KAPITEL 12 / *CHAPTER 12* [12]
INTEGRATED INTERDISCIPLINARY CONCEPT OF LIFE-LONG LEARNING: UKRAINIAN EXPERIENCE

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Introduction

Analysis of scientific sources and the modern socio-cultural situation enables to speak of a paradigmatic scientific revolution, which affects the fundamental change of the paradigm of cognition and mastering the world, reflecting the revolution of the information society era. This process began within the post-industrial (transitional from industrial to information) society and is currently at the stage of forming the main elements and formulating the tasks of educational development, since within its framework there will be a transformation of the sphere of education into the main form of human and society's life activity, and a complete reorientation of educational activity to ensure conditions for self-development of the personality, harmonization of relations in society and ensuring the conditions for the survival of humanity.

The study of contemporary content of science and philosophy allows us to conclude that nowadays the formation and development of a new post-nonclassical scientific paradigm is taking place affecting a fundamental shift in social reflection and social consciousness from a discrete-atomic-fragmentary to a holistic-continuous worldview and paradigm of cognition.

The educational sphere has entered a state of systemic crisis, which is caused by epochal civilizational challenges and threats that befell humanity at the end of the 20th and the beginning of the 21st centuries, and have colossal planetary consequences in radically changing the socio-economic, humanitarian-political, moral-ethical, natural-ecological mechanisms of the functioning of human civilization [1; 2; 3; 4].

A new scientific paradigm is being implemented in the field of pedagogy, where the global crisis of humanity, marked by a "condensation of historical time", has led to the emergence of dozens of educational and pedagogical paradigms.

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Literature review. We can mention the situation connected with the pedagogical diversity revealing the paradigmatic plurality of pedagogy, where a lot of paradigms are declared in the Ukrainian pedagogical literature, such as: formative, humanistic, personality oriented, subject-subject, subject-activity, contextual, spiritually oriented, andragogical, scientific-technological, instrumental-technological, humanitarian and humanistic, esoteric, authoritarian, manipulative, knowledge-centric, culture-creating, ethnocentric, supportive, rationalistic, acmeological, competence-based, polyphonic, child-centric, inclusive, critical-creative, postmodern (post-nonclassical), continuous-distance, open education, innovative, harmonizing, noosphere-ecological, civilizational-anthropological, projective-aesthetic, humanistic-reflective, collaborative/partnership, dialogic, improvisational, life-creating, synergistic and acmesynergistic, communicative, mutual learning, anthroposophical, totallogical, suggestopedic, theocentric paradigms, the paradigms of fundamentalization and integration of knowledge, intellectualization of innovative education, etc. [4].

We can also mention such pedagogies being used in the sphere of Ukrainian pedagogical theory and prantice as: humane, authoritarian, self-determination, cooperation, partnership, morality, biblical, penitentiary, identification, ethnic, integral, comparative, theater, military, library, neopedagogy, developmental, environmental, embryonic, museum, ecological, environmenal, constructivistic, health-preserving, noospheric, retropedagogy, space-flight, zoopedagogy, creative, etc. [4].

We can also mention different concepts of education as a continuous process of person's development: the continuous education, continuing education, continuous schooling throughout life, education throughout life, life-long education, life-long learning, lifewide education, recurrent education, out-of-school education, non-formal education, self-directing education, permanent education, adult education, etc. [6; 7; 8].

Thus, we can state the paradigm shift in modern education [9; 10; 11; 12], and the plurarity of educational paradigms [13: 14; 15; 16; 17; 18; 19; 20; 21].

One of the ways to solving the problem of the paradigmatic plurality of pedagogy

(and many other educational problems stemming from it) can be found in the jubilee report of the *Club of Rome*, where the formation in all the participants in educatinal process of "literacy for the future" was proclaimed. To achieve this goal the educators and all concerned persons are to focus on certain prerequisites when the educational process is to be based on "connectedness", having a value character, focusing on sustainability, cultivating integrated thinking, proceeding from the pluralism of educational content [22].

The aim. In this regard, it is extremely relevant to identify the main trend in the development of education and pedagogy regarding the integrated interdisciplinary concept of life-long learning, which is the **purpose** of the paper.

Methods. Our interdisciplinary research in addition to the theoretical analysis of the problem field of life-long learning studies, involves the concept of functional asymmetry of the hemispheres of human brain [23; 24; 25]. The research is also based on universal paradigm of development [12], on the ideas about holographic/fractal organization of the world [26; 27; 28; 29; 30], on the results of relativistic physics [31; 32; 33; 34; 35; 36], as well as on the synergetic approach being an interdisciplinary scientific tool aimed at cognizing the world in its wholeness and unity, with the help of which the researchers seek to build "conceptual bridges" between many scientific areas [37; 38; 39].

Results and discussion

12.1 The substantiation of the universal paradigm of development

The analysis of the development of pedagogical reality with the aim to ground the integrated interdisciplinary concept of continuous education (life-long learning) requires the involvement of a key theoretical and methodological basis, which appears as both a specific tool and a universal paradigmatic principle of research and explanation of the world being the *philosophical universal* the ancient philosophers were eager to reveal [40]. This universal principle can be considered as the universal paradigm of development [12], which reveals a universal scheme of any development:

thesis → antithesis → synthesis. This triadic scheme stems from the fact that any movement is realized in the form of vibration/wave, having a universal form and fixing the upward and downward trends of development (**Figure 1**).

The wave model expresses a universal development paradigm in the context of three methodological levels of the analysis of our reality – the single, the specific and the general [12].

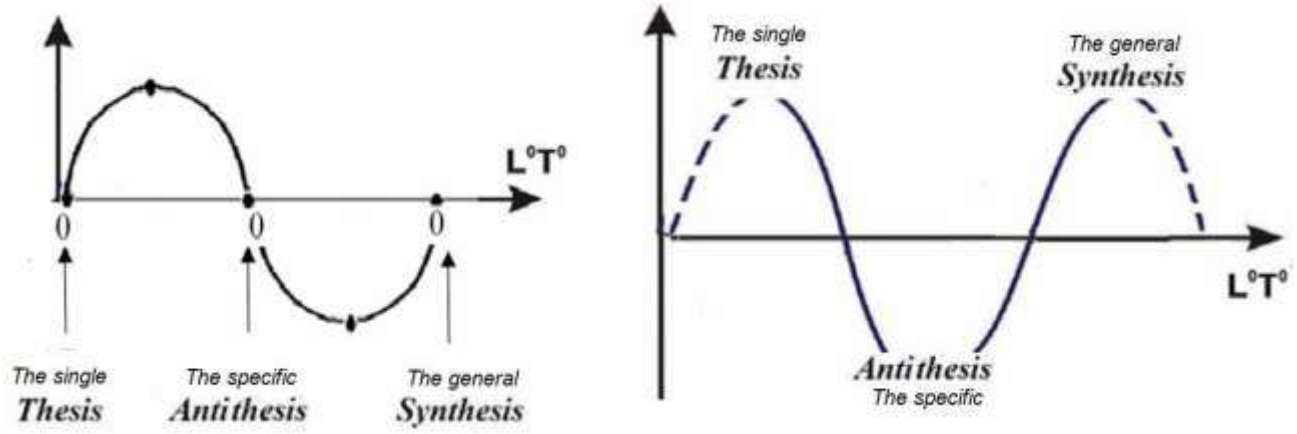

Figure 1 - The wave model of reality in the context of the universal paradigm of development and three methodological levels of analysis of reality.

