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# I. The Science of Physical Economy

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AUGUST 23, 2002

## Special Report: Science and Infrastructure

by Lyndon H. LaRouche, Jr.

**Note from the editor:** *Lyndon LaRouche wrote this report under the totally different circumstances of August 2002, under the presidency of George W. Bush (and at a time when LaRouche had already stepped forward as a candidate for the Democratic presidential nomination of 2004).*

*But the reader who studies it, taking those differences into account, will gain a rare understanding of physical economy and infrastructure which is no less true today than it was then, and is indispensable now to illuminate the economic policies needed for a second term of President Donald Trump. It should be read in conjunction with the preceding article by Robert Ingraham and Brian Lantz.*

During the recent two years, the Americas, Europe, and most of the world at large, have come to the fag-end of a decades-long, popular delusion about economics. The present world monetary-financial system is already teetering at the brink of a collapse, a collapse which has been caused by nothing but that delu-

sion. Now, during the Summer months of 2002, it has become clear, even to many among what had been the world's stubbornly wishful dreamers, that the world at large is gripped by the terminal phase of economic collapse of the present world monetary-financial system, a collapse of the 1971-2002, International Monetary Fund (IMF) system. No recovery of that "floating exchange-rate" monetary-financial system, will ever occur, neither during the months ahead, nor over the years to follow.

What we are experiencing, is a form of global crisis far worse than that of 1929-1933. Nonetheless, it is a crisis which we could overcome. It must be conceded, that were we to do no more than repeat the measures of recovery used successfully by President Franklin Roosevelt et al., we would fail to meet the present challenge adequately. We must restore the Roosevelt reforms; but, to succeed, we must add new features, features made necessary by the great changes in political geography and physical economy over the course of the 1933-2002 interval as a whole.

The most urgent of the immediate, specifically physical-economic U.S. reforms required by this crisis, involves immediate adoption of policies for rebuilding the U.S.A.'s basic economic infrastructure. Sweeping

### Table of Contents

*Section 1 is in this issue, Sections 2 and 3 will be in our next issue*

Introduction; Hoover, Roosevelt, and George W. Bush

1.0 The Present National Crisis in Transportation

Was it a Conspiracy?

When Men Conspire

What Was LaRouche's Conspiracy?

1.1 Where Transportation Fits In

2.0 'Hard' and 'Soft' Infrastructure

Classical Humanist Education

Classical Artistic Composition

Health-Care as Infrastructure

3.0 A National Infrastructure Policy

U.S. Global Infrastructure Today

Our Space Program

3.1 The American System of Political Economy

3.2 Infrastructure and Profit



*LaRouche's emergency infrastructure reconstruction program represents the methods of Alexander Hamilton's American System of political economy. "We must restore the Roosevelt reforms; but, to succeed, we must add new features, features made necessary by the great changes in political geography and physical economy over the course of the 1933-2002 interval as a whole."*



measures for rebuilding the systems of power generation and distribution, water management, land reclamation, health-care, and education, must be fully under way during the 2003-2004 interval. There are two aspects of the United States' basic economic infrastructure which desperately require even more immediate attention, even prior to the November 2002 mid-term elections: saving and rebuilding both the national railway system and the complementary air-transport system.

I explain those needed immediate measures, first describing the crisis-setting, and the national mission-orientation in which such actions are to be understood.

What the U.S.A. is experiencing now, is the closing act of a Classical tragedy: a self-inflicted ruin. This is a ruin deeply embedded in the habits acquired, over several decades, habits acquired by our leading institutions, and tolerated by the overwhelming majority of the population in general. If, and only if, we, as a nation, can come to recognize the error in those presently wide-

spread opinions and habits, we can find a way out of the crisis.

To escape from this crisis, we must abandon so-called "free trade" and "shareholder value" follies, to return to what our republic's first Treasury Secretary, Alexander Hamilton, outlined as an "American System of political-economy," a system entirely unlike the so-called capitalist and socialist systems of Europe. The great German-American economist Friedrich List named Hamilton's outline **The National System of Political-Economy**. It is a system sometimes identified as the "American historical exception": the system of such anti-Locke followers of Europe's Gottfried Leibniz as our Benjamin Franklin, Washington, Hamilton, Mathew and Henry Carey, Henry Clay, Abraham Lincoln, and avowed "American System" follower Franklin Roosevelt.

Solving the present crisis means warning every foolish American populist to stop blaming Washington, and "the politicians" for every actual or alleged

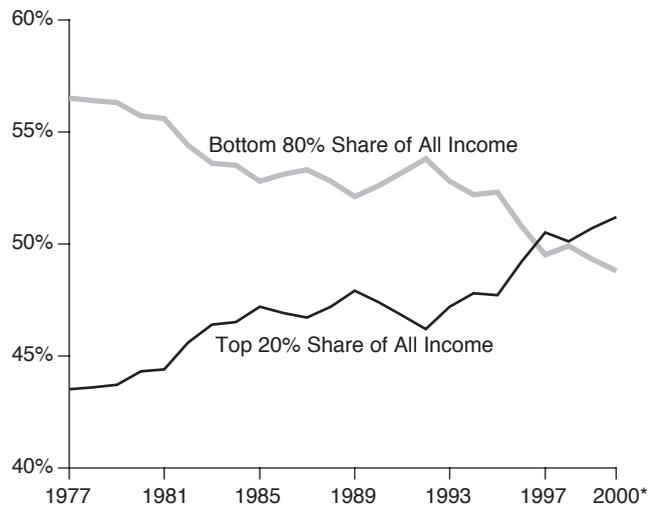
suffering of our people, from taxes to head lice; whereas, our more intelligent citizens rightly blame the menace of West Nile killer-virus on the silly popular opinion which allowed the fraudulent banning of DDT. No nation was ever threatened by destruction from within, except as a consequence of its prevalent popular opinion. In fact, the greatest source of present danger to the United States from our so-called politician class, is a prevalent whorish desire to be found attractive by what that class perceives to be popular opinion. So, we might speak, at times, of “Madam Government,” and, often, of “Hollywood Madam Government.”

We must accept the reality, that no recovery of the present financial system is possible, unless our minds be freed from the deadly, suicidal, “free trade” and “shareholder value” delusions of current popular opinion about economics. So freed, we were then able to act on the fact, that the hopelessly bankrupt, failed present system must be replaced by something like the successful 1945-1964 Bretton Woods system. Once that is accepted, a solution to the present crisis is possible. However, we can not simply wish for such a change; you must help me, now, to cause it to happen.

The kinds of monetary, financial, and economic reforms which we should remember as the experience of the 1933-1945 Franklin Roosevelt recovery, are a model of the types of recovery measures which will work, once again, today. Now, as during 1944-1945 monetary deliberations, there are two general steps which can bring about a general recovery. First, a concert of nations must apply the methods of financial-bankruptcy reorganization, to replace the presently failed IMF system with a fixed-exchange-rate system. This must be a system modelled on the 1945-1964 period of post-World War II reconstruction. Second, those Franklin Roosevelt-like monetary and financial reforms, must be matched by new economic programs, programs of economic recovery installed as law by governments.

As was done under Franklin Roosevelt during the 1930s, some part of those economic measures, including some expanded infrastructure programs, should be introduced by the U.S. President and Congress right now, before the November 2002 mid-term elections, without waiting for the completion of the needed international monetary reforms. However, today, we can not

FIGURE 1  
**Top 20% of Population Have More Than Half of All After-Tax Income**



\* = projected  
 Sources: Congressional Budget Office; EIR

postpone the new monetary system for more than a matter of months. The continued success of the immediate economic measures will depend upon an early agreement to a 1945-1964 type of international monetary reform.

### Hoover, Roosevelt and George W. Bush

Against the background of the present economic crisis, the use of the term “vacation” to describe President George W. Bush’s recent retirement to Texas, has an embarrassing double meaning. Instead of wasting precious time on vacation amusements, such as that propaganda side-show described as the Waco economic summit, President Bush should have pushed his administration and the Congress into two emergency measures to save the core of the nation’s public transport. He should have led actions to stop the virtual free fall of both the presently disintegrating national railway system, and the gravely endangered commercial passenger-airlines system. Were there no immediate action to protect these systems, action along the lines of the Franklin Roosevelt precedent, to save and rebuild those two imperilled elements of our nationwide transport system, the U.S. economy would soon cease to exist as a viable form of national economy. If we let

those rail and air-traffic systems collapse now, it would take years to rebuild up to even the level of those systems today. The danger of such disintegration is an immediate national, economic-security emergency.

I repeat my warning: Were we, now, to allow a further round of that shutdown of our nation's public transport, power, and water-management systems, a shutdown which began under the direction of President Jimmy Carter's National Security Advisor Zbigniew Brzezinski, the United States would cease to have a national economy in fact. Since Brzezinski came into that position of power, in 1977, there has been a persistent, accelerating decline in the real (physical) standard of living of Americans in the lower 80% of family-income brackets (**Figure 1**). Recently, with the 2000-2002 collapse of the so-called "new economy," the lower half of the upper 20% of family-income brackets has been increasingly hard hit with loss of financial assets. That collapse is now about to become much, much worse, unless drastic and sudden changes in national policy and practice are introduced now.

With the looming collapse of Federal Reserve Chairman Alan Greenspan's mortgage-inflation bubble, areas of apparent real-estate booms, such as the greater Washington, D.C. area, are threatened with giant waves of foreclosures, and catastrophically deep collapse in nominal value of the mortgages which had been bundled for processing by Fannie Mae and Freddie Mac. Meanwhile, the international valuation of the U.S. dollar had been propped-up by foreigners' subsidy of the mushrooming U.S. current account deficit, and floods of flows of money, from sources including the OPEC states, as subsidies of the U.S. financial system. Those subsidies are now drying out, as President Bush's support for Prime Minister Sharon's Middle East war, and Bush's pushing for a war against Iraq, is accelerating flight out of the U.S. monetary and financial systems.

