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Ukrainian Language Information Foundation
of the National Academy of Sciences of Ukraine*Dedicated to Sir Roger Penrose –
the outstanding intellectual
of our time.***THE “CORONA” CRISIS AND THE “DARK MATTER” OF DOLLAR**

The ideas and methods of the general theory of evolution formulated by the author in previous publications have been developed in the work. The provisions of the author's concept are systematized, which are presented in the form of three laws of evolution concerning the essence and features of the functioning of the main concept of the theory – *the mechanism of evolution*.

The First (basic) law of evolution states that the complexity of an evolving system always increases. Thus, an increase in the complexity of one or another mechanism of evolution is a necessary condition for evolution, in the area where this mechanism operates. The Second Law of Evolution defines the qualitative nature of the behavior in time of any mechanism of evolution, that is, its temporal dynamics. When formulating the Third Law of Evolution, it is noted that the increase in complexity is only a necessary, but not a sufficient condition for evolution. Under some circumstances, the system gets the opportunity to demonstrate an abnormal increase in complexity, while practically not evolving. As a result, a situation arises of an uncontrolled, "parasitic" increase in the complexity of the system, not directly related to its evolution, which gives reason to single out a parasitic component in the complexity of the system, which gives a constantly increasing load on the system. This is the basis for formulating the Third law of evolution – the law of growth " parasitic" complexity, which explains the essence and causes of almost all evolutionary catastrophes.

The laws of evolution are illustrated by examples of the behavior of the genetic, neural, communication and financial-information-network mechanisms of evolution. Of particular interest is the evolutionary interpretation of the inflationary model of the Universe in the approach of Roger Penrose. In the spirit of the above conceptual provisions, an analysis was made of the crisis associated with the COVID-19 pandemic ("Corona" Crisis"), which was used by the ruling circles as an element of "controlled chaos". Having produced a global disturbance of the world socio-economic system, the crisis remained manageable to an acceptable extent. At the same time, the World Financial System with the dollar at the head has withstood and, perhaps, even somewhat strengthened.

An analysis of all the mentioned phenomena and processes leads to the conclusion that in any system at a certain stage of evolution, a structure begins to appear, consisting of three zones: controlled (managed); uncontrolled (unmanaged) and intermediate between them – weakly (conditionally) controlled (managed). In terms of observability, it sounds like any sufficiently complex system has an observable ("light") part, an unobservable ("dark"), and an intermediate ("gray") region between them. The noted effect is universal and manifests itself in almost all subject areas.

This approach allows, within the framework of a unified methodology, to analyze the phenomena and processes of both natural and social history. The "Corona" Crisis, as a representative of a series of acute global crises of our time, really turns out to be connected with the "Dark Matter" of the financial-information-network mechanism.

The author draws attention to the fact that crises and catastrophes occupy a very significant place in the arsenal of Evolution's tools. This circumstance poses very responsible tasks for the scientific community.

Широков В.А. Криза «Корони» і «Темна Матерія» долара. У роботі набули розвитку ідеї та методи загальної теорії еволюції, сформульованої автором у попередніх публікаціях. Систематизовано положення авторської концепції, які представлені у формі трьох законів еволюції, що стосуються сутності та особливостей функціонування основного концепту теорії – *механізму еволюції*.

Перший (основний) закон еволюції стверджує, що складність системи, що еволюціонує, завжди зростає. Таким чином, зростання складності того чи іншого механізму еволюції є необхідною умовою еволюції на тій ділянці, де діє даний механізм. У Другому законі еволюції визначається якісний характер поведінки у часі будь-якого механізму еволюції, тобто його темпоральна динаміка. При формулюванні Третього закону еволюції зазначається, що зростання складності є лише необхідною, але не достатньою умовою еволюції. За деяких обставин система має можливість демонструвати аномальне зростання складності, при цьому практично не еволюціонує. В результаті виникає ситуація неконтрольованого, «паразитного» збільшення складності системи, не пов'язаного безпосередньо з її еволюцією, що дає підставу виділити у величині складності системи паразитну компоненту. Це дає навантаження на систему, яке постійно зростає. Викладене дає підстави для формулювання Третього закону еволюції – закону зростання «паразитної» складності, який пояснює суть та причини практично всіх еволюційних катастроф. Закони еволюції проілюстровані на прикладах поведінки генетичного, нейронного, комунікаційного та фінансово-інформаційно-мережевого механізмів еволюції. Особливий інтерес викликає еволюційна інтерпретація інфляційної моделі Всесвіту у підході Роджера Пенроуза. У дусі викладених концептуальних положень виконано аналіз кризи, пов'язаної з пандемією COVID-19 («Кризою «Корони»»), використаної правлячими колами як елемент «керованого хаосу». Спричинивши глобальне збурення світової соціально-економічної системи, криза залишалася прийнятною мірою керованою. При цьому встояла і, можливо, навіть дещо зміцніла Світова фінансова система з долларом на чолі.

Аналіз усіх згаданих явищ і процесів веде до висновків, що в будь-якій системі на певному етапі еволюції починає проявлятися структура, що складається з трьох зон: контрольованої (керованої); неконтрольованої (некерованої) та проміжної між ними – слабко (умовно) контрольованої (керованої). У термінах спостережуваності це звучить так, що будь-яка досить складна система має спостережувану («світлу») частину, крім того, частину яка не спостерігається (темну), і проміжну між ними («сіру») область. Зазначений ефект є універсальним і проявляється практично у всіх предметних галузях. Цей підхід дозволяє в рамках єдиної методології виконувати аналіз явищ і процесів як природної, так і соціальної історії. «Криза «Корони», як представник низки гострих глобальних криз сучасності, справді виявляється пов'язаною з «Темною Матерією» фінансово-інформаційно-мережевого механізму.

Автор звертає увагу, що в арсеналі інструментів Еволюції кризи та катастрофи займають дуже важливе місце. Ця обставина ставить перед науковою спільнотою дуже відповідальні завдання.

INTRODUCTION

On March 19, 2021, at the Kyiv House of Scientists of the National Academy of Sciences of Ukraine, located on Volodymyrska Street, number 45-a, in a beautiful mansion of the early 20th century, the author of this article, at the request of the Kyiv scientific youth, gave a lecture under that title. As everyone remembers, this happened in the era of COVID-19, when, after its apotheosis in 2020 (the peak of the «corona crisis»), the authorities were just beginning to ease pandemic restrictions. This was done very carefully and rather inconsistently, which was dictated by the great uncertainty of this global phenomenon that engulfed the whole world, and a poor understanding of its nature, causes and methods of dealing with it.

Be that as it may, the author, following all the prescribed restrictions and precautions, gave this lecture, was gladly subjected to the temperamental attacks of young scientists and strengthened in the thought of the need to publish a fundamental work, most likely a book on the topics of evolution, a topic that served as a logical and the factual basis of the lecture. Before that, I had repeatedly raised the evolutionary topic and made reports on it for completely different audiences, including at the meetings of the N. M. Amosov Club, of which the author has the honor to be a member, at the House of Scientists.

Time passed, but the process of writing the book slowed down. Much more pressing matters arose, dealing literally with matters of life and death. Analyzing these dramatic events, I became more and more deeply convinced that they are quite consistent with the evolutionary doctrine I am developing, the first publications of which were carried out several years earlier in the journal “Bionics of Intelligence”¹. And finally, at the suggestion of professor G. Chetverikov, through whose efforts the journal only continued to exist in recent years, I found time and wrote the text of the article with the announced title, which I offer to the attention of readers.

Before starting the presentation of the main content, I consider it necessary to make some clarification. The fact is that for many, it may seem artificial and not intelligible

1 В.А. Широков. Эволюция как универсальный естественный закон (Пролегомены к будущей общей теории эволюции). «БИОНИКА ИНТЕЛЛЕКТА», №№ 1-2, 2017, №1, 2018. В свободном доступе по адресу: <https://ulif.org.ua/page/evoliutsiia-kak-universalnyi-iestiestviennyi-zakon-prolieghomienny-k-budushchiei-obshchiei-tie>

enough to compare such different things as the global pandemic and the matter of the dollar, moreover, dark (this epithet can also cause perplexing questions). However, below the author will try to present the phenomenology and logic of this case in such a way that this comparison would look not only quite rational, but even necessary.

To facilitate understanding of the content, let me quote here the main provisions of the work cited above on the general theory of evolution. Let's start with this.

Part I. EVOLUTION AS A UNIVERSAL NATURAL LAW

1.1. General Provisions and Fundamental Issues

We proceed from the conviction that the World is evolving. We qualify this belief as the “Presumption of Development” and further we will consider evolution as one of the main properties of the World, perhaps even the main one in general. There have been many attempts in history to give a “strict” definition of the concept of “*evolution*”. We believe that “*evolution*” is such a fundamental, primary concept that it is impossible to give a strict definition of it. However, you can give examples, give some explanations, explore its properties and establish patterns. But, when it comes to regularities, it is subject to clarification what exactly is meant. In our opinion, this clarification is concluded in the answer to two questions that we consider fundamental for the subject of our consideration:

1. *If we analyze evolving objects, then: is it possible to set those properties that can be correlated with any process of evolution?*
2. *If it is possible to set these properties, then: are they subject to generalization and/or are they reducible to some “general” concept that could be associated with any evolutionary process?*

The author claims that there is a positive answer to both questions. To answer them, we define the conceptual basis of our theory.