This can be illustrated by the S-shaped law of development of objects of any nature discovered by Pierre Verhulst, who constructed a model of population growth (K) under the condition of external limitations (**Figure 2**).

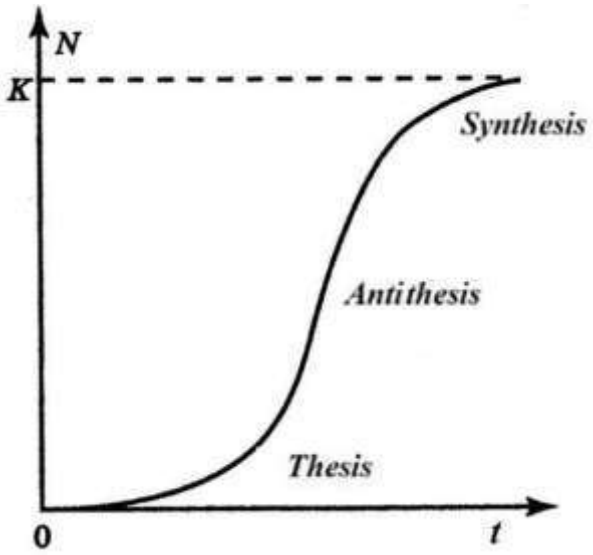

Figure 2. S-shaped law of developmen

In general, here we trace a synergetic developmental scheme as an alternation of hierarchized, ordered) and dehierarchized, disordered states of development of any system (**Figure 3)**.

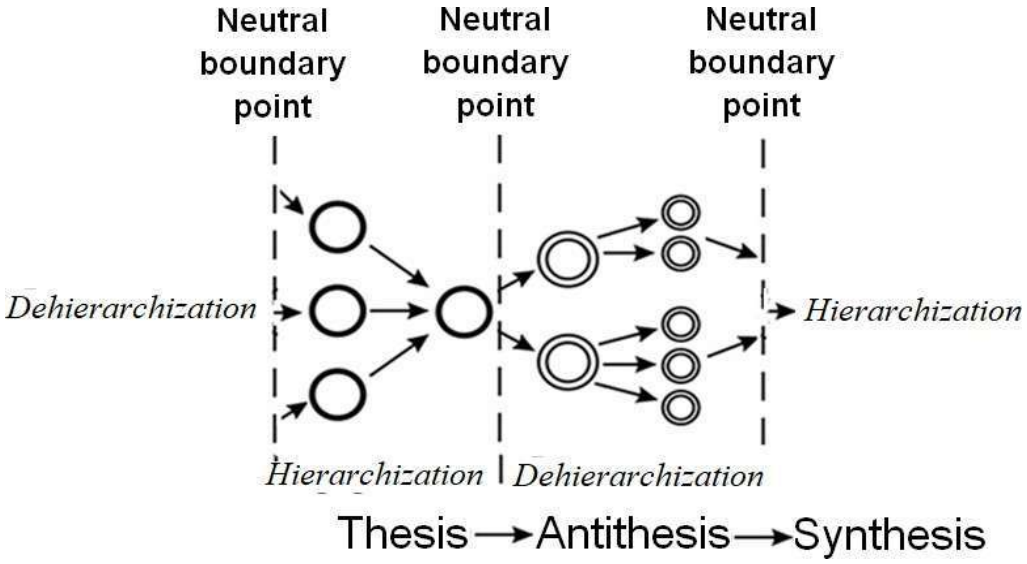

Figure 3. Alternating processes of changing system's hierarchization and dehierarchization states through the neutral boundary/bifurcation point (a synergistic "bead game")

12.2 Extrapolation of the universal paradigm of development on different aspects of pedagogy

The three-stage pattern of development can be outlined in the form of a model, the elements of which are man and the world (internal and external, subject and object).

I. The initial stage of onto- and phylogenetic development of human being as the Homo sapiens reveals the unity, syncretism of the subject and the object. At this stage, all forms of social consciousness (such as religion, art, philosophy, science, moral, etc.) are combined in a certain rational and irrational unity. At this level of development of mankind, knowledge about the social and natural world found expression in a synthetic form – in the form of simple proto-logical, proto-theoretical models, immersed into mythologeme and metaphor. In a certain sense, here thought and action are merged, as

is the case in young children. Just like the latter, the representatives of ancient societies do not yet fully realize themselves as personalities. That is why the human being and the world, subject and object appear as a single indivisible complex.

II. At the second stage of the development of mankind as a species and subject of history, the growth of the dichotomy of the human being and the world, their asymmetry are manifested: the subject and object appear as polar entities. The coordination of relations in the subject-object system finds its expression in such model of the development of science, which distinguishes the classical (within which the object being the primary reality influences the subject and largely determines it, acting within the "objective reality given to us in our sensations") and non-classical (the subject influences the object) stages of the development of theoretical consciousness.

III. The third stage – the contemporary period of post-nonclassical development of science – is associated with the idea of integrating the object and the subject, when they are considered as influencing each other and mutually potentiating each other. Here the development of humanity seems to return to its anciant sacred source, but at a higher level of development. Here the idea ofcomplementarity, mutual additionality of the rational and irrational components of the process of cognition of the world is revealed, and the world is presented as a whole, where everything is interconnected (refer to the phenomenon of quantum entanglement: [27; 31; 32]). It is on this theoretical basis that the concept of integrity is currently gaining ground as an important methodological principle of the new paradigm of education, including continuous education [12].

The specified universal evolutionary scheme of development allows us to outline some peculiarities of the development of psychology and psychotherapy that pass three stages.

1. At the initial stage of the development of humanity, the pre-logical principle of participation, psychization of the world combined the subject and the object, the person and his/her environment into a holistic complex, the elements of which appeared as, in a certain way, syncretic, merged, and the world cognition is realized as mystical act within magical rituals.

2. Then the process of splitting the above mentioned holistic complex is revealed – there is the process of personality formation, that is, gradual development from the original indivisible "I" and non-"I" to an increasingly clear opposition of the subjective to the objective, the spiritual to the physical, the immaterial to the material [12]. This stage marks the formation of modern civilization, reflexive forms of its culture and science, enabling to differentiate the psychoanalytic stage, where the separation of the subject from the object, the disintegration of the person is stated, which we find in Z. Freud's works, who understood the person as a complex of three components/instances of the psyche (the id, ego, and super-ego) that are constantly at odds with each other [41].

3. Western culture eventually begins to realize the danger of a person's struggle with himself/herself, and an era of development of synthetic psychologies (such as Gestalt psychology, humanistic psycholofy) begins, in which the principle of mental and spiritual unity finds its embodiment. Humanistic psychology showed that the integrity of a person [42], the presence of sub-personalities (in Gestalt psychology and therapy: [53; 44]) or "alienated experience" (according to [45]) does not carry a fundamental insurmountable contradiction. This is not a struggle between God and the devil in the human soul, this is not the opposition of profane and sublime drives of morality, but a artificial isolation from each other of such parts that can agree among themselves. Therefore, the idea of integration of personality, achieving integrity not through the victory of one part over another, but through their union and synthesis, was put forward as an ideal of psychological and psychotherapeutic knowledge.

