

# **THE PROLEGOMENS TO THEORY OF HUMAN STABLE EVOLUTIONARY STRATEGY AS IDEOLOGY OF RISK SOCIETY AT AGE OF CONTROLLED EVOLUTION TECHNOLOGIES**

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## **ПРОЛЕГОМЭНЫ К ТЕОРИИ СТАБИЛЬНОЙ ЭВОЛЮЦИОННОЙ СТРАТЕГИИ ЧЕЛОВЕКА КАК ИДЕОЛОГИИ ОБЩЕСТВА РИСКА В ЭПОХУ ТЕХНОЛОГИЙ УПРАВЛЯЕМОЙ ЭВОЛЮЦИИ**

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### **Резюме.**

Стабильные адаптивная стратегия Homo sapiens является суперпозицией трех различных адаптивных информационных массивов: биологического, социокультурного и технорационалистического модулей, основанных на три независимых процесса генерации и репликация адаптивной информации – генетической, социокультурной и символической наследственности (трансмиссии). Третий компонент SESH ориентирован равно на адаптивном преобразовании окружающей среды и собственно носителей SESH. С появлением технологии High Hume, риск достиг экзистенциального уровня значимости. Экзистенциальный уровень техногенного риска является, по определению, риском эволюционным, так как ведет к актуализации возможного исчезновения человечества как вида. Возникновение биоэтики должно рассматриваться одновременно и как формирование современной (трансдисциплинарной) научной концепции и как социокультурная адаптация, контролирующая идентичность человека в процессе глобальных эволюционных трансформаций и выполняющей, следовательно, функцию самосохранения.

The metaphor technology (selection) of « directed by human evolution» [1,p. 169] by Nikolai Ivanovich Vavilov was the starting point for the original system of theoretical postulates as the theoretical core of the concept of evolutionary technological risk, that reached existential significance at the beginning of the 3rd millennium (in the vicinity of the evolutionary singularity zones). Source of evolutionary risk turned out to be linked with the nature of human beings, and the evolutionary process has acquired a theological meaning and significance. It happened after combining categories of object and subject of technology of «directed by human evolution» in the Homo sapiens itself.

In the investigations we consistently viewed human stable evolutionary strategy (SESH) from three perspectives.

1. The nature of the carrier (substrate) of adaptive information - biological, socio-cultural and techno-rationalist adaptive modules. This aspect is equivalent to various ways of adaptive information replication - genetic, socio-cultural and symbolic inheritance.

2. The nature of the relationship between the generation and adaptability - Darwin-Weismann modus and Lamarck modus. At Darwin-Weisman modus in the process of distribution of newly generated adaptations the horizontal transfer (diffusion, contamination as a result of communication) is significantly inferior to its specific weight to the vertical one, i.e. inheritance from ancestors to descendants. The modus is based on the genetic code and is provided by the so-called Eigen's hypercycles. At Lamarck's modus the horizontal transfer (diffusion, contamination as a result of communication) is comparable as regards of its specific weight with the vertical one. Modus is based on socio-cultural code and is provided by systems of mimesis (cultural heredity) and speech (symbolic inheritance)

3. The nature of the various co-evolutional adaptations, which results in their integration into a single evolutionary stable strategy - co-evolutionary Informatics and co-evolutionary semantics. This aspect is equivalent to the evolutionary mechanism of overcoming the conflicts between the various adaptations.

Replication of praxeologically oriented knowledge is carried out in the framework of techno-rational module through mechanisms of symbolic inheritance, and replication of value priorities is carried out within the socio-cultural unit accordingly, sociocultural inheritance (cultural traditions). If the main «appointment» of interest is a material survival of carriers of SESH (evolutionary efficiency), the «purpose» of values (evolutionary correctness) determined by their ability to ensure the preservation of self-identity.

So, stable adaptive strategy of Homo sapiens is a superposition of three different adaptive data arrays: biological, socio-cultural and technological modules, based on three independent processes of generation and replication of an adaptive information – genetic, socio-cultural and symbolic inheritance. This, third component SESH focused equally to the adaptive transformation of the

environment and carrier a stable adaptive strategy. Thus, its aspect of the implementation SESH can be called informational ones.

