Elaboration of the New Paradigm of Interdisciplinary Investigations*

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ABSTRACT
In the article, the problem of creating a theoretical system for approaching the complex phenomena of Reality is discussed. The idea is expressed that epistemology, as the theory of cognitive process, has a dissociative character. The postulate of an integrated informational system is formulated. Such postulate is a suggested basis for creation of a unified methodology of cognition (investigation) which makes it possible to elaborate a new paradigm of interdisciplinary investigations as a separate scientific discipline which has its own methods and special objects. The article will be of interest to philosophers and methodologists of science.

SUMARIO
En el artículo el problema de la creación de un sistema teórico para explicar cognición del complejo fenómeno de la Realidad es discutido. La idea es expresada que epistemología, como la teoría del proceso de cognición, posee un carácter disociativo. Es presentado el Postulado de un sistema informacional integrado. Tal postulado es tomado como base para la creación de una metodología unificada para cognición, la cual permite elaborar el Nuevo paradigma de investigaciones Interdisciplinares, como una disciplina científica separada que posee su propio método y objeto. Será de interés a metodologistas de la ciencia.

RESUMO
Neste artigo, o problema da criação do sistema teórico para cognição do complexo fenômeno da Realidade é discutido. É expressada a idéia de que epistemologia, como a teoria do processo cognitivo, tem um caráter dissociativo. O Postulado de um sistema informacional integrado é formulado. Tal postulado é tomado como base para criação da metodologia unificada de cognição, a qual possibilita a elaboração do Novo paradigma de pesquisas Interdisciplinares como uma disciplina científica distinta, que possui seu método e objeto próprios. Será de interesse dos metodologistas da ciência.

Key words and phrases:
complex phenomena, theory of consciousness, criteria of scientific approach, cognitive paradoxes, epistemological verification, interdisciplinary investigations.

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INTRODUCTION

Before stating a scientific idea with a desire to be heard and understood, one must see if the following three conditions are met: First, the idea should be sufficiently substantiated and simple enough to be set forth. Second, an appropriate cognitive environment should be identified in which to advance this idea. Finally, the historic moment for society to apprehend this idea must also be appropriate.

As to the first, this thesis concerns substantive theoretical work on the methodology of interdisciplinary investigations using the informational-systemic approach under the general title “The Fundamentals of Nonstatistical Analysis” (or, *Nonstatanalysis*). As to the second, restrained optimism still exists in the scientific circles regarding the possibility of understanding the most enigmatic phenomena of Reality. As to the third, the crisis of scientific methodology resonates with energetic, economic, ecological, and socio-political crises, which comprise the general crisis of human societies and planetary life. Since science is an integral part of cognitive activity, a breakthrough in scientific methodology will influence all social processes and the course of postmodern civilization. At the present “post-historic” moment, theoretical works that search out ways of making it through the methodological crisis deserve tolerant consideration.

1. *LOOKING FOR THE WAYS OUT OF THE CRISIS*

Existing scientific disciplines had their origins. The old natural philosophy was supplanted by the different sciences, each separated according to the objects of investigation. To study complex phenomena, the different sciences are required, though we may imagine a symbiosis of sciences. Such a symbiosis is not always efficient because of each science has its own special methodology, and differing methodologies are not always compatible. For example, the methodology of physics has been developed around physical objects and forces and cannot be effectively used when investigating social or psi-phenomena. The task emerges in this time to work out a unified methodology for investigating complex phenomena, and thus, to conceive interdisciplinary investigations as a distinct, veridical, self-sustaining scientific discipline.

The accumulation of information about phenomena which cannot be approached using the existing <theoretical base/network of the process of cognition> and <means of cognition> can be regarded as symptomatic of the epistemological crisis. Really, science can say almost nothing about the mechanisms of mind operation or about the etiologies of many diseases. Many peculiarities in animal behavior remain mysterious. The nature of elementary particles is far from being clear; quantum theory cannot explain the details of nucleon interaction. Unsolved remain the problems of the emergence and evolution of life on Earth and in particular the evolution of consciousness. There are no satisfactory explanations to a limitless array of anomalous phenomena, etc. The situation looks like the crisis in physics at the end of nineteenth century.

The question of cognizability of Reality again becomes topical. A possible way through the crisis could be creating a <new theoretical base for the process of cognition> and <means of cognition> (as constituent elements of a particular theoretical system, or system of knowledge). This new theoretical system, in interaction with existing ones, might provide approaches to any phenomenon or process. Nonstatanalysis is a candidate for such a theoretical system.