The developed methodological principle (the universal paradigm of development) can be both an instrumental and prognostic means of conducting the research, as it allows us to build a generalized scheme of the development of reality, including socio-pedagogical reality (**Table 1**).

Education as a social institution and pedagogy as a science at the global level evolved according to an identical scheme, which is most clearly illustrated by the dialectics of relations between participants in the educational process.

Table 1. Generalized scheme of reality development

STAGES OF DEVELOPMENT	THESIS →	ANTITHESIS →	SYNTHESIS
Forms of existence of matter	space	movement	time
Hypostases of the Absolute	God the Father	God the Son	God the Spirit
Methodological principles	principle of integrity	principle of development	principle of self-similarity
Types of civilizations	primitive society	traditional society	information society
Stages of adulthood	child adult mature person	child adult mature person	child adult mature person
Orientation in the world	attitude towards others	activity	attitude towards oneself
Human society modes	citizen	specialist	personality
Forms of human activity	game (process)	work (product)	creativity (process + product)
Individual development	motivational sphere	operational sphere	Integral/creative sphere
Forms of social and educational interaction	subject – subject	subject – object	subject–object–subject
Substrate of higher nervous activity	right hemisphere	left hemisphere	hemispheric synthesis
Stages of cognition	sensual-concrete	abstract-logical	spiritual-concrete
Forms of world mastering	axiology	praxeology	gnoseology
Mechanisms of cognition	truduction	induction/ deduction	insight
Ways of cognition	irrational	rational	meditative
Forms of education	upbringing	teaching	upbringing+ teaching
Forms of influence	initiating	formative	creative
Teacher roles	teacher-priest	teacher-specialist	teacher-personality

1. In primitive societies, where a person appeared, in a certain sense, integrated into the cosmos of social and natural existence, the process of learning the social forms

of life was filled with nature-related content, and the teacher acted as a priest (a mystic), who carried out the process of teaching as an act of initiation [46]. This sociocultural phenomenon, often associated with rites of passage, not only signifies social transition, but also imparts some knowledge to the initiated revealing the subject-object indivisibility [47]. Sometimes, initiation involves mystical procedures capable of fundamentally altering the psychological state of the participants, resembling A. Makarenko's "explosion method" [48].

Here we have the direct transmission of knowledge and experience (which here were integrated into a holistic indivisible complex) in the process of collective action of a magical ritual, which is appropriate to compare with the pedagogical process of cooperation/partnership (team learning/teaching) [49; 50; 51; 52].

Here, the teacher and his/her pupils/disciples revealed a holistic subject-subject pedagogical/educational complex, in which the process of comprehension of the being by the latter was realized as a process of holistic, synergistic action of all the participants in magic process of initiation and schooling.

2. Then, in the process of socio-economic stratification and the development of the personality beginning of a person, the teacher crystallized as an entity that transmits ready-made knowledge, and the pedagogical/educational process acquires the state of a subject-object process of the classical model.

3. However, since the 19th century, spiritual/cultural production has become a mass phenomenon. The privileged position of the intellectual as the one who "involves in the Truth" is questioned. And this loss of the intellectual's the "teacher" position meant that from now on the teacher and the student are on an equal footing in relation to the truth, and that it is no longer enough to simply transfer ready-made knowledge, but it is necessary to reveal to the students the very process of the birth of knowledge. The educational sphere begins to transform towards a subject-subject humanistic position, revealing the fall from the classical scheme of the pedagogical process, which is manifested in the formation of a personally oriented, nature corresponding (ecological, inclusive) paradigm of modern education.

12.3 The concept of functional asymmetry of the hemispheres of human brain and neuropsychological prerequisites of creativity

The triadic model of educational development is implemented in the plane of onto- and phylogenetic dynamics of the cerebral hemispheres, which reveals the movement from the subconscious (right hemisphere) to the conscious (left hemisphere), and from it to their synthesis and exit to the superconscious [53].

One of the most important generalizations in the subject sphere of our research, as we believe, is revealed in the concept of the functional asymmetry of the human brain, which shows that the functions of the hemispheres are related to the basic processes of the human being [12; 23; 24; 25; 54; 55]. Moreover, the hemispheric asymmetry expresses the general asymmetry of space and time in our Universe (refer to "Gibson's law of right-side stimulation") [24; 56]).

At large, the hemispheres express the left – rational, and the right – irrational strategies of cognition and mastering the world, which must be integrated for an adequate reflection of reality, for a true picture of the world.

V. L. Deglin, studying the hemispheric features of the reflection of the surrounding world, and in particular its spatial characteristics, came to the conclusion that both hemispheres refract space in an erroneous way, but these errors have a directly opposite nature, when the left hemisphere is characterized by the expansion of space, and the right – by the approach of separate elements to the observer. That is, the left hemisphere strives to distance a person from the environment, and the right – to integrate a person into it. However, the functional coherence of the hemispheres, the compromise between them leads to the alignment of spatial deformation, that is, the adequacy of the perception of volumetric space on the plane of the retina is achieved, when the volumetric and the planar, being geometric antagonists (which is demonstrated by the dichotomy of the geometries of Euclid and N.I. Lobachevsky), are harmonized and brought to a common sensory and cognitive "denominator" [57].

The human development proceeds from the right-hemisphere aspect of the psyche (in an infant, both hemispheres show the lowest index of asymmetry and function as a

single whole mainly according to the principle of the right hemisphere) to the left-hemisphere, and from it to the state of functional synthesis of the hemispheres [12; 23; 24; 25; 54; 55].

Thus we have the philosophic scheme/algorithm of development revealing the triadic and dialectic character: (1) theses → (2) antitheses → (3) synthesis. According to this algorithm we can understand the development of forms of activity in onto- and phylogenesis:

(1) *Play* (right hemispheric spontaneous activity that is not aimed at achieving pragmatic goals and exists for its own sake, similar to "art for art's sake"). In most ancient (primitive) communities, there was no sharp boundary between work and leisure.

(2) *Work* (left hemispheric purposeful activity aimed at achieving certain pragmatic goals). Only during the industrial revolution do we observe the differentiation of work and leisure, when the latter began to be associated with non-working time.

(3) *Creativity* (the inter-hemispheric activity that reiterates the play, but at a higher level of development, since it has the characteristics of both play (spontaneous, self-determined activity), and work (the activity that manifests a certain practical result). In creativity, work and leisure are combined and intertwined.

Under such conditions, the onto- and phylogenetic dynamics of the hemispheres realizes the movement from the subconscious (right hemispheric) to the conscious (left hemispheric) aspect of psychic activity, and from the latter – to their functional synthesis revealing the superconscious entity [53] as a creative status of a person (as evidenced by encephalographic studies, the hemispheres are functionally synchronized in a meditative and creativity state [58; 59]), which characterizes the state of unity of opposites, which at the level of mental reflection of reality is realized in the fundamental phenomenon – ***the diplasty*** – not characteristic of animals the fundamental ability of a human being to combine opposite attitudes, concepts, psychophysiological states in one integral/paradoxical context [60; 61; 62; 63], revealing the epistemological/social phenomena of *absurdity, paradox, chaos,*

ambiguity. And the diplasty as a psychological state expresses the mental/cognizing strategy to decrease the level of entropy/chaos of nervous processes [55].

