Journal of Nano- and Electronic Physics
Vol. **15** No 6, 06032(6pp) (2023)

Журнал нано- та електронної фізики
Том **15** № 6, 06032(6cc) (2023)

Heuristic Metamodeling – a Transdisciplinary Approach

V.P. Mygal[1], G.V. Mygal[2], A.V. Myhal[3]

[1] *National Aerospace University "Kharkiv Aviation Institute", 17, Chkalova st., 61070 Kharkiv, Ukraine*
[2] *Lviv Polytechnic National University, 12, Stepan Bandera, st., 79013 Lviv, Ukraine*
[3] *Consulting Implementation Firm "CON-COR", Kyiv, Ukraine*

(Received 21 September 2023; revised manuscript received 22 December 2023; published online 27 December 2023)

Analysis of the evolution of cyclic processes in the cognitive space of dynamic events made it possible to overcome interdisciplinary barriers and problems. The purpose of the article is to study the structure of the relationship between the subject and the problem, as well as the relationship between them. It is shown that when visualizing the functioning of elements of complex dynamic systems (CDS) in the space of dynamic events, the complementarity of heuristic metamodels and the similarity of the structures of their interconnections have cognitive value. The relationship between the sciences and their metasciences is due to numerous analogies of properties and relationships, as well as the dynamic similarity of processes of various nature. A system analysis of the heuristic meta-model of the structure of the interconnections of physics, mathematics, philosophy of their metasciences showed that the complementarity of these sciences simplifies the system analysis of the problems of the functioning of the CDS. The technological and physical limitations of the functioning of the elements of the CDS are discussed, the complementarity of which determines the viability of the CDS in extreme conditions. Attention is drawn to the elements of geometric similarity of the structure of natural fractals and spatio-temporal ordering of information flows of various nature in the space of dynamic events. It is shown that the connection between fractal thinking and the holographic nature of memory is important for the study of nonlinear systems. The key role of emotional intelligence in the cognitive perception of the harmony of the fractal nature, which contributes to the creative work of the individual, is discussed.

Keywords: Dynamic events, Natural fractals, Conjugate triads, Balance of opposites, Inversion, Cognitive metamodels, Dynamic symmetry.

DOI: 10.21272/jnep.15(6).06032 PACS number: 05.10. – a

1. INTRODUCTION

Transition from interdisciplinarity to transdisciplinarity. Interdisciplinary methodology is successful in computerization, biotechnology and biomedicine.

Interdisciplinary, multidisciplinarity and transdisciplinarity reflect the levels of integration of various scientific disciplines, as they strive to connect (converge) disciplinary points of view. Thus, multidisciplinary research is often defined as research conducted within several disciplines and pursuing several independent goals, united by a single context [1]. In essence, this is a combination of methodological and conceptual tools from various fields of science [2]. Transdisciplinarity takes into account the consequences of the flow of information circulating from one branch of knowledge to another, allowing unity to emerge in diversity and diversity through unity. Transdisciplinarity is aimed at revealing the nature, characteristics and structure of this flow of information in search of new approaches, universals and new logic.

Transdisciplinary heuristic metamodels are effective in solving real problems (etc.) [3]. Obviously, for the study of natural fractal systems, it is important to harmonize the perception of reality, as well as to streamline knowledge with the help of new cognitive metamodels and metaheuristic models.

The problem of cognition of complex and non-linear systems is closely related to fractal thinking and the holographic nature of memory. Indeed, both methodologies allow:

– represent and reproduce complex non-linear dynamic systems;
– use the principle of self-similarity, that is, the whole has the same shape as one or more parts;
– display the degree of filling the space with a fractal or hologram when changing the scale.

This is important for the development of creative thinking and successful activities in various fields of science, technology, art and education.

Information asymmetry. It can be both structure-forming and structure-destroying [4]. On the one hand, digitalization (search engines, filters, reviews and recommendations) makes searching easier and provides an abundance of information. However, the relevance of information depends on the functional asymmetry of the cerebral hemispheres, the study of the individuality of which is a big problem. On the other hand, in various fields of activity, a significant part of the information simply does not exist. Therefore, the subjective perception of information requires a transdisciplinary approach to the selection of relevant information and its systematic analysis.