2. *THE REFERENCE POINTS FOR ELABORATION OF THE SPECIAL THEORETICAL SYSTEM*

The creation of an intellectual product (or, production of mental output) is the determinative feature of the Human as the participant in and subject of the cognitive process. Any intellectual product is created with a certain *approach*. Assuming that any approach may be described as having a certain aim and a certain set of consecutive cognitive actions to achieve this aim. Such a set of cognitive actions used to fix rules of a cognitive process I will name the *criteria of approach*. In practice, the aim and criteria of approach may correspond or not. I will call *rational* (reasonable, clever, etc.) and expedient an intellectual product for which the aim and criteria of approach correspond. I will call a *field of expediency* the set of expedient intellectual products created under such particular aims and criteria. The aim of and criteria of approach may be called the *limits* (or *canon*) of this field of expediency. Thus, every intellectual product may be attributed to a canon.

The Human involved in the cognitive process is creating an intellectual product, and thus carrying out a certain experiment. The results of such an experiment may be evaluated regarding the extent to which the created theoretical system makes it possible to develop applied theories, which can be verified experimentally. To ensure the integrity of the experiment in creating this theoretical system, I deliberately did not carry out my research on the basis of any others’ results. This allowed me opportunity to avoid the mistakes of others, and it now allows to investigate my own work for compatibility with other authors’ works. Therefore, the ideas in this article are offered as the author's personal ideas. If some ideas or conclusions coincide with the works of others, then two independent authors have determined for themselves the similar criteria of approach.

The subjectively determined basic criteria for Nonstatanalysis are the following:

1) determination of the limits of the theoretical system's field of expediency;
2) formation of a base of notions/prime concepts;
3) elaboration of the <theoretical base of the process of cognition> including <basic ideas> and <system of proofs>;
4) level-by-level exposition of material, and consecutive exposition on each level;
5) regard of reliable results of scientific experiment as starting-points in working out the theoretical system;
6) elaboration of questions of epistemological, theoretical, hypothetical and empirical verifications of the theoretical system;
7) possibility of post-development of the theoretical system in case understanding of the extremely complex phenomena is required;
8) compatibility with other authors' intellectual products (theoretical systems), created under similar criteria of approach.

The aim of approach, which is being set, I will call metaphysical aim of approach (MPA). Such an aim (in the case of Nonstatanalysis) is formulated as the following two assertions:

(1) There is nothing outside the integral and objectively existing Reality; and
(2) the general Law of Reality exists, simultaneously as the condition and the transitional result of the process of cognition.

When elaborating Nonstatanalysis, the MPA assertions are regarded as (1) **objectively** determined boundary sub-aim, and (2) **subjectively** determined transitional sub-aim of the process of cognition. The first sub-aim leads to creation of non-agnostic theoretical system (to cognize **objectively** existing Reality – it is the **objectively** determined aim of the cognitive process). Such metaphysical aim of approach and the **subjectively** determined criteria of approach form the limits of Nonstatanalysis's field of expediency or – canon (the *TS canon*). The theoretical system is being built by adhering to the following demand:

- Each assertion (as intellectual product) of such a theoretical system must be within the limits of such a theoretical system's field of expediency (within its TS canon).

Paul Dirac generalized the previous resembling demand:

- The theoretical system (or, the scientific theory) must answer the conditions of harmony and beauty.

However, from the point-of-view of Nonstatanalysis, this demand appears to be insufficient. If a certain assertion is within the limits of the theoretical system's field of expediency, such an assertion is *epistemologically verified* (expedient in reference to a TS canon). The reference point under the creation of any theoretical system (including Nonstatanalysis) must be constructed with epistemologically verifiable assertions. In the following chapters, I will detail these subsequent seven points (listed above) of the subjectively determined criteria of approach in Nonstatanalysis.

3. *WAYS OF FORMATION OF THE BASE OF NOTIONS*

The next criterion of approach for creating a theoretical system is forming its base of notions (primitives, concepts). Each scientific discipline uses its own notional base and terminology. There are many received, or commonly understood notions which haven't a mono semantic meaning. Examples include <thought>, <consciousness>, <mind>, <intellect>, <subtle matter>, <soul>, <intuition>, <physical field>, <mental energy>, <system>, <state>, etc. Beginning any verbal exposition necessitates a *conceptual* (semantic) *tautology*. This problem inevitably arises with the **starting notions** of any theoretical system. (In the next section of the article I propose a solution to this problem.) The task is not to formulate **absolutely initial** definitions. The only demand is that all explanatory assertions must be within limits of the Nonstatanalytical field of expediency.

