

DIALECTICS OF HUMAN COGNITION AND THE SCIENTIFIC FOUNDATIONS OF METAPHYSICS

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Abstract

The purpose of the work is to reveal the scientific foundations of metaphysics. To substantiate scientific knowledge, a review-analytical approach has been applied to synthesize reliable information with the rational reliability of a systematic approach in the interests of substantiating the human structure in the structure of the universe. The philosophical focus of the work is based on the concept of the essence of man and the meaning of the vital activity of his organism in their connection with the universal understanding of the unity of man and the Universe. The systemic completeness of a person's structural representation is based on P.K. Anokhin's theory of the functional system of the organism and inductive logic, while the universe is based on deductive logic. The rules of the triads of the block hierarchical method of the system approach are applied to describe the hierarchy levels considered in the system integrity and in the inheritance relations between them. The main result of the work, achieved by comparing natural scientific knowledge about humans with basic philosophical and theological knowledge, is the identification of the material (physiological) structures of the human organism, revealing the essence of metaphysical concepts. The value of the research lies in the rehabilitation of metaphysics, which makes the necessary contribution to the scientific base of philosophy and theology, and ensures their well-deserved place in the hierarchy of sciences. The application of the results of the work in practice can be aimed at realizing the constructive potential of a person, preventive medicine, substantiation of the concept of sustainable social development, and policy (actions related to public management of human life).

Key words: functional system of the organism, structure of the universe, essence, meaning

1. Introduction

Figure 1 shows the refined architecture of P.K. Anokhin's neurocybernetic information model of the functional system (FS), which is a central-peripheral mechanism of the brain (supplemented by a corrector of the result of the action based on the cortico-visceral theory of K.M. Bykov and I.T. Kurtsin [1], which is confirmed by R.A. Pavlygina [2]). "Cybernetics reflects the processes of control and communication in the FS", and "computer science describes the patterns of the emergence, transmission and extraction of information" [3]. The block of modules on the far right is represented by the nervous centers of the human organism systems. The information from their outputs is fed by reverse afferentation to the adders on the left side of the circuit, where it is combined with information about external environment and divided into two streams in acceptor of the result of the action.

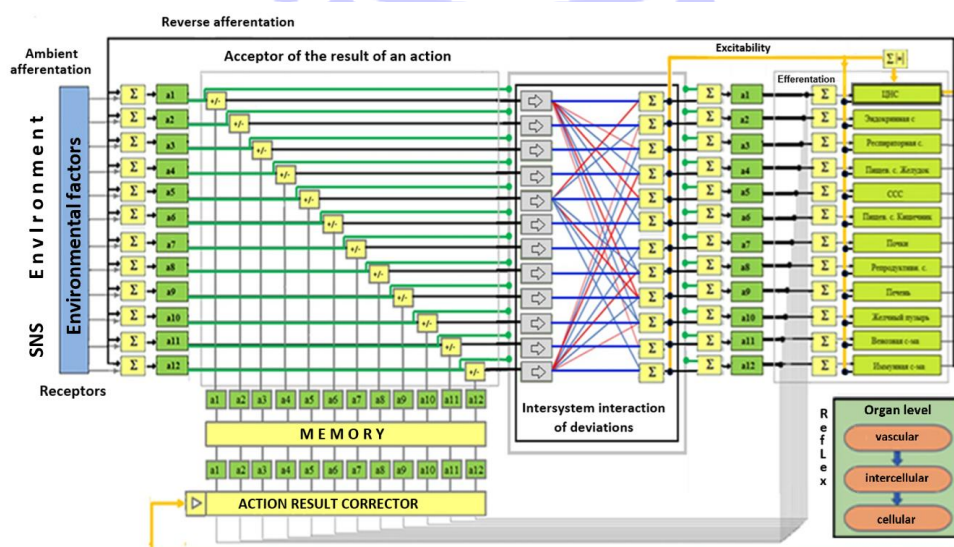


Figure 1. Functional system model

The first one goes to the feedback generation modules (+/-), where information is compared with the parameters of the beneficial result of the action - homeostasis, and then, as a result of deviation from them, it enters the block of their intersystem interaction, which determines the excitability of nerve centers, enhancing them efferent effect; The second stream is combined with the inverted results of the first, completing the feedback accounting and determining the reactivity (sensitivity) of the nerve centers of the systemic functional units (SFU) of the organism. In this way, the physiological mode of adaptation of the organism is realized.

