

The scientific basis for life on Mars

by Lyndon H. LaRouche, Jr.

I respond to a query forwarded to me from the Aug. 10 session of *EIR*'s regular, Leesburg Saturday afternoon intelligence discussions.

To lighten the burden of this reply, I refer readers to the fact that this is a matter which pervades all my scientific work. For example, some former students will recall the argument for pervasiveness of life in the universe, which I featured as a pedagogical point within the one-semester course in economics during the 1972 Spring semester at Columbia University campus. Those, and others, will recall from relevant publications, that the core of my original discoveries in physical economy is embodied in those considerations.

The question, whether we ought to have anticipated a necessary basis for presuming life to have existed on Mars at some time, can be answered only by first taking into account the most profound, and most frequently overlooked principle upon which the authority of all fundamental scientific knowledge depends. Only after those prerequisites are taken into account, by both questioners and respondent, can a competent answer be delivered.

The shame of virtually all taught science today, is that it ignores the most crucial question posed by even the mere notion of scientific principle. The proper answer to the question, "What is human knowledge?" in physical science, as otherwise, is subsumed under a scrutiny of those cognitive processes upon which all knowledge depends. In light of that often-ignored matter of scientific rigor, the science of physical economy stands as the highest-ranking branch of physical science. That is first of the prerequisite points to be considered.

1. Physical economy sets the question of the possibility of continued existence of the human species, against that upon which the human species acts, and which reacts to the human species' activity, the universe.

2. The unique distinction of human existence on this planet, is that it depends upon those willful increases in potential relative population-density, which are effected through the instrumentalities of those mental-creative processes of cognition which empiricism and materialism either deny, axiomatically, to exist, or, as Immanuel Kant did, pronounce "unknowable" by mankind.

3. Physical economy shows that the characteristic of valid

discoveries of principle employed to alter human behavior, is a "not-entropic" growth of the human potential relative population-density, correlated with improvements in demographic characteristics of the relevant entire population, and with increase of the physical standard of living and physical productivity of the society, per capita of labor force, per household, and per square kilometer of relevant surface area of the planet.

(As set forth in the referenced Columbia semester: This not-entropic function is reflected in terms of three constraints: a) That the ratio of "free energy" to "energy of the system" of the physical economy as a whole, must not be negative, and must not decline; b) that the ration of "energy of the system," per capita of available labor-force, per household, and per square kilometer of relevant surface-area, must increase; c) that progress in these terms is made obligatory by the factor of "technological attrition.")

4. That is to say, that the universe rewards humanity's valid acts of discovery of universal principle, with "not-entropic" impulses in the increase of mankind's potential relative population-density.

5. Thus, mankind's knowledge of the universe is characteristically "not-entropic," a knowledge which demonstrates the universe as a whole to be characteristically "not-entropic." (E.g., the universe is so pre-designed, that it is prone to obey the will of man whenever that will reflects the creative-cognitive potential of the individual human mind. Hence, the universe is prone, by manifest pre-design, to "obey" not-entropy.)

6. This is made known to mankind through the Socratic method of cognition first rigorously defined by Plato; therefore, that process of cognition is characteristically "not-entropic."

7. The mathematical meaning of this "not-entropy," is clarified by the discovery presented by Bernhard Riemann's 1854 habilitation dissertation, where a clear view of the relationship among cognition, mathematics, and not-entropy was first provided. Essentially, to understand cognition, we must recognize that science is not a product of mathematics, but of frequent departures from mathematics, into the domain of experimental physics. Experimental physics rudely refutes and corrects the stubborn idiocies of existing mathematics (and merely mathematical physics) by aid of *measurable* demonstrations of a new physical, or equivalent principle, enabling us to construct a new, functionally superior quality of mathematical physics. Each such step of progress in human knowledge, has the mathematical characteristic of an *absolute mathematical discontinuity*.

It should be noted that experimental physics effects progress to two distinct effects. It may merely guide us to eradicate nonsense from knowledge; or, it may find the relevant error in existing belief to err only in respect to inadequacy, in that it has to discover some additional principle, if it is to progress beyond the bounds of its present pragmatic competencies. It

Impeach Gov. Ridge! Stop Nazi-Style Crimes Against Humanity

LYNDON LAROUCHE ON CABLE TV

WWOR-TV 10:30 p.m. Eastern 9:30 p.m. Central
Saturday 8:30 p.m. Mountain 7:30 Pacific
August 24

Lyndon H. LaRouche, Jr., candidate for the Democratic Party's Presidential nomination, will address the nation in a half-hour telecast.