In the notional base of Nonstatanalysis, everything, which pertains to a theoretical system, can be called an *element* of such a system. A *pertinent element*, somehow or other influences the system. Any system has at least two elements. The simultaneity of two such elements or the simultaneity of the system and any of its elements is a *relation* (or reference). The <result of the relation of one element to the other> is its *sense* of the other. The sense of the element in reference to the theoretical system is simultaneously a *denotatum* and a *notion*. Within the context of a theoretical system, any element appears as a *denotatum-notion complex*. The sense of the element (as denotatum) is its *property,* and the sense of the element (as notion) is its *meaning*. Both denotatum and notion comprise the *cognitive sense* of an element. With cognition, any element of a theoretical system may be described with denotatum as its property and notion as its meaning. The cognitive sense of any element of a theoretical system **must be set**. Nonstatanalysis has a few hard rules of *cognitive sense setting*, which are named *CSS principles*.

- CSS principles **stipulate** the cognitive sense of the elements of a theoretical system.

Both the property and meaning of an element depend on a certain CSS principle. In other words, the element as denotatum-notion complex has **acquired** both properties and meaning. In consequence of setting its cognitive sense, such an element (as denotatum) is being *denoted* and (as notion) is being *introduced*. The denotatum-notion complex is a denotatum denoted by a notion, which, in turn, is being introduced.

The cognitive sense of elements is stipulated as an *epistemological function* of CSS principles in the process of cognition. These principles, in turn, are reiterative elements of the same theoretical system and have their own identifiable cognitive sense. Thus appears a *functional tautology*. The <cognitive sense setting> appears as the self-organizing, cognitive process of its own theoretical system. Each element of the theoretical system may be said to fulfil a discrete epistemological function in a cognitive process according to its cognitive sense.

A denotatum-notion complex, which has acquired both properties and meaning in consequence of cognitive sense setting, is an *object of cognition.* An object of cognition has a cognitive sense only in reference to that other necessary element of a theoretical system, which is the *subject of cognition* (e.g. a Human, observer, investigator, etc.). When the subject of cognition produces a *cognitive action* – that is, a setting of the cognitive sense of the object of cognition – the subject of cognition links with an object of cognition and carry out the process of cognition in the *cognitive frame of reference* (CFR). Since the subject of cognition not only observes a phenomenon but also carries out the process of cognition, it is useful to add the notion <cognitive frame of reference> to the physics notions of *frame of reference* and *observer.*

When the subject of cognition carries out a cognitive action <setting the cognitive sense of oneself as a denotatum-notion complex>, of the resulting functional tautology is called *consciousness*. (Human as subject of the cognitive process cannot consciously experience the outer world without simultaneously consciously experiencing of oneself as an object of cognitive process, which [this object] is a part of the outer world). In this manner, to lose consciousness describes a kind of absence of one’s own cognitive sense within one’s own theoretical system (e.g., personal worldview/mindset).

CSS principles include that of *decomposition* and that of *dissociation*. If the denotatum is denoted by a notion through the principle of decomposition, then the denotatum acquires *decompositional properties*. Such a denotatum-notion complex is regarded as an element of a *decompositional model*. If the denotatum is denoted by a notion through the principle of dissociation, then the denotatum acquires *dissociational properties*. Such a denotatum-notion complex is regarded as an element of a *dissociational model*. The cognitive sense of the same entity (later transformed into the denotatum-notion complex) as appearing in decompositional and in dissociational models will be quite different. Because of differing models, the <principles of cognitive sense setting> stipulate differing *results* (output) for the subject of cognition. According to CSS principle, a new notion originating from an existing, received notion will be transformed into one having a mono semantic meaning. In this way, it is possible to create specific language. For example, a physicist introduces some notion, which is not familiar to the biologist and *vice versa***.** But if those two representatives of different scientific disciplines introduce their two notions using the same CSS principle, then the two corresponding denotatum-notion complexes, even garbed in different terms, will have some similar cognitive sense and can be familiar to both scientists. The unitary tendency of CSS principles leads to creation of a new interdisciplinary language.

