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Key Concepts and Principles of Futurosynergetics

Bozarov Dilmurod Mirzarasulovich
Associate Professor of the Department of "Languages, Exact and Social Sciences"
"Institute of Technology, Management and Communication

Abstract

This academic article explores the concept of futurosynergetics as a result of epistemological integration between futurology and synergetics within a socio-philosophical framework. It argues that under the conditions of global transformation, futurosynergetics serves as a crucial theoretical foundation for designing future-oriented strategies. The article highlights the significance of historical holism, the dynamics of open systems, meta-historical reasoning, and axiological perspectives in constructing images of the future. Futurosynergetics is interpreted as a conceptual space that synthesizes scientific, cultural, and ethical dimensions of humanity's future vision.

Keywords: Futuro synergetics, futurology, synergetics, historical holism, meta-history, forecasting, axiology, future imagery.

Introduction

Futurosynergetics is a complex and multi-layered direction of modern scientific and philosophical thought, formed in a socio-aesthetic context. Its conceptual essence is aimed at interpreting the ontological states of humanity that may arise in the future in the conditions of historical dynamics, civilizational differences, global crisis situations and technogenic evolution on a systematic and synergistic basis. This approach is formed at the epistemological interface between classical futurology and synergetics and, by integrating the theoretical foundations of these two directions, serves to conceptualize knowledge about the future as a stable, changing and multi-vector reality. Futurosynergetics manifests itself as an unconventional epistemological practice aimed at understanding not only projection models of existing reality, but also trajectories of movement within this reality. By its very nature, it is a point of convergence of scientific progressivism and socio-humanistic reflection, which allows it to be universal modeling within the framework of prognostic activity. The analysis of new stages of human development, changing structures of societies, imbalances of social systems and global transformations in the prognostic spectrum becomes a real intellectual strategy within the framework of the futurosynergetic approach.

At the heart of futurosynergetic analysis lies the concept of the future, which embodies the social nature of man, his historical experience and transcendental desires. Within this concept, time is seen not only as a linear movement, but as a changing energetic space; in which the past, present

and future form an inextricably linked dynamic continuum. In the futurosynergetic model, the predicted future is perceived not as reality, but as a constructed reality reflected in social consciousness, which defines ontological dualism - the boundary between what is and what could be. On this basis, futurosynergetic is an attempt to identify potential forms of existence and evaluate them from a socio-philosophical aspect. Its epistemological foundation is based on the principles of synergism: instability, self-organization, bifurcation, auto-organization, and the emergence of unexpected situations leading to structural social outcomes. This means that futurological predictions are no longer based on static scenarios, but on a complex typology of alternative vectors and development trajectories.

The present era can be characterized by a technogenic explosion, cultural information saturation, epistemological relativism and a crisis of values. In such conditions, futuro-synergetics has emerged as a new scientific and philosophical concept. It not only combines modern futurology and synergetics, but also creates a unique methodology of epistemological and axiological searches for the future. Futuro-synergetics is a philosophical and epistemic model that synthesizes the variability of social systems, the possibility of self-organization and the probabilistic nature of prediction.

Synergetics is an interdisciplinary approach developed by H. Haken and "studying the laws of self-organization of open complex systems", in which order parameters, the principle of slaving and bifurcation points are indicated as the main concepts[1]. As Haken notes, "synergetics is the science of how innovation emerges as a result of the interaction between different elements"[2]. According to T.S. Akhromeeva and G.G. Malinetsky, who brought this concept to the socio-philosophical arena, synergetics "is a bridge between the humanitarian and natural sciences and should form the basis of the philosophy of designing the future at a time when modern humanity is at a bifurcation point"[3]. Their concept substantiates the axiological component of futuro-synergetics: it reveals the question of what historical trajectory humanity should choose during its social evolution, at technogenic and cultural stages. However, there are methodological doubts about the application of synergetics to the social sciences. T. Sudakova, recognizing this, emphasizes the need to "consider synergetics as a modern form of dialectical thinking"[4]. According to him, "it is not the difference between dialectics and synergetic that is important, but their methodological coherence"[5]. This approach strengthens the philosophical foundations of futuro-synergetics, turning it into a methodological alternative in social thinking. The futuro-synergetics approach also emphasizes the need to understand the future "not only as a scientific forecast, but also as a value-oriented social project." In the article "Synergetics in the scientific worldview", unknown authors write about this: "Synergetics allows harmonizing not only theory and methodology, but also value-oriented development strategies"[6]. This position presents futuro-synergetics as a universal paradigm integrated in philosophy, sociology, and historiography.

