the potential which uniquely makes man what he is.



All charts are based on standard estimates compiled by existing schools of demography. None claim any more precision than the indicative; however, the scaling flattens out what might otherwise be locally, or even temporally, significant variation, reducing all thereby to the set of changes which is significant, independent of the quality of estimates and scaling of the graphs. Sources: For population and population-density, Colin McEvedy and Richard Jones, *Atlas of World Population History*; for life-expectancy, various studies in historical demography.

Note breaks and changes in scales.

In looking back to evidence dating from earlier than six to eight thousand years ago, we must take into account the fact, that the northern hemisphere has been in an Ice Age for about two millions years. Over long periods, the northern part of the North America and Eurasia land-area are buried under build-up of a massive glacier, while the ocean-levels fall to between 200 and 400 feet below what they are today. Be-tweentimes, there are shorter periods, such as the period between 17,000 and 4,000 B.C., during which the glaciers are melting, or since A.D. 1,000, when the climate is becoming

cooler, on the way to covering much of the area with glacier, once again. As a result, most of human culture prior to about 12,000 years ago, remains unknown to us: lost under glaciers, or buried in the seas hundreds of feet below present ocean levels. What we do know of details of how pre-historical human minds worked in some cultures, dates from solar astro-nomical calendars whose internal evidence dates them to Cen-tral Asia about 8,000 years ago. Most of what we know as ancient history, dates from a revival of earlier and new civili-zations in Asia and the Mediterranean region during the mil-

lennium before the birth of Christ. Look at the data shown in Figure 2 with those facts in view.

Note briefly, at the left side of the chart, the column labelled “Neolithic.” Actually the Hittites, who, we are told, spoke a dialect of ancient Greek, and who were one of the three “world-powers” of the Mediterranean region during the period 1600-1400 B.C., were an iron culture, among other cultures using copper and bronze. Now, focus upon the main part of the figure, beginning 400 B.C. Observe that there is a rise of culture during the period of spread of Classical Greek culture, and, then, a long period of stagnation and decline in Europe, a decline caused by the ruinous policies of the Roman and Byzantine empires, both of which were in a state of moral decay from their foundation. There is a revival of growth of European culture from the period of Charlemagne until the emergence of Venice’s role as an imperial maritime and financial power throughout Europe, after the death of Friedrich II, and the resulting “New Dark Age” of the middle of the Fourteenth Century.

Yet, throughout that mixed history of slight advances and temporary collapses, the overall tendency in the human condition, is a persisting, long wave of improvements, from early man, up into Europe’s Fifteenth Century. Then, came the Golden Renaissance. Since then, potential relative population-densities have advanced at an accelerating rate, while life-expectancies have progressed—until the downshift in economic and cultural policy, since 1966.

This benefit was not limited to western Europe and the Americas; despite the evils of Portuguese, Dutch, and British slave-trade, the British opium-trade, and Dutch, British, French, and Belgian imperialisms, the net impact of the institution of the modern nation-state upon the world at large has been positive. From the accession of France’s Louis XI, in 1461, until the introduction of policies based upon “post-industrial” utopianisms, which began approximately 1966, throughout most of the world, the well-being of the individual improved, as the cultural impact of those reforms introduced into Europe under the influence of Europe’s mid-Fifteenth-Century “Golden Renaissance,” increased, world-wide.

The economic impact of the reforms introduced by the Fifteenth-Century introduction of the modern form of sovereign nation-state, is centered in four topical areas: 1) education; 2) promotion of scientific and technological progress in all areas of production and physical distribution; 3) a new quality of commitment, by government, to foster those general improvements in basic economic infrastructure which are needed to establish a favorable climate for scientific and technological progress; 4) a new conception of the nation-state itself. The economic significance of the modern sovereign nation-state republic, is located in the relationship between the first two areas, education and scientific progress. This brings us to the area in which my own discoveries in economic science, the so-called LaRouche-Riemann Method in physical-economy, are located.

What is education?

Now, we have come to what students would identify as the “hard part” of my report to you today. This is the crucial area of my presentation, in which I will be upsetting the notion of economics you have gathered from most textbooks and related writings on that subject-matter. After that, the rest of what I have to report to you, is the “easy part,” by comparison. However, this “hard part” should not, and could not be skipped; it is the principle upon which a competent sort of scientific approach to economics depends absolutely. Every university student today, as a candidate to become part of the future leading elite of nations, must understand these crucial principles; had your predecessors known these principles, the world would not be in the mess it is in today.