Unlikely the notions, the CSS principles of Nonstatanalysis may be regarded as having an aperspectival, unitary tendency. Notions are transposed from one domain to another. The term <force> defines a certain physics notion. But the notion <force> in psychology is more metaphorical. Such a transposition of a notion from one domain to another I name a *notion-metaphor transmutation*. On the other hand, if the notion is being used without referring to its correspondent denotatum-notion complex, such a practice is called a *notion hypostatization* and the notion in-itself is regarded as an independent entity. Forming interdisciplinary language is not only a similarity among notions, but also a similarity of cognitive sense is important. Such a formation of interdisciplinary language allows also an avoidance of notion hypostatization.

All notions/concepts/primitives of Nonstatanalysis have unequivocal treatment; that is, they are aperspectival, such that they are invariant in the *expedient quantity* of <cognitive frames of reference>. This means that when the expedient quantity of the subjects of cognition will use the same CSS principles to create notions, the problem of intersubjectivity will not arise. The term <expedient quantity> denotes a specific qualitative-quantitative characteristic, which is being used in Nonstatanalysis to describe the number of entities, which are being singled out during the cognitive action. The expedient quantity of ideas – it is a certain quantity of ideas of a certain quality, which is enough to make a true decision (in research, in business, etc.). Another example. The ADC Applied theory (see later in this article) says that to solve the <problem of subjectivity of the criteria of the approach> we must form a chain of mutually compatible theoretical systems of the different authors. But objectively, we cannot take into account all possible theoretical systems that have been and are being created today throughout the world. Therefore we say that the expedient quantity of such theoretical systems (which are of a certain quality) is enough to solve the problem of subjectivity (mentioned above). For a scientific theory to be accepted, it must be adopted by the expedient quantity of scientists only, not by the all people on the Earth.

In mathematics there is a notion <infinitely large quantity>. In Nonstatanalysis there is an additional notion <the quantity enough big (or, very big) but obligatorily limited>. I still cannot find an appropriate short term for this notion. For now, I will use the term <big but limited>. Answering a question 'How many people live on the Earth?' one may reply <big but limited>. Or, to 'How many stars are in Universe?' one also may reply <big but limited>. To address 'How many cognitive frames of reference may be linked with a certain entity (which is, thereby, transformed into the object of cognition)?' one may say <big but limited>. (And here the problem of intersubjectivity arises which in Nonstatanalysis is being solved by taking into account the Third cognitive paradox; for the cognitive paradoxes see later in this article). And to the question 'How many notions (words, phrases, languages, etc.) can exist?' one may say <big but limited>. But the number of the CSS principles is limited to twelve, so it becomes possible to try to decipher esoteric texts. Also, all human languages are translatable one into another exactly because of the applicability of the twelve CSS principles. (Here an interesting question emerges whether we could understand animal language having gotten the theoretical knowledge about the CSS principles?).

Nonstatanalysis uses not only verbal exposition but also language of information-systemic models, so that in the certain cases verbal exposition is not necessary.

4. *THE MAIN ELEMENTS OF NONSTATANALYSIS AND THEIR SCHEMATIC-FUNCTIONAL CONNECTION*

The denotatum-notion complex can be formalized as the *term*. Such terms as subject of cognition, intellectual product, device, influence, Reality, object of cognition, mirror, reflected phenomenon of Reality, information, artificial mean of information processing, intellect, theoretical base, means of cognition, hybrid intellectual complex, machine intellect, etc. formalize the <model notions> as elements (denotatum-notion complexes) of the <*scheme* of a process of cognition>. (In this present case, the scheme – it is a decompositional model of a cognitive process). There are four levels of intellectual product in Nonstatanalysis; they are *level of description* (D level), *level of generalization and systematization* (GS level), *level of an applied theory* (AT level), and *level of theoretical system* (TS level). These four levels of intellectual product correspond with the four forms of information: *phenomenological observation*, *data complex*, *informational system*, and *integrated informational system*.

Introducing the meaning of notion I say: 'it is'. The *device* – it is the denotatum-notion complex (e.g., graphic model) which utilizes tools, physical instruments, sense organs, etc., and has a certain cognitive sense in reference to the subject of cognition. A *change* of the <set cognitive sense> of a device in reference to the subject of cognition in a process of cognition is called *information*. For example, <reading the indications> corresponds to the <change of cognitive sense> of such a device in reference to the observer; therefore, information, as an element of the scheme of the process of cognition has no sense outside the scheme – it does not exist independently.