If there is an inability to maintain the organism's homeostasis due to the influence of dangerous environmental factors or lifestyle, which is accompanied by exceeding a certain threshold of total deviation from the optimality of the nerve centers, then a non-specific reaction of the central nervous system (CNS) is activated. The central nervous system initiates the dominant state of the brain structures by the level of its activity, influencing the corrector of the result of the action, which, in proportion to the values of the optimality parameters, reflexively affects the state of each nerve center of the human organism (taken into account in the figure by the summation blocks on the right), which corresponds to the cortico-visceral theory of K.M. Bykov and I.T. Kurtsin (1950s) [1], confirmed by R.A. Pavlygina (1973) [2]. As a result, the cerebral cortex can directly affect the state of internal organs (by the mechanism of conditioned reflexes) by the same reaction to a wide range of external stimuli. The level of functioning of the organism increases (to the levels of reactions: training, activation, stress), and the relative influence of any irritating factor is no longer significant.

The altered state of the nerve centers of the brain through neural networks has an efferent neurotonic or neuromuscular effect on the vascular smooth muscles in the area of the corresponding SFU of the organism, affecting the lumen of the vessels. This drives the state of the nutrient medium (external) for the cells of the corresponding organ (tissue), maintaining cellular homeostasis, providing optimal conditions for DNA replication and transcription, RNA synthesis, protein translation, and amino acid synthesis. The integrity of the organism in the process of its vital activity is achieved through the coordinated work of all elements of the organism's SFU.

In Figure 2, the table (in its part highlighted in gray) shows in detail the structure of the FS model of an organism based on a system block-hierarchical approach [4], which includes a description of the subordination of isomorphic levels (functional systems) and their inheritance relationships for elements of the lower levels of the hierarchy described by the method of triads of M.M. Telemtaev's system technology [5]: "External environment — Activity Model - Result/The state of the elements". For clarity, the figure to the right of the table shows how the rules of interaction of nerve centers at the level of the brain of the organism are applied to all levels of control of the functional state of the organism: the state of the elements of the lower levels vertically depends on the elements of the higher level. Reverse afferentation is realized by interoreceptors at the cellular level. It is known that due to the influence of reverse afferentation, a change in the state of any SFU will immediately affect the state of the other SFU [6].

