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## Survival of Civilization Through the Negentropic form its Existence

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*In the article it is examined questions of the survival of contemporary civilisation. Concept itself «survival» is introduced through the negentropic form of motion of matter, and, in the synergetic understanding, the ontological base of concept «survival» is mutual transformation chaos – order. Is based status of concept «survival» as general scientific, and its correlation with the concept «civilisation» makes it possible to solve the problems of passing the civilisation to the steady development and controllability by further development in global scale.*

*Keywords: survival, civilisation, synergetic approach, the negentropic form of motion of matter, order, chaos, homeostasis, «living».*

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### Point of view

Humanity attempts to solve the tasks of passage to the steady development, controllability by this passage and by further development in global scale. But, now already, to the tasks of steady development and controllability is added the problem of the survival of civilisation, moreover, it becomes paramount.

The problem of survival is fundamental. It connects the together cognitive (knowledge as method, the means of survival) and biosocial (social as the carrier of collective mind – the means of knowledge) in humanity. The survival of carrier ensures further knowledge of objective reality and its conversion through the practise, is created optimum living environment for the carrier. The problem of survival unites solid and spiritual, material and ideal, finite and infinite, maximum and infinite in the man. It appears in the single,

the special, the general and is determined entire human activity in the past, present and future. For the course of entire its history for humanity it was possible to achieve the particular solutions of the problem of survival, due to an increase in efficacy (both quantitative and qualitative) of the use of planetary material-energy potential.

The results obtained in the course of practical permission and generalisations never will be sufficient: the problem is developed and increases in the present stage, considerably anticipating its particular solutions.

Problem of survival, successfully solved in the past, again is topical as ever. It is already insoluble by traditional turning to internal (planetary) material - energy source – accumulative inside the system «Persons – Biogeosfera». Material-energy potential is final and insufficient for the retention, the retention of basic structural-

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functional interactions, defeniting the integrity of this system.

It is today clear that the new ideological basis and new methodological approach is necessary for the solution of the problem of survival and steady development of civilisation. The formation of civilisation must consider all new forms of the transformations of the society: ecological-information, it is information-virtual, globalizational and regionalizational as the component parts of noosferagenesis.

From the point of view «of the thermodynamics of the negentropic systems» of bio- and geosphere of planet for the human civilisation – this is simply environment – material-energy source, by which it exists, and it survives, which it, as any negentropic system, makes with unfit for its own existence and use (Schroedinger, 1972). The paradox again appears: the «more successfully» is solved the problem of survival, the sharper acute it becomes, it passes from the regional-state to the planetary-global scale.

Historically the first attempt at the posing of problems on its planetary scale is the work of T. Maltus(1993). It gave subsequently so that called – «Malthusianism» and «neo-Malthusianism» as with it the logically connected, entire complex scientifically-futurological direction «of the simulation of future», for the first time stated about itself as «The Club of Rome». Adopted or rejected, this «law about population» never the less, cannot be abolished and acts in processes developed of negentropic subsystems with the qualitatively irreversible complication, structure and by reversible to a certain characteristic minimum increase in the quantity of their components. How from a termodinamic point of view is entire living, including man with his biosocial specific character, under the conditions of the locked planetary (according to the material-energy sign) ecosystem.

Civilisation as biosocial subsystem is found in the contradictory unity with the biosphere as planetary system. Biologically it is included in the terrestrial biosphere as its prevailing element, socially – it the completely self-contained formation, for which, as systems, the biosphere – necessary environment.

Concept «civilisation» proved to be so appropriate at the moment of its formation and acceptable for many branches of human knowledge, that to it were given many particular interpretations. Because of this now it lost the necessary for the concept integrity and single-valued universality. Most frequently by «civilisation» is understood not the manifestation of public life on the planet, but the certain in a cultured way-ethnic, historically caused generality, by which is assigned the special, characteristic only for it specific world view (mentality).

