Life

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Source

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i) Life, as we see it now, is a specific state of matter (the living state) resulting from the interaction between matter and energy carriers. This interaction starts from the utilization of solar radiation by autotrophic organisms, and spreads over a diversity of organisms via numerous (bio)chemical cycles. A significant part of the utilized energy is retained in organisms by molecular carriers and “network channels” of high energy content; lessening of the utilized energy pool up to some critical level entails in death.

ii) Life on Earth is represented by a specific hierarchical system (the living system) consisting of self-reproducing agents. These agents are the only reference matter of life and are often represented by organisms. They can sometimes be represented as more complex units: bisexual pair, beehive, etc. The agents being individuals can interact with each other and therefore the whole system can be considered as a fragmented and integral entity simultaneously. Different levels of the organization of agents correspond to different levels of life hierarchy. Life as a system shows its worth in the diversity of constraints, feedbacks and interconnections with surroundings.

iii) Life on Earth proceeds as the specific process (the living process). It is expressed in transformations of surroundings (by agents) and in transmutations of the self-reproducing agents themselves. From the physico-chemical point of view, the living process has both dynamic and informational contents. It allows the agents to properly meet the changes in environment and to expand (spread) over a space, thus increasing the level of system complexity and differentiation.