The *process of cognition* is the closed, circular <model process> of creation of an intellectual product by the subject of cognition in consequence of <information processing and conceptualizing>. The process of cognition is carried out by <means of cognition> using a corresponding <theoretical base of the process of cognition>. The *means of cognition* is a <combined model notion> which includes the <model object>, a device and/or without an <artificial means of information processing>, the *intellect* as natural mean of information processing, and <*means of formalization* of intellectual product>. These <means of formalization> include: 1) **visual signs**: visual signal; graphic model (as a set of dots, lines and planes); alphabetic letter, symbol, scheme and figure (as a kind of graphic model); term (as a set of letters); sentence (as a set of terms); text (as a set of sentences, symbols, and schemes or figures); 2) **audible signs**: sound signal, speech; 3) other signs.

Since Nonstatanalysis itself is an intellectual product on the level of a theoretical system, since any intellectual product may be taken as an object of study for Nonstatanalysis (in particular for its ADC Applied theory; see later in this article), therefore Nonstatanalysis formalizes itself by means of its own <means of formalization> (self-organization). So we again have functional tautology. The *theoretical base* [of the process of cognition] (theoretical network) is a <combined model notion>, which includes denotatum-notion complexes; subjective experience; model notions, model processes, model constructions; words; assertions (e.g. hypotheses, axioms, theorems, postulates, correlations, principles, rules, laws); languages; the *methodology* of a process of cognition (including the methodology of investigations, methodological rules, etc.).

The <intellect> and <theoretical base> schematically belong to the subject of cognition. The <subject of cognition> is a model notion (or model construction) which has the cognitive sense of an element of subject-object interaction. The actual Human (involved in cognitive process), the cognitively active group of persons, a society, any bio-object of Earth, and even non-bio-object can be substituted in this model construction, and formalized as a <graphic model of the subject of cognition> in the scheme of the process of cognition. The graphic model of the subject of cognition (using a decompositional model) includes the <graphic model of the theoretical base> in general, and partially overlaps the <graphic model of the means of cognition>, spinning out from it the <graphic model of the intellect>.

The means of cognition (as model notion) obtain a certain cognitive sense only in reference to a certain theoretical base, which is, therefore, called *correspondent.* For example, the denotatum-notion complex is formalized by means of the term, and, the term can evoke the correspondent denotatum-notion complex. That is why the means of cognition and correspondent theoretical base (or, *vice versa*, the theoretical base and the correspondent means of cognition) are linked together by an *inversion link*. This link is not a *causal link* but is *acausal*. The means of cognition (as denotatum) and theoretical base (as notion) form the denotatum-notion complex – *cognitive space*, which may afford a stable <model construction>, which can also evolve. To illustrate the point, consider this question: What is the difference between the stick lying on the ground and one held in hand? <Taking the stick in hand> corresponds with a change of characteristic of the theoretically modeled cognitive space which already includes the human (as denotatum-notion complex), formalized as the subject of cognition, and the stick (as denotatum-notion complex), formalized as an **additional part** of the means of cognition. But because of inversion link between the means of cognition and theoretical base, <taking the stick in hand> corresponds also with certain **changes** of the theoretical base (because the characteristic of the cognitive space can be fixed). In actual cases such changes are being and sustained for a long time. Therefore, the <stick in hand> changes the subjective experience of the human. Such a new experience, formalized as a changed theoretical base, could (because of the inversion link) bring about the changing of the cognitive sense of the means of cognition in reference to the subject of cognition, and, in actual cases, leads to creation of more perfect tools. Any <model construction> is also an element of a theoretical base, and, therefore, a part of a cognitive space. Thus we come upon the conceptual tautology. The problem of the conceptual/semantic tautology is solved using the CSS principle of *tautological cycle*.

Cognitive space (as notion) and a correspondent object of cognition (as denotatum) form the denotatum-notion complex – *experimental space*, which is a particular <model construction>. If the process of cognition spreads in experimental space, the scheme of cognitive process coincides with the <scheme of the experimental space>. If in the scheme of the experimental space the subject of cognition differentiates from the object of cognition, then the means of cognition and correspondent theoretical base form *A-type cognitive space* (A-space). For example, the investigator (as the subject of cognition) is **here**, but the object of investigation (as the object of cognition) is **there** (in the cryostat, on the plate under the microscope, in the sky, in the open-air cage, in the ocean, under the Earth's crust, etc.). Such a type of cognitive space has been formed historically on the basis of human subjective experience. This methodological rule has applied in this space:

- To cognize (study, investigate) the object, it must be divided into constituent parts.

