

## Humans in Universe

000.100 Introduction to [10 Color Posters](#)

000.101 The combined land areas of Africa, Europe, and Asia embrace within their perimeters the Mediterranean, Black, Caspian, Aral, China, Arabian, Red, Baltic, and North seas: altogether their area was historically thought of only as a flat Universe sandwiched between heaven above and hell below and seemingly stretching away to infinity in all lateral directions. Yet the total land area of this flat world constitutes less than 17 percent of the subsequently-discovered-to-be-spherical Planet Earth's surface. All the great empires of written history before A.D. 1500 lay well within that "known" flat world: it was and as yet remains the spontaneous theater of popular historical conceptioning.

000.102 How did this pervading historical concept become outdated? What changed the terrestrial conceptionings adopted by the leaders of the world's power structures?

000.103 When the archaeologists' artifact-proven history of mathematics opens 4,000 years ago in Babylon and Mesopotamia, it is already a very sophisticated science. Mathematics may well have had its beginnings much earlier in India or Indochina, as it is an art and science that has traveled consistently westward. Over 3,000 years ago the Greeks made further magnificent contributions to geometry, algebra, and calculation. Then about 2,000 years ago the Roman Empire all but obliterated mathematics. A little more than 1,000 years ago Arabs and Hindus traveling through North Africa began to restore some of the ancient mathematics to the westward-evolving culture. When al-Khwarizmi's original A.D. 800 treatise on algebra was republished in Latin in Carthage in 1200, it required a further 200 years for his elucidation of the function of zero-the cipher-to be diffused into the university systems of Europe .

000.104 The cipher made possible the positioning of numbers, which in turn facilitated division and multiplication. Imagine trying to multiply or divide with Roman numerals . . . impossible! The Renaissance began with the new calculating facility introduced by the cipher. The cipher was not only an essential tool in the work of Copernicus, Kepler, Galileo, and Newton, but it also brought about Columbus' revised concepts of terrestrial navigation. It went on to instrument the mechanical and leverage calculation capabilities of Leonardo; and in the art of ship

design the cipher gave birth to structural and mechanical engineering, which made possible the intertensioning and compressioning calculations of the ribbed structural strength of a sailing vessel as well as that of its vast wind-energy-driven complex of compression and tension spars, sails, and rigging-replacing the trial-and-error guesswork that had previously been used in naval and land architecture. This capability in mathematical multiplication and division opened up a whole new field of safely anticipated structural engineering and navigation.

000.105 This new anticipatory science made large engineering projects possible, but it became known to, and then was employed by, only the world's richest schemers, monarchs, nations, and pirate enterprisers. No others could afford to buy great ships. With more powerfully engineered ships, humans emerged westward through Gibraltar to explore the Atlantic, to sail around Africa, to reach the Orient and the Pacific by water, and to circumnavigate the globe. Thus it became public knowledge that the old open-edged, infinite world system had closed back on itself in all circumferential directions to become a finite system: a closed sphere. The monarchs and merchants realized that, within that closed system, whoever commanded the line of most efficient high seas supply would become the masters of world wealth. Ships could carry cargoes that overland caravans could not.

000.106 In 1600 the East India Company was founded as a private enterprise by Queen Elizabeth and a small group of her intimates. The limited legal liability of their enterprise was granted by royal decree, and its projects were thereafter militarily sustained and protected by Great Britain's Royal Navy and colonial troops. In England the East India Company College was established to train the officers of the enterprise for their world-wide deployment; that college and its handsome campus are still in operation as of 1979. The British Empire became the first in history of which it could be said that the Sun never set.

000.107 As professor of economics at the East India Company College in 1810 Thomas Malthus became the first economic authority ever to receive in toto the vital statistics of a world-embracing spherical empire. At the very end of the 18th century Malthus published his documented thesis that humanity was multiplying its numbers at a geometric (exponential) rate of gain while increasing life-support production at only an arithmetic (linear) rate of gain. And since the Earth is a finite, closed-system sphere, it apparently became scientifically manifest that there is a fundamental inadequacy of life support on our planet. Until then all opinions on such matters had been pure guesses.

