Notes on Energy and Environment

by

Fred Bernard Wood, Ph.D.

Abstract

The analysis of energy and environment systems requires attention to biological systems in addition to phyical engineering systems. The absence of a completeness theorem for biological systems prevents us from guaranteeing the correctness of such analyses. A quasi-completeness test is proposed to reduce the chance of error. This method of testing hypotheses uses three axes: METHODS (X-axis); PROPERTIES (Y-axis); and EVOLUTIONARY LEVELS (Z-axis). Using a "Top-Down" process similar to that used in structured computer programming, we look at the whole universe first, and then move down through galaxies, solar systems, planets, and down to our planet EARTH. If science has large gaps in our perspective, we look where we can for trial hypotheses, to ancient Hindu philosophy, if necessary.

We use as a trial hypotheses Itzhak Bentov's concept of our universe cycling through a white hole, expanding, folding back, contracting, and collapsing into a black hole. We leave Bentov's concept of "consciousness" in limbo until Sheldrake's "A New Science of Life" is digested. Proceeding on we construct a chart of the life span of planet EARTH, running from ten billion years ago to ten billion years in the future. On this chart we see that man used predominantly renewable energy sources from approx. 8,000 B.C.to about 1600 A.D.when power amplifying tools replaced many force amplifying tools. The primary use of non-renewable energy sources appears as a short transition period of about 300 years in the 10,000 year span of organized civilization so far.

We need to conserve non-renewable energy sources for more critical uses in the future billions of years of mankind's tenure on the planet earth. Further we need to understand the role of the glacial ages in supporting life on the planet. Nuclear fission energy produces uncontrollable radioactive wastes, and thermonuclear fusion power may raise the temperature of the earth's atmosphere such that the polar ice caps would melt and cause devsastating changes in the weather. Our challenge is to develop the "Third Wave" leaders to bring us into the new age of intelligence amplifying tools, renewable energy, and expanding human potential.

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In dealing with physical problems such as the design of RADAR components and computer-communication systems, I am accustomed to finding a completeness theorem which verifies that the mathematical series being used can completely describe the physical problem with any given accuracy. When I try to analyse energy and environment problems I find that biological systems are involved in additon to the physical systems I normally analyse in my electrical engineer- ing and computer work. Further I find that biological scientists have a theo- rem that states that it is impossible to develop a completeness theorem for a living system.(CTCM magazine III/3, pp. 19-21 or CTCM book section 311)

Since we cannot have a completeness theorem for an environmental system that includes biological elements in addition to the physical and chemical sub-systems, we must search for a means of insuring that we have not neglect- ed important elements. I shall call this approach a "Quasi-Completeness Test." For this quasi-completeness test I propose organizing our data in a three-dimensional space where the three axes are:

(1) METHODS axis-consisting of three zones along the X-axis:

(a) EMPIRICAL SCIENCE zone.
(b) ABSTRACT PHILOSOPHICAL zone.
(c) INTUITIVE-HUMANISTIC zone.

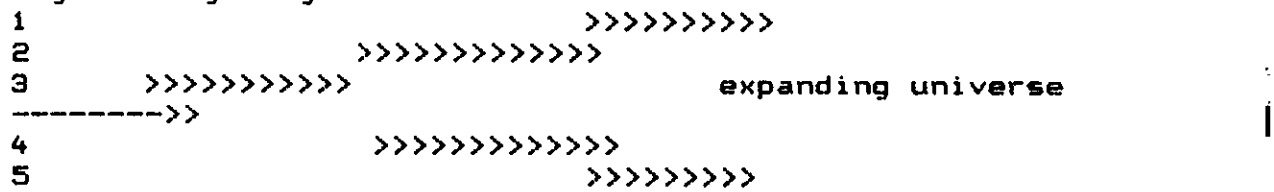
(2) PROPERTIES axis-consisting of a series of zones for properties such as energy, information, entropy, feedback, structure, bonds, growth, metabolism, reproduction, dependence, learning, development, symbols, organization, division, centralization, and interdependence- along the Y-axis.

(3) EVOLUTIONARY-levels axis(split) along the Z-axis with space for physical-chemical evolution, biological evolution, astronomical evolution, and technological evolution connected to biological evolution through cultural evolution.

Considering estimates of the age span of of our planet, first in the empirical science zone we have:
Birth of the stellar universe.....to present.....to final cooling of the sun
3,000,000,000 years .....+.....10,000,000,000 years.