1.2. On the mechanisms of evolution.

We believe that the basic concept of the general theory of evolution is the concept of the “*Mechanism of evolution*”. The brief content of this concept is revealed in the following statements:

1. The evolution of the world is carried out in certain discrete forms. These discrete forms we will call “mechanisms of evolution”.

2. Each mechanism of evolution is characterized by a certain complex of materially expressed features, specific to it, that allow it to be individualized and distinguished from other mechanisms as some discrete entity².

3. However, all mechanisms have some common properties, which allows them to be typified and attributed to one class of phenomena, namely, to the class "Evolution"

In the cited work, the following evolutionary mechanisms are singled out and considered with varying degrees of detail:

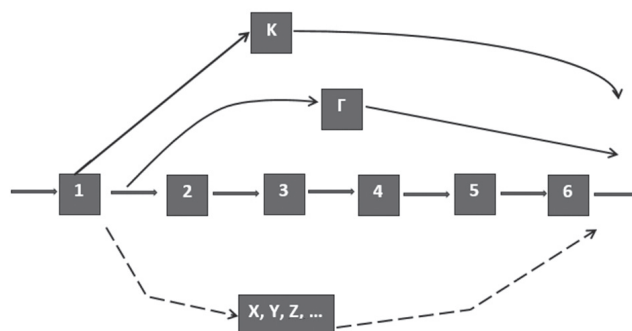
1	PHYSICAL	E	C	O	G	N	I	T	I	V	E
2	CHEMICAL										
3	GENETIC										
4	NEURAL										
5	COMMUNICATION										
6	PRODUCTION, consisting of the stages:										
6.1.	Consumer	Economic	?	?	?	?	?	?	?	?	
6.2.	Exchange										
6.3.	Financial										
6.4.	Financial Information										
6.5.	Financial-Information-Network										
?	??										

Note that each of these mechanisms has its own "fine structure". Here we have explicitly listed only individual stages of the Production Mechanism, of which we currently number five and some which we plan to dwell on in more detail. At the first glance at the table, one notices that the last line consists of only question marks. This means that at the moment it remains unclear: how will the Financial-Information-Network Mechanism end?, what will follow it?, how and when will the transition to the next mechanism be carried out?, what will it be like? and what will happen to the human race at that time (if it exists at all by that time)? Unfortunately, we do not know clear answers to these questions, although there are a great many futurological fantasies on these topics.

Does the above list exhaust the set of all mechanisms of evolution? The answer is obviously no. We assume that this set is generally open. Moreover, the possibility of parallel action and interaction of several mechanisms, and not only those listed in the table, is by no means excluded.

² The principle of such individualization and selection, apparently, is close to discovered and described by us the lexicographic effect in information systems (see. В.А.Широков. Інформаційна теорія лексикографічних систем. – К. : Довіра, 1998. – 331 с. V. Shyrokov. "Language. Information. System" –К.; Наукова думка., 2021, 158 с.. Free access at: https://www.ulif.org.ua/system/files/blok-shirokov_book.pdf).

So, the following diagram shows a picture where, in parallel with the six mechanisms we have designated (squares 1 – 6), the cosmic (K), geological (G) and a number of other possible others (X, Y, Z, ...) operate.



Each mechanism of evolution operates on a certain class of objects, and its action is provided by the corresponding "substance", a kind of "agent" system that implements the action of this mechanism. The noted facts are summarized in the table.

MECHANISM OF EVOLUTION	OBJECTS	«SUBSTANCES»
Physical	Elementary particles, physical fields, nuclei, atoms	Physical interactions
Chemical	Electrons, protons, neutrons, photons, atoms, molecules	«Pauli principle», which provides the order in which atomic orbits are filled and, consequently, the available set of atoms
Genetic	All living organisms	Genomes
Neuronal	Living organisms starting with worms	Neural systems
Communication	Collective (social) animals, humans	Signaling systems
A) Production-consumer	People	Communication systems, tools
B) Production-exchange	People	Communication Systems, tools and products of labor
C) production-financial- "...+..."	People	Technique, technology, social, financial and economic, government, international and global institutions, cognitive-communicative and network systems.

1.3. Basic (First) Law of Evolution and Complexity Theory

Let us now turn to the answer to the fundamental (in our opinion) questions of the theory of evolution formulated above. We argue that the cause and engine of all evolutionary processes without exception is the complexity of the evolving system. This means that an increase in the complexity of a system is a necessary condition for its evolution: if the system evolves, then its complexity increases. Thus, we come to an empirical generalization, which we call the First (basic) law of evolution and formulate as follows:

First Law of Evolution: The complexity of an evolving system always grows. In other words, an increase in the complexity of one or another mechanism of evolution is a *necessary condition for evolution*, in that part of it where this mechanism operates.

Of course, in order for the above statement to take on a real meaning, it is necessary to define the concept of complexity – the key concept of our theory. We adhere to and develop a phenomenological approach to the interpretation and application of complexity. In accordance with it, complexity is an exclusively multi-faceted, fundamental concept, comparable in its ontological and epistemological range with the concept of energy. However, they act differently and reflect different properties of things. So, if energy is a measure of *the intensity* of processes occurring in certain objects, then complexity is a measure of *heterogeneity, structure, irregularity of processes* and objects. Complexity, as well as energy, is characterized by an exceptional richness of forms of manifestation. If particular forms of energy are work, heat, electromagnetic, atomic, nuclear, gravitational energy, enthalpy, kinetic, potential, internal and even “dark” energy, etc., then the forms of manifestation of complexity are probability, fuzziness (in the sense of Zadeh), entropy, information (in the sense of Kolmogorov), fractality, etc. The noted facts are given in the table:

COMPARISON OF PROPERTIES OF ENERGY AND COMPLEXITY

ENERGY is a measure of intensity processes and objects	COMPLEXITY is a measure of the heterogeneity (structuredness, fuzziness, irregularity) of processes and objects
Dimension formula: ML^2t^{-2}	Dimension formula: $ML^2t^{-2}T^{-1}$
Units: $1 J = 0.239 cal = 1.602 \cdot 10^{-19} eV$	Units: Bit, $Ccal \cdot (K^{\circ})^{-1}$; K° – degrees Kelvin
Manifestations (forms) of energy In mechanics: kinetic, potential, ... Electromagnetic field energy: $\frac{E \cdot D}{2} + \frac{B \cdot H}{2}$	

In quantum mechanics: $E_{\psi} = \langle \psi H \psi \rangle$ (energy in the state ψ) ...energy and heat, energy and work, enthalpy, internal energy, free energy, energy and mass, dark energy... ,	Manifestations (forms) of complexity information, entropy, probability, fuzziness, «fractality»
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It can be argued that energy and complexity are *complementary categories* (in the sense of *the complementarity principle of N. Bohr*), so that a sufficiently complete description of a system must contain both energy and complexity component. However, it should be noted that so far the role and influence of this latter has been underestimated. And even in theoretical works, complexity was considered mainly in the computational sense – as the complexity of algorithms and computer programs. However, already V. A. Uspensky, a student of A. N. Kolmogorov, spoke in the sense that if the 20th century was a century of energy, then the 21st century will already become a century of complexity. The author shares this point of view.

To operate with this concept, it is necessary to have some measures that allow estimating complexity from a quantitative point of view. The approach of A. N. Kolmogorov³ to the definition of algorithmic complexity can also help here, which, in our opinion, has great methodological strength and points the way to the development of a phenomenological approach in this area, which allows to quantify the complexity and its dynamics for objects and processes of the real world. Especially valuable in the mentioned work of A. N. Kolmogorov, in addition to the formal definition of complexity, is the direct relationship between complexity and information that he established, moreover, the direct expression of the amount of information of a constructive object through its algorithmic complexity. By projecting this formal approach onto reality, an insightful researcher will find conceptual and operational resources for determining – already at the phenomenological level – measures of the complexity of real objects and processes.

1.4. Measures and temporal dynamics of the complexity of the mechanisms of evolution. The Second law of evolution.

Note that the definition and construction of measures of complexity for mechanisms of evolution in real conditions and in certain phases of their dynamics is not an easy task and has not yet been solved. Approaches to it are currently semi-empirical in nature and are largely based on the intuition of the researcher. In our work [1], we presented complexity measures for various mechanisms of evolution and performed their comparison and analysis.

3 А.Н.Колмогоров. Три подхода к определению понятия количества информации. В кн. Теория информации и теория алгоритмов. – М.: Наука, 1987. – С.220.

In the table, as an example, we present the results taken from there for the genetic, neural and communication mechanisms.

