
Humanity's Critical Path: From Weaponry to Livingry

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War is obsolete. It is imperative that we get the word to all humanity – “RUSH” – before someone ignorantly pushes the button that triggers the pushing of all the buttons.

What makes so difficult the task of informing humanity of its newborn option to realize success for all is the fact that all major religions and politics thrive only on the for-all-ages-held, ignorantly adopted premise of the existence of an eternal inadequacy of life support inherent in the design of our planet Earth.

All books on economics have only one basic tenet – the fundamental scarcity of life support. The supreme political and economic powers as yet assume that it has to be either you *or* me. Not enough for both. That is why (1) those in financial advantage fortify themselves even further, reasoning that unselfishness is suicidal. That is why (2) the annual military expenditures by the U.S.S.R. and the U.S.A., representing the two camps of socialism and private enterprise, have averaged over \$200 billion a year for the last thirty years, doubling it last year to \$400 billion. Over \$6 trillion have been spent thus far by the two major powers in developing the ability to kill ever-more people, at ever-greater distance, in ever-shorter time.

It is time to realize a new initiative. One that has been available for a little more than a decade. It is an unprecedented option I have seen coming and have been initiating the groundwork for for over fifty years.

In 1927 I was convinced that humanity's most fundamental survival problems could never be solved by politics. That was the year transatlantic phone service began. That year a human first flew alone across an ocean in one day. It was obviously the beginning of the swift integration of all humanity.

Humanity in all its millions of years had existed remotely deployed as relatively isolated separate nations. The inbreeding of local survival advantaged types over hundreds of generations gradually evolved “nations” with inhabitants who looked physically different from those of other “nations” and whose ways of life were approximately unknown to one another.

It was obvious that the integration of these various “nations” would require enormous amounts of energy. It was also obvious that the fossil fuels were exhaustible. It was obvious that a minority of selfish humans would organize themselves to exploit the many transitional dilemmas. I was convinced that within the twentieth century all of humanity on our planet would enter a period of unprecedented crisis. I could see that there was an alternative to politics and its ever more wasteful warring, and inherently vain attempts to solve one-sidedly all humanity's basic economic and social problems.

That realizable alternative was through invention, development, and reduction to physical practice of working, mass production prototypes of human-circumstance-advantaging technology. This complete family of intercomplementary artifacts I determined must be designed – structurally, mechanically, chemically, metallurgically, electromagnetically, and cybernetically – to provide so much performance per each erg of energy, pound of material, and second of time invested as to make it eminently feasible and practicable to provide a sustainable high standard of living for all humanity. It must be a standard of living far more advanced, pleasing, and increasingly productive than any ever experienced or dreamed of by anyone in all history.

It was clear to me that this advanced level could be entirely sustained by our daily income of Sun energy. In 1983 the total energy being consumed daily by all humanity amounts to less than 1/500,000ths of 1 percent of our planet's daily Sun energy income.

It was also clear that the advanced standard of living I foresaw could be attained and maintained by artifacts that would necessarily emancipate humans from piped, wired, and metered exploitation of the metabolic, life sustaining processes of the many by the few.

This family of artifacts leading to such comprehensive human success I identify as *livingry* in constradistinction to the *weaponry* of the human political power structure. What I fore-

saw was technologically reforming the environment instead of trying politically to reform the people.

My livingry production initiative, for complete realization, requires the veering of big business from its weaponry fixation to a human-circumstance-advantaging technology at the aero-space level of know-how. I fully describe the vastly larger, far more enduringly profitable for all, entirely new, world livingry production and service industry in my recent books, *CRITICAL PATH* (St. Martin's Press, 1981) and *GRUNCH OF GIANTS* (St. Martin's Press, 1983).

Most importantly I set about 55 years ago, at age 32, to undertake an experiment in individual initiative. I undertook to see what a penniless, unknown human individual, with a dependent wife and newborn child might be able to do effectively on behalf of all humanity in initiating and realistically developing such a technological program.