As long as the present system persists, no general form of economic recovery will ever occur. The so-called economic fundamentals are hopelessly unsound.

Our nation's situation is broadly comparable to, but far more menacing than that under President Herbert Hoover, during 1929-1933. Hoover did not

cause the Great Depression of the 1930s, but he refused to reverse the accumulation of policies which had been introduced under Presidents Theodore Roosevelt, Woodrow Wilson, and, especially, Calvin Coolidge. These foolish policies were the accumulated changes, such as the Federal Reserve Act, which, combined with the world-wide reign of the British Nineteenth-Century gold standard, had dominated the 1901-1929 trends in the U.S. and world economy. These were the policies which had ultimately produced the two depressions in the 1922-1933 U.S. economy. It was this trend, continued under Wall Street's Andrew Mellon, which was the primary cause for the 1929-1933 crash.

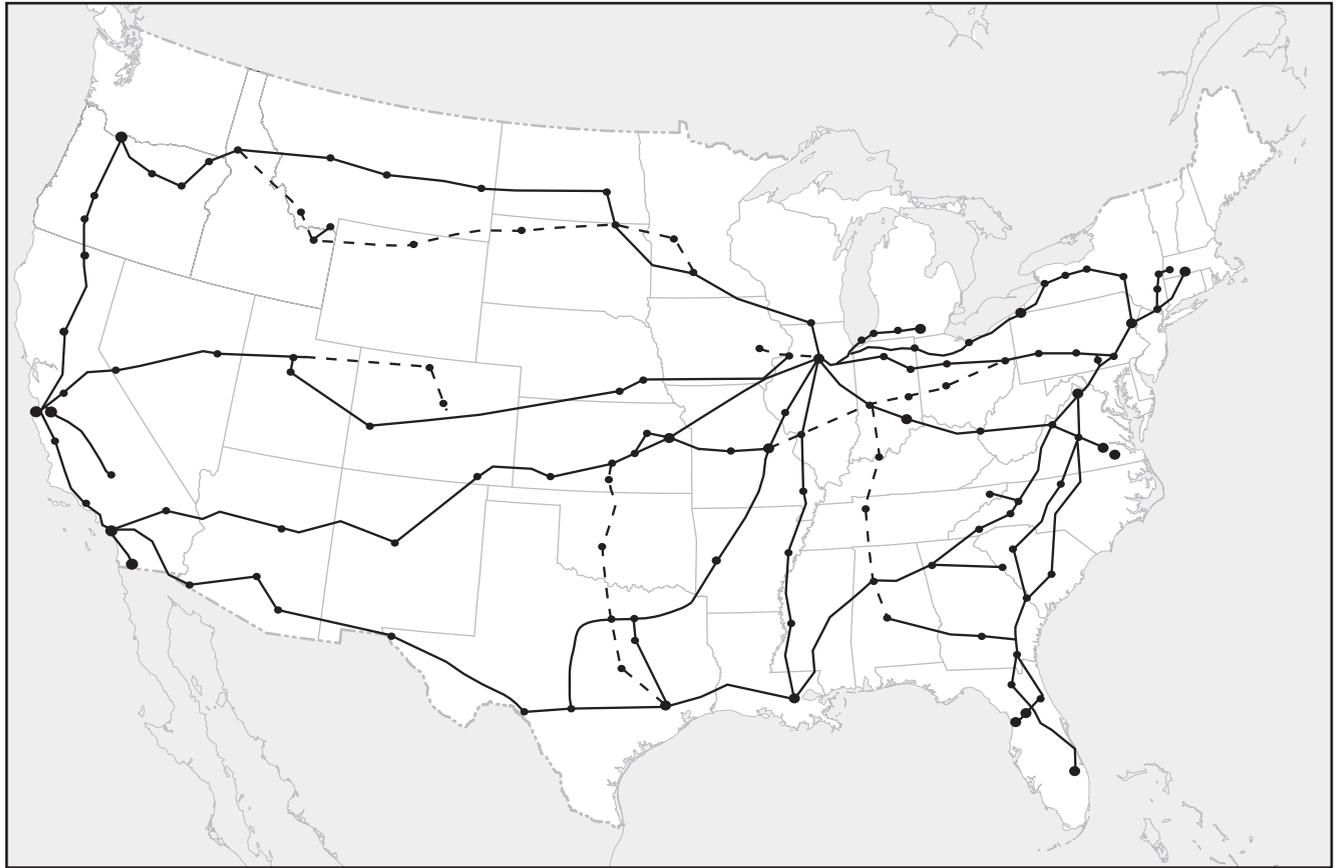
Now, like Hoover before him, President George W. Bush, "Number 43," has been induced to make some terribly bad decisions. Worst, has been the lie spread by that Administration and also some leading Democrats, that "the fundamentals are sound" and a "recovery on the way." In fact, the U.S. situation today is, as I said, far more dangerous than that of 1933. The first step toward overcoming an economic depression, is to cease denying the fact of the onrushing collapse. There is no recovery, George; Dracula will not be flying tonight, or any night.

Contrary to rumors, Hoover's reelection was not ruined by the Depression; he was ruined by refusing, as Number 43 has done so far, to admit that a genuine depression was in progress. Like Hoover before him, Number 43 did not cause the present U.S. depression; but, like Hoover, he adopted it as his child. That mistake is what ruined Hoover's hopes of reelection. Hoover was not to be blamed for the Depression; he was justly blamed by Franklin Roosevelt for allowing it to become worse. The same blunder would doom Number 43, and most of our citizens, too, unless the President were turned around, to adopt a new set of advisors who might persuade him not to repeat President Hoover's politically fatal blunder.

I repeat a crucial fact. The chief difference between 1929-1933 and today, is that today's crisis, while similar to the Great Depression of the 1930s, is far more serious. Nonetheless, the same principles which Franklin Roosevelt used to save the U.S. then, are key sources of insights, for defining the cure of the epidemic of accelerating collapse presently under way.

FIGURE 2

**Amtrak Rail Lines Lost, 1971-2002**



Source: EIRNS.

**1.0. The Present National Crisis in Transportation**

Compare the portions of the U.S. national railway system which are in service today, with the system in service prior to 1977 (Figure 2), and also look back to an earlier time, prior to the late 1950s merger negotiations between the Pennsylvania and New York Central railways (Figure 3).

Now, referring to the 1977 map, ask: Which intercity rail routes would be more efficient ways of transporting passengers than passenger air-transport? In making the comparison, assume that modernized rail systems, comparable to France’s high-speed intercity system, or the German design for a magnetic-levitation (maglev) system were used.

For example, look at the Northeast corridor from

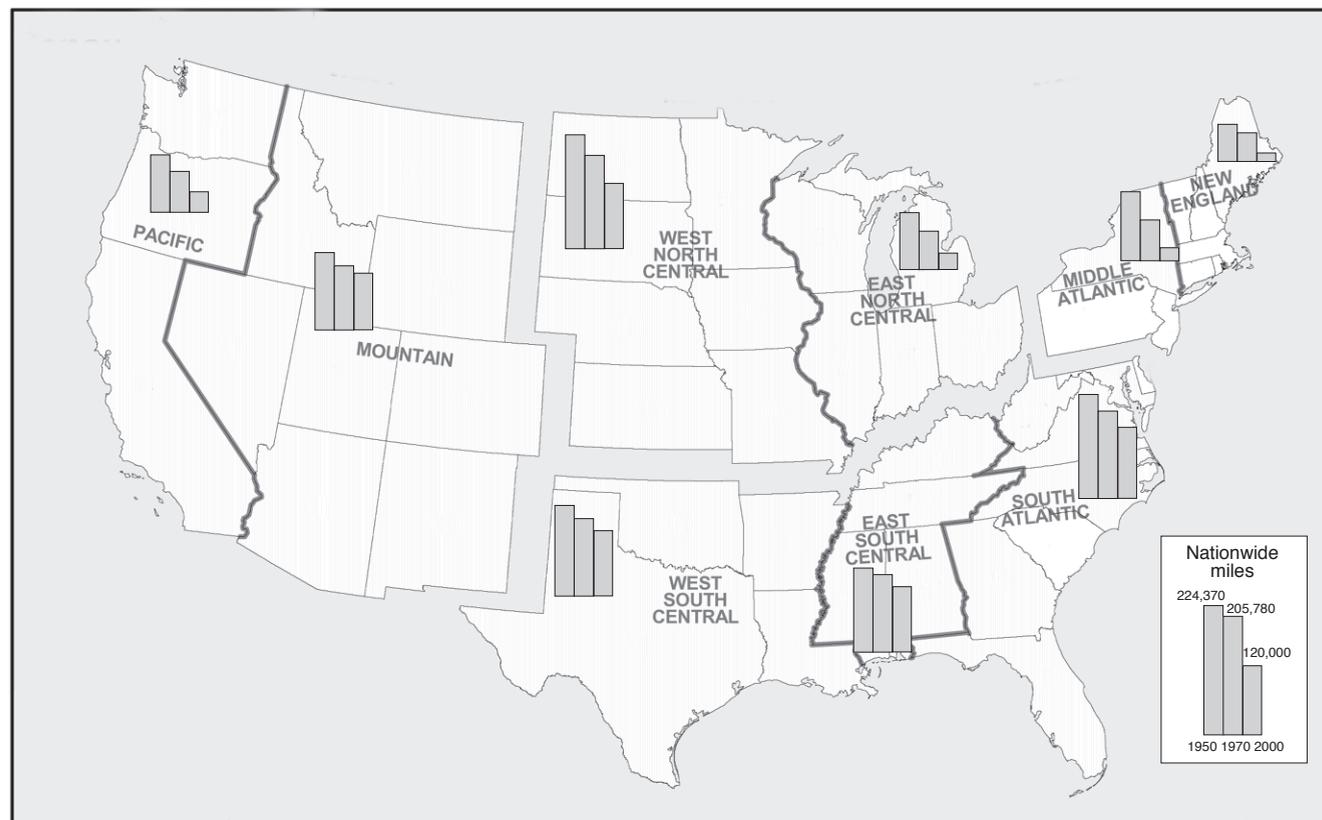
Boston, Massachusetts, down to Washington, D.C. (Figure 4). Start from the South Station in Boston, and proceed through Pennsylvania Stations in Manhattan and Philadelphia, through Baltimore, and Washington, D.C. Starting from downtown Boston, through downtown Manhattan, Philadelphia, Baltimore, to Washington, compare the in-travel time of passengers by rail, with the lapsed time required for travel from the city center to the airport, processing to board the aircraft, and so on, to reach a downtown destination in each of the cities en route.