000.108 A third of a century after Malthus, Darwin attributed biological evolution to survival of only the fittest species (and individuals within species). Though he denied there was any economic significance in his theory of evolution, the economists insisted that superior physical fitness obviously governed economic survival as well. Karl Marx accepted the scientific viewpoints of both Malthus and Darwin when he declared in effect that the working class is the fittest to survive: they know how to use the tools and to cultivate the fields-the wealthy are parasites. This inaugurated the supranational concept of two world-wide political classes and two competing theories of political organization.

000.109 As a consequence of the discoveries of Malthus and Darwin all the great political ideologies have since adopted a prime philosophy that says: "You may not like our political system, but we are convinced that we have the fairest, most logical, and ingenious method of coping with the inherent inadequacy of terrestrial life support, but since there are others who disagree diametrically about the best method of coping, it can be determined only by force of arms which system is the fittest to survive." Thus survival of the physically fittest became the basis for national departments of defense with their priority of access to the most advanced science and technology. The military took command of all the highest performance materials, brains, instruments, and tools of production.

000.110 Mutually assumed survival-only-of-the-fittest is the reason why the United States and the USSR have for the past 30 years appropriated 200 billion dollars annually to buy ever more effective weapons of potential destruction. The great political and industrial power structures have all become supranational comprehensivists, while the people have been passport-chained to their respective 150 national preserves-the people have become educationally divided into "specialists" for exploitation by the supranational powers who divide to conquer and divide to keep conquered.

000.111 Up until the 20th century reality consisted of everything that humans could see, smell, touch, and hear. Then at the entry into the 20th century the electron was discovered. A century after the time of Malthus much of science became invisible with the introduction of an era of electronics, electromagnetics, and atomics. These invisible micro- and macro-exploring cosmic instruments provided for rearrangements of atomic interpositioning whose metallic alloying and chemical structuring produces ever more powerful and incisive performances per

pound of physical matter employed.

000.112 Structures are complexes of visible or invisible physical events interacting to produce stable patterns. A structural system divides Universe into all Universe outside the structural system (macrocosm) and all Universe inside the structural system (microcosm). Newton's discovery of mass interattraction showed that the interattraction force of atoms, planets, stars, or galaxies increases exponentially as the interdistances decrease arithmetically, and vice versa: halve the interdistance and make fourfold the interattractive integrity of the remotely bodied structural system. That is the law of gravity. Symmetrical, noncontacting, concentric interpositioning of already-symmetrical arrays of atoms produces exponentially increased interatomic coherence of "materials."

000.113 Gravity is the inwardly cohering force acting integratively on all systems. Radiation is the outwardly disintegrating force acting divisively upon all systems.

000.114 All structural systems are comprised of tension and compression components. Stone masonry has a high compression-resisting strength of 50,000 pounds per square inch ultimate. But masonry has low tensional coherence; it can withstand only 50 pounds per square inch tensing. Stone-Age-derived masonry is a thousand times more effective in its resistance to compression than to tension.

000.115 Throughout the three million known years of the Stone Age humans relied on gravity to hold their vertical stone walls together until (as often happened) they were shaken apart by earthquakes against which they had almost no tensionally cohering resistance. Gravity pushed humanity's stone structures inward toward the Earth's center. Humans had to build their structures on bedrock "shoes" to prevent them from sinking vertically into Earth's center. Stone buildings could not float on water. But nature had invented low-weight wood of high self-cohering tensile strength (averaging approximately 10,000 p.s.i.) and of relatively low compression-resistive capability (also approximately 10,000 p.s.i.). Wood floated on water and could move useful loads horizontally; wood made good rafts for transporting humans but not for floating heavy cargoes. Thus the high tensile strength of wood, combined with the human discovery of the intertrussing principles of structuring and the low overall displacement weights involved, made possible for humans to design and fabricate air-enclosing wooden vessels whose structure and space enclosure combined to produce highly successful wooden vessels of the sea that could carry great cargoes.

000.116 In the 1850s humans arrived at the mass production of steel, an alloy of iron, carbon, and manganese having a tensile strength of 50,000 p.s.i. as well as a compression-resisting capability of 50,000 p.s.i. Steel has the same compression-resistance capability as masonry, but it also has a thousand times greater tensile capability than masonry and five times the tensile or compressive strength of wood. Steel brought mankind a structural-tension capability to match stone's previous millions of years of exclusive compressional supremacy. With far higher tensile strength per weight than wood, steel made possible even more powerful watertight, air-containing vessels than did wood, even though steel by itself does not float.

