

# Evolution of the Concept of Evolution

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If we assume that the first human cultures appeared about 6,000 years ago, pictures of the world, that they created and in which they existed, were stationary during about 97% of this time. Such pictures of the world based on its creation by this or that God and subsequent existence without essential changes. This does not mean that events have been excluded in such world. What was excluded, were the novelties, while events such as sun moving across the sky, changing seasons or reproducing the number of individuals in populations of domesticated species, were integral parts of the whole picture. Such events constantly repeated themselves that allowed Ecclesiastes to formulate his dictum: "*What has been will be again, what has been done will be done again; there is nothing new under the sun.*"

(Ecclesiastes, 1:9).

Even appearance of the science in its contemporary sense in the seventeenth century didn't get change stationarity of the picture: physics, chemistry, biology, astronomy, geology and geography didn't include notions of development or evolution in any form. Biology was the first discipline which, thanks

to Jean-Baptiste Lamarck, due to the rapidly accumulating paleontological data, gave rise to the very idea of evolution in the beginning of nineteenth century. Then, after revealing the mechanism of this evolution by Charles Darwin in his fundamental work *On the Origin of Species*, the evolutionary theory became one of cornerstones of biology as a science. However, even before Darwin, Charles Lyell introduced an idea of evolution in geology. His historical book *Principles of Geology* inspired Darwin himself during his famous sailing aboard HMS *Beagle*.

In the same nineteenth century, pioneer ideas of Sadi Carnot led Rudolf Clausius to formulation in 1854 the 2nd law of thermodynamic according which "entropy of an isolated system, always increases over time". This was the first physical law that is asymmetric relating to time, and it was remained the only one for more than a century until the discovering in 1964 the cosmic microwave background radiation. This discovery was crucial for wide acceptance of the Big Band model that considers temporal structure of our Universe as a consecutive development in time, i.e., as evolution, rather than a steady state. As a

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result, evolutionary idea took the central stage in astronomy and astrophysics.

This drastically changed all the situation in natural sciences: if all the Universe evolves, it looked quite natural to expect that its parts are evolving, too. Almost simultaneously, in the sixties, the concept of evolution penetrated into geography as a theory of tectonics of lithospheric plates, which grew out of the idea of continental drift, presented by Alfred Wegener in 1912. Approximately at the same time, in the second half of twentieth century, chemistry, trying to explain origin of life, came at last to the notion of the evolution of organic molecules. Later, Robert Hazen supplemented the chemical evolution with mineral evolution of inorganic compounds in his book *Mineral Evolution*.

In our century, the concept of evolution is used by practically each branch of contemporary science. If in the eighteen century our world looked static, and any changes in it seemed either periodical or random, now, on the contrary, relatively stationary states look as a kind of temporary stops or, more exactly, sharp decelerations in the general evolutionary dynamics. As a result, there are a lot scientific journals devoted to this or that aspects of the evolution. Majority of them focuses on biological evolution but there are also such journals as *Evolution and Human Behavior*, *Journal of Human Evolution*, *Evolution of Communication* and even *Journal of Software: Evolution and Process* among them. However, none of these journals considers the evolution as itself in all its totality and interrelations of its individual manifestations.

This situation spurred us to start up this journal – *Journal of Evolutionary Science*. Its main goal is to provide a forum for discussion of the principal problems of the evolution itself without references to particular areas of science or even culture. On the other hand, our journal welcomes articles on particular subjects of the evolution. Especially if the authors consider them from more general point of view and/or compare revealed features and regularities with evolution in the other, adjacent or more remote fields.

Evolution, accompanied by a constant increase in complexity from the Big Bang to the modern such a complex and diverse world, has been probably the most important process in our universe. So would not it be

interesting to examine this process as in general as in all its aspects? And is it not surprising that this topic was chosen as the main subject of our *Journal of Evolutionary Science*?

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