Modern Horizons of Evolution: from Nature, a Human Being and Technology to Technogenic Man-Measurable System

Evgeny KAMENSKY
Southwest State University, Kursk, Russia
E-mail: kamensky80@mail.ru

Irina ASEEVA
Southwest State University, Kursk, Russia
E-mail: irinaaseeva2011@yandex.ru

Vicktoria BELKINA
Southwest State University, Kursk, Russia
E-mail: viktoria2206.1995@mail.ru

Abstract. Nowadays the issues of understanding the technogenic elements of environmental structure of human life and activities in the framework of socio-humanitarian knowledge are beyond the focus of scientific research. The article presents author's understanding of the phenomenon, which we define as Technogenic Man-Measurable Systems (TMMS) in its most futurological aspect, reflecting, however, the existing trends in the development of scientific and technological progress.

Keywords: Technogenic Man-Measurable Systems (TMMS), Technosphere, Anthropic principle, Hybridization, Synergetics

Introduction

The issues of understanding the status and importance of the technology in the socio-cultural contexts of human life and activities have a certain history in scientific and philosophical thinking. However, the problems of studying human environment are traditionally concentrated in the framework of natural sciences and other specialized areas of knowledge, taking into account its environmental (in the broadest sense) and biological parameters. For example, environmental sociology can be understood as a relatively new field of scientific inquiry in addressing the problem of balancing the social factor as an element of the environment and the necessity of considering its impact on an individual and the society.

In this type of scientific and social space the limitations of the approach to the problem of integrating technogenic phenomena into natural and socio-cultural contexts of spaces of human life and activities is obvious. The fragmentation of scientific research results makes it difficult to form a holistic viewing of these processes, provoking turning to interdisciplinary methodological and explanatory constructs, the formation of which is currently being carried out, but it is still not sufficiently acknowledged and approved, although it is certainly promising.

1. It is sufficient to analyse the difficult path of the Theory of Complexity in Russia. This theory is better known here as Synergetics. Methodologically important issues of Synergetics foundations and its possible approaches in different areas of science can be found in the works of V.G. Budanov [14]; S.P. Kapitsa, S.P. Kurdyumov, G.G. Malinetsky [24]; K. Mainzer [28]; I. Prigogine, I. Stengers [33]; V.S. Stepin [35]; H. Haken [20]; D.S. Chernavsky [17].
2. The works that reflect the adaptation of the topological theory to socio-humanitarian and interdisciplinary knowledge are essential for the study (see, e.g. [10-13]).
3. Certain aspects of complex forecasting and modelling in relation to the state and the development of technogenic and other transformations of human environment and human being future are being developed (see, e.g., Benjamin et al. [4]; Bostrom [9]; Kirk [25]; Kurzweil [26]; Waldeman [39]; Kamensky [23]; Boev E. & Kamensky [8]).

4. Special attention should be paid to the works in which the concept of the technosphere as a part of the noosphere is distinguished (V.I. Vernadsky [38]; K. Popper [32]; M. Heidegger [21]). However, none of the approaches suggested in the works of these authors has been accepted as a universal one by the scientific community. Although the importance of universalism is obvious, it still remains a marginal area of scientific methodology and practice.
In this paper the most general, but, nevertheless, as it seems to us, rather significant philosophical and methodological outlines of understanding the dynamics of the development of technical and technological complex connected with human life and involved in the contextual processes of human environment transformation are presented.

Research Methodology
Socio-humanitarian paradigm of today's world, tending to interdisciplinary, problem-oriented, not subject-oriented fields of knowledge in its ultra-modern trends of development, continues to use orthodox, traditional doctrines of explaining and interpreting new anthropotechnical phenomena illustrating the trends of hybridization of different systems, however. TMMS as a product of new types of relationships of 'living-nonliving', forming atypical for each system characteristics and effects can be referred to such phenomena nowadays. Nevertheless, there is almost no comprehension of technogenic elements of environmental structure of human life and activities, in particular in the framework of socio-humanitarian knowledge. These issues are addressed in the field of philosophy of science and technology on a larger scale, but they still remain marginal in the scientific community. We believe that, first of all, this is due to the interdisciplinary nature of these explanatory models, immaturity of their methodological and conceptual apparatus that makes them open and vulnerable for 'criticism' of the orthodox representatives of different branches of science.

