https://doi.org/10.5281/zenodo.3978727 **Research Article**

SYNERGETICS
A PROSPECTIVE METHODOLOGY OF UNDERSTANDING THE WORLD IN A LINGUISTIC WAY

Linguistics

Keywords: Methodology, method, synergetics, synergetic methodology, synergetic principle, attractor, instability, theory of knowledge, bifurcation, homeostatis, dialectics, dynamic hierarchy, dissipative structure, hierarchy, competition, cooperation, observability, nonlinearity, linguistic view of the universe, transparency, trajectory, philosophical category, fluctuation, emergence.

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Abstract

The linguistic view of the universe and the issue of the participation of the human factor in it are analyzed using philosophical categories of the theory of knowledge, as in the process of studying all other phenomena. The synergetic methodology, which has entered the science as a new approach to the process of understanding the world, also incorporates important aspects of these principles. Synergetics is also recognized as one of the most effective directions recognized in all areas at the current stage of scientific development. This article analyzes that the synergetic methodology can also be the basis for the study of linguistic problems as a methodology that can provide an in-depth analysis of the substantive essence of the object. It is also argued that the study of the phenomena of linguistic levels as a whole system on the basis of a synergetic paradigm is a prospective methodology of modern linguistics.

It is known that the process of learning knowledge in the field of science requires an approach based on certain methodologies and methods. To what extent an objective interpretation of the object under study depends on what methodology and research method the researcher relies on. Therefore, method and methodology serve as a basic point in any science.

“Method-objective being is a method of determining its essence, nature and composition, finding and discovering certain features and peculiarities, and drawing scientific conclusions and generalizations about them, scientifically analyzing and studying the source of research of subject phenomena.

The methodology, being linked to the goal of the researcher, is how to understand the source of the research and how to approach it and on this basis, the formation of certain theoretical or practical, logical (internal) or descriptive (formal external) knowledge on the object” [18, p.255].

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M.Abuzalova emphasizes that in mysticism and dialectical gnoseology there are 16 basic principles of approach to the source of knowledge, study and research and the formation of dialectical knowledge about it, and one should use them in certain scientific investigations:

1. That the thing is real (objective, independent) individuality.

2. The thing is a set of relationships.
3. The thing is changing and evolving.
4. Internal contradictions in the thing.
5. The thing as a whole of contradictions (conflicts).
6. The occurrence of opposing sides.
7. Unit of analysis and synthesis (generalization).
8. The infinity of the relation of the thing to other things.
9. That things go into their reflection.
10. The infinity of the relations of the thing.
11. The infinity of deepening in the essence of things.
12. The infinite increase in the relations of things.
13. The repetition of the past stages in the development stage.
14. Returning to the former as a result of the negation of negation.
15. Updating the form while preserving the content.
16. Transition of quantitative changes to qualitative changes [3, p.17].

We can see that the synergetic methodology, which has entered the science as a new approach to the process of understanding the world, embodies important aspects of these principles. The synergetic approach to the object of research is just appearing in Uzbek linguistics. "Using synergetic terminology, we can say that languages are a system of parameters that people obey. Language changes a little during a person's life. Man learns language after birth, that is, obeys him and contributes to the preservation of the language throughout his life. A number of language-related facts, such as competition, fluctuations (changes in the meaning of words, etc.), can now be studied in the context of synergetics" [26, p.382].

Synergetics (the combination of an ancient Greek prefix συν- with the meaning of 'appropriate' and the ἔργον with the meaning of 'activity') is an interdisciplinary field that studies the formation and self-organization of the models and structures in open systems that are far from thermodynamic equilibrium [30].

E.N. Knyazeva gives a relatively broad definition based on the concepts of synergetics: Synergetics (Greek synergeia-means 'cooperation', 'solidarity') studies issues such as the process of self-formation (organization) in complex systems of nature,the fact that at what stage of evolution chaos plays a positive role, the emergence of order from disorder, cases of deviation from law (fluctuation), unstable and stable states, linear and nonlinear development, the multiplicity of development [10, p.99].

"A distinctive feature of synergetics as a theory of self-organization is to study the processes of formation of the integrity from the sum of inseparable parts as a result of cooperation and synergy. The parts of the integrity determine the parameters of its existence and ensure the stability of the structural integrity. The order parameters of the integrity, in turn, affect its parts" [17, p.469].

In the 60s of the last century, synergetic laws began to be discovered by the scientists such as B.N. Belousov, A.M. Jabotinsky, I.R. Prigogin, S.P. Kurdyumov, I. Stengers, G.A. Nikolis, Klimotovich in the fields of physics, chemistry, biology engineering, economics, and the social sciences, while in the 1970s G. Hacken, who solved the problem of the existence of general laws of self-organization, proposed to study it in a special science called synergetics. “The science of synergetics is not a special science like physics, chemistry, biology, or sociology, but a science of self-organization found in these sciences. This is the essence of synergetics” [24, p.25].