Specifically, the object of cognition and subject of cognition (as denotatum-notion complexes) are regarded as elements of a decompositional model. According to this methodology, the means of cognition are being developed in the movement of enhanced influence and powers of altering Reality. Such a rule is useful when a human intends to investigate the insides of a coconut, and thus the investigator cracks it open with a stone.

However, is it possible to investigate the laws of brain/mind functioning with this decompositional methodology? Investigating brain function (or mind operation) using a decompositional model is not sufficient. Nonstatanalysis offers another scheme of experimental space – the <dissociational model of the process of cognition>. Such a scheme foresees that under the process of cognition the subject of cognition and object of cognition form a *subject-object complex*. That is to say, the subject of cognition cognizes itself (functional tautology). Such a scheme corresponds with a particular theoretical base (as notion) and a means of cognition (as denotatum) which together form *B-type cognitive space* (B-space). Another methodological rule of the process of cognition is formulated here:

- The object of cognition cannot be divided into parts, but rather the subject-object complex (as a model construction) can exist in discrete (holonomic) states.

Thus regarded, the subject-object complex (as denotatum-notion complex) is an element of a dissociational model. Such a new methodological rule surpasses the old one gazing paradoxically from the aperspectivity of subjective experience. It is called the *First cognitive paradox*. There are several cognitive paradoxes, which make it possible for the subject to make transition from A-space to B-space. Such paradoxes are called *algorithms of inter-space transitions* and are derived by analyzing <cognitive process errors>, which are intrinsic to subjective experience as theoretical base. Thus, Nonstatanalysis operates with two different notions of cognitive space – A-space and B-space, each space with its own theoretical base and means of cognition. These notions are introduced according to the CSS principle of *dissociation* from the notion of cognitive space.

5. *THE BASIC IDEA OF NONSTATANALYSIS*

A-space and B-space are linked by the following qualitative relation (mathematical symbols used only in a qualitative sense):

$$A + \Sigma CP => B, \qquad (1)$$

where A symbolizes A-space; B symbolizes B-space; ΣCP symbolizes the expedient quantity of cognitive paradoxes (this relation also presented by scheme). At the early stage of development of the theory of cognition (epistemology), subjective experience was taken as the only possible source for formation of the theoretical base. Cognitive process errors were not analyzed. Unexplainable phenomena were attributed to the interference of supernatural or chaotic forces, and as a result, miscellaneous belief systems appeared. Therefore, the value ΣCP was insignificant, and, as consequence,

$$A \approx B\,. \qquad (2)$$

There was no necessity to distinguish between different cognitive spaces, in that cognitive space was regarded as homogeneous and uniform. Cognition was based primarily on subjective experience. But, for in the last few centuries of the Modern Age, mainly because of qualitative improvements of the technical base of experimental investigations and development of special mathematical apparati, human beings have made considerable steps toward analyzing errors in the cognitive process. Now the factor ΣCP cannot be disregarded. It makes itself apparent that

$$A \neq B \qquad (3)$$

This strict nonequivalence leads to the idea of dissociability of the cognitive space (see the relation (1)). <Dissociability of the cognitive space> is the *First basic idea* of Nonstatanalysis. This is a hazardous but necessary step in the direction of development of a theory of cognition. Exactly such an idea is required to overcome the epistemological crisis. It can be expected that the cognition of complex phenomena will be more adequate and effective in a transition from A-space to B-space. Since the notions A-space and B-space are introduced according to the CSS principle of dissociation, the theoretical base of B-space **by no means antagonizes** that of A-space. B-space allows transformation of human cognitive possibilities when investigating certain kinds of phenomena (e.g., psi phenomena).

The dissociated cognitive space and <methodological rules of the process of cognition> (including the algorithms of inter-space transitions) form a Theory of the process of cognition, or *epistemology*.

6. *ELABORATION OF THE SPECIAL METHODOLOGY OF COGNITION*

Studying changes in schemes of experimental space, understanding that A-space is evolving, theoreticians and observers can arrive at the notion of the *integrated informational system* (IIS). This notion is introduced according to the CSS principle of the <*transformation of notions during the inter-space transition*> from the existing *informational system* notion. IIS is the main concept of Nonstatanalysis and the fourth form of information (following phenomenological observation, data complex and informational system) with these consequent postulate:

1. Particular informational system exists which include **all possibly cognizable** information about an experimental space including the object investigated.