OBJECTS OF THE EVOLUTIONARY SYSTEM	MECHANISMS OF EVOLUTION (COMPLEXITY PARAMETERS)		
	Genetic	Neural	Communication
	Volume of genomes (in bits)	Normalized volume of the neural system (in bits)	Volume of the sign («lexical») system (units)
Virus	10^3-10^4	0	0
Bacterium	10^5	0	0
Ciliates	10^6	0	0
Worms	10^6	10^0-10^1	0
Bees, Ants	10^7	10^3-10^4	100
Chimpanzee, Dolphins	10^8	10^7-10^8	10000
Human	10^9	$10^{10}-10^{11}$	From 10^7-10^9 to $>...$

The table shows that the complexity parameters for the genetic, neural and communication mechanisms are, respectively: the volume of genomes, the normalized volume of neuronal systems and the volume of "lexical" systems. It is also seen that over time, as new species appear, an increase in each parameter is observed. At the same time, each of them arises "at its own time", namely, when its predecessor has already, as it were, "exhausted" the intra-system possibilities of its growth. Another conclusion concerns the acceleration of the growth rate of complexity parameters. The analysis shows that if in the early stages of genetic evolution the doubling time of the complexity parameter (genome volume) was more than 60 million years, then the doubling of the communication parameter for humans, judging by the studies of S.P. Kapitsa in the field of human population growth⁴, occurred in a progressive pace (starting from one thousand years in the era of the Neolithic revolution and up to 50 years by the beginning of the twentieth century. That is, the growth rate increased by about 20 times in 10 thousand years). From what has been said, the following conclusions can be drawn.

1. All mechanisms of evolution have one thing in common: the unfolding in time of any of them leads to the complication of the evolving system. This means that in the course of the temporal dynamics of a specific mecha-

nism of evolution, its complexity (estimated by the value of the corresponding quantitative correlate) increases.

2. At the same time, each evolutionary mechanism – the mechanism of evolution through the complication of the system – has its own natural limit. It is, as it were, "programmed" to achieve a certain maximum complexity characteristic of this particular mechanism.

3. If an evolving system approaches this limit (its complication resources are approaching exhaustion), it falls into the so-called "complexity trap", enters a critical phase and "trying to find" other mechanisms that can ensure its complication, and therefore continue the process evolution.

4. In the case under consideration, another one was connected to the genetic mechanism (when it approached its limit) at a certain stage – the neural mechanism and evolution was continued. Then the neural mechanism came close to exhaustion and the communication mechanism kicked in.

Let's summarize what has been said. As far as we can judge from the analysis of the available data, the temporal dynamics of all mechanisms of evolution have common features. They are shown schematically in Figure 1.

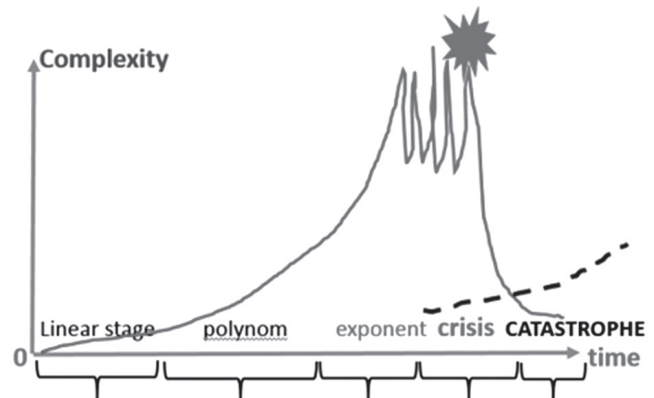


Fig. 1. Generalized dynamics of a mechanism of evolution

Thus, at the initial stage of deployment of the evolution mechanism, the complexity grows linearly in time. This era is relatively calm, predictable development of an evolving system, its "golden age". During this period, the formation of the main system characteristics and determinants of the system and their exit to the stage of dominance takes place.

Then comes the era of polynomial growth in complexity. The system develops its characteristic properties. At the same time, development accelerates, revealing all the potential possibilities of the corresponding mechanism of evolution.

After that, the system enters a phase of exponential growth in complexity. A characteristic feature of the exponential period is that it occurs at the border of the limiting possibilities for the development of the system within the framework of the corresponding mechanism of evolution. This period of complication is poorly amenable to or is no longer amenable to control and management, and critical phenomena begin to grow in the system. Their reason

4 Капица С.П. Феноменологическая теория роста населения Земли. // УФН 166 63 (1996) ; Капица С.П. Общая теория роста человечества: сколько людей жило, живет и будет жить на Земле (М.: Наука, 1999).; Капица С.П. Парадоксы роста. Законы развития человечества. М.: Альпина нон-фикшн, 2009. ; Kapitsa S P Global Population Blow-Up and After. The Demographic Revolution and Information Society (A Report to the Club of Rome and the Global Marshall Plan Initiative) (Hamburg: Tolleranza, 2006, Moscow, 2007).; С.П.Капица. К теории роста населения Земли. УФН, т. 180, № 12, 2010 Сс.1337-1346.

is the internal inconsistency of the evolutionary process: The basic law of evolution requires an increase in complexity, and the need to ensure the controllability of the system with the same necessity limits this growth to an exponential region. Critical phenomena are growing and can become catastrophic for the system. At this time, in the depths of the system (and, possibly, outside of them) there occurs (if it occurs) the birth of a new mechanism of evolution (in the figure it is indicated by a dashed line), with which approximately the same story occurs.

The foregoing is the content of the **Second Law of Evolution** – the Law of the temporal dynamics of the mechanism of evolution.

1.5. Parasitic complexity phenomenon. The Third law of evolution.

From the foregoing, one might get the impression that we imagine evolution as a monotonous process of a steady increase in the complexity of the mechanism of evolution until it enters the critical region. Such a conclusion could be drawn if the “Generalized dynamics of the mechanism of evolution” depicted in Fig. 1 is taken too literally. 1. But in fact, this is not the case, and the picture looks much more ambiguous.

First, reality is arranged in such a way that it seems to “resist” the evolutionary process, which is accompanied by an increase in the complexity of the system. That is, in parallel with the evolutionary processes, anti-evolutionary processes can and do go on in the system. These effects can be traced in every mechanism of evolution.

The following observation refers to the phenomenon of anomalous growth in complexity observed in almost all mechanisms of evolution. The noted anomalous growth can be summed up in one term “inflation”.

For example, in the genetic mechanism, as in any other, the phenomenon of the “complexity trap” operates. One of its manifestations, in our opinion, is the existence of genomes of organisms that are simpler in their general organization than higher animals and humans, but whose genome complexity exceeds that of the human one. For example, the wheat genome consists of approximately 17 billion base pairs, which is approximately 2.5 times higher than the corresponding indicator of the human genome (6.9 billion base pairs). Some species of amoeba generally differ in the colossal length of the genome. Thus, the genome of the amoeba *Amoeba dubia* consists of 690 billion base pairs. There is a large bibliography on this subject. It is partially presented in our work [1]; here we will give only two, in our opinion, the most characteristic references to two remarkable works⁵. However, even they are far from exhausting the subject.

5 Щербаков В.П. Эволюция как сопротивление энтропии// Журнал общей биологии. 2005. 66(3) : 195–211; А. В. Марков, В. А. Анисимов, А. В. Коротаев. Взаимосвязь размера генома и сложности организма в эволюционном ряду от прокариот к млекопитающим // Палеонтологический журнал. №4, 2010. С. 3–14.

The situation is similar with the financial mechanism. Following [1], we take the global volume of GDP as a parameter of the complexity of this mechanism and present the corresponding data from this work. So, for the period 1970–2016. World GDP increased from \$3398.7 billion to \$75212.7 billion and increased by \$71817 billion or 22.13 times. A 22-fold increase in 45 years cannot but look impressive (if not frightening). In more detail financial evolution will be considered in the second part.

Something similar happens in the field of the physical mechanism. In connection with the discovery of the anomalous, time-accelerating expansion of the universe, scientists eventually came up with the so-called lambda-CDM model. This model assumes that in the early stages of the evolution of the Universe (age from 10^{-43} sec to 10^{-37} sec), it underwent a colossal expansion, which led to exponential growth of all spatial scales. This phenomenon is called the “inflationary model”, since the term “inflation” in cosmology means a rapid growth in scale, in which the growth rate is proportional to the value of the scale itself. However, based on the observations of supernovae carried out in the late 1990s, it was concluded that the expansion of the Universe is accelerating with time, and such expansion refers to the present, and not to the early stage of the Universe that took place immediately after the Big Bang. These observations were supported other sources (measurements of relic radiation, gravitational lensing, Big Bang nucleosynthesis). As a result, the analysis of the phenomenon of the accelerating expansion of the Universe led to the need to introduce the concept of “dark energy” responsible for such an anomalous expansion.

Recently, Roger Penrose proposed a new interpretation of this behavior of the Universe, different from the lambda-CDM model. In his remarkable lecture “Seeing Trough the Big Bang into Another World” (“Is it possible to see the previous Universe through the Big Bang?”), he suggested that the early (“post-Planckian”) inflation of the Universe is nothing more than a trace of its previous (!) evolution, which led to the catastrophe (!) of the Big Bang, and the late, modern inflation, accompanied by exponential expansion, is already a consequence of its modern natural evolution.