The genesis of the work leading to my 1951-1952 discoveries, was my reading of an advance copy of Norbert Wiener’s *Cybernetics*, in early 1948. It was Wiener’s pseudo-scientific attempt to degrade human ideas to the level of statistical information theory, which provoked my commitment to refute him in the same way I had constructed a defense of Leibniz’s *Monadology* against Immanuel Kant’s *Critique of Pure Reason*, approximately a decade earlier.

For this purpose, I focussed upon the derivation of new families of technologies from the experimentally validated discovery of a new physical principle. In this way, I focussed upon the same problem I had addressed earlier, in refuting Kant’s fallacious argument; I narrowed the definition of “information” to the scope of what Plato had defined as the “idea:” a validatable discovery of a new natural principle. By showing that such ideas were beyond the scope of Wiener’s statistical methods, I demonstrated that “information theory,” insofar as it is misapplied, as attempts to describe human mental behavior, is a hoax.

However, it was necessary to show that the same argument made for scientific ideas, was also relevant in the domain of ideas associated with Classical art-forms, such as tragedy, poetry, music, and plastic arts. I must correlate the meaning of ideas as they occur in scientific discovery, with the same quality of ideas, as they occur in the domain of Classical art-forms. For this side of my argument, I focussed upon the function of what is strictly defined as metaphor within poetry, tragedy, and the Classical musical settings of poetry. For the latter purpose, I concentrated upon the span from Wolfgang Mozart through Johannes Brahms’ Opus 121. I was able to show, that the kinds of ideas which represent validatable discovery of physical principles, are the same species of ideas we associate with provable solution to a metaphor in poetry, tragedy, Classical musical composition, or in the great paintings of a Leonardo da Vinci and Raphael Sanzio.

I was also able to show, why it is, that the actual process of generation of such discoveries can not be represented explicitly within the terms internal to any medium of communication, such as a mathematics. For example, as any university student should know, from study of original scientific discov-

eries of validated principle: from written text, diagrams, and oral discussion, we can define the kind of scientific paradox whose solution is the new discovery. Once the student has reenacted the mental act of successful discovery of the principle which solves that paradox, the student can report the result. An experiment can be designed, to test the principle which the student claims to have rediscovered. If that experiment is successful, its results can be applied in many ways. However, there is one step in that set of connections, the which can not be expressed within the confines of any medium of communication: the mental act of discovery which occurs, is hidden from even the possibility of direct observation by others, within the sovereign cognitive processes of the individual, both the original discoverer, and the student whose mind has experienced the reenactment of that process of discovery of the principle which solves a crucial paradox.

The same is true in Classical art. The term “Classical” is rightly used, when it refers to the principle underlying those developments in the philosophy, science, and art of Classical Greece, the which are based upon the notion of Reason, as Plato defines Reason. In this sense, “Classical” is opposed to “Romantic,” since the Romantics, following Immanuel Kant, insisted that there is no connection between art and the notion of Reason we associate with validatable discoveries of physical principle. In the case of so-called “post-Modernist” art, the very idea of truthfulness is discarded, in favor of rabid irrationalism. Where, in science, all discoveries of principle occur as solutions for crucial ontological paradoxes, in Classical art, the place of ontological paradox is taken by metaphor.

The two departments of knowledge, science and Classical art, are distinct but inseparably interconnected. Science deals with the intellectual comprehension of mankind’s interrelationship with nature. Classical art deals with human social relations, as these relations are to be seen from the vantage-point of ideas, as Plato defines ideas. The two are united in two ways. Social relations are to be understood as the internal characteristic of societies from the standpoint of mankind’s interrelationship with nature. More immediately, the connection between art and science is passion. The passion which we associated with successfully sustained concentration, in producing a validatable solution for a paradox in science, is the same passion expressed by the resolution of a metaphor, in Classical poetry, tragedy, music, or painting. This is the passion which Plato and also the Apostle Paul identified by the Greek word *agapē*, the passion which is distinct from, and often opposed to, the passion identified by the Greek term *eros*. The chief social function of Classical art is to educate the passions, including the quality of passion needed to energize the successful concentration which leads to a validatable discovery of principle in science.

