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# 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.*

*The first part of the reprint of this 2002 article was published in EIR last week. We present here the second and concluding section of Mr. LaRouche's report first published on September 27, 2002 in EIR Vol.29 No.37 pp. 14-47.*

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## 2.0. Hard and Soft Infrastructure

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All competent teaching and practice of economics for today's world conditions incorporates the concept of the *Noösphere* presented by Russia's Vladimir I. Vernadsky, as combined with two corrections borrowed from my own original, parallel contributions to the science of physical economy. This use of Vernadsky's work is crucial for defining global and national infrastructural policies for today's circumstances. I summa-

rize the relevance of this point.

The pivotal feature of Vernadsky's successive definitions of the *Biosphere* and *Noösphere*, is his work in founding the branch of physical science known as *biogeochemistry*. The first phase of his discoveries led to the definition of the *Biosphere*. The same method led subsequently to his definition of the *Noösphere*. The only two crucial shortcomings I find in those published achievements reported to me by relevant specialists, including translations of relevant writings by him, are that he did not live to complete his intended mastery of Riemannian physical geometry, and that his presented conception of the human intervention creating the *Noösphere*, does not include explicit recognition of those elements of Classical principles of artistic composition which provide society the ability, in the words of Shelley, to promote the power "of imparting and receiving profound and impassioned conceptions respecting man and nature."<sup>12</sup>

A very brief summary of relevant features of his development of the conception of the *Biosphere*, will probably be sufficient for the discussion of our present topic, the policy which must underlie a modern notion of basic economic infrastructure.

Since Kepler's successful discovery of gravitation and related matters, Kepler's discovery and proof of that principle has been the standard of reference for

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12. LaRouche, op. cit.

building a competent form of systemic mathematical physics, one based on experimental proofs of discovered universal physical principles.<sup>13</sup> The discovery of a valid universal scientific principle, begins with evidence which stubbornly defies current methods of systemic interpretation of some aspects of sense-perception. The experimental validation of the hypothesis which overcomes that paradox, defines a working scientific principle. The suitably exhaustive further experimental work may, then, refine and define that as a *universal* physical principle, such as Kepler's definition of universal gravitation.

The work of Louis Pasteur and his followers presented geologist Vernadsky with crucial evidence of mathematical-physical differences of universal physical principle between the chemistries of living and non-living processes. Vernadsky, as a geologist, took into account the evidence of fossils provably products of the activity of living processes. These fossils included the Earth's oceans and atmosphere, and included the outer surface of the planet down to a considerable number of kilometers below sea-level. The resulting picture of the geological evolution of the planet, including its atmosphere, defined a *Biosphere*.

From the vantage-point of that same method, Vernadsky defined a higher state of existence, called the *Noösphere*. In the case of defining the Biosphere, his experimental method focussed upon physical effects *systemically* incongruent with physical chemistry's known classes of abiotic processes. In examining the impact of human activity on the Biosphere, he defined a universal physical principle, which he termed *noësis*, which corresponded to effects beyond the *systemic* capacity of all known living processes excepting human activity. *Noësis* signifies the class of mental activity which generates the discovery of those hypotheses which qualify experimentally as universal physical principles.

So, as the Biosphere presents us with life stubbornly taking over the outer regions of our planet, so the action of *noësis* exhibits itself as, in the longer run, superior to

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13. Kepler's scientific method was derived, ultimately, from Plato's Socratic dialogues, but Kepler's immediate predecessors were, as he emphasized, the founder of modern experimental science, Nicholas of Cusa, and Cusa's followers Luca Pacioli and Leonardo da Vinci. It was the challenge of Kepler's work which prompted the work of Fermat, Pascal, Christiaan Huyghens, Leibniz, et al., through the completion of the foundations of mathematical physics by, chiefly, Gauss and Riemann.

merely living processes in general. Hence, the *Noösphere*.

The resulting image of our planet, is of an evolving entity, within the Solar System, and, thus, the universe. Three mutually distinct categories of action are constantly transforming this planet, interacting with one another, and who knows what else besides. These processes, the abiotic, the living, and the cognitive (or, *noëtic*), are distinct, but interacting, and, in that sense, also interdependent. Let us say that they are *multiply-connected* processes, or "*multiply-connected phase-spaces*."

Now, since the scale and impact of man's impact on what are called "natural resources," has become relatively large, especially when compared to the situation during earlier centuries, it were inevitable that mankind must now think of giving a helping hand to those planetary abiotic and living processes of our Biosphere. If we presume that we are going to continue, and accelerate, scientific progress in discovery and use of universal principles, we must develop ways in which to assist the Biosphere in producing those preconditions which expanding human life will require, if we are to maintain and also improve the average conditions of life for a growing human population throughout the planet. We must do things in the sense of making the deserts bloom, and must apply principles of public sanitation in a richer sense than during earlier generations.

In this vein, we must consider what has been termed "basic economic infrastructure" as the relatively "hard" form of basic economic infrastructure, as man-made improvements in the Biosphere. This includes nationwide and continental systems of transportation, regional systems of integrated generation of power, national and international systems of water management, extensive systems of land reclamation and maintenance, and the rational design and management of cities and the relationship of urban life to, and integration with countryside of field, mountains, and forests. These are matters which come under the special domain of government; private entrepreneurship may play an important, even indispensable helping role, but the responsibility and authority for the outcome lies primarily with government.

Now, to the matter of "soft infrastructure."

### **Classical Humanist Education**

From the standpoint of even ordinary schoolbook physical science, the provable distinction of the human species from all other forms of life, is expressed by

comparing the potential relative population-density of the human species, with that of the higher apes. The human potential is expressed in the millennia-long span of an increase from a few millions, to present billions. This is an increase of a type which occurs in other species only through genetic “evolution.” For us, it is a potential for increased potential which occurs equally, and universally, among all branches of the human family; it occurs, for example, in the same degree, among children of what are falsely called “aboriginal” stocks of persons in Australia, as anywhere else.

This point defines the axiomatic quality of difference between a competent form of general education, known historically by such names as “Classical humanist education,” and the monstrously corrupt forms of education prevalent in U.S. practice and doctrine, including that of universities, today. The need for our return to the conception of a Classical mode of humanist education, corresponds to an indispensable element of the improved economic infrastructure which must be built into the U.S.A.’s public life today.

To make this point comprehensible, I must now summarize a crucial scientific argument I have made repeatedly in earlier locations, an argument which is axiomatic in all of my contributions, over five decades, to the development of the science of physical economy.

Famously, Plato emphasized that what human beings experience with their senses, as usually perceived, are merely shadows, as on the walls of a dimly fire-lit cave, as the Apostle Paul warns famously in **I Corinthians 13**. Our sense-apparatus is an integral part of our biology. The world acts upon that sense-apparatus; it is the reactions of those sense-organs, the *shadows* of the real universe, which are immediately conveyed to our consciousness. Plato’s Socratic dialogues, and **Laws**, taken as a whole, are a special quality of outgrowth of Classical Greek drama, a collection of spiritual exercises, by aid of which the human mind is aided to sort out the paradoxical relationship between the shadow-world of sense-certainty, and the real universe which those shadows imperfectly reflect.<sup>14</sup>

In modern physical science, the most important opponents of a competently scientific practice include the René Descartes whose misconceptions of space, time, and matter, degrade mathematical practice to the kinds of crudities which polluted the work of such otherwise

able mathematicians as the “ivory-tower” formalists Euler and Lagrange.

On that pivotal point: In my current choice of pedagogy, I emphasize five points of pedagogy as the elementary basis for a comprehension of the way in which the issue of appearance versus reality arises: a.) Kepler’s actual process of discovery of universal gravitation, as elaborated in his 1609 **New Astronomy**; b.) the comparison of Classical Greek treatment of such problems as the doubling of the square and cube, with Gauss’s 1799 publication of his discovery of the fundamental theorem of algebra, in which he exposes the relevant axiomatic follies of d’Alembert, Euler, and Lagrange; c.) the Leibniz-Bernouilli proof of the coordinate principles of the infinitesimal calculus and universal least action, in their exploration of the implications of the catenary; d.) the emergence of Riemann’s 1854 definition of physical geometry on the basis of Gauss’s earlier development of the notion of general principles of curvature, a notion of curvature emergent from Gauss’s 1799 report on the fundamental theorem as point of departure.

The typical fallacy in contemporary discussion of the paradoxical character of sense-certainty, is most efficiently shown by indicating the intrinsic incompetence of efforts to derive a physics from either a Cartesian view of geometry, or the even cruder basis of a counting arithmetic. Since the Classical Greece of Archytas and Plato, the essential progress of scientific thinking has been premised on defining and solving those ontological paradoxes which arise in the misguided effort to degrade physical science to the status of a mere hod-carrier for an “ivory tower” mathematics of the type presented by Descartes.

Back to Kepler.

During the Sixteenth Century, doctrines on the subject of astronomy had reverted from the Solar hypothesis of both Aristarchus and founder of modern science Cardinal Nicholas of Cusa, to the medieval dark-age’s mysticism of Aristotle, as typified by common features of the work of the ancient Claudius Ptolemy, and also Copernicus and Tycho Brahe. All three were in accord with the gnostic, ivory-tower dogma of Aristotle, insisting that man could not know the efficient causes of action, but must accept the appearances judged in terms of presumably unchanging principles expressed by what was assumed to be “perfect” uniform motion.