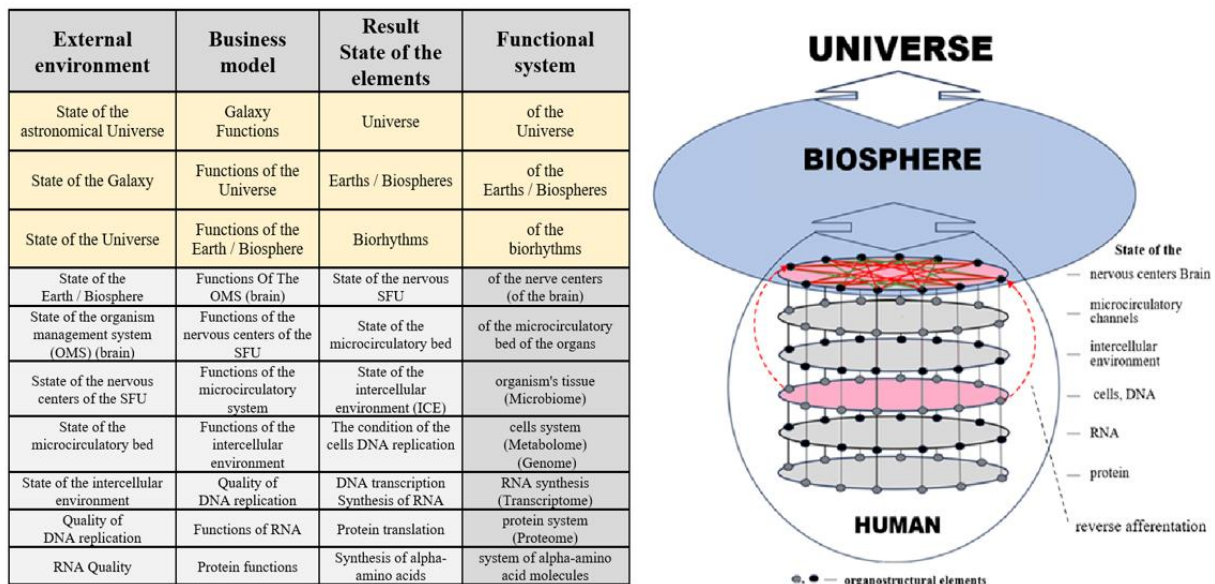


Figure 2. Hierarchy of levels of the functional system of the body

It should be noted that the triads of system technology are an analogue of the triad of G.V.F. Hegel in the form of "thesis-antithesis-synthesis". With the help of logical homology (isomorphism) of levels, i.e. the statement of formally identical laws governing the functioning of materially different phenomena [7], an objective knowledge of reality is achieved, contributing to its theoretical and practical development. In the table (Figure 2), let's pay attention to the first level from above of the functional systems of the human organism highlighted in gray: the

level of the nervous centers of the SFU. For him, the state of the biosphere acts as the external environment, the organism's management system acts as a model of activity, and the state of the nervous centers of the brain acts as a result of activity. The inheritance relationship between the properties of elements at different levels of the system hierarchy, when moving down, corresponds to the rule: the elements of the triad of the higher level for the lower level determine positions by moving diagonally down to the left, for example: the result of the state of the nerve centers for the lower level takes the position of an activity model that will determine the result of the activity of the next lower level. When moving up, the elements of the triad determine positions by moving diagonally to the right and up. Based on the systemic triadic hierarchical approach, based on the upper level of the organism, we will define the structural elements of the first level above the organism, based on the principle of isomorphism of levels and the idea of the integrity of man and the cosmos (V. I. Vernadsky's anthropocosmic doctrine [8]). In accordance with the rule described above, the element of the external environment "State of the Biosphere" at the organism level occupies the position of a model of activity at the level above the organism, and the element of the model of activity "Functions of the Management System" at the organism level occupies the position of the result of activity at the level above the organism. In the position of the external environment of the level above the organism, we place an element external to the Biosphere - the state of the Solar System (Universe). We will form other higher levels in the same way. It is known that the influence of the Universe on the Biosphere of the rotating Earth is associated with gravitational effects and electromagnetic radiation (EMR), the activity of which determines the daily and seasonal rhythms, affecting meteorological, etc. the state of the Biosphere as a system, as well as on humans in the form of daily biorhythms. "Man in his being cannot be separated, isolated from the energy structure of the Cosmos. He carries it within himself and therefore lives according to the same laws as the Cosmos. The interaction of the energy structures of the universe, in the process of energy information exchange with humans, is the main driving force of its cosmic evolution" (L.V. Shaposhnikova, 2005) [9]. "The human electromagnetic field acts in exact accordance with the fluctuations of the electromagnetic field of the Earth (Biosphere), and the Earth (Biosphere) - in accordance with the influence of cosmic factors on it" (R.O. Becker, 1961) [10].

Based on the above facts, when considering the FS level: The state of the Universe - The functions of the Earth/Biosphere - The result of the function of the Earth/Biosphere, it turns out that the result is the state of the environment, including the biorhythmic activity of the Earth/Biosphere. But with the opposite effect on the level of the organism, it can determine only a single fixed element of the "function of the nervous system (brain)" - the standard of the beneficial result of the action - homeostasis. Taking into account the manifestation of this action above the upper level of the organism, the author adheres to the well-known "hypothesis", according to which the parameters of the daily biorhythm at the time of birth are recorded in the brain's memory as parameters of homeostasis. It is important to note that at the organism level, biorhythms are constantly present in the complex of environmental parameters.

