Review Essay

To the Metaparadigm of Evolution*

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The almanac *Evolution* has as its starting point the following idea: 'The currently globalizing world needs global knowledge' (Grinin, Korotayev, Carneiro, and Spier 2011b: 9). It is obviously true, as we really need an evolutionary metaparadigm. We have '*to develop an inclusive view of the Cosmos, Earth, life and humanity* by erasing boundaries between disciplines' (Grinin, Korotayev, and Rodrigue 2011b: 5; emphasis in the original).

Otherwise we will repeat the mistake of the blind-folded 'wise-men' of Indian parable who attempted to describe the elephant that they were asked to feel – each of them touching different parts of the animal. And, in fact

> there is only a rather limited number of studies that analyze the evolution of abiotic, biological, and social systems as a single process. Even fewer studies seek to systematize the general characteristics, laws, and mechanisms of evolutionary dynamics in order to allow a comparative analysis of different evolving systems and evolutionary forms (Grinin, Korotayev, Carneiro, and Spier 2011b: 7).

Thus, the goal of the almanac is to fill this distressing gap. That is why it makes the emergence of the almanac *Evolution* a desirable and important event for the biologists and historians, sociologists and astrophysicists, anthropologists and geneticists. Well, the enumeration would take too much space.

In the present brief review we will try to have a glance at the already published volumes. The first volume focuses on the com-

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parative studies in biological, social and cosmic evolution, while the second one deals mainly with study of the evolutionary processes from the Big History perspective.

The contributions to the volumes can be divided into several groups. The first group consists of the articles concentrated on cosmic evolution and Big History.

In his huge article Fred Spier gives an outline of the history of the Universe from the Big Bang to the post-industrial society as a process of 'interplay between energy levels and energy flows' (Spier 2011b: 61). This approach allowed him to get a very capacious explanatory scheme, which could be used for cosmic evolution as well as for biological and cultural. His contribution to the second volume of the almanac supplements the first outline and considers how to define Big History research, including an overview of the types of research that could profitably be undertaken (Spier 2011a: 26). G. Siegfried Kutter gives a personal perspective on the history of the Universe. It is partially based on the writing the college-level text *The Universe and Life*, 'which – according to the founders of Big History – influenced the creation of this multidisciplinary field' (Kutter 2011: 101).

A number of papers (especially in the second volume) continue and develop the analysis of Big History school of thought and the analysis of its interaction with the society. David Christian deals with an interesting question: How the 'Big History Project' was launched (Christian 2011: 23). Barry H. Rodrigue shows that Big History course is extremely important for changing the educational paradigm in the USA. In the American universities international studies still 'are often taught in an old-fashioned style of "us" *versus* "them"' (Rodrigue 2011: 75).

This is evidently the major issue, and Big History course could help us to cope with the situation.

A number of authors deal with some urgent issues of cosmic evolution, at the same time looking for correlations with social or biological evolution.

Obviously, we see that there are a lot of interesting parallels between stellar and social evolution. And '…it may help stiffen the sinews of those anthropologists who have come to doubt the validity

of the evolutionary approach in their own field' (Carneiro 2011: 79). It is also important to mention his ideas about stages 'Now, it has become fashionable for some ethnologists and archaeologists who proclaim themselves friendly to evolution to assert that they are not interested in *stages*, but only in *process*, as if that were a sign of greater intellectual maturity. Wrong! Stages … designate important way stations along a path that many societies are following' (*Ibid.*: 70).

Astrophysicist Eric J. Chaisson shows that 'if big historians are to make headway, indeed to be accepted by traditional historians, they ought to ground their research agenda on empirical facts and tested ideas, where possible, and to focus their subject matter on the role of humanity *in the one and only Universe we know*' (Chaisson 2011: 39).

The correlation between mega-evolution and Big History is discussed in another paper. The author also compares more thoroughly the Western tradition, which 'emphasizes the idea of equilibrium, and thus reduce cosmic, biological and social evolution to mass-energy processes' and the Russian one of Big History. In which, however, 'sustainable non-equilibrium patterns are used' (Nazaretyan 2011: 83). I suppose that such comparisons are very important and useful because otherwise some important ideas and approaches could be lost for many years (see Golubovsky 2000; Flegr 2002; Liu 2010).

The article by Alexander Mirkovic (his main purpose is 'to analyze the Big History in the context of resurgent religious fundamentalism in the Anglo-American world' [Mirkovic 2011: 51]) shows that this 'loss of ideas' is a very real danger for modern science. Nowadays, 'While we were promised the triumph of the liberal ideas and ideals, what actually happened … was the reactionary backlash…' (*Ibid*.: 50). This situation really interferes with science: '…suddenly politicians wanted to force scientists to treat creationism and intelligent design as legitimate scientific theories' (*Ibid*.: 51).

Well, the ideology impedes progress of science in Western societies not less than in non-Western. Here the contemporary biological anthropology can serve a good example (Balanovskaya and Balanovsky 2007: 38–47). Mirkovic tries to understand the causes of this 'reactionary backlash' and how Big History helps to overcome these troubles.

Tom Gehrels, basing on Chandrasekhar's cosmic-mass equation (and equation of Planck), proves that our universe is a member of a quantized system of universes, the 'Chandra Multiverse' (Gehrels 2011: 123). I think this hypothesis is extremely efficient. Though, it is possible that a new reading of some works by A. A. Fridman (cited in Fok 1963: 355) could make it even more efficient.