Another aspect of the realization of SESH functions (co-evolutionary semantics) is a time-varying code of correspondence between members of pairwise co-evolutionary ligaments. (Some researchers have used to refer to this phenomenon, the term semiotic cooptation [2;3]. This term used as equivalent ones to (co)evolutionary semantics in our research. Accordingly, we consider as equivalent terms co-evolutionary informatics and semiotic selection, because in the latter case, biological and socio-cultural line of modules achieved by mutual selective pressure. The role of the operator is specifying rules of corresponds the biological and socio-cultural, socio-cultural and techno-rational, and biological information arrays. This function is performed by a system objectified interests (praxeological oriented knowledge), or by the system of subjective values (psychological predisposition).

So, in accordance with the information/semantic dichotomy of mechanisms inter-module coevolution the influence of culture on the structure and composition of the populations of Homo sapiens, and on the pool of High Hume technological schemes is divided into two separate types:

1. changes in the frequency of certain genes, and the prevalence of specific technologies and their applications (information coevolution) and
2. the general increase in the level of genetic polymorphism and technology diversity (semantic co-evolution)..

Note that the semantic mechanism of communication between the modules in a biological time scale is very fast and immediately affects the complex traits. Because this change of structure communicative and co-evolutionary relationships (gene-cultural co-evolution and techno-humanitarian balance) can be regarded as discrete. As a result, for example, genetic polymorphism for a particular complex of DNA sequences is conserved and, after elimination of the relevant socio-cultural type to genome. With the change of the socio-cultural predisposition complex total variability of the genome should accumulate. Indeed, if the examples fixation or elimination of certain structural genes in the population under influence of socio-cultural factors are relatively few, correlation between the levels and patterns of genetic polymorphism and sociocultural types undoubtedly exist [4]. More rapidly evolving autonomous element of the co-evolutionary pair becomes sense-factor for the partner. Semantic co-evolution is the discrete acquisition of adaptive significance of individual alleles by changing socio-cultural types and manifested as an increase in the genetic variability of populations of Homo sapiens and domesticated species parallel to socio-culture -genesis

Pattern of the impact of culture on the organization of the genome is distributed from actual human genome to the genomes of «cultivated» (domesticated) species, and its existence now depend on the human evolution. The genome of these species formed sub-genome providing communication with biological evolution as an evolving system of social and cultural predisposition [5, p.30]. Thus, a comparison of the results of adaptability investigation by methods of

biological and cultural anthropology can serve as next empirical falsifier of the SESH concept. The evolutionary correctness is main parameter that links the two dataset.

Like the system of values and meanings priorities and predisposition evolutionary correctness in the biological time scale is capable to discrete fluctuations in instrumental regard. Thus, evolutionary risk may increase discontinuously to the existential level, not only as a result of technological disaster, but also because of the conjugated with technological progress changes in system of values priorities and semantic connotations.

However, on the other hand, such object is able to spontaneously increase system complexity, and at different stages of socio-techno-anthropogenesis leadership take on its individual components. About 350-400 years ago because of the transmutation of the sociocultural component of SESH technological civilization arose. Permanent expansion of the controlled by Homo sapiens «socio-ecological niche» and the escalation of risk techno-anthropogenic effects are features of this type of civilization. The maximum value of the evolutionary risk reached in the case of antiparallel changes dynamics of evolutionary efficiency and evolutionary correctness. In this case, the intrinsic value of the risk extremely rapidly crosses the boundaries of the «physical» sense ( $R_{int} > 1$ ). Reaching this point is irreversible semantic destruction (destruction of value priorities, and concept of humanity and human nature especially).

Two specification seems quite logical. Adaptability of SESH is generally defined by reproduction of the relevant information files, and by semantics of intermodular co-evolutionary relationship. In view of this, for example, the proliferation of new system of socio-cultural innovation can't be implemented by a simple type of contact contamination (diffusion), but requires the inflow of biological carriers of corresponding co-evolutionary semantics.