Call **1-800-532-4550** (toll-free)

To reach the LaRouche page

ON THE INTERNET

<http://www.clark.net/larouche/welcome.html>

To reach the campaign by

ELECTRONIC MAIL

larouche@clark.net

Paid for by Committee to Reverse the Accelerating Global Economic and Strategic Crisis: A LaRouche Exploratory Committee

is the second case, upon which Riemann's habilitation dissertation, like his notion of a Riemann Surface, is focussed. In this second case, experimental proof, by measurement, of a new physical principle, is to be added to existing mathematical knowledge as it were a new dimension of a physical space-time geometry.

This obliges us to review all presently acquired knowledge from this vantage-point in physical space-time geometries. In this approach, we are impelled to divide all relatively valid discoveries into two general classes: a) discoveries of new theorems of an established physical space-time geometry (established theorem-lattice), and, b) discoveries of new dimensions (i.e., any one set of axioms, postulates, definitions, constituting an hypothesis, is transformed into a new hypothesis by the discovery of a new principle serving as an axiom of the new hypothesis). The latter are distinguished as "new physical principles" (or, equivalent notions). Each such principle is treated as a "dimension" of an n -dimensional physical-space-time manifold, and with an associated, experimentally measurable physical space-time curvature.

The notion of the progress, through experimental physics, or analogous means, from a relatively valid physical space-time geometry (hypothesis) of " n dimensions," to a superior one (hypothesis) of " $n+1$ dimensions," is the general definition of "not-entropy" employable for a topological

form of mathematical physics (which excludes the Grassmann-Weyl presumption of the existence of linearity in the very small).

8. Although experimental physics, or comparable measurement, may show us, that a discovered theorem or hypothesis increases the per-capita power of action *locally*, that is not proof, in and of itself, that such local advantage corresponds to a net gain for humanity as a whole. Thus, local advantage must be viewed as but a phase-space within a larger geometry of society as a whole, within a still larger geometry of mankind as a whole. Thus, the principle of increase of potential relative population-density, through the not-entropic fruits of individual's cognition, is the highest authority in experimental physics.

Physics and life

All human knowledge may be mapped by simple table of three columns and three rows. The columns are "astrophysics," "macrophysics," and "microphysics." The rows are, from lowest to highest: 1) Ostensibly non-living processes; 2) Ostensibly non-cognitive, living processes; and, 3) Cognitive processes. All of the elements of knowledge so located interact functionally.

Another table describes, roughly but usefully, the empirical refinement of knowledge. Knowledge is otherwise ordered from lower linear, to higher non-linear, and both these according to extremes of frequency of oscillation reached. Thus we drive inquiry and action into the extremes of scale, and in refinement of contrast of linear to non-linear.

All such considerations are properly subsumed under the certainty, that not-entropy is the underlying characteristic (e.g., higher hypothesis) of the universe as an integrated whole.

The foregoing three sets of experimental considerations, combined, present us with a higher hypothesis. It is a "relative theorem" (e.g., hypothesis) of this higher hypothesis, that the principle of life is pervasive throughout the universe, and that life must necessarily manifest its efficient presence as a principle of the universe, wherever appropriate local phase-space conditions exist.

Thus, if we reject the mechanistic, Darwinian presumptions, in favor of the considerations summarized thus far here, it follows:

1. That prior to the recent NASA report, the compelling investigative presumption had to have been, that recognizable life-forms must have existed actively on Mars during some interval of time, possibly including the present.

2. If three stated or otherwise implicit assumptions of the given NASA report are solidly confirmed, then we have the fact of existence of active forms of life on Mars during some extended period of time, prior to, and possibly including the present. These three, "nested" presumptions are: a) That the meteorite came from Mars; b) That there are life-forms contained within the meteorite; and, c) That the life-forms are not located there through "contamination" by environments other

than those of Mars.

3. If those presumptions are confirmed, we are confronted with two experimental propositions: a) What is the range of conditions on Mars within which what types of life-forms are "successfully" active; and b) What are the conditions under which a succession of life-forms is originated on Mars—or, elsewhere, such as Earth?

4. One of the subsumed special sets of questions references the transformation in the conditions of the Earth's surface, from a reducing to an oxidizing characteristic. A related, "nested" question, is: How does that consideration apply to the pre-history of Mars, as compared with relevant datings for Earth?