The diplasty, considered to be the main/fundamental factor of evolution of the *Homo sapiens* [64; 62], is a phenomenon of integration of two elements that exclude each other (for example, in linguistics this is the oxymoron – a figure of speech combining contradictory, mutually excluding complex concepts/words with opposing meanings, like "living dead", "old news, "genius stupidity", "deafening silence," "strong weakness", "organized chaos"), which activates ***bisociation*** (the simultaneous mental association of an idea or object with two fields ordinarily not regarded as related [65]) – a synergistic mechanism of human creative activity, since contrary to associative connection of concepts, which appear under the influence of deeply rooted schemes of experience (that is, based on the reiteration of concepts arising in time and space and being associated with similarity, contiguity or contrast), the bisociations appear as a result of combining ideas that do not have an obvious commonality and connection between them, being objectively new and sometimes seem unnatural, chaotic, paradoxical, contradictory and hence – creative [66; 67].

Unlike the associative connection of concepts, which arises under the influence of already "trodden" schemes of experience (on the basis of the repetition of concepts that have arisen in time and space and are associated with similarity, contiguity or contrast relationships), bisociations arise as a result of the combination of ideas that do not have an obvious commonality between them and the connection between which sometimes looks unnatural [66; 67].

The hemispheric synthesis involves the full unfolding/realization of the resources of the "right", creative aspect of the psyche (the essence of which lies in the ability to think holistically, polysemantically, combining and integrating facts and realities belonging to different and even polar spheres of our world), and therefore the educationalists should not rush to replace the activity of the right hemisphere with the left one. Thus, the mind of a person in whom direct perception of the surrounding world and visual-figurative thinking were not properly formed in childhood may later receive one-sided development, acquiring an excessively abstracted mode. Some researchers

believe that such purely one-sided left-hemispheric thinking leads to the formation of a schizoid type of person, characterized by an unambiguous "black and white" worldview [68].

The conclusion that creativity is realized in the plane of paradoxical synthesis of the functions of the right and left hemispheres is confirmed by studies of creative individuals who are characterized by mutually exclusive features:

1) Creative individuals have, on the one hand, enormous physical energy, and on the other hand, they are often in a state of calm and rest;

2) They are both strict and naive;

3) Within the framework of their personality, playfulness, frivolity and strict discipline, responsibility or irresponsibility are combined;

4) Their fantasy and sense of reality are integrated;

5) They manifest themselves as both extroverts and introverts;

6) They are modest and at the same time proud;

7) They avoid stereotypes in the field of gender roles;

8) They show both a rebellious spirit and conservatism;

9) While seeking physical peace, they simultaneously demonstrate a true passion for work, and they also objectively evaluate their work;

10) The openness and sensitivity of creative people often leads them to empathize with suffering and pain of others; on the one hand, they seek comfort, and on the other, they are able to sacrifice it for the sake of an idea [69; 70].

Three more personality characteristics are associated with originality of thinking – dominance, sensitivity to emotions, manifestation of femininity in men, connection between creative abilities and such personality trait as narcissism. In this, creative individuals often identify themselves with others and easily change social roles. Other qualities of creative people are as follows: self-discipline in work; ability to postpone material pleasures; resistance to frustration; independence of judgments, high level of autonomy; tolerance, openness to uncertainty, paradox, absurdity, propensity to risk, high level of self-initiation and desire to perform tasks as best as possible. They also demonstrate the ability for broad categorization and idiosyncrasy (increased sensitivity

to some non-specific stimuli/signals), to establish non-obvious patterns. It is noted that creative people have the highest "I" strength, which is positively correlated with average neuroticism [71; 72; 73].

12.4 Some tendenses concerning the education development

This conclusion is confirmed by the global dynamics of educational processes, as evidenced by the emergence of new pedagogical movements being based on such reformist trends of the late 19th and early 20th centuries as "individual pedagogy", "social pedagogy", "artistic education", "state-public education", "moral pedagogy", "new education", thus expressing the process of creating a new social and pedagogical environment that challenges ossified and dogmatized educational ideas. These processes, in our opinion, are evidence of a nonlinear trend of the world educational system entering a state of openness, dissipativeness, which manifested itself in the second half of the 20th century on the scale of the entire human civilization [4].

In the 50-70s of the 20th century, humanistic pedagogy and psychology gradually gained ground in the world. This stimulated the process of the emergence of cooperative/partnership pedagogy. In the late 80s, Johns Hopkins University (USA) introduced team-individual learning, which was used primarily in cases where the spread of success in the class was too large and the number of lagging students did not allow the teacher to study the material at a uniform pace for the entire class. The organization of educational process was based on the principles of mutual assistance, mutual support, which had a positive effect on weak students.

The pedagogy of cooperation/partnership appears to be the most vivid practical embodiment of the pathos of open pedagogy, a relief expression of the new synergistic paradigm of education as an open system. The pedagogy of cooperation/partnership expresses the leading trend in the development of pedagogical thought, the movement towards the "new pedagogy", which states a new socio-cultural situation, according to which the child should be a free subject of school life. Important here is the recognition of the priority of the harmonious development of a person over various types of his/her

education.

12.5 The substantiation of resonant pedagogy

The the subject-object indivisibility of the participants in educationsl process reveals the phenomena of *resonant pedagogy*, resonant learning, which implement the processes of collective acquisition of knowledge, as well as the ability of students to resonate with each other and with a holistic team.

Under the conditions of cardinal civilizational changes, pedagogical practice encounters new civilizational challenges that open the way to the establishment of a new scientific paradigm, the understanding of new civilizational and pedagogical realities, such as the noospheric movement, resonant phenomena of the world, theories of morphic resonance and formative causality, etc. [74], which allow us to talk about the phenomenon of "planetary intelligence", since today many scientists believe that information, which is the fundamental principle and a general property of the Universe, is connected with the process on planeraty level. Here information is understood as the universal principle of nature and society. As Academician V.P. Kaznacheev writes, thousands of years ago, primitive people (protohominids) who inhabited our planet, had 13–14 billion neurons accumulated in the brain – a kind of conductor-type computers that regulated the behavior of these creatures in the form of instinctive reactions. But the cosmic phase of the emergence of a new man and intelligence had come. In some parts of the planet, a strange process had taken place: in the head of the protohominids, these 14 billion neurons, in each of which there was already a soliton-holographic form of living matter, explosively combine into one giant soliton. All generic formations turned out to be connected by soliton fields, which means that no matter how far a member of the primitive horde went, all its members saw him/her in holographic images. It is believed that not a single person, but a group united by one common field, formed the basis of the most primitive human planetary intelligence [75].