Now, compare the incurred costs to airlines, of maintaining intercity passenger service, with the total incurred costs and lapsed time for travel by modern rail or maglev (e.g., persons, man-hours, miles, lapsed time of movement, dollars of capital plus cost. Lapsed time of movement is calculated as average time, beginning with travel to mode of rail, or air transport, to reaching

FIGURE 3A

### Decline in Railroad-Track Mileage, 1950, 1970 and 2000, By Region

(Miles of Track)



Source: U.S. Dept. of Transportation.

the ultimate destination for which the rail or air portion of travel is chosen.) (See Table 1.)

Now, continuing to focus on the Northeast rail corridor as a point for comparisons, consider the unpleasant reality, that domestic airlines now in a state of actual or near-bankruptcy, are slashing intercity passenger service as a way of effecting needed economies. Now, consider the action of the Bush Administration, the Congress, and others, in continuing to destroy even the presently remaining national rail service.

Now, compare the total cost to the national economy of moving passengers by highways, rather than rail types of intercity and local mass transit. Include all

of the costs which society incurs by substituting highway transport for rail-type mass transit, including bigger highways, traffic jams, and so on. Thus far, we have only sampled some of the most direct costs of the changes in work- and life-style for both the population in general, and the national economy.

Now, shift attention to a related matter. This time, study the 1977-1980/2000 changes in economic relations among intercity and national rail corridors, on the one side, with collapsing levels of industrial activity in population centers, and with the amounts of passenger travel and freight-tonnage along lines connecting these urban centers. Compare these changes with 1971-2000

FIGURE 3b

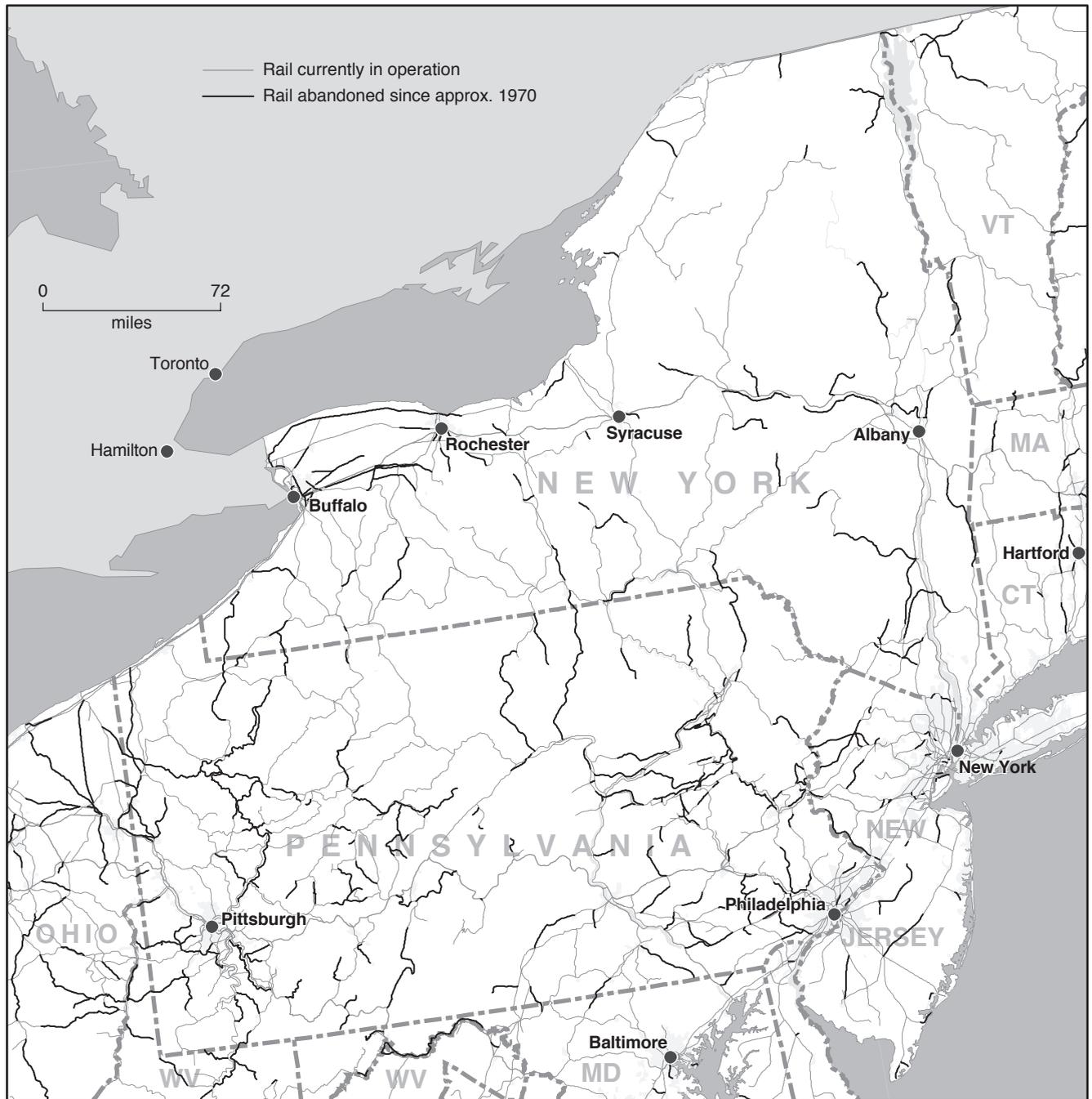
### East North Central Region: Abandoned and Existing Rail as of 2002



John Sigerson / EIRNS 2002

FIGURE 3c

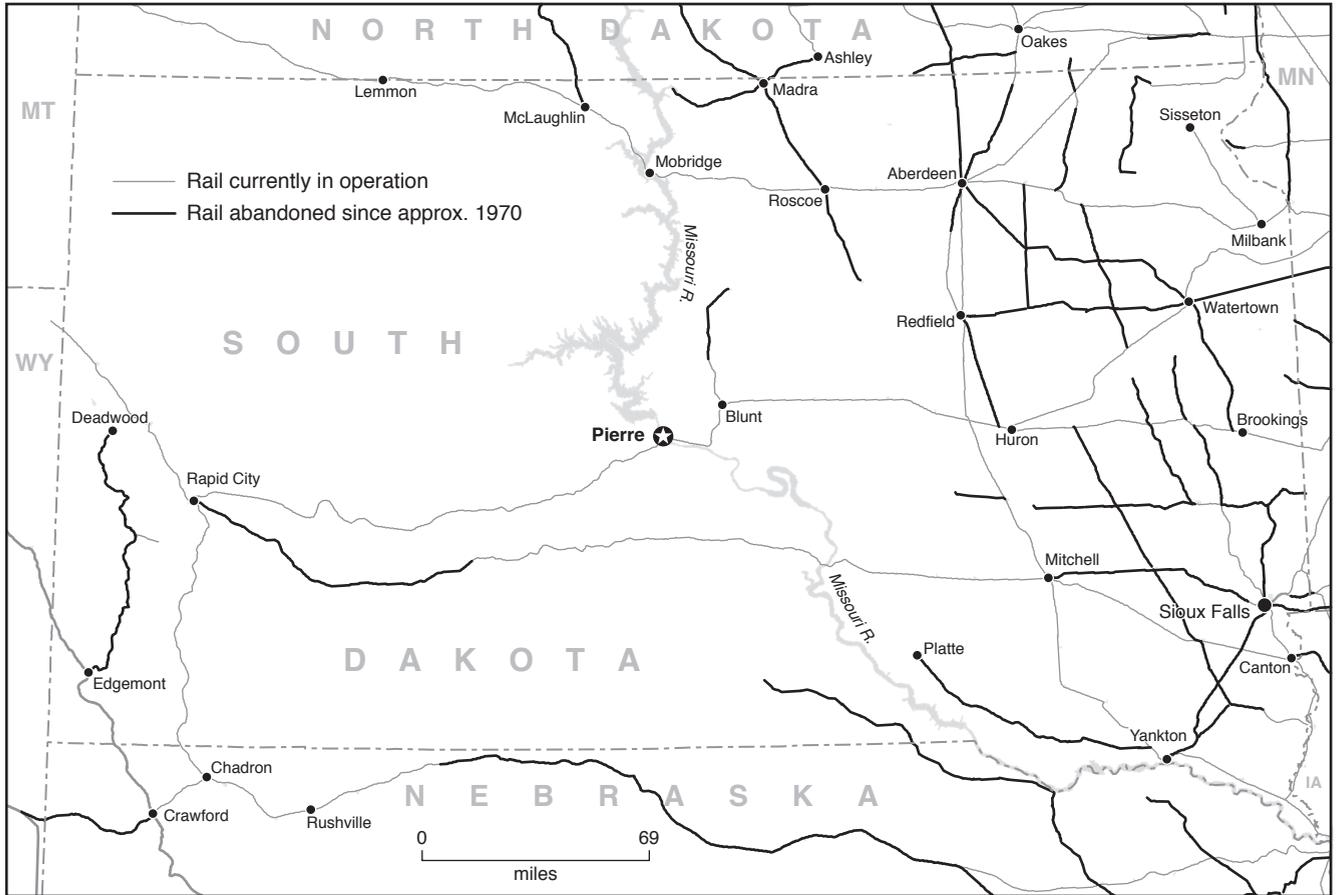
### Middle Atlantic Region: Abandoned and Existing Rail as of 2002



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FIGURE 3d

### South Dakota: Abandoned and Existing Rail as of 2002



John Sigerson / EIRNS 2002

FIGURE 4

### The Amtrak Northeast Corridor



Source: Amtrak

## Rail Is Faster in Northeast Corridor

Travel by rail is at least as fast or faster than air travel, in trips between most cities 350 miles (564 kilometers) apart or less. As magnetic levitation is built, it becomes the best mode of transport by far.