Synergetics is seen as a combined theory of self-organization with discipline and complexity. German Hacken, who introduced the term ‘synergetics’ to science and first used it in his lectures, explains in a 1969 lecture at the University of Stuttgart why he chose the term synergetics: "I chose the word 'synergetics' because many terms in science were named after Greek words. I was looking for a word that meant “joint activity, the total power of energy (constant movement)”. When I proposed the word “synergetics,” I also included the concept of “interaction” in it. Thus, the general direction of the research movement was determined, which has not lost its force even today, and the process of studying the general laws of systems consisting of separate parts.I believe that these new results are being achieved under the term ‘synergetics’ or that “synergetics” was initially understood as a direction of research rather than as a final object” [11, p.55].

Scientists attribute the emergence of the direction of ‘synergetics’ to the integration of the twentieth century and “it is based on the action attempting to consider different objects as complex dynamic systems that obey the single laws of development” [12, pp.38-44].

Synergetics has attracted the attention of the scientific community as it works as a synthesis of many theories about the structural nature of the world. The basis of the language of synergetics is a set of many terms which are taken from the exact and humanities, such as bifurcation, attractor, hierarchy, fluctuation, nonlinearity, dissipative structure, cooperation, competition, trajectory.

Thus, synergetics is boldly entering the current stage of scientific development as one of the recognized effective directions in all areas. “According to its methodological function, it helps to form a unified interdisciplinary approach to the subjects and objects which are being studied” [4, p.14].

69 volumes of books and pamphlets on synergetics have been published at the Institute of Theoretical Physics and Synergetics of Stuttgart University and research works in more than 20 disciplines are underway. In addition, more than 400 monographs and textbooks reflecting the natural-scientific and philosophical ideas of synergetics have been published in the Russian Federation, and more than 200 candidate and doctoral dissertations have been defended [5, p.5].

This data alone shows that synergetics is a promising direction.

Complex, open systems are studied on the basis of synergetic ideas, concepts, methods. It is also widely used in the study of social processes, including animate and inanimate nature, which helps to understand complex beings, structural changes.

Nowadays, synergetics is rapidly entering the humanities; the directions of socio-synergetics and evolutionary economics emerged; it is used by psychologists and teachers; programs in linguistics, history and art studies are being developed, work is underway on a project to create a synergetic anthropology [6, p.157]. “Synergetics is a set of scientific views based on the recognition that the self-organization of the universe, the eternal sequence of things and events in space and time, their interconnectedness, their existence on the basis of causal connections consisting of certain systems” [28, p.17].

Scientists around the world approach the issue of synergetics from different angles. Let us state some of them.

E.N.Knyazeva and S.P.Kurdyumov consider "nonlinearity" as the main conceptual aspect of the new paradigm [10; 11].

Academician N.N.Moiseev draws attention to universal evolutionism and coevolution as an important property of synergetics. Coevolution means the coexistence and development of existing systems in nature and society [30].

Researchers such as T.N.Evgrafova, N.A.Ismukov, P.V.Opolev study the question of the place of synergetics among the existing philosophical concepts and the interrelated and separate aspects of dialectics and synergetics [9; 16; 17].

This methodological direction has aroused great interest among Uzbek scientists, and soon a lot of scientific research was conducted. The publication of scientific collections and materials of scientific conferences in the country are proof of this [Philosophical Problems of Synergetics (Tashkent, 2005), Natural-scientific and philosophical problems of Synergetics (Namangan, 2009); Synergetics: development and prospects (Namangan, 2010), Synergetic paradigm: problems and opportunities (Tashkent, 2013).

Such scientists as O.Fayzullaev, N.Shermuhammedova, M.Abdullaeva, I.Rahimov, A.Utamurodov, D.Bozorov, Z.Muminova, M.Q.Niyazimbetov, G.G.Gaffarova interpreted synergetics as a philosophical-methodological direction of general sciences [1; 2; 5; 8; 13; 14; 20; 24; 27], while A.Nurmonov, A.Rahimov, N.Turniyozov, M.Ernazarova [15; 19; 23] explored the issue of a synergetic approach to linguistic problems.

In particular, the research of D.Bozorov is noteworthy. Discussing the synergetic paradigm, the scientist emphasizes that the basic concepts and principles of this direction do not consist of suddenly emerging ideas, but the ideological and philosophical roots of these concepts are gradually formed on the basis of ideas of Eastern and Western scientific schools. Synergetics, therefore, is characterized by the fact that it encompasses the leading constructive aspects of

theories of pre-scientific cognition. “Synergetics as a scientific concept not only seeks solutions to scientific problems, but also creates conditions for understanding the world on the basis of new principles, analyzing the paradoxes of development on the basis of non-traditional approaches, developing scientific directions through new scientific ideas and hypotheses. In our view, synergetics is also a new paradigm from a philosophical point of view, which includes new scientific ideas about human nature, society and the way a person thinks and feels about himself ” [4, p.27].

A.Nurmonov and A.Rakhimov in the book “Introduction to Linguosinergetics” scientifically analyzed the theoretical foundations of the science of “Linguosinergetics”, its original roots and sources, the directions of research and its prospects as a first attempt to understand the synergetic nature of linguistics in the context of synergetics and linguistics.

