

UDC 370.182

**O. V. Voznyuk,**  
Doctor of Pedagogical Sciences, Professor  
(Zhytomyr Ivan Franko State University)  
alexvoz@ukr.net  
ORCID: 0000-0002-4458-2386

### DEFINING AND DIAGNOSING THE GIFTED STUDENTS

*The article contains the research of the phenomenon of giftedness and the ways of its diagnosis. The interdisciplinary analysis enables to derive at the conclusion about genetic connection of talent with the creative and intellectual aspects of a personality. The study is based on methodological aspects when the research proceeds from the universal to the particular, and from the latter – to the singular. On the level of philosophical methodology the universal paradigm of development is applied enabling to ground, that creativity, giftedness and intellect have certain genetic ties being realized in the process of a person's development: the man develops from the state of giftedness, characterized by the functions of right hemisphere of the cerebrum realizing multiple, emotional and image reflection of reality, high affective and perceptive sensitivity being the indicators the very giftedness – that right hemispheric developing potential of man which must be sublimated into left hemispheric intellectual (analytical, abstract and logical) forms of psychical activity. On the third stage of man's development the unification of right- and left hemispheric functions reveal the psycho physiological basis for creative (paradoxical, dialectical) thinking and mastering of reality. The mentioned stages determine pertaining proper strategies of the diagnostics of giftedness.*

**Key words:** *giftedness, intellect, creativity, the concept of functional asymmetry of human brain, the universal set of giftedness diagnostics.*

**The urgency of the problem.** Deep and many-sided research into the problem of giftedness of the participants of educational process enables to come to a conclusion that personality's giftedness, being fundamental psychological characteristic, is closely connected with such man's aspects as creativity, intellect, emotional intellect, intellectual development. The human beings with developed searching mechanism as an essential aspect of man's creativity are characterized by minimal aggressiveness and are open for helping others. Thus such personality's faculties as creativity and altruism are interconnected. That is why creativity can be understood as the basis of empathic capacity of a man being the ability to understand another person's emotional states and mental preferences and thus enhancing the process of formation in the personality non-pragmatic, spiritual values and world outlook orientation.

**Analysis of recent research and publications.** So the sense of harmony and justice as well as active reaction to truth is developed in creative people.

Among other such qualities one can mention: high dedication to certain ideals that can be understood as life mission; the developed sense of harmony and harmonious environment; high demands of the creative person to other people and himself; independent system of values; a tendency to non-conformism; deep interest in philosophical problems; pursuit of life meaning; striving to bring all things to perfection.

As a rule creative personalities' characteristics of emotional sphere are mutually contradictory: a unique combination of personality's characteristics (L. B. Yermolayeva-Tomina); impulsivity of behavior (F. Barron); increased susceptibility and sensitivity (R. Kettel); high level of energy and vitality, sensory and emotional lability; certain deviations from traditional behavioral patterns and even stubbornness (U. V. Kala); emotional attitudes and coloration of the individual activities, high level of emotional excitability (V. M. Kozlenko, V. O. Molyako); the impact of emotions on person's evaluations.

It is very important to use P. V. Simonov's information theory of emotions. According to this theory the man's emotions stem from the deficiency of relevant information about the outer world. According to information theory (which teaches us about information as the function of probability) such low level of information signals about low probability of the events.

The mentioned enhanced emotionality of creative and gifted persons, according to information theory of emotions, means that creative people are in great need of information, which presupposes their openness to uncertainty, chaos, paradox [1].

Thus, person's creativity reveals a relationship with giftedness. One of the major faculties of the latter is the capacity to implement the creative acts. So the process of creative personality's development can be focused on the qualities, characteristic of gifted individuals. Due to this the diagnostics of giftedness must be based on studying of man's creative and intellectual aspects.

**The purpose of the article.** The main objective of our theoretical research is grounding the above supposition.

**The scientific results and their discussion.** L. Terman's fundamental research of the level of man's intellect development revealed the stability indices of intelligence on a Stanford-Binet scale thus serving as a working definition of giftedness and creativity [2].

The research of the phenomenon of giftedness enables to drive at the conclusion: there is a rather close relationship between creativity, giftedness and intellect not only in the context of phenomenological characteristics, but also concerning the genetic aspect of this relationship. The latter is illustrated by the Japanese proverb: "when a person is five-year-old he is a genius; a child reaching ten years of age is a talented person; an adult is an ordinary man".