[1] Haken, G. (1989). Synergetics: An overview. // Reports on Progress in Physics, 52(5), 515–518.
[2] Haken, G. (1989). Synergetics: An overview. // Reports on Progress in Physics, 52(5), 520.
[3] Ахромеева Т. С., Малинецкий Г. Г. (2020). Синергетика и гуманитарно-технологическая революция. // Вестник философии и культуры, №3, с. 53–68. [Bet: 60–62].
[4] Судакова, Т. (2023). Синергетические принципы в методологии криминологического мышления и диалектике. // Российский криминологический журнал, 17(3), С.229–230.
[5] Судакова, Т. (2023). Синергетические принципы в методологии криминологического мышления и диалектике. // Российский криминологический журнал, С.17(3), 232.
[6] Philosophical and methodological prospects for the future of synergetics in the scientific picture of the world (2022). // Futurity Philosophy, 12(30). [Bet: 15–18].

In the synergetic approach, the image of the future is a "probabilistic-realistic" model formed in the minds of socio-economic subjects, which is not a strict prediction, but a set of alternative scenarios. Therefore, synergetic modeling differs from the deterministic approach and is based on concepts such as probability, uncertainty, and systemic instability.[7]. According to Haken's principle of slaving, order parameters "subdue" other system elements, thereby reducing complex systems to a simple spatial model. These theoretical foundations can be used in synergetic computers, algorithmic prediction, neuro-interface models, synergetic simulation of socio-ecological systems, as well as in urban planning, education, environmental security, and political forecasting. In particular, Malinetsky says about this: "Synergetics is an intermediary concept in the theoretical substantiation of future high technologies"[8].

Futuro-synergetics views social reality within the framework of two opposing principles: holistic (recognizing wholeness) and atomistic (individualized) approaches. Holism seeks to see social systems as a single whole, while atomism sees individual consciousness and needs as the main determinant. These constitute the axiological differential of the futuro-synergetics model. Futuro-synergetics is not only a scientific paradigm, but also a universal methodological basis for historical thinking, social reflection and axiological choices. It serves as a “transdisciplinary bridge” between existing forms of social consciousness, visions of the future and theoretical predictions. This approach allows humanity to choose not only knowledge about the future, but also axiological vectors towards which it is directed. It is these aspects that make it one of the most relevant concepts in modern philosophy. In the futurosynergetics methodology, the human factor is considered as a central determinant. Man is not only a subject of forecasting, but also an active agent that synergistically manages social systems, putting forward cognitive and axiological criteria. This approach introduces an anthropocentric interpretation into futurological processes and turns the future into a reflected identity of humanity. In this regard, futurosynergetics goes beyond the framework of classical rationality and includes intuitive-cultural reflection in the framework of analysis. Visions of the future at this point take the form of theoretical models that are reflected not at the level of aphorisms, but in the logic of change of synergetic systems. These models allow us to understand the complex connections between the historical memory of society, current crisis situations and possible future scenarios. In this approach, the forecasting process, on the one hand, reflects existing socio-structural systems, and on the other hand, reveals the ways of their potential transformation. Since the directions of social evolution in futurosynergetic thinking are qualitatively sharply changing, uncertain and multi-level, future predictions are also multi-vector, projective constructions based on a spectrum of probabilities, partly with an axiological scope. Their significance lies in their assessment not as real reality, but as a driving force in the consciousness of society - a center of motivational energy.

Also, one of the criteria indispensable for futurosynergetic analysis is the dialectical interaction between historical holisticness and metahistoricity. Futurosynergetic explains future evolution on the basis of existing historical facts and their dynamic tendencies, but it identifies new historical directions through the metahistorical context - the civilizational possibilities, transcendental goals and ideals of humanity. This gives futurological activity an aesthetic and philosophical aspect and

[8] Малинецкий, Г. Г. (2015). Синергетика – от прошлого к будущему. // Моделирование и анализ информационных систем, 19(3), 5–31. [Страница: 6–8].

raises it incomparably above the level of a simple statistical or technocratic exercise. In this sense, futurosynergetics is not only a practice of developing scenarios, but also a conceptual expression of social identity, cultural-intellectual reflection, and axiological responsibility for the future.

Futurosynergetics is a methodologically open and axiologically responsible philosophical paradigm based on the synergistic conceptualization of the categories of time, history, consciousness and humanity, integrating social reality and potential reality. It forms the future in the consciousness of society not only as a prediction, but also as an axiological field that must be built, in which future expressions are theoretical images of a new level of social existence, a prospective project of human activity.