This design science revolution would use the highest aeronautical and engineering facilities of the world and redirect them from weaponry to livingry production; all humanity would thereby have the option of becoming enduringly successful.

All previous revolutions have been political—in them the have-not majority has attempted revengefully to pull down the economically advantaged minority. If realized, this historically greatest design revolution will felicitously elevate all humanity to unprecedented heights.

Such a design initiative would be impossible of accomplishment by great nations, great religions or private enterprise no matter how rich or powerfully armed. With the average sovereign nation occupying less than one-twelfth of one percent of the planet Earth's surface, the sovereign prerogatives of any one nation have been, and as yet are, meager. Great private enterprises are capital gambles whose "ships must come in" within a reasonably short time or their backers will go bankrupt. Enterprise, with its stockholders and money managers, is too narrowly focused and shortsighted—too narrowly focused on moneymaking to be concerned with its side effects and too shortsighted to address those biggest, most important, and long range tasks that are vital to sustaining humans on board our planet.

Being human, I made all the mistakes there were to be made but I learned to learn by realistic recognition of the constituent facts of the mistake-making and attempted to understand

what the uncovered truths were trying to teach me.

As a regular U.S. Navy officer in World War I, I saw that there was nothing to stop me from thinking comprehensively about our total planet Earth, its total physical resources and most advanced total know-how. Nor was there anything to stop me from thinking realistically about how to operate this magnificent Spaceship Earth on a sustained basis for all the passengers on board.

I discovered that it is now technically feasible with presently proven technology, to adequately service all humanity solely by the vast overabundance of our cosmic energy income—from the Sun, vegetation-produced alcohols, and Sun-derived windpower and wavepower. Through foresight and design, it is possible to phase out all further use and abuse of nature's cosmic energy savings account: our fossil fuels and atomic energy.

Having committed ourselves to solving humanity's problems with artifacts, it became necessary to sort out which came first of the various artifacts. I came to consider and develop a "critical path" (a first-things-first program) of necessary artifacts, all of which were requisite to getting Spaceship Earth operating omnicooperatively on behalf of all.

In my Philadelphia archives there are approximately 40,000 original articles published and often reprinted in newspapers or magazines during the last sixty years which successively document my critical path schedule of artifacts invented and prototyped. It is this family of artifacts I have developed for later adoption by a World Livingry Service Industry. These livingry items include the following:

The Dymaxion House: The autonomous, mass-producible, air-deliverable dwelling machine weighing only 3 tons which was only 3 percent of its conventional, single-family dwelling counterpart. First designed, 1927; modeled, 1928; full-scale prototyped in 1945 at Beech Aircraft; helicopter delivered, 1954.

Tensegrity: The continuous-tension/discontinuous-compression structuring principle of Universe (i.e. stars not touching planets, electrons not touching their atomic nuclei) introduced to planet Earth to replace the continuously compressioned, secondarily tensioned structuring in present world-around engineering theory. Designed, 1929; prototyped, 1929.

The Dymaxion bathroom: A one-piece, 250-pound bathroom. Designed, 1928; proto-

typed, 1936; mass-produced in polyester fiberglass in West Germany, 1970.

Synergetics: Exploration and publishing of the four-dimensional geometrical coordinate system employed by nature. (See SYNERGETICS and SYNERGETICS 2, Macmillan, New York, 1975, 1979.) Discovered, 1927; published, 1944.

Dymaxion World Map: Discovery and development of a new cartographic projection system by which humanity can view the map of the whole surface of the Earth as one-world island in one-world ocean, without any visible distortion in the relative size and shape of any of the land masses and without any breaks in the continental contours. This is the undistorted map for studying world problems and displaying resources and other data in their true proportion and exact location. Discovered, 1933; published, 1943.

World Game: A grand strategy program developing the design science of solving all problems with artifacts, invented by self or others, which take advantage of all scientific and technological development through studies of their effects on the total world's social and economic affairs as ascertainable from the Dymaxion World Map. A means of assessing the feasibility of realizing various initiatives in solving world problems. Invented, 1927; applied, 1928.