The following determination of this concept is most acceptable: *Civilisation – negentropic social system, whose real existence is provide ford with the knowledge of living environment and with the subsequent conversion of its practically accessible part.* The examination of the genesis of the problem of the survival of civilisation must be conducted in its relationship with the development of civilisation itself: from sufficiently isolated in a cultured way-ethnic formations to planetary whole and transformation of ideas about the place and role of man in the world; from understanding of man as one of his elements to the anthropocentric super-paradigm, which places the interests of humanity in the centre of peace. Antropocentrizm, generated by the illusion of the increasing authority above resources of planet, by the scientific and technical achievements, by imaginary perspektives of prolonged existence of civilization, it removes tension from the problem of survival, leads to the underestimation of real situation. But reality

is such: human civilization in its development already very probably, irreversibly entered «into the zone of bifurcation», predbecoming, where the assumption of the loss considerably higher than assumption of its satisfactory passage.

The problem of the survival of separate in a cultured way-ethnic formations no longer is solved neither due to the use accumulative in the depths of the planet of energy sources accessible to the use nor due to their redistribution. Traditionally utilized of energy and substance in the depths of planet it remained to 50-60 years, and attempts at the redistribution will lead to the loss of civilization still earlier. In the present stage the problem of the survival of civilization has the planetary scale: humanity either survives as planetary whole and finds the prospects for real future both on the planet and beyond its limits, or it perishes in the forced isolation, in the exhausted and unfit for existence locked living environment. They can object to us, that, together with socium, there are high technologies and other means of survival. In our opinion, this unjustified «scientific and technical optimism», and even is more, high technologies must be morally provide ford, otherwise they are dangerous. In this situation the self-contained survival of separate in a cultured way-ethnic formation, how strongly it not was relative to others, it is impossible. Remaining herself at the disposal humanity of material-energy potential with the judicious use can be sufficient both to the output beyond the planetary limits for the mastery of the external sources of energy and substance and to concentration of efforts on search and the mastery of fundamentally new energy sources.

The social form of motion of matter, observed in the terrestrial human civilization as its special manifestation, also possesses the quality of survival as whole. The survival of civilization is ensured by the survival of individuals, its components. But the survival of individuals

by the survival of sociums as the elements of united planetary civilization. Essence of man in his social significance, in the dialectics of co-operation of individual and society, that gives corporate effect, the goal-directed knowledge of objective reality through its reflection by the social consciousness (individual and collective). *And precisely knowledge in the unity with the practical conversion is real means of the survival of biosocial formations.*

Development of any negentropic systems non-return, in this the essence of this method of existence as process. And in this aspect the sufficiently extended concepts of recovery to co-evolution with nature (Danilov -Danilyan, 1998) prove to be unfounded. They contradict the fundamental laws of conservation, position about the equilibrium of order and chaos in the World, since only one state of Order without Chaos is considered.

Our task, to attempt to prove general scientific status of concept «survival» as the expressing essence negentropic type of motion of matter and to examine its ontological bases.

### **Example**

In light of the solution of this problem, is interesting synergetic approach to the motion (as the entire totality of the changes, which are accomplished in the world), since it made it possible to more clearly reveal two main types of the changes: one – to the side of adjustment, self-organizing and of organizing (external factor) the material systems, another – to their chaotic spontaneous decomposition and destruction.

As a result the subjective dialectics of human thinking as the universal analog of the objective dialectics of peace was enriched by the discovery of the principle of self-organizing the material systems (structure-genesis, forming, which function in the micro-, the macro- and mega-world, i.e. in corresponding to them and

generatrix together with them, on typical for them time-spatial scales), of expressing to the dialectician of the change through the equivalence to evolution and to involution, the revolution and devolution. This law-principle synthesized in itself three previously the open dialectical law. For our study special importance the following aspects of these laws have – these are discrepancy (law of interaction of oppositions), continuity (law of the interrelation of quantitative and qualitative changes), infinity of material motion (law of the irreversible step by step replacement of the states of systems – negation of negation).

In connection with, this in synergetics, which reveals the new aspects of materialist dialectics, a whole series of the new categories, which refine already known laws, is developed. This science of arised in the physical-chemistry thermodynamics, swiftly gathering forces, is converted into the contemporary methodology of scientific knowledge (Ruzavin, 1989).

In the law of the discrepancy of the motion of peace they began to use concepts of creative (ensuring order) and destructive (leading to chaos) contradictions, after estimating their interpenetration in the real processes. In the law of interaction of a quantity and quality to categories of evolution (quantitative changes) and revolution (qualitative changes) in the process of the progressive development of phenomena added the categories of involution and devolution – quantitative-qualitative changes in the regressive nature. In the law of the negation of negation more clearly they began to realize the step by step change of the states of objects to the side either Chaos or Order.