Results
We also believe that in view of the above mentioned theories and concepts the problem of technogenic development and transformation of human environment in the most generalized form can be illustrated by the following provisions:
1. Technology, being a product of human activities, is an indicator of cultural evolution of a human being throughout the whole historical and socio-cultural development. Technosphere products are associated with the development of a human being as a species, being a cause, a tool, and a result of human intellectual evolution.
'Anthropological turn' as a relevant characteristic of the current time lies in the increasing trends of anthropotechnical hybridization reflected in the ideas of transhumanism. Despite the fact that the representation of this 'turn' can be traced in other contemporary social phenomena (such as transgender and homosexuality, the popularization of which is becoming an important feature of modern society), it is easy to notice that it is typical for the developed countries with powerful technological potential capable of modelling non-biological scenarios of human reproduction in a homogeneous world. Consequently, the focal point in this case is also a technogenic factor of human evolution and non-obvious vectors of human future development, initially perceived as independent, will exist due to the technical and technological progress on closer examination.
2. The processes of the unification of technological, socio-cultural, and personal spaces imply that all of them adapt to the models of technology 'ontology'. For example, now the vital developments in the field of the management of people and the objects of non-anthropic and non-social sphere are actually based on the principles of algorithmic presentation of the activities of social groups and individuals in similar way to technical systems in which the main characteristic is their functionality. Hence, a mechanistic approach to a human being as a set of utilitarian qualities and his utilitarian and functional potential without taking into account a complex creative characteristic of a personality and his individual characteristics. Similar

processes can be observed in relation to the culture of management, organizational culture, and social culture.

3. The very culture of modern consumer society is based on the fetish of innovations in engineering and technology as the main consumption product. As a result, because of the particular complexity of the technology, it is attributed with true social and anthropic qualities, which is possible only as a simulation of these characteristics at the present level of progress, however. Conversely, there is a counter trend: a person himself becomes mechanized by the analogy with technogenic subjects, which facilitates a kind of dialogue between technology and a human being. In other words, it is difficult to make a human being from a robot, but it is much easier to make quite the opposite. Hence, there is a simplification of the essence of the anthropic subject; this comes into conflict with his self and other latent existential contents of a personality which have not been reliably studied. As a result, in today's society an uncontrolled increase in the cases of frustration, deprivation, and other psychosocial disorders occurs on a massive scale.

So, the anthropological turn of modern civilization probably lies in the crisis of the consumer society, the crisis of postmodernity based on the enormous achievements of the technical and technological development of the current stage, which gave a person more free time reducing the degree of self-preservation efforts. The whole history of human development is the history of the technological development when, becoming more complex in the direct proportionality, it facilitated the struggle of humanity for survival in the natural environment, transforming both this very environment and the methods of interaction of the society with it. In fact, we are talking about the formation of material culture as it is, expressed in its peak achievements reached by the phenomenon of civilization of a particular type.

4. It is obvious that currently 'over-optimization' (N. Taleb) of social system is taking place, which leads to its destruction. Social immunity is disappearing, unpredictable existential risks (N. Bostrom) are growing, and searching for a new paradigm of existence is becoming urgent. In this case it seems that a throwback to the past orthodox grounds is impossible since progress achievements have become an integral part of our lives and they are our environment. To destroy the environment means to destroy a modern human being and this intention is 'decadence' (F. Nietzsche).

5. We can assume that human achievements have formed 'a super-environment' and now, in view of its complexity, this environment is objective, and a human being as a subject should be simplified. Two macro-scenarios of further development are obvious: either a human being will progress intellectually, becoming more complex according to the mentioned trends, that is simply impossible on a mass scale in the conditions of pragmatic consumer ideology of the time or a human being will become a 'One-Dimensional Man' (after H. Marcuse), with a distinct functional in a particular area of social and professional practices, by means of which he will adapt to the environment in which he lives and carries out his activities.

Therein lies the main paradox of the situation: initiated and implemented by a human being technical and technological progress as a product of the intellectual evolution triggers the regress of the very humanity destroying human adaptive potential. In this aspect, the ideas for new foundations of social stratification are becoming relevant. They are reflected in the ideas of a 'Creative Class' and the similar ones but, in fact, they go back to Plato's ideas about the ideal social structure based on the power of intellectuals-philosophers.