In a good modern education, the student does not learn about past discoveries in science and art: the student reexperiences those discoveries. In studying the history of Classical Greece, for example, the Homeric epics take the student into



A Guatemalan refugee child, and father, in Chiapas, Mexico. “Education is the foremost feature of any economy designed for human beings. It must be an equal opportunity for education of all young persons, so that all might have the right to partake, in the way I have described this process of education, of the heritage of essential ideas passed down to us from all mankind earlier.”

the mind of the population from which the genesis of European civilization sprang. The student re-creates an important aspect of the ancient Greek mind in his, or her own mind today. The student observes, as the ancient Greek mind did, the quarrels among the pagan gods of Olympus, and how these quarrelling gods intervened into the quarrels and destinies among mortal men and women. In the later Greek tragedies, such as those of Aeschylus, the student sees the ancient Greek mind working to liberate itself from the grip of those pagan gods, as Aeschylus’ *Prometheus Bound* expresses this. In Plato, we meet the foundations of the modern European scientific and Classical-artistic mind, as they are being produced in a population which has lived through the mental conditions associated with the hearer of the Homeric epics and the Classical tragedies.

In a good education, we do not read opinions about his-

tory; we re-experience it within those same cognitive processes of the individual human mind through which we reenact original scientific discoveries. In science, this takes the form of reexperiencing each among what we regard as the most relevant original discoveries of physical principle, as these discoveries were made, by actual, individual men and women, within the time and social setting in which those individuals lived and worked. The combination of this approach to education in art, history, and historically situated scientific discovery, is what is generally termed a Classical humanist education, such as that practiced by the celebrated Brothers of the Common Life, proposed by Friedrich Schiller, introduced to Germany by Schiller's friend Wilhelm von Humboldt, and brought into secondary education in the United States by Benjamin Franklin's great-grandson Alexander Dallas Bache.

Once we look at education in those terms, we have satisfied the prerequisites for taking up the subject of economic science.

This view of mankind's history and pre-history, shows us that we are the beneficiaries of the development of ideas discovered by ancestors as far distant as tens of thousands of years before us, ideas which we must learn afresh by reenacting the experience of the original discovery within our own individual minds. We see, that our generation must add to that store of validatable discoveries of scientific and artistic discoveries, as countless earlier generations, reaching back perhaps a millions or more years, have enriched us. We find within the individual reenactment of such discoveries by a student today, the absolute difference between a human being and an ape.

This is the principle of the individual human mind which sets every person absolutely apart from, and above all inferior species. This is the principle which demonstrates that there are no biological races, or biological nationalities among human beings: all are equally endowed with this same cognitive principle, differing only as it is developed in each branch of culture, each nation, each personality. My discovery was to have shown that this principle, viewed in this way, is the fundamental principle of economic science.

Thus, education is the foremost feature of any economy designed for human beings. It must be an equal opportunity for education of all young persons, so that all might have the right to partake, in the way I have described this process of education, of the heritage of essential ideas passed down to us from all mankind earlier. The purpose of society is the development of the potential of each and every human individual. No man must be educated to be a slave, a serf, or other lower moral condition. To that purpose, all other purposes of government, and all law, must be subordinated.

Government is indispensable, because some agency must assume responsibility for the welfare and educational opportunities, for all of the people, and for the rational and coherent improvement of all of the territory, as for the common defense of those institutions against criminals, feudal reactionaries,

usurers, and foreign powers. The fragility of the mortal individual life, the limited responsibilities and capabilities of individual entrepreneurs, require that some durable institution be constituted, committed to these principles and purposes. Only in this way can the individual person be assured these natural rights, and the good provided by the living, safely delivered to the posterity yet to be born.

Out of such concerns, the Golden Renaissance crafted those conceptions of sovereign nation-state and national economy, from which we have derived every benefit which civilization has afforded mankind, during the five centuries since that time. If we were to allow the neo-feudal reactionaries behind today's supranational institutions to nullify the institution of the sovereign nation-state, we should all land in a Hell like that of Europe's Fourteenth-Century "New Dark Age" within the short- to medium-term.

The science-driver economy

During the last sixty years of the Nineteenth Century, Hamilton's "American System of political-economy" was well known, world-wide. For more than two decades, beginning with President Abraham Lincoln's administration, the U.S. economy was the most powerful, and technologically most advanced in the world. That success was based upon the American System, as taught by Hamilton, by Benjamin Franklin's political heir Mathew Carey, by the most powerful man in the Congress during his time, Henry Clay, by Clay's ally, former President John Quincy Adams, by the work of Friedrich List, and, most of all, the world-wide influence of Mathew Carey's famous son, Henry C. Carey.