Kepler’s more precise calculations showed not only that the orbit of Mars was elliptical, but that motion

14. Plato’s method is reflected in the work of Leibniz, from whose writings I was originally educated in these matters.

along the orbital pathway was never uniform. This signified what Kepler defined as a controlling “intention,” embedded in the universe, evidence which discredited Aristotle’s dogma absolutely. Thus, Kepler defined that efficient intention as a principle operating on the universe from outside Aristotle’s dogma. This intention was identified as a universal principle whose effect is observed as gravitation.

One can not perceive gravitation as an object; yet it is an efficiently acting universal physical principle. Gravitation is *real*, and perceived evidence of its effect is the shadow of reality. With Riemann’s announcement at the outset of his 1854 habilitation dissertation, all ivory-tower conceptions of space, time, and matter, were, speaking figuratively, thrown into the wastebasket, as unwanted relics of a superstition-ridden past. Among literate and honest scientific opinion, only experimentally proven, universal physical principles could be accepted as the geometric “dimensions” of a universal physical geometry.

This was not entirely a new discovery. Already, during the interval from Archytas and Plato, through the work of Eratosthenes and Archimedes, Plato and his associates had recognized that the physical differences among the notions of line, surface, and solid, were not consistent with a naive conception of linearly extended space and time; the difference among these species of physical existence represented the action of specific *powers*, as Plato emphasized in his **Theaetetus** dialogue.

This notion of powers, is that employed by Leibniz for defining a science of physical economy; it is the use of the notion of powers employed by Gauss in defining the fundamental theorem of algebra, the same notion Gauss employed in number theory, in defining the significance of residues. The appearance of the falsely named “imaginary numbers” in number theory and geometry, is a reflection of the efficient existence of such physical powers for defining all mathematics suited for the practical requirements of physical science.<sup>15</sup>

Science does proceed from a critical attitude toward pre-existing notions of the organization of action in physical space-time. Thus, it does proceed, in fact, from describing, from an historical perspective, a naive con-

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15. Hence, Riemannian geometry is not a non-Euclidean geometry, such as those of Lobatchevky and Bolyai, but as Gauss’s teacher Abraham Kästner had argued, an anti-Euclidean geometry, which scrapped the axiomatic ontological assumptions of Euclid respecting space, and replaced these with nothing but a physical geometry of physical-space-time.

ception of space, time, and matter, a conception more or less consistent with sense-certainty. It is by uncovering the fallacies of sense-certainty, by discovering the principles required by encounter with ontological paradoxes, that mankind overcomes a childish faith in the shadow world of sense-certainty, to discover those universal principles, by means of which we act to increase man’s power in and over the real universe.

Examples of the pathway of scientific progress, include: the ancient discovery of the doubling of the cube, like Gauss’s similar discovery of the fundamental theorem of algebra, and Leibniz’s and Bernoulli’s kindred discovery of the meaning of that curvature—the catenary—known as expressing both the principle of the infinitesimal calculus and universal least action. The catenary, so understood, is a specifically physical-geometric existence, and is the most typical expression of the physical reality of the complex domain’s universality.

The term *knowledge* were, therefore, rightly restricted to the cumulative progress away from the merely learned crudities of sense-certainty, through successive discoveries of universal physical principles. These discoveries have the form of that principle of *hypothesis* typical of Plato’s Socratic dialogues. Thus, as illustrated by the successes of nuclear microphysics, we become able to act efficiently upon the unseeable reality beyond the reach of the senses; we become able to manipulate the unseen reality which controls the shadows.

So, experimentally valid physical science assumes the form of a special quality of latticework. The unfolding of that lattice of increasing knowledge of reality, describes the freeing of mankind from the darkness of sense-certainty. Discovery by discovery, as typified by ancient Greek science’s still durable discoveries, the light of reason guides our hands into the real universe, beyond the shadows of perception. Man’s power in the universe increases. The study of the cumulative benefits of this process of discovery of such knowledge, a process leading upward and away from simple sense-certainty’s systems, is called the *epistemology* of what is recognized today as the subject-matter of physical science.

Vernadsky’s distinction among the powers of the respectively abiotic, living, and cognitive domains, is an example of the way in which physical science has, in fact, applied the principles of epistemology to itself. He applies the Classical method of experimental hypothesis and proof of principle, to the subject of physical science in general, including the generality of mankind’s

process of discovery of universal physical principles.

However, that experience of the progress of science, from the Classical Greek of Archytas, Plato, et al., through modern times, demonstrates the existence of a still higher principle than any of those I have referenced here thus far. No lower form of life is capable of effecting the progress from an ontological paradox, to an hypothesis, to the proof of that hypothesis as a principle; this can be accomplished only by the sovereign cognitive powers of the individual human mind. This is the principle, the power, which distinguishes humanity absolutely from all lower forms of life.

The proper function of education, is to afford the developing young individual the means to become assured of his or her command of that higher principle which sets the human being above all other species, the principle of hypothesis as I have just described it. This is accomplished by creating the circumstances, including education, in which the developing individual re-enacts important discoveries originally made in the past. This includes physical principles of the type I have just illustrated, above. It also includes principles which belong to the category of principles of Classical artistic composition.

### Classical Artistic Composition

As indicated above, the two crucial omissions in Vernadsky's definition of the Noösphere, were the absence of reflection on that anti-Euclidean quality characteristic of all competent representation of modern European science since the work of Leibniz, Gauss, Riemann, et al.; and lack of attention to those social processes, on which society depends for the transmission of valid discoveries of principle as actual knowledge. I mean knowledge, rather than forms of classroom learning associated with rehearsals for the monkey-see-monkey-do performances known as responding to computer-scored multiple-choice questionnaires.<sup>16</sup>

The history of the transmission of valid discoveries of universal physical principle, provides a relatively obvious, more readily understood approach to the principled feature of social relations which must be taken into account. The significance of the principles of artistic composition in both plastic and non-plastic art-forms is rarely recognized today. On the latter account,

16. Compare education keyed to multiple-choice questionnaires with the educational practices described in the "Voyage to Laputa," from Jonathan Swift's *Gulliver's Travels*.

the reader might reference C.P. Snow's *Two Cultures*.<sup>17</sup> The relevant issue of education is: Is there a principle of *truthfulness* in Classical artistic composition, as experimental method provides a standard of truthfulness in assessment of proposed universal physical principles of science? Classical humanist education is premised on the evidence that such a principle of truthfulness applies.<sup>18</sup> Actually, the same principle of truthfulness applies to principles of Classical artistic composition, as to the history of knowledge in physical science, as I shall indicate summarily here.

For such reasons, the study of the principles of Classical humanist education properly begins with focus on the way in which valid original discoveries of universal physical principles are to become experiences replicated by present-day students and others. The picture is then broadened, to show the same "mechanisms" at work in transmission of ideas by methods of Classical artistic composition. The picture is completed, by indicating the relevance of Classical artistic composition, as for scientific knowledge, for the understanding of history, and for the practice of statecraft by leaders and others alike.

*Like all physical reality, the act of discovering a universal physical principle, is not an object of sensory perception.* Like the discovery of any physical principle, we are able to prove the presence of such an act of discovery by the efficiency of that action. Thus, the central problem of communicating what are actually ideas, rather than merely opinions, is that such acts of cognition (noësis) are products of a perfectly sovereign process within an individual mind.

As Plato's Socratic dialogues illustrate this fact, such an act of discovery has three principled phases:

1. The recognition of what is called an ontological

17. C.P. Snow, *Two Cultures and the Scientific Revolution*, Cambridge University Press, London and New York. Reprint 1993.

18. The most extreme opponents of a principle of truthfulness include the radical positivists, including the devotees of Bertrand Russell and the existentialists as typified by Theodor Adorno, Hannah Arendt, et al., in *The Authoritarian Personality*, Harper, New York, New York, 1950. Notably, Arendt traced her defense of the position, that there is no truth, but only opinion, from the reading of Immanuel Kant's *Critiques* by fellow-existentialist Karl Jaspers. She reads Kant's intent correctly. The neo-Aristotelean reformers of empiricism, such as Kant, the ideologue of the fascist state G.W.F. Hegel, and Hegel's crony Savigny, used a neo-Aristotelean denial of any comprehensive principle of knowable truth to, so to speak, bring their burglar friends in to loot the house. She makes one think of the Pokémon addict who responded to his mother's detecting his hand in the cookie jar by killing her with an axe. Before the court, the addict explained to the judge: "It was her fault. She peeked!"

paradox, a paradox which threatens one's confidence in previously accepted ways of thinking; 2. An hypothesis, which, if proven true, might overcome that paradox; and 3. A proof-of-principle test, such as an astrophysical observation or a crafted experiment, which disproves, or proves the hypothesis.

If an individual who believes he has discovered a universal principle wishes to communicate that discovery to another person, he must rely on the immediate fact that he can communicate two elements of that three-step discovery to a qualified second person. These two evidences are the paradox and the experimental or equivalent evidence. This, of course, is exactly what should be the characteristic teacher-student relationship. Then, if the posing of the paradox by the first person produces a kindred hypothesis in the second, and if the empirical test bears that out, the generation of the hypothesis by the first has been replicated in the second. If the empirical tests do not substantiate the hypothesis, new tests must be made, and, possibly, more appropriate hypotheses.