Apparently, the only way of correcting the situation is to create artificial conditions for restoring and improving 'social immunity' of a human being, his adaptive structures as the guarantor of the preservation of subjective autonomy. However, nature, probably, activates the natural mechanisms of correcting the destructive tendencies through the descriptively recorded phenomena of the transformation of pathologies, normal distribution and the like. These phenomena are related to the processes of self-organization of the systems which are the subject of trans-scientific areas of modern knowledge, but which are not understood to this day. New

diseases, wars and other disasters may act as unpredictable convergent effects, risks of our time, but perhaps they stimulate the process of restoring natural harmony despite their catastrophic values in the world people conscience. There are proponents of these viewpoints both in scientific and in futurological journalistic literature.

6. The consumer society as the product of the postmodernity of technogenic civilization can achieve balance and order only bringing together 'the principles of life' of a human being and technology, harmonizing these principles. It is possible to destroy this type of society as a stage of human evolution only from the outside through the external links of the system. However, if the society is developing in a similar global environment of the global world system (with respect to its characteristics), then there is probably no objective factor leading to a crisis of this type of social organization. Circular determination starts to work. Under these conditions, the only thing we can rely on is the existence of a human being as his fundamental potential, his creative and dynamic essence which is self-determined 'from inside'. He is a kind of important cause capable to stimulate self-development regardless of any circumstances.

Then it is possible that these trends will be broken from inside, if singularity which is not connected with technical and technological progress but defined by unlocking a fundamental human potential, the boundaries and the content of which are absolutely not studied to this day occurs. But the logic of life tells us that this can most likely happen only by means of its stimulation by technical (technological) methods. Moreover, this can occur in different scenarios.

7. In our opinion, being widely advocated today the ecological approach as opposed to the technogenic one is doomed to remain a utopia if it does not take into account the problems of technological development as it implies devastation of intellectual evolution of humanity which is intimately connected with technological development.

The main conclusion that can be made by assessing the current situation of the development of society, a human being and technology is as follows: the technosphere occupies more and more space between 'the world of society and a human being' and nature at least through its technogenic products that mediate this relationship.

For example, we can travel in the mountains but in a car, or we can enjoy the sounds of nature but in audio recording, etc. The characteristic feature of this time is that the current achievements in technical and technological progress interfere in the very essence of the biology of life, changing the true natural processes but still in accordance with its natural mechanisms. This is the main principle of anthropotechnical hybridization consisting of technical replication of natural biological processes. However, for example, in accordance with the ideology of transhumanism, it is probable that through achieving singularity, when uploading consciousness to virtual networks radically different from the existing principles of 'life' of post-human will be observed; according to N. Bostrom at this stage of the development of human reasoning a prediction of these principles is impossible.

Discussion

So, we will try to outline our vision of the phenomenon which we call the technogenic man-measurable system in its most futurological aspect which, however, reflects the existing trends of the development of scientific and technical progress. First of all, let us operationalize this phenomenon.

We believe that man-measurability originates from the very ideology of anthropocentrism and humanism, enclosing a human being in the subject matter of comprehension by a human being himself, and most importantly, in the terminology of Protagoras considering a man as "the measure of all things". In this case, if we look at the issue at least from the origins of the fundamental ideas of Renaissance Humanism, it is possible to speak about radical man-measurability, putting anthropic subject in opposition with nature. Modern paradigm of

humanism, based on the integration of scientism and subjectivity in the sense of postnonclassical models, as we have already said, is represented, for example, by Synergetics. V.I. Arshinov and V.G. Budanov [1, 61] suggest that man-measurability relates to the problem of understanding the ontology of synergetic systems on the basis of postnonclassical methodology, for example, by the analogy with quantum processes understanding.

V.I. Arshinov and V.G. Budanov argue that a new unified worldview can and should be built in the context of the paradigm of the complexity of the world and a human being, nature and human existence enrooted in nature, involved in it, and therefore in balanced relationship with it; human existence constructs in its collective becoming another 'manmade' nature of technology and social institutions [1]. We suppose that this viewpoint reflects a truly synergetic aspect of the problem, which lies in mentioning nature-measurability and man-measurability of modern reality. However, the theory of the balanced relationships of human existence and nature (not in its cosmological sense), at least the nature of the Earth in the conditions of its current state and the trends of scientific and technological progress and the evolution of human intelligence raises a number of questions [16]. Here there is rather a tendency of man-measurable restructuring of nature.