Observation is here necessary. Chaos as initial concept does not have single-valued determination. V.Vasilkova in its monografic, discussing about «doregulation world of Platons», she writes: «Thus is designated the dual role of Chaos with respect to the world order – and

destructive, and design» ( Vasilkova, 1999, p.90). So, chaos is the some substratum of development, the primary and simultaneously final state, from which it is born and where departs any order after it ceases to exist. Aristotle treated chaos as «hyle (Greek. – wood, forest) material, matter». This in its understanding «yet not assumed the form of the real things «of promatter», which as the naked, yet not realized «possibility» possesses certain properties of the substance, which is powerful to assume the specific form» (PED, 1997, p.568). Qualitative uncertainty as the unity of its three types hence it follows that is one of the characteristics of chaos: «states, connections of states and formation», in this case «the uncertainty of state characterize by themselves the coalescence of existence, undertaken in its static character, i.e. at each fixed moment of time. Since temporary aspect and, therefore, motion and the development of system in this type of uncertainty is not reflected, it is possible to name static uncertainty» (Osipov, 1990, p.96). The correlation of treatments of concept examined above chaos with the category «development» makes it possible to isolate its two most important characteristics: the uncertainty of the connection of states and the uncertainty of formation. *In the application to the development as the qualitative change of state of system, we treat chaos in two aspects – these are the break of reality by possibility as the totality of the equivalent potentials of development upon transfer of system from one qualitative state to another and as the qualitative uncertainty of the totality of elements, the absence of their corporate quality, structure, integrity, the loss of the time-spatial connections between the elements of this system.*

Order as the steady relation of the elements of system – purpose of control in the homeostatic systems, i.e., its safety.

The essence of dangers – in the fact, that they disrupt partially or completely dynamic

stability – the homeostasis of systems, they introduce in them unbalance, nonequilibrium, disrupt their linearity and behave as the nonlinear homeodynamical processes, whose laws governing became the object of the new science, which arose in the second-half of the 20th century,– synergetics. Initial negative relation to it from the side of cyberneticists was justified by the fact that some failures of homeostats were examined by them as annoying chances. Today in practice almost no one denies, that the linearity proved to be, being the objective opposition of nonlinearity, only one of its manifestations. By very important, but, nevertheless, one of particular components of this unity. In other words homeostatics – it's a special case of synergetics describing the steady state of system.

One-sided anti-dialectic approach to the linear and nonlinear processes as the most dangerous intellectual failure in the knowledge of the deep properties of motion was changed into the development of the dialectics of their interrelation both at the level of the objective objects of experiment – states of stability or instability of most material systems and at the level of their intellectual theoretical reflection in the systems of conceptual apparatus.

Synergetics on the genesis of its formation is the science of integrative, synthesizing in itself the number of others, with respect to which it develop general scientific theoretical concepts. The basis of its integrative integrity are conceptual numbers of the preceding it particular sciences, which existed to it separately from each other and not needed the mutual alignment of their terminological and conceptual apparatus(Kurdumov, Malineckiy, 2002).

When theoretical constructions rise to the general scientific level, is accomplished its one additional interaction, both with all its

predecessors and with the scientific systems of the dialectical-materialist philosophical categories, through which is provided the unity of all levels of scientific knowledge. The clear agreement of the co-ordinative and subordinate relations of particular, general scientific and philosophical knowledge becomes the necessary condition of formation of dialectical scientific-philosophical world view (united science) as the maximally concentrated and simultaneously generalized understanding of peace in its contemporary expression. If we this integration it will be impossible attain ourselves, then people as before will remain in the captivity of ideological pluralistic chaos, with its anti-dialectics and subjectivism. This chaos of ideas sometimes treats as the manifestation of the certain spiritual freedom of man, and, in the essence, is a result gnoseological of the disinformation, which leads both to the underestimation of the very problem of survival of civilization, and to the error in the selection of strategy of it's survival, which leads to the loss.

### **Conclusion**

The basis of the substantiation of general scientific status of concept «survival», the construction of its definition, in our opinion, can become *thesis about two types of the motion* (entropy and negentropic), considering within the framework synergetic approach relative to its resulting direction (either to the order or to chaos).