Individual cognitive space. The individuality of the functioning of CDS of different nature is most manifested in the space of dynamic events [5]. In it, the similarity of dynamic features of information flows of various nature in a single cognitive space stimulates thinking in more general forms, and the use of intuition contributes to the acquisition of new knowledge. After all, we prove by logic, and discover by intuition, the connection of which contributes to creative activity [4].

The hidden connections between topological modeling and fractal logic are based on the holographic nature of memory [3]. Therefore, with the help of

topological similarity, we can discover something new or understand what we observe through traduction.

Evolution of cyclic processes. The cyclicity of most of the processes occurring on Earth is associated with the constant action of cosmic factors (solar activity, etc.), leading to the movement of matter, energy and information. When visualizing the functioning of the CDS elements in the space of dynamic events, the structure of their interrelations is manifested. This is also evidenced by the results of cognitive modeling of the influence of small perturbations on the dynamic structure. Therefore, individual changes in the cycle of functioning of objects of animate and inanimate nature contain information about the adaptability of the structure of the relationship between the elements of the CDS [6]. Knowledge of the laws of evolution of cyclic processes in natural systems creates the basis for predictive analytics and knowledge mining.

The purpose of the article is to study the structure of the relationship between the subject and the problem, as well as the relationship between them.

2. METAMODEL OF THE STRUCTURE OF PROCESSES

Interrelated phenomena, analogies and principles. The increasing complexity of interaction in the digital world has led to the development of complex systems thinking [7]. The natural relationship between structure and functionality was considered in [8-10], which provided new opportunities for NBIC. Informativeness of heuristic models of the structure of interconnections of nano-, bio-, information-, cognitive technologies and components of cyber-physical systems is due to the use of a fractal triangle and fractal logic. In works [3-6], new ideas are developed, which are based on:

– inversion of the structure of information sources and the medium of its transmission;
– the principle of detailed balance;
– similarity (kinematic, dynamic, geometric, etc.).

Their complementarity and interconnection made it possible to identify information flows of various nature online.

Natural relationship between statics and dynamics. Graphical display of the causal connection of phenomena, the logic of the development of technological processes in time, information and energy flows, as well as system states, simplifies interaction in the digital world. In the cognitive space, you can analyze the statics and dynamics of objects of any nature online. This is confirmed by modeling the multifractal evolution of solar activity in the cognitive space of dynamic events. Thus, by converting statics (the number of sunspots per month over the past 340 years) into a dynamic structure, we found that this structure is multifractal in the space of dynamic events [3].

Finding a balance of opposites. With intensive thinking, a person intuitively seeks balance, for the restoration of which the static / dynamic ratio is important. Negativism/positivism is important for resolving doubts. When generalizing, the relation of evolution / involution is important. All this is influenced by many internal and external factors (emotional coloring, magnetic storms, etc.). Therefore, the search for a balance of opposites can be represented as a cognitive metamodel of the structure of thinking (see Fig. 1).

Universality of the metamodel structure. The cognitive metamodel of the structure of thinking consists of three conjugated opposites (statics-dynamics, negativism-positivism, evolution-involution), which reflect different types of information exchange [6]. As can be seen from the cognitive metamodel, the balance of the components of the structure of thinking is the harmony of conjugated opposites. On the one hand, the components of two triads (statics – evolution – positivism, on the other hand, induced components (dynamics – involution – negativism). Therefore, the cognitive metamodel of the structure of thinking allows you to form a balance of creative and critical thinking.

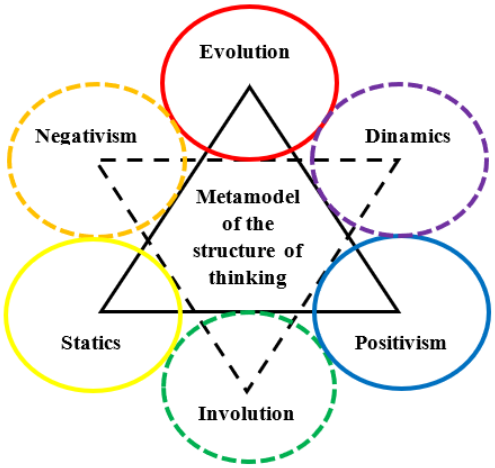

Fig. 1 – Cognitive metamodel of the structure of thinking

Such a structure of thinking demonstrates a tendency to blur the boundaries between the methodologies of natural and social cognition.