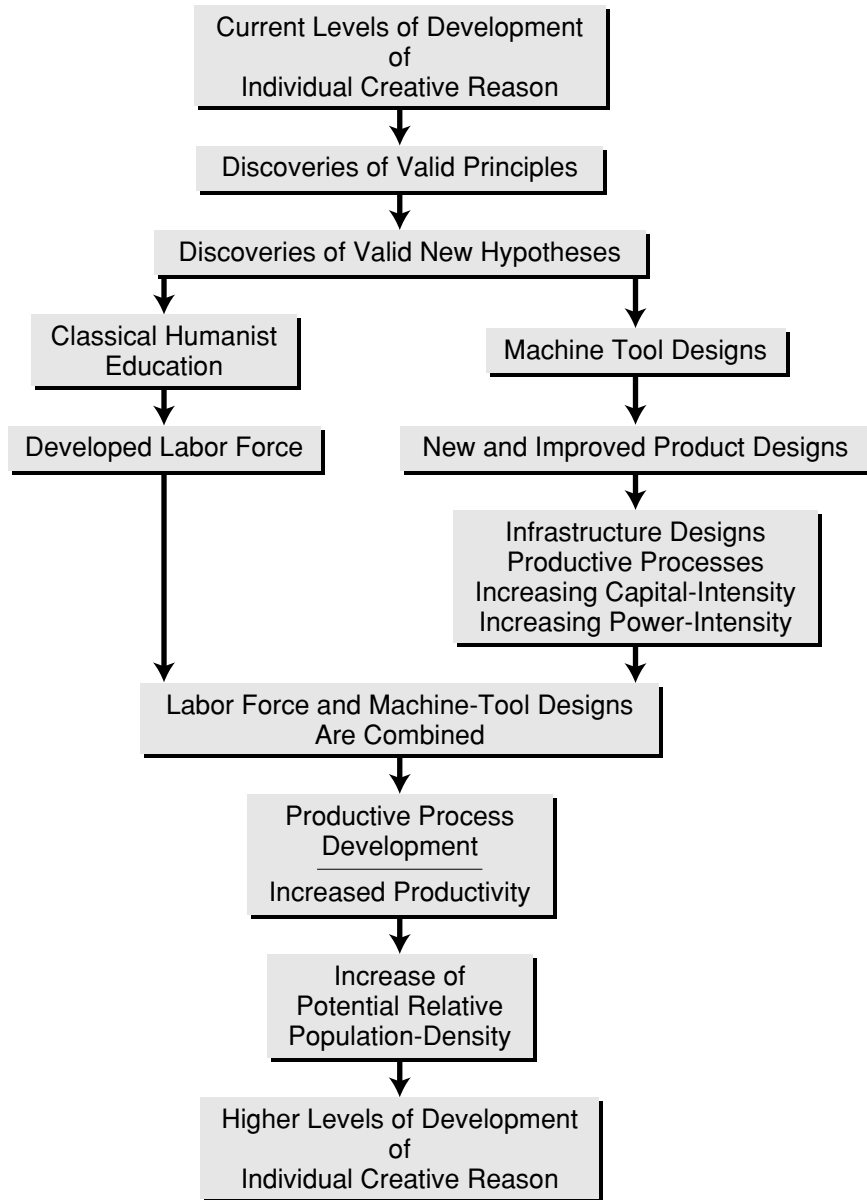
The rise of Germany to become the leading economy of the continent of Europe, was based directly on the American model and its successes. It was Carey who personally shaped Japan's rise to become a modern industrial power. The industrial development of Russia, under Tsar Alexander II and Count Sergei Witte, was based directly upon the American System model. The American System was known and taught in leading nations of Asia, and throughout the Americas. Everywhere it was used, the results were vastly superior to that of economies influenced by British economic liberalism.

During the Twentieth Century, for purely political reasons, the American System fell out of customary peace-time use, even in the United States. It was used only, either when actual war or the threat of war forced a general economic mobilization, or, was briefly, successfully revived in some degree, by President John F. Kennedy's space program. Yet, today, most professional economists and university students know nothing, or almost nothing about this American System.

Since we are considering that American System in the form my discoveries provide improved understanding of the reasons for its vast superiority over any rival, let us focus our attention on the kernel of the difference between the American System and the vastly inferior performance of the so-called British, or liberal economic doctrines. Turn now to **Figure 3: The Machine-Tool Principle**, or what is known otherwise as

FIGURE 3

How the Machine-Tool Principle is situated



the “science-driver” model of economy. Quickly consider the main historical highlights of how this came into being, and then trace through the steps represented by this figure, step by step.

The beginning of this model of economy dates from the year A.D. 1440, when the famous Nicolaus of Cusa published his book, which founded modern experimental science. Cusa’s principles were adopted by Luca Pacioli and Pacioli’s student and collaborator, Leonardo da Vinci. Johannes Kepler, in the introduction to his *Harmony of the Worlds*, credits Cusa, Pacioli, and Leonardo, as the principal sources

on which he relied for his scientific method. The scientific and technological discoveries of Leonardo, by themselves, amount to a general scientific and technological revolution.