This conclusion was confirmed by empirical observations of the relationship between the spread of dairy farming and the invasion of ethnic groups - gene carriers of constant lactase activity. As has been shown previously this type of process was a simple process of socio-cultural borrowing and imitation [6].

Periods of abrupt increase in the value of the evolutionary risk obviously coherent periods of «scientific and technological revolution» and the indigenous reconstructions of dominant value systems in society. As a result the structure of co-evolutionary connections between the elementary adaptations of different modules and actual adaptive meaning of each element is destabilized and prone to unpredictable stochastic fluctuations.

The system of prevailing in society value priorities has a structure including several levels: personal (unconditional) interests, group (conventionalist) standards, abstract and theoretical (universal) values [7, p. 348;8]<sup>1</sup>. Here, above all,

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<sup>1</sup>Two publications cited; first item is classical publication on social ethics of Lawrence Kohlberg, the second onesis study on experimental neuroscience, that after half-century by neuromorphology methods empirically substantiated biological substrate base of L.Kolberg philosophical constructs.

in the area of group norms and predispositions on specific attributes humanization/dehumanization possible relatively rapid reconstruction, that radically changing the semantics of the cultural module and biological or techno-rationalistic ones. As a result, the adaptive evolution landscape of biological or another module (adaptive significance of its individual elements) is quickly reformatted. An example would be a radical revision of value priorities with respect to traditional and non-traditional sexual orientation in the Western mentality from 1970 to 2015. Human values practically are not involved in this not yet completed the process of transformation of socio-cultural and psychological predisposition, but the result will have a systemic importance for the trend of the future of human evolution.

As can be surmised among three levels of value priorities and corresponding socio-cultural predispositions (personal interests, group standards, and human values) namely group standards most susceptible to evolutionary transformation. Individual interests (as most closely associated with the living requirements biological deterministic module). Universal values propriety (as most abstract, distant from the objective reality and close to rationalistic module concepts) are more stable elements of this set.

However, the effect of perturbations group ratios (attributes of humanization/dehumanization in particular) diffuses through evolutionarily semantic gear to a biological module and destroying, in turn, semantic matching rules of the module with the two remaining modules. By virtue of this secondary impact of elements of the biological module subject to a system of objective «interests», and then at other levels of socio-cultural module of SESH. There is a fixation of a certain set of group norms and thereupon - revision of universal values as the latter are a reflection of the projective group norms and individual interests.

Therefore, some of the biological adaptation to a new social context becomes a selectively neutral or maladaptive element, i.e. genetic load, and, conversely, some selectively harmful or neutral components of the genome acquire adaptive value. With regard to technological innovation, in their totality, they are clearly aimed at fragmentation of biological adaptive complex separation of its constituent interlocking adaptations (such as sexual and reproductive functions) on independent cultivated patterns.

A scientific and technological revolutions (a paradigm shift) has investigated some time ago (by Thomas Kuhn at classic monograph, 1962), but the evolutionary significance of socio-cultural transformation begins to become clear only now. Meanwhile, socio-cultural inheritance is also capable of a radical overhaul of its structure and composition.

An additional complicating circumstance acts relative independence of each module, and, for example, «macro-mutation» of cultural and psychological predisposition is aimed primarily at preserving structural distribution of subcultures within a given civilization type, and then, on the selection of appropriate elements of the biological module of SESH.

However, co-evolutionary semantics of SESH is characterized by relative balance of gene-cultural («gene-culture co-evolution») and techno-cultural («techno-humanitarian balance») modules and lack of direct formatting impact of techno-rationalist module to remaining (biological and socio-cultural) ones. As results configuration of the entire system not exclude uncontrolled jump to the existential level of risk.

