Introduction

Once More on Megaevolutionary Paradigm

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Every time we work on this Yearbook, we are focused on making at least a small step forward to gradual elaboration of a megaevolutionary paradigm (see Grinin *et al.* 2009) as well as to considering the features of various evolutionary phenomena (*e.g.*, Grinin, Carneiro, Korotayev, and Spier 2011; Grinin, Korotayev, and Rodrigue 2011; Grinin and Korotayev 2013; Grinin and Korotayev 2015; Grinin and Korotayev 2016; Grinin and Korotayev 2019). This megaevolutionary paradigm is designed to create a united scientific field for cross-disciplinary studies.

The present volume is the seventh issue of the 'Evolution' Yearbook. It consists of three sections. ***Section I. Megaevolution and Cosmic Evolution*** consists of two contributions and opens up with an encompassing article which covers all phases and stages of megaevolution 'Megaevolution: Its Main and Transitional Phases' (by **Leonid Grinin and Anton Grinin**). This article is devoted to the issue of unity of laws, patterns and mechanisms of evolution at all its stages and levels in the single and universal process of universal evolution / megaevolution or Big History. Despite the enormous differences between cosmic, planetological, chemical, biological, and social evolutions, there are many similarities. Unfortunately, quite a few works are devoted to their identification. In this article the authors consider a number of such important similarities, which clearly demonstrate the systemic-structural and functional-evolutionary unity of the world at its different levels and in different areas. The understanding of these similarities deepens our perception about all stages of megaevolution and its regularities, and leads us away from the false idea that social evolution in all as-

pects is different from the evolution of previous levels. In the first section the authors try to give their own definitions of evolution which would cover as many variants of evolutionary changes as possible. In the second section they give a rather voluminous and dialectical picture of the unfolding megaevolution instead of a rough scheme: cosmic – biological – social. The notions of main and transitional phases of universal evolution are introduced; and the importance of its planetological and chemical phases is shown. In the third section the authors of the paper show that one can reveal a number of similarities at all levels and phases of megaevolution, which can be generalized in universal laws, rules, mechanisms, patterns and principles of evolution. One should note that in fact none of the important laws and principles, not any of the important rules of evolution, have been 'lost' in the process of transition from lower to higher levels. They were only modified and became more complicated, and there also appeared some new principles and rules (and in retrospect one can see their rudiments at the lowest levels of evolution). Some of these laws and rules are described in this section. The fourth section presents some evolutionary and philosophical ideas that explain the profound similarity in the laws and patterns of megaevolution at all its levels and phases.

In this context the paper by **Leonid E. Grinin** 'The Star-Galaxy Era and Universal Evolution' is worth mentioning. It is surprising that Big History can exist at all as a connected narrative, as a description in which periods, key points, trends, and sequences can be distinguished. This possibility is the result of the tremendous work of different scholars and the astonishing technological advancements of scientific observations and experiments.

Big History is described in a non-uniform manner. Only one or a few lines are dedicated to large periods of the history of the Universe. Such situation is characteristic of any unwritten history, where due to lack of data huge gaps are filled by theoretical reconstruction. But with respect to cosmic evolution itself there is a certain kind of paradox, which is that thanks to the theoretical physical and mathematical reconstruction the first seconds and minutes of the Universe are described in great detail, while the following billions of years are reconstructed only in a very general way. For example, Steven Weinberg, in his famous book *The First Three Minutes: A Modern View of the Origin of the Universe* focuses literally on the first hypothetical minutes after the Big Bang, describing one stage of the Universe's change after another. He also states that 'The universe will go on expanding and cooling, but not much of interest will occur for 700,000 years' (Weinberg 2000[1979]: 112; these words are often repeated by some others, for example Greene 2004: 196). This book, as well as many other books, contain very little information on the next millions and billions of years, because during this period there are processes about which we do not know enough (although today a number of processes are already much better known and some gaps are filled in). The contribution by Grinin is specif-

ically devoted to the evolutionary analysis of the longest phase of megaevolution – the star-galaxy era.

One of the main objectives of our Yearbook is to find similarities in evolutionary laws, principles, and mechanisms at different levels and stages of evolution. Indeed, despite the diverse manifestations, the comparison of different processes and subjects, their appearance, development and evolution, *etc.* at the same time demonstrate considerable similarity in forms, methods, mechanisms, patterns, on the basis of which there will be derived rules and even laws that will be applicable at different phases of evolution and in its various manifestations. Sometimes one should speak not about rules, but rather about regularities, and often only of analogies, but not at all random ones. This approach has repeatedly given a new vision for science. Cybernetics was created just under such conditions. The predecessor of the science of cybernetics, the Russian scientist Alexander Bogdanov in his work about the fundamentals of organization science (in which he was ahead of his time) paid much attention to such analogies that allow us to see the common in a wide variety of phenomena belonging to different realms, and he also gave a detailed information on the scientists working in this direction.[1]

Following Bogdanov, one may ask: with the infinite abundance of the matter in the Universe and infinite variety of forms, where do these systematically reproduced and extended by cognition analogues come from? And one can agree that recognizing them as simple 'random coincidences' means the introduction of an element of arbitrariness into the worldview and even coming into a clear contradiction with the theory of probability. And modifying his answer, one can argue that there is only one scientific conclusion: there really exists a unity of evolutionary laws and patterns, their unity is manifested everywhere – in animate and inanimate nature, in elemental forces and human conscious actions (Bogdanov 1989).