That is the only way a valid hypothesis can be replicated in the mind of another. It can not be seen with the senses; its generation must be replicated. That may seem to be unfair; but, after all, to see the unseeable beyond the shadow-world of sense-perception, requires the help of an unseeable agency. That is the continuing importance of Plato's Socratic dialogues. The method of those dialogues is needed, to educate the cognitive powers specific to human individuals, which means to make the individual conscious of such activity within his or her own, sovereign mental processes.

A creative personality is one who has developed the ability to conceptualize his or her own cognitive processes as objects of intentional thought. The practice of epistemology is an example of such looking at the cognitive generation of hypothesis as an object of conscious attention. The development of such a capacity in the student, is the principal continuing objective of a Classical humanist curriculum. It is that self-development within the student, which fosters the moral development of the child and adolescent. That is the Classical humanist principle of education, if only in first approximation.

Look first at plastic, and then non-plastic art-forms, as I have now described an epistemological overview of physical science.

Classical sculpture. Classical Greece freed itself from the archaic practice of tombstone art, to produce

off-balance figures with such refinement that the mind of the viewer saw not a static figure, but figures frozen in an infinitesimal instant of motion. This was applied not only to images of living figures, but to designs of products, architectures, even cities. I illustrate the importance of this Classical form of sculpture by an example from my personal experience.

During the middle to late 1980s, I was concerned with saving the famous cupola of the Cathedral of Florence from the effects of some ill-advised modifications brought about by a local government. I became involved with the work of an outstanding specialist in the matter. The crucial issue to be addressed was: what was Brunelleschi's physical principle of design of the construction of that cupola? I looked, and looked. It struck me: The hanging-chain principle, the catenary! Suddenly, it was all obvious; I looked at images of the cupola, and had the occasion to observe it again directly. I could see it all so clearly! My relevant scientist friend confirmed my discovery.

Brunelleschi had used the hanging-chain principle, explicitly, as his method of constructing the cupola. This was more than two and a half centuries before Leibniz and Bernoulli had settled the role of the catenary in defining both the proof of the infinitesimal principle of the calculus and the principle of universal least action. How was this possible? Look to the effect of such developments as the revival of Classical Greek culture, at the beginning of the Fifteenth Century, at Padua prior to the Aristotelean reaction there.

A Classical humanist education produces an enriched state of the individual human mind, by means of which the principles of creative discovery common to physical science and Classical artistic composition, are reflected in a genius such as Brunelleschi, Nicholas of Cusa, and Leonardo da Vinci. Leibniz's unrivalled genius reflects the post-1648 Classical renaissance which followed the awful "little dark age" of religious warfare, just as the developments around Padua at the beginning of the Fifteenth Century produced that florescence of genius largely crushed during the subsequent 1511-1648 little dark age.

The case of Classical sculpture and architecture shows the relatively obvious connection between Classical forms of plastic artistic composition and genius expressed in physical science. What of the non-plastic arts: Classical drama, Classical poetry, Classical musical composition—all in opposition to the Romantic and modernist?

In all poetry and prose deserving of those names, the function performed by paradoxes in mathematical physics, are accomplished by irony, including metaphor, and conjunction of moods. In spoken poetry and prose, meter, voice-registration, voice-coloration, and rubato effects, blended with gestures, transform a mere flow of words from recitation of mere text, into the prompting of intended idea in the mind of the hearer. In written prose and poetry, the spoken intent is conveyed by marks of punctuation, such as commas, which warn the reader of an intended prosodic change of spoken utterance, to be heard in the mind of the reader.

In music, J.S. Bach's development of a system of well-tempered counterpoint, employs the natural prosody and registration of the *bel canto*-trained singing voice, to define ideas and the interaction among ideas, with an ability far beyond even customary Classical poetry. Classical instrumental music is performed by instruments singing *bel canto* under the control of the capable performing musician.

Classical drama is never arbitrary fiction, but is always a medium for use of paradox to bring into focus some principle of actual history. As for Classical Greece, the dramas of important writers, such as Shakespeare or Schiller, were never fiction, but were historical studies of principles of statecraft referenced to actually known history, or to legends, such as the Homeric, which expressed a reflection on some period of history in a way relevant to current problems of statecraft.

As Shakespeare's Chorus steps forward to describe the play, **Henry V**, about to begin, he says:

For 'tis your thoughts that now must deck  
our kings,  
Carry them here and there; jumping o'er times,  
Turning the accomplishment of many years  
Into an hour-glass....

In successful Classical drama, the matters on stage fade, like the smile of the fabled Cheshire Cat, and the parts being performed on stage give way to the reality being enacted on the stage of your imagination. And if the play were well performed, you are astonished at the close, to see the actors standing still on that other stage before your eyes. If you are wise, and the play were well composed by author and the company, what you have experienced in your imagination, is not a fiction, but a true insight. The fiction is the illusion which ap-

pears on stage when the play has ended; those actors there, are not now what they seem to be. Such, are matters of cognitive substance and sensory shadow.

All Classical art has the form of play: play in the double sense, of playing and drama. Its function, as play, is to evoke a study of matters of principle, as paradox is used for the teaching and progress of mathematical physics. Discovery of principle, is intense work, as adequate performance of a musical composition is. But it is always dependent upon a spirit of playfulness, and richly exciting to the committed participant. It is always, in that specific sense, *fun*. A person who is not playful in that sense of the term, is going cognitively dead, as too many university graduates do, about the time they pass through the unhappinesses of orals, written examinations, and securing their employment in their chosen career.<sup>19</sup> A man who considers himself already perfected, is already cognitively dead.

The physical progress of humanity is expressed in the form of accumulated discoveries of universal physical principles. The comprehension of history is accessed through science's partnership with progress of discovering and applying the principles of Classical artistic composition to the understanding of the passion on which society's cooperation in use of science depends.

### Health-Care as Infrastructure

The fraudulent argument, of Rachel Carson and others, for banning DDT, led to the present situation in which West Nile Virus threatens the U.S. population today. Sanitation and health-care are inseparable partners in the defense of human life. If we do not restore DDT to use now, we as a people, and its government, are morally insane. The overriding authority of the Preamble of the Federal Constitution demands a return to the governmental policies of sanitation and health-care of the 1960s, such as the post-war Hill-Burton law. It demands a return of the legal authority for diagnosis, prescription, and treatment to the medical professional, now. The law of sanitation must be to contribute to preventing the spread of the sickness, and of health-care, to allow the physician to treat the patient.

The policies expressed by National Security Advisor Henry A. Kissinger's mass-murderous 1974 Na-

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19. Cf. Dr. Lawrence S. Kubie, **The Neurotic Distortion of the Creative Process**, (University of Kansas Press, Lawrence, Kansas, 1958); and "The Fostering of Scientific Creative Productivity," **Daedalus**, Vol. 91, No. 2, Spring 1962.

tional Security Study Memorandum 200 (NSSM-200), and National Security Advisor Zbigniew Brzezinski's kindred, 1981 *Global Futures* and *Global 2000* policies, must be reversed, on both the grounds of the Preamble, and according to the implied obligations of the post-war Nuremberg Code. Human beings are not human cattle, to be herded and culled at the pleasure of the self-anointed "shareholder" interest.

At about the time Kissinger was issuing NSSM-200, my associates were presenting a research report on the calculable consequences of continuing the global trends resulting from the policies which utopian plotters Kissinger, George Shultz, and Paul Volcker set into motion, as President Nixon's ruinous monetary policy of August 15, 1971.<sup>20</sup> In our own report, which was the result of a study-project which I had set into motion during the spring of 1973, we pointed to the likelihood, that if then-current U.S. policy-trends of the 1971-1974 interval were continued, we would witness a massive, early- to middle-1980s, epidemic eruption of then still relatively dormant pests and diseases in areas such as the Sahel region of Africa. During the early 1980s, it happened, as our 1973-1974 work had forecast.

Today, we must not overlook the fact that the evolution of the HMO (Health Maintenance Organization)-dominated system has been significantly shaped by the intent to cull the American "human herd," by means akin to Adolf Hitler's elimination of lives deemed by him "not worthy to be lived." Like the NSSM-200's intent to promote genocide in places such as Africa, we have the promotion of euthanasia in the U.S.A., as in the Netherlands and Belgium. "No code" is a related part of this. The use of "malpractice" suits, creating the pretext for insurance companies' driving physicians, financially, either into restricted practice, or out of the profession, has been part of this. Current trends toward "one standard disease, one standard treatment—and no more!" is part of the process of accelerating mortality rates. Pricing pharmaceuticals out of the range of ever larger portions of our senior citizens, and of others, is part of this. The creation of the pre-conditions for widespread food shortages, is part of this.

Now, under the impact of the floating-exchange-rate monetary system, with legislation such as the predatory

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20. *New Solidarity*, January 9 and 16, 1974, "Rockefeller's Ecological Holocaust."