A human being rather changes nature through technology, than destroys it provided that this is not about pathological scenarios of the sterilization of the planet due to technological catastrophes, industrial and other man-made disasters or similar anthropotechnical causes. This assertion is based on a rather trite idea that all living organisms, and even noncellular protoforms of life, to which viruses can be referred today, transform nature. In this case, these processes are considered natural. For example, virologists say that viruses control open-ocean streams, they are responsible for the formation of some rocks consisting of the remains of plankton which died from a viral infection, which significantly affects physical and other parameters of the planet. However, we still believe that a technogenic scenario is the most likely one. And this is the reason of our interest in the analyzed issue of modern trends of the development of technogenic sphere and its integration with the contexts of the existence of the anthropic subject, in which it was previously represented but in a different, instrumental form.

We believe that man-measurability is a category denoting, apparently, an assessment of the object from person's perspective of involvement, participation, and complicity. That is 'human assessment', but only considering a person as a subject of this assessment. In this case it is necessary to remember about the so-called anthropic principle in all its interpretations, the analysis of which is given in the scientific literature (see, e.g., Polozova [31]; Barrow and Tipler [3]; Carter [18]; Boev [7]; Arshinov [2]; Budanov and Aseeva [15]).

V.I. Arshinov and V.G. Budanov [1] note that the cybernetic understanding of the 'human-computer' system reduced it to the information processing system, i.e. a system of symbol manipulation based on a set of rules. But then, the same cybernetic perspective of the evolution of this system resolving into a progressive linear displacement of a person and his full replacement by a computer appears.

Even N. Berdyaev [5, 6] wrote that the means of life often substitute for the goals of life; they can occupy so much human life space that the goals of life eventually and completely disappear from human consciousness. And it occurs on a grand scale in our technical epoch. Of course, technology for a scientist making scientific discoveries or for an engineer inventing something can become the main content and the goal of life. In this case, technology as cognition and an invention receives a spiritual meaning and refers to the life of spirit. But the substitution of the goals of life by technical means can imply depreciation and extinction of the spirit. And so it happens. A technical instrument is heterogeneous in its nature both for those who use it and for the purpose it is used for. It is heterogeneous for a human being, human spirit and meaning. Currently, the representatives of the newest forms of romanticism, ecological approach,

environmentalism and similar branches of science use these arguments in their reasoning of anti-technocratic positions, and it is difficult not to agree with them.
However, the current state of the problem analysis illustrates new approaches and models of understanding, based on the search for universal system qualities of anthropic and technical systems. In particular, V.I. Igonin [22, 38] suggests that 'a technical system' and 'a human system' are the forms of energy existence. After this follows the recognition of 'a technical system' as a subject of 'man-measurability' as a result of understanding the energy unity of 'a subject' moving in its progressive development and a technical system which he creates. The self-organization of the subjective energy-technical system goes in the direction of the energy-technical enhancement of the space of its energy state.
At the same time, it seems that this viewpoint, though developing the ideas of perpetual motion in the constructs of development through self-organization can be regarded as one of the modern images of the stated by G. Leibniz assertions of the basic levels of classical science, which made specifically stable pendulum an object of scientific interest (see, e.g., Prigogine [34]).
In the modern truly synergetic understanding a TMMS can be represented as a dynamic non-equilibrium system. We mean that in the case of integrating in the process human activity and complex analytical (or another, but usually computer) equipment the status of controlling subsystem transfers from an anthropo-biological subsystem to a technical one or vice versa; it occurs swiftly, according to the current objective or even task, which reflects this the process as a process of operational status change of the control parameter (or even of the order parameter). In this case this process can accompany TMMS work both within a predetermined tunnel of the objective (the attractor) and in the space of bifurcation with the highly ramified objective tree (the operational choice situation), for example, in multiaspect predictive planning of particularly complex systems evolution without defining the desired (specified) scenarios of such development.
Thus, such activity presupposes the potential presence and reaching an indefinite number of bifurcation points which require operational decision-making not only on the basis of predicting the determined scenarios based on machine extrapolation, but also on the basis of intuitive or other latent non-formalizable mechanisms for defining objectives and decision-making by the subsystem 'man'. In such a complex interaction a transition of the subsystems between two base statuses (controlling and instrumental) without the possibility of statically-stable definition of any of them for the subsystems will be observed. It is likely that a nonlinear pendulum or other oscillatory kind of the parametric dynamics of hierarchical structure of TMMS without destroying its hybrid ontological content will be observed.
The outlined process can be described with the introduced by us category of 'the horizontal hierarchy' which represents a dynamic response of a static hierarchical system in a specific space-historical period. The opposite is also possible, in some cases for a number of specific classes (kinds) of systems a static vertical hierarchy is no more than a characteristic feature of horizontal hierarchy within a specific period if we rely on at least the proposition of 'perpetual motion in nature'.
In our opinion, at this stage of the development of interdisciplinary knowledge it is quite difficult to determine whether the proposed constructs are nonlocal methodological or they are ontological characteristics of the systems. But it seems to us that they are topical in both senses for TMMS in particular. TMMS will always be ontologically non-equilibrium but at different points of time it may have different internal factor structure (configuration of subsystems) represented only by two macro-types of vertical hierarchy as its static characteristic at a particular point of time: 'anthropo-biological subsystem- technical subsystem' and vice versa. It is possible that there may be moments of transition without clearly identifiable status indicators of subsystems in the bifurcation points of objective defining and decision making (choice) concerning the directions of the development (activity). The change of the operational status