The entropy forms of motion of matter (mechanical, physical and chemical) express the anbroken process of dissipating the initial material-energy potential of system, included in its structure at the moment of formation. The result of this is the curtailment of system existence by reaching the state (of system) chaos, which depending on the level of examination can be any from the thermal to the molecular. This of

motion from the complex to the simple, from the system integrity to the summative totality, from steady interaction of elements to their random relation. In the world entropy motion everything is determined by ambient conditions and internal resource of interaction as by the probability of existence of systems.

Negentropic motion, motion from the simple to the complex are observed in other forms – information, biological and social. This is the capability of systems for complication, transformation and accumulation, that are been located is outside of energy and substance, to the retention of the own parameters under the changing ambient conditions, correspondence them. this discontinuous-continuous motion. Concrete negentropic system originally possesses natural final life cycle, during which it reproduces its own similarities and by means of which finds the possibility of continuing existence, actively resists the changing ambient conditions. This system, after passing the cycle of negentropic motion, is decomposed into the entropy components, the form of motion of which is so entropy. It becomes the potential source of subsistence and complication of new negentropic formations.

Is possible to assume that *survival, in its dialectical unity with the living environment it is and the negentropic form of motion of matter i.e. survival as something objectively general and with the need constantly repeating in biosocial processes, expresses the ontological essence of negentropic systems.*

In other words, in the synergetic understanding, the ontological base of the concept «of survival» is mutual transformation chaos – order.

Correlating concept «survival» with the concept «civilisation» through the negentropic type of motion of matter, we can answer the number of questions.

In the theory of systems «living» it designates the localised negentropic processes, where the changes in the side of the increasing complexity more perfect order become the method of their existence.

Thus, the necessary condition, through which realises the possibility of existence of living in actuality, is external for the living as systems, the relatively stable living environment, which functions as reliable material-energy and information source, «the bosom of life» and the background of its inhabiting. Fall outside the limits of these parameters of the background of life, dissipated states of substance, energy and information places on the face of existence living negentropic systems. This background of life is «the belt of life» in any planetary system, where on the specific radius from the central source are added the specific material parameters, the potentially predetermining functioning lives.

Systematically-dialectical approach requires the concretely historical examination of various phenomena as the systems of the interacting elements through the development of their interrelations by means of different model presentations. It specifically is examined in the clearly marked «interfaces», which separate the external and internal medium, the object (in our case the Earth and terrestrial civilisation) being investigated with their quantitative and qualitative states – the parameters, which unambiguously are divided into necessary and random, primary (determining corporate system qualities) and second (the not determining essence systems by the fact of its presence or absence in the system).

Any arbitrarily undertaken totality depending on the conditions of examination can be interpreted and as chaos of the elements of order (disorder of the defined level), to as order with its local disturbances, fragments of chaos in

the regulated structure. This completely relates also to our case.

The general definition of the concept of system as the totalities of the elements, which function as unified whole sufficiently only in the first approximation, but requires additional detailing with the analysis of concrete objects, facts during the deployment of their structures and relations.

Survival as phenomenon is not separated from «the living». These are the form of opposition to Chaos, the form of active Order in the dialectics of its interaction with Chaos. In the assumed World and the observed Universe something moves to Chaos, something to the Order, but their relation in any mentally chosen fragment of objective reality – in our case this the Earth and it's human civilisation – constantly. Synergetic seeing of world makes it possible to establish that the directions of the happened in the World changes (to Chaos or to the Order) are equivalent.

Concept «survival» in its application to the negentropic systems, acquires status of general scientific for the following reasons:

- this is process;
- this is the specific method of existence;
- this is the biological form of motion, which has by its upper limit social, and lower – nonliving form of motion;
- inanimate forms of motion;
- this is the mechanism of the irreversibility of qualitative changes, progressive development(complication)ofnegentropic systems;
- this manifestation of the relation (interaction) of the internal and environment through structural changes in the negentropic systems;
- this is the axiological super problem, which has as necessary the moral installation, characteristic of man, in contrast to all other living beings.

It is possible that status of the concept «survival» higher than general scientific and reaches categorial (philosophical) level. The possibility of this can be substantiated by most systematically-dialectical approach, which requires the concrete definition of category «motion» in the specific character of its application relative to the organic (transitional from inert to living), preintellectual (biological) and intellectual (social) forms.