The identification of genetic relationship between the categories we can use the philosophical methodological, all-scientific and concrete scientific methodology approaches to the investigating of the phenomena of creativity, giftedness and intellect. This enables to clear up universal and concrete aspects and mechanisms of human development, specifically the development of the mentioned phenomena. Therefore, we proceed from the universal to the particular and then to the singular.

**The level of philosophical methodology.**

This level presupposes application of the *universal paradigm of development* outlining the universal developmental (dynamic) model of any phenomena thus revealing a *dialectical line* of any change. This model in its turn is based on a *universal philosophical model of reality*. The latter uses three fundamental elements: 1) the person, 2) the world (internal and external, *subject and object*, "I" and not-"I") and 3) the boundary between them [3].

The universal paradigm of development is understood as a process of changing the developing phenomena. This process covers three states: **the thesis** – a state of fusion of the subject and object → **the antithesis** – a state of differentiation of the subject and object → **the synthesis** – a new state of the fusion of the subject and object realized on a higher level of development. The outlined synergetic process presupposes the splitting (violation) of the integrity state (the identity of the opposites) of the developing phenomena, and the ultimate restoring of this integrity at a highest evolutionary stage.

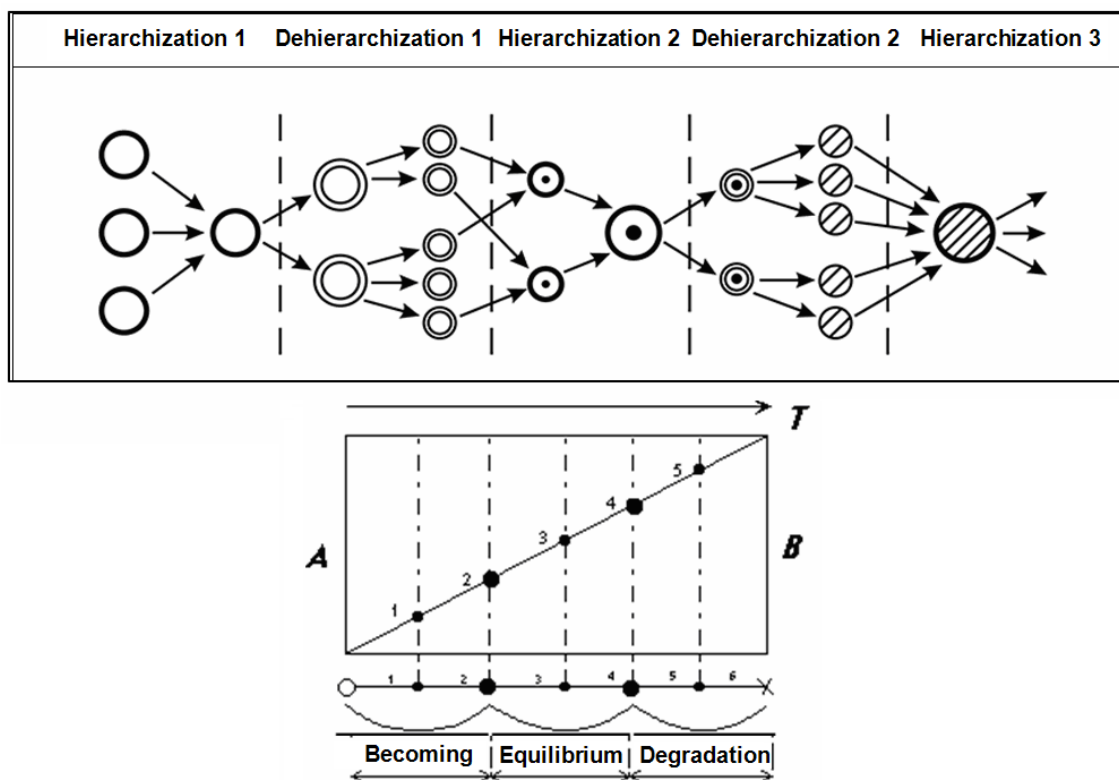


Fig. 1. Synergetic three-phase and six-phase models of development

We have a generally known philosophical developmental thought according to which the third evolutionary stage dialectically reiterates the first one, but on a higher level of development.