The development of modern science, the deep penetration of information and communication technologies into social structures, the aggravation of global problems and the limits of anthropocentric thinking are pushing humanity to develop completely new methodological approaches to studying the future. In such complex conditions, futurosynergetics - that is, a conceptual paradigm based on synergistic thinking in studying the future - stands out for its philosophical, epistemological and methodological foundations. This approach, based on the principles of synergism, allows us to understand, model, and predict the complex, interactive evolution of social, technological, cultural, and natural systems[9].

The epistemological roots of the category of futurosynergetic lie in synergetic thinking, that is, in the dialectical balance between disorder (entropy) and self-organization (autopoiesis). According to E. Janch, in order to understand the future, it is necessary to deeply study *“nonlinear mechanisms of development processes in changing systems”*. This point of view distinguishes futurosynergetic from deterministic approaches. The evolution of society, nature and technological systems is manifested as complex structures that cannot be determined in advance, formed through many bifurcated states.

One of the important ideas in futurosynergetic thinking is the principle of “multi-level forecasting”. The “FuturICT” project, put forward by D. Helbing and his team, serves as a kind of model in this regard. They write: “The creation of new information infrastructures that allow for real-time observation, modeling and prediction of large-scale social systems will lead to the understanding of humanity’s own future.” Their project puts forward the concept of strategic management of the future through the integration of synergetic and big data. However, this model is too technocratic; it considers the human factor, moral determinants and cultural differences as secondary, which leads to methodological limitations. From the point of view of the cognitive-agentic approach, the future is not considered “just a state of being”, but rather a product of the constructive activity of the human mind. P. Mankekar and A. Gupta explain the concept of “futurity” through the lives of BPO employees as follows: “futurity is a mechanism by which subjects stabilize their subjective existence through hopes, fears and plans for the future, despite existing socio-economic difficulties”[10]. This idea is related to one of the important principles of futurosynergetics - understanding the future as a product of the reflexive activity of the subject. However, there is a danger that this approach excessively neglects technological determinants, that is, human desires play a lesser role in the determination of global information systems.

[9] Helbing D., Bishop S., Lukowicz P. FuturICT. — ArXiv preprint arXiv:1211.2313, 2012. — C. 4–9.
[10] Mankekar P., Gupta A. The Future of Futurity. — Duke University Press, 2025. — C. 79–83.

Another important principle of the synergetic paradigm in understanding the future is the primacy of the horizontal causality approach. S. Pereslegin says about this: “In understanding the future, we must abandon vertical, that is, linear causality, and take into account spatial (horizontal) connections between events.” This idea encourages us to understand historical events, technological shifts, and cultural transformations not only from the past to the future, but also through alternative directions and scenarios. Futurosynergetics therefore adopts scenario modeling as its methodological basis.

Synergetic concepts are philosophically based on two main ontological principles: holism and atomism. In the holistic approach, humanity is seen as an integral part of a global system. This perspective is associated with the global modeling of the Club of Rimsky-Korsakov and the scientific developments of scientists such as G. Malinetsky. They describe humanity as a "planetary subject" and see the future as "a complex system that must be built on the basis of harmony between nature and society." On the other hand, the atomistic paradigm represents a technocentric and individual-oriented approach. This type of thinking includes D. Bell's theory of postindustrial society, F. Fukuyama's "end of history", and R. Kurzweil's concepts of technological singularity. Bell writes: "The main force shaping the future is the primacy of information production." This approach recognizes the central role of science and technology in transforming society, but often ignores the cultural and ethical dimensions.

Methodological polylog and scenario constructions play an important role in futurosynergetic analysis. In particular, approaches such as the Delphi method, SWOT analysis, tree of objectives, and complex systemic modeling are used to predict the future based on scenarios[11]. These methods, on the one hand, ensure the interdisciplinary nature of knowledge, but on the other hand, do not deny the uncertainty of scientific predictions based on probability. Futurosynergetics is an epistemologically, methodologically and ontologically integrative approach that takes into account the complex interaction of social systems in the study of the future. It is based on the integral integration of synergetics, information technologies, philosophy, social thought and culture. This concept serves as an epistemic basis for humanity to consciously build its own future.

