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ANALYSIS OF CULTURE AS AN UNBALANCED SYSTEM

Статья посвящена анализу культуры как неравновесной системы, способной превращаться в хаос и переживать радикальные трансформации. Фундаментальным фактором неравновесия в культуре, наряду с энергетическим, выступает деятельность людей, наделенных сознанием и волей. В статье поставлен вопрос применения синергетики непосредственно по отношению к анализу культурной проблематики.

Ключевые слова: культура, неравновесная система, культурные изменения, синергетика.

Стаття присвячена культурі як нерівноважній системі, що характеризується здатністю перетворюватися на хаос та переживати радикальні трансформації. Фундаментальним чинником нерівноважності в культурі, поруч з енергетичним, є діяльність людей, наділених свідомістю і волею. У статті приділено значну увагу застосуванню синергетики безпосередньо до аналізу культурної проблематики.

Ключові слова: культура, нерівноважна система, культурні зміни, синергетика.

The article is devoted to culture as an unbalanced system that can turn into chaos and experience of radical transformations. The fundamental factor of unbalance of culture is the activity of men endowed with consciousness and will. The authors raise a question about the application of a synergetics to the analysis of cultural issues.

The keywords: culture, unbalanced systems, cultural changes, synergetics.

Actuality of interpretation of culture as an unbalanced system is connected with the important role of unbalanced systems and processes in modern science. Analysis of unbalanced culture as a factor of cultural transformations is practically relevant and theoretically researched enough in the absence of sustainable methodologies for the study of culture as a system in a constant change. But there is a problem of an adequate interpretation of cultural phenomena in terms of perceptions of unbalanced systems.

Rene Thom, Herman Haken, Vladimir Arnold, Ilya Prigozhyn, Isabelle Stengers [1; 6; 10] paid a special attention to a phenomenon of unbalanced systems in the field of natural science. The scientists investigated the fact that in a smooth connection of external speaker system takes an irreversible and a probabilistic nature. Probabilistic character of dynamics means that the system can be changed by “making choices” of several alternatives. The change specifies a weak fluctuation of essentially random and its effect is determined by the sensitivity of the system to small perturbations.

According to cultural and sociological thought a culture studied in a rather static way, the analysis of culture as an unbalanced system exists mainly at a level of “problems raised”.

The aim of the article is to investigate a culture as an unbalanced system able to turn into chaos and experience some radical transformations, as well as a possibility of using of unbalanced systems study in humanitarian issues. The scientific problem is connected with

the concept of unbalanced systems investigated in the natural sciences.

It is of great importance to find out if it can be applied the concept of unbalanced systems and conceptual provisions of synergy to analysis of cultural phenomena. An introduction of understanding of the mechanisms and factors of unbalance in culture in connection with the problem of cultural change is also among the aims of the article.

Intensive searches in synergy were associated with the second wave of interest in unpredictability, randomness, and in fact – to unbalance processes in social and cultural sphere. The first ones refer to early 1970-ies during a booming of a catastrophe theory in western authors' investigations. According to this point of view a catastrophe theory provided a versatile method for studying of all the jumplike processes.

A system in a strongly unbalanced state is characterized by volatility for its own initial settings. While passing of instability points in various environments the transition to the state of complexity appears. So macroscopic phenomenon of self-organization in the form of spatial paintings rhythmically change over time can arise. So a new structure appears with a chaos. Self-organization at a micro-level leads to complications of spatiotemporal patterns at a macro-level. A necessary condition for the implementation process regulation of an unbalanced system is not its isolation, serving the most important characteristics of the synergy of objects.

A concept of bifurcation is of great importance in a sense of unbalanced state or variable parameter the system gets a threshold of stability on which it opens for several possible ways of change. Then a sharp decrease of entropy takes place as a transition to the "order" from of "chaos".

It must be emphasized that synergetics isn't connected with a dynamic balance. There is no idea of progress in synergetics. No attractor is not "higher" or "lower". Bifurcation is associated with a notion of disaster, "the crest of a wave of disruption".

Synergetics doesn't involve the transformation of quantity into quality in an explicit form. A fractal feature is one of the key "images" of synergetics which expresses an ability of a structure to reproduce itself in any scale.

There are some disputes about applying of synergetics directly to the analysis of social or cultural issues.