Trends and Transformation Charts: These depict the total history of all the metallurgical, chemical, electromagnetic, structural, and mechanical trendings to greater performance per given amounts of given materials, time, and energy. A compendium of all the scenarios of science and technology's evolving advances. Chronological chart of total history of scientific discoveries, and technical inventions. Chronological chart of the mining of all metals and recirculation of the scrap of those metals. Chronological charts of all major industries' performances assessed in terms of per capita human use. These charts, begin in 1928; first published, 1937, at Bureau of Standards, Washington, D.C.; published in NINE CHAINS TO THE MOON, 1938; published in FORTUNE magazine's tenth anniversary issue, 1940. This issue of FORTUNE went into three printings and took FORTUNE from red-to-black-ink status. It changed U.S.A. and world economic

health assessment from a tonnage criteria to one based on energy consumption.

The Dymaxion Omnitransport (for land, air, water surface and submarine travel): The first full-scale working prototype stage of which was the Dymaxion Car, produced to test the crosswind ground taxiing behaviors of an omnistreamlined, ultimately to be twin-orientable-jet-stilts-flown, wingless, flying device, which would take off and land like an eagle or duck, without any prepared landing fields (similar in principle to the forty-years-later descent and take-off, multi-jet system of the Apollo Moon Landing Craft). Designed, 1927; prototyped, 1933.

Geodesic Dome: The unlimited clear-span, omni-triangulated, tensegrity structures to accommodate both humanity's converging and deploying activities. Invented, 1938; prototyped, 1947. Since then, over 300,000 have been produced and installed around the world from northernmost Greenland to the exact South Pole; over 100,000 installed in children's playgrounds.

Octet truss: The flooring or roofing structure for unlimited spanning. Designed, 1933; prototyped, 1949. Specified by NASA for U.S. space-"platform" construction.

The Fog Gun: The pneumatic means of cleaning human body, dishes, clothing, etc. without plumbing's piped-in water supply.

Compact, odorless toilet equipment: For anaerobic conversion of human wastes and garbage into methane gas and fertilizer. Designed, 1928; long proven in India and China; now being refined for mass-production use as dry-packaging-fed system.

Carbon blocks-inserted, copper disc-brakes: Invented and successfully demonstrated at Phelps-Dodge, 1937.

Oxy-acetylene flame-melted, water-cooled centrifuge: For processing low-grade tin ore. Invented and successfully demonstrated at Phelps-Dodge, 1937.

Hanging book shelves, and other furniture: Invented, 1928; prototyped, 1930.

Modeling of all geometric-developments of energetic-synergetic geometry: Including tensegrity models of all geometrical structures and the hierarchy of primitive structural systems. The minimum, all-space-filling module. The foldable, seven unique great circle models. The tetrahelices. Dis-

covered, 1927; demonstrated, 1936.

Twin-hull rowing and sailing devices: Invented, 1938; prototyped, 1954.

Triangular geodesic framing of ocean sailing hulls: Invented, 1948; successfully demonstrated, I.O.R. racing sloop "Imp," 1979.

Floating breakwater: For use where stone-building from bottom is too expensive. Desirable for harborless islands and open shoreline mooring protection. Invented, 1960, first invention proved effective but swiftly overstressed materials employed; principles employed proved valid; invention number two avoids earlier invention's breakdown of materials.

Water wavepower machine: Developed in connection with floating breakwater number two, in which each wave-lifting elevates and entraps a large bulk of water, whereafter gravity precessionally impels water through a turbine. Invented, 1970.

Hydraulic and pneumatic structures: Whereas pneumatics are compressable, they prove highly successful in filling shaped fabric containers where shock loadings are to be absorbed by the pneumatic compressability in circular forms as in automobile tires. Pneumatics will not prevent buckling in a hollow tube column – but hydraulics will do so due to hydraulics non-compressability. Throughout 55 years since first employing them, I have made many successful uses of both pneumatic and hydraulic structures. Invented, 1927.