O. Fleckheim, one of the founders of the futurological approach, calls futurology "scientifically based predictive activity", dividing it into theoretical and practical directions. In his opinion, futurology is able to project future socio-political situations through the intellectual power of society, since "prediction is formed as an idea that meets the needs of the present." Flechtheim's approach still serves as an important theoretical foundation in modern futurology. However, critically approaching this point of view, B.S. Stepin calls futurology "not just a forecast, but a tool for creating a concept of social renewal." G. Nikolis and I. Prigogine in this regard point to open systems as "an energetic source of structural renewal in conditions far from stability." According to this principle, society renews its development trajectory through external influences, global changes, and internal imbalances.

Futurosynergetics is a complex, transdisciplinary concept that embodies the epistemological and ontological foundations of modern scientific development and global energy transformations. Its theoretical and methodological basis is closely related to synergetics - that is, the laws of self-organization of open and uncertain dynamic systems - and futurology - research aimed at

[11] Лисичкин В.А. Отраслевое научно-техническое прогнозирование. — М.: Наука, 1981. — 164 с. — С. 107–110.

scientifically modeling, predicting and consciously managing future sociotechnical environments. Futurosynergetics offers a scientific approach aimed not only at analyzing the functional behavior of energy systems at certain stages, but also at predicting their long-term evolutionary trajectories, identifying bifurcation points and cognitive intervals that arise in these trajectories. Futurological thinking and the synergetic paradigm are taking shape in modern scientific thinking as a scientific and theoretical basis that provides an innovative approach to the problems of predicting society, historical processes and the future. Futurosynergetics is a conceptual and methodological integration of these two approaches - futurology and synergetic. It involves a philosophical and scientific analysis of the changing nature, complex structure, and self-organization of social systems. This integration allows for a deeper understanding of the historical movement of humanity, its aspirations for the future, and the axiological content of prophecy.[12].

In futurosynergetic analysis, energy systems are studied in an integrative manner with the social, political, cultural and ecological infrastructures of society. Such systems are interpreted not within the framework of simple linear models, but in a complex, interconnected and multifactorial dynamic environment. The processes of energy production, distribution and consumption are not only the result of technogenic activity, but also the product of historical and cultural choices, normative values and conscious strategic will of humanity. Futurosynergetic systematically studies these socio-cognitive determinants and proposes to model the energy future not only through physical or economic parameters, but also through anthropological and ethical criteria. In this approach, the concept of the future acquires a variational and probabilistic character, not deterministic. According to synergetic laws, any complex system — including national or global energy infrastructure — passes through bifurcation points in its evolutionary development. At these points, the system chooses one of several possible states and stabilizes in this direction. It is in this context that futurosynergetics demonstrates its ideological and theoretical superiority: it does not passively observe the current state, but rather models possible options through cognitive intervention tools, allowing humanity to consciously choose the most optimal development trajectory. Epistemologically, futurosynergetics, unlike classical scientific approaches, is based not on determinism, but on the criteria of uncertainty, variability, and interactivity. It emphasizes the study of discontinuities, classifications, transitional states, and emergent structures rather than continuity and stability. Ontologically, this approach views energy systems not as substantial, but as relational and procedural: energy here is not just a physical quantity in quanta or watts, but as a complex transformation of information, intellectual labor, biospheric resources, and sociocultural contexts.

Futurosynergetics provides a particularly convenient epistemic platform for transdisciplinary research. It consolidates physical energy, information technologies, economic forecasting, political strategies, theories of social consciousness, environmental monitoring and anthropological values in a single complex. Thus, Futurosynergetics proposes a reinterpretation of the energy future of society based on the integrative model of "man - nature - technology - morality". This model, in turn, serves as a scientific and methodological basis for building self-developing systems based on synergetic principles. In this regard, Futurosynergetics can play an important role in defining strategic vectors of energy policy, in line with the paradigms of "man -

[12] Флекхайм О. История и будущее: Основы футурологии. – М.: Прогресс, 1970. – 1-2 с.

society - state" in the Concept of New Uzbekistan. Values such as social justice, ecological sustainability and technological sovereignty translate the principles of the Futurosynergetics concept into practical political reality[13]. Therefore, the deep scientific foundations and philosophical ideas of this concept remain a relevant object of research not only for academic circles, but also for political scientists, energy specialists, and cultural scholars.

In conclusion, the futurosynergetic paradigm represents an important epistemological shift in the contemporary evolution of contemporary socio-philosophical thought. It understands prediction as an active state of social consciousness, a conceptual understanding of historical time, and an axiological orientation to the future. This approach seeks to understand the future not only on scientific grounds, but also on the basis of the cultural heritage and spiritual values of humanity.

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