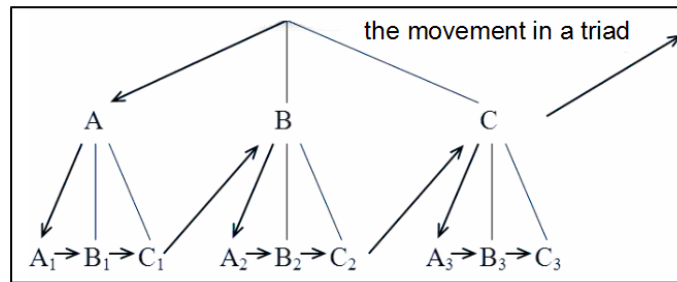


Fig. 2. Hegelian movement in a triad

This Hegelian scheme is quite dialectic being illustrated by G. V. Plekhanov in a very simple way: any phenomenon, developing to the end, changes into its opposite; but since the new, contrary to the first, phenomenon also in its turn changes into its opposite, then the third phase of development has a formal resemblance with the first one.

The dialectical process reveals the formal identity of the beginning and last phases of development of the phenomena and finds the realization in psychological research that reveals the so-called pro- and retrograde inhibition when retained in man's memory rows of items form specific structure when the initial and the final elements take precedence in the memorizing process of human brain.

The above mentioned dialectical developmental scheme realizes the development of dialectical contradiction revealing the repetitive-cyclic change of two opposing states – wholeness and discretion (singular and plural) thus confirming its universality. As P. K. Anokhin writes, due to broad biological standpoint, as well as due to philosophical analysis of the role of space and temporal structure of the Universe, the motion of the matter along the consequent rhythmically reiterating phases is a universal law that defines the main organization of living beings on the Earth [4].

This conclusion expresses the universal character of cyclic and helical form of the development of our world as a whole and its every element and aspect.

So the dialectical paradigm of development reveals its methodologically isomorphic character being the universal algorithm of any change, any motion and development. This paradigm helps solving a lot of scientific problems. Let us take one of them relating *the types of human activities*. A. N. Leontiev put forward ontogenetic trajectory: playing → learning → labor. The pertinent theory differentiates several such types, as playing, cognition, thinking, learning, communication, labor, speech et cetera (B. G. Ananiev, S. L. Rubinstein, A. N. Leontiev et al.).

The universal paradigm of development clears up this problem as thinking, communication, learning, cognition are present in playing and labor in a through way. It is the universal development paradigm that reveals three stages of unfolding basal human activities, realizing a fundamental genetic circuit:

- **playing** (the activities are not aimed at achieving the pragmatic goals and existing for itself as a subject-subject phenomenon) →
- **labor** (purposeful activities aimed at achieving certain pragmatic goals, which reveal an object-object instrumental character) →
- **creativity** (the activities that replicate the playing, but at a higher level of development, having the characteristics of both the playing, being *spontaneous*, self-determined activity, and the labor, being the activity that aims at practical results).

Compare with similar line: **giftedness** → **intellect** → **creativity**.

As E. Fromm put it, the *spontaneity* being the characteristic feature of creativity is a condition for realizing the integrity of the personality, in the framework of which different spheres of life are unified. As E. Fromm writes, the main component of spontaneity is love that should be man's voluntary union with the outside world on the basis of preserving man's and world's identity. Owing to this the dynamic nature of love is realized as it increases the desire to overcome separateness and leads to the unity, but does not destroy individuality [5].

**The level of all-scientific methodology.** The initial stage of onto- and phylogenetic man's development outlines the subject's and object's state of unity, syncretism, when representatives of primitive societies (subject) and the surrounding world (object) made up a holistic psyche unity due to which the subject and object (inner) and outer) represent an integral indivisible complex.

The second stage is the historical era of contemporary times revealing the ever increasing unfolding of the dichotomy of the man (as a species and the subject of history) and the world (as a vast arena of human development).