allows keeping the necessary level of the subjective order of the system optimally organizing specific linear processes within the system during its dissipations with the environment within the current attractor.

Therefore, we can assume that the phenomenon of horizontal hierarchy is an indicator of the dynamics of vertical hierarchical structures or systems in general, or, at least, of biocoenosis or certain populations of species in them. In complex systems a struggle for the controlling status of one of the parameters can occur. It is possible that a dynamic state that allows existing operational status change of two or more parameters not only as controlling parameters, but also as order parameters will be a new homeostasis of the system. This is due primarily to the expansion of the range of the goals of human society which has to integrate the priorities of the development of previously separate spheres of social practices into a single stream of goal-setting. In this case, social systems will be inclined to organize a network, rather than centralized deterministic form, and the mechanism of horizontal hierarchy will be determinant in their homeostasis; vertical hierarchy will be a private response to the local objectives of the existence. Such grounds, for example, are the foundation of the ideas of civil society as a set of associations of free individuals, and any other network structures. A successful example of the use of the concept of the order parameter in the sociological aspect can be found in the work of H. Haken [19]. And speaking of the TMMS subjectivity, we can conclude that the parametric design of the internal structure of such a system is the most successful for describing the fundamental bases of its hybrid nature.

As an example, it is also possible to imagine that under condition of implementing the integration of ‘computer-brain’ (N. Bostrom) as a result of the irreversible system failure which threatens with the loss of valuable arrays of information, through the regulation of the system by means of the mechanisms of negative feedback the biological subsystem may be disabled (destroyed) as the most vulnerable and unreliable when its most valuable core (consciousness, personality, memories, knowledge) will be stored on a reliable technical (artificial) data storage device. Such algorithms can well be ‘firmwared’ in the programs of the TMMS operation in the nearest future or be formulated as a principle of ‘objective necessity’. It is probable that these results will be achieved in addressing the fundamental issues concerning the relationship between psyche and somatics, and, in fact, as a result of the victory of materialist or idealistic paradigms of the human worldview or understanding their integral unity on the basis of new scientific discoveries in the field of cognitive science, transpersonal psychology and related areas of knowledge.

It is not excluded that the specified scenario of horizontal hierarchy in the context of the forced system socio-anthropo-technical integration will be possible in the conditions of the development of antagonistic trends of the social, technical and technological development of a human being. In the process of this integration the subsystems will struggle for the autonomy (in borderline cases even by means of destructing the second subsystem which acts as a subsystem-opponent, not a subsystem-partner).

Therefore, two basic scenarios of socio-anthropo-technical hybridization and TMMS development are obvious. In this case the very TMMSs are represented in two types:

1) simple systems which do not make decisions by means of an anthropogenic subsystem. For example, ‘man-manipulator" or any other technical device.

2) complex systems making decisions by means of an anthropogenic subsystem.

Undoubtedly, this classification is the most general and not final, and it needs further clarification. Here it is important to understand its main criterion which is the ability of technical and technological subsystems to make autonomous decisions not just as an optimal algorithm with regard to a number of factors according to the programmed scenarios and their combinations, but, particularly, ‘the simulation of will’. But more importantly, according to K. Mainzer’s position, is:

“<...> nonlinear dynamics can generate complex patterns and system states, which cannot be forecast in the long run without increasing loss of computability and information. Thus, artificial minds could have their own intentionality, cognitive and emotional states, which cannot be forecast and computed similar as is the case with natural minds” [30, 282].