U.S. HMO law, with the rampage of deregulation unleashed under National Security Advisor Brzezinski, by Garn-St. Germain—implemented by the Keating Five—by Kemp-Roth, and by the financial-derivatives bubble, the destruction of those safeguards of sanitation and health-care has already taken on the character of a more or less global mass-murderous effect. The legendary Four Horsemen of the Apocalypse must be prancing triumphantly, when they see the continuing folly of most of our governments and their people.

The central feature model for a national health-care system, is, like the system intended by the Hill-Burton law, the application of the system required for support of a U.S. military at war. Under Hill-Burton, the unit was the county. The private and other physicians were rallied around a set of private, voluntary, university, and public hospitals, which represented what was estimated as an adequate bed-capacity of various classes, representing hospitals and auxiliary facilities for both expected and, to a significant degree, exceptional situations. This array of capabilities was buttressed by the functions of the Corp of Engineers, the Public Health Service, and the reserve which could be drawn from the military medical institutions.

To the degree this development progressed in the respective states and counties, and to the degree in-time access to emergency hospital facilities was built into the public highway and transport systems, it worked; whereas HMO has been increasingly a failure. HMO law is not merely an inevitable failure, now becoming a national catastrophe; it is a predatory medical malpractice performed by shareholder value.

We must reverse the presently continuing, disastrous course.

Among the principal changes to be made, we must end the worsening trend toward basing the financial system of health-care on that usurious illogic, of using case-by-case accounting as an instrument of accountants' financial control of the medical practice, respecting the functions of diagnosis and care for the individual patient. It is ultimately as injurious to the U.S. national interest, to regulate the delivery of medical service on a patient-case by patient-case basis, as it would be to provide public sanitation for the sole benefit of one residence, but not the adjoining ones. My neighbor's disease is a disease of our neighborhood, or like epidemic contagious disease, or pollution, a disease of the nation as a whole. Health-care for a society is a matter of national-security interest.



The delivery of health-care by the medical profession is “entrepreneurial” in respect to its most essential characteristic: the application of the developed creative mental powers of the individual professional; public-health policy is a matter of the interdependency of the universal and particular role of the professional. *The provision of available health-care is universal; the professional care for the patient, is a privileged action by the relevant individual professional’s direct relationship to the patient.* The arrangement under which quacks, guised as financial executives or accountants, engage in the malpractice of medicine, must be ended, and banned from future recurrence.

The leading edge of the process of rebuilding our national health-care system, will be the emphasis of public effort, by the Federal and state governments, on buttressing existing full-service general hospitals, and reestablishing them where closures of essential such institutions have occurred. Full-service general hospitals which function as teaching institutions, are crucial. Such an emphasis on general hospitals, and enhancement of their relations with the related research functions of universities, will provide the technological lever of reconstruction of the nation’s health-care potential as a whole.

On the financing of health-care, we must return to the pre-HMO system. Health-care as a whole, is a bulk-purchase, not a retail sales outlet. The forecast payments from private patients, and from those under insurance or related programs, must be supplemented by the combination of contributions to hospital budget-requirements, and also capital improvements, by fundraising, with contributions from agencies of government as that last-resort amount which enables the institution to meet the requirements of relatively indigent patients.

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### **3.0. A National Infrastructure Policy**

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Today, under the implied reading of the U.S. Constitution by Treasury Secretary Alexander Hamilton, government-directed building and maintenance of basic national infrastructure, should represent approximately half the economic throughput of the U.S. national economy. To reestablish a healthy national economy, we must understand and accept the functional basis which

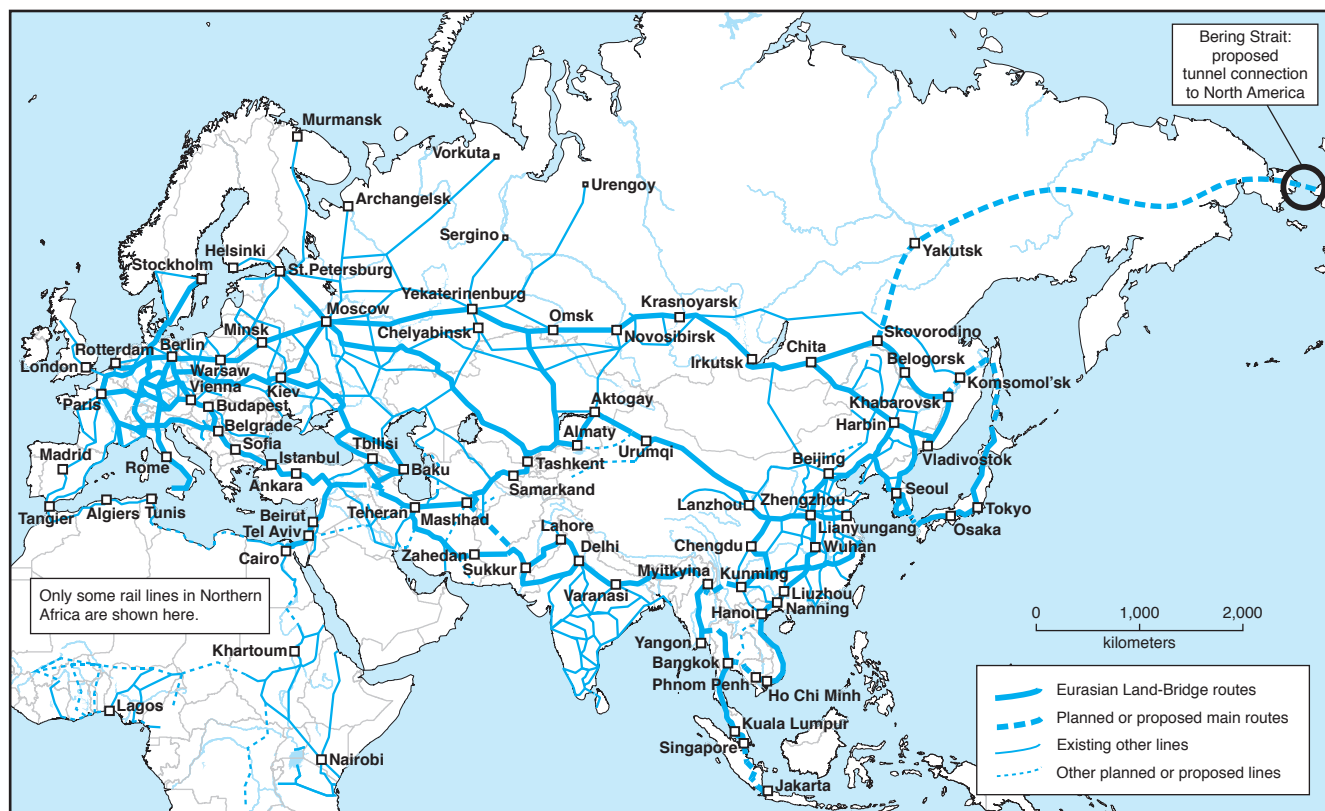
defines that relationship between basic economic infrastructure, as primarily the economic function of government, and the particular role of individual, private economic, or related initiative.

Admittedly, today, to achieve and maintain such goals, we must reverse the past three-decades shift in composition of the U.S. labor-force, to emphasize an increase in the ration of employment in technologically progressive physical output, a shrinking of unemployment, and a curtailing of dubious employment in such make-work activities as unskilled personal services and redundant aggregates of sales employment. This change in composition of employment of the labor-force, must be accomplished through increasing emphasis on increased capital investment in production of physical goods, per capita of the total labor-force. That means increase of physical capital, as distinguished from merely financial capital. To rebuild production, we must, like President Franklin Roosevelt, lay the foundation for that, by a relatively massive concentration on rebuilding basic economic infrastructure. We must build our way out of the current bind, in this twofold manner.

The essence of healthy politics, is the role of the sovereign initiative by the individual personality. As such among our founders as Cotton Mather and Benjamin Franklin emphasized, the essential basis for a healthy republic, is the shared commitment among sovereign individual personalities of *the intention to do good*. To this end, moral individuals create and shape the government of their republic, and entrust to that government the authority and duty to make such laws as are needed to foster cooperative intentions, or to conduct such necessary operations as are beyond the competent authority and scope of private individual economic action. This authority and obligation require us to conduct common and related action to secure the sovereignty of the republic’s powers to promote the common good, and ensure those powers, commitments, and benefits to our posterity.

Individual freedom does not tolerate anarchy, nor anarchy individual freedom. As our Solar System, like the movement of our planet, is governed by those *intentions* defined as universal physical laws, the enduring freedom of the individual, requires that our free choices be governed by adoption of and submission to an appropriate choice of orbital trajectory for our society, as a whole. If we err, we shall correct our error. To this

FIGURE 1  
The Northern Rotterdam-Seoul-Tokyo Land-Bridge Corridor



EIRNS

end, a republic must regulate the economy as a whole, to protect it from the follies of some or more of its own citizens, as from foreign errors which might spoil our national intention.

In addition to those protectionist rules set forth by leading American patriots, such as Benjamin Franklin, Hamilton, Monroe, the American Whigs, Friedrich List, and Franklin Roosevelt, they showed that government must change the environment in ways which enable the common action of individual producers, to increase the productive powers of labor of the republic as a whole.