Quantitative indicators in thermodynamics of unbalanced processes haven't any analogies in history or cultural history, even in case of the entire history of mankind. In addition, a man is a minded and strong-willed creature, while synergetics deals with inanimate objects.

Synergetics emerged from the effects of specific socio-cultural "prejudices", ideological realities, sociological theories, philosophical doctrines at science.

An idea of synergetics as an addition of doctrine of liberalism in senses of the "invisible hand of the market" and "civil society" that self-cultivating in the world of matter [5, p. 65]. Then synergetics returns to the humanitarian "fatherland" as a reference to its own sources. A bright illustration of the above mentioned idea is the work "Synergetics and forecasts of the future" which attempts to spread the methods of synergetics into Lev Gumilov's cultural theory [3, p. 111].

Interpretation schemes adopted in synergetics can be extended to socio-cultural reality as well as Charles Darwin's distribution of socio-cultural stereotypes of capitalism on

wildlife, with a struggle in which a strong one wins, establishing the theory of natural selection.

A society can be analyzed as a system which has balanced and unbalanced states. Human culture can be considered as dissipative structures bearing in mind and environmental problems that have always been actually for mankind. The development of some societies can be interpreted in terms of entropy production (resource depletion, reducing soil fertility). All the modern typology of cultures is associated with energy indexes (the theory of economic systems, the “challenge-response” system and the concept of “post-industrial society”).

Historians described resource disaster of civilizations that had an irreversible character and had hard foreseen consequences. Culture scientist or philosopher can find in any society periods of excess of entropy on a periphery of society when it acquires stability and periods of extinction associated with a deficit of energy. He can identify the characteristics of chaos that became the basis of a new order.

The proximity of an order and chaos at the society at a macro level during the given time at a micro level isn't an accidental metaphor, but can be considered as a scientific hypothesis. Its visual character can be found in social and cultural institutes or in any phenomenon of group behavior. The behavior of the group and the behavior inside the group can actually be different from the behavior of an individual to have his own quality and to be well defined and predictable, and the behavior of the group vary depending on the action provided for it. Famine, war, abrupt climate change are such kind of changes for society, that was described as a situation of challenge by Arnold Toynbee [7].

At any given moment society has a chaos of will, desires, actions, and unconscious motives. An individual endowed with desire and will is a factor of fluctuations in a culture. The socio-cultural system can take an unbalanced state in which some fluctuations get a critical character, making the further development of the whole system unpredictable (for example, a role of a “great person” in history and culture).

Historian and culture expert deal with unique and special events of historical process that are unique and take place in unique historical period. It is difficult to explain the bifurcation of inanimate matter, although it can be described during an experiment in which something similar is directly observed.

There is a concept of attractor in historical and cultural process. It means a “point of attraction” which presence determines chaos and generates an ordering process. It is possible to see the effects in complex cooperative “behavior” particles of inanimate matter, but it can not be explained without resorting to magical studies (like a “memory of interactions that generate correlation” by Prigozhyn). At the same time the association of society around a strong leader or some dominant ethnic group can not be described and explained. It is also hard to interpret a periodic change of styles in history of art by mass mood fluctuations caused by the behavior of members of the elite strata of society.

Finally it can be found the direct relationship between the amount of energy, entropy processes and structural organization of society or its collapse. It doesn't need to resort to solutions of “boundary” issues, for example, about the energy for the Big Bang.

Energy as a criterion of society development was the basis of cultural theory of Lesley White and in this sense is not a new one. Moreover, for the first time the term “cultural

studies” was suggested as a representative of “energetism” in science by Wilhelm Ostwald, the author of “Principles of the Theory of Education”: “a science about specifically human ways of working could be called as cultural studies”. Ostwald and White founded the tradition in which cultural changes anyway contacted with ways of mastering energy in this culture.

“We can predict – wrote Leslie White – a type of social ideology for a society with a steam engine and nuclear reactor” [9, p. 294]. It allows synergetics to give a due attention to the process of changes and its ontological aspects, the problems associated with its internal and external evolution.

The concept of unbalance in synergetics is associated with the concept of entropy as a quest of system to the energy balance and energy dissipation outside. Reaching its final maximum entropy can isolate matter forming system, limiting the possibility of change. In this case, the system becomes balanced. Resentment acting doesn’t leave traces in the system and its “behavior” become deterministic available.