Table 1 shows lapsed times of travel, downtown to downtown, from Boston to the leading cities in the Northeast Corridor. Since the Amtrak stations in these cities are located in the downtown areas, they are easily accessible from the city proper as a starting point for travel; whereas reaching an airport requires travel from downtown, usually involving several different vehicles.

The trip from Boston to Baltimore exemplifies the process. Start in downtown Boston and take the Blue Line subway to Logan Airport Station, and then the Massport Shuttle bus to the airline terminal (total transit/ride time for the two vehicles, including a short wait, is 40 minutes). A commuter must now arrive 2 hours before plane departure. The flight to Baltimore will take 1 hour, 28 minutes, and deplaning, another 15 minutes. Then the commuter must take the shuttle bus to the MARC train station, and the MARC train to downtown Baltimore (total transit/ride time for these two vehicles, including average waiting, 1 hour and 15 minutes). From departure in downtown Boston, the traveler arrives at downtown Baltimore 5 hours and 45 minutes later—assuming no baggage is checked.

Compare conventional train travel, and then the more revolutionary magnetic levitation (maglev) train. In each instance, the point of departure is downtown Boston's South Street station, proceeding

to New York's Penn Station, etc. From Boston to New York, Amtrak's normal train service is an hour faster than the airline trip; its higher-speed Acela Express train is an hour and a half faster, although the poor condition of Amtrak's tracks holds the Acela below its top cruising speed. The Acela Express also beats plane travel to Philadelphia, and is comparable in the case of Baltimore.

It may appear anomalous that a trip by air takes less time from Boston to Washington, D.C., than it does from Boston to New York City, only half the distance. It is ground transport to and from the airport that consumes much of the time in the trip to downtown New York City, whereas Washington's Reagan National Airport is a short subway stop from downtown. Thus, the Boston to Washington trip is the only one in which the lapsed time of travel is appreciably less by air than by rail.

But once the United States develops maglev rail, as LaRouche recommends, the situation changes dramatically. Maglev cuts the transport time by 60-85%, depending on the destination. In a maglev system, there is no steel wheel riding upon steel rail; rather, magnetic forces lift, propel, and guide a vehicle over, or under a guideway, so that it "floats" on a magnetic cushion. This eliminates the major source of friction, vibration, and wear on the vehicle, which slows all traditional modes of railroad transport. Maglev systems permit revolutionary methods of locomotion and control of the moving vehicles. Current-generation maglev systems travel, in extensive tests, at top speeds of 280-300 mph (450-492 kmh). At that point, air travel becomes appropriate only for distances greater than 500-750 miles (805-1207 km).

—Richard Freeman and Anita Gallagher

TABLE 1

### Northeast Corridor: Travel from Downtown Boston in 2002

(Hours in Transit, by Mode)

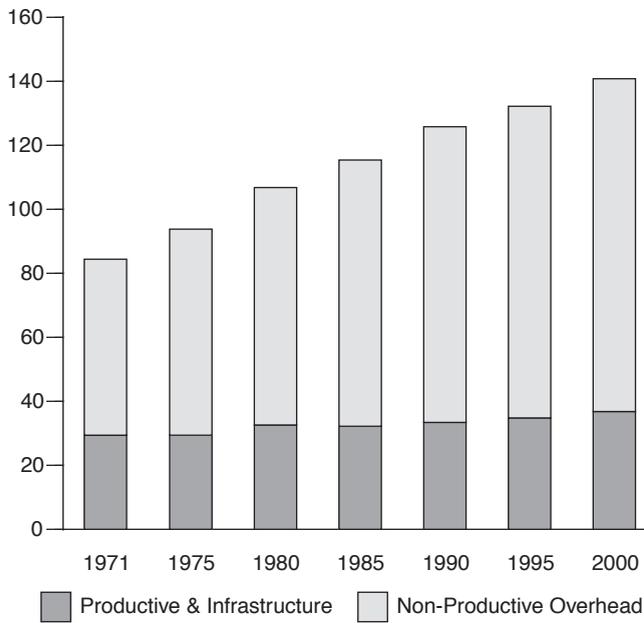
	Distance from Boston	Airline, No Baggage	Airline, Baggage Checked	Normal Amtrak	Amtrak Acela Express	Maglev Train
New York	208 miles (335 km)	5.50	6.00	4.25	3.65	0.90
Philadelphia	299 miles (481 km)	5.25	5.75	6.00	5.15	1.30
Baltimore	404 miles (650 km)	5.75	6.25	7.50	6.35	1.90
Washington, D.C.	434 miles (699 km)	5.00	5.50	8.10	6.90	2.00

Source: Amtrak; Airport Services; *EIR*.

FIGURE 5

**U.S. Labor Force, 1971-2000: Non-Productive Overhead Grows**

(Millions of workers)



Source: U.S. Dept. of Labor, Bureau of Labor Statistics, "Employment & Earnings"; U.S. Department of Commerce, "Statistical Abstract;" U.S. Department of Health and Human Services, Health Resources and Services Administration, Bureau of Health Professionals; U.S. National Center for Health Statistics; *EIR*.

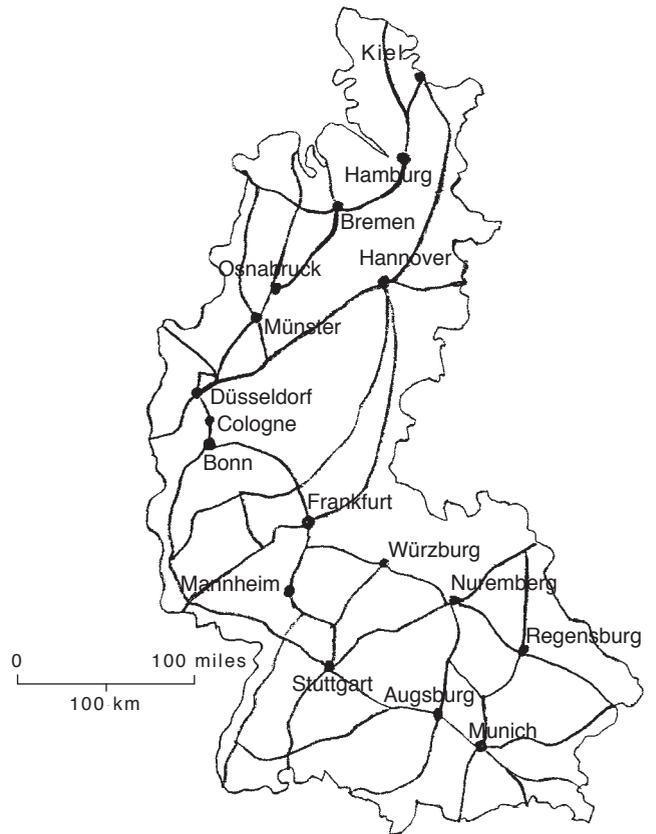
changes in the percentiles of the total labor force employed as operatives, engineers, and technicians, in capital-intensive forms of manufacturing and farming (Figure 5). Compare these U.S. data to the case for the agro-industrial economy of Germany over the interval 1971-1989 (Figure 6). We have reduced the percentile of the labor force employed in production of physical goods, while increasing the percentile employed in such forms of overhead costs as unessential low-skilled services and administrative routines: no way to run a railroad!

Ask: What is the meaning of those changes to which these selected statistical benchmarks point?

Beginning approximately the time coinciding with the U.S. entry into its official 1965-1972 war in Indo-China, the U.S. economy underwent a profound change. It turned away from its tradition as the world's leading agro-industrial nation, to become an increasingly decadent culture, to become what has been called a "post-industrial," or "consumer" society. I have

FIGURE 6

**West Germany 1989: Selected Routes of Rail Grid**



compared this 1965-2002 plunge into economic and cultural decadence, to the degeneration of ancient Italy which characterized Roman civilization and its tradition, from approximately the close of the Second Punic War, until the emergence of modern European civilization during the Florence-centered Fifteenth Century Renaissance of the anti-Romantic, Classical Greek tradition.

Those powerful political-financial forces which had hated President Franklin Roosevelt, seized the opportunity presented by his untimely death, to begin tearing up the foundations of those American constitutional traditions which Roosevelt had invoked to rebuild the U.S.A. as the only world power to emerge from the 1939-1945 war in Europe.