The next major development along these lines, occurred in France, the organized science-driver program designed and directed by Minister Jean-Baptiste Colbert. This was the program which included the famous Christiaan Huyghens and, during the years 1672-1676, the Gottfried Leibniz who developed the original calculus, and also founded economic science, in Paris, while working with Colbert’s science-driver program.

The next major development occurred between the years 1792-1814, under the leadership of the French scientist famous as “the organizer of victory” against the combined force of the invading allied armies of France’s enemies, Lazare Carnot and his former teacher and collaborator Gaspard Monge. Both Carnot and Monge, like the majority of France’s Ecole Polytechnique, were followers of Leibniz in physical economy, and in issues of science generally. Carnot is of outstanding, original importance in science and in economics, in his pioneering the design and application of the modern machine-tool-design principle. Most of the branches of Nineteenth-Century developments in science, were introduced under the leadership of Carnot and Monge, in France, during the period 1794-1814, after which, beginning approximately 1826, world leadership in science quickly passed to Carnot’s and Monge’s collaborators and admirers in the Germany of Carl Gauss and Alexander von Humboldt.

The next major development in the history of the science-driver model of economy, was that begun under U.S. President Abraham Lincoln. The basis for this was the American System, as U.S. founders such as Benjamin Franklin and Alexander Hamilton had defined the principles of the American System. Later, beginning 1814, French military professionals and engineers earlier associated with Monge’s 1794-1814 Ecole Polytechnique, assisted the United States in developing West Point Military Academy under Commandant Sylvanus Thayer as the leading center of science and engineering in the Americas. A famous 1825 graduate of that West Point, who graduated at the top of his class,



Hydrology research in Mexico City. "This science-driver model is the normal form of a healthy modern, peacetime agro-industrial economy."

Benjamin Franklin's great-grandson Alexander Dallas Bache, became the direct liaison between the U.S. science community and Carl Gauss and Alexander von Humboldt in Germany. Meanwhile, during the 1830s, the German-American economist Friedrich List, returned from his collaboration with Philadelphia's Mathew Carey, to introduce the American System to Germany, and to organize the famous Customs Union, which became the first step toward the industrialized Germany which emerged, later, from 1876 onward.

When the U.S. went into Civil War, to defeat the British monarchy's puppet, the slave-owners' Confederacy, Lincoln carried the American System into action for his war-mobilization. Already, at the close of the Civil War, the United States had become the world's leading industrial power, the world's most powerful land army, with a naval power ready to be expanded, as was President Lincoln's intention, into defeating the British navy once and for all. It was in the United States, during the period 1861-1876, that the modern ma-

chine-tool principle of economy was fully established in the form which continued to be followed in all leading economies of the world throughout the Twentieth Century, until the "post-industrial" downturn introduced to the U.S. government in 1966.

One more leading historical fact must be noted. Since the 1901 assassination of U.S. President William McKinley, and McKinley's replacement by such admirers of the defeated slave-owners' Confederacy, as Mexico's enemies Teddy Roosevelt and Woodrow Wilson, during the entirety of the Twentieth Century, neither the United States, nor any nation of Europe has enjoyed an actual national profit except under conditions of preparing for war, conducting war, or as a spill-over from a space-program run like a war mobilization.

In the U.S. case, at the end of World War I, the Wilson administration plunged the U.S. economy into a deep depression. The same thing occurred under President Truman, during the years 1946-1948. Only the mobilization for potential nuclear and other war against the Soviet Union, prompted the Truman administration, in late 1948 and early 1949, to reverse the most extreme features of its ruinous monetarist policy, and launch an industrial re-expansion. Virtually all of the leading additions to technology during the 1970s and 1980s, were spill-overs of technologies developed under that U.S. aerospace "crash program" which the U.S. began to bring toward a halt in 1966.

Now, under the influence of the anti-technology, "post-industrial" utopianism which has been introduced over the recent thirty years, the world's current, short-term financial obligations, including so-called "off balance sheet" accounts, especially in the form of pure casino gambling called "derivatives," have risen to an unpayable amount, several times the combined Gross Domestic Product of all nations of the world. Today, with a qualified exception for the case of China, the world's financial and monetary system is hopelessly bankrupt, and rumbling like a volcano, ready to explode into a new series of collapses which will represent, inevitably, the most devastating financial collapse in history.