The third stage involves the process of the fusion of the object and subject, their reciprocal mutual influence when the spiral of humanity's development returns to its sacral sources, but at a dialectically higher level of development. This third stage of the evolution of an education as a social institute is characterized by the construction of the educational process on a subject-subject basis, revealing the development of interdisciplinary

synthesis and the emergence of such integrative research spheres as educational anthropology, suggestopedia, educational synergetics, ecology, chronobiology, acmeology, pedagogical paradox study etc.

**The level of concrete scientific methodology.** On this level of research the universal development paradigm is realized in the conception of hemispheric asymmetry of human brain. This conception is one of the most heuristic analytical instrument to achieve the goals of the article.

The hemispheres can be considered a psycho-physiological focus of the human being, as their functions are directly or indirectly correlated with lot aspects of the man.

Psychological experiments results in the conclusion that the hemispheres being the psycho-physiological focus of human organism, in the functional sphere correlate with such aspects of human being, as:

- energy and information regulation of man's behavior;
- goals creation and searching for the ways of achieving the goals;
- automatic and spontaneous psychic activity;
- volitional and non-volitional psychic spheres;
- power and weakness of nervous processes;
- lability and inertness, excitation and inhibition of nervous processes;
- first and second signaling systems;
- ergotrophic and trophotrophic organismic functions;
- empathy and reflection, extroversion and introversion;
- "I" and non-"I";
- sympathetic and parasympathetic branches of vegetative nervous system, etc. [6].

Automatic (subconscious) man's actions are included into the right hemispheric psychic activity; non-automatic (conscious) – into the left hemispheric aspects of psychic activity.

The right hemispheric strategy of perception, thinking and mastering the world represents the emotional, concrete, expressive, holistic world view presupposing ambiguous poly-semantic linguistic and motivational context of reflecting the reality and corresponding to energy-field aspect of the Universe (continual type of the matter). The right hemisphere generates religious-mythological, artistic reality, awaking to the life such forms of social consciousness, as religion and art.

Left hemispheric strategy of perception, thinking and mastering the world realizes abstract-logical, sign and symbolic, discursive, conceptual, discrete, plural world outlook presupposing accurate linguistic and motivational context of reflecting the Universe (discrete type of the matter, substance-informational aspect of the Universe). The left hemisphere creates scientific-technocratic reality, revealing science and politics [3].

Onto- and phylogenies of the person reveals the process of gradual increasing the hemispheric asymmetry. In a baby the state of functional symmetry of cerebral cortex reveals the situation when the hemispheres function according to the functional pattern of the right hemisphere). The greatest expression of the hemispheric asymmetry is realized at a mature age. Then the hemispheric asymmetry is being gradually leveled and in an elderly person there grows the condition for functional synthesis of the hemispheres, when old people are enriched in life experience and transform into a children with their frankness and openness of perception of the world, plastic psyche and behavioral spontaneity.

The right hemispheric functions focus on the present time (with turning to the past), and the left one – on the present time (with turning to the future). This experimentally grounded fact enable to conclude: man's development moves from past to future, and from the future – to their integration, when space and time dichotomy of the Being is eliminated; thus a person frees himself from "*the curse of Chronos*".

As the study of social processes shows, the socio-psychological life of a society reveals periodic processes of vacillation of social mood typical for the left (20-25 years) and right (20-25 years) hemispheres. These cycles were learned on a quantitative level with the help of studying social and psychological climate of a society, different social practices, the styles of architecture, music, fashion etc. The period of this vacillation, as the appropriate analysis shows, corresponds to the lifespan of one generation.

Thus there are three main types of man's comprehension of the Being – rational (left-hemispheric), sensual (right-hemispheric) and meditative one that incorporates the first and the second types: the neuropsychological researches of brain's EEG show that in the state of hemispheric functional synthesis (synchronization process of brain's hemispheres) the meditation (illumination) state displays itself. So, person's development proceeds from sensational to rational and from the latter to meditative form of thinking [7].

So, the onto- and phylogenetic dynamics of human brain outlines the movement from right hemispheric (unconscious) to left hemispheric (conscious) aspects, and from the latter – to the hemispheric synthesis revealing the super-consciousness (V. P. Symonov and K. K. Stanislavsky [8]).