In order to bridge the gap between the techniques used by his-torians and those used by geologists and paleontologists, a work-shop was held in August, 2010 (Alvarez *et al.* 2011: 145). The concepts and techniques of 'reading Earth and life history from rocks' that had been demonstrated at the workshop were summarized in the article.

David Hookes (2011) analyzes the evolution of information systems from the Big Bang to the era of globalization.

However, I think the core part of the almanac is constituted by the articles, devoted to analysis of connections and comparisons between biological and social forms of evolution.

Graeme D. Snooks indicated his aim as 'constructing a general theory of life'. He points that 'certainly the task is difficult, but, I hope to demonstrate, it is not impossible… many complexity theorists have attempted to develop a theory that can explain systems of both an inanimate and animate kind. I will suggest that separate dynamic theories are needed for this purpose' (Snooks 2011: 85).

In his contribution Edmundas Lekevičius continues the discussion of the issue of 'general theory of life's evolution'.

He points out that 'during the past decade, strong nihilistic trends, far stronger than before, appeared in evolutionary biology… To describe that situation I could find no better word than "crisis"' (Lekevičius 2011: 118–119). That is why he thinks that 'if we want to have a more profound evolutionary theory which better corresponds to the present-day achievements, we must revert to Darwin's original premises and reassess them not only from the viewpoint of genetics but also from that of ecology' (*Ibid.*: 101).

I should mention here, that the 'ecosystem theory of evolution' was also developed by Valentin Krasilov (1989). I believe that this theory could play a significant role in the forthcoming synthesis of a 'more profound theory'. Even more efficient for this synthesis

would be the epigenetic theories of evolution (Shishkin 1988; Grodnitsky 2002). Besides, we have to remember that some interesting and important observations and theoretical grounds were made long ago (Shmalhausen 1968: 116, 305–315; Alekseyev 1984: 70).

I would like to cite also Lekevičius' following conclusion 'to sum up, traditional approach emphasizes selection units and cares about what is selected, whereas I propose taking interest in what *is making selection.* … competition is not necessary for the process of selection: it might be even more intense in the case of cooperation' (Lekevičius 2011: 118).

The last sentence could be considered as a bridge to Zhanna Reznikova's article devoted to 'the paradox of altruism'. A large number of data is considered in this article. It leads the author to the convincing conclusion, that 'altruistic behaviour in animal societies is based, to a greater or lesser extent, on the division of roles between individuals in dependence of their behavioural, cognitive and social specialisation... We can assume that cooperation that is based on reciprocal altruism requires more advanced cognitive skills than altruism towards kin because reciprocity demands remembering and discounting levels of cooperativeness among individuals' (Reznikova 2011: 154).

The conception of 'social aromorphoses' and their comparison with biological ones is considered in a large article by Leonid Grinin, Alexander Markov, and Andrey Korotayev. They present the idea that 'it appears possible to speak about a single *rule of aromorphosis* (biological and social) in macroevolution that may be rendered as follows: in course of macroevolutionary process from time to time one may observe within particular groups of systems such potentially significant changes (innovations) that turn out ultimately (but not immediately) to secure a radical qualitative reorganization of large groups of (biological or social) organisms…' (Grinin, Markov, and Korotayev 2011: 173).

To sum up, they 'believe that, on the one hand, the emergence of perspective morphological forms, institutions, relationships is accounted for by internal characteristics of biological and social organisms; however, on the other hand, this could be regarded as a result of the presence of a sufficient number of other forms whose

evolutionary "successes" and "failures" have paved way for the emergence of a "successful" version' (Grinin, Markov, and Korotayev 2011: 200).

They elaborate on this conception in another article, which suggests biological and social phases of Big History, paying special attention to the similarities and differences of evolutionary principles and mechanisms 'at various levels and in various aspects' (*Ibid*.: 160).

The next group of articles deals mainly with social evolution.

The alternatives and variations of social evolution (Bondarenko *et al.* 2011), evolution of nested networks in the prehistoric U.S. Southwest (Chase-Dunn 2011), conceptions of a global brain (Heylighen 2011), and post-singular evolution and civilizations (Panov 2011) are discussed.

The last group is formed by essays on Big History. These contributions present some experiences of practical application of Big History course in different spheres and situations.

A web-designer describes the background to the writing of the children's book (Gronek 2011). The geologist tells us about 'ten of the most striking features of Earth's history' (Hughes 2011: 233). A Montessori teacher says, 'the teacher does not have to know all the answers – she or he knows the ways to find an answer! And the child is not questioning the teacher, but questions time and space' (Werkhoven 2011: 250).

A particular combination of art and geology is a feature of life experience of Paula Metallo. The objective of her article is 'to express in what ways Art can be a means of describing pattern and encourage openness to stretching the brain to comprehend interconnectivity' (Metallo 2011: 256). A poet who considers 'Big History and bioregions' is present in this company as well (Lawless 2011). The architect aims at demonstrating the usefulness of studying small-scale subjects such as Tiananmen from a Big History perspective (Quaedackers 2011). And a time visualization tool called 'ChronoZoom' and how it could be used in the study of Big History is a subject-matter of the next essay (Saekow 2011). And finally an essay of a caseworker should be mentioned, he is particularly interested in the functionality of public organizations,

through which we, humans, contract to govern ourselves (Tierney 2011: 287).

Thus, I think that the goal of almanac is achieved. The synthesis of metaparadigm of evolution has started.

NOTE

* For more information about the Almanac, see p. 160 of the present issue of *Social Evolution & History.*

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