The author is very impressed with R. Penrose’s model. It fully corresponds to our evolutionary concept. Moreover, it draws attention to the need to analyze the traces of the previous evolution, which led to the catastrophe of the previous World and the emergence of a New One. In addition, it suggests that the Big Bang, which laid the foundation for our Universe, had been possessed with the evolutionary nature identical to the mechanism of our Second Law of Evolution – the law of temporal dynamics. Finally, the above methodology leads to conclusions that clarify the supreme meaning of “dark” energy as the evolutionary factor and so the need for its appearance. Of course, this ideology – with appropriate clarifications

– is applicable not only to the physical, but also to any other mechanism of evolution. This issue will be analyzed in detail in the second part of our work.

The above example and effects from completely different areas, it seems to us, are associated with one property common to all evolving systems, which we called the “parasitic complexity phenomenon”, which begins to manifest itself especially clearly and even dominate at a certain, rather late stage in the unfolding of any mechanism of evolution.

The fact is that **not every increase in the complexity of a system leads to its evolution**. Under certain circumstances, the system gets the opportunity to “accelerate” its complexity to unthinkable values, while practically not evolving, but in the process driving itself into a critical region. We have to state that the source and cause of evolution – the increase in the complexity of an evolving system, sooner or later begins to give rise to crises or even catastrophes in it. As noted above, increasing complexity is just a **necessary condition for evolution**. But, unfortunately, it is not **sufficient**.

Above, we have given examples of a colossal (exponential, “explosive”) growth in the complexity of the mechanisms of evolution with an unimpressive evolution of the corresponding systems. As a result, a situation arises of an uncontrolled, “parasitic” increase in the complexity of the system, which is not directly related to its evolution. This circumstance gives us reason to single out the parasitic component in the complexity of the system and present the total complexity of any evolving system as a sum:

$$C_{total} = C_{evol} + C_{parasite}, \quad (1)$$

where C_{evol} is the part of complexity corresponding to real evolutionary processes; $C_{parasite}$ – parasitic complexity not related to evolution; C_{total} is the total complexity of the system. We introduce the value σ (σ -factor) as a factor in

the efficiency of the evolution of the system, according to the formula:

$$\sigma = \frac{C_{evol}}{C_{total}} = \frac{C_{evol}}{C_{evol} + C_{parasite}}; \quad 0 \leq \sigma \leq 1. \quad (2)$$

Obviously, the σ -factor reaches its maximum value of 1 only in the ideal case, when $C_{parasite} = 0$.

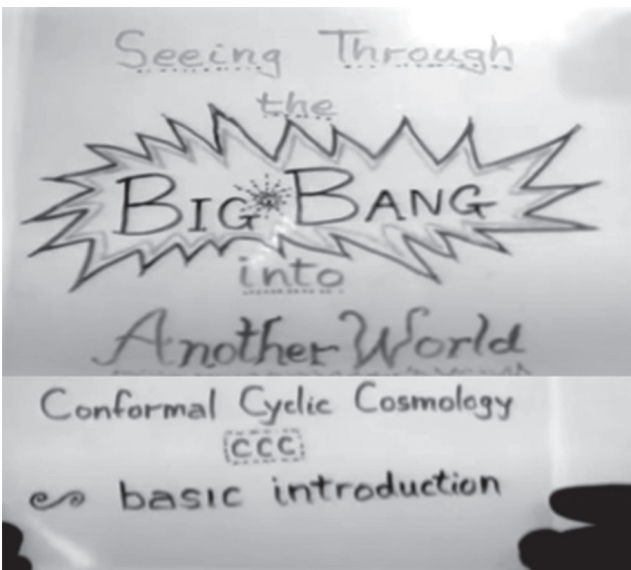
The foregoing gives grounds for the formulation of the **Third Law of Evolution – the law of increasing “parasitic” complexity**, the brief essence of which is set out in the two previous paragraphs.

Part II. LIGHT, GRAY AND DARK SIDES OF BEING

2.1. What is wrong with our financial system?

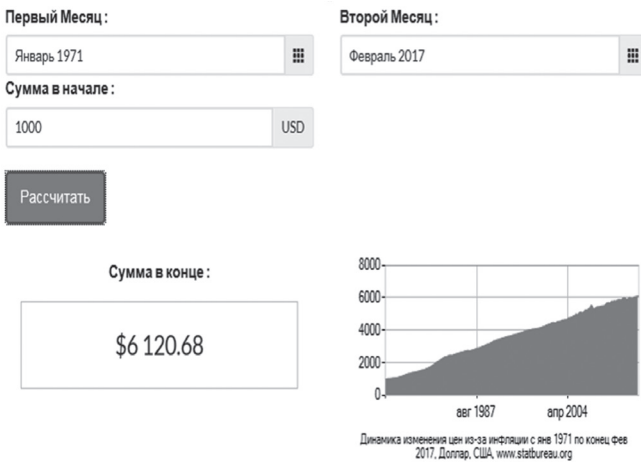
A striking example of the operation of the law of increasing “parasitic” complexity is the behavior of the global financial system over the past few decades. Let’s try to estimate the value of the σ -factor for its main, dominant subdivision, namely, the one that is based on the dollar as the main world reserve currency with its principal and, at the same time, factotum – the US Federal Reserve System.

We will proceed from the assumption that in the financial system the main contribution to the production of $C_{parasite}$ is made by inflation. Of course, in this context, the term “inflation” is used not in the cosmological, but in the financial sense. However, in fact, in this situation, these meanings paradoxically coincide, which leads to the idea of their isomorphism, and that behind this is the same general pattern. Namely, from the law of temporal dynamics and the law of “parasitic” complexity it absolutely unequivocally follows: the complexity of an evolving system will grow in time, and at an ever accelerating pace, however, the evolutionary value of this complexity will decrease in the same proportion, acquiring an increasingly “inflationary” character.



Roger Penrose lectures: «Seeing Trough the Big Bang into Another World»
 (<https://www.youtube.com/watch?v=5IB9m49zUag>)

To estimate the value of the “parasitic” term, we will use the program posted on the website⁶, which allows you to calculate the inflation rate of the US dollar for a certain period online. Let’s calculate this level, starting from 1971 to 2017:



Calculation of dollar’s inflation dynamics for the period “January 1971 – February 2017”

We calculate the efficiency value σ as an “inflationary” ratio:

$$\sigma = \frac{1000}{6120.68} \approx 0.16, \quad (3)$$

where 1000 is the amount at the beginning (January 1971), and 6120.68 is the amount at the end (February 2017), taking into account dollar inflation for this period. This calculation shows that at least **83% of the resources of the financial system during this period were spent on the production of “parasite” complexity $C_{parasite}$** . It is possible that the real value of the σ -factor is actually much smaller, since we took into account only one “parasitic” parameter – the inflationary source of $C_{parasite}$ growth. But even from such a rough estimate, it can be seen that the **“efficiency” of the modern global financial system is extremely low, and if this evolutionary trend continues, it will progressively decrease.**

Of course, there are many questions here. What are the visible and invisible causes of “parasitic” complexity? To what extent is it possible to deal with them in principle? How to increase the σ -factor and decrease $C_{parasite}$? To what extent is it generally possible (if possible) to improve the efficiency of the existing financial system? Who and what does it depend on? No less important is the question: who mainly bears the burden of “maintenance” of “parasitic” complexity and vice versa – who is the main beneficiary of this status quo?

In order to answer these questions, it is necessary, at least very briefly, to dwell on the history of the financial mechanism and its substance – money. In this presentation, we will follow our work [1].

2.2. Brief history of the modern World Financial System.

And what do the laws of evolution have to do with it?

According to history, money appeared about 5 thousand years ago. Around the same time, the first state formations appeared. Since then, the history of mankind has been associated with the history of money. This history is boundless and a colossal and also boundless literature on economics, politics, technology, technology, history, geography, organization, culture, ethics, aesthetics, morality, psychology, medicine, law, forensics, etc., is devoted to it of money. This entire period was associated with the monopoly of the state on the issue of money, management and control of financial processes. However, in 1913 this monopoly was abolished in the United States, where the so-called Federal Reserve System (also known as the **Federal Reserve** or simply **the Fed**) was created, which acts as the Central Bank of the United States, but is a private organization. It was with the creation of the Federal Reserve in the United States that the state’s monopoly on the issuance of money in favor of the Fed was eliminated, which “pulled over” the role of a monopolist in this matter.

The subsequent events (World War I, Great Depression, World War II, the creation of the Bretton Woods system, etc.) suggest some kind of teleology in the creation of the Fed, aimed at constructing the World Financial System in the future – a kind of global financial pyramid, the top of which is the Fed.