Previously we have formulated conditions of such semantic stability in terms of socio-humanitarian knowledge: the human desire to ultimate ideal («Per aspera ad astra – Through thorns to the stars») serves by the core of West mentality. It is complemented by the second intention of the sacred and, at the same time, putting limits to this ideal («Ad imaginem suam ad imaginem Dei -The image and likeness of God») and the emphasis on God's chosen people, the absolute priority of the uniqueness of the human person («Unus ex nobis – One of Us», says the God of Adam). Thus the actualization of the desire to bring together the world of things and the world due receive the nature of the movement to the Absolute, ultimate goal («Omega Point», as Teilhard de Chardin called it) [9, P. 11, 506; 10; P. 206].

The objectified and exempted from metaphorical argument comes down to ascertaining. The trend for the release of the social role and social status person from the preformation by properties of biological substrate (a genome) is a criterion of social (and evolutionary) progress and belongs to the set of basic predisposition of mentality of technological civilization in its Western form. This trend, in turn, is balanced by an irrational fear of a possible intervention in the human psyche from the outside, violating the free will of the individual and causes him to act contrary to his «human nature». The trend can be traced at least since biblical times and legends about werewolves and vampires, through gothic novels of 18<sup>th</sup> century to modern thrillers and science fiction at most recent years.

The system of socio-cultural balances to ensure the identity of Homo sapiens has been very stable, but only until the birth of technology-driven evolution. At this point, the ontological antinomy «evolution versus intelligent design» have been completely overcome by West civilization. As a result, limited technology tools for transformation of reality proved to surmountable, at least in potentio. Semantic code humanization/dehumanization remains the only integrated into the current SESH stabilizer to global evolutionary process. However, the controller itself is susceptible to considerable stochastic fluctuations, and opened for technological interventions and, therefore, requires continuous monitoring.

With the advent of High Hume technology, risk has reached the existential significance level. The existential level of technical risk is, by definition, an evolutionary risk as possible leads to the genesis of disappearance of humanity as a species (but not necessarily – disappearance of intelligent life and the noosphere in general).

When the actual evolution becomes the object of the rationalistic management and/or manipulation, account specific features of the social response to scientific and technological development are essential in determining and

prognosis of innovational risk. These factors stem from the substantial foundations of human consciousness and culture, and are the result of the previous biosocial evolution.

Changing the techno-cultural balance as adaptive response of the sociocultural component of SESH to describe above processes led to the transformation of classical science to post-academician science. As part of the same global-evolutionary transformation has to consider and the emergence of bioethics as a form of modern (transdisciplinary) scientific concept that combines the features of the humanities, classical scientific theory and social utopia.

Not so long ago E.Koonin very observant diagnosed curious feature of explanatory models of modern evolutionary biology: they are narratives with more or less teleological component. Consciously or not, in explicit and implicit logic constructs "to occur ..." inevitably present in these models. A language of these narratives is best suited to describe the evolutionary processes and phenomena, and to create verifiable hypotheses, although it is contrary to the classical (not modern, transdisciplinary) methodology of science [11, p. 473].

This is even truer for that phase of the evolution of man and mind, which and is characterized by a universal process of rationalization and technologizing evolutionary process. As an example of such explanatory model proposed here is an evolutionary model of risk. It is combined in accordance with the principle of subsidiarity of objective-scientific (evolutionary efficiency) and subjective humanities (evolutionary correctness) criteria for the value of evolutionary risk. The proposed concept is largely methodological. In other words, it is a meta-theory. It will, we hope, is able serve as a heuristic incentive to formation of available empirical and social verification concrete scientific hypotheses [10].

This total consideration is, in turn, determines the civilizational and evolutionary function of bioethics. As a priori it is clear the each of the three modules of SESH should to have its own system of self-preservation. In the biological module it is the most well studied and is referred to as immunity. In techno-rationalistic module such system is the concept of verification and falsification of reliability of scientific knowledge. At socio-cultural module the system of pre-dispositions regulate human identity in the global-evolutionary transformation and performs the function of self-preservation.