It is time for the world to return to the American system, as Figure 3 outlines it here. It will not be necessary to plan a war to bring back this science-driver model of economy. For reasons I shall now indicate, this science-driver model is the normal form of a healthy modern, peacetime agro-industrial economy.

Start at the top of the chart, and work our way down.

At any time, the accumulated discoveries of experimentally verified principle, in science, Classical art-forms, language, and studies of history, represent the basis for the potential level of productivity, and wealth, which can be reached by the population of that nation. Each of these principles is one whose original discovery can be reenacted in the mind of a student, in the same way a scientific principle's discovery is reenacted and supplied with experimental validation in a well-developed secondary and university educational pro-

gram. This accumulation of knowledge can be thought of as representing an expandable manifold in the sense of Bernhard Riemann's 1854 habilitation dissertation. To the degree to which that knowledge is being maintained within the population of a nation, that knowledge represents what I have identified on this chart as "Current Levels of Development of Individual Creative Reason."

The nation, and the world may add to those "Current Levels," additional, new, validated discoveries of principle, by the same experimental-scientific method which has succeeded in the past: through the stimulation of the developed cognitive powers of the individual human mind. These added discoveries lead to, not only new principles, new dimensions of a Riemannian manifold; in the effort to integrate these new discoveries with former knowledge, we develop, and also validate, new ways of looking at both nature and society. This, I have designated as "Discoveries of Valid New Hypotheses," using the term "hypothesis" in the way it was originally defined by Plato, and as "hypothesis" is used by Riemann.

This process represents the store of knowledge being supplied to the nation's educational system. Thus, I have included all the elements I have just defined, including a nation's educational system, within the area of the dotted line on this chart. Call this area, the educational-science system. This is the system which produces the nation's developed labor-force.

Now turn to the right-hand column in this chart; we come now to the matter of machine-tool designs.

Now, imagine that we believe we have solved a crucial scientific paradox. We believe, that we have discovered a new principle of nature. We must test that discovery. For this purpose, we must design an experiment. We must show that this principle, which we think we have discovered, actually operates in a number of places, in nature, where we should expect it to operate, if it is valid. Let us suppose we think we have proven that discovery experimentally. Often, we must make a new experimental design, based upon the problems which the previous experiments have forced to our attention. Imagine that we improve the design of the experiment several times over, in this way. Ultimately, if our discovery is valid, and if we work very well, we will end up with a refined design for the experimental demonstration of that principle. The principle is now ready to be taken out the laboratory, and put to work.

The next step, is to present this refined design of experiment to those engaged in producing designs for machine-tools, and also designs for new kinds of other products. Call this the "machine-tool design" sector of the machine-tool industry. Think of mechanical machine-tool designs, but also think of chemical and other processes which have the same function in production as the conventional machine tool. The result of any discovery of principle, when treated in this way, is a large family of new, improved products and improved techniques of production.

Now, combine the improved machine-tool designs with

the educated labor-force. The labor-force educated in the way we have outlined, will readily learn the principle embedded in these new machine-tool designs. That labor-force's understanding of these principles will enable us to succeed in production using the new product-designs and techniques.

Thus, we must consider two general factors determining the overall growth of national productivity under these conditions. First, we are limited by the percentile of the labor-force which has the quality of educational development matching the new technologies. Second, the rate at which qualified labor can increase its productivity through technological progress, is limited by the rate at which investment in such progress is flowing into not only agriculture and manufacturing, but also improvements in such basic economic infrastructure as land management, water management, power supplies, transportation, and the special needs of the urban environment.

Given a commitment to high rates of investment in technological progress, the rate of progress will be determined by the rate at which new discoveries are being developed. This rate of progress is limited by the size of the ratio of people employed in research and development, including the machine-tool sector, relative to the total employed labor-force; the lower that ratio, the lower the potential growth of productivity. Similarly, the higher the percentile of the labor-force left unemployed, or employed in the general service, clerical, and popular entertainment sectors, the lower the rate of productivity. This rate of progress is also limited by the structure of social life in the family household and in the population generally.

This describes the essential features of the science-driver model of modern economy.

This brings us back to the definition of the fundamental difference between human beings and great apes. Focus upon the structure of life within the family household, and the population generally. Define these structures from the standpoint of the model we have just outlined.

First, the quality of education. Is the education of a textbook form, or a Classical humanist form? The science-driver model requires, that general education at all levels, be based upon the Classical-humanist form of the student's reliving the mental act of the original discovery of principle, whether in science, or in art, or in study of history and pre-history.