The author is far from conspiracy theories – rather, the ideologists, creators and factotums of the Federal Reserve managed to take full advantage of the opportunities provided to them by the vicissitudes of historical development. However, one cannot deny the fact that such a long-term and purposeful political and financial stratagem could hardly be realized if it had not been induced and stimulated by certain objective laws. We refer to these as the Basic Law of Evolution, because the development of the World Financial System was accompanied by a steady increase in the complexity of the corresponding mechanism of evolution, which will be demonstrated below.

It seems to us that the leaders of the Fed step by step realized the new opportunities provided by the private status of a monopoly-producer of the currency of a country like the United States. Already after the First World War, where the United States, without making any special efforts, managed to take advantage of a significant number of its results, it became clear that in the new world, much more closely connected by various kinds of political, economic and other relations, the role of money as a universal agent intermediary between producers and consumers, subjects and objects of the global social scene will increase. And the winner will be the one who will be able to adapt to the new conditions to a greater extent.

In 1933, US President Franklin Roosevelt signed Executive Order No. 6102 on the actual confiscation

⁶ <https://www.statbureau.org/ru/united-states/inflation-calculators?dateBack=1971-1-1&dateTo=2017-2-1&amount=1000>

from the population and organizations of gold located in bars and coins. Thus, the gold standard, if not completely eliminated, was significantly limited. In fact, this was not just a statement of the fact that, due to the greatly increased scale of the economy, gold is no longer able to cope with the function of a money stabilizer, but mainly an action aimed at providing new degrees of freedom in the financial sector to perform various kinds of maneuvers, including speculative. The Great Depression in the United States served as an excuse (or maybe it was the reason?) for the restructuring of the economy under the tasks of dominating financial and political institutions over purely industrial ones.

An exceptional event in terms of the prospects for expanding the influence of the dollar system was the Second World War. One gets the impression that it seemed to have been specially organized in order to ensure the dominance of the dollar in the world. To paraphrase a well-known expression, we can say that if the Second World War had not broken out, then it would have to be invented only so that the dollar would take a dominant position in the world⁷.

Even before the end of World War II, in July 1944, the so-called The United Nations Monetary and Financial Conference, better known as the Bretton Woods Conference, took place in Bretton Woods (USA, New Hampshire). It was intended to lay the foundations for the post-war financial world order.

In particular, the Bretton Woods system was established – historically the third in a row, according to which a fixed price was set for gold (35 dollars per 1 troy ounce). As a result, the United States, represented by the Fed, gained world currency hegemony. In fact, this led to the emergence of the Gold Dollar Standard of an international monetary system based on the leadership of the dollar. In the middle of the 20th century, the United States owned 70% of the world's gold reserves. The dollar has become the base of currency parities, the predominant means of international settlements, foreign exchange interventions and reserve assets. The national currency of the United States, and in fact – the currency of the Federal Reserve became at the same time world money.

It is characteristic that the USSR, despite the fact that it was a participant in the conference and signed the Bretton Woods agreements, did not ratify them in the future, which severely limited the integrity of the world financial system and, therefore, the hegemony of the dollar. In our opinion, this became one of the main reasons for the beginning of the Cold War, since it objectively narrowed the area of the World Financial System based on the dollar as the main reserve currency.

In 1976, at the conference of the IMF countries in Kingston (Jamaica), a new – the fourth world monetary

system was approved. It attempted to eliminate some of the contradictions of the Bretton Woods system. The gold standard was abolished and the demonetization of gold was legally completed: its official price, gold parities were canceled, the exchange of dollars for gold was stopped. Now purely financial substances are almost completely freed from the restraining bonds of matter in the form of gold, which further stimulated the activation of their "non-material", "subjective", "informational" properties. The role of the SDR was declared as the main financial instrument of the IMF⁸, but the dollar still remained the leading world currency. Thus, a highly effective symbiosis of the Fed system and the US state was finally formed. The national idea and national treasure of the United States – the dollar continued its victorious campaign in the World, since now almost all the necessary institutions have been created to form the global World Financial System. The dollar, which became the world currency, more and more definitely won the place of the main substance and subject of the financial mechanism of evolution. The "financial postmodern" has begun.

The consequence of this status quo was the possibility of using dollar-based global financial instruments to solve the US's own problems. The reverse side of this opportunity was the conviction of the United States in its exclusive role in the world. This role, which manifests itself in completely different forms (and in our time even in those that resemble *idée fixe*), in fact, is based on the exclusive financial status of the Fed – the status of the principal of the global financial dollar pyramid. At the same time, it is necessary to realize that this pyramidal structure crowned by the Federal Reserve, performing the functions of an evolutionary factor, can exist only in conditions of constant growth of its distribution area.

From some detached point of view, this process looks identical to the modern inflationary-exponential expansion of the Universe, which we mentioned above. Therefore, the processes of globalization of the world that began in that era actually demonstrated nothing more than a natural form of evolution of the World Financial System itself, subject to our First, Second and Third Laws. So the laws of evolution really have something to do with it. And the historical role of the United States and its Federal Reserve was reduced to supporting and accompanying all the tools and institutions that ensure this evolution.

The foregoing formed the basis of the new World Order. This expansion was limited only by the existence of a socialist system associated with the USSR, which was not part of the dollar pyramid, which became the main reason for its dismantling, which ended with the liquidation of the USSR in 1991. Thus, all obstacles to globalization, and in our terminology – unrestricted «inflation» – were swept away. "To develop", in the sense of fighting with

⁷ The author reminds that he is not based on conspiracy theories. Our conclusions are invariant with respect to the facts of the existence or non-existence of a «world conspiracy» or a «secret government»

⁸ <https://www.imf.org/en/About/Factsheets/Sheets/2016/08/01/14/51/Special-Drawing-Right-SDR>

restrictions, was no longer with anyone, because there were no longer any borders. This gave Francis Fukuyama reason to imagine that history was already over⁹.

But in fact, it has only just begun.

After all, the next decade has convincingly demonstrated that in reality we are dealing not so much with the end of history as with the beginning of a certain new stage in it. Which confirms the well-known idea that history is still ahead of thinking. For us, this new stage is associated with the formation of the financial-information-network mechanism of evolution.

2.3. Financial-information-network (FIN) mechanism and assessment of its complexity

We emphasize that the onset of certain stages of the Production Mechanism occurs, as they say, “in due time” and correlates with the corresponding social and technological phenomena of an innovative nature. In this regard, we note the chronology of the latest stage of financial, as well as informational and network evolution.

We associate the beginning of the newest historical stage of the financial phase with the creation of the Fed in 1913, after which a number of social upheavals of a global nature occurred (World War I, the collapse of the Russian Empire and the creation of the USSR, the Great Depression in the USA, World War II, the creation of the Bretton Woods system, the collapse of the British Empire). We attribute the beginning of the information phase of the FIN stage to 1974 and associate it with the first world energy crisis. A detailed justification for such an accurate dating is given in our work [1]. The beginning of the network phase of the FIN stage – around 1990 – we associate with the creation and spread of the Internet. We attribute the unconditional approval of globalization as the main trend of world development to 1991 and mark it with the liquidation of the USSR.

It is necessary to note the content heterogeneity of the factors FIN-stage, namely: the Internet is an information technology factor, the collapse of the socialist system is political, and globalization is socio-economic. All of them contribute to determining the measure of the complexity of the evolutionary mechanism and its dynamics.

Above, we analyzed the financial aspects of complexity, which concentrate the socio-economic and political components.

In recent decades, information and network aspects have become especially active. At the same time, in

scientific papers devoted to the theory of complex networks, their complexity, as a rule, is not analyzed quantitatively.

At best, a reduction to some computational scheme is proposed, for which the computational complexity can be estimated, which is then compared to the complexity of the analyzed system. It is clear that in a literal setting to use such approaches in our case is not entirely appropriate. Based on the phenomenological understanding of complexity, we choose the total amount of information circulating in the Web as an integral measure of the complexity of the FIN-stage of evolution.

This indicator has recently been actively scanned. In particular, according to IDC, the amount of data stored on the Internet approached 487 exabytes (487 billion GB) in 2009 and was projected to double within about a year and a half. But already in 2012, IDC announced that in 2011 the total global volume of data created and replicated by humanity exceeded 1.8 zettabytes (1.8 trillion GB), more than double the previous forecast rate. According to further IDC forecasts, the amount of data on the planet will at least double every two years right up to 2020, which has happened and continues to happen in our time.

There are two important aspects to this process. The first concerns the actual volumes of information that humanity is no longer able to process and comprehend. The second is related to the fact that, according to some estimates, most of the information in circulation is actually parasitic in nature and does not contribute to the evolution of mankind. In these aspects, the laws of evolution find their manifestation, prescribing as a necessary condition an increase in the complexity of an evolving system, and as the volume and rate of growth of complexity increase, an uncontrolled growth of its parasitic component, which does not contribute to the evolution of the system, but constitutes an unbearable load on its functional subsystems. Thus, **the global information system of mankind, along with others, has now acquired a crisis, almost catastrophic character.** And indeed, due to the network, inflationary nature of modern civilization, these **critical phenomena are characterized by universality, they are broadcast to all the main aspects of its functioning and generally threaten the existing World Order.** This is manifested in the permanent crises of the global financial system, international, interstate and humanitarian relations, etc.

