

Life looks like an axiom to us

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Abstract

The dynamics of human evolution and the visible universe are similar.

Text

It is not easy to recognize life as spontaneously born: there are so many reasons to live that are beyond our control - all the sticks and carrots that make us live, multiply, it is difficult even to list - there are so many of them. Yes, and evolution, with its strict indisputable rules of selection, does not at all look like an aimless spontaneous process.

In general, life looks like an axiom for us.

However, Godel's incompleteness theorem gives hope: it is possible that we were born to make a fairy tale come true and turn an axiom into a theorem.

On the subject of probability in evolution.

The left figure 1 shows a beautiful human family tree, compiled in 1931.

It can be seen that - on the way from the general start in the Eocene to the beginning of our stage of the evolutionary relay race in the Pliocene - there are approximately 12 forks.

Suppose the participants at each fork throw a coin - where to transform with reproduction: to the left - to a dead end branch or to the right - to an alluring human image. Of course, only those who successfully flip a coin 12 times in a row get to it with a probability of $0.5^{12} = 2.441 \cdot 10^{-4}$.

The probability is not so small - and it took 5 epochs of the Cenozoic era of the geochronological scale to realize it - in the amount of 123 million years. It can be seen that the duration of the epochs decreases, and the number of forks in each increases slightly - the relay race is self-accelerating.

The dynamics of the forks is shown in the right figure 1 - it is satisfactorily described by the simplest equation typical for developing systems with positive feedback $f(\tau) = n_0 + f_0 \cdot \exp(h_0 \cdot \tau)$

By the way - in it you can, if you wish, see the Hubble equation, and in the Hertzsprung-Russell diagram - a family tree of stars.

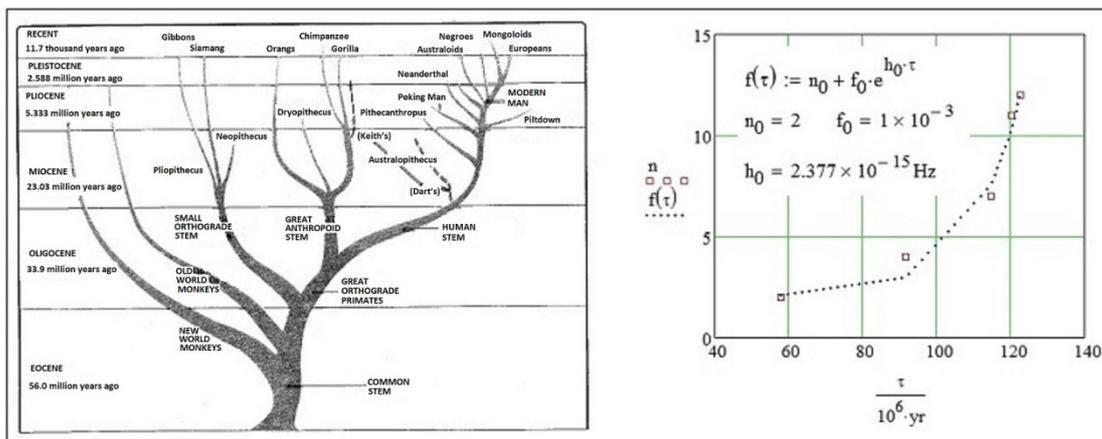


Fig.1. On the left - the evolutionary tree of primates, on the right - the dynamics of evolutionary forks.

The "tossing a coin" technique shows the futility of any calculation of the probability of an evolutionary process; it seems that scientifically, in accordance with the empirical principle of MHD, we can only assert that its result at any stage will be the most geochemically active, active form of life.

But the graph of the dynamics of the forks is useful.

The empirical principle "everything living is from living" is also useful when it comes to abiogenesis and vitalism.

The living Friedrich Wöhler was the first of the people with his own hands in a flask, - outside his body, - created the conditions for the "self-organization" of inorganic matter, - ammonium cyanate, - into organic matter, - urea, - which his living organism produced with his man-made participation all his 82-summer life.

From the same category, the famous Miller-Urey experiment: they stood or sat alive next to their model-flask and looked at the abiotic spontaneous generation of organic molecular precursors of life they had arranged.

In general, it seems that the problem of the role of a "live observer" will be actively discussed by us, the creators of life involuntarily, for a long time to come.

A few words about the diversity of life forms around us.

It is not excluded - the history of life in the solar system is not limited to terrestrial forms in the range from a meter-long human to a nanometer-sized virus - it is quite possible to imagine something similar in the other direction from a person - to a mega-meter creature, to which a person will seem like a meter-long virus.

The similarity of analogies allows us to estimate the size of the mega-creature and the radius of its habitat.

According to my estimation, - Earth-sized mega-creatures can live in the Oort cloud on a sphere with a radius of ~ 320 au, in a spherical belt several au thick, - here au is an astronomical unit.

Perhaps, when settling in the solar system, we will have to face the anti-virus protection of megameter creatures.