000.117 The technology of metallurgy began developing metal alloys of ever higher strength-to-weight ratios. Out of this came aluminum production by the opening of the 20th century-and aluminum alloys and stainless steel by the 1930s. These new materials made it possible to design and build engine-powered all-metal airplanes (structural vessels), which could pull themselves angularly above the horizontal and ever more steeply aloft. With the advent of successively higher strength-to-weight ratios of metal alloys and glass-reinforced plastic materials, ever more heavily laden airplanes were designed, which could climb ever more steeply and faster. Finally humans developed so much strength per weight of materials capability that they accomplished "vertol" jet plane flight and vertical space-vehicle blastoffs. Since then human scientists developing ever greater strength per weight of material have gone on to carry ever greater useful loads in vertical takeoff vehicles at ever more accelerated rates of ascent.

000.118 As of the 1970s the human mind has developed a practical tensile structuring capability of 600,000 p.s.i. The means of accomplishing this new and overwhelming structural strength has become entirely invisible. Fully 99 percent of humanity has as yet no idea that this increase in tensile capability has come about or how it came about or why it works. While humans cannot see the ever-lessening interatomic proximity of atoms and electrons of electromagnetic events, they can witness the ever more vertical takeoff-angle capabilities manifesting human comprehension of the fundamental structuring principles and their military developments and profitable commercial uses. But only vast money investments or vast governments can afford to exploit the increased technical advantages.

000.119 Before the airplane humans said, "You cannot lift yourself by your bootstraps." Today we are lifting ever lighter and stronger structural vessel "selves"

by ever less effort of our scientific know-how bootstraps. No economist knows this. It is the most highly classified of military and private enterprise secrets. Industry now converts the ever-increasing work capacity per pound of materials invested primarily to yield monetary profits for the government-subsidized private-enterprise producers of weapons.

000.120 Now in the 1970s we can state an indisputable proposition of abundance of which the world power structures do not yet have dawning awareness. We can state that as a consequence of the myriad of more-with-less, invisible, technological advances of the 20th century, and employing only well-proven technologies and already mined and ever more copiously recirculating materials, it is now technically feasible to retool and redirect world industry in such a manner that within 10 years we can have all of humanity enjoying a sustainably higher standard of living-with vastly increased degrees of freedom than has ever been enjoyed by anyone in all history.

000.121 During this 10-year period we can also phase out all further use of fossil fuels and atomic energy, since the retooled world industry and individual energy needs will have become completely supplied by our combined harvests of electromagnetic, photosynthetic, chemical, and biological products of the daily energy income initially produced by Sun and gravity. Industry, retooled from weapons production to livingry production, will rehouse the deployed phases of world-humans by single-family, air-deliverable, energy harvesting, only-rentable dwelling machines. When humans are convergent, they will dwell in domed-over moon-crater cities that will be energy-harvesting and -exporting centers rather than energy sinkholes.

000.122 All of the foregoing makes it possible to say that since we now know that there is a sustainable abundance of life support and accommodation for all, it follows that all politics and warring are obsolete and invalid. We no longer need to rationalize selfishness. No one need ever again "earn a living." Further living for all humanity is all cosmically prepaid.

000.123 Why don't we exercise our epochal option? Governments are financed through taxation and would have no way of putting meters between the people and their directly received individual cosmic incomes. So too, private enterprise should no more meter the energy than it meters the air. But all of Earthians' present power structures-political, religious, or capitalist-would find their interests disastrously

threatened by total human success. They are founded upon assumption of scarcity; they are organized for and sustained by the problems imposed by the assumption of fundamental inadequacies of life support.

000.124 Why does not the public itself demand realization of its option for a revolution by design science? Less than one percent of humanity now knows that the option exists; 99 percent of humanity cannot understand the mathematical language of science. The people who make up that 99 percent do not know that all that science has ever found out is that the Universe consists of the most reliable technology. They think of technology as something new; they regard it as threatening both in terms of modern weaponry and as job-eliminating competition for their life-sustaining opportunities to "earn a living." Ergo, humanity thinks it is against technology and thinks itself averse to exercising its option.