During 1933-1945, Roosevelt rebuilt the power and prosperity of the U.S.A. through his reliance on that principle of the general welfare which is known as *agapē* in the Classical Greek of Plato and of the Christian Apostles John and Paul; rebuilt the ruined nation he

inherited from President Hoover's failing fingers. His opponents preferred the contrary tradition of Presidents van Buren, Polk, Cleveland, Theodore Roosevelt, Woodrow Wilson, and Coolidge. Once the war had been surely won, those opponents used the occasion of the President's death, to begin the process of uprooting the constitutional foundations of that Roosevelt-led, capital-intensive economic reconstruction of the nation's physical productive powers, which had been built up during the 1933-45 interval.

### **Nixon's 1971 Decision Undid FDR's Work**

The primary target of this Roosevelt-hating, so-called "conservative" financier-led interest, was the popular base of Roosevelt's leadership. The objective was to begin the process of ripping the general welfare clause out of the U.S. Constitution, and gradually degrading and corrupting those portions of the population which had elected Roosevelt to an unprecedented four terms as President.

Until President Eisenhower's retirement from office, and the assassination of President Kennedy, the Roosevelt legacy was still so deeply embedded in the U.S. population, that the enemies of that legacy, the nuclear-utopian cabal, were limited to corrosive, but inconclusive victories in their determination to turn back the clock to Teddy Roosevelt, Wilson, and Coolidge. The case of the Suez Crisis illustrates that point. The assassination of President Kennedy and the launching of the official U.S. war in Indo-China, signalled the takeover of U.S. political and economic policy-shaping by a force which Eisenhower had denounced as "the military-industrial complex." That "complex" is what is otherwise known as the utopian financier/war-making interest, as presently typified by its sympathies for Israel's Ariel Sharon and the political "chickenhawks'" foolish lust for a new war against Iraq.<sup>1</sup>

Under the growing influence of those wild-eyed utopians, who used their roles as caricatures of Roman imperial pro-consuls, to control both the Nixon and Carter Presidencies, the United States underwent a fundamental change in outlook echoing the imperial impulse of post-Second Punic War Rome. Imperial

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1. The term "chickenhawks" is currently used to point out the lack of U.S. military service records among those fanatics currently most zealous in their reckless demands for a more or less immediate war against Iraq.

Rome ceased to be a productive economy, and, instead, relied increasingly on looting those populations which it subjugated both within its empire, and on the Empire's borders. The crucial blow which brought about the transformation of the U.S. from a productive, to a degenerate, consumer society, was the launching of the anti-Franklin Roosevelt decision of August 15, 1971. That decision destroyed that Roosevelt-designed Bretton Woods system which had organized the great post-war economic build-up of 1945-1964. President Nixon launched the so-called "floating exchange-rate" system which led into the presently onrushing collapse of the post-1971, global monetary-financial system.

The collapse of many of the former industrial centers of the U.S.A., the collapse of the technologically progressive family-farm system, and the collapse of the U.S. rail system, are leading markers of a decadent United States driven now, like the fabled lemmings, to the waiting brink of the cliff.

From the time of the 1944 Democratic primary campaign, until the present, the utopian financier circles of the U.S.A. and the far-flung British Empire, were obsessed with the idea of building a post-war, English-speaking world empire, a utopians' empire modelled on the widely publicized "Open Conspiracy" design presented jointly by the utopian nuclear-weapons fanatics H.G. Wells and Bertrand Russell and their followers.

### **Was It a 'Conspiracy'?**

At that point in this report, one can hear today's wild-eyed maenads and satyrs shrieking their protesting cries of "Conspiracy theory!"

Fools like those, when met among academics, are easily recognized as victims of those types of wild superstitions met among such followers of the Cathar cult as the empiricists John Locke, Bernard Mandeville, François Quesnay, David Hume, Jonathan Edwards, Adam Smith, and Jeremy Bentham. These cultists worship a god of the gamblers, whose "Invisible Hand" operates from under the floorboards of the universe, fixing the roll of the dice, so that some men, preferred by that "Maxwell demon," become rich, and others poor. For such superstitious fellows, history is shaped by statistical accidents beyond the comprehension of the human will. For them, religion is a form of worship of an all-powerful, demonic croupier allegedly lurking under the floorboards of reality.

If one points out the existence of such rules of behavior promoted by those influential peddlers of superstition, worshippers of that demonic “Invisible Hand” may burst into mindless, repeated chanting of “Conspiracy theory!”

Contrary to such superstitious fellows, history is actually shaped in the way the German Classical military doctrine of *Auftragstaktik* implies. I explain.

History is shaped as Johannes Kepler, the original discoverer of gravitation, and first founder of a comprehensive form of modern mathematical physics, defined the organization of the Solar System. God, says Kepler, governs the lawfully ordered orbit of the planet by an *intention*, an intention which Kepler identifies as a *knowable universal physical principle*, the principle of gravitation. God is no gambler’s bookmaker, no statistician. He is a God of truth, not mere opinion; He is a God of universal physical principles, principles which, as Kepler shows, express His *intention*.

In society in general, as in government itself, government can, at best, choose a course of national action based upon proven universal principles. However, that knowledge of principles is not perfect forewarning of what will actually occur. We poor mortals never know *all* of the principles which are operating; therefore, the field commander, or corporal will probably find that the combat or analogous situation he faces, is not exactly the situation which he, or his superiors expected. His challenge, therefore, is to discover how to fulfill the specific mission to which he is assigned, by using his professional skills and powers of creative leadership, to develop the needed tactic on which successful leadership in the mission depends. In the extreme case, as “old” Moltke illustrated the principle for a specific case, the local assigned task may even be cancelled and replaced, on the judgment of the trusted local commander. In German: *Auftragstaktik*.

Therefore, success of the mission often depends on what is best termed “flanking” the opposition. Often, this means recognizing an exploitable flaw in the opponent’s tactical expression of his intention. Since the definition of the principles of *strategic defense* by France’s great engineering officer Lazare Carnot, superior skill in development and use of logistics, rather than kill-power, is a crucial margin of difference in warfare, or comparable mission-oriented enterprises. The example of Gen. Douglas MacArthur’s direction of the Pacific

War, is an example of the preeminent role which strategic defense assigns to logistics.

It is the same in all important missions in life.

In peace, or war, the laws and customs of a society combine in their effect, to form what scientists term a *system*, as a specific form of mathematical physics is a system. By “a system,” we should understand something comparable to Euclid’s geometry, his **Thirteen Books of the Elements**. The system is based upon an approximately fixed set of definitions, axioms, and postulates. That system is filled out by adding an accumulation of theorems and related impedimenta, each and all of which are presumed to be not-inconsistent with the set of definitions, axioms, and postulates. A body of popular opinion, for example, has many of the characteristic features of such a system. For example, the culture of Belshazzar’s Babylon was such a system, in approximation. The notion of such a system is the point of Percy Shelley’s poem “Ozymandias.”

The point to be emphasized, is that virtually all such systems encountered in scientific practice, or the prevalent practice of a society, are flawed. Most social systems known from history have been exposed as tragically flawed. The rational study and criticism of such mathematical and social systems, is the branch of science known as *epistemology*. A body of religious belief is such a system. The doctrine of Karl Marx’s four-volume **Das Kapital**, represents such a system. Any current body of popular opinion has the qualities of such a system.

For example, when a fanatical adherent of the system known as empiricism or logical positivism, screams “Conspiracy theory!” he is denying the fact that empiricism is a system. That means the empiricism common to such as Sir Francis Bacon, Thomas Hobbes, Lord Shaftesbury’s John Locke, Bernard Mandeville, David Hume, Adam Smith, Jeremy Bentham, and their imitators. The respective, competing, neo-Aristotelean outgrowths of the modified empiricist systems constructed by Immanuel Kant, G.W.F. Hegel, and Hegel’s crony Savigny, and other post-1789 Romantics, are specific types of systems which are not only distinct sub-types of empiricist systems, but they can not be understood in a practical way, unless they are recognized as systemic outcroppings of both anti-Classical Romanticism in general, and empiricism in particular.

For example, the current form of combined eco-

conomic and social philosophy of practice of the present United States, is a system. It is a system which has connections to the earlier systemic features of U.S. mass behavior, but which is functionally distinct from the dominant systemic features of pre-1965 mass behavior of the U.S. The change of the United States from its earlier character as a producer society, to its recent decadence as a consumer society, is typical.

For example, most among those Americans who passed through adolescence during the 1960s, often seem almost a different species than their parents' and grandparents' generations, chiefly because of the cultural paradigm-shift characteristic of the mid-1960s shift from a producer-oriented system toward a consumer-society system. There is an even more pronounced cleavage between the systemic outlook of the "Baby Boomers" and their children's generation.

It is such systemic features of cultures, and such systemic differences among successive generations of the same culture, which are crucial in attempting to make any important forecast of the likely developments within a society as a whole, or a definable stratum of that society. My unequalled success as a published long-range economic forecaster, is due chiefly to my emphasis of the overlay among two kinds of systems: The system represented by physical science, and systemic features of the differentiated social-cultural systems of which a society is composed.

Whether in Classical tragedy, or current history, the crucial features of long-ranging social processes, are most clearly expressed by the effects of the breakdown of what had been previously well-established social-political systems. In such latter cases, the society's habitual adherence to customary rules of behavior has led, ultimately, to a loss of that system's superficially apparent, temporary appropriateness to the situation now confronting it. "The system doesn't work any longer as it was supposed to!" So, a generation or more after the rise of the ideology's influence, perhaps longer, reality has overtaken the system, exposing the fatal flaw embedded within it from the beginning.

The farcical "economic conference" recently performed at Waco, is an exemplary symptom of such a breakdown at the end-phase of a previously habituated system of mass behavior. President Herbert Hoover's pitiable folly, in his response to the 1929-1933 crisis, is an example of the way in which what had been considered reliable beliefs, turn cruelly against the believers.