The cheaper methods of education are those which Friedrich Schiller condemned as designed for what he termed, in German, the *Brotgelehrte*, a term which I think is best translated as referring to education designed for people training to sing to earn their supper, not for the benefit of the music. It is important that students be motivated by a passion for finding truth, instead of material rewards for replying to questions with the approved textbook answer. This passion for truth is cultivated by the student's actually reliving the mental experience of the original discovery of principle. Teachers must be

educated and otherwise qualified to use those methods of pedagogy in designing lesson-plans. Class sizes must not be so large, as to prevent the individual student's participation in the process within the classroom.

Second, the number of years devoted to education, and the percentiles of the student-age population who are enabled to remain in studies to complete such programs at each successively higher level.

Third, the rate of discovery occurring in the programs in the overlap of universities with research programs and institutions.

Fourth, the ratio of production of qualified professionals in science, Classical art-forms, language, and history, to total labor-force.

Fifth (and, also first), the cognitive quality of life in the family household, both for pre-school-age children, and during school and university years. The family household should be seen as a most important part of the total educational process. The exchange of ideas about matters of principle, about discoveries, in the family social setting, fosters achievement within the formal educational programs. Similarly, the quality of leisure activities outside the home, has a similar effect upon the potential productivity of the population.

When these considerations are taken into account, it is clear that any healthy form of modern economy is "dirigistic," in the sense that term is applied to the tradition of France's Jean-Baptiste Colbert. In fact, a "free trade" system, such as that of the British East India Company's Adam Smith, Jeremy Bentham, or the contemporary liberal economists, is also "dirigistic," if in the opposing direction.

The governing principle of any economy modelled upon the American System, is, as Treasury Secretary Hamilton wrote: to foster the increase of the (physical-economic) productive powers of labor through fostering the development of basic economic infrastructure and investment in scientific and technological progress in the production and physical distribution of goods. The design of the system of public credit, national currency, and national banking, in Hamilton's famous three reports to the Congress, is to shape the financial and monetary processes of the national economy to foster such increase in the productive powers of labor. Thus, credit, money, and banking must be controlled to the degree necessary to direct the financial and monetary processes into serving the national interest of fostering the increase of the productive powers of labor.

The French Physiocrats' *laissez-faire* dogma was just as dirigist as the Colbert whose memory these Physiocrats hated. Colbert's purpose, like Hamilton's, was to foster increase of the productive powers of labor through scientific and technological progress in infrastructure, agriculture, and manufactures; the Physiocrats', who represented the feudal tradition of the Fronde, was to weaken the national economy's development, in favor of the hereditary power of the system of serfdom under the feudal land-owning aristocracy. Adam

Smith, who copied most of his economic theory from the previous work of Physiocrats such as Quesnay and Turgot, differed from the Physiocrats on one crucial point: Smith, as a hired agent of Lord Shelburne's British East India Company and Barings bank, represented a different variety of feudal interest, that of the Venetian-style financier-oligarchy which ruled the Netherlands and England. Smith and other liberal economists have always designed the system of credit, money, and banking just as dirigistically as Colbert and Hamilton, but for the opposite purpose: to serve the private interests of the financier oligarchy to the disadvantage of the modern nation-state republic and its citizens.

When the liberal economists, such as the neo-feudalist Mont Pelerin Society, or the Wharton School, speak of "freedom," they are speaking of the freedom of the financial parasite from the control of its host, and victim, the modern nation-state economy. We opponents of both forms of feudalism, of both landed aristocracy and financier oligarchy, design the laws to defend the interest of the freedom of all of the individual citizens, present and future, against oppression by both relics of feudalism. The strike of the U.S. Teamsters' union against the looting of employees by the ultra-conservative present ownership and management of United Parcel Service, is one more example of this continuing struggle of patriots of the nation-states to free the citizens from the parasitical practices of such relics of feudalism.

In conclusion, I summarize the kernel of my own personal contribution to Leibniz's science of physical economy.

Science: Man studies himself

According to the false, but influential teachings of the so-called hesychasts, such as Aristotle and the Stoics, knowledge is achieved by contemplating the universe. So, they, who call themselves "the observers," insist, by definition, that they are a strange, non-existent species, standing upon a non-existent platform outside the universe. This is sometimes called oriental mysticism; it is also known among non-religious, secular mystics, by the awesome name of "scientific objectivity." A study of physical economy requires us to reject such aberrant, if popular notions of "contemplation" and "objectivity," as worse than useless. On the presumption that people in the real world might disregard the opinions of those who insist that they themselves do not exist: Look at man, as I have described the pre-history and history of the human species' relationship to the universe as a whole.