The topical character of the problem of the survival of terrestrial civilisation, its system existence is the necessary condition, which determines the formation of united science, or, as a minimum, the development of the adequate theory of safety and survival of terrestrial civilisation.

The formation of system, «the generation» of it in the new quality from synergetic chaos of alternatives as the versions of selection – this is the passage of possible into the real, the manifestation of the need for the totality of chances. In the negligibly small interval of time, characteristic for each final collection of possibilities, is achieved the selection of only of them, which realises. Quality and quantity of these possibilities is determined (as components prerequisite) by the properties of the previous state (homeostasis ). But locally self-organised in this case order becomes the component of overcoming chaos, converting into itself the remained elements of chaos and the different versions of the not realized orders, pushing slightly them to the face of possible from the state «of nonrealization» to the maximum impossibility of real existence as system element.

*Survival in all its definitions given above and to eat the virtual elusive beginning in the living material, which retains it as the negentropic system in each, how conveniently small instant of it's reality, ensures the continuity of its existence*

*as realities from the past to the future, are created prerequisites for the following formation by the complication of a quantity and by the improvement of the qualities of its elements and their relations.*

In the axiological aspect it relatively to the human civilisation as to whole, its ethnocultural formations as the necessary particular elements, up to the human individuals as the components of this whole.

Survival – quality inherent in life both in the biological and social form of motion of matter. This the general, which is inherent in the separate biological organism (individual) and their totality (population, form), so to individual person, to social group and to society as a whole.

We sum up that outline aboved: any living is the negentropic system, which ensures its existence through the survival at each moment of its present.

Which a role of the negentropic type of motion in the appearance of living? Special role in this so-called organic (thus far science has only this example) material, specific state between the inert and the living, in which realize the passage, a change of direction of motion from the entropy to the negentropic, play (Eigen, Schuster, 1982). Is possible, this manifestation of the special shape of the motion, where the inert substance is no longer inert, but is not yet living – it is already capable of the reproduction, it inherits the qualities of predecessor, transfers «development program» to heir, but not it is capable of the maintenance of the dynamic constancy of its own parameters under the changing conditions of medium. In this state (let this is the form of motion, which expresses

the uncertainty of formation as process) change status, quality of concept «information», which of the measure of the ordering (disordered state) of system is converted into «the program of its development», finds «value». In the gnosiological aspect in «organic form of motion» is concluded the question: «That also as makes living with living?» And answer to it.

Thus, equilibrium and interdependence of Order and Chaos as the bases of existence and change in the World are expressed as the relation of two types of motion. In the examination they are defined concretely as the sequence of mechanical, physical, chemical, *organic*, biological, social, information and most virtual possible of the forms of motion of matter. Each subsequent including previous and not directed to them, i.e. includes new system quality.

A question about it is information-virtuality form of motion of matter is debatable (Abramov et al., 1998; Kuibar, 2006) but we develop this concept when the information motion is not isolated, but it is considered as synergetic quality - synthesis of the mechanical, physical, chemical, *organic*, biological and social forms of the motion of material systems. In the conclusion let us note that *the concrete definition of concept «survival» through the negentropic type of motion of matter and the correlation*

*it with the concept «civilization» it makes it possible not only to estimate status, scale and the contemporary state of the problem of the survival of civilization, but also within the framework the synergetic approach through the principles of organization, the special feature of functioning and the laws of interaction of the entropy and negentropic systems to base the possible methods of its decision.*

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## **Выживание цивилизации через негэнтропийную форму её существования**

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*В статье рассматриваются вопросы выживания современной цивилизации. Само понятие «выживание» вводится через негэнтропийную форму движения материи, причем, в синергетическом понимании, онтологическим основанием понятия «выживание» является взаимопереход хаос – порядок. Обосновывается статус понятия «выживание» как общенаучного, а соотношение его с понятием «цивилизация» позволяет решать задачи перехода цивилизации к устойчивому развитию и управляемости дальнейшим развитием в глобальном масштабе.*

*Ключевые слова: выживание, цивилизация, синергетический подход, негэнтропийная форма движения материи, порядок, хаос, гомеостаз, «живое».*

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