000.125 The fact that 99 percent of humanity does not understand nature is the prime reason for humanity's failure to exercise its option to attain universally sustainable physical success on this planet. The prime barrier to humanity's discovery and comprehension of nature is the obscurity of the mathematical language of science. Fortunately, however, nature is not using the strictly imaginary, awkward, and unrealistic coordinate system adopted by and taught by present-day academic science.

000.126 Nature's continuous self-regeneration is 100 percent efficient, neither gaining nor losing any energy. Nature is not employing the three dimensional, omniinterperpendicular, parallel frame of the XYZ axial coordinates of academic science, nor is nature employing science's subsequently adopted gram/centimeter/second weight/area/time exponents. Nature does not operate in parallel. She operates in radiational divergence and gravitational convergence. She grows outwardly by omniintertriangulated structuring from nuclei.

000.127 Nature is inherently eight-dimensional, and the first four of these dimensions are the four planes of symmetry of the minimum structure of Universe-the omnitriangulated, equi-vector-edge tetrahedron. In respect to the conceptual pre-time-size tetrahedron's volume taken as unity 1, with its six unit-vector-edge structure, the always conceptual-independent-of-size family of primitive, pre-time-size, least complex polyhedra have the following exact volumes-the vector-triangulated cube 3, the octahedron 4, the rhombic triacontahedron 5, and the rhombic dodecahedron 6. When the size information is introduced, it occurs only as

frequency of modular subdivision of each unit vector structuring of the primitive family's respective 1-, 2-, 3-, 4-, 5-, and 6-tetravolumes. Frequency to the third power,  $F^3$ , values then multiply the primitive, already-four-dimensional volumetric values. In physically realized time-size each has therefore  $4 + 3 = 7$  dimensions, but since each system is inherently independent in Universe and therefore has spinnability, one more dimensional factor is required, making a total of eight dimensions in all for experientially evidencing physical reality.

000.1271 To define the everywhere-and-everywhen-transforming cosmic environment of each and every system requires several more intercovarying system dimensions-planetary, solar, galactic, intergalactic. Because of the six positive and six negative degrees of freedom governing systems-within-systems intertransforming, we have  $8 + 6 = 14$  dimensional systems in cosmic relationship governance.

000.128 Nature is using this completely conceptual eight-dimensional coordinate system that can be comprehended by anyone. Fortunately television, is spontaneously attractive and can be used to teach all the world's people nature's coordinating system-and can do so in time to make it possible for all humanity to favorably comprehend and to exercise its option to attain universal physical success, thereby eliminating forevermore all world politics and competition for the right to live. The hydrogen atom does not have to compromise its function potential by first "earning a living" before it can function directly as a hydrogen atom.

000.129 Nature's coordinate system is called Synergetics-synergy means behavior of whole systems unpredicted by any part of the system as considered only separately. The eternally regenerative Universe is synergetic. Humans have been included in this cosmic design as local Universe information-gatherers and local problem-solvers in support of the integrity of the eternal, 100-percent-efficient, self-regenerative system of Universe. In support of their cosmic functioning humans were given their minds with which to discover and employ the generalized laws governing all physical and metaphysical, omniinteraccommodative, ceaseless intertransformings of Universe.

000.130 At present 99 percent of humanity is misinformed in believing in the Malthusian concept of the fundamental inadequacy of life support, and so they have misused their minds to develop only personal and partisan advantages, intellectual cunning, and selfishness. Intellectual cunning has concentrated on how to divorce



money from true life-support wealth; second, cunning has learned how to make money with money by making it scarce. As of the 1970s muscle, guns, and intellectual cunning are ruling world affairs and keeping them competitive by continuing the false premise of universal inadequacy of life support. If mind comes into supreme power within a decade, humanity will exercise its option of a design revolution and will enter a new and-lasting epoch of physical success for all. If not, it will be curtains for all humanity within this century.

000.131 In complement with Synergetics 1 and 2 the posters at [color plates 1-10](#) may clarify for everyone the few scientific conceptions and mathematical tools necessary for universal comprehension and individual use of nature's synergetic geometrical intertransformings.

Footnote:

Rudyard Kipling labored under the only-you-or-me philosophy, but he was inspired by thoughts that it might some day be otherwise:

And no one will work for money and no one will  
work for fame  
But each for the joy of working, and each in his  
separate star,  
Shall draw the Thing as he sees It for the God of  
Things as They are!"

- from *When Earth's Last Picture Is Painted*

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