Thus, the harmony of perception of the cognitive metamodel of the structure of thinking in the form of the Star of David contributes to the transition from the indivisibility of knowledge and culture to the unifying strategies of learning and creative activity.

Determining the causes of key problems in the functioning of objects of various nature in extreme conditions makes it possible to predict the consequences of problems and find possible ways to solve them.

3. INTERRELATION OF THE NATURAL SCIENCES AND THEIR METANASCIENCES

Spatial-temporal harmony of interconnections. In the cognitive space of dynamic events, the structure of processes of various nature is transformed into conjugated triads, the perception of harmony of which simplifies the interaction of a person with the digitized world through:

– establishing a balance of conjugated triads and coloring them with natural colors;
– inversion of conjugate triads, the effectiveness of which was manifested in physics, mathematics, software algorithms, etc.;
– synthesis of complementary dynamic, static and

statistical metamodels.

Their systematic analysis showed that the perception of harmony depends on psychophysiological factors (fatigue, stress, etc.). The important role of external and internal factors is due to the manifestation of the Le Chatelier principle [11].

Determining the causes of key problems in the functioning of objects of various nature in extreme conditions allows us to predict the consequences of problems and find possible ways to solve them.

Complementarity of key sciences and their metasciences. For modern metaphysics, the statistical diversity of natural fractals and multifractals is important, as well as the principles:

– principles of duality and trinity, the hierarchy of which turns metaphysics into a single system of paradigms;
– the principle of fractality (self-similarity), reflecting the unity of the whole and the particular;
– the principle of double cyclicity, manifested in the orderliness of the spatio-temporal structure of information flows of different nature.

The complementarity of these principles is manifested in natural dynamic fractals and multifractals [12], as well as in structural functionalism (experimental psychology). Therefore, it is necessary to expand the worldview of the researcher on the basis of modern metaphysics [13], which is associated with metaphilosophy and metamathematics. Their structure of connections with physics, mathematics and philosophy is shown in Fig. 2.

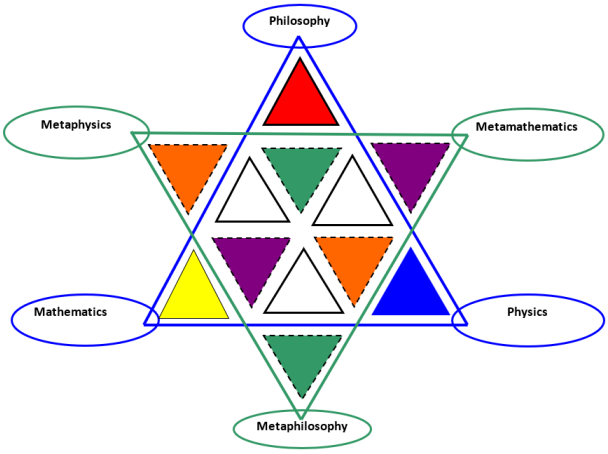

Fig. 2 – The structure of the relationship of sciences and their metasciences

As can be seen from the figure, the structure of the relationship between the key sciences and their metasciences has the form of the Star of David. The visualization of the relationships made it possible to establish their complementarity, which made it possible to expand the number of interpretations of the Star of David [3-5].

Visualization of triads of hidden relationships. Interrelationships of sciences in Fig. 2 are colored in accordance with natural colors according to I. Goethe [4]. It is symbolic that this is the choice of 6 natural colors in Fig. 2 is the only possible one. This made it possible to single out 6 conjugated triangles and 6 induced states (triangles marked with a dotted line) in the figure.

The hidden relationship between metaphysics, metamathematics and metaphilosophy is naturally associated with the fact that:

– the triangle of key sciences is connected with the triad of conjugated metasciences;
– the triangle of metasciences (metaphysics, metamathematics and metaphilosophy) has one state, the uncertainty of which is manifested in the gray balance, and not in the white balance;
– the choice of conjugate triangles (triads of colors) is individual, and also depends on heredity and education.

Note that the heuristic metamodels of the structure of interconnections between the elements of complex dynamic systems (cyber-physical, information flows of various nature) also have the form of the Star of David [3, 4, 6].