Consequently, the element of the triad "Functions of the Earth / Biosphere" above the upper level of the organism performs only the function of duplicating the daily biorhythm of the Universe, i.e. it does not perform complex transformations of information, like all FS of the organism except the upper one. And if the latter is confirmed by "bioorganorhythmology (the science of dependent and autochronous rhythms in the structures of living organisms, which is considered to be created by A.L. Chizhevsky" [11]) and heliobiology ("a branch of biophysics that studies the effect of changes in solar activity on terrestrial organisms" [12]), then in confirmation of the former, I cite the opinions of well-known scientists:

- energy coming from space carries certain information at the moment of human birth, and it can be fixed in a biostructure (With V. Stanko and G.P. Markov, 1991) [13];
- in [14], using automated system-cognitive analysis of the Eidos system based on birth data from 20007 real subjects, they came to the conclusion: "the subject somehow remembers the position of celestial bodies at the time of birth" (A.P. Trunev, E.V. Lutsenko, 2009);
- based on the Sacred Tradition of the Church, it can definitely be said that human souls are not co-eternal with God, do not pre-exist with their bodies, but appear in the created world simultaneously with them [15];
- the results of scientific research show that the date of birth, being the main endogenous factor, along with hereditary factors, determines the psychophysiological characteristics of a personality, a tendency to certain diseases and the specifics of reactions (Andrews E. J., 1966, Brauner G., 1984, Ebertin R., 1979, Eysenck H., 1982), "critical periods", vol.E. the most responsible and "sensitive" stages in human life (Aghajanyan N.A. 1978, Bochkov V.G. 1974, 1986, Brown F. 1977, Vasilik P.V. 1984, 1985, Ganzen V.A. 1984, Kotelnik L.A. 1987, Shaposhnikova V.I. et al. 1973, 1975).

Finally, based on the consideration of the influence of the Sun and planets on the geographical location of this event at the time of birth, an algorithm for identifying the reactivity norms of nerve centers was developed, which

made it possible to predict the predisposition of the human organism to non-communicable diseases with a high prognostic value of a positive result, and to determine psychophysiological characteristics of a personality [16].

The necessity (obligation) of maintaining the activity norms of nerve centers in the state of the body's homeostasis parameters is revealed from the analysis of the R.M. Bayevsky equation: $LF = FR \times DS$ [17] - under various environmental influences, in order to maintain an adequate level of functioning (LF) of the body with a decrease in functional reserves (FR), it is necessary to increase the degree of tension (DS), as well as from the equation of the principle of self-regulation by P.K. Anokhin - I.P. Pavlov: $|LF - N| \equiv DS$, which consists in the fact that any deviation of LF from the optimal level for metabolism (N) leads to an increase in DS, mobilizing mechanisms for returning a useful result of vital activity to an optimal level [18]. Based on the above formulas, graphs of FR and DS/N as a function of LF/N are obtained (Figure 3) [19].

It follows from the graphs (Fig. 3): with homeostasis ($LF/N = 1$, $DS/N = 0$), the provision of functional reserves is maximum. Therefore, the meaning of an organism's vital activity is to minimize the deviation of the level of functioning from the norm [16], i.e., in striving for the truth of existence - Plato's "idea of Good" (provision with functional reserves).