Interior and exterior aerodynamics of structures: Throughout 55 years since inception, I have made many successful applications of aerodynamics in streamlining my omni-medium transport or in reducing wind-drag on buildings and preventing drag-exhaustion of controlled environment heat conservation, to using wind drag of buildings to operate exhaust-air turbines accommodating hurricane-speed winds. Developed from 1927 on.

Integrated world-around ultra-high-voltage electrical energy conducting grid: Grid closed via Bering Straits between U.S.A. Alaska grid and U.S.S.R. Kamchatka grid. Conceived, 1950.

Windmill systems: First designed into Dymaxion ten-deck tower building using Fletner vertical blade systems; built into and field-proven in Beech Aircraft Fuller House as a dome-drag turbine. Developed

also as propeller bladed system in 1960 which operation evolved into Windworks of Mukwanago, Wisconsin, which first developed electronic conversion of direct into alternating current and arranged feed-into electric utility power lines whenever wind blows. Conceived, 1927; adopted by Wisconsin Power & Light, 1982.

Chronofile: The chronological record of all my to-and-from correspondence of 87 years. Now, in 1982, contains over 800 volumes (filed in 8½" x 11" x 3" containers), documenting my livingry artifact development program.

Publications: Twenty-four books, authored and published; circa. 200 magazine and newspaper articles; circa. 1,000 tape recorded lectures; circa. 2,000 unrecorded, invitational lectures elucidating artifact/ideas at circa. 500 universities and colleges visited on my 49 trips around the world since 1958.

Often my artifacts are adjudged by critics to be failures because I did not get them into mass-production and "make money with them." Such critics who see making money as the criteria of success do not realize moneymaking was never my goal. Nor was getting into the business of mass production. I learned very early and painfully that you have to decide at the outset whether you are trying to make money or to make sense – they are mutually exclusive.

I saw that nature has various categories of unique gestation rates – lags between conception of something and its birth. In humans, conception to birth is nine months. In electronics, it is two years between inventive conception and industrial production. In aeronautics, it is five years between invention and operating use. In automobiles, it is ten years between conception and mass production. In railroading, the gestation period is fifteen years. In big city skyscraper construction, the gestational lag is twenty-five years. Depending on size and situation, the period of gestation in the single family residence varies between fifty and seventy-five years. There seems to be a correlation between the gestation rates and the speed at which the development operates – for example, the electromagnetic waves move at 186,000 miles per second, transport airplanes at 500 miles per hour, the automobile at 80 miles per hour, and the skyscraper only a fraction of an inch per minute during a mild breeze. Humans can't see the hour or minute hands of a clock move. They can see only the seconds hand move. When humans don't see something move, they don't

get out of the way.

Because of these lags, the earlier I could introduce the conception model, the earlier its birth could take place. I assumed that the birth into everyday life of the livingry artifacts whose working "conceptual prototypes" I was producing would be governed by those respective-category gestation lags. I also assumed my livingry inventions' progressive adoptions by society would occur only in emergencies. I called this operative principle "emergence through emergency." I observed that only in emergencies when solutions "at any cost" were needed, were the necessary funds made available for research and development (usually in the area of weaponry). No scientists have ever been employed by the housing "industry" to research and develop plumbing. For all of humanity to begin to break away from its conditioned reflexes regarding living facilities (home customs and styles), allowing them to be advantaged by my livingry artifacts, would take a minimum of half a century to get underway. Since this was clearly a half to three-quarters of a century undertaking, I saw in 1927 at outset that I best not attempt it if I was not content to go along with nature's lag laws.

Evolution's inauguration of the World Livingry Service Industry had to wait until capitalism had graduated from its for-centuries-held assumption that physical land property constituted capitalism itself. Now capitalism has come to the startling realization that the strictly metaphysical, technological "know-how" is the most profitable property and the key to exploitation of the invisible industries of chemistry and biochemistry, metallurgy, electromagnetics, and atomics.