Turniyozov explains the action of a synergetic factor in linguistic phenomena as follows: “The synergetic factor is fully manifested in text derivation (speech derivation). In particular, the phonetic, morphological, syntactic means of text formation ensure the practical application of the synergetic factor. This includes not only the intermingling of language and speech units, but also cognitive-pragmatic rules”[23].

M. Ernazarova also acknowledges the growing importance of synergetic methodology as one of the “philosophical foundations of the study of speech as a system” [29].

Almost all sources on synergetics state the following 7 basic principles:

1.Homeostaticity. Homeostasis (Greek same, similar + standing; motionlessness) is a term used primarily in biology, the ability to maintain internal state stability through reactions aimed at self-controlling, maintaining the dynamic balance of an open system. It is the desire to rework the system itself, to restore the lost balance, to overcome the resistance of the external environment.In synergetics, the goal – the program of keeping the system in a state of homeostasis is called the attractor. In homeostatics, bipolarity, the internal conflict between goals, creates integrity. The worry of keeping the system around a single goal worries any researcher who has aintegral view of the universe. The sole purpose is related to the need of one for the other. For example, in order to live forever, the process of birth and death alternates, the tree must shed its leaves in autumn to continue its life and bloom in spring [7; 22].

2.Hierarchy. Gradual (hierarchical) subordination of lower systems to higher systems. For example, a hierarchical relationship of language levels (phonetics, morphemes, lexicon, morphology, syntax).

3.Nonlinearity. In traditional science, linearity and orderliness are the highest criteria. In order to move from one state of homeostasis to another, the object must break through their joint boundaries, entering a non-linear region. The higher the barrier, the stronger the transition state and the larger the area of homeostasis. Radical reconstruction of the system, which will be a deep homeostasis change, requires great effort.

Sensory organs also have nonlinear properties of sensitivity, limits of perception, otherwise we would be wonderful creatures who see everything, hear everything (there are all frequencies and intensities of vibration and radiation), no brain can withstand such excess information [7]. In linguistics, too, features such as derivation laws, transposition, multivariate, methodological adaptation are based on nonlinearity.

4.Transparency. The synergetic approach also brings new ideas in this regard. Transparency allows us to study the program of development of systems from simple to complex. This means that a hierarchical system can only evolve and become more complex by exchanging matter, energy, and information with other levels and systems.

Understanding language and speech as a nonlinear open system is associated with a number of synergistic features, such as their versatility, communicative openness, richness of internal and external influences and fluctuations, spontaneous emergence of new meanings and expressions in different speech situations and cultural contexts, having dynamic development [15, p.59].

The emergence of new concepts and trends in world studies in the XX-XXI centuries, methods of synthesis analysis such as psycholinguistics, pragmalinguistics, lingvosinergetics, and the bold introduction of audio-visual, virtual forms in the communication process can serve as a vivid example.

5.Instability. Synergetics focuses on the relationship between the states of instability and stability in the development process. One of the founders of the School of Synergetics, I. Prigogine, elaborated on this in his "Philosophy of Instability." In his view, until now, the concept of instability has been used in a negative sense and its original nature has not been given enough attention. He interprets instability as the important essence of being. [See 25, p. 369]. Based on this principle, the new qualitative change and the boundary between the old and the new are associated with "bifurcation points". Scientists liken the concept of bifurcation to the separation that has appeared in the existing system, and the new directions to the two-pointed shape of the fork. In the following period, the term polyfurcation was also used in places where it was considered that there could be more than one of these directions." In particular, for the Uzbek language, the phenomena of agglutination, synthetism, suffixation, relativity are a stable phenomenon, cosmic, fusion, analytism, and prefixation are an unstable phenomenon – chaos. In the process of evolutionary development, the chaotic characteristics of a particular language may have the property of stability and may have a drastic effect on the structure of the language" [15, p.65].

6. Dynamic hierarchy (emergency). "Emergency" means that some features, i.e. horizontally, a new quality of the system emerges spontaneously. The point between the past and the future - the bifurcation point in the subsystem is the whole period of change. It is here that an evolutionary choice is made to develop a larger system based on dynamic chaos.

7.Observability. According to the principle of observability, any scientific theory must have an empirical basis and apply quantities and concepts that allow a qualified experiment to be conducted in the investigation. The development of science is associated with the anthropic principle, personal knowledge, and this concept was introduced by M. Polani.

The final result takes on the character of an irrational event with a previously incredible outcome. Synergetics is based on the relativity of the scale of observations. The integral description of the system is formed through the sum of the various additional quantities and the relationship between the different levels of observations [21]. In synergetics, it is explained by the scale of the observations and their relativity to the expected original result.Determining the boundaries of the system depends on the position of the observer.

To sum up, synergetics can also serve as a basis for the study of linguistic problems as a methodology that can provide an in-depth analysis of the substantive essense of an object.The phenomena of linguistic levels as a whole system, the analysis and interpretation of various changes on the basis of a synergistic paradigm, which occurred as a result of natural and social evolutionary processes, opens the way to the next stage of development that stands before linguistics.

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