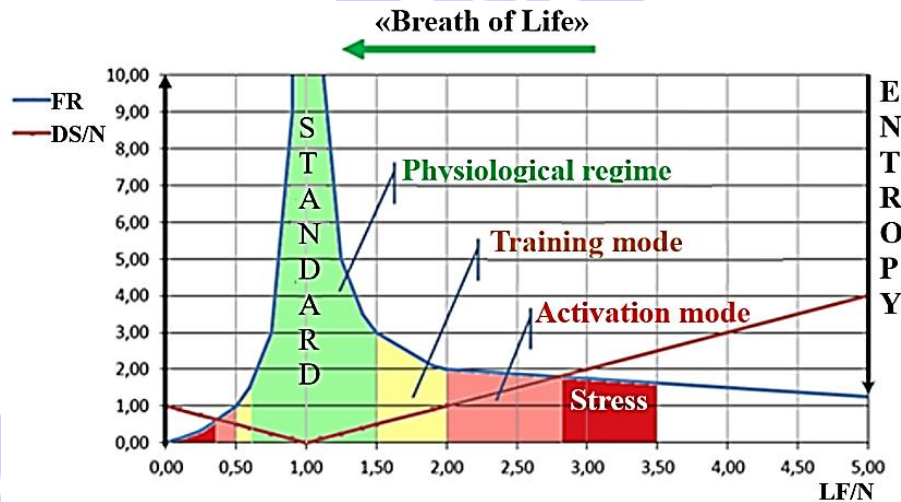


Figure 3. Особенности физиологических реакций организма

One can also come to the conclusion about the wisdom of nature, because according to P. K. Anokhin (1968), the absolute and categorical condition for the survival of any child "is the requirement of the completeness of the vital functional systems of the newborn at the time of birth" [20], i.e., in order to adapt to the external environment of the organism, the FS must have a standard of optimality for everyone SFU, and At the moment of birth, it is fixed in memory and corresponds to the parameters of the environment, which provides ideal physiological conditions for survival (Fig.3). The training and activation modes depend on the degree of activity of the nonspecific reaction of the body. Their implementation contributes to an increase in the entropy of the system, a measure of the energy spent on the activity performed.

The increase in entropy (Fig. 3) depends on the degree of deviation of the LF from the norms of reactivity SFU (parameters of homeostasis). Under stress, the consumption of functional reserves exceeds their replenishment, which threatens the vital activity of the body. Under frequent stress, high excitability of the nerve centers, in accordance with the theory of A.A. Ukhtomsky leads to a rigid interaction between nerve centers, contributing to degenerative changes in organs and tissues controlled by nerve centers with low reactivity [21]. The cause of the disease is nerve centers with a high rate of reactivity [22]. It should be noted that the norms and rules of interaction of nerve centers represent a model for the development of metabolic syndrome, which is a promising tool for pre-nosological diagnosis.

Now let's consider the functioning of the organism in the structure of the Universe—Biosphere—Man (Fig. 4) based on the scientific works of A.S. Davydov [23] and L.N. Gall [24]. The gravitational and electromagnetic radiation of the universe, penetrating into the Biosphere, affects humans in the form of daily biorhythms. They are perceived by exteroceptors on the human body, activating the channels of Oriental Medicine, which are hydrated biopolymers capable of converting the frequency of electromagnetic radiation and mechanical impact into electromagnetic.

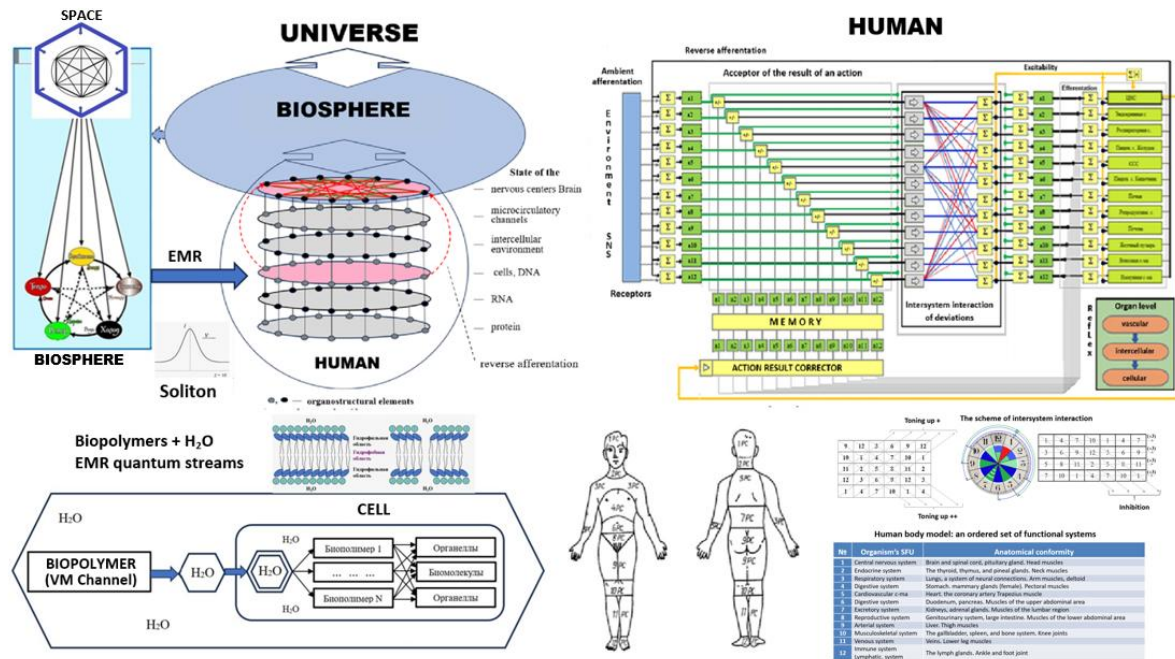
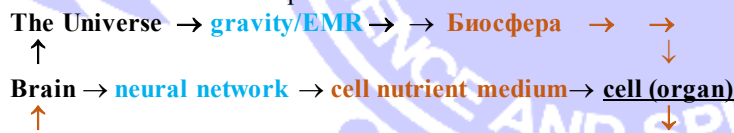