So, if we rely on the data growth rate of information on the Web as a quantitative correlate of the measure of complexity of the FIN-stage of evolution, then we should conclude that **the world has entered a critical – exponential period of growth in the complexity of its FIN of the evolutionary mechanism.**

As for crises, there is much more data here. For example, in the financial sector. As noted in [1], in the period from 1970 to 2013, there were more than 400 major

⁹ As early as 1989, Francis Fukuyama’s essay «The End of History?» appeared in The National Interest. (Francis Fukuyama, «The End of History?»), and in 1992, based on this article, his book saw the light of day under the eloquent title «The End of History or the Last Man» (Francis Fukuyama. The End of History and the Last Man. 1992. Free Press, P. 418;), without the question mark in the title. In this regard, the author cannot but recall the ironic expression of a much more insightful writer – M.E. Satykov-Shchedrin from his «History of a City»: «History has stopped its course.»

banking, currency or debt crises. Internet data on this subject go off scale¹⁰.

Critical phenomena have swept over the Network itself. Recently, global hacker attacks have been extremely intensified, so they are already talking about full-scale information wars, cyber wars and hybrid wars. Cyber troops are being created in the military and special structures of various countries.

We will return to the analysis of critical phenomena, since their common internal source, as it seems to us, is the uncontrolled increase in the complexity of the corresponding systems and the resulting impossibility of their effective management. In fact, in our time, global governance has been reduced to one parameter – the volume of the dollar issue, and elementary control theory affirms the fatal inevitability of crises in a system of great complexity, controlled by just one parameter.

Thus, we come to a statement of the **main contradiction of the modern era**, which we formulate as follows:

“On the one hand, there is a **need to increase the complexity of the world system to ensure its evolution**, and on the other hand, and **at the same time, there is a need to reduce the same complexity** due to the impossibility of effectively managing a system of such great (exponentially growing) complexity that the “Network of Networks” acquired.

Analysis of the main contradiction thus formulated allows us to write down the symbolic relationship between the controllability of the system and its complexity:

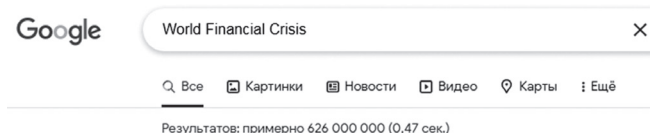
$$\langle \text{Controllability} \rangle \cong \frac{1}{\langle \text{Complexity} \rangle}, \quad (4)$$

Formula (4) demonstrates that the controllability of a system is inversely proportional to its complexity; that is, the more complex the system, the more difficult it is to manage. In the limiting case (at the singularity point) $\langle \text{Complexity} \rangle \rightarrow \infty$, therefore, $\langle \text{Controllability} \rangle \rightarrow 0$. Thus, when entering the exponential zone of complexity growth, the system falls into the “**exponential uncontrollability hole**”, that is, it becomes practically uncontrollable, which serves the main cause of the crisis phenomena developing in it, which can even lead to a catastrophe and the collapse of the system.

2.4. System structure of an evolving object. Consequences of growth of parasitic complexity.

The stated facts and the conclusions following from them regarding the control of evolving objects located in the exponential well are depressing. Obviously, the simultaneous satisfaction of such defiantly opposite requirements as those formulated above, basically a

10 As of October 13, 2022:



contradiction, is impossible. But there is no hope that the problem will “solve itself” either. Therefore, it is necessary to propose some measures. For example, temporarily sacrifice evolution in favor of the controllability of the world system. Or take a risk and surrender to the will of the evolutionary elements. Or vice versa – to more carefully analyze the sources of parasitic complexity, localize them and take vigorous measures to eliminate them or at least reduce their influence. Or something else. To begin with, at least analyze the considerations we have outlined about the causes of modern crises.

However, the author is quite conscious of the fact that the world bodies exercising global governance (if any) are not at all obliged to know our theory. At the same time, an analysis of world processes allows us to conclude that the mentioned bodies, apparently, are guided by ideas, if not literally coinciding with ours, then, in essence, very close to them – if not in form, then in anyway, in terms of content. Moreover, it seems that they even know something more, with which we congratulate them. We are led to this conclusion by the options for overcoming global crises. In [1], we considered and analyzed several such options. Let’s list them.

Option number 1. Controlled chaos.

Option number 2. Modification and transformation of the MFS (doctrine of “controlled complexity”).

Option number 3. Restriction of the integrity of the MFS.

Option number 4. Cosmic evolution.

Option number 5. Scientific and technological progress.

Option number 6. Quantum information and quantum civilization.

Due to space constraints, we are not in a position to analyze all these options in detail here. Therefore, we refer the reader to our work [1], and here we will say a few words only about option No. 1 – controlled chaos.

We have to admit that it is the most practically developed and even actively used in practice in our time. His main method is based on the empirical observation that if instabilities of not very clear origin arise in a complex system, then a quasi-random “chaotic” effect is introduced into the system to combat them. Experience shows that during such an operation, the system very often “calms down” for a while and its parameters stabilize. The doctrine of “controlled chaos” was developed in the USA. Its authors usually include Zbigniew Brzezinski (author of The Grand Chessboard: America’s Dominance and Its Geostrategic Imperatives), Gene Sharp (author of From Dictatorship to Democracy), and Steven Mann, who published in 1992 in the National War College Journal in Washington, D.C. “Chaos Theory and Strategic Thought”. All of them are related to the “color revolutions” in the

countries of the former USSR, Yugoslavia, and then in Egypt, Tunisia, Libya, Syria, as well as in the post-Soviet countries (Ukraine, Georgia, Kyrgyzstan, ...). Numerous examples of the application of the “controlled chaos” method can be observed in our time..

Unfortunately, it should be recognized that “controlled chaos” is apparently not a good solution to the problem, and the stabilization of the world order is getting worse and worse, since its means and methods are themselves very poorly controlled and therefore fraught with unpredictable consequences up to a global catastrophe, which make all “measures taken” meaningless. Especially dangerous here is that this catastrophe can happen quite by accident, as a result of the action of the notorious “human factor”.

As for the other options, theoretically, as far as we know, they are being developed. However, the real and tangible practical results of this activity are unknown to us.

2.5. Crisis of “Corona” and its evolutionary-systemic interpretation.

As it was said at the beginning of our article, in late 2019 – early 2020, a global pandemic caused by coronavirus SARS-CoV2-COVID19 arose and began to develop. The first outbreak was recorded in Wuhan, China in December 2019. Already on January 30, 2020, the World Health Organization declared this outbreak a public health emergency of international concern, and on March 11, a pandemic. Thus began the global social crisis. It was aggravated by the fact that the population in its mass, and, apparently, most governments had little or no idea of the causes, threats of this disaster and effective methods of dealing with it. As a result, panicky rumors spread, outbreaks of social destabilization spontaneously arose, and so on.

In fact, as of mid-March 2021, over 120 million cases of the disease have been registered worldwide; more than 2.6 million people have died and about 91.2 million have recovered, and COVID-19 has begun to decline. True, new strains of it began to appear along the way, new outbreaks were observed in different regions, but they no longer had a global character.

However, the COVID-19 pandemic has had severe social and economic impacts, including the largest since the Great Depression global recession and massive famine affecting some 265 million people.

This has led to the postponement or cancellation of numerous sports, religious, political and cultural events, and widespread supply shortages have been exacerbated by panic buying.

Schools, universities and colleges were closed either on a national or local basis in 172 countries, affecting approximately 98.5% of the world’s school and student populations.

Numerous sporting events have been canceled or postponed, including European national championships in

almost every sport; The European Football Championship 2020 has been postponed for a year, as well as the 2020 Summer Olympics, which were supposed to start on July 24 in Tokyo.

Numerous cultural events such as festivals, exhibitions and competitions have been canceled or postponed, including the Moscow and Cannes International Film Festivals, the Farnborough Air Show, the Eurovision Song Contest 2020, etc.

The COVID-19 pandemic – we call it the Corona Crisis – has dealt a severe blow to the economies of all countries. According to experts, the most serious economic crisis since the Second World War was expected.

The authorities in some countries have tried to provide massive financial support to companies, families and the most vulnerable groups. In total, since March 2020, according to some estimates, about \$12 trillion has been spent on these purposes.

However, the infusion of public money did not save the economy from falling, and sometimes collapse due to the cessation of business activities, travel, disruption of supply chains, and so on. The fall in global GDP, according to the Organization for Economic Cooperation and Development (OECD), was expected at 4.5%.

A report from the United Nations Conference on Trade and Development (UNCTAD) released at the end of November 2021 warned that the crisis could push another 130 million people out of poverty and worsen inequality and social protection.

In the first nine months of 2020, global hours of work fell by 11.7 percent, equivalent to the loss of 323 million permanent jobs, according to the United Nations International Labor Organization (ILO). The reduction in working hours resulted in \$3.5 trillion in revenue loss, or 5.5% of global GDP.