The paper by Grinin contributes to solving of this problem. It continues author's attempts to combine Big History potential with the potential of Evolutionary Studies in order to achieve the following goals: 1) to apply the historical narrative principle to the description of the star-galaxy era of the cosmic phase of Big History; 2) to analyze both the cosmic history and similarities and differences between evolutionary laws, principles, and mechanisms at various levels and phases of Big History; 3) to show how cosmic evolution fits the universal evolutionary algorithms and correlates with the common evolutionary laws and patterns.

Thus, comprehension of the idea that many principles, mechanisms, characteristics, features, patterns, laws and rules of evolution, which we used to

[1] The particular attention was paid to the Serbist-French scientist M. Petrovic who since 1906 tried to explain 'the theory about analogues' by developing the formulas of 'general mechanisms of heterogeneous phenomena' (eponymously-named book was published in 1922).

attribute only to its highest levels and mainstreams, can be found at all its levels and in different lines, and this fact clarifies a lot in understanding of evolution (see, *e.g.,* Grinin 2013, 2014; Grinin, Korotayev, and Markov 2012a, 2012b; Grinin, Korotayev, and Ilyin 2012; Grinin and Korotayev 2015; Grinin 2015). It also contributes to the understanding of its driving forces, vectors, trends, and reveals new aspects of evolutionary studies and creates a common field for interdisciplinary research. Our world is amazingly multifaceted, diverse and inexhaustible in its manifestations. And still, many of its foundations are universal. Of course, it is very difficult to find even some of these foundations. This contribution is devoted to the search for this unity and the forms of its manifestation in the historical path of our Universe.

Section II. Biosocial and Social Evolution consists of four contributions. We would like to dwell particularly on the paper by **Marina Butovskaya, Andrey Korotayev, and Alexander Kazankov** 'Dominance Styles and Variability of Social Relationships in Non-Human and Human Primates' which aims specifically at studying dominance styles and variability of social relationships in non-human primates and humans. According to the authors, the continuity of social life observed between non-human primates and humans is fundamental for understanding the formation of human society in the course of evolution as well as its further social evolution (Butovskaya and Fainberg 1993). The capacity for self-recognition, purposefulness, long-term memory, prediction of others' actions, deception, the understanding of social bonds within the group – these are some, but by no means all, prerequisites of human society, those which are actually observed in extant great apes. The authors demonstrate the most important characteristics of evolution at all its stages: similarities between its different levels, qualitative leaps while maintaining the continuum, compulsory presence of preadaptations at lower levels of evolution. At the same time, preadaptations, as a some kind of 'excesses' at their own stage of evolution, become extremely important characteristics at higher levels.

The contribution by **Eudald Carbonell and Policarp Hortolà** 'From Past Unaware Hominization to Future Conscious Humanization: Social Evolution in Retrospect and Prospect' offers scholars who explore alternative futures an insight into how the knowledge of past human evolution might contribute to shaping the way we think about the future and the relationship that humankind has to its futures. In this sense, it presents the bases of a potential new paradigm of social evolution by exploring possibilities arising from the forms of past social behaviour and future self-understanding. This is achieved by reflecting upon what makes us human, taking into account the key concepts of hominization and humanization, and by sharing with the readers a range of views on how elective affinity, collective individuality, complementarity, and correspondence can affect our conscious 'progress' (sensu 'directional change') towards full humanization.

Leonid E. Grinin in his paper 'The World System Since the Bronze Age: Systemic Integration and Divergence-Convergence Cycles' discusses some aspects of integration of different regions and societies in the course of historical globalization. Within historical globalization one can observe a close correlation between such important processes as technological transformations, urbanization, political integration, struggle for political hegemony, *etc.* In the paper the author analyzes these correlations in more detail. He also tries to associate historical globalization and its aspects with the phases of expansion of spatial links between societies. Within the expansion process the author points out seven levels from the local level through the planetary one. The most significant changes were associated with crucial technological breakthroughs, or production revolutions and other related transformations like the Urban Revolution. The latter can be regarded as a phase transition of the Afroeurasian world-system to a qualitatively new level of complexity. There are also several periods which one can define as landmarks in the World-System history. The paper also offers some theoretical ideas about the cycles of divergence and convergence.

According to **Konrad Szocik**, the author of the contribution 'What is Right and What is Wrong in the Darwinian Approach to the Study of Religion' one of the greatest challenges for the study of cultural evolution is an explanation of processes and mechanisms of transmission of cultural traits. Darwinian approach is a promising and useful research program. However, it is worth asking in what extent Darwinian account can provide appropriate and reliable explanation for origin and transmission of religious components. In this paper the author discusses some benefits and weaknesses of this approach for the study of religion.

It seems that Darwinian approach fails to explain transmission of acquired traits and non-random variation. One can look for biological benefits provided by religious affiliation when trying to explain it in terms of survival and reproduction. However, the author assumes that biological evolutionary explanation cannot explain ultimately some unique human traits like religiosity. Biological evolutionary account can explain a number of similarities between humans and non-human animals in some basic behavioral patterns (similarity by homology). The focal point is if this approach can provide reliable explanation for specifically human cultural phenomena that only analogically can be found among some social animals, especially social insects, like in the case of mechanism of eusociality. The key idea of this paper is that Darwinian approach to religion might explain only small part of human religiosity, and reliable explanation should combine Darwinian and cultural evolution, and cognitive account.

Section III. *Reviews and Notes* contains two contributions: a review by **Antony Harper** of a recent book *Islamism, Arab Spring, and the Future of Democracy* by Leonid Grinin, Andrey Korotayev, and Arno Tausch (Springer, 2019); and the lecture on Big History by **Leonid E. Grinin, Andrey V. Korotayev, and David Baker** 'Beyond Global Studies. An Introductory Lecture into a Big History Course'.

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