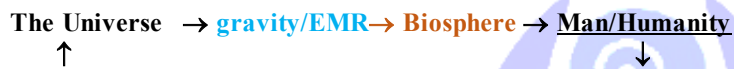
Figure 4. The structure of the Universe—Biosphere—Man

The activity of biopolymers in the form of a soliton wave specifically activates the body's systems, transferring energy to cells through aqueous crystal chains with almost no losses. Biopolymers of cells, in turn, form the frequencies of electromagnetic radiation necessary to provide energy for biochemical reactions in the cell. Information about changes in cell activity by reverse afferentation is transmitted to the body's control system, which, in accordance with the level of functioning of the system, changes the lumen of blood vessels, increasing or decreasing the nutritional properties of the corresponding intercellular medium controls cell activity. Thus, the biosphere, duplicating the influence of the diurnal biorhythms of the Universe, constantly, in accordance with biorhythms, specifically controls the state of the cells of our organisms. "Life itself is not something separate, an additional component of reality" [25].

The above information is presented in the form of a scheme:



Globally, this scheme can be represented as:



The latter scheme highlights the importance of energy exchange between man/humanity and the universe. Not only does man depend on the universe, but also the harmony of the universe depends on the "reverse influence of man on the world around him" [26]. "The human body is not a limited something, but a substance that generates electromagnetic waves that escape into the surrounding abyss of space" [27]. The disruption of the harmony of the universe is reflected in the activity of the Sun and its impact on the ecology of the biosphere. Chinese sages believed that "the order in space, the correct change of seasons, heat and cold depend on human behavior and morality" [28].

"Heaven acts depending on the actions of people" [29]. In the statement of A.L. Chizhevsky: "In the light of the modern scientific worldview, the fate of mankind depends on the fate of the universe" [30], the "modern scientific worldview" inherent in him more than half a century ago is still not inherent in our time. Conclusion: "the salvation of modern civilization is primarily connected with the salvation of man and, consequently, humanity as a whole [31], since deviation from the optimal functional state of humanity can directly affect the development of a global ecological, demographic, and political crisis.

Table 1 shows the terminological correspondences of the elements of the functional system of the body for physiology, philosophy, theology, Hinduism and the Chinese tradition.

Table 1.

Physiology	Philosophy	Theology	Hinduism	China
Functional system	Soul	Soul	Dziva	Corporeal Soul (Po)
Afferentation Acceptor Result Action Efferentation	The intelligent part of the soul Platon	Mind-organ of contempl-n God's providence The soul controls	Shiva Saguna+Adhyāsa:SagBr. Nath → Dziva Shiva Saguna	Shi+Qi-external+internal Shen (mind of the soul) Hou Shen (functi-n. state)
A useful result of the activity (parameters of homeostasis)	The sensually desirable part Entity	Desirable power Spirit/essence of the soul The Spiritual Will	Narayana, Shiva nirguna Atman-nirguna. Brahman / Vishnu Sankalpa → Nirgunabrahman	de = Yuan Shen Gui Shen Zhi Shenqi
Deviation from the useful result of an action	The passionate (furious) part Platon	The irritable power of the soul The Holy Spirit (volition)	Shiva Saguna = avidyā, attribute	Disharmony Emotional imbalance
Neural network	The mechanism of influence on the physical body in the process of controlling the physical body	Etheric shell/ Etheric body	Gun, Prana (odžas, tedžas)	Hun's Ethereal Soul Qi (Yin, Yang)

The graphs in Figure 3 reveal the true essence of the functional state of the SFU of the human body when achieving optimal parameters of the body's homeostasis, i.e. the essence of being from the point of view of philosophy, because at the same time, the functional reserves of the body are maximum, and entropy is absent. This is "a force that potentially contains a goal and a final result", "setting the principle of the unity of the organism for which it arose, exists and functions" [32]. On the other hand, according to Aristotle, "the essence of being is essence" [33].