4. LIMITATIONS AND PROBLEMS OF MODELING SOURCES OF INFORMATION

Interrelation of technological restrictions. In extreme conditions, technological limitations are due to the variety of information sources and their instability [13]. Therefore, the complexity of computational algorithms is due to the fact that:

– large databases contain inaccuracies, errors, etc., and are also focused on the past;
– twins and augmented reality affect the mentality;
– blurred line between lies and truth.

The relationship of physical limitations. The connection of fluctuations with induced micro- and macro-inhomogeneities in information flows of various nature is due to the variety of physical analogies (electromechanical, optical-mechanical, and others), which have heuristic significance. Thus, interconnected analogies generate a triad of physical constraints (uncertainty, instability, and nonlinearity) [14]. On the one hand, they increase the computational complexity of algorithms, and on the other hand, the virtuality of calculations does not obey the laws of natural science. All this limits the further development of cognitive computing.

Problems of neurolinguistic programming (NLP). The main problems of NLP are related to the fact that thinking and objects of thinking are individual. Therefore, NLP techniques are fuzzy patterns according to which one should carry out one's activity. The exit of heuristic metamodels beyond the framework of mathematical models is associated with:

– inability to make clear, positivistically interpreted conclusions about objective reality;
– creation of a virtual (own) reality that limits the reliability of conclusions;
– search for individual means of harmonizing interaction.

Therefore, the convergent approach to solving real problems and the use of universal sources of information and inversion made effective heuristic metamodels in NLP. The universal principle of inversion (dependencies, sources of information, state, etc.) provides new opportunities that allow technical monitoring of NLP. Note that inversion is used in psychology, art, metaphysics, logic, creative and critical thinking.

Problems of perception of fractal nature. Information and energy are different physical realities [16].

So, energy obeys all the laws of thermodynamics, but information does not. Structural information and its action or connection with energy are studied mainly by natural and applied sciences (engineering and computer science). On the other hand, information can be unstructured (genetics, biotechnology, and others). However, information flows of different nature in a single cognitive space have common features that can be universal markers or sources of information

Emergence of fractal nature. On the one hand, in Nature there are no ideal objects (absolutely elastic or solid), as well as ideal forms (spheres, or circles, or triangles). There are also no ideal fractals in Nature, and there are three orders of magnitude more natural fractals than mathematical ones. On the other hand, non-linear differential equations contain coefficients that depend on the properties of the medium. In communication channels, microheterogeneities and gradients of the medium determine its throughput, which is measured in bits per second [16]. On the other hand, micro-heterogeneity of information sources affect the dynamics of cyclic processes and their evolution. In the cognitive space, a scalar time series (signal, source of information) is transformed into a 3D configuration of dynamic events, the orthogonal projections of which are signatures of the 1st and 2nd orders. The change in their functioning cycles in antiphases reflects adaptive and transformational processes.

Hierarchical organization of fractal nature. Fractal structures are based on the principle of dynamic symmetry (symmetry of similarity), i.e. forms are dynamic, evolving over time.

Indeed, a natural fractal:
- accumulates the idea of growth;
- there is a kind of "gene" of shaping in design;
- it is the integrity and identity of the organization.

Indeed, the organization of natural fractal structures is based on the principle of dynamic symmetry (similarity symmetry).

Symmetry and asymmetry. There are two main approaches to the analysis of metamodels. The first one is based on the dialectical interrelation of two opposites that characterize the system property of integrity. In this case, symmetry is defined as a set of object properties (orderliness, uniformity, proportionality, harmony). It is important that it is the understanding of harmony that is connected with proportions. Asymmetry refers to the opposite properties of an object (system), namely, randomness, disorder, disproportion, etc.

The second approach is based on the concept of symmetry as a property of the immutability (invariance) of certain aspects, processes and relations of objects with respect to certain transformations. At the same time, the very concept of symmetry contains two contradictory moments. The first – in one sense, "symmetrical" characterizes the qualitative property of the object from the standpoint of its proportionality, balance. The second – symmetry shows the way of functioning and coordination of the constituent parts of the object, with the help of which the unification of parts into a whole is achieved. Asymmetry is characterized, on the one hand, as a structural property of an object, and on the other hand, as a functional characteristic of its movement and development.