The asymmetry of semantic communication defines (from the denoted object to denoting symbol) the disparity of composition of socio-cultural module. This dichotomy is due to the process of socio-cultural self-identification and implies the correlation to each other causal (cause - effect) and semantic (object and its sign) binary oppositions. In the case, determinate by itself culture elements can be designated as protected by ethical and legal standards itself culture object of self-identification of Homo sapiens (humanity). On the contrary, other the elements are at its core stimulated by culture biological and genetic developments. It can regarded as just a symbol of human attributes (human nature), that open to manipulation and control by technology. Naturally, the most stable and evolutionary plastic organization of human evolutionary strategy, will be the case

when the self-identification system of sociocultural module is basically the same as objective knowledge on the essence of anthropogenesis. This knowledge generated by techno-rationalistic module.

At the highest level of analysis of the problem of evolutionary risk and its components come into conceptual field of the anthropic principle. One of the parameters of the mathematical model of population growth («Doomsday equation») becomes a universal constant human genesis at Universe, also derived from the characteristics of the socio-cultural and biological evolution [12].

On accordance with the Foerster`s equation (law of hyperbolic demographic growth of Homo sapiens [13]) about population growth in the last 10 thousand years governed by the hyperbole. In other words, volume of global human population growing with the increasing acceleration and about 2025 will become infinite, i.e., lose its physical meaning. This will mean the end of the evolutionary history of Homo sapiens, although it does not necessarily mean the death of intelligent life in general. Rather, it involves the passage of a certain evolutionary singularity point, the achievement of the magnitude of the evolutionary risk of a value close to 1.

In Foerster`s equation present parameter  $T^*$ , which the author has been calculated empirically and, in their estimation, was approximately  $2 \cdot 10^{11}$ . Brandon Carter in the above-cited paper considers this option as a member of a pool of world constants, determine the appearance of the humans and the formation of their capacity for reflection of natural laws and civilization development. In his understanding of this quantity is a function of the amount of contained in the human genome information ( $10^{10}$  bits) and the length of a generation (20 years). By reducing this parameter is below the threshold, the transition from the biological to the socio-cultural, and then technological phases of anthropogenesis becomes impossible.

Both phenomenological interpretation and explanatory model of Foerster`s equation are in full agreement with the views of the organization and formation evolutionary risk SESH defended in this study.

On the one hand, population growth increases the frequency of techno-rationalist and socio-cultural innovations/adaptations and speed of their spread in the population as the co-evolution of these processes in accordance with the Lamarck mode flows through contagious mechanism. This extends the limits of ecological niches available for mastering Homo sapiens and creates conditions for further acceleration of population growth [14, p.8-13;15, p. 68-70].

On the other hand, the integrity of the structure of three-modal SESH implies a certain inter-module communication correspondence between the elements of the biological and socio-cultural modules (co-evolutionary semantics). After exceeding some threshold number of adaptive socio-cultural elements in comparison with the pool associated with them biologically determinate signs of adaptive evolution efficiency drops sharply. (This conclusion is still valid even under condition ambiguity of semantic connections between the modules).



It is manifested in the accumulation of genetic and cultural imbalances, and inconsistencies to social and cultural environment and psychophysiological features of organism (evolutionary load). In the first approximation, the threshold of the fracture zone of the curve of demographic growth is achieving volume of replicated by social and cultural inheritance of adaptive information to a value that comparable to the amount of genome information. This situation allows two fundamental and alternative evolutionary scenarios.

The first («hard») decision means technologization of biological human evolution, i.e., «enhancement» of *Homo sapiens* using genetic engineering, etc. technology. This solution is fraught with the completion of the evolutionary history of humankind (loss of self-identity of generations of carriers mind).

«Soft» solution involves creating a radically transformed version of evolutionary semantics for regulating gene-cultural co-evolution and techno-humanitarian balance. The newly emerged coevolutionary semantics is to provide best match of the biological and techno-rationalist modules to so-called universal value priorities, preserving self-identity of carriers mind.

Bioethics is largely methodological concept. In other words, it is a meta-theory. It, we hope, can serve as a stabilizer system for attribute identifiers identity of the person, as well as a system of cultural and mental predisposition formed based on them. This system maintains the current version of evolutionary semantics in a technological complex within the «universal values» to ensure the preservation of humanity in the process of permanent development of technologies addressed on the subject of the evolutionary process.

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