Therefore, the essence is determined by the parameters of homeostasis - the norms of reactivity of the body's SFU, which determine the basis of the physiological and psychological characteristics of a person: character, reactivity of the body (sensitivity, resistance, excitability), in theology, it corresponds to the parameters of the spirit. The spirit in the form of a biorhythm, i.e., an instantaneous image of gravity and (or) the EMR of the Solar system (Universe) at the moment of birth is represented in the functional system of P.K. Anokhin as a useful result of an action, coming from memory (Figure 1) in the form of neural signals, is used in the acceptor and corrector of the result of the action, i.e. it is the material carrier of the essence (Figure 6), which corresponds in theology to the ideas of Bishop Ignatius (Bryanchaninov) [15].

2. Conclusion

Philosophy in the modern socio-cultural space performs a number of functions: epistemological, prognostic, design and methodological [34], can become the theoretical foundation for the practical realization of the boundless existence of the biosphere and society of planet Earth, the Universe [35]. The priority ideal of scientific knowledge is the understanding of the inseparable unity of the Universe and humanity, their interdependence, which stimulates the need to rely in everyday life on knowledge of the theoretical foundations of the human body, on knowledge of the essential features of the potential of being of his organism in order to achieve the goal of anthropocentrism - personal and state interest in the regularity and effectiveness of restoring the state of homeostasis of each member of society of each state for the realization of increasing the functional reserves of humanity, which should be aimed at:

- decent, effective labour for the benefit of society;
- systematic physical education and sports activities;
- self-realization: the development of identified abilities and talents;
- creation of a personal, comfortable and safe internal environment;
- solving the problem of population conservation: disease prevention based on pre-nosological diagnosis;
- increased life expectancy;
- improving the well-being of every member of society.

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The Special Theory of Non-Dualism and A. A. Markov's Theory of Potential Realizability

Let us look into the meaning of the verse from 'Ishavasya Upanishad'.

ॐ पूर्णमदः पूर्णमिदं पूर्णात्पूर्णमुदच्यते । पूर्णस्य पूर्णमादाय पूर्णमेवावशिष्यते ॥ ॐ शान्तिः शान्तिः शान्तिः ॥

The meaning of this verse is: 'That is 'Absolute'; This is 'Absolute'; 'Absolute' comes of 'Absolute'; If 'Absolute' is taken out of 'Absolute', then 'Absolute' only remains. Note that this thousands of years old verse appears to be similar to the recent Russell's paradox but it is not actually so. Hence any statement about 'Brahman', (The Ultimate Divine). would appear to be a paradox, but it is not actually so. I have come across many western philosophers who are logical positivists and classical logicians and who practise logic and mathematics based on the law of excluded middle $\Phi \vee \neg \Phi$ saying that this verse is an obscurantistic exposition of the eastern myth. They are right in their own framework of classical logical paradigm, which is by itself paradoxical due to the law of excluded middle and which evolves a concrete but finitary knowledge domain.

Sir LEJ Brouwer exposed the paradoxical nature of classical logic and introduced his intuitionistic logic which excluded the law of excluded middle and the axiom of choice. The intuitionistic paradigm due to Sir LEJ Brouwer has been developed more or less on the lines of some of the tenets of Indian philosophy.

The law of excluded middle of the classical calculus yields a formula $\neg \neg \Phi = \Phi$ where as A. A. Markov's constructive logic advocates the formula $\neg \neg \Phi \rightarrow \bigvee_{\alpha} \Phi_{\alpha}$ where $\mathcal{A}_{\alpha}, \alpha = 0, 1, 2, 3, 4, \dots, \omega, \omega_1$ is a hierarchical semantic semiformal system of languages in the framework of constructive logic due to Markov. Note that Markov's constructive logic is more or less similar to the intuitionistic logic due to LEJ Brouwer.

Anyhow, both the paradigms have their roots from the ancient Indian philosophy "The Special Theory of Non-Dualism".

E. G. Rajan