The mentioned phenomenon can be illustrated with an example from Lyall

Watson's book "*Lifetide: A biology of the unconscious*", which describes a 30-year experiment with wild monkeys conducted by scientists on the Japanese island of Coshima. Scientists gave the monkeys sweet potatoes (yams) by scattering them in the sand. An eighteen-year-old female, Imo, was the first to wash the yams in water and taught other monkeys to do the same. After a few years, the number of monkeys washing the yams on the island of Coshima reached a critical mass, which Dr. Watson tentatively defined as 100 (the experiment was called: "the hundredth monkey"), and suddenly all the monkeys on the island began to wash the yams at the same time without any external prompting. In addition, absolutely all the monkeys on all the neighboring islands began to wash the yams at the same time. Scientists first observed something similar and suggested that there must be a certain field covering all the islands, thanks to which all the monkeys could "communicate." [76]. In general, a huge amount of experimental evidence has been accumulated confirming the existence of an information field, or planetary intelligence.

A pedagogical methodology arises – *resonant learning* [77], being reflected in modern pedagogical practice, which reveals ways to substantiate resonant mechanisms of the educational process. As a Ukrainian scientist M.P. Leshchenko writes, "when a group of people unites to perform a certain type of educational activity, the phenomenon of overlapping individual biological fields occurs and a total field of activity arises. If pedagogical activity is considered to be a process of energy and substance exchange between a teacher and students, then it is quire right to conclude about the existance of a communicative field having a cognitive-active nature."

This conclusion is not unique, since currently in the field of pedagogical science such methods of educational actions as meditation, suggestion, hypnosis, telepathy, intuition, resonant learning, superlearning, Gestalt education, suggestopedia, pedagogical synergetics, acmeology, methods of collective knowledge acquisition, etc. are increasingly becoming relevant [77]. Hypnotic states can also significantly enhance intellectual and creative potential. For instance, the researches indicate that a novice chess player can drastically improve his/her skills through trance techniques, which are also applicable to other areas of human activity [78; 79; 80; 81; 82; 83].

Suggestopedic and other unconventional/innovative methods, aimed at activating altered states of consciousness, can result in extraordinary abilities [84]. Examples include individuals gaining near-instantaneous calculation abilities (e.g., a farmer struck by lightning developed complex mathematical skills) or becoming polyglots [85]. One notable case is that of W. Melnikov, a contemporary polyglot (knowing about 100 languages) who acquired the wonderful faculty after being seriously injured in Afghan war. Another case depicts an American man, Michael Thomas Boatwright, who inexplicably began speaking Swedish after regaining consciousness. After the incident where sixty-year old Boatwright lost his consciousness, he could only communicate in Swedish with doctors through an interpreter and failed to recognize himself in a mirror. Although he had visited Sweden several times, he was a U.S. citizen who had spent a decade teaching English in Japan.

Resonance learning is connected with the the phenomenon of "mirror neurons" [86; 87; 88] consisting in the process when the neural ensembles of human brain in a person are reflected at the level of the neural ensembles of another person, provided that these people are in the process of communicative interaction.

Resonance learning is closely related to the synergistic principle of ultra-weak signals and the concept of a universal semantic space of the Universe (as well as to the synergistic principle of integrity), which stems from the philosophical principle of the unity of the world, as well as from the so-called anthropic principle [89]. One of the epistemological consequences of these principles is expressed in the idea to which many philosophers were committed, namely, in the idea of the identity of the being and consciousness, according to which the laws of the objective world and the laws of human thinking are isomorphic. That is, there is a coincidence of the laws and forms of cognizing thinking with the laws and forms of objective reality, when, as Hegel wrote, things and thinking about them coincide, and the being appears identical to consciousness. In addition, the anthropic principle (or the principle of cosmological complementarity) establishes the expediency of human existence in the Universe; it proceeds from the understanding of man as an organic and active part of the Universe (refer to the paradox/phenomenon of the quantum physics the "*Observer*": [90; 91].

Here we can also mention the phenomenon of synchronicity outlined by Wolfgang Pauli and Carl Jung: synchronicity is the coming together of inner and outer events being meaningful to the observer in a way that cannot be explained by cause and effect principle [92; 93; 94].

12.6 The opposition "actual-potential"in philosophy and pedagogy

Using the universal paradigm of development and the principle of the unity of the human psyche allows us to conclude that creativity, giftedness and intelligence as one of the main categories of the psychology and pedagogy have a certain genetic connection that is realized in the process of student development: a person develops from a state of giftedness, which is characterized by the functions of the right hemisphere of the brain, which implement a multi-valued, emotional-figurative reflection of reality, extraordinary affective-perceptual sensitivity, which become signs of giftedness itself – that right-hemisphere developmental potential of a person, which with human development should sublimate into left-hemisphere sphere of analytical, abstract-logical thinking organizing the human intelligence as a set of elementary acts of information processing [95; 96].

Finally, at the third stage of human development, the integration of right- and left-hemisphere functions reveals the psychophysiological basis for creative (paradoxical, dialectical) thinking and mastering reality. Therefore, the natural development of a person goes from giftedness to intelligence, and from it – to creativity.

Thus we can solve another important scientific problem related to the presence of paired synonymous categories in various sciences, in particular in psychology and pedagogy. The involvement of the fundamental paired category "actual-potential" allows us to solve this problem through the adaptation of synonymous scientific categories to the binary opposition "actual-potential. As O.A. Donchenko writes, in the science of the last century, a tendency to move from the study of things to the analysis of states crystallized, considering objects as a constellation of possibilities, the world of potentiality in general. W. Heisenberg [97; 98] put forward the concept of possibility

to the central place of modern science, taking into account the fact that it occupies an intermediate position between the material and spiritual worlds of reality. When subjects are considered as a constellation of possibilities, then one or another quality of their interaction determines the degree of realization of the potentialities inherent in these universes. The solidity of their effective connection is the type of intersubjective relations, mutual relations. The state of society as a complex system depends, on the one hand, on how it subjectively realizes the possibilities of humanity and the cosmos, on the other, – on how people and groups within society realize their own possibilities, while actualizing and embodying their "single" ("monadic") potentialities" [99; 100].

The application of the probability function in pedagogy and psychology opens a new page of them. Thus, we can say that giftedness is a latent, potential right-hemisphere category, which, being actualized, is realized as talent being the realized giftedness. The phenomenon of human giftedness, by its very definition, should be understood as something that is inherent in a person as a potential quality that should be actualized, and not formed as something new.

In this regard, let us consider some categories of science, philosophy and pedagogy: by using two fundamental categories – actual-actual and potential-possible – it is possible to clarify many synonymous categories (**Table 2**).

Table 2 demonstrates the dichotomy and a certain contradiction between the actual-existing (present) and the potential-possible (past and future as imaginary/virtual entities), which, due to the unity of the world, should be considered as a single whole. In this regard, we can talk about the invisible presence of the future in the present, which leads to a variety of paradoxes revealed by ancient thinkers.

We can say that giftedness is manifested (actualized, realized) in a person through certain educational procedures/methods, which allows us to talk about actualizing pedagogical action (or actualizing pedagogy), which we conceptualize.

At the same time, giftedness as a potential entity is usually considered as a systemic personality entity that acts as a certain coordinator, regulator, and stimulator of the creative activity of the individual. Therefore, giftedness (as a whole, a potential entity that is to be actualized) should be studied in a holistic context of research together

with the study of intellectual and creative abilities.