Through discoveries of principle, a power unique to the human individual, mankind has accomplished what no animal species could do. We have increased our species' power, per capita, over the universe. We, as a species, thus change our relationship to the universe, and also change the totality of relations within the universe. Thus, when we prove a discovered principle to be efficient in this way, we find that the universe submits to our will, and on our behalf, as if it were designed to be our servant. But, it obeys us only when our

commands are based upon principles which we discover to be efficient. Thus, when we observe any part of the universe, we are observing ourselves: the so-called “objective observer” is a contradiction in terms.

This is not a hit-or-miss process.

The location of our ability to make such validatable discoveries is known, and is unique. It is the sovereign cognitive powers of the individual personality. That agency, within the individual, is the distinction which sets mankind apart from, and above the animals; that agency, whose existence is denied by the empiricists and Immanuel Kant, is the only agency through which human knowledge is acquired, the only agency through which mankind’s per-capita power in the universe is increased.

This agency is, contrary to Kant, an intelligible existence. This is demonstrated, for example, by the replicatable nature of the reenactment of valid original discoveries, as by students in a Classical-humanist form of educational program. The rules by which success is achieved, are well-known among those familiar with the repeated successes of such reenactments. If we follow those known rules, we can be pressured of net success. There is nothing inherently random in this process.

When we examine more closely the problem of technological attrition in physical-economy, we recognize, that without the continuing intervention of this creative cognitive process, in discovering new principles and developing their application, all economies would be inherently entropic in physical-economic terms; a sustainable physical-economic profit for national economies would be impossible.

Once we take into account the physical-economic notions of “energy of the system” and “free energy,” there could never have been net growth, or sustainable profitability in any physical-economic process, but for a source of anti-entropy in the working of the internal processes of the economy. There is but one source of such anti-entropy: the creative productivity unique to the sovereign cognitive processes of the individual personality. It is the development and realization of that cognitive potential, which is the determining variable in national economy’s performance.

The efficient feature of the human individual’s, and the human species’ relationship to the universe at large is located solely in the development and realization of those sovereign cognitive potentials of the individual personality. Thus, in any scientific study of the universe, our ability to know that universe relies upon the same principles of individual cognition which are the sole active feature of man’s power to change the ordering of relations within the physical universe at large. In studying the universe, the power of individual cognition is studying its own action in an entirely self-reflexive way.

This shows us, that science is nothing other than discovering, through aid of experimental validation, those methods of thinking which have shown their anti-entropic

expression in terms of man’s increase of his per-capita power in the universe. Thus, what we discover, by means of this critical insight into the relative successes and failures of our cognitive processes, is a reflection of the universe’s “pre-designed” proneness to submit itself to the will of human creative cognition.

At that instant, we can not escape the thought, that what we are forced to recognize in this way, is what ought to be understood as the message of *Genesis* 1:26-28: man and woman, made in the image of the Creator, and equipped in that way, to exert dominion within the totality of this universal creation.

Where mere animals know one another only through sentient biological relations in current time, we human beings are enabled to know those moments of creative discovery of principle which occurred in the minds of original discoverers deceased centuries, or even millennia before we were born. The most intimate thoughts we may share with our contemporaries, are shared as we share the thoughts of discoverers long deceased, by re-creating the mental experience of discovery, each within our own sovereign cognitive processes. The most profound, the most meaningful and efficient social relations among human beings are defined in terms of such ideas. We live, thus, within the realm of the simultaneity of eternity, the simultaneity of the efficiency and replicability of those ideas which occur as genuine, valid discoveries of principle.

The efficient society, the efficient economy, is one which orders its affairs according to this principle. The good society, is one which provides its newborn future citizen the opportunity to become a personality within the simultaneity of eternity. The fundamental law ruling each and all nations and their relations with one another, ought to become the recognition of this principle, the principle that the true, self-governing purpose of any good society is a development of the individual personality consistent with this conception of the efficient place of the human individual within such a simultaneity of a universal eternity.

Unless we change our ways, to take at least a significant step of change in that direction, I can assure you, that within no more than a few years, most of this planet will have collapsed into a new planetary dark age, perhaps of two or more generations’ duration. Thus, I think, from studying the evidence of dead cultures and fallen once-mighty empires, does the universe purge itself of those forms of culture which lack the moral fitness to survive. Democracy is clearly misguided on this point. The issue is not whether the rightness of ideas to survive depends upon their popularity. The issue is, that if such popular opinion fails to respond to the right choice of ideas, then, it were likely, that the culture which produces such popular opinion will, at its moments of most dangerous crisis, soon cease to pollute the universe. We have come to a time, when that is the only sane way in which to situate our deliberations.