On the basis of the super-consciousness due to combination of the two excluding each other functional entities – emotional-imaginative and abstract-logic – the state of creativity is generated as one of the newest concepts of creativity mechanism is related with the phenomenon of **biosociation** being used as a newest explanatory principle of man's creative status: contrary to associative relationships of the notions in human brain (taking place under the impact of hackneyed experience schemes based on reiteration of the events) the

biosociation derives from the combination of ideas that have no obvious interconnection, and their relationship can be viewed like supernatural and paradoxical. This phenomenon (biosociation) is based of *diplasticity* – the man's ability to combine diametrically opposed things and phenomena in one logical context.

Taking into account the made analysis one can conclude that the purpose of education and the ways of reaching its goals is quite understandable, since it is quite clear that the state of hemispheric harmony presupposes a sufficient developmental level of the two hemisphere of human brain. For the time being a traditional schooling process is based mostly on the development of the left-hemispheric thinking, but the fact of certain underestimation of the importance of emotional and imaginative (right-hemispheric) mechanisms of psychic activity in the process of educating is acknowledged. Moreover, the psychological and pedagogical experiments convince that the right-hemispheric function activation ensures a respectively significant stimulus for the development of left-hemispheric type of psychic activity [9].

The above made theoretical analysis enables to clear up the main aspects of a new (holistic and synergetic) paradigm of education, and elucidate the ways and stages of unfolding the educational process on structural-dynamic and contents-pragmatic levels. It is quite understandable that:

- 1) up to 8–12 years of the child's growing the right hemispheric aspects of schooling are to be organized;
- 2) after the age of 8–12, when the process of active hemispheric asymmetrization is revealed the educational process is to focus of the left hemispheric aspect.

Meanwhile teachers' attention is to be paid to the process of reciprocal functional harmonizing the man's both aspects as hereafter we must achieve the state of hemispheric integration without losing the right hemispheric capacity. This scenario mirrors the mentioned Japanese saying, according to which the educational and cultural process of socialization inhibits the mental development of a child.

The theoretical analysis enables to conclude that creativity, giftedness and intellect are bound by genetic link, realized in man's development: a personality develops:

- 1) from the state of *giftedness*, characterized by the functions of right hemisphere and thus – by poly-semantic, emotional and imaginative reflection and cognition of the world, by affective and sensory perception. The letter is the indicants of giftedness – the right-hemispheric potentiality, which in the developmental process is to be sublimated into

- 2) left-hemispheric *intellectual* status being analytical, abstract and logical psychological state, as intellect can be understood as a mechanism of elementary logical processing of information (G. Eysenck, R. Sternberg et al.).

- 3) Eventually, at the third stage of personality development the unity of right- and left-hemispheric functions make up the psychophysiological conditions for *creative* (dialectical, paradoxical) thinking and fathoming the world [10].

Consequently, *the natural and perfect personality development springs up from giftedness, and then proceeds to intellect and from the latter – to creativity.*

**Conclusions.** Implemented analysis enables to conceptualize *the universal system of giftedness diagnosis* thus revealing the giftedness criteria and covering the genetic trajectory of the child's development, when giftedness is predominantly expressed at primary and secondary school age; the intellect – at middle and secondary school age; and creativity – at high school age must contain the following tools:

**Giftedness** (right hemisphere):

- 1) the research of man's inter-sensual associativity (synesthesia) due to studying the sense channels (the affective and perceptual sensitivity);
- 2) the research of man's empathy
- 3) the research of the specifics of man's altruism;
- 4) the research of imaginative thinking that is – the artistic exploration of reality.

**Intellect** (left hemisphere):

- 1) the research into intellectual resources of human thinking, the ability to abstract and logical thinking etc.;
- 2) the research into emotional intellect.

**Creativity** (hemispheric functional synthesis):

- 1) the research of the capacity in creative, poly-semantic, paradoxical, biosociation thinking,
- 2) the study of the ability to create the hypothesis,
- 3) the research of brain asymmetry index,
- 4) the research of possibilities of non-pragmatic world outlook orientations.

## REFERENCES

1. Barron F. Creative Process and creative person / F. Barron. – NY, 1969. – 234 p.
2. Terman L. Mental and Physical Traits of a Thousand Gifted Children / L. Terman // Genetic Studies of Genius / Terman L. (Ed.). Stanford, CA : Stanford University Press. – 1925. – Vol. I. – P. 34–45.
3. Voznyuk O. V. Main Aspects of the Concept of Universal Model of the Being / O. V. Voznyuk, L. M. Ovander. – Zhytomyr : Volyn, 1997. – 132 p.