It seemed that the Corona Crisis brought the world to the threshold of an unprecedented catastrophe, but to everyone’s surprise and massive eschatological expectations, nothing of the kind happened.

At the end of March 2020, the Chinese media called the coronavirus pandemic the beginning of the de-dollarization of the world. The Chinese edition of The 21st Century Business Herald published an article in which the journalist outlined the economic problems of the United States during the pandemic, and also explained why the COVID-19 crisis could take away the status of the world reserve currency from the dollar, that is, lead to de-dollarization of the world. Over the years, China has assumed an increasingly important role in trade relations, but the dollar has only strengthened its position as the dominant reserve currency. Despite the Belt and Road Initiative, which was supposed to promote a new model of international cooperation and development, China’s share of the trade sector, denominated in yuan, was only 14%. Since the 2008 crisis, the volume of non-bank debt in US dollars

almost doubled, while the share of other major currencies stagnated or declined. The Corona crisis, as many hoped, would intensify de-dollarization processes. But that didn't happen either.

The question arises: why?

It seems to us that the Corona Crisis, despite its humanitarian and dramatic nature, was used by the ruling circles in the way it should have been used – in a completely pragmatic vein, namely as an element of “controlled chaos”. In what follows, we will use such an interpretation of “controlled chaos” that is consistent with our evolutionary approach.

There is no doubt that the Corona Crisis introduced a disturbance into the world socio-economic system, and, unlike, so to speak, the standard disturbances of “controlled chaos”, it no longer had a local, but quite a global character. At the same time, it remained manageable to an acceptable extent, since the actions of governments, one way or another, “on average” coincided with the desires and aspirations of the peoples and were aimed at protecting against a danger that was seen as quite mortal. As usual, the fear of death was the most effective factor.

Consciously or due to circumstances – it does not matter, but the measures taken in their mass contributed to the reduction of the “parasitic” complexity of the global economy and finance. Let's list these factors:

1. Decrease in activity in the field of show business, sports, tourism, other aspects of the “consumer society”.
2. The growth of unemployment, the reduction in the total amount of working time.
3. A sharp increase in distance, online methods of work and education.
4. Hunger.
5. Ban on mass gatherings.
6. Lockdowns.
7. A sharp decline in the activity of stock markets.
8. Reducing the environmental burden.

No matter how cynical and inhumane it may seem at first glance, but an elementary analysis shows that in each of the above factors one can feel and designate in words a “antiparasitic” component. Thus, the World Financial System with the dollar at the head has withstood and, as it seems to us, even somewhat strengthened. And this despite the seemingly completely inflationary multi-trillion dollar emission during the pandemic¹¹, designed to compensate for business losses and stimulate business activity.

Despite the intuitively felt “antiparasitic” nature of the factors listed above, it is not possible to more or less correctly quantify their effect. Anyway, the author does not know how to do it. We have to state only the most general features of what happened, namely:

*“CROWN” showed the characteristic evolutionary features of society: **on the one hand**, the presence of “official”, “permitted”, “legal”, “legal”, “permitted”, etc. etc. , and **on the other** – not quite permitted, and even directly prohibited forms of social structure, hostel and functioning..*

2.6. Fundamental structure of an arbitrary rather complex system

Let's move on to generalizations.

In connection with the foregoing, there is a strong feeling that there are some hidden parameters operating in the world in general. They seem to be affected sometimes, but not always. This requires some special approach and special tools with which you can manage situations within certain limits. Let us try to carry out a small analysis of the controllability of systems, if possible, without resorting to standard methods of control theory.

Controllability (*manageability*), first of all, implies that the subject of management has tools to control the parameters of the managed object. For this, of course, it is necessary that they be known. Then it is necessary to find out which of these parameters are observable quantities and which are not. For the classical assumption of absolute observability has long been refuted. The idea of observability, which was developed in detail for the first time in the history of science when substantiating quantum mechanics, is, on the whole, very productive from a methodological point of view as applied to the description of complex processes. As A. Einstein noted in his discussion with W. Heisenberg in 1926 during a discussion of the foundations of quantum mechanics¹², it is impossible to build a theory only from observable quantities (although without them, no scientific theory is generally unthinkable). Finally, only the theory itself should determine which of its quantities are directly observable and which are not. In particular, in quantum mechanics, states are, generally speaking, not directly observable quantities. The latter correspond to operators of a certain type, acting in the state space and whose eigenvalues correspond to the values of observables.

Thus, in the world, and hence in cognition, there is an “invisible”, that is, something that cannot be directly observed. This gives us grounds for recognizing the role of faith in cognitive-intellectual processes, which, in the words of the Apostle Paul, is “certainty in the invisible”¹³.

However, it should be recognized that the deeper epistemological reasons for observability are not disclosed in quantum theory either. We believe that these reasons lie in the phenomenology of the complexity of manifested being. Any reality, being an object of observation (in other words, entering into a “subject-object” relationship),

11 According to some reports, the amount of money supply “under COVID-19” in the United States amounted to 5.9 trillion dollars, which, in turn, is 38% of the total money supply, and is also equal to the volume of emission over the past 40 years.

12 Гейзенберг В. Физика и философия. Часть и целое. Пер. с нем. – М.: Наука, 1989. – Сс. 191-196.

13 “Faith is the substance of things hoped for and the certainty of things not seen.” St. Ap. Paul, Heb 11:1.

manifests its essence in some limited forms that can be perceived by the subject. The manifested complexity of the noted forms (potentially it is infinite – after all, matter has no boundaries of divisibility, so to speak, “deep” and does not allow control of all its interconnections and mediations) turns out to be compensated, consistent with the “perceptual-sensory” apparatus of the perceiving subject or device (which, basically the same). The mechanism of complexity self-compensation seems to us to be such a universal “universal” of the “subject-object” relationship that, perhaps, it should be attributed to the basic principles of system analysis.

The next question concerns the real possibilities of the control system to obtain the necessary data, process it within an acceptable time frame, develop a rational decision based on them and take effective measures for its implementation. All this should take place in real time and take into account the specifics of controlled objects and control subjects, their inertia, etc. Unfortunately, the listed operations for an object located in the exponential well, as a rule, are on or even beyond the capabilities of the control system. We can say that the complexity of the controlled object at a certain stage of evolution begins to exceed the capabilities of the control system. At the forefront here, as we see, are also the relations “subject-object”. The structure of these relations is quite bizarre, since what we call the “object of control” constantly “goes beyond” and begins to show the features of subjectivity, finding completely unexpected substantial resources for this. Thus, in order to conduct a correct system analysis of relations of this kind, we believe it is necessary to somewhat clarify the concept of a system, which consists in explicitly taking into account the action and interaction of the basic components of any system, namely: <Structure>, <Substance> and <Subject>. A detailed presentation of this clarification is presented in our works¹⁴.

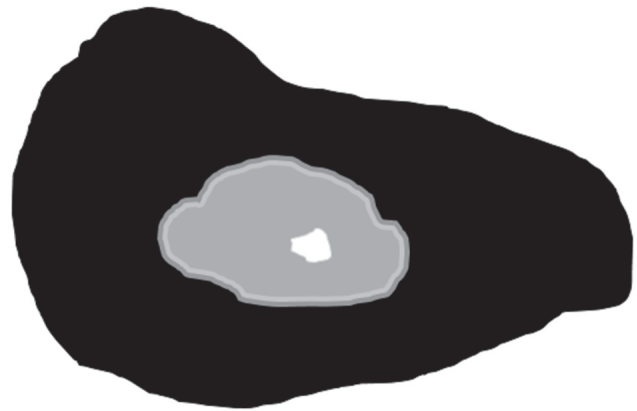
So, in an arbitrary rather complex system, due to the limited nature of its resources, which always takes place, at a certain stage of evolution, a structure consisting of three zones begins to appear:

controlled (managed) zone;
uncontrolled (unmanaged) and
intermediate between them is weakly (conditionally) controlled (managed).

In terms of observability, it sounds like any sufficiently complex system has an observable (“light”) part, an unobservable (dark”), and an intermediate (“gray”) region

between them. Schematically represent this in the form of a partly “Manichaeian” picture:

LIGHT, GRAY AND DARK SIDES OF THE EVOLVING WORLD



The noted effect manifests itself in systems and subject areas that are completely different (practically, in all) in their origin and nature. Recently, K. V. Anokhin noted the effects of dark matter and dark energy even in the structure and operation of the human brain¹⁵. In our further work, we will show how these effects manifest themselves in the linguistic consciousness of a person and the human community. Now let’s move on to examples and start with the evolution of the physical world, which we already talked about in the first part.