However, in this case it is appropriate to refer to the TMMS non-equilibrium state once again. It currently cannot be understood as an absolute characteristic, since both of its basic subsystems (a man and technology) are quite autonomous at the present stage of technological development. For example, if the system ‘man-computer’ will be decomposed, then both of its subsystems will be autonomous in relation to each other as ontological objects. However, from the viewpoint of the functionality of the system the two basic scenarios can also be viewed:

1. A human being as a subject in relation to the overall functioning of the system is the subsystem determining the life of the system almost at any time due to having will and freedom to make decisions about the relevance of the existence of the system. In this case, having performed a set of appropriate functions the system temporarily stops operating, at least by switching off the computer. In this case, a technogenic subsystem of TMMS is functionally referential.

2. In the case of ‘man – life-supporting appliance’ TMMS the functionality of the technogenic subsystem of the system is much more referential in relation to anthropic subsystem. In this case, a technogenic subsystem provides the functionality of the whole TMMS and is ontologically referential. Nevertheless, a person still has the possibility of switching it off, in spite of the destruction of the whole system itself.

Thus, two main forms of communication and topology criterion of TMMS can be identified: according to the basic type of communication (or ontology) and according to functionality.

It is also essential to remember that the extent and the quality of communication of the subsystems are much higher in the ontological types of systems than in the other types. These can serve as a criterion for their classification. It is the development of TMMS with these types of communication that characterizes the current stage of these systems development as a fundamentally new one. This is the protoform of organic unity of TMMS of the future as inseparable integrity of anthropotechnical subject or anthropotechnical form of ontology. V.I. Arshinov writes that the problem is to stimulate strongly the process of the convergent extension of the practices of technocultural anthropologically oriented mediations which generate recursively hybrid cognitive interfaces between the converging levels of reality; at this, complexity, as irreducible integrity, is this very potential context in which this ‘double’ technocultural convergence can only be fully implemented [2, 84].

At present the predominant type of non-equilibrium lies in the ontological referential relations of anthropic subsystem in the TMMS structure. The vector of the future consists of the displacement of the reference to the technogenic component or to their ontological equilibrium at different variants of functional non-equilibrium.

Thus, the formation of the phenomenon of ‘horizontal hierarchy’ in TMMS is the criterion for assessing its integrity as the indicator of integrative subjectivity. The displacement and the dynamics of the operational statuses in the cycle of life-support will characterize its complicacy as dynamic integrity with further strengthening ‘horizontal hierarchy’ localized now as the principle of the functioning of more complex and integrated structure of TMMS in its subsystem relationships and structural loci. A network type of structure (rather than a center-deterministic type) is the most adequate principle for organizing such system existence.

The issue of building futurological models of the formation of subjectivity of technogenic phenomena has arguments both objectively supporting and refuting these trends. For example, the fact that technology has no ability of self-positing (goal-setting of its development) indicates a significant difference when describing the trends of its subjectivity formation. Upon reaching the status of a subject in terms of its autonomy from a human being, we cannot already talk

about TMMS and will focus on new forms of subjectivity; though this subjectivity will be anthropomorphic, its self-development may lead to a new hybrid form of ontology. In this perspective TMMS is a transitional form between the instrumental and subjective status of technology in which man-measurability may not be included any more. Modern technologies allow only creating TMMS which are the main objective of the current stage of scientific and technological progress, whereas gaining autonomous status by technology is mainly an accompanying scenario usually of apocalyptic nature. On the other hand, according to V.S. Stepin (2011), in the case of TMMS in a so-called activity triad each of its subsystems can change the status alternately in the range of 'subject-means-object' controlling, supporting, and saving each other. In this case it becomes obvious that a connective of 'artificial intelligence - natural intelligence' works more using poorly formalized languages peculiar to ordinary consciousness and intuition rather than using strict logic. One of the indicators of the processes of the formation of the anthropotechnical subjectivity is that currently there is a contradiction between the self-service of equipment and its functional area [6, 28].

In addition to this, the most important aspect in understanding the problem of anthropotechnical hybridization is the observability of universal synergetic laws in the activity of the very technical systems. For example, overloaded buffers behave remarkably similarly to infected people. If the buffer is overloaded, it tries to send packets to neighbouring routers. As a result, overload is spread in the space. On the other hand, routers can restore. This is not only an exemplary metaphor, but a hint *concerning nonlinear mathematical models* describing genuine *epidemic processes*. According to K. Mainzer, computer networks are computer ecological communities [29].