Reorganizing all its strategies, capitalism has now unloaded its real estate property onto the people by refusing to rent and forcing people to buy their condominium or co-op homes. Evolution had to wait upon the government-guaranteed, forty-year mortgage-financing of housing's costs to exceed human financial capability to acquire. Evolution had to wait until the United States' mass-production of automobiles exclusively as moneymaking business had been made obsolete by the technological felicity of manufacturing by other countries' producers. U.S. productivity is free possibly to reorient itself to the necessity of rehousing all humanity in mass-produced, aerospace-level-of-technology livingry, as the housing emergency looms on the horizon.

My "Fly's Eye" domes were designed in 1977 as components of a "livingry" production

and service. The basic hardware components will produce a beautiful, fully equipped, air-deliverable house that weighs and costs about as much as a good automobile. Not only will it be highly efficient in its use of energy and materials, it also will be capable of harvesting incoming Sun and wind energies. The software part of the product will include a service industry to air- or highway-transport, install, lease, maintain, remove, and relocate the domes or their separate hardware components. They will be semi-autonomous - i.e., have no sewer, water-pipe, or electric-power connections. Like telephones and rental automobiles, they will not be sold.

Having undertaken the solution by artifacts of the world's great housing crisis, I came also to regard the history of cities. Cities developed entirely before the thought of electricity or automobiles or before any of the millions of inventions registered in the United States Patent Office. For eminently mobile man, cities have become obsolete in terms of yesterday's functions - warehousing both new and formerly manufactured goods and housing immigrant factory workers. Rebuilding them to accommodate the new needs of world man requires demolition of the old buildings and their replacement of the now obsolete real estate, streets, water and sewer lines, and yesterday's no longer logical overall planning geometries. I sought to take on this challenge and developed plans for an entirely feasible and practical new way for humans to live together economically. My floating cities plan for Tokyo Harbor and my Old Man River's City project are two such designs.

Evolution was clearly intent on postponing inception of the World Livingry Service Industry until humanity had graduated from its pre-twentieth century condition as a planet of remote nations to an integrated global society all of which waited upon completion of a world-around network of highways, airlines, and telephones, and the automobiles and jumbo jet airliners.

The same humans will converge for entertainment, idea-exchanging, education, and will diverge and individually deploy for athletics such as skiing, sailing, surfing, and other health and research developments. When they converge it will be under great domes. Every time we double a dome's diameter we halve the amount of surface through which an interior molecule of atmosphere can lose or gain heat.

As a scientist I am greatly interested in all that goes on in the political-economic scene and in the impact of one unforeseen technological

evolutionary event after another upon that scene. I see development of one minuscule computer chip completely altering the whole world patterning. As the half century of utterly unpredicted technological discoveries have occurred, accompanied by an ever greater familiarity with all the world by humanity, I have become increasingly confident that my 55-year-ago judgments and predictions were sound.

All the evolutionary events requisite to the Livingry Industry have not taken place or are about to take place in the very near future. If the political systems do not eliminate humanity with their weapons, the half-century-gestating, World-around Livingry Service Industry will be born.

Fifty-five years ago when I set out as an individual to ask some very large questions about why humans were included in Universe, I determined that humanity is an *experimental initiative* of Universe.

The experiment is to discover whether the complex of cosmic laws can maintain the integrity of eternal regeneration while allowing the mind of the species *homo sapiens* on the little planet Earth to discover and use some of the mathematical laws governing the design of Universe, whereby those humans can by trial and error develop subjectively from initial ignorance into satisfactorily informed, successful local-Universe monitors of all physically and metaphysically critical information, and thereby serve objectively as satisfactory local-Universe problem-solvers in sustaining the integrity of eternally regenerative Universe.

Trial-and-error-evolved steering wisdom does not accrue to shifting the rudder angle violently leftward from an equally violent rightward-course-steering error. Evolutionary advance in trial-and-error steering systems is accomplished by successively more delicate leftward-rightward correcting of swing-over error. This progressive reduction of mechanical momentum must however be preceded by forthright acknowledgement of the error and thereby of the truth often hidden by erroneous assumptions of yesterday's rationalizing and false self-pride.