According to the data of observations of the Planck space observatory published in March 2013, interpreted taking into account the standard cosmological model Lambda-CDM, the total mass-energy of the observable Universe consists of 4.9% ordinary (baryonic) matter, 26.8% from dark matter and 68.3% from dark energy. At the same time, ordinary matter from interstellar gas, masses of stars, planets, etc. The concept of dark matter was introduced to theoretically explain the problem of hidden mass in the effects of an anomalously high rotation speed of the outer regions of galaxies and gravitational lensing. The composition and nature of dark matter is currently unknown. The most likely candidates for the role of dark matter particles are hypothetical weakly interacting WIMP particles that do not participate in electromagnetic interactions. We mentioned dark energy above; it is responsible for the anomalous (“inflationary”) expansion of the Universe. According to some hypotheses, the expanding power of the dark energy will continue to increase indefinitely until it surpasses all other forces in the universe. In this scenario, dark energy eventually breaks all gravitationally bound structures of the Universe, then surpasses the forces of electrostatic and intranuclear interactions, breaks atoms, nuclei and nucleons and will

14 Широков В.А. Системні ефекти при лексикографічному описі мови. С.25 //System Analysis and Information Technologies 16-th International Conference SAIT 2014. Kyiv, Ukraine, May 26-30, 2014 Proceedings. Nataliya D. Pankratova (Ed.). В.А.Широков. Лингвистика и системный подход. Часть I. Бионика интеллекта. 2015. № 1 (84). С. 3–12. V. Shyrokov. “Language. Information. System” – К.; Наукова думка., 2021, 158 с.. Free access at: https://www.ulif.org.ua/system/files/blok-shirokov_book.pdf

15 Темная материя и темная энергия мозга. К В Анохин. (“Dark matter and dark energy of the brain”). <https://www.youtube.com/watch?v=HtZLZz1LLGM>

destroy the Universe in a Big Rip. Unless, of course, the World Mind chooses any other scenario for It.

Apparently, it is not given to us to become participants or even witnesses of such outstanding events. But science at the moment asserts precisely the described structure of the matter of the Universe, 95.1% consisting of dark matter and dark energy, which, in general, corresponds to the above evolutionary ideas, however, up to some terminological inversion, the essence of which becomes clear from the following table.

PHYSICAL TERM	EVOLUTIONARY ANALOGUE
Baryonic matter	Light matter
Dark matter	Gray (Deep) matter
Dark energy	Dark matter

Similar reasoning is applicable to the Internet – the World Wide Web (W3 – WWW), in which the following structure was built in the process of its evolution::

Usual Web ("Light Web") – is available to users using standard browsers;

Deep Web, Deep Net – a set of Web pages of the World Wide Web that are not indexed by search engines. Part of the deep web is the Deep Web, hidden web, which consists of web pages that are dynamically generated in response to queries against online databases:

DarkWeb, DarkNet – segments of the Network, although connected to the general Internet, but requiring special software tools for access. Darknet (DarkNet, also known as the "Hidden Network", "Dark Web", "Shadow Network", "Dark Web") is a hidden network, the connections of which are established only between trusted peers, sometimes referred to as "friends", using non-standard protocols and ports. This also includes the so-called Anonymous Network, which represents a system of unconnected virtual tunnels that provide encrypted data transfer. To designate the Darknet, the Anonymous symbol is sometimes used – the mask of Guy Fawkes, a participant in the so-called Gunpowder Plot (England, 1605).

In recent years, the term "Deep State" has gained considerable popularity, which is most often used to refer to a certain part of the state apparatus and structures affiliated with it, pursuing an independent, unofficial, law-bound policy in their group (clan, oligarchic, etc.) interests. The Deep State is often considered a conspiracy theory term, though it has taken on an almost official meaning lately. In the given meaning, the deep state acts as an opponent or even antagonist of the official state, although their interests and goals may well coincide. Often the border between them is almost indistinguishable. As for the Dark State, this phenomenon undoubtedly takes place, although the term has not yet gained popularity. In our understanding, the Dark State is illegal, including international entities, pursuing their policy with harsh and

even terrorist methods. As such, one can name the Islamic State (ISIS, ISIS, DAISH), the features of the Dark State have national mafia structures, etc.

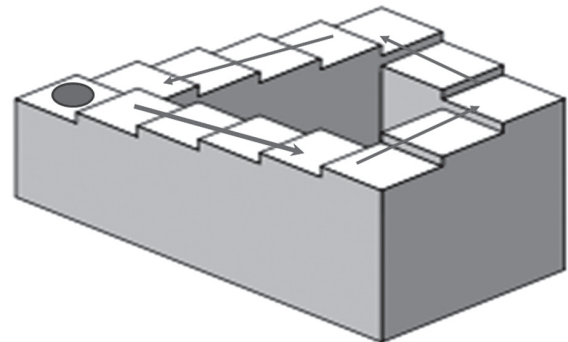
In the course of evolution in areas not regulated by law (such as crypto-currency activities, new types of weapons, cardinal private scientific and technological discoveries), one should also expect the emergence of structures capable of usurping important state functions and, de facto, playing the role of the Dark State.

It seems to us that a similar three-zone structure can be found in any object that is at a certain stage of evolution. It would be very interesting to analyze from our point of view the three-zone structure of the genetic mechanism, where, using the example of Amoeba dubia, we can expect the value of the σ -factor at the level of only one percent and, accordingly, the volume of gray and dark genetic matter at the level of 99%. We will not undertake this analysis here, leaving this work to competent professionals in the field of genetics, if our approach arouses their interest.

Let's move on to the analysis of the three-zone structure of money using the example of the dollar, the most advanced on the evolutionary ladder of the world currency.

2.7. "Dark matter" of dollar

If the image of a ladder came to us when we started talking about the evolution of the dollar, then let us continue this metaphor using the image of a ladder developed by Lionel and Roger Penrose¹⁶:



This paradoxical image – "Up the stairs leading down" – shows how to draw the impossible in the real world on a flat picture.

"Aber sieh, – as Franz Kafka noted in the famous parable "The trees", – sogar das ist nur scheinbar¹⁷"

The history of the Fed and further the IMF expressively says that it was all devoted to strengthening the influence of the dollar, expanding its geography, so that it became planetary, increasing its functionality, including purely speculative ones, which as a result far exceeded

16 GUIDE: The author himself put a red dot on the picture to indicate the beginning of the movement and red arrows to indicate its direction. So that the Reader does not go wrong by mistake.

17 «But see, even that is only appearance».

the functions of ordinary money. But then this story became more and more like running up the Penrose stairs. The more the possibilities of the dollar increased, the more universal the financial instruments associated with it became, the faster the “parasitic complexity” associated with it grew.

Its original monetary matter grew with new substances – numerous derivatives, special drawing rights and many others.

In the dollar, criminal relations began to be hidden more and more often and more sophisticatedly. The volume of a kind of “dark matter” and “dark energy” hidden in it has grown steadily and continues to grow.

The mentioned substances, without making a significant contribution to world development, give a large, constantly growing and in no way compensated burden on the world production and economic system.

Formally speaking, the dollar is currently in a superposition of three main states:

**ordinary legal money (light part);
derivatives, SDRs, cryptocurrencies, etc.(deep part);
illegal money or money with an illegal (criminal) origin (dark part).**

Symbolically, this can be represented using the formula:

$$\Psi = \alpha_{LI}\Psi_{LI} + \alpha_{DE}\Psi_{DE} + \alpha_{CR}\Psi_{CR}, \quad (6)$$

where Ψ_{LI} , Ψ_{DE} , Ψ_{CR} – functions of **light, deep and dark states**; α_{LI} , α_{DE} , α_{CR} – corresponding weight coefficients – numbers showing how much the corresponding state contributes to the superposition Ψ . The formula (6) demonstrates the logical structure of money, consisting of **Light, Gray (Deep) and Dark zones**. But unfortunately, there are no markers of “parasitic” factors in it, so finding the values of weight coefficients and establishing “golden proportions” for them, and even more so, effectively managing their value is almost impossible.

Truly, as they used to say in the old days: “Money does not smell!”.

For Rome, as everybody knows, this idyll ended by catastrophe.

On this major note, we conclude the presentation of the main content and proceed to concluding remarks.

CONCLUDING REMARKS

As can be seen from the above, the author’s evolutionary approach works on the entire range of the Universe. At least in all cases of its application, it gives more or less correct qualitative results.

And what is even more valuable, in our opinion, is that the main concept of the theory – complexity – is, in principle, a measurable quantity for which it is possible to develop even formalized quantitative models.

What else we consider valuable in this approach is that it allows, within the framework of a unified methodology, to analyze the phenomena and processes of both natural and social history. This gives reason to once again think about the fact that we live in a single, very connected, interdependent world. Therefore, as John Donne wrote: “...never send to know for whom the bell tolls; it tolls for thee”.

And finally.

The three-zone structure (*Light, Gray and Dark zones*) can be considered an established and universal fact of our evolutionary concept. And the “Corona” Crisis”, as a representative of a series of acute global crises of our time, really turns out to be connected with the *Dark Matter* of the financial-information-network mechanism. Unfortunately, this crisis is not the last one. No sooner had it ended than a new one began, in the epicenter of which was Ukraine.

The author would not like to draw eschatological pictures, but, as we have seen, Evolution is a consistent and unsentimental person. In the arsenal of its tools, catastrophes occupy a very honorable place.

Let’s hope that the World Mind will choose any other scenario for us.