The primary responsibility of government for basic economic infrastructure, is among the principal vehicles to be used by government for its functions of protectionist and regulatory measures in shaping the direction of the U.S. economy. In the state of affairs associated with today's combined national and world crisis, concern for our nation's own infrastructure must now also figure, to a greater degree than ever before, in our nation's long-range foreign-policy.

## U.S. Global Infrastructure Policy Today

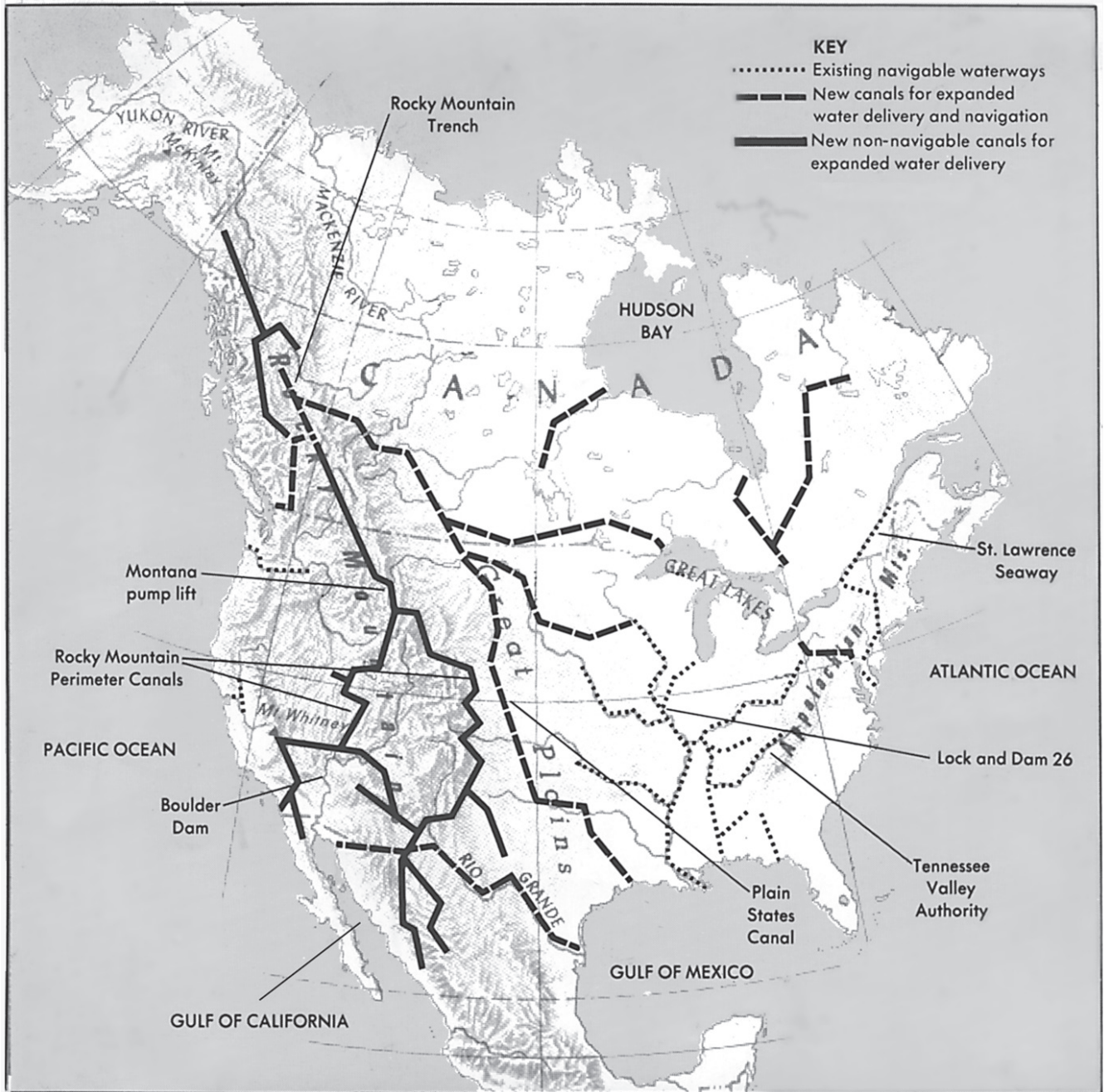
The U.S. system of infrastructure must be assessed as dovetailing with a now emerging global system of multi-continental economic-development corridors.

The spines of these corridors are defined by a combination of continental systems of blended friction-rail and magnetic-levitation transport, and water-corridors used for combined functions of extended inland waterways for transport, and for land-management—as for agriculture and human consumption of water. These corridors parallel the transport-lines with large-scale systems for generation and distribution of power and, often, distribution of water through pipelines. The corridors, which may be in the order of fifty to a hundred kilometers in cross-section, will incorporate presently existing or new urban centers, which will be linked to secondary urban centers within the same beltway.

In the case of one of these corridor-networks, the Eurasian Land-Bridge linking Pusan and Japan to Rotterdam (**Figure 1**), the included mission of these corridors, is to transform corridors running through large

FIGURE 2

**The NAWAPA Plan for Bringing Additional Fresh Water to the United States, Canada, and Mexico**



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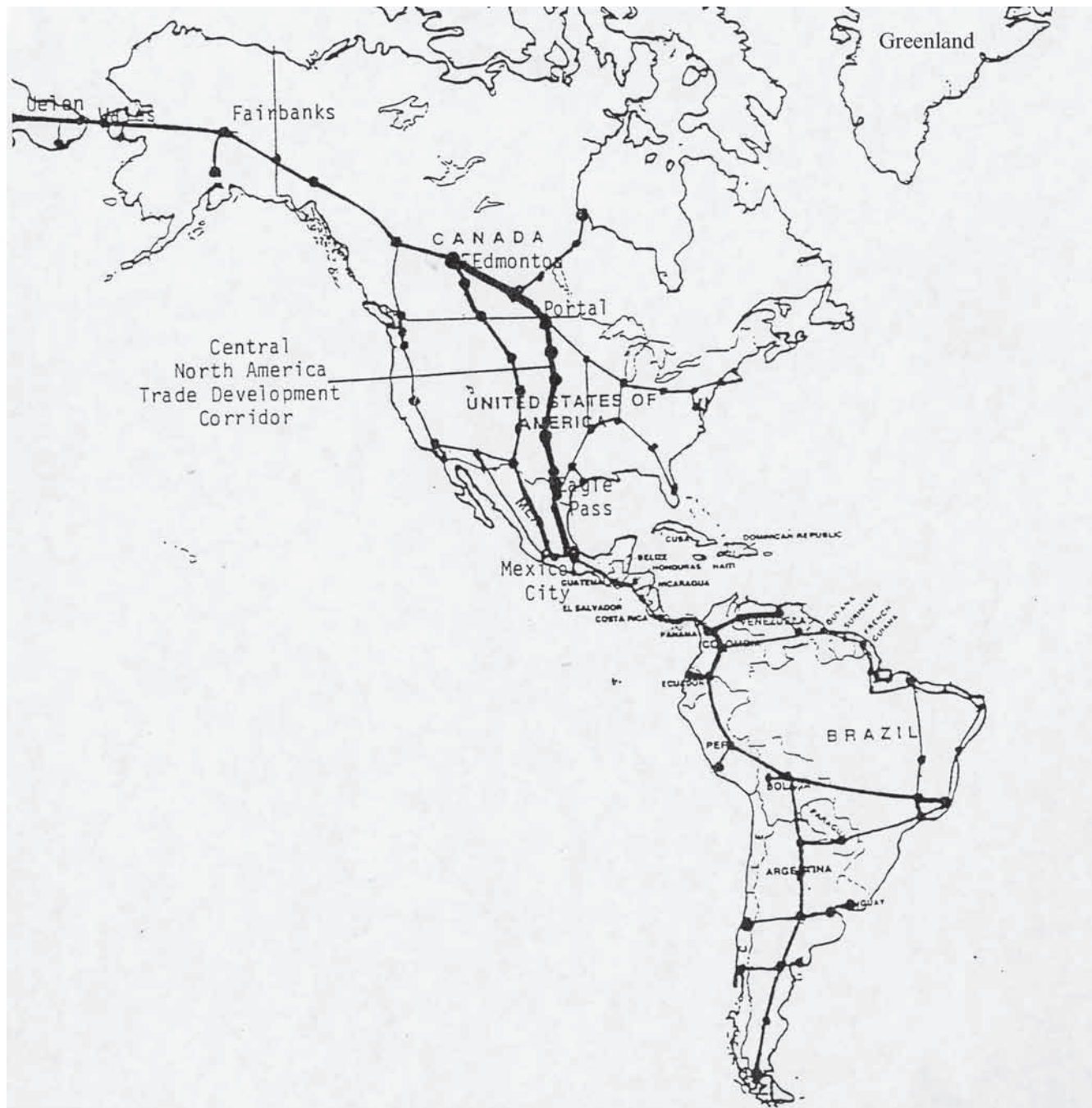
regions of Central and North Asia, into regions of development through which efficient access to the development of mineral and other resources becomes economically feasible. Thus, the transport of technology, from “fountains” of technological progress throughout Eurasia, to regions of Asia which have presently a large deficit in such capacity, defines the principal lines of

future world trade throughout the interior of Eurasia as a whole.