Such are the evidences of what is accurately identified as a *systemic crisis*.

The following little example is noteworthy.

The occurrence of what had been the inevitable collapse of Enron, has triggered a hue and cry against alleged "bad apples" among prominent executives of corporate basketry. Foolish people now cry: "Weed out the bad apples, and all will be well once again!" In fact, the badness of those apples, the inherent moral corruption of those apples, is an inevitable product of the system launched by Federal Reserve Chairman Paul Volcker in the fourth quarter of 1979, a system continued by Volcker and Alan Greenspan ever since: the so-called "shareholder value" system.

To clean up that system would require nullifying all of those relevant legislation and Federal court decisions since 1982, which favored the practices of Ivan Boesky, Michael Milken, the Keating Five, and George Soros. The rotten-apple system features the role and influence of the Democratic Leadership Council (DLC), deregulation, "privatization," and so on, which went into building such edifices as the financial architecture and corporate practices of Enron, the dot.com bubble, and the Fannie Mae-led mortgage bubble. The problem is not the apples; the source of the rot in those apples is the tree. The rot is the decadence built in, axiomatically, to the consumer society as a species of political-economic system and legal philosophy.

## When Men Conspire

The scrupulous epistemologist warns, that the uses of the term "conspiracy" have one meaning in common, but also three meanings which are explicitly contrary to one another.

Each of these uses of the term, signifies a sharing of intention among some, or even nearly all of the members of a society. In the term's common use, it signifies a plot, a scheme, to some purpose which is held secret from persons outside that particular association. In the more significant use of the term, it points toward a sharing of belief in a set of assumptions which have the implied character of a special set of definitions, axioms, and postulates. In the latter case, we may speak of "shared belief in a system." *We speak of systemic, rather than ad hoc conspiracies.*

All of the important features of the present U.S. economic and monetary-financial crises, are reflections of the effects of widespread sharing of what are chiefly the

misguided beliefs (*vox populi*) of a large population. The center of the systemic conflict so defined within today's U.S.A., is the often embittered opposition between those who believe in the regulated, production-oriented American System of political-economy of President Franklin Roosevelt, and the opponents of that system, who prefer the decadent, consumerism-oriented system of deregulation and "free trade" currently preferred among anti-Roosevelt, American Tory ideologues. It is the latter system whose axiom-driven failure has prepared the way for, and unleashed the present world depression.

Today's relevant, *systemic conspiracies* are assorted among three outstanding types.

The first two types, represent, respectively, ad hoc or systemic forms of belief in a fixed system, the latter like that of both Aristotle and the empiricists; the definitions, axioms, and postulates of the system remain permanently constant within the limits of that specific system. The third type, expresses the Classical conception of man in the universe as typified by Plato, Kepler, Leibniz, Gauss, and Riemann. This latter view *rejects axiomatically* that notion of a fixed set of so-called "ivory tower" axioms, which we associate with Aristotle, Claudius Ptolemy, and empiricists such as Galileo, Descartes, Bertrand Russell, et al.

The third view is typified by the discoveries of mathematical physicist Bernhard Riemann, as Albert Einstein came around to accept, explicitly, that view—of a finite but unbounded universe—which had been defined by the discoveries of Kepler and Riemann. This third view is that which I have shared, with increasing efficiency, since adolescent wrestling with the leading Seventeenth- and Eighteenth-Century English, French, and German philosophers, including Leibniz and Kant. My choice is the view which corresponds in practice to what Alexander Hamilton defined as *the American System of political-economy*. This third view, explicitly that of Leibniz, locates the source of profit of national economies as a whole in the development of *the physical productive powers of labor*; a development originating in the discovery and application of *new* universal physical principles.

That American System has its explicit origins in two crucial aspects of Leibniz's discoveries in political-economy. First, Leibniz's founding and initial elaboration of that branch of physical science known as *physical economy*, over the interval 1671-1716. Second, as

the U.S. 1776 Declaration of Independence attests, Leibniz's definition of "Life, Liberty, and the Pursuit of Happiness," in his exposure of the fraud of John Locke's Cathar-like, pro-slavery definition of "Life, Liberty, and Property."

In the third view, the only source of actual profit of an economy as a whole, is the application of discovered universal physical principles to the effect of creating new states of nature, states of nature which could not have existed prior to making those discoveries of what are provably universal physical principles. *The proof must be physical, not mathematical.*<sup>2</sup> The typical effect of such policies of science-driven practice, is to increase what I have defined as *the potential relative population-density of society*, as measurable per capita and per square kilometer of the Earth's surface.

### Three Characteristics of the American System

The meaning of the term "ideas," as defined by Plato and his followers, is restricted to the implications of such a definition. Such discoveries of principle (ideas) are of two forms. First, the discovery of ideas concerning nature, as by an individual discoverer of a principle of abiotic physics or of biology. Second, discoveries of social principles bearing upon mankind's increased power to acquire, and cooperate in realization of such ideas. The latter ideas, respecting the intellectual organization of social relations, have distinct physical effects. *Therefore, such ideas respecting the social organization of mankind around ideas, also qualify efficiently as universal physical principles, in the same sense as any other experimentally validated discovery of a universal physical principle.*<sup>3</sup>

Therefore, the ability of society to generate a true profit, depends absolutely on the discovery and application of man's discovery of both classes of new universal physical principles, as I have included among physical principles, certain types of ideas respecting social organization. With that important qualification, we might

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2. Cf. Carl Gauss's 1799 announcement of the discovery of the fundamental theorem of algebra is the Classical refutation of the axiomatically "ivory tower" mathematics of d'Alembert, Euler, and Lagrange, and also of Laplace, Cauchy, Clausius, Grassmann, Felix Klein, Ernst Mach, et al. Gauss's argument echoes those of Archytas, Plato, Eratosthenes, et al., showing that there exist only physical solutions for the doubling of the square and cube.

3. Lyndon H. LaRouche, Jr. **The Economics of the Noösphere**, EIR News Service, Washington, D.C., 2001.

say that the only source of sustainable true profit of a society, is the quality of scientific and technological progress driven by an ongoing process of an individual's voluntaristic discovery and application of an expanded store of such combined types of universal physical principles.

Thus, we should rightly regard the influence of the doctrines of the neo-Manichean Cathars, as echoed by Locke, Quesnay, Mandeville, Adam Smith, et al., as intrinsically evil, since those doctrines define a social order in which the prosperity of a few, is premised upon the subjugation of the many to the status of dumbed-down virtual human cattle. In opposition to such wicked doctrines as those of such neo-Cathars, the American System of political-economy is premised upon the efficient sharing of participation in a system based upon increasing the productive powers of labor, an increase effected through fostering and employing increasingly capital-intensive investment in scientific and technological progress; through fostering the universal increase of the productive powers of labor.

Such progress confronts us with three leading propositions. First, progress as expressed by the individual's economically efficient relationship to the state of affairs of the existing society; second, the physical condition of the society in which that individual is acting; and, third, the care for the welfare of the individual member of society, including the transmission of the store of knowledge of principles, culture per se, to the development of the individual, especially the immature, new individual.

Therefore, the primary function of government is to *conspire* to provide and maintain the system which responds to those requirements. This intention is best served by the American System of political economy.

That *system* has three leading components: *basic economic infrastructure*, the economic responsibility of government; *economic entrepreneurship*, the economic function contributed by the individual proprietor; and, *culture in the Classical sense of that term*. These characteristics of the American System of political-economy are expressed essentially in the Preamble of that U.S. Federal Constitution which is everywhere subject to the controlling principles expressed by the Preamble.

Three essential principles are expressed by that Preamble, two primary, one an important corollary. First, the principle of perfect *sovereignty*; second, *the prin-*

*ciple of the general welfare*; and, third, that *the general welfare is defined as including that of posterity*, not only those presently living.

The significance of that Constitution, as defining an historically exceptional quality of U.S. accomplishment, is best demonstrated by looking at the axiomatic folly embedded in the European models of parliamentary systems.

To begin, we should stress that anyone who regards U.S. constitutional law as rooted, in any sense, in the English *Magna Carta*, is a hoaxster or a fool. The *Magna Carta* was intended and applied to defend the form of baronial anarchy characteristic of a feudal system of virtual slavery. The intent was to protect the privileges of "serf-holder value" from any attempt to establish a sovereign nation-state accountable for the general welfare of the nation and its people. The imposition of that *Magna Carta* typifies the order of Europe during the brutal near-millennium of domination of Europe, and other parts of the Mediterranean region, by the imperial maritime power of Venice's financier oligarchy.

Throughout most of the centuries during the interval from the death of Charlemagne until the death of England's Richard III, Europe and the adjoining Mediterranean region were dominated by a partnership between Venice and the brutish Norman heritage of William the Conqueror and his Plantagenet/Anjou successors.

The Norman conquest of England, and all of the Crusades, were a continuing expression of this Venice-orchestrated alliance of so-called "ultramontane" interests against recurring efforts to establish sovereign states. The efforts to "globalize" the world economy today, are an attempt to resurrect the depraved conditions of life under medieval Venice's imperial sway. The rise of Venice-orchestrated religious warfare within Europe, from 1511 through 1648, was a product of this same ultramontane interest.<sup>4</sup>

With the decline of the temporal power of the city of Venice, following the 1648 Treaty of Westphalia, the

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4. Much credit for ending that war belongs to Pope Urban VIII and his special diplomat, France's Jules Cardinal Mazarin. Mazarin was key in bringing about the Treaty of Westphalia. For that reason, Mazarin's Jean-Baptiste Colbert has been bitterly hated and libelled by the Netherlands and British followers of the Venetian oligarchical model, ever since. The development of what became the American System of political-economy owes much to Leibniz's alliance with the circles of Colbert.