Table 2. Adaptation of some synonymous scientific categories to the opposition "actual-potential"

Potential-Possible	*Actual-Existing*
Field	Substance
Continuous	Discrete
Noumenal	Phenomenal
Whole	Part
Inner	Outer
Content	Form
Quality	Quantity
Right-hemisphere psyche	Left-hemisphere psyche
Mind	Intelligence
Cyclothymia	Schizothymia
Genetic inheritance	Epigenetic inheritance
Mind	Intelligence
Creativity	Creative artistry
Giftedness	Talent
Talent	Genius
Abilities/skills	Knowledge
Upbringing/"nature"	Education/"nurture"
Temperament	Character
Motivation	Behavior
Experience	Knowledge
Central nervous system	Vegetative/ autonomic nervous system
Sympathetic branch of the autonomic nervous system	Parasympathetic branch of the autonomic nervous system
Nervous regulation of organismic processes	Humoral regulation of organismic processes
Development	Formation

Human intelligence is formed on the basis of human abilities and predispositions, which is carried out in the plane of traditional (classical) formative pedagogical action/influence, which implements a linear process of sequential formation of certain structures of the human brain.

12.7 The substantiation of the post-nonclassical pedagogies and the educational trajectory of person's life-long development

A person's creative qualities (the giftedness faculties) cannot so much be formed as newly created ones (an example of this can be the experiments of the famous hypnologist V.L. Raikov: [82; 83]), which allows us to talk about bifurcation ("explosive") pedagogical influence, which we conceptualize with the help of synergetics being a complex interdisciplinary science that operates with the concept of "bifurcation" – a paradoxical zone of system development, where systems radically change very quickly.

Modern pedagogical and psychological science is now reaching a certain level of theoretical and methodological "completeness", as it begins to be open up to phenomena that were previously ignored by academic pedagogy. Such phenomena include learning that takes place in the process of initiation – a socialization phenomenon that has versatile projections and is not only a rite of social transition, but also a learning process that is initiated as a result of such a transition, which was carried out in primitive communities in the form of mystical procedures capable of radically changing the psychological state of the initiated. This is similar to the "explosion method" of A.S. Makarenko, as well as to learning in a state of hypnotic trance, when, for example, a person can significantly increase his intellectual and creative potential: as evidenced by the experiments of V.L. Raikov, a person who plays chess poorly, who has undergone appropriate hypnotic suggestion, can significantly increase his chess skills [82; 83].

The above facts are implemented in the plane of the types of pedagogical influence conceptualized by us (actualization and bifurcation pedagogies), which are based on known facts about different trajectories of human development in modern and ancient civilizations. Thus, there are known cases of Mowgli children who missed the corresponding sensitive phases and who later found themselves in a civilized environment, practically not amenable to socialization, that is, they remain at a savage level of development. However, the social environment, even a very primitive one, is

able to organize information signals that are able to awaken in the child potential resources of humanity, which (resources) can be developed and revealed by new information signals.

Another example describing a primitive and nomadic tribe in Paraguay, the Guayqui. J. Vellard, a French ethnographer, found a two-year-old girl abandoned at a campsite. He brought her to France, where she was raised in a modern environment. By age 20, she was indistinguishable in intellect and social integration from educated European women becoming an ethnographer and mastering different languages. It is clear that if a girl who "immersed" in modern human civilization were not 2 years old (when the most intensive process of maturation of the relevant mechanisms of the human psyche takes place), but 8-10, the results of her upbringing would not be so brilliant. Such evidence illustrates the importance of the potential resources of giftedness inherent in Homo sapiens, which are revealed and developed in suitable social environments. Furthermore, it emphasizes the role of sensitivity phases, or "informational windows," in the development of living/human beings, when they are open to specific environmental influences.

Thus, a person realizes his/her essence within the present (the actual), which rests between two eternal abysses – the past (the virtual) and the future (the potential).

The present can be understood as a transitional boundary phase between the past and the future, revealing the paradoxical phenomenon of bifurcation – a state in which any developing system undergoes often unforeseen metamorphoses (hence we have the metamorphosis pedagogy) – changes that bring this system to a new level of development. In the dimension of the human psyche, these states are called "altered states of the psyche/consciousness", which open up the most unpredictable evolutionary prospects. Bifurcation pedagogy is based on these states, with the help of which both actualizing and formative pedagogies can achieve their goals.

The past fills a person with sacred genius – that inexhaustible energy-informational resource of the Universe (the Absolute), from which a human being draws strength and inspiration for further life. This resource can be actualized (due to the actualization pedagogy) both with the help of social technologies of initializations,

as well it can be awakened in sensitive phases of the trajectory of human development, and reconstructed using the means of methodology of the teaching fairy-tale and the so-called "retropedagogy", aimed at restoring previously acquired knowledge and skills. This inexhaustible energy-informational resource in its ultimate expression can be understood as the "complex of sacredness", which A. Maslow wrote about. The creator of humanistic psychology (which considers the positive and negative qualities of a person as a useful resources for the development of his/her psyche) asked students who among them aspired to accomplish something great – to write a brilliant book, to create a great theory, to build something unusual. Almost none of the students expressed a desire to do this [42; 100]. A. Maslow became convinced that the "sacredness complex" dormant in man, instills in the Homo sapiens the inexhaustible potentials of the Universe (the use of which puts man on a par with the Creator), being nowadays leveled by modern systems of education. The task of actualization pedagogy is to awaken the mentioned sacred complex.

This process can be correlated with the educational technique of interval/spaced repetition, according to which the speed of the process of forgetting information is inversely proportional to the time since its memorization, when the more time has passed, the slower the information is remembered. Since the memory works according to the algorithm of damping oscillations, we can talk about the process of wave-like actualization of certain information in the human memory. According to the method of spaced repetition, the educational process involves alternating cycles of types of educational activities. The law of information updating leads to the conclusion that the educational information that is memorized must be re-updated after a certain number of cycles within one or another unit of time, since it is shown that with an increase in the interval between sessions of memorizing educational material, the speed of memorization the number of people is increasing [101; 102; 103].

The future is originally rooted in a person, presenting in him/her in a dormant state in the form of potential/spiritual structures, which are to be formed (reproduced) by traditional formative pedagogy, which in its best examples is aimed at anticipatory development [104]. At the same time, this development is oriented not only at actual,

but also at potentially present evolutionary goals that are present in the future (future structures of a person) potentially. In this case, the distant future can influence the present and builds/creates a system of goals (attractors) that direct the evolutionary trajectory in a certain direction. In this sense, a person unconsciously address himself/herself as to an ideal-reference being of the distant future. Thus the future can influence the present.

