



The Relevance of Infodynamics: From the Biosphere to the Psychosphere

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Abstract

Living matter is considered an emerging property of inert matter, and thinking matter (the mind) is considered as an emerging property of living inert matter. Thinking matter handles information in a way and at a speed with no precedent in the Earth, including determinism. Changes in the planet occurred as cultural evolution speeded up and the planet gained a psychosphere. To try to run the planet as a biosphere is an error; a target in the past. There is a need to understand the underpinning of information – matter – energy relations (infodynamics) as the present thermodynamical view of Physics is limited. Ecology and Economy should merge in one single and unified science with information dynamics as a common core.

1. The Emergence of the Biosphere

At the beginning of Earth history there was only inert matter. The lithosphere, hydrosphere, and atmosphere formed shortly – in geological terms – after the planet aggregated. Matter interacted physically and chemically, and from these basal systems, a new property emerged – life – giving rise to living matter ca. 3,600 million years ago. Living matter behaves differently than inert matter. It is a complex adaptive system that has the ability to accumulate and speed information* transfer, to expand (biomass) and to evolve, and it obviously interacts with the inert matter. Over time, and by so acting it has changed the external part of the planet: the gas composition of the atmosphere, calcareous rocks and soil are formed, etc. The planet is more complex and looks different; it is equipped with inert and living matter; it now has a biosphere. Biological evolution takes place, complexity grows, and information accumulates; however, the biosphere is restricted to the limits of the planet.

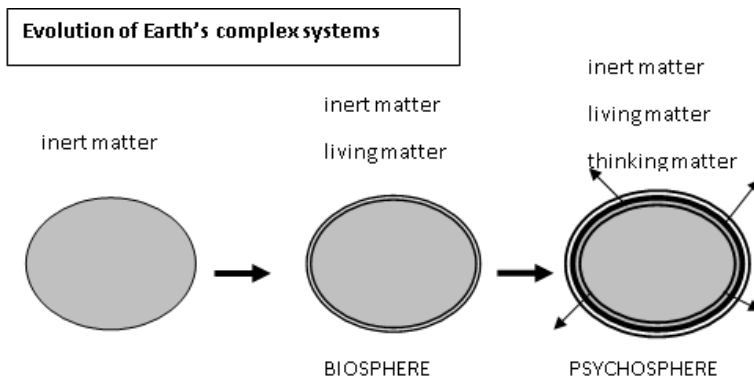
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2. The Emergence of the Mind

Very recently in Earth’s history, a new property – the mind – emerged, this time from living matter. Thinking matter behaves differently from living and inert matter, although it

* Information is used here in the sense of a basic property of matter (i.e. first quark = first in-formation), not as information related to human communication, which is a rather high and complex level of evolved information

has to comply with all restrictions imposed by these supporting subsidiary systems. Thinking matter processes information much faster than living matter and it can accumulate and retrieve information from external deposits (e. g., books, CDs, etc.). Information in biological systems is transmitted via the genetic channel from generation to generation. Information in thinking matter is transmitted and exchanged between individuals almost instantly. Cultural evolution is a consequence of it, thus, being much faster (Lamarckian) than biological evolution (Darwinian). Technology develops; information transfer gains scale and speeds up[†] and exosomatic energy is increasingly being involved, magnifying the influence (impact) of the mind on the environment. Global scale consequences of having thinking matter happened in a very short time-span compared with previous living matter induced changes. A psychosphere has built up and it has even surpassed the limits of the planet in the form of radio-wave emissions of structured information.



If we accept that inert matter, life and mind are three distinct cosmic phenomena (emergent systems: inert matter → life → mind), we may end up with a different perception of human affairs and, perhaps, a new paradigm.

Homo sapiens is the only surviving species where thinking matter is present. However, each person tends to consider himself as a unit,[‡] as the mind cannot be physically separated from its living support system (at least, for the time being). To intellectually separate mind (Psychosphere) from nature (Biosphere) would surely have deep implications in fields like religion or law. Here I will comment only about the environmental field.

3. Environmental Concern

Environmentalists and conservationists tend to be alarmed by changes of planet's life and its environment due to human actions. The change is real and increasing (accelerated) as previously argued, but the reasons for dismay are misleading. In the past, the planet has changed more drastically many times; and in several cases change was induced by the evolution of life (i.e., liberation of oxygen). If there is a new emergent system operating in the planet (thinking matter) now, the surprise would be to not observe an important change taking place. And it

[†] Since the big-bang, information (historic and complex) has been accumulating and speeding up in time.

[‡] From the biological point of view, *Homo sapiens* is not a functional unit, as we need many symbiotic micro-organism to live. Each one of us is a mammal-bacterial consortium.

is fully logical that present changes are occurring faster than any others before, due to life's presence in the planet, because thinking matter – and thus, cultural evolution – processes information much faster than simple biologic systems. Change is always happening. The planet is not in danger as it is being claimed. What may be at risk are the (comfort) living conditions for our species (or sectors of it), and it is legitimate for the human conscious mind to try to prevent or amend any undesirable change. The conservationist and sustainable use approach in modern society is striving in this direction, but, again, they may be misguided.

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Whatever befalls the earth befalls the sons of the earth. Man did not weave the web of life, he is merely a strand in it. Whatever he does to the web, he does to himself. This is an appealing message attributed to Chief Seattle, but with some wrong implications. Man is not just a part of nature. Human mind cannot be placed at the same level as its biological component (mammal body); they are not homologous. Conversely, *Homo sapiens* is not homologous to any other part of nature, at least of the “biospheric” nature, because of its mind. Determinism, for instance, is one of the consequences of thinking matter that did not exist before its emergence. It is an error to undermine these basic facts.

4. The Need of a New Science Based in Infodynamics

Modern environmentally concerned society is trying to introduce ecological principles into their running of the world. But present ecological science is biospheric and does not help much to understand how the psychosphere functions. A scientific discipline that tackles this challenge is not yet available.

Traditional thermodynamics take notion of exchange between energy and matter, but in any such exchange there is also a change of information status of which there is neither record nor complete explanation. The most Physics can yet tell us is that life is a mnemonic open linear dissipative system that exchanges entropy for information; and little more. What about information interactions and evolution? Is there a hidden variational principle? One of the three components of real phenomena, information, seems almost missing.

A new science that integrates information in (thermo/info) dynamic processes is much needed. We will hardly understand the functioning of our psychosphere without developing a new scientific body – both basic and applied – of information dynamics. Only then, based on the same information-grounded commons, will present disciplines of Economy (human exchange affairs) and Ecology be merged in one single and unified “Hology” or whatever it may be termed. That is the challenge for this century.

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