In fact, we are talking about the formation of the protoforms of technology autonomy as an aspect of its subjectivity. This can be observed not only in the simulation of such anthropomorphic characteristics as reflexivity, dialog-based character, variability of choice, the form of a response to the impact, etc. More accurate and in-depth studies of complex systems discover the universality of these characteristics which may probably converge into new forms of ontology provided that we take into account not just biomechanical, physiological and psychological characteristics of anthropic principle but the necessity of creating appropriate interfaces. All these trends continue showing human moving away from anthropobiomorphizm and even socio-cultural determination to some new horizons of existential representation.

Conclusions

Perhaps the given processes are a certain stage in human evolution according to the general principles of human existence organization, of the existence of human 'ego', of consciousness as a psychical-spiritual essence of a biological individual, which are currently largely described but have not been learned ontologically. In particular, between the world and a human being there is always perception and interpretation which is prior to conscious awareness and understanding, as the necessary processes of rational knowledge unlike the knowledge of acquaintance which is deep and fundamental in relation to the focus of all psychical processes, but which is based not only on biochemical, but also, probably on other already non-physical stimuli. Consequently, the status of an observer in human life always involves the use of 'a tool' which may define the highest autonomy of a human being among animal species of the planet in relation to the natural environment.

Theories of immortality and other areas of transhumanism are based on the postulation of changing the natural processes of biological and ecological functioning of human body. This postulation can result in the technologies of artificial programming of the processes of life, the creation of the models and principles of controlling these processes with the provision for coordination and change of certain physiological algorithms and the conditions of the environment. Currently, the devices for life-sustaining treatment are already the protoforms of

such processes, but they are still used for organizing and supporting natural physiological processes. Over time, it is likely that these very processes will be modified on condition that the decision concerning the necessity of their optimization to the external goals of human existence in relation to the natural laws of life is made.

In such conditions the anthropotechnical subject does not seem science fiction. It serves as an advanced oriented model of the development of technical and technological evolution. In this respect one ought to bear in mind that these processes develop in parallel in the area of the development of technogenic high-tech anthropomorphic forms implementing their functions only simulating anthpropic qualities not only in the aspect of the imitation of physical species characteristics, but also reproducing the models of physiological functioning, thinking, and social behavior. As a result, we consider these trends as 'converging' ones. They will produce a convergent effect after mutual integration and form that very 'anthropotechnical subject'.

Acknowledgement. The research is financed by the Russian Science Foundation, project No №19-18-00504 "Sociotechnical environment of digital reality: ontological matrices, ethical and axiological regulative structures, roadmaps, and information support for management decision-making"

References

1. Arshinov, V.I., Budanov, V.G. (2006). Consciousness and awareness in synergetics. Synergetics at the turn of the XXI centuries: Collection of scientific works. Ser. "Problems of Philosophy". Center for Humanitarian Scientific-Inform. research / Otv. ed. A.I. Panchenko. Moscow, 55-73.
2. Arshinov, V.I. (2011). Innovations, traditions and archaism as value components of culture in its synergistic and complex dimension. 'Personality. Culture. Society', 13 (2), 79-89.
3. Barrow, J.D., Tipler, F.J. (1986). The Anthropic Cosmological Principle. Oxford: Oxford University Press.
4. Benjamin, D.K. et al. (2001). Individuals' Estimates of Risks of Death: Part II – New evidence. 'Journal of Risk and Uncertainty', 22(1), 35-57.
5. Berdyaev, N. (1933). Man and machine (Problem of sociology and metaphysics of technology). 'Way', 38, 3-38.
6. Beskaravayny, S.S. (2010). From the technosphere to the noosphere - the main contradiction in development. 'Scientific notes of the Tavricheskiy National University named after IN AND. Vernadsky. Philosophy Series. Culturology. Political science. Sociology', 23 (2), 27-31.
7. Boev, E.I. (2014). Socio-humanitarian model of globalization as an integral condition for the development of modern civilization. 'Bulletin of the Southwest State University', 2 (53), 125-130.
8. Boev, E. & Kamensky, E. (2015). An Innovation Civilization in the Context of the Anthroposphere Crisis of the Technogenic Society. 'Asian Social Science', 11(4), 328-335. doi: 10.5539/ass.v11n4p328
9. Bostrom, N. (2002). Existential Risks**.** Analyzing Human Extinction Scenarios and Related Hazards. 'Journal of Evolution and Technology', 9(1).
10. Bourdieu, P. (1974). Zur Soziologie der symbolischren Formen. Frankfurt am Main: Suhrkamp, 204 S.
11. Bourdieu, P. (1982). Die feinen Unterschiede. Frankfurt am Main: Suhrkamp, 391 S.
12. Bourdieu, P. (1985). Sozialer Raum und Klassen. Frankfurt am Main: Suhrkamp, 82 S.
13. Bourdieu, P. (1987). Sozialer Sinn. Frankfurt am Main: Suhrkamp, 186 S.
14. Budanov, V.G. (2009). Methodology of synergetics in post-non-classical science and education: monograph. Moscow: URSS, 239 p.