The function of local-in-Universe, critical information-gathering and local-in-Universe problem-solving is manifest in the forward cockpit of all great airplanes. When the door to the pilots' and engineers' compartment is left open, you may see a myriad of instruments covering all the walls and ceilings of the cockpit.

The dials of the cockpit instruments report optically and accurately all the stress, strain, heat, pressure, velocity, ratios, and other significant conditions of all critical parts of the airplane's air-frame, fuselage, wings, rudders, landing-gear, power-plant, baggage compartment and passenger space, as well as of the interior and exterior temperatures, atmospheric pressure, etc., as well as all the instrumentally reported information regarding altitude and the ever-changing geography of clouds, wind forces and directions, as well as all the electromagnetically received, computer displayed information regarding directions of all surrounding airports and the flight path beam bearings, etc.

Through comprehensively synchronized, computerized control of this instrument-reported information the captain may put the ship on "all automatic" flight as his assistant pilot and engineer watch those dials and intervene only when the computer information signals the pilot that it registers emergency parameters.

It is by virtue of this information that the pilots and engineers are able to serve as local problem-solvers in support of the integrity of their passengers' and their own regenerative living integrity.

This same critical information-gathering and local problem-solving in sustainment of the integrity of regenerative systems is also performed by the electromagnetic instrumented airport tower controllers who deal with a myriad of variables of wind and speed directions, and aircraft holding, approaching, landing, taking off, holding ready to take off, on field runways - taxiing planes, each plane worth millions of dollars, each packed full of beyond priceability human cargoes.

All these high velocity, vast risk, complex pattern controls of pilots, controllers, and engineers are special-case patterns of the generalized local information-gathering and local problem-solving in support of the integrity of eternal regeneration.

All of ecology on planet Earth, all the biosphere of planet Earth as well as the radiated entropy and the gravitationally coordinated-and-cohered syntropy of the solar system, the Milky Way galaxy, and the two billion other known galaxies are all special-case manifests of the local-in-Universe information-gathering and problem-solving in support of the synergetic integrity of overlappingly episoded, eternal scenario Universe.

We recognize the following:

1. This information-gathering and problem-

solving function of humans on little, local planet Earth is a cosmically generalized function.

2. Our experiencing of the coordinate integrity of nature's pattern of initiating the growth of myriads of ecologically intercomplementary biological species is scientifically sorted out.

3. Nature's method of trial-and-error evolution of the successive biological types prospering most successfully under each unique evolutionarily progressive environmental change demonstrates that preferred environment technology eliminates survival only of the fittest.

With those recognitions, we come to the full realization that the failure of humans on planet Earth to fulfill satisfactorily and faithfully their generalized information-gathering and local problem-solving in support of eternal regeneration of Universe simply means death of this particular planetary installation of mind-endowed individuals.

The failure of humans means the function must be performed in local-Universe by other phenomena capable of embracing and reliably serving the information agglomerating and problem-solving function. The eternal Universe show must go on.

When individuals shunt the comprehensive cosmic regeneration into exclusive advantaging of only their own survival and enjoyment and succeed in prolonged local short-circuiting of cosmic regenerativity, they disqualify the invention human as a reliable function of regenerative Universe. They are just as irresponsible in the cosmic system as the company employees who pocket the cash register contents for their own account. This is cosmically true of a childless multimillionaire maneuvering himself into a position to make a big profit involving "hard-headed," absolutely selfish decisions that will knowingly and legally deprive many others of survival necessities - "to hell with the next generation" - which deal will win him the applause of other powerfully rich individuals because it makes them feel more comfortable about their own selfishness.

If you ignorantly believe there's not enough life support available on planet Earth for all humanity, then survival only of the fittest seems self-flatteringly to warrant great selfishness. However, it was due only to humans' born state of ignorance and the 99.00 percent invisibility of technological capabilities that they did not recognize the vast potential abundance of resources available to support all humanity at

an omni-high standard of living.

I know that technologically humanity now has the opportunity, for the first time in all history, to operate our planet in such a manner as to support and accommodate all humanity at a substantially more advanced standard of living than any humans have ever experienced, and through a World Livingry Service Industry sustain that standard through all the forward days of history.