Unstable processes and systems dominate in the world. It is connected with social and cultural reality. Only in this case the historical process is presented as inherently unstable when we can speak about fluctuations in the development of culture, cultural changes and transformations. The culture can acquire features of stability or stagnation in a condition of maximum entropy at a periphery. At maximum entropy production is virtually the same as the content of the natural sciences – the more energy consuming society is closer to a state of balance. The less energy consuming society is more unstable in its status. In this sense society has no difference of any other physical system. The deficit of an isolating power on a periphery can be seen as an inside culture excess of energy. At the borders of culture a “dynamic chaos” appears because of accumulation of elements of an excess energy (for example, high standards of living can lead to non-economic forms of behavior, consumption and independence in the actions of others). Dissipative structures appear outside of the system. A “memory” about collision is a result of excess energy at a micro level of a system in a form of mutual influence of individuals emancipated of a cultural substratum. Interindividual influence is the result of private and individual contact enhanced while weakening of relationship with a cultural substratum. When increasing an installed power of individual action a cultural substratum decreases.

Economic culture and its mental structures are responsible for inside culture balance (“gravity” of any culture), if excess of energy within the system starts to compete with accidental culture structures responsible for removing energy from the outside (ideology, literature, spatial art). This process can be identified with a mechanism of “vertical convection”. Human activities of “high” level bind an excess of energy (Renaissance architecture in Italy called by Karl Marx as “non-capitalized states of past”).

They are characterized by “noise” of countervailing accidents (variations around adopted fundamental values and especially norms) and mutually balance each other (for example, because of the competition between group and individual values). In this unbalanced state they acquire a coherent character, forming new cells or recombining substrate of production of negentropy (defeat of England in the war against France in the Hundred Years' War made her a “Queen of Seas”).

It can get a negative character if it leads to the exhaustion of the energy base of culture

(Renaissance individualism not only delayed the development of the New Italian nation, but also undermined the military-political opportunities of Italy for more than three centuries). Finally, it can lead to compromise when the economic stagnation and the lack of development of mental structures are compensated by accidental elements of culture (development of arts in Spain of XVI century at the background of economic stagnation).

After a period of stability comes the energy imbalance and chaos. Power chaos generates an unknown but “structured” future which has inevitability and unpredictability as the most important key characteristics. The predictability of the process of structuring with imbalance as a mechanism of cultural change is the only thing of synergetics insisted on.

Culture is a multi-leveled complex in which a stable substrate (structure of economic culture, mentality) interacts with accidental characteristics (group values, lifestyle, individual psychological motivations, forms of art, political regimes, organizations of subculture formations) that are associated with manifestations of the essential characteristics of the process of group and individual behavior.

As Lesley White wrote: “technology appears as an independent variable system, but social system as a dependent variable one” [9, p. 441].

A person acts spontaneously at his own risk but reaches some results represented in the formation of new structural characteristics of cultural substrate.

This community isn't provided with external regulatory intervention force, but with the processes of self-organization of subjects acting chaotically. The basis of such kind of cooperative effects is an imbalance inherent the culture. The fundamental factor of unbalance in culture is energy and a work of individual endowed with consciousness and will. They are responsible for inside culture fluctuations generate chaos as well as highly organized structures that replace the previous ones, providing a continuous process of change. The imbalance generated by external actions (of a climatic character or situation of intercultural interaction) but people aren't an abstract culture reflect.

We can agree with Franz Boas [2] in this aspect.

Man is a biological being endowed with mechanisms of suggestion and counter suggestion. Suggestion is associated with reduced consciousness, criticality of the perception and realization of its content. Suggestion doesn't imply a comparison with a past experience as well as an existing entity [4, p. 44]. Suggestion is the basis of collective human behavior, so the basis of inside culture cooperative effects associated with a human self-organization. Suggestion is a basis of the order balance.

Counter suggestion means the ability of an individual to move beyond a framework of culture settings. Counter suggestion has parallels in the animal world and described by ethnologists as an example of the phenomenon of rats scouts. Counter suggestion is a mechanism that provides culture to respond the emergence of new challenges, production of new behaviors and artifacts. It is a mechanism of flexibility but also a source of a possible chaos. Variation is a way of development and selection of possible cultural forms in a new environment which should grow in conditions of external actions growth. From a certain point counter suggestion forms begin to dominate then a chaos of new cultural forms appears. So a counter suggestion can be interpreted as a source of fluctuations of cultural forms and within its framework is a chaos.