15. Budanov, V.G., Aseeva, I.A. (2013). Social chaos and problems of management of future during an era of changes. 'World Applied Sciences Journal'.T. 25. № 9. C. 1383-1389.
16. Budanov, V., Aseeva, I., Zvonova, E. Industry 4.0: socio-economic junctures //Economic Annals-XXI, 2017, №168(11-12), P. 33-37. DOI: https://doi.org/10.21003/ea.V168-07
17. Chernavsky, D.S. (2004). Synergetics and information: monograph. Moscow: URSS, 287 p.
18. Carter, B. (1983). The Anthropic Principle and its Implications for Biological Evolution. Phil. Trans. R. Soc., A 310, 347-363.
19. Haken, H. (1996). Sinergetics as a Bridge and Social Sciences. In: Evolution, Order and Complexity. London; N.Y.: Routledge, pp. 234-248.
20. Haken, H. (2012). Synergetics: An Introduction. Berlin; Heidelberg; New York; Tokyo: Springer-Verlag, 408 p.
21. Heidegger, M. (2002). Die Technik und die Kehre. Stuttgart.
22. Igonin, V.I. (2013). Investigation of the applicability of the synergetic approach to the analysis of the structure of energy technology type. 'Modern high technologies', 5, 32-38.
23. Kamensky, E. (2014). Instrumental Theoretical and Methodolodgical Construct of a Conception of the Human Environment. 'Pensee', 76(11), 9-21.
24. Kapitsa, S.P. et al. (2003). Synergetics and future forecasts. Moscow: Editorial URSS, 290 p.
25. Kirk, K.M. (2001). Natural Selection and Quantitative Genetics of Life-History Traits in Western Women: A Twin Study. Evolution, 55(2), 432-435.
26. Kurzweil, R. (1999). The Age of Spiritual Machines: When computers exceed human intelligence. New York: Viking.
27. Levin, K. (1963). Feldtheorie in den Sozialwissenschaften. Ausgewählte theoretische Schriften (hrsg. Von Dorwin Cartwright). Bern und Stuttgart: Verlag Hans Huber, 395 S.
28. Mainzer, K. (2007). Thinking in Complexity. The Computational Dynamics of Matter, Mind, and Mankind. (5th ed.). Berlin, Heidelberg, New York: Springer, 482 p.
29. Mainzer, K. (2010). Challenges of complexity in the XXI century. 'Voprosi filosofii, 10, 84-89.
30. Mainzer, K. (2011). Interdisciplinarity and innovation dynamics. On convergence of research, technology, economy, and society. 'Poiesis and Praxis', *7(4),* 275-289. doi: 10.1007/s10202-011-0088-8
31. Polozova, T.A. (2006). Human dimension as the pivotal direction of the development of culture in the XXI century. 'Humanities research', 4, 22-27.
32. Popper, K. (1972). Objective Knowledge: An Evolutionary Approach. London: Oxford University Press.
33. Prigogine, I. & Stengers, I. (1984). Order Out of Chaos: Man's new dialogue with nature. New York: Bantam Books Inc., 349 p.
34. Prigogine, I. (1989). The Philosophy of Instability. 'Futures', 21(4), 396-400.
35. Stepin, V.S. (2005). Theoretical Knowledge. Netherlands: Springer Science & Business Media, 398 p.
36. Stepin, V.S. (2011). Civilization and culture. St. Petersburg: SPbGUP, 408 p.
37. Synergetics. Anthology (2013) / KnyazevaE.N. (ed.). Moscow; St. Petersburg: Center for Humanitarian Initiatives, 408 p.
38. Vernadsky, V.I. (2013) The biosphere. In: The Future of Nature: Documents of Global Change, 161-167.
39. Waldeman, M. (1994). Systematic Errors and the Theory of Natural Selection. 'The American Economics Review', 84(3), 482-497.