This is possible not because we have found more physical resources. We have always had enough necessary resources. What has happened that now makes the difference is that we have vastly increased our know-how of specialized innovations, all of which invisible realization integrates to make possible success for all.

Even as we have now scientifically and incontrovertibly found that there is ample to support all humanity, the majority of humanity and its leaders have not yet come to that realization in sufficiently convincing degree to reorient world affairs in such a manner as to realize that sustainable high standard of living for all.

There are three powerful obstacles to humanity's realization of its omni-physical success:

1. The technical means of its accomplishment exist altogether in the invisible realms of technology.

2. The experts are all too narrowly specialized in developing the invisible advance to envision the synergetic significance of integrating their own field's advances with other fields' invisible advance.

3. The utterly different, successful ways of metabolic accounting, dwelling, self-employing, cooperating, and enjoying life are unfamiliar and non-obvious.

Because of ancient arms-accomplished seizure of land by the most physically powerful and the subsequent arms-induced blessing of the seizures by power-ordained "ministers of God," royal deeds to land were written as assumedly God-approved and -guaranteed covenants.

Landlordism, first woven into the fabric of everyday life by royal fiat and thousands of years of legal process precedent, has become an accepted cosmic phenomenon as seemingly inevitable as the weather. Humans have learned to play many of its games.

Land "ownership" and its omnidependent comprehensive thing-ownership involvements and their legal-documents-perpetuations constitute the largest socioeconomic custom error

presently being maintained by a large world affairs-affecting segment of humanity.

Nothing new about all that. But what is new is that humanity has gone as far as it can go with this significant error and is in final examination as to whether it can free itself from its misconditioned reflex straightjacket in time to pull out of its greatest in all history, error-occasioned tailspinning into eternity.

We do have both the knowledge and the technical means to do so if we do it quickly enough.

I also know that this can be realized only by a technological revolution involving total Spaceship Earth using all the resources and know-how as an integrated regenerative system as in the design of any successful sea-going or space-penetrating ship, a great world-around service industry (even the greatest potential industry of all history), or of any biological organism.

Spaceship Earth now has 160 admirals. The five admirals in the staterooms immediately above the ship's fuel tanks claim that they own the oil. The admirals with staterooms surrounding the ship's kitchen, dining rooms, and food refrigerators claim they own all the food. Those with stateroom next to a lifeboat claim that they own the lifeboat and so forth. They then have an on-board game called balance of trade. Very shortly the majority of admirals have a deficit balance. All the while the starboard-side admirals are secretly planning to list the ship to port so far as to drown the port-side admirals, and vice versa. Nobody is paying any attention to operating the ship or steering it to some safe port. They run out of food and fuel. They discover that they can no longer reach a port of supply. Or their dangerous-waste-disposal

problems threaten to scuttle the ship or poison the passengers. Finis.

Humanity is now experiencing history's most difficult evolutionary transformation. We are moving away from a rooted life style with a 95 percent rate of illiteracy. We are almost unconsciously drifting away from self-identity with our ages-long, physically-islanded-from-one-another existence as 160 separate, sovereign nations. Now, the uprooted humans of all nations are spontaneously deploying into their physically integrated highways and airways and satellite-relayed telephone speakways, into a big-city way-stationed, world-around living system.

We may soon be atom bombed into extinction by the pre-emptive folly and greed of the moneymaking, supranational corporations' weaponry industry and the political puppet administrators of the now hopelessly bankrupt but still second-greatest weapons-manufacturing nation.

If not bomb-terminated we are on our ever swifter way to do what could never be done before. Our more-with-less technology can now enable us to become an omni-integrated, majorly literate, unified Spaceship Earth society. It is a matter of converting the high technology from weaponry to livingry. The essence of livingry is human-life advantaging and environment controlling. With the highest aeronautical and engineering facilities of the world redirected from weaponry to livingry production, all humanity has the option of becoming enduringly successful.

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