Venice model of financier-oligarchical forms of imperial maritime power, was adopted by the rising financier oligarchy of the Netherlands and England. The cases of William of Orange and the Eighteenth-Century British East India Company, typify this development. It is fairly said, that the parliamentary systems of Europe since 1648, owe most of their axiomatic characteristics to the legacy of either Venice's traditional asset, the Habsburgs, or the Anglo-Dutch imperial maritime form of oligarchical model.<sup>5</sup> The axiomatic difference between the United States' constitutional American System of political-economy, and British capitalism, and also Marx's principled opposition to the U.S. economy and Constitution, are rooted, respectively, in the Venetian characteristics of Anglo-Dutch financier-oligarchical models and Marx's scientifically illiterate defense of the British model against the contrary American system.

Thus, the most characteristic feature of governments derived from the Venetian imperial-maritime model, is the establishment of a private corporation, a "central bank," as a separate, ruling financier power: a virtual power over governments, as Presidential candidates Gore and Bush agreed in their 2000 campaign debates. The U.S. Federal Reserve System, created at the direction of the personal banker of England's Edward VII, Ernst Cassel, through Cassel's New York agent Jacob Schiff, is such a Venice-style echo of Venice's medieval Lombard banking system of Bardi, Perruzzi, et al. The new form of International Monetary System (IMF), launched on August 15, 1971, has since shown itself, as in the cases of Argentina and Brazil, a faithful heir of that Lombard banking-system which wiped out one-third of the population of Europe during the mid-Fourteenth-Century "New Dark Age."

Lacking a form of Presidency specified by the U.S. Federal Constitution, the parliamentary systems of modern Europe have been the lawful prey of either foolish monarchs, such as Edward VII, Kaisers Wilhelm and Franz-Josef, and Czar Nicholas II, or of those central banking interests which act in concert to topple

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5. In modern history, the Spanish and Austrian branches of the Habsburg monarchies are expressions of a broader *Fürstentum* assembled from a recurring alliance of feudal princes often operating under the title of "Holy League." This body was usually more powerful than the monarch himself, and usually ran the secret police agencies (e.g., *Geheimpolizei*) through the *Fürstentum*'s control over Chancellors such as the famous Prince Metternich.

elected parliamentary regimes almost at whim.

The root of the centuries-long conflict between the American patriots, such as Lincoln and Franklin Roosevelt, on the one side, and the American Tories, since Judge Lowell and Jeremy Bentham's agent, the Bank of Manhattan's Aaron Burr, on the opposing side, is this issue of central banking. It is a matter of principle, that a government which is unable to exert sovereignty over its credit, currency, and banking system, has no real sovereignty at all. Only as under a Presidency as powerful as Franklin Roosevelt's was, can the Venetian-style oligarchical insolence inherent in an existing central banking system be held in check. The appropriate measure for all times, is typified by Treasury Secretary Alexander Hamilton's design for a U.S. National Bank.

### **What Was LaRouche's Conspiracy?**

At this point, for the sake of clarity, I shall now shift for a while, to referencing myself in the third person singular.

That axiomatic conflict between sovereign government and central banking, has been the uninterrupted issue of a LaRouche Presidential candidacy since 1975. As official FBI documents and comparable sources have documented repeatedly, since 1973, the combination of Lyndon LaRouche's uniquely vindicated long-range forecast of what happened on August 15, 1971, combined with LaRouche's humiliating defeat of Professor Abba Lerner, in a celebrated public Autumn 1971 debate at Queens College, marked LaRouche as an intellect to be feared by the financier interests which had launched the new, floating exchange-rate monetary system on August 15, 1971. LaRouche's 1975 announcement of his 1976 Presidential candidacy, his launching of a Middle East peace initiative in April of that year, and his simultaneous proposal for an emergency international, gold-reserve-based monetary reform, produced vivid, often even paranoid expressions of intellectual fear from relevant quarters, such as then Secretary of State Henry A. Kissinger.

The problem has been, that since the assassination of President Kennedy, no President has challenged the post-Roosevelt arrogance of the Federal Reserve System. Since 1976, no currently prospective U.S. Presidential candidate but Lyndon LaRouche has shown the indispensable combination of knowledge and commitment to principle, required to challenge those reigning American Tory interests (including tra-

ditional organized-crime interests) which presently exert jointly, top-down control over the political parties, many parts of the Executive branch, and the Federal Courts.

The issue has been: Will the leading parties, and the voters generally, continue to support only Presidential candidacies acceptable to the Tory forces controlling the Federal Reserve System? If we continue to support that system of selection even now, the United States is probably doomed to an early end of its existence in its present constitutional form, and to a hopeless plunge into something far worse than a mere depression, into a general breakdown crisis.

President Reagan had some of the essential qualities of a President, and, beyond reasonable doubt, Bill Clinton was, personally, the most intelligent of the Presidents since Jack Kennedy. However, if the President of the United States lacks the combination of intelligence, knowledge, and guts, to take on the American Tories' financier oligarchy, directly, consistently, without vacillating as all political opportunists do, "He ain't worth shucks" in today's crucial moments of existential crisis.

Suppose a candidate now qualified for the Presidency is presented. Would the majority among citizens support that candidacy? Offhand, most observers would agree, "Probably not." If they are right, what happens to the U.S.A.? Therefore, as was the case with the self-doomed citizens of Italy under ancient Rome, the greatest source of danger to the people of this nation is their own current popular opinion. That popular opinion is also a system, the system which is, in fact, the greatest single threat to all of them today.

Such was always the cause of a nation's doom, on the stage of Classical tragedy, or real-life tragedies of actual nations or cultures. The root of a self-inflicted national tragedy lies in the smallness of the mental life of the people; tragedy is what a people, a popular culture, does to itself.

If you have not been working to change popular opinion, as candidate LaRouche is doing, you were not qualified to become President in 1976, 1980, 1984, or any later time, up to the present. A real crisis requires real leaders, like Athens' Solon, even if the only such available are wise-cracking old geezers. Real leaders, in such a time, are those who challenge the authority of the foolish popular opinion which got us into the mess; the cowards appeal to the very prejudices which they

seek out and to which they appeal; they have created the disaster. Otherwise, the cowards and bunglers reveal themselves to be such, by their attacking isolated, so-called individual "issues," usually local or special-constituency issues, rather than the actually determining role of influential personalities in all crucial historical matters. *Real leaders for a time of crisis are those who act for relevant, competent, axiomatic changes in the existing system. Such is the lesson which history had already taught to those wise enough to have learned.*

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## 1.1. Where Transportation Fits In

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The chief feature of the general division of labor in a healthy form of modern nation-state, is the distinction between what are distinguished from one another as, on the one side, basic economic infrastructure and, on the other, the role preferentially assigned to private entrepreneurship in such categories as agriculture, manufacturing, and relevant learned professions and useful crafts.

Essentially, speaking in broad terms, that which pertains to the relative universality of all the general area of land and sea, and to the entire population occupying that territory, is the responsibility of the sovereign nation-state and its agencies of government. That which pertains to the particular individual, family, or to persons associated in some closely held private enterprise, should be usually treated as within the province of private enterprise.<sup>6</sup> General transportation, by sea, ports, inland waterways, rail, and also public highway systems, typifies the government's unique responsibility and authority for creation, maintenance, and direction of basic economic infrastructure. General land-maintenance, development and management of water resources, related functions of public sanitation, the gen-

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6. Today's publicly held joint-stock corporation, is, typically, a different order of species than an entrepreneurship. The latter functions under the intent of the right to hold and use personal property under the protection and rules of government, and within the bounds of the "general welfare clause." Although this is specific to the U.S. Constitution, the notion of a commonwealth was the principle of natural law underlying the practice of post-feudal, modern European civilization since France's Louis XI and England's Henry VII. The moral inferiority of the Wall Street-controlled variety of large corporation to the entrepreneur has gone to extremes, for the worst, under the impact of the recent thirty-five years cultural paradigm-shift, especially since Zbigniew "technetronic" Brzezinski's 1977-1981 reign as National Security Advisor.

eral production and distribution of power, are also typical subjects of the inalienable responsibility of government to promote, protect, and regulate for the benefit of the general welfare.

Such typical elements of hard infrastructure, are complemented by essential elements of universal social welfare, principally education and the health-care and sanitation systems which support and complement the private role of the medical profession.

The principal other aspect of a national economy, is the application of the sovereign creative powers of individuals, such as private entrepreneurs, to a local part of the whole territory and population. The technologically progressive farmer is typical, as is the technologically progressive variety of closely held entrepreneurship in manufacturing, or skilled technical services.

Thus, the essence of real economy (*physical economy*), is defined by the distinction between the two interdependent elements of the economy as a process, as a *system*: the physical economy of the territory and population of the nation as an indivisible whole (the relative *universal*) and the role of the *particular*; sovereign individuality within the process as a whole. The function of transportation can not be competently defined, except by addressing that subject in terms of that relationship between the universal and particular.

For purposes of first approximation, start from the late Professor Wassily Leontief's contribution to developing a system of accounting for the U.S. national economy in linear terms of approximation. Actually, a linear input-output model describes only an economy at the first moment of its death; a viable economy is intrinsically a non-linear system of a Riemannian type, as I have defined this.<sup>7</sup> Nonetheless, the Leontief model illustrates some crucial facts about the economic function of mass transportation. After that fact is presented, we can proceed to address the way in which transportation functions in a healthy, non-linear economy, rather than an implicitly dead, linear-mathematical model of the axiomatically pathological John von Neumann, systems-analysis type.