Rational thinking. It is associated with environmental constraints or psychological experiences. Emotions also do not obey natural laws. At the same time, most mathematical models deal with two or three spatial dimensions. Only in the cognitive space of dynamic events time is set parametrically.

Interrelation of structures of metamodels. We see the prospects for the development of heuristic metamodeling through the prism of the fractal paradigm. For this, mathematical tools of fractal structures and holography are used. Topological structures (fractal geometry) and holographic structures are similar. Therefore, there is a connection between synergetics and holography, which manifests itself in more generalized forms. Fractal holographic structures make it possible to represent psychological phenomena in more generalized forms. Digital twins, augmented and mixed reality are important for:
- development of human emotional intelligence;
- individualization of learning;
- metadesign and metamodeling.

Fractal thinking involves flexibility, creativity, intuition and a systematic approach to problem solving.

5. PERCEPTION OF THE HARMONY OF FRACTAL NATURE

Self-organization of nature. In complex systems of both animate and inanimate nature, complex spatiotemporal or functional patterns of self-organization processes are widespread [19]. They are extremely important in the natural sciences (physics, chemistry, biology), as well as in medicine, engineering and social sciences. The science of self-organization is based on universal principles that are applicable to both inanimate and living nature [20].

Subjective perception of nature. It is important to note that the perception of the harmony of nature may differ from person to person due to the subjective perception of information and may vary depending on:
- intuitive understanding of harmony, which can arise on the basis of personal associations and interpretations;
- personal successful experience;
- cultural context of the environment.

A consequence of this is the variety of heuristic metamodels**.**

Heuristic metamodels and cognitive models. Today, more than ever, it is important to perceive the harmony of nature, which is a unique creator [21]. Of particular interest are heuristic metamodels and cognitive models that look like the Star of David.

And, as a result, complementary interpretations of it, namely as:
- a symbol of consent and harmony between different forces or opposites, represented in its geometric structure;
- striving for unity and combination of different aspects of life or the world;
- a symbol of the cosmic order, expressed by virtue of its geometric regularity.

They are based on the complementarity of systemic and fractal thinking, which follows from the analysis of Figure 3.

In addition, fractal thinking is also associated with

figurative thinking, which is based on the holographic nature of memory. Therefore, new interpretations of the Star of David meta-model contribute to:
– study and understanding of the fractal nature;
– optimization of creative activity;
– individual perception of reality.

It all depends on successful experiences, impressions and associations that influence the cognitive and creative process.

Formation of emotional intelligence. Many of its shaping capabilities are already obsolete due to smartphones and social media, and the loss of empathy is a concern. In connection with GPT4 artificial intelligence, Meta virtual reality and Tesla bots, it is important to emphasize that they are based on nature-like algorithms and elliptical functions.

In the analysis of reality (topology, natural fractals, self-organized CDS), systemic thinking is necessary. Whereas the analysis of abstract models (mathematical fractals, digital holograms, digital topograms) requires fractal thinking. Therefore, such harmonization allows to find a natural balance between conjugated opposites, which is essential for finding a balance when making responsible decisions.