5. That set of questions prompts our examination of the strong, if currently less popular presumption, that the generation of the periodic table of elements, of which the Solar System's planets and moons are ostensibly composed, was effected, during a period a much-faster rotating Sun was shedding rotation, under conditions of coherently ordered fusion within a superheated disk of expelled solar matter orbiting the Sun (as our present image of gravitational fusion within the Sun could not account for that periodic table). The Kepler phase-shift, between the inner and outer planets, has greatly increased significance for us, if a second inner planet (the only likely one, excepting the exploded planet now represented by the asteroids) is shown to have de-

veloped living forms. In such a case, our way of looking outward, at the universe in general, must be significantly shifted, to include a much more interesting history (and prospective future) for our Sun, than has been common lately.

6. All of this must be situated in a commitment to several related matters: a) Extend the frontiers of experimental physics, on both the astrophysical and microphysical frontiers, especially into the sub-nuclear domain, where "strong forces" prevail; b) Consider the proposition, that the natural tendency in a universe defined as our table defines science, is for the composition of the universe to shift upward, not only from a less-organized, to a more highly-organized form, but, generally, from the "inorganic" toward the "cognitive" form; c) That the curvature of physical space-time has changed much over the "history" of the universe, is continuing to change, and might be willfully altered, ultimately, in the manner a Riemann Surface function suggests, by intervention of mankind.

7. That the investigation of such matters, requires the cleansing of science of both the incapacitating pagan-religious mythology, of "linearity in the very small," and, also, of kindred types of empiricist's mechanistic mumbo-jumbo, imported into the mathematics-physics classroom and textbook from the dionysiac rites of the Hobbesian market-place.

LISTEN TO LAROUCHE ON RADIO



*Frequent Interviews with
Lyndon LaRouche on the
Weekly Broadcast "EIR Talks"*

ON SATELLITE
4 p.m. ET
Galaxy 7 (G-7)
Transponder 14.
7.71 Audio.
91 Degrees West.

SHORTWAVE RADIO
Sundays 2100 UTC
(5 p.m. ET)
WWCR 12.160 MHz

**Cassettes Available to
Radio Stations**

**Transcripts Available to
Print Media**

Local Times for "EIR Talks" Sunday Shortwave Broadcast on WWCR 12.160 MHz

Adis Ababa 0100*	Little Rock 1600
Amsterdam 2300	London 2200
Anchorage 1300	Los Angeles 1400
Athens 2400	Madrid 2300
Atlanta 1700	Manila 0600*
Auckland 1000*	Mecca 0100*
Baghdad 0100*	Melbourne 0800*
Baltimore 1700	Mexico City 1600
Bangkok 0500*	Milan 2300
Beijing 0600*	Minneapolis 1600
Belfast 2200	Montreal 1700
Berlin 2300	Moscow 0100*
Bohemian Grove 1400	New Delhi 0330*
Bogota 1700	New York 1700
Bonn 2300	Nogales 1500
Bombay 0330*	Norfolk 1700
Boston 1700	Oslo 2300
Bretton Woods 1700	Paris 2300
Bucharest 2400	Philadelphia 1700
Buenos Aires 1900	Pittsburgh 1700
Buffalo 1700	Prague 2300
Cairo 2400	Rangoon 0430*
Calcutta 0330*	Richmond 1700
Caracas 1800	Rio de Janeiro 1900
Casablanca 2200	Rome 2300
Chattanooga 1700	St. Louis 1600
Chicago 1600	St. Petersburg 0100*
Copenhagen 2300	San Francisco 1400
Denver 1500	Santiago 1800
Detroit 1700	Sarajevo 2300
Dublin 2200	Seattle 1400
Gdansk 2300	Seoul 0700*
Guadalajara 1600	Shanghai 0600*
Havana 1700	Singapore 0530*
Helsinki 2400	Stockholm 2300
Ho Chi Minh City 0600*	Sydney 0800*
Honolulu 1200	Teheran 0130*
Hong Kong 0600*	Tel Aviv 2400
Houston 1600	Tokyo 0700*
Istanbul 2400	Toronto 1700
Jakarta 0500*	Vancouver 1400
Jerusalem 2400	Vladivostok 0800*
Johannesburg 2400	Venice 2300
Karachi 0300*	Warsaw 2300
Kennebunkport 1700	Washington 1700
Kiev 2400	Wellington 1000*
Khartoum 2400	Wiesbaden 2300
Lagos 2300	Winnipeg 1700
Lima 1700	Yokohama 0700*
Lincoln 1600	Yorktown 1700
Lisbon 2300	

* Mondays