In this regard, we propose a new post-nonclassical paradigm of the development of systemic entities/human being, which is based on the paradoxes of formative causation [74], as well as on the the fundamental indecomposability/integrity of quantum systems, quantum entanglement [26; 27; 1987; 31; 32], on the teleological paradox (manifested in the paradox of self-government processes: Since the process of development of any object and phenomenon of our world is aimed at a specific, and not at any result, the goal of the development of systemic entities is present at the beginning of their development, when the question of how the process of this development can be determined by a factor that does not yet exist as an objective reality can only be answered in one way – ideally) [105] that allows us to assume that the development of a system in the direction of increasing its complexity is ensured by control from the future – ideal and perfect – state of the system, which in the future will reach the highest possible level of its evolutionary complexity/perfection (refer to the phenomenon of "retrocausality" in physics [33; 34; 35; 36; 106] and phychology [107; 108; 109]. Thus, the process of development of any system is controlled by its future virtual state during the transition from hierarchization to dehierarchization through the neutral zone of dynamic chaos, where the system is open to ultra-weak (informational) signals that originate from its future virtual state and act as evolutionary attractors of this system.

This view of the reality, if integrated into the scientific and methodological plane of pedagogy and psychology, should radically change the traditional pedagogical paradigm and receive a certain grounding and explanation within the framework of our holistic pedagogical paradigm in the context of the above-mentioned actualization and bifurcation (explosive) pedagogies, which correlate with the functions of the right and

left hemispheres, as well as with the state of their synchronization [23; 24; 25; 58; 59].

The evolutionary algorithm of this development can be illustrated by the Japanese proverb (quoted by Masahiro Yokotani), according to which "When you're ten, they call you a prodigy. When you're fifteen, they call you a *genius*. But once you hit *twenty*, you're just a normal *person.*"

The process of human development, carried out from the right to the left hemisphere, and from it to the bifurcation state of hemispheric synthesis, appears as a certain explanatory model of educational and, in general, socio-natural phenomena, illustrating the holistic process of the development of educational reality.

According to the theory of the functional system, although human behavior is based on the reflex principle, it cannot be defined as a sequence or chain of reflexes. Behavior differs from the set of reflexes by the presence of a special structure, which includes as an obligatory element of programming, which performs the function of anticipatory reflection of reality (in humans, this is a phenomenon of simultaneous, i.e., instantaneous, recognition, which in psychology, in addition to "anticipatory reflection", has received the names "anticipation", "preperception", "object-hypothesis", "preconception", "precognition", etc.) [107].

Anticipatory reflection of reality is realized not only on the basis of the already formed experience of behavior in humans and animals. We can talk about the ability of living beings "to read" information from the future [108], since this future can influence the present, as evidenced by the construct of quantum physics – "waves of the future", which go from the future in the direction of the present [33; 34; 36].

Taking into account the onto- and phylogenetic dynamics of the cerebral hemispheres, we can say that, having started life with a focus on the future, a person ends it with an individual past time. In this sense, the very experience of individual life can be represented as a transition from the future to the past. Therefore, the phenomenon of functional asymmetry of the human brain, which reveal the ability of a person to predict future events, become important in this context. Likewise, in the fantastic mirror world of Lewis Carroll a person can be currently in prison, serving his sentence, and the trial will begin only next Wednesday, and the person hasn't even

thought about the crime yet [110].

In this regard, we note that quantum physics has discovered the effect of the indecomposable unity of the fundamental quantum-photon level of the Universe, on which such aspects as the single and the multiple, part and whole, cause and effect, present, past and future ... are not differentiated [26; 27; 31; 32]. According to this point of view, the future can influence the present (and past) with all the causal aspects that follow from this.

As V.Yu. Rogozhkin writes in "*Eniology*" (2006), "You can make a mistake on the last day of your life and pay for this mistake all your life! For example, a dying father curses his children for treating him badly. The children, in turn, treated their father badly all their lives because he cursed them before his death!"

Here we can also cite the psychological phenomenon of "*retroactive inhibition*" – an integral nervous process that inhibits learning as a result of the fact that responses to subsequent elements of the material being memorized have an inhibitory effect on responses related to its previous elements, that is, there is forgetting of the material under the influence of further learning [111].

The above mentioned facts enable to state that in the functioning of human psyche the traditional principle of linear causality is violated: here the expected future can influence the present, revealing the already mentioned phenomenon of precognition.

This circumstance necessitates the possibility of creating a new direction in the psychological and pedagogical field – retro-, chrono-reverse pedagogy, which is directed at implementation of the resources of the future to activate the process of learning and education in the present.

This and other scientific facts indicate that human society (both its actual and virtual aspects, revealed in the form of archetypes of the collective unconscious of C. Jung – [112] unfolds its individual tempoworld, which affects all representatives of this society through the so-called social-suggestive norms. This is what the concept of transference – direct control of reality by consciousness [113] – is aimed at and known in some circles of researchers.

Thus, we have conducted an interdisciplinary generalization that allows us to

build a model of the development of the educational sphere and outline the content of post-nonclassical pedagogies (**Table 3**).

Table 3 - The content of post-nonclassical pedagogies and the educational trajectory of human development in the sphere of life-long learning

Hemispheric dynamics	Right hemisphere →	Left hemisphere →	Hemispheric synthesis
The ways of person's change and the types of pedagogical influence	Development. Initiating influence	Formation. Formative influence	Transformation. Creative influence
The types of pedagogies	1. Actualization pedagogy 2. Resonance pedagogy 3. Metamorphosis pedagogy	1. Formative pedagogy 2. Retro-, chrono-reverse pedagogy 3. Pedagogy of life's facts	1. Bifurcation pedagogy 2. Creative pedagogy 3. Pedagogical paradoxology
The main manifestations of personality	Talent	Intelligence	Creativity
The education and development processes	Potential resources of talent/giftedness are actualized, contained in a person in a hidden, unmanifested form and are revealed (initiated, sometimes spontaneously released) in the form of acts of involuntary behavior, skills, and automatisms.	Actualized potential resources receive further socio-practical projections through the educational process, as a result of which the revealed skills are developed and become elements of knowledge and voluntary forms of behavior.	Fundamentally new human qualities crystallize through the organization of the bifurcated explosive phase of students' development.
The main methods	The main methods consist in creating an actualizing socio-pedagogical environment in which potential human resources would be actualized, which can be programmed using an teaching fairy-tale.	The main methods consist in creating an educational and informationally rich socio-pedagogical environment in which, in the sensitive phases, appropriate skills and abilities are formed stemming from hidden talents, and appropriate knowledge is crystallized.	Main methods: "explosion method" by A.S. Makarenko, methods of pedagogical synergetics, collective learning and resonant pedagogy, hypnotic, suggestopedic and similar methods, including traditional methods of creative development of the personality.

We would like to especially note that our conclusions remove the paradox of traditional formative pedagogy, which has been called *the paradox of development* which can be named *the teleological paradox* consisting in the fact that the new arises from the old (as really new) and at the same time not from the old, for in this case the difference between the new and the old disappears: if the new arose from the old, then it, accordingly, has been contained in it in a potential-virtual state and is not fundamentally new. At the same time, if the old arises from itself, that is, exists eternally, then this contradicts the axioms of the temporal order [114] and leads human consciousness to an epistemological "dead end".

In K. Marx's works, this paradox is revealed in the fact that capital arises in circulation and at the same time not in it. In Ch. Darwin's works, a new species arises from the old one and at the same time not from it. Saint Augustine expressed the essence of this paradox in the following words: "Every past is no longer existing, and every future is no longer existing, therefore, both the past and the future are shortcomings in the being". As Arthur Schopenhauer put it in the book "*The World as Will and Representation*", "No one ever lived in the past, no one will have to live in the future; the present is the form of life" [115].