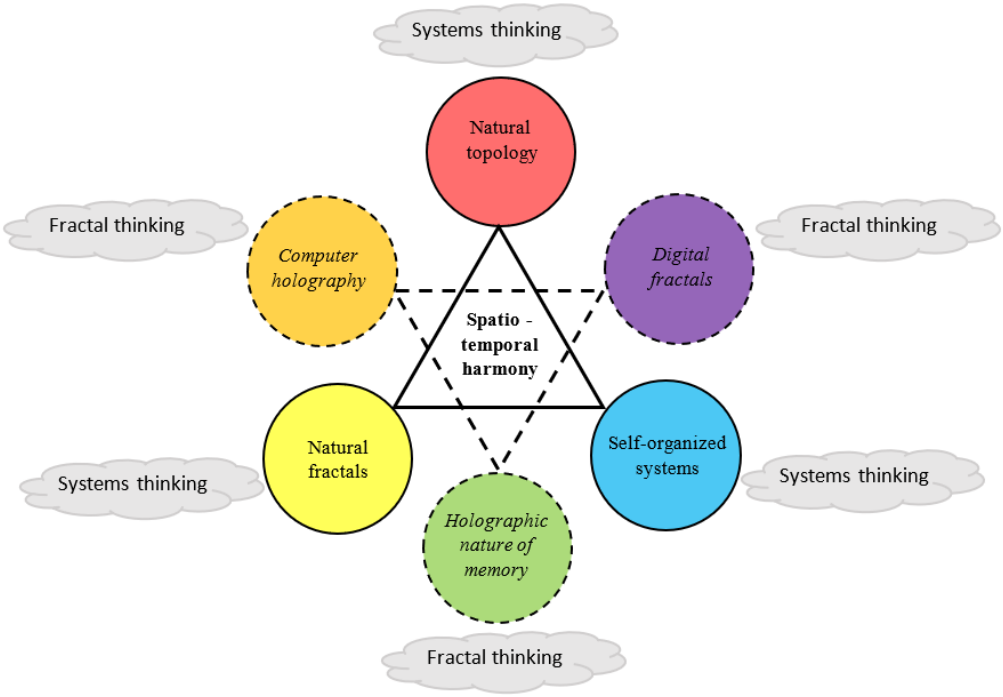

Fig. 3 – Harmonization through the complementarity of systemic and fractal thinking

6. CONCLUSIONS

The transdisciplinarity of the approach is achieved through the universality of dynamic similarity, inversion and natural colors according to I. Goethe. Their use in heuristic modeling contributes to:
– interpenetration of physics, mathematics and philosophy with their metasciences;
– the transition from the duality of perception of opposites in psychology to the integral 3D perception of the harmony of conjugated triads in nature and art;
– cognitive value of heuristic meta-models, which look like the Star of David.

The transdisciplinarity of the approach made it possible to expand the number of interpretations of metamodels in the form of the Star of David. Their complementarity has innovative potential.

The problems of optimizing the creative activity of an individual and the viability of the CDS are closely related to non-linearity, uncertainty and instability, which complicate the search for energy and information balance.

They underlie the complementarity of the proposed heuristic metamodels, which contributes to:
– development of critical thinking through self-learning in the cognitive space with augmented reality;
– exploration of the hidden relationships between metaphysics, metamathematics and metaphilosophy;
– optimization of the intellectual activity of the individual and the development of emotional intelligence.

In our opinion, each individual creates his own cognitive space through successful activities (training, hobbies, sports, etc.). This contributes to the choice of the optimal strategy for creative activity in design (engineering, investment, etc.). At the same time, the connection between fractal thinking and the holographic nature of memory allows:
– see and understand the world in all its complexity and diversity;
– take into account self-similarity, scale and non-linearity of phenomena;
– uses analogies, metaphors and symbols to convey and perceive information.

The spatial ordering of dynamic events, the universality of information sources and the concept of inversion confirm the close connection between fractal logic and the holographic nature of memory.

The discreteness of fractal thinking implies flexibility, creativity, intuition and a systematic approach to solving problems. In addition, fractal thinking is also associated with figurative thinking, which is based on different types of holography (acoustic, dynamic, and others). Therefore, new interpretations of the Star of David metamodel contribute to the study and understanding of the fractal nature.

It is shown that the fractality of nature is most manifested in dynamic symmetry, which indicates the connection between fractal logic and holography. Therefore, the results of heuristic metamodeling can be used to study:

- the impact of electromagnetic and optical radiation on physical and biological objects;
- physical processes in information systems;
- dynamic systems and nonequilibrium processes.

In general, an individual's choice of information processing method allows for decision making under conditions of uncertainty using generative AI.