In North America, the need for a nationwide water-management program, such as an expanded North American Power and Water Alliance (NAWAPA), implies a unified rail-water grid-system reaching, through cooperation among sovereign states, into Mexico and

FIGURE 3

### Proposed Inter-American Railroad Line



Source: Hal B.H. Cooper, Jr., Cooper Consulting Co., Kirkland, Washington.

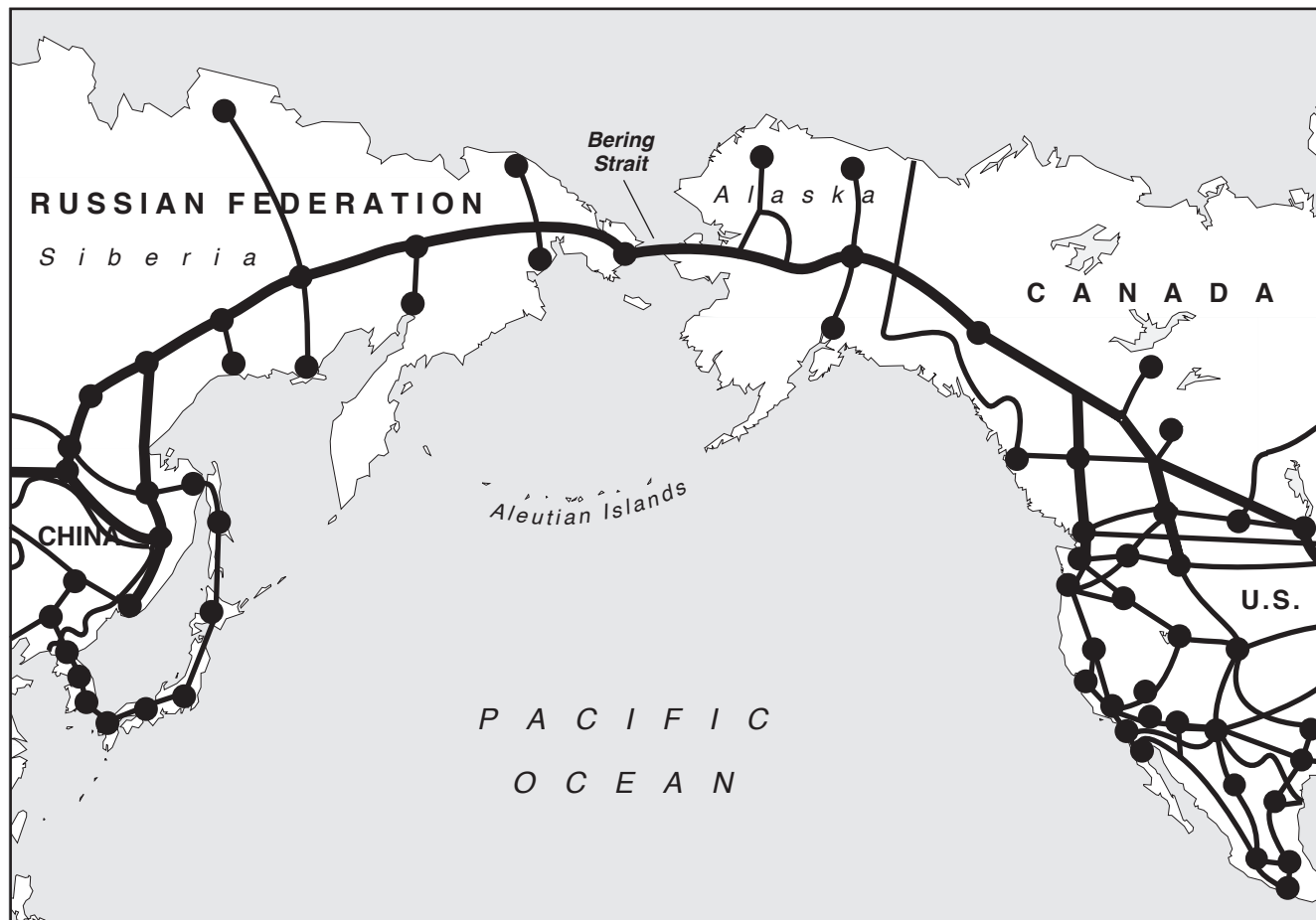
Canada (see **Figures 2 and 3**). Domestic infrastructure policy and related elements of foreign policy must now be seen as of greater importance to us than past practices imply.

The Eurasian Land-Bridge system is to be linked

with systems of the Americas through a rail/maglev link across the region of the Bering Strait (**Figure 4**).

The North American rail-water grid is to be extended through Central and South America (**Figure 5**). Within South America, the combination of wide-scale

FIGURE 4  
**Bering Strait Tunnel Connection for Rail Corridors**



Source: Hal B.H. Cooper, Jr., Cooper Consulting Co.

rail/maglev and water management systems, have an outstanding included importance, in doing for inland South America what the Eurasian Land-Bridge makes possible for Central and North Asia.

The Southernmost tier of the Eurasian Land-Bridge system enters Africa at Egypt, through a great railway bridge soaring above, and spanning the Suez Canal (**Figure 6**).

Within such a global grid of development corridors, the nations enter into a new phase of history, in which cooperation in effectively managing the Biosphere becomes as feasible as it is indispensable.

### **Our Space Program**

*However!* The habitable portions of our planet occupy a relatively small, if crucially significant part of the planetary body as a whole. Moreover, the planet as

a whole, including its surface areas, are also subject to powerful influences exerted, not only by patterns of behavior of the Sun itself, but the Solar System as a whole. We have come into a recently new phase of human existence, during which we must now think seriously of space exploration as an essential part of the world's, and, therefore, our nation's essential economic infrastructure.

The known catastrophes heretofore suffered by peoples, have fallen into two classes,<sup>21</sup> man-made, and from so-called "natural" causes, the latter usually presumed, in earlier times, to be beyond man's power to prevent. As physical science progresses, we begin to imagine that we can either control some of the forces behind so-called "natural" catastrophes, or, in other

21. Cf. Plato, *Timaeus*.

FIGURE 5

**South America: Great Water Projects**



EIRNS

cases—such as architecture for earthquake zones—at least mitigate the damage suffered. Also, through scientific progress, we become aware of new kinds of threatening long-wave natural effects built into our Solar System, or perhaps from beyond. The sense of those dangers from natural extra-terrestrial cycles, gives us a fresh sense of the frailty of the system of human life on Earth. Scientific progress provides the grounds for optimism about mankind’s emerging power to gain control over these dangers.

Shall we then say to ourselves, “In a few billions

years, or much less, human life on this planet will be crushed”? What of a large asteroid hitting Earth directly? So it goes. Shall we, then, resolve to squat pitifully on the surface of our planet, or shall we get out “there,” seeking the knowledge by whose aid future generations might defend our planet from such things?

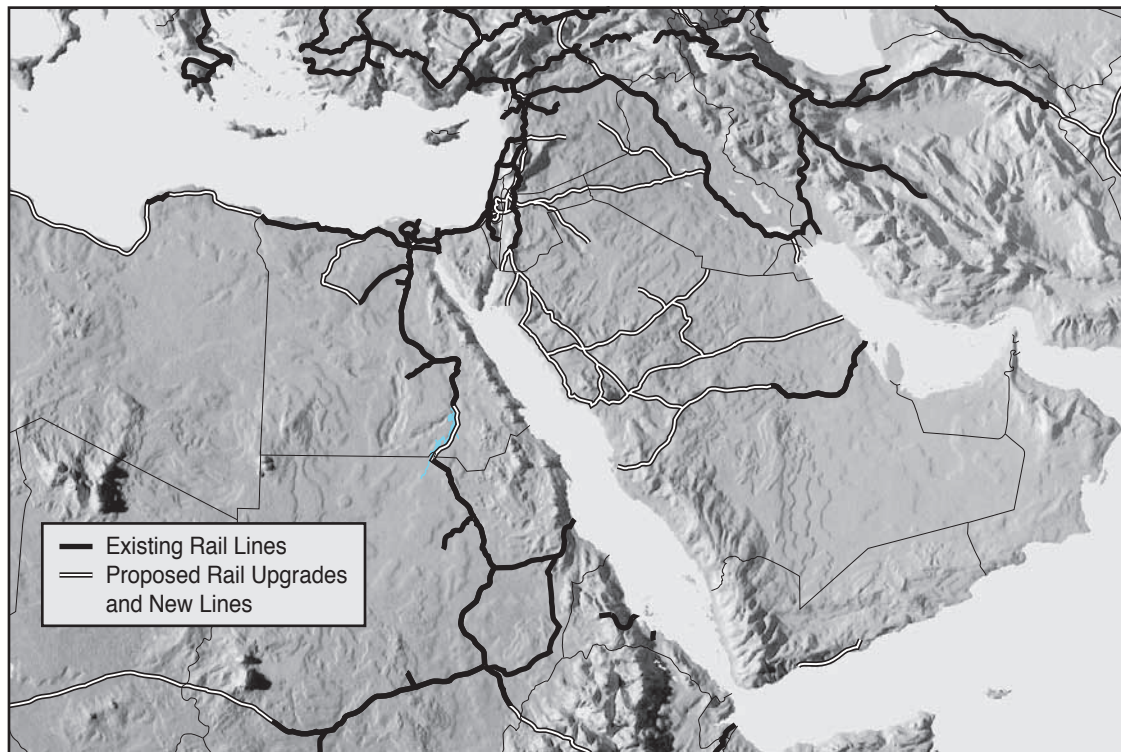
There are other, if related reasons for space exploration. Modern civilization’s technological progress has depended upon exploring in three directions: outward, into the astrophysical domain; inward, ever deeper into microphysics; and, toward the extremes of what is loosely termed “energy-flux density.” It is sufficient, for the purposes of this report, to offer one illustration of this point, the matter of life.

