
BIOLOGICAL INEVITABLENESS

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ABSTRACT. Thermodynamic niches that evolved high thermal systems will inevitably have also evolved low thermal niches. Specific low thermal niches allow the progression of pre-biotic and biotic molecular systems. Where there is the evolution of hydrogen atoms there will be the evolution of physical systems with mental state capacity.

KEY WORDS. Thermodynamic niches, stellar evolution, entropy, devolution, glycation/glycosylation, 'solar knowledge unit', yellow/white dwarf stars, annihilation, 'biogradient approach', 'critical mass/biogestalt approach'.

INTRODUCTION

Why is there organic evolution? Why is there change? Then, of course, if there were no change in prebiotic systems, there would be no evolved biotic systems. Here we are discussing change, not just any change, but a specific directional change, a posteriori, for one can see the direction it has taken. Furthermore, thermodynamic niches that allow for biological evolution to occur are simply another way of saying certain reactions will inevitably occur.

THERMODYNAMICALLY SPEAKING

It would seem that once energy formed into a primeval soup of elementary particles that in turn began to form more complicated particles, the process of complexity simply continues until forms of living systems with their unique gestaltic properties are created. One can ask another generalize question: In principle, is organic change different from inorganic change or is the dynamics for both processes one general mechanism? One looks at stellar evolution and one sees maximum entropy that evolves to minimal entropy and then back again to maximum entropy, in localized regions within the birth and death of stars (entropy is defined here as a measure of the disorder or randomness of a closed system).

As for organic evolution, we have not seen the maximum and minimum phases, although the minimum must have occurred in prebiotic times.

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Furthermore, the destruction of the biosphere by some virus or other disease process would not represent a maximum phase of entropy in the sense used here as an evolutionary process; this would give a maximum phase of entropy but it would be an 'artificially' introduced one. The need here is for some undefined organic process that represented devolution in a programmed manner of the original organic evolutionary period.

Macromolecular evolution can and did occur pre-enzymatically. For example, glycation (as compared with enzymatic glycosylation) of transferrin protein occurs after 14 days at 37 centigrades ¹.

THE GENERALIZED MODEL:
THE SIMPLEX/MUTIPLEX SYSTEM

Attempting to think as simplistically as possible, one can derive the following system. If two immutable simplexes of a pre-biological nature were to combine to form something more complicated, a multiplex which had only one way of being created, that is by two simplexes, then $A+B = A:B$ multiplex or $A:B$ multiplex could break down to $A+B$ simplexes. However, if A and/or B are mutable then we have A' or B' and the multiplexes themselves could be considered mutable if they contained A' or B' simplexes. $A:B$ would be the 'normal' multiplex and $A:C$ or $B:C$ would be the more aberrant forms found in nature. Population wise or considering the statistical probability of these forms found in nature would be controlled by their thermodynamic stabilities, thus an array of pre-biological systems would evolve through the natural selection processes. Such a progression of macromolecular evolution will be inevitable.

Then if one proceeds to the question of why multicellular genes exist such as those found in the phylum *Prorifera* as opposed to those found in *Protozoa*, one could reduce the question to the fundamental question of why reality exists, because if hydrogen exists it will evolve to introspective minds (and further?). It is inevitable that these evolving systems will indeed become existent.

THE ARITHMETIC OF NEGATIVE ASPECTS:
SOLAR KNOWLEDGE UNITS

Since all solar systems are by definition stellar, the star associated biosphere will inevitably be destroyed because of the aging process of the star. Thus, using our example, the sun, a yellow dwarf star that may be 4.95 billion years old should pass through the following scenario. After a lifetime of 9 billion years as a main sequence star, the equilibrium between the total pressure force directed outwards and the gravitational force directed towards the center will be perturbed. The core of the sun will collapse under its own gravitational attraction. This gravitational energy from the collapse will be converted to heat causing the shell to burn so that the outer layers will swell immensely evolving into a red giant causing

the earth's temperature to disallow any living state and a final expansion at thirty million years will cause the periphery of the sun to pass over the earth's orbit, finally contracting to a white dwarf.

With these physical endpoints one has endpoints of accumulated knowledge. Therefore one can establish a unit based upon solar longevity and accumulated knowledge—the 'solar knowledge unit'. Thus, say that a star with a biosphere is a low mass mainstream star that exhausts its nuclear core fuel and collapses to a white dwarf in only three billion years destroying the knowledge component achieved by its biosphere. Thereby it may have, say, a 0.3 solar knowledge unit. But if it were a more massive star (eight solar masses) that collapsed to a white dwarf in twenty billion years with a biosphere that lasted ten times as long as our sun, it would have perhaps a solar knowledge unit of two (and thereby be twice as 'smart' as we are; although many other factors would enter into this complex functional unit, such as how evolved the intelligence of the introspective/memory biological system was on any specific biosphere, or if the closeness, say more centrally located in the galaxy, of other solar systems were light months from each other and could enhance each others knowledge gathering capacities, etc.).

Such a unit would label a biosphere with its inevitable potential for knowledge gathering and its ultimate existence time. With the inevitability of the origin or creation of biosystems, there also comes the inevitability of its annihilation.

THE EVOLUTION OF 'CREEPING' THINGS

There seems to be two possibilities to the evolutionary development of biological systems. One would be the 'biogradient approach' in which the system as it becomes more complex acquires more biological character as a smooth mathematical gradient. The other possibility would be the 'critical mass/biogestalt approach'. In this instance the system as it acquires complexity reaches a critical degree that allows it to become 'alive' with a specific holistic pattern having been achieved.

IN OTHER WORDS (SUMMARY)

The fact that protons and electrons form hydrogen atoms allowing for high thermal systems (stars) that in turn create iron/carbon cycles that eventually aggregate into lower thermal systems with carbon/carbon bonds, leads one to understand the eventual and inevitable hierarchical evolution of complicated self-sustaining forms.

One can furthermore derive the fact that given the multitude of galaxies that exist and the inevitability of complexity occurring to create biotic systems, as discussed here, then the likelihood of introspective minds besides our own biospheric example becomes enormous.

NOTE

- 1 Van Campenhout, A.; Van Camenhout, C.; Lagrou, A.R. and Manuel-Keenoy, B. (2004), "Effects of in vitro Glycation on Fe³⁺ binding and Fe³⁺ isoforms of Transferrin," *Clinical Chemistry* 50:1-10.