### The 'Worldwide Cup of Coffee'

The particular production of a product at some particular location in the world's economy as a whole, depends, today, upon inputs to the location of that produc-

tion from many parts of the world. This input includes labor, materials, power, and so on. The analysis of local production, requires estimates and management of items listable on what are termed "process sheets" and "bills of materials." The items so listed, as supplied from other production, include production from various parts of the world as a whole.

In teaching a course in economics, at various college and university locations during the 1966-1973 interval, I included the concept of "a world-wide cup of coffee." I situated the class's attention on the idea of sitting in a diner where they are presented with a cup of coffee. I asked them to back-trace the ultimate origin of everything represented by that cup of coffee. This included not only the coffee beans, but the water, the cup, the spoon, the milk, and the sugar; but also the diner within which it was being served, including the stool and other fixtures of the diner; and also what was required to produce and support the families of those employed there. I asked them to consider not only the quantities from each source, but also the cause-effect time-sequences involved. Thus, the students found themselves staring at that imagined cup of coffee, and seeing much of the history of world-wide mankind reflected in that object before them.

All of the ingredients transmitted, to be expressed by that cup of coffee, involved a system of transportation. Think of certain similarities between that process of transportation and the interdependency expressed among cardio-vascular, lymphatic, digestive, respiratory, and nervous systems. At each interval along each of those pathways of movement, things are happening, entering and departing the conduit represented by the system as a whole. The existence of every process through which these conduits are leading, is essential to some aspect of the adjacent activity at each point along the pathway. The system is no mere "pipeline," no mere conveyor belt; it is an active organism.

Compare the development of the railway system in the United States, from the work of German-American economist Friedrich List through the completion of the first transcontinental link, under the influence of Abraham Lincoln. The transcontinental system transformed land-area from a relatively primitive economic state into regions of rich agricultural and other development along the flanks of the right of way. The railway was creating physical economy within the region through which it moved, and the railway became the

7. LaRouche, op. cit.

mode through which the resources of relatively remote areas could be accessed, and then combined, to produce the explosive growth of agro-industrial power of the U.S.A.

Actually, the railway system was developed at no net cost to the U.S. economy. *Even if that railway system produced nothing else, the production facilitated by such mass transit increased the per-capita productivity to such effect, that this benefit exceeded greatly the actually incurred capital and operating, physical costs of the transportation system.* The ability to effect the assured delivery of passengers and freight, from any locality within the nation, to any other locality within the nation, was a principal source of the growth of national productivity, from the time of the Lincoln Presidency, until the wrecking of the agriculture and other essential parts of national economy, under the 1977-1981 direction of National Security Advisor Zbigniew “Technetronic” Brzezinski’s program of “deregulation.”

It was not the operating costs of that rail system which ruined it. It was the cannibalistic looting of almost everything by Wall Street’s and London’s parasites, combined with the catastrophic effects of deregulation, which virtually destroyed a railway system whose contribution to net national physical income exceeded the actual combined depreciation, maintenance, and operating costs incurred. In a rational system, long-range truck transport’s inherent costs borne by the national economy, are far greater, per ton mile, than a technologically modern form of well-managed, integrated national rail system.

By a rational system, one means one in which freight-rates and schedules provide a local community with a quality of service at a cost per ton to the shipper no higher than available for major markets. Entire regions of the U.S. national economy have been murdered economically by Brzezinski-led, cannibalistic “deregulation” of transportation and other categories of basic economic infrastructure. Brzezinski and his accomplices destroyed precious physical capital; their looting operations down-shifted the U.S. economy as a whole to a qualitatively lower level of national productivity per capita and per square kilometer.<sup>8</sup>

8. U.S. government and Federal Reserve reports published since 1982, have been dominated by an increasingly massive ration of willful accounting frauds, conducted under the rubric of “hedonic values.”

When the economy is examined in axiomatically non-linear terms, rather than the linear input-output models of Leontief et al., the most crucial features of the national rail-transport network become clearer. Refer to my description of “the third view,” the Riemannian view, earlier.<sup>9</sup>

To the degree the individual or society acts according to stubborn tradition, he or that society is behaving as an animal, not a human being. An animal can learn, but the limit of its learning is defined by what we may term loosely, and fairly, as the creature’s genetic heritage. The creature can adapt to its environment through learning, but its powers of adaptation are limited by what are ostensibly the outer limits determined by its (his, her) biological heritage. Similarly, to the degree that the members of society act according to sense-certainty, the same kind of limitation prevails. It is only as the person goes outside habitual, or customary belief and behavior, that a culture is qualified to continue to survive more or less indefinitely.

The only existing physical proof, that the human individual is better than a mere animal, is the ability of the individual member of the human species to generate the discovery of an experimentally valid universal physical principle, such as Johannes Kepler’s uniquely original discovery of the principle of universal gravita-

9. A truly non-linear view bans all ivory-tower mathematics, such as that of Euler, Lagrange, Laplace, Cauchy, et al., from physical science, and replaces the space-time assumptions of a Cartesian model with a system in which only experimentally proven universal physical principles are accepted as mathematical “dimensions.” See Riemann’s 1854 habilitation dissertation, **Über die Hypothesen, welche der Geometrie zu Grunde liegen**; (Dover Publications, New York. Reprint, 1953). For example, in his 1761 *Letters to a German Princess*, Newton doctrinaire Leonhard Euler premises his attack on Leibniz’s infinitesimal calculus, on the assumption that infinitesimals do not exist, arguing that straight lines can always be drawn between two points along a line of the shortest possible distance. Hence, Euler, like Lagrange, Cauchy, et al., degrades physics to a mathematics based upon linear systems, in opposition to the definition of the catenary as a *physical* curvature expressing universal least action. The latter, as shown by Leibniz and Jean Bernoulli, is the basis for the definition of the infinitesimal calculus. This notion of physical geometry, as opposed to the “ivory tower” geometries of Euler, Lagrange, Cauchy, Grassmann, et al., is expressed by Gauss’s 1799 definition of the complex domain, as opposed to the delusion of Euler, Lagrange, et al.’s assertion that the square root of  $-1$  is merely an “imaginary” number. The complex domain expresses the efficient existence of a physical-geometric domain, as distinct from an essentially arithmetic one. The catenary is the typical physical curvature of the complex domain.

tion.<sup>10</sup> The discovery of those types of universal physical principles, or the re-enacting of such a discovery, as by a student, is the act which distinguishes the man and boy from the monkey.<sup>11</sup> Through the discovery and application of such discovered principles, society is able to burst the kind of biological limits which impose an approximately fixed upper limit on the potential relative population-density of the higher apes, thus raising the potential population of the human species from mere millions of individuals, to billions today. Such efficacy of universal physical principles of those characteristics, serves mankind as a standard of knowable truth.

The fostering and application of such discoveries, to the effect of increasing the potential relative population-density of society, is the proper physical definition of *economic profit*. Without such profit, the marginal depletion of currently employed natural resources would result in a lowering of the effective per-capita physical income of society, resulting in an economic loss through technological attrition. The watch-word becomes, thus, “progress or die!”

All known cultures existing prior to Europe’s Fifteenth-Century Renaissance were thus either doomed, like ancient Babylon and Roman culture, or collapsed into a prolonged relative dark age. The cause for this collapse was either intellectual scientific and moral bankruptcy of the culture, as in Babylon and Rome, or, in the case of the relatively superior culture of Classical Greece, the subjugation of a large part of the population to the abused condition of human cattle, even slavery. So, the hegemonic culture of medieval Europe, as typified by that Venetian-Norman abomination, the Thirteenth Century’s Holy League, plunged all of Europe into the genocidal New Dark Age of the Fourteenth Century, the dark age from which the Italy-centered, Fifteenth-Century platonian Renaissance not only rescued the previously shattered Papacy, but also gave birth to that modern European civilization which the Venice-led, Sixteenth-Century anti-Renaissance sought to drown in religious warfare.

The only assurance of continued prosperity, is the fostering of the intellectual development of all of the

people of society, the practice of the common good, the promotion of the general welfare. This requires the collection and transmission of the truthful discoveries of other societies, as well as those of our predecessors. The reliving of those inherited discoveries of principle, combined with the devotion to effecting and sharing new discoveries of universal principle, ensures the optimal moral development of the character of the young. This provides the climate in which an optimal ration of the members of society will participate in the promotion of progress. This fostering of such participation by the individual, is the reality for which the use of the term “freedom” should be allowed.

Such are the rightly included goals to be served by aid of mass transportation. The moral and economic effects are two faces of the same coin. The “bloodstream” of mass transportation also transmits ideas and their application, as expressed in the form of technologies spun from the thread of scientific discovery, and expressed in the forms of products and techniques.

Thus, the development of the U.S.A. through highways, canals, improved river courses, and rails, was more than the transport of things; it was the transmission of ideas, and of the means needed to express those ideas in forms of physical practice conducive to the fostering of accelerated rates of scientific and technological practice. The innovative spirit of the progressive farmer and mechanic, transformed such objects into, not merely objects of consumption, but stimulations of the innovative potential of the users of those products. Henry Ford’s Model T, is a celebrated example of this. The development of the integrated generation and distribution of electrical energy in cities, characterized the upward leap of the industrial revolution during the early decades of the Twentieth Century; rural electrification launched under Franklin Roosevelt produced similar effects in agriculture.

Not only is a national railway grid like a living tissue; it is a living tissue, a living interaction among the cognitive powers of the people who are participating in the activity organized around that economic bloodstream. What is being transmitted is the combined maintenance and increase of the productive powers of labor.

### End of Part 1

*The concluding Part 2 will appear in the next issue of EIR, beginning with Section 2.0 “Hard and Soft Infrastructure.”*

10. *The New Astronomy* (1609).

11. As I have already specified, a principle of social cooperation which enables society to apply such physical principles, is also an experimentally provable principle.