Forms of suggestion can be determined in a context of the proposed interpretation in the conditions of support of existing cultural substrate. Suggestion doesn't have rational and "mental" character. It correlated with a cultural substratum, essence of culture and aimed at its reproduction. In a "negative" sense it is responsible for cultural statics. But a counter suggestion is rational and has a conscious character so it is aimed at development of a new one. Its manifestations have an accidental character and are the source of instability of unbalanced culture as a whole system. It is a factor of cultural dynamics in extreme case.

The complex analysis of culture is complemented by the complexity of human behavior "endowed with intellect and will". An individual as a rational being always tried to oust the chaos on a periphery of his life, putting an outside world under his control. However this desire to order generated not only a myth and a religion, but a science too, which can be a start of a chaos leading to unexpected and unpredictable new order. An individual tries to subordinate the world – is a subject of change and a major factor of "sensitivity to small changes" that makes history of culture an unpredictable.

An attention to unbalanced systems is generated by social and cultural factors (feeling of instability) so it is possible to use the apparatus of synergetics for culture analysis. Unbalance of culture is a fundamental factor of a power imbalance between a production of energy at the level of cultural substrate (business culture and mental structures serving it) and an output of a power to a periphery. Accidental cultural level (individual and group values, art) can be seen as a mechanism for removing of excess of energy that supports the cultural individualism and destructs collective mental attitudes.

The growth of internal cultural individualism generates the fluctuations which put a culture into a chaos in a case of imposition of unbalanced connection (such as war, famine, excess of resources, and temporary excess of resources). This chaos can lead to changes both of positive and negative characteristics in terms of maintaining of self-identity. A dynamics suggestion (responsible for supporting of existing transpersonal order) and a counter suggestion (related to individualistic behaviors in culture) are structural unbalance factor of a culture in a behavioral sense. Counter suggestion can be considered as a source of innovation mechanism of fluctuations and a chaos, but a suggestion – as a source of an order. Fluctuations generate chaos as well as highly organized structure which replace (by changing of a substrate) the ones existed before, providing a permanent process of changes. The further analysis of culture as an unbalanced system involving data of culture studies, sociology and other humanities, will identify the areas of possible factors and cultural changes depending on order parameters which set by physical conditions of human existence. It lets to take into account the fact that people endowed with consciousness and will act in culture, but it helps to avoid tendentiousness of psychologism in interpretations.

References:

1. Арнольд В. И. Теория катастроф / В. И. Арнольд ; изд. 4-е, стереотипное. – М. : Едиториал УРСС, 2004. – 128 с.
2. Боас Ф. Методы интерпретации культуры / Ф. Боас // Антология исследований культуры. – Т. 1 : Интерпретация культуры. – СПб. : Университетская книга, 1997. – С. 499–508.
3. Капица С. П. Синергетика и прогнозы будущего / С. П. Капица, С. П. Курдюмов, Г. Г. Малинецкий. – М. : Наука, 1997. – 285 с.
4. Краткий психологический словарь / сост. Л. А. Карпенко ; под общ. ред. А. В. Петровского, М. Г. Ярошевского. – М. : ИПЛ, 1985. – С. 43–44.

5. *Майнцер К.* Сложность и самоорганизация / К. Майнцер // Синергетическая парадигма. Многообразие поисков и подходов. – М. : Прогресс–Традиция, 2000. – С. 56–79.
6. *Пригожин И., Стенгерс И.* Время. Хаос. Квант. К решению парадокса времени / И. Пригожин, И. Стенгерс. – М. : Эдиториал УРСС, 2001. – 240 с.
7. *Тойнби А. Дж.* Цивилизация перед судом истории / А. Дж. Тойнби. – СПб., 1996. – 480 с.
8. *Уайт Л.* Энергия и эволюция культуры / Л. Уайт // Антология исследований культуры. – Т. 1 : Интерпретация культуры. – СПб. : Университетская книга, 1997. – С. 439–464.
9. *Уайт Л.* Наука о культуре / Л. Уайт // Антология мировой культурологической мысли / авт.-сост. С. П. Мамонтов, А. С. Мамонтов. – М. : Изд-во РОУ, 1996. – С. 290–295.
10. *Хакен Г.* Информация и самоорганизация: Макроскопический подход к сложным системам / Г. Хакен – М. : Мир, 1991. – С. 46.

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