The above time spans are consistent with the big bang theory of the origin of our universe. (See G. Gamov, The Biography of the Earth)

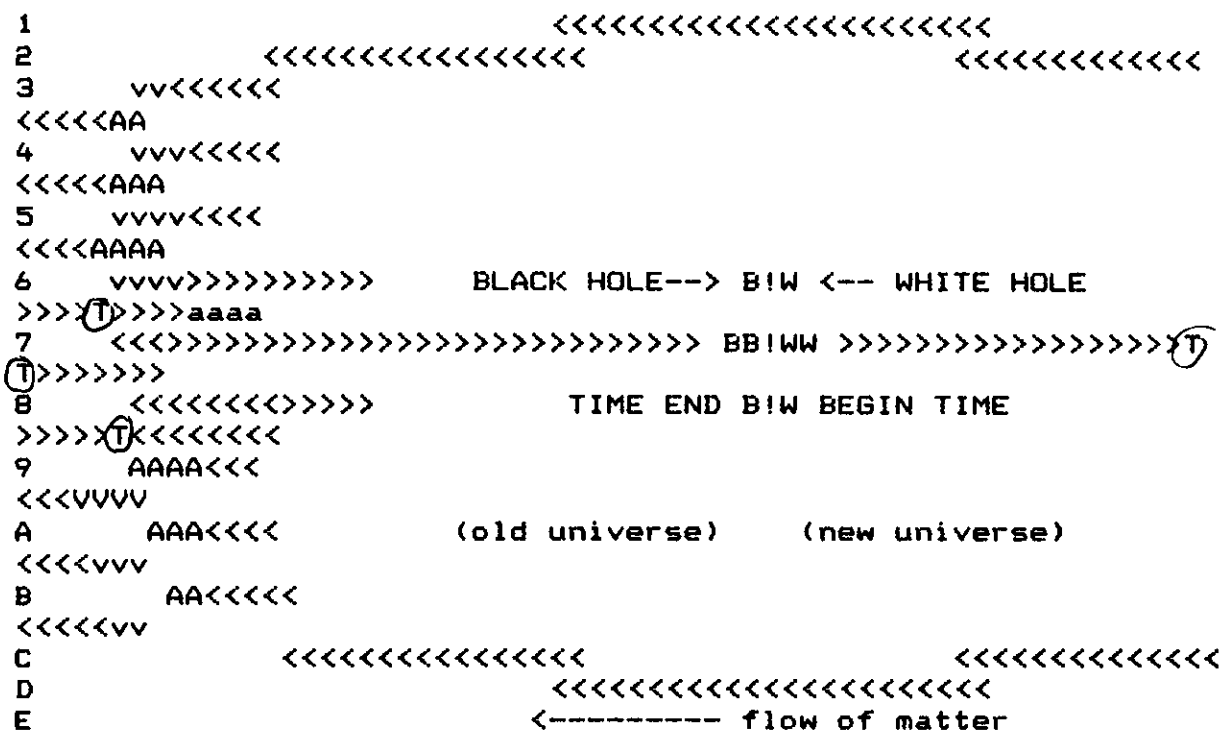
Fig. 1: Big Bang.



There is a lack of symmetry in the "Big Bang" theory.

Let us consider a more symmetrical or more complete theory (but unproved scientifically) developed by Itzhak Bentov in "Stalking the Wild Pendulum", NY: Dutton, 1977). Since this theory so far lacks scientific proof, it is considered in the "abstract-philosophical zone" at present. Here the universe is considered to start with a big bang out of a "white hole" to become the expanding universe of the previous section. Then at some time later the expanding matter of the expanding universe starts to fold back on itself. Later the reverse flow folds back again and collapses into a "black hole." Back to back with the black hole is a white hole from which a new universe expands in the next "big bang." This process is illustrated in the figure below. An important feature of Bentov's model is that there is a hierarchy of consciousness in the protospace that is analogous to a set of holograms generated from the electromagnetic waves from the thoughts of living beings on the planets.

Fig.2 - Bentov Model of Life Cycle of Universe.



The little diamond formed by T's in the above diagram represents the section of the universe that can been seen by our most powerful telescopes. As yet we have no experimental way of testing Bentov's cosmological theory outside of the small diamond.

Now Bentov doesn't give a time scale for the life cycle of the universe. Fritjof Capra in "The of Physics" mentions the idea of a cycle of the universe developed by the ancient Hindus. The time of one cycle of the universe postulated by the Hindu philosophers is:

314,000,000,000,000 years.

Since I know of no way to either measure such a time cycle or a theory from which to calculate the time cycle, I would put the above time constant in the Intuitive-Humanistic Zone.

Fig. 3 - Life Span of Planet Earth.