It should be noted that the paradox of development is known in psychological and pedagogical science, where it is recognized that a person is born a passive outer-motivated object of education, but he/she will need to become a self-determined, inner-motivated creative subject of full-fledged moral, civic, professional activity and behavior [116; 117]. In this context, the essence of pedagogical activity appears in the transformation of the personality, which involves a creative-metamorphic, paradoxical process of creating something fundamentally new, which is implemented in the practical sphere of bifurcation pedagogy in the context of the mechanisms of creativity. The moment of creating something new in the act of creativity reveals the aforementioned paradox of development, when the new must arise from something that has never been, that did not exist. Accordingly, the creative act can be metaphorically understood as an "act of divine creation", as a process of forming a fundamentally new quality, which reveals states of dynamic chaos (bifurcation), uncertainty at the moment

of transition from the old state to the new.

This approach reveal a new type of pedagogy – the pedagogical paradoxology being developed in our works [118; 119] and aimed at developing creative, non-linear, diplastic, paradoxical thinking in subjects of the educational process. Pedagogical paradoxology implements "the principle of cognition of the world as a holistic world, which is an intellectual and vital necessity. This universal problem will appear before educational systems in the future, because our disunited, scattered disciplinary knowledge is deeply inadequate for understanding the realities and problems that are becoming increasingly global, transformational, multidimensional, polydisciplinary and planetary. Due to this multidimensionality, the Global, Multidimensional, Complex become invisible" [120, p. 19].

The human development proceeds from the right-hemisphere aspect of the psyche (in an infant, both hemispheres show the lowest index of asymmetry and function as a single whole mainly according to the principle of the right hemisphere) to the left-hemisphere, and from it to the state of functional synthesis of the hemispheres [23; 24; 25; 58; 59].

Under such conditions, the onto- and phylogenetic dynamics of the hemispheres realizes the movement from the subconscious (right hemispheric) to the conscious (left hemispheric) aspect of psychic activity, and from the latter – to their functional synthesis revealing the superconscious entity [53] as a creative status of a person (as evidenced by encephalographic studies, the hemispheres are functionally synchronized in a meditative and creativity state [58; 59], characterizing the state of unity of opposites, which at the level of mental reflection of reality is realized in the fundamental phenomenon – *the diplasty* – not characteristic of animals the fundamental ability of a human being to combine opposite attitudes, concepts, psychophysiological states in one integral/paradoxical context [60; 61; 62; 63], revealing the epistemological and social phenomena of *absurdity, paradox, chaos, ambiguity* being the main tools of the pedagogical paradoxology. And the diplasty as a psychological state expresses the mental/cognizing strategy to decrease the level of entropy/chaos of nervous processes [55], reflecting the oriental wisdom: as Lao Tzu put it, "be bent and

you will remain straight. Be empty and you will stay full. Be worn out and you'll remain new."

Besides the pedagogical paradoxology, the new pedagogy has been developed by us – the *pedagogy of life facts*, based on fundamental socio-psychological regularities, being revealed by social psychology, in accordance with which people are in no hurry to draw conclusions based on the well-known general theoretical facts of reality, but with surprising ease form the impressions of life based on vivid examples – emotionally charged events that are easy for a person to actualize with the help of his sensations and which, therefore, seem to him more possible and convincing than statistics. The pedagogy of life facts is a way/method of teaching a person the wisdom of the world and behavior strategies based on concrete/objective facts, which are right-hemispheric, emotional-figurative entities, on the basis of which a system of actual knowledge about the world and man can be built using the procedure of traduction (comparison) reflected on the left-hemispheric-conceptual, abstract-logical level. The pedagogy of life facts, which forms constructive knowledge saturated with concrete content, expresses the key goal of human development, which in the context of the concept of functional asymmetry of the human brain hemispheres is realized in the hemispheric functional synthesis – the psychophysical goal of human development expressed in a state of meditation, creativity, prayer [121].

Let us dwell on the pedagogical concept/method of the *teaching fairy-tale* we have developed. The fairy-tale being the metaphorical resource of human development finds actualization in modern psychological and pedagogical science, which studies the peculiarities of children's perception and understanding of fairy-tale content as a means of upbringing and education, being a special source of the formation of aesthetic feelings. Accordingly, we can outline the main aspects of the fairy-tale being not only a developmental and upbringing, correctional and therapeutic means of influencing children, but also a teaching tool. Myths and fairy-tales, as shown in the pedagogical concept of a teaching fairy-tale, carry in a condensed figurative-metaphorical form the information about the world (including the philosophical, mathematical, physical facts, laws and regularities), which is generally adequate to modern scientific ideas, revealing

the phenomenon of "cognition before cognition". In this regard we can refer to J. Krüger's book "*Signposts to Silence. Metaphysical mysticism: theoretical map and historical pilgrimages*" (2018). F. Capra wrote quite clear about this phenomenon in his book "*The Tao of Physics: An Exploration of the Parallels between Modern Physics and Eastern Mysticism*" (1975), where he convincingly showed that the thinking of a mystic being immersed in the mystical depths of the Universe, and the thinking of a contemporary physicist studying the quantum/fundamental structure of the Universe are in many ways similar not only in terms of their content (information about the world, which is similar in mystical and physical interpretations), but also in the movement of thought, which reveals paradoxical features of our world.

The irrational information being embodied (decoded) in fairy-tale on the level of right hemisphere, can be transcribed (recorded) into rational knowledge on the level of left hemisphere in adulthood.

Conclusions.

As we can see, a new paradigm of education is underway, which is oriented towards three fundamental aspects of anthropomorphic reality. Traditional education and the traditional pedagogical paradigm, based on the implementation of the functions of brain's left hemisphere into the educational process, ignores the phenomena of the post-nonclassical scientific paradigm, leaves out of consideration amazing examples of "instantaneous acquisition of knowledge" and is oriented towards "linear" formative pedagogy (pedagogical action). This process being a "linear-discrete", "atomic" entity appears fundamentally subject-object, knowledge-centric. Under such conditions, the participants in the educational process are involved in the process of knowledge-centric education, which can be understood as a technology, as an adaptive-disciplinary system of assimilation of the sum of knowledge, skills and abilities (competences), specially organized for the reception and transmission of information.

The holistic model of continuing education, presented in **Table 3**, assumes that a person's educational trajectory should be oriented on the functions of the right

hemisphere of the human brain, as well as on the state of functional synthesis of the hemispheres, revealing several new types of pedagogies. Due to them the integrated interdisciplinary concept of life-long learning is grounded, which implements three types of pedagogical influence/interaction: pedagogical influence aiming at development (actualizing, resonance, metamorphosis pedagogies), at transformation (bifurcation, creative pedagogies, pedagogical paradoxology), at formation (formative, retro-, chrono-reverse pedagogy, pedagogy of life facts) of the pa rticipants in educational process.

We hope that the presented conceptual principles of the new paradigm of education will become promising directions for the development of continuing education and the educational sphere in general.

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