4. Anokhin P. K. Selected Works : Philosophical aspects of the theory of functional systems / P. K. Anokhin. – Moscow : Nauka, 1978. – 400 p.
5. Fromm E. To have or to be? / E. Fromm. – N. Y. : Bantam Books, 1976. – 240 p
6. Sperry R. W. Hemisphere Deconnection and Unity in Conscious Awareness / R. W. Sperry // Americal Psychologist. – 1968. – № 23. – P. 723–73.
7. Murphy M. Contemporary meditation research / M. Murphy, S. Donovan. – San Francisco, Esalen Institute Press, 1985. – P. 34–40.
8. Simonov P. V. Conditioned avoidance responses to the pain stimulation of another animal / P. V. Simonov // Activitas nervosa superior. – 1977. – V. 19. – № 1. – P. 28–29.
9. Bogen J. E. The Other Side of the Brain. VII : Some Educational Aspects of Hemispheric Specialization / J. E. Bogen. – UCLA Educator. – 1975. – № 17. – P. 24–32.
10. Pribram K. Holonomy and Structure in the Ogranization of Perception. Images, Perceprion and Knowledge / K. Pribram. – Dordrecht : Reidel Publishing Co., 1977. – 456 p.

#### **Вознюк А. В. Определение и диагностика одаренных студентов.**

*Исследуется проблема одаренности и пути ее диагностики. На основе междисциплинарного анализа делается вывод о генетической связи одаренности с творческими и интеллектуальными аспектами человека. Исследование опирается на методологические подходы, когда исследование идет от всеобщего к особенному, а от него – к одиночному. На уровне философской методологии используется универсальная парадигма развития, благодаря которой обосновывается, что творчество, одаренность и интеллект имеют определенную генетическую связь, которая реализуется в процессе развития человека: человек развивается от состояния одаренности, характеризующегося функциями правого полушария головного мозга, которые реализуют многозначное, эмоционально-образное отражение действительности, высокую аффектно-перцептивную сензитивность, что являются признаками именно одаренности – того правополушарного развивающего потенциала человека, который должен сублимироваться в левополушарные интеллектуальные (аналитические, абстрактно-логические) формы психической деятельности. На третьем этапе развития человека интеграция право- и левополушарных функций обнаруживает психофизиологическую базу для творческого (парадоксального, диалектического) мышления и освоения действительности. Отмеченные этапы определяют соответствующие стратегии диагностики одаренности.*

**Ключевые слова:** концепция функциональной асимметрии полушарий головного мозга; универсальный набор диагностики одаренности; одаренность, интеллект, творческий потенциал.

#### **Вознюк О. В. Визначення та діагностика обдарованих студентів.**

*Досліджується проблема обдарованості та шляхи її діагностики. На основі міждисциплінарного аналізу робиться висновок про генетичний зв'язок обдарованості з творчими та інтелектуальними аспектами людини. Дослідження спирається на методологічні підходи, коли дослідження йде від загального до особливого, а від нього – до одиночного. На рівні філософської методології використовується універсальна парадигма розвитку, завдяки якій обґрунтовується, що творчість, обдарованість та інтелект мають певний генетичний зв'язок, який реалізується в процесі розвитку людини: вона розвивається від стану обдарованості, що характеризується функціями правої півкулі головного мозку, які реалізують багатозначне, емоційно-образне відображення дійсності, високу афектно-перцептивну сензитивність, що є ознаками саме обдарованості – того правопівкульового розвивального потенціалу людини, який має сублимуватися в лівопівкульові інтелектуальні (аналітичні, абстрактно-логічні) форми психічної діяльності. На третьому етапі розвитку людини інтеграція право - і лівопівкульових функцій виявляє психофізіологічну базу для творчого (парадоксального, діалектичного) мислення й освоєння дійсності. Зазначені етапи визначають відповідні стратегії діагностики обдарованості.*

**Ключові слова:** концепція функціональної асиметрії півкуль головного мозку; універсальний набір діагностики обдарованості; обдарованість; інтелект; творчий потенціал.