As I have indicated earlier, the physical proof that life expresses a principle absent from our definition of abiotic processes, argues that the principle which life expresses is universally efficient. Therefore, are there fossils on Mars which attest not only to fossils of earlier life on that planet, but some active form of life today? This requires a multi-planetary experiment. To conduct that experiment in an adequate way, we must use probes, but we must, sooner or later, actually visit it.

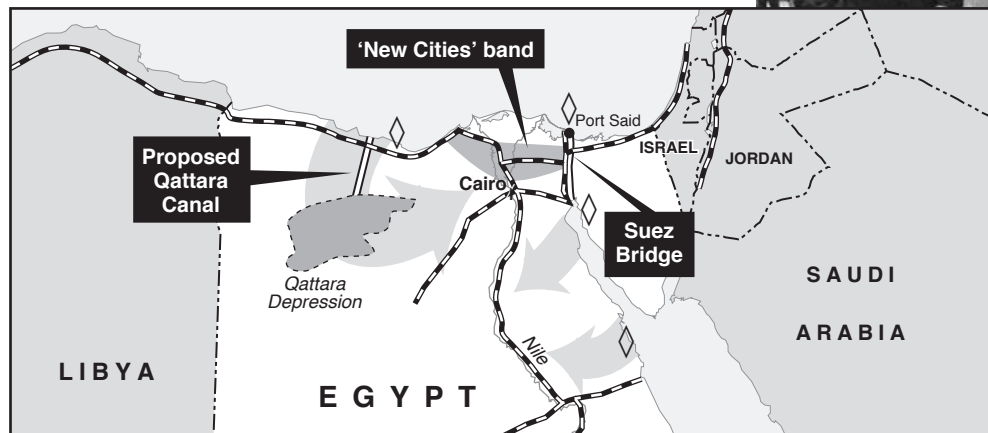
Consider this matter from the vantage-point of my earlier, qualified emphasis on the conception of the Noösphere. The requirements of development along the lines indicated by the accompanying figures showing development corridors and waterway developments, represent global undertakings, with global effects. We know enough in advance to be assured we can be successful in the explicitly stated intentions behind such plans. Nevertheless, we must also look ahead to consider the challenge of managing the long-range, global effects of what we are building. We must consider the Earth’s own Noösphere within the

FIGURE 6

**Greater Middle East, Existing and Proposed Rail Development (Arab League)**



Source: EIRNS



EIRNS



Government of Egypt

*The first of the bridges across the Suez Canal, a joint project of Egypt and Japan, is opened on Oct. 9, 2001. The Mubarak Peace Bridge was inaugurated by Egyptian President Hosni Mubarak (right) and former Japanese Prime Minister Ryutaro Hashimoto.*

Solar System of which it is a part, especially that inner ring of Sun and planets within which the Earth's own Noösphere is functionally situated. For this purpose, we must also look at our Earth from relevant viewpoints in nearby space.

I refer to a proposal for a Mars-oriented space program, which I developed, in memory of Krafft Ehrlicke, during 1985-1986. A reflection of that proposal was presented in a half-hour television documentary, *The*

*Woman on Mars*, which I broadcast in 1988. During those years, I concluded that *such a long-range program*, for placing a permanent science station, exchanging personnel by means of continuously powered flights of flotillas of partially Moon-manufactured spacecraft between Earth-orbit and Mars, should define the mission-orientation of the organizational umbrella of our national science-driver establishment. Implicitly, virtually all of the frontier development and pilot

implementation of scientific discovery would be situated with the greatest efficiency, in an organized effort built around a space-oriented mission of discovery and pioneering development.

Such a space-exploration program is no mere option.

As I have emphasized, once again, within the foregoing pages, man's ability to increase our species' per-capita and per-square-kilometer power on our planet, depends, unconditionally, upon the efficient intention to promote and rely upon progress in discovery and application of valid notions of universal physical principle. As we progress, both the possibility and urgency of accelerating such progress are increased. To that purpose, we must choose one or several possibilities for achieving broad-based breakthroughs, each such loosely describable as a field of scientific breakthroughs.

The space-exploration mission-orientation which I have indicated fits such a requirement for the world's present level of its scientific-technological frontiers. A fuller appreciation of the implications of the concept of the Noösphere, points us in that direction.

As I emphasized in the report sampled by my 1988 nationally televised *The Woman on Mars*, any sensible scheme for man's scientific visits to Mars, must be a long-range effort, for which about forty years of development must be expected. The requirement must be flotillas of spacecraft, whose weightiest components will be produced from materials available on the Moon (including, probably Helium-3 fuel). These journeys will be made as continuously powered (accelerated, decelerated) flight, from a base in Earth's geo-stationary orbit, to a position orbiting above Mars. From materials in the latter position, assemblies will descend to the surface, and subsurface of Mars, thus establishing a station to receive and provide protective housing for working teams. This will require the development of technologies now known to be feasible accomplishments, but not yet available otherwise.

Although, back in 1986, I allowed about forty years for the completion of the initial manned-flight mission of the project, even allowing forty years means attacking the problems as a high-intensity "crash program" roughly broadly comparable to President Kennedy's Moon-landing mission. However, that does not mean that the pay-back begins forty years from now. Each and all of the technologies required for that mission, will be applicable ways of bringing great benefits to life

back here on Earth. We need not wait the forty years for such benefits; we will be able to apply some of them to life on Earth in the years immediately ahead, and others at later stages of the initial program. As I emphasized in 1986, if we can design housing for a scientific station on Mars, we have thus the quality of technology needed to transform the Sahara.

Look at the U.S. Moon-landing program, which brought many times the cost of the program as economic benefits to our national economy. Science-driver modes of "crash programs," have been relatively the greatest source of progress in the productive powers of labor.

I emphasize my warning. In the universe, nothing good simply happens. The notion of universal physical principles can not be competently separated from intention. Without a will, there is no way. In general, it is the efficient intention to do good which creates and maintains a good society; it is persons committed to do good, who protect societies against the doom of decadence. Never trust programs, except as they express the unswerving intention built into the relevant political or other personalities. To save our imperilled nation, our imperilled planet, we must develop the institutions, including science-driver types of "crash programs" which are relevant to an intention for progress as such.

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### 3.1. The American System of Political-Economy

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As I have said repeatedly, here and in many earlier locations, *the creation of the U.S.A. as a sovereign republic, is a unique event in the past half-millennium of world history*. During a time when it was still impossible to establish a true republic in Europe, the best minds of Eighteenth-Century Europe rallied to the hope of the establishment of such a republic from among the English-speaking colonies of North America. The exemplary result of that process, was the role of the energetic scientific and political genius of Benjamin Franklin, in steering his followers through the perilous 1763-1789 struggle to establish a Federal constitutional republic premised on the principle of *agapē* (the common good, the general welfare). As our friend, the Marquis de Lafayette expressed it, the newborn U.S. republic was a temple of liberty and beacon of hope, for all mankind.



The celebrated, London-orchestrated events of July 14, 1789 sealed the defeat of the effort of Bailly and Lafayette, to rescue France from its deadly crisis. They created a constitution which they had intended should transform France quickly into a constitutional monarchy echoing the draft U.S. Constitution. A break between the U.S.A. and its former ally France, was accomplished under such influences as British Foreign Office agents Danton and Marat, a break deepened by the London-steered Jacobin Terror, by the Napoleonic tyranny, and, then, by the Devil's own Congress of Vienna.

These ugly events left the young U.S. republic imperilled throughout the ensuing period, until the crucial military victory of 1863 at Gettysburg. Throughout that period, from the Duke of Wellington's successful seating of Britain's puppet, France's disgusting Restoration monarchy on France's throne, France, Britain, and the Habsburgs, and the Spanish monarchy, among others, were our enemies, through and beyond 1865: until those U.S. military victories of 1863-1865 which led to the expulsion of the fascistic puppet-regime of the tyrant Maximilian, which London and Napoleon III had imposed upon Mexico. By the role of leaders such as the American Whigs, such as President Abraham Lincoln, our republic survived, to emerge as a world model of agro-industrial development during the 1861-1876 interval.

During the perilous early decades of the emerging republic, 1763-1865, including the "four score and seven years" preceding the Battle of Gettysburg, the treacherous American Tories enjoyed the sympathies, and also support from our British and other enemies based in Europe. Under these difficult circumstances, the U.S. interior had become a battlefield between two forces: the American Tories, such as bankers Aaron Burr and Martin van Buren, controlled chiefly from London; and the patriotic tradition associated with the Whigs, Lincoln Republicans, and President Franklin Roosevelt's Presidency. That conflict persists to the present day.