REFERENCES

1. J. Petts, S. Owens, Bulkeley, *Geoforum* **39** No 2, 593 (2008).
2. R.J. Lawrence, *Futures* **36** No 04, 488 (2004).
3. V.P. Mygal, G.V. Mygal, *J. Nano- Electron. Phys.* **13** No 4, 04023 (2021).
4. V. Mygal, G. Mygal, S. Mygal, *The Educational Review, USA* **6** No 4, 109 (2022).
5. V. Mygal, G. Mygal, S. Mygal, *Radioelectronic and Computer Systems* **4** No 100, 7 (2021).
6. V.P. Mygal, G.V. Mygal, S.P. Mygal, *Radioelectronic and Computer Systems* **2** No 102, 118 (2022).
7. *Converging Technologies for Improving Human Performance: Nanotechnology, Biotechnology, Information Technology and Cognitive Science* (Ed. by M. Roco, W. Bainbridge: Springer Dordrecht: 2003).
8. K. Mainzer, *Thinking in Complexity: The Complex Dynamics of Matter, Mind, and Mankind* (Springer-Verlag Berlin Heidelberg: 1994).
9. S. French, *The Structure of the World: Metaphysics and Representation* (Oxford University Press: 2014).
10. J.W. Forrester, *System Dynamics Review* **23** No 2, 345 (2007).
11. D. Evans, D. Searles, E. Mittag, *Phys. Rev.* **63** No 5, 051105 (2001).
12. B.B. Mandelbrot, *Self-affine Fractal Sets. "Fractals in Physics"* (M.: Mir 1988). 0
13. A. Bird, *Nature's Metaphysics: Laws and Properties* (New York: Oxford University Press: 2007).
14. V. Terekhovich, *Metaphysics of the Principle of Least Action. Studies in History and Philosophy of Science. Part B: Studies in History and Philosophy of Modern Physics* **62**, 189 (2018).
15. C.E. Shannon, *Bell System Tech. J.* **27**, No 3, 379 (1948).
16. G. Nikolis, I. Prigozhin, *Self-organization in Nonequilibrium Systems: from Dissipative Structures to Order Through Fluctuations* (Wiley: New York, NY, USA: 1977). [in Russian].
17. H. Alder, *NLP: The New Art and Sciense of Getting What you Want* (Piatkis: 1994).
18. V.P. Migal, *Func. Mater.* **5** No 2, 188 (1998).
19. H. Haken, J. Portugali, *Information Adaptation: The Interplay Between Shannon Information and Semantic Information in Cognition* (Springer Cham: 2015).
20. *Selforganization in Complex Systems: The Past, Present, and Future of Synergetics. Proceedings of the International Symposium, Hanse Institute of Advanced Studies*, Editors: Günter Wunner, Axel Pelster (Delmenhorst, Germany: 2012).
21. K.M. Passino, *Biomimicry for Optimization, Control, and Automation* (Springer-Verlag London: 2005).

Евристичне метамоделювання – трансдисциплінарний підхід

В.П. Мигаль[1], Г.В. Мигаль[2], А.В. Мигаль[3]

[1] *Національний аерокосмічний університет ім. М.Є. Жуковського «Харківський авіаційний інститут», вул. Чкалова, 17, 61070 Харків, Україна*

[2] *Національний університет «Львівська політехніка», вул. Степана Бандери, 12, 79013 Львів, Україна*

[3] *Консалтингова фірма з впровадження "CON-COR", Київ, Україна*

Аналіз еволюції циклічних процесів у когнітивному просторі динамічних подій дозволив подолати міждисциплінарні бар'єри та проблеми. Мета статті – дослідження структури взаємозв'язків між суб'єктом та проблемою, а також відношень між ними. Показано, що при візуалізації функціонування елементів складних динамічних систем (СДС) у просторі динамічних подій проявляється взаємодоповнюваність евристичних метамоделей та подібність структур їх взаємозв'язків. Взаємозв'язок наук та їх метанаук обумовлений численними аналогіями властивостей та відносин, а також динамічною подібності процесів різної природи. Системний аналіз евристичної метамоделі структури взаємозв'язків фізики, математики, філософії їх метанаук показав, що взаємодоповнюваність цих наук спрощує системний аналіз проблем функціонування СДС. Обговорюються технологічні та фізичні обмеження функціонування СДС, взаємодоповнюваність яких визначає їхню життєздатність в екстремальних умовах. Звернено увагу на елементи геометричної подібності структури природних фракталів та просторово-часової упорядкованості інформаційних потоків різної природи у просторі динамічних подій. Показано, що для дослідження нелінійних систем важливий зв'язок фрактального мислення з голографічної природою пам'яті. Обговорюється ключова роль емоційного інтелекту в когнітивному сприйнятті гармонії фрактальної природи, яка сприяє творчій діяльності індивідуума.

Ключові слова: Динамічні події/стани, Гармонія, Пов'язані тріади, Баланс протилежностей, Інверсія, Когнітивні метамоделі, Динамічна симетрія.