As a consequence of that yet-unresolved internal conflict between the forces of good and evil—and, notably, because of the political conditions which developed during the post-Franklin Roosevelt decades—virtually none of our universities' economics, history, and political science departments today acknowledge, or even seem to know of the axiomatic, systemic distinc-

tions between that American System of political-economy implicit in our Federal Constitution, and the model, often called "capitalism," established in Britain under the British East India Company and its Haileybury school of Bentham, Adam Smith, Malthus, Ricardo, et al. Still today, the political processes of our nation are polluted with the incompetence expressed by the often-babbled lie, that the U.S. Constitution is a testament to British Eighteenth- and Nineteenth-Century liberalism.

Again, as I have emphasized in these pages, the economic policy-shaping of today's U.S.A., is divided between two conflicting, axiomatically incompatible systems, the American System and its opponent, that presently extremely decadent form of the British Eighteenth-Century system. The irony is, that we have been invariably brought to the brink of ruin, as now, by the varieties of that British liberalism which President Franklin Roosevelt denounced, and the liberalism from which we were repeatedly rescued, as from the brink, by a turning back to the American System, as the case of President Franklin Roosevelt illustrates that point in practice.

Therefore, the principal intellectual obstacle to saving our republic from ruin, is the lack of competence in the economic opinions of not only most within our government and leading parties, but the citizenry in general. Unfortunately, only the smell of doomsday in the presently accelerating, global monetary-financial collapse-process, could shock parties and constituencies sufficiently to cause them to consider rethinking their recent opinions about the principles of economy. That shock is being delivered with increasing force right now.

To understand that conflict, we must look back to its roots in pre-Treaty of Westphalia Europe, in that period of a post-Renaissance, little dark age of Venice-orchestrated religious warfare in modern Europe's history, from 1511 to 1658.

Out of the Seventeenth-Century developments in England and the Netherlands, two varieties of tyranny emerged as leading powers in Europe. One, was typified by the advocacy of that absolutist, Hitler-like tyranny associated with Paolo Sarpi follower Thomas Hobbes. The other, that pro-slavery form of oligarchical tyranny more reflective of the tradition of Venice's financier oligarchy, was that of the followers of William of Orange and John Locke.

As Irish recollection insists, there is, of course, no genetic difference between the brutishness of Hobbes and the Mephistophelean liberalism of Locke. The two are, like the slime-molds, two seemingly opposite appearances of the same species expressed in the form of what are merely alternating states of organization. In both political systems, the Hobbesian and Lockean, the oligarchy conceives of itself as a Cathar-like “elect,” or “select.” Under Hobbes, there is a dictator. Under Locke, the oligarch’s hedonistic exercise of political and economic power, is typified by the principle of the slime-mold-like central banking system, a collective parasite which herds, loots, and lulls and culls the common herd of human cattle.

The more liberal approach to pillaging the poor, that of the followers of Locke and his like, usually prefers to rely chiefly on a combination of financial power and rigging the game of financial affairs greatly in favor of “the house,” or the squabbling “houses,” which are almost as much predators in their dealing with one another, as with their customary popular prey. They dispense their pillaging *liberally*.

The most concise expression of the axiomatic distinction between the American System and the axiomatic quality of the Eighteenth-Century British East India Company model of imperial financier-oligarchical maritime power, is the difference in policies of education.

The British Eighteenth- and Nineteenth-Century liberal model prefers not to cultivate “excessively” the mental powers of young members of the human herd. It prefers to degrade the mental powers of the many into a condition which the rulers have selected for each victim as his or her destined, future economic role and station in adult life. That tradition, which is an echo of the Roman imperial Code of Diocletian, and its echoes in U.S. educational policy-making today, measures education in terms of estimated fitness of the young for adult employment, as if one were expressing deep moral concern for the production of wool and meat, not human beings.

Our American patriotic model rejects that. The difference is reflected in the relative literacy of the two populations at the beginning of the Nineteenth Century. The level of literacy in Benjamin Franklin’s America, was more than twice that of the British. Our republican education policy, as expressed by Benjamin Franklin’s leadership, was always consistent with what German history should recall as the Schiller-Humboldt mode of Classical humanist education. Our

tradition in education-policy, is the development of human beings, rather than households of employable human cattle.

If we are true republicans, we develop the economy and its opportunities for employment, in directions intended for the needs of human beings, rather than degrading human beings, as if there were wood or bone to be carved into the shape of employees. Since it is natural for human beings to be cognitive beings, we must require our economy to develop in directions of that scientific and related progress which expresses the essential distinction between human nature and the beasts. We must educate all of our young to become makers of a history of progress of the human condition, rather than species of human cattle.

In the great sweep of that European civilization, rooted in Classical Greece, which was originally the child of Egypt, the Classical humanist tradition has always been expressed as a struggle: first, to discover human nature and its requirements less imperfectly; and, second, to steer the process of change within society in directions which are compatible with the natural requirements expressed by the human power to discover, transmit, and apply discoveries of those universal physical principles of art and science, by means of which the human being acts as one made in the image of, and love for, mankind and the Creator alike.

Under such a policy, we do not foster technological progress for the sake of becoming rich; we choose technological progress as the way in which the living individual, caught between the brevities of individual life and death, can find a meaning of an individual life’s work which shall become a necessary, useful part of the future of humanity. The dying man must smile, because he knows his life was not a waste; he must live and die, not as a pet or cattle do, but according to that essential nature of the human being which wise men know as a creature made in the likeness of the Creator.

The great scientist must be paid, but pay is not his motive. Rather, he must be paid because he must be enabled to do that work on which his contribution to future mankind depends. He must be paid such that his family and community will continue an upward course of human development. He must be educated for that role, the all-sided role which every person in a just society must be educated to perform.

The axiomatic root of the difference between the American System and Eighteenth-Century British liberalism, is that.

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## 3.2. Infrastructure and Profit

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Competent policy-shaping of a national economy treats the concept of financial capital as a fiction. To understand any of the essential mechanisms of a national, and world economy, we must rely on the notion of physical capital, rather than financial capital. In addition to the physical capital essential to production of products and essential services, we require, absolutely, two other categories of physical capital which are usually overlooked in recent decades of official and other U.S. estimates of national income and product. This defect in U.S. official accounting already existed even before the early introduction of the fraud known as the Quality Adjustment Index, during the early years of Paul Volcker's Chairmanship of the Federal Reserve System.<sup>22</sup>

The two accumulations of physical capital which are, most often, either overlooked or greatly underrated, are governmental contributions to the development and maintenance of basic economic infrastructure, and the development of that artistic and scientific cultural development of the members of society which is to be best assessed by the comparative standards of strictly Classical culture.

Such infrastructure, like the capital development of the facilities of production of physical goods, performs an indispensable, if largely intermediate function in the relationship between the exercise of the individual human will and the Biosphere in general. It is the tool which amplifies the application of the human will and hand. It does this in much the same sense as the investment in essential physical forms of capital goods in manufacturing or agriculture. The connection between such notions of infrastructural and industrial productions' capital, is relatively more immediate, more obvious in the case of modern agriculture. These connections are best understood from the standpoint of the Noösphere, as I have summarized my view of the Noösphere earlier in this report.

The concept is even clearer, at least implicitly so,

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22. Recently, the fraud of the early 1980s Quality Adjustment Index has been continued under the accounting fraud of "hedonistic" valuation. This fraudulent notion of a "hedonistic" principle was introduced into late-Eighteenth-Century British practice by Lord Shelburne's Jeremy Bentham, the latter the putative father, and stuffed dummy, of the "utilitarian" school. It persists today as a reflection of the dogmas of John Stuart Mill and the "marginal utilitarians" generally.

when we look at the development of the mind of the individual as a form of stored-up investment in physical capital. The accumulation of cognitive knowledge of valid universal physical principles, as distinguished from mere forms of learning comparable to textbook learning, brings the essential point into better focus.

Thus, the recent three decades of madness, in destroying capital through privatizing public infrastructural institutions; in substituting "blab school" qualities of instruction in mere opinion, in most aspects of public and higher education; in reducing techniques more and more to techniques to be learned by dummies; typifies a vast, systemic process of destruction of physical capital of the landscape and human minds alike, as the case of "The Keating Five" illustrates the point.

If we take those horrors introduced during the recent three decades into account, there is nothing properly mysterious about the fact that our economy is sliding deeply into a physical, as well as monetary-financial collapse.

The complementary point to be stressed, is that production costs far more than present accounting practices allow. By reducing the acknowledged costs of education, for the sake of "the bottom line," accounting practice of the recent decades has contributed much to bringing our economy to the bottom we are now experiencing. The perilous collapse of our capacity for generating electrical power, the decay of our investment in large-scale water-management systems, the intentional looting of the national railway system, and what deregulation of transportation did to our national trucking and air travel industries, illustrate the point.

We must regard standards for minimum wages, pensions, freight-rate schedules, protectionist approaches to defining fair prices of essential produced goods, and maintaining a repertoire of national production of most of the types of essential goods for our own internal use, as, admittedly, increases of the apparent accounting costs of marketed goods; but those price-floors are essential to the formation of essential productive capital, including the basic economic infrastructure, and levels of cognitive mental development of our young.

After more than three decades of qualities of folly often verging upon insanity, or worse, it is time to correct those mistakes, and rebuild.