But, for this assertion to be in the limits of Nonstatanalysis's field of expediency, we must formulate also the next four assertions:

2. Such an informational system already cannot be regarded as a set (collection) of discrete data about the object investigated;
3. Such a system is described by three systemic characteristics and one characteristic of its state;
4. Such a system possesses some universal properties;
5. Such a system evolves according to the *Law of development*, which is universal for all similar systems.

(I'm thinking this Law may be one of the most general.) Put together, these assertions compose a Postulate which makes it possible to elaborate the theoretical base for cognition of all kinds of phenomena, i.e. to achieve the aim of approach, which was formulated as MPA assertions. (<There is nothing outside the integral Reality> means that all possible phenomena and processes belong to one existing Reality; in other words, the possibility of the existence of any, so called, *parallel realities* is rejected). The general Law of Reality is a <condition for carrying out the process of cognition>. This also means that the laws of the process of cognition must *ab ovo* correspond the laws of development of the object which is being cognized/investigated/studied, otherwise the very cognition be impossible.

From the point of view of our present-day knowledge (our subjective experience), the general Law of Reality may appear to be boundary knowledge (the boundary aim of the cognitive process), but, in reality, it is only a transitional sub-aim. (From the moment of receiving such a transitional result of the process of cognition, one must formulate a special methodological rule, which will make it possible to carry out a cognitive process using the new knowledge of this Law. Such a rule is the *Fifth cognitive paradox,* which puts restraining conditions on the process of cognition.) The boundary aim of the process of cognition is the first of the MPA assertions. Mario Bunge (1973) calls the similar assertions as the "meta-physical prerequisites of every true initiative in any investigation". The Law of IIS's development I regard as a candidate for the general Law of Reality.

If the B-space theoretical base be formed on the basis of this Postulate, then the First cognitive paradox (and all other algorithms of inter-space transitions) will not appear paradoxical from the B-space point of view, and one can elaborate a *new system of proofs* (or, a new system of scientific corroboration). In B-space a new system of proofs is elaborated, which differs from the (dominant) logical one, yet it is **no less strict** because it is based upon the Law of IIS's development (the Law of changing the state characteristic of IIS). Using such a new system of proofs, the possibility of formulation of epistemologically verified assertions (which have a cognitive sense in reference to Nonstatanalysis) concerning complex phenomena is being verified.

It is important to emphasize that using the B-space theoretical base the process of cognition does not cease when the subject of cognition gets the information (for example, in the form of the phenomenological observation) about the only one single event, phenomenon, or process, i.e., if the recurrence/replication of the phenomenon is not present. This is possible because of the specially developed *non-statistical* methodology of cognition. It implies representation of phenomena in the graphic model of IIS (as the consequence of the first assertion of the Postulate). In this form, a single**, isolated** phenomenon may be represented. Then the special methodology of the theoretical investigations is being developed (as the consequence of the last four assertions of the Postulate). Using such a methodology, a task could be fulfilled of returning back into science the objects, which are of non-statistical nature.

Since the transitional MPA sub-aim is determined subjectively, therefore the <problem of subjectivity of MPA assertions> (of the two sub-aims, taken together) exists. And the more phenomena are being described using the theoretical base, which is developed using the Law of IIS's development, the more the problem of subjectivity of the aim of approach is resolved.

The Postulate of the existence of an integrated informational system (or, the Postulate of IIS) also makes it possible to eliminate the problem of *informational infinity* from the theoretical constructions. For example, if we can't get **all** (or, subjectively, **infinite**) information about the object investigated (e.g., the bio-object, the certain physical object, the climate, the political situation, etc.), one may represent such an object in the form of the <graphic model of IIS>. According to the Postulate, the IIS includes **all possibly cognizable** information about the experimental space (including the object). Then, using the theoretical knowledge about the IIS's universal characteristics, properties and Law of IIS's development one can estimate the change of the characteristic of IIS{object} in consequence of different factors' actions, and, as result, foresee what will be the object's physical characteristics in the necessary place or moment.

7. *PECULIARITIES OF THE THEORETICAL SYSTEM'S CONSTRUCTION*

The theoretical work 'Fundamentals of Nonstatistical Analysis' consists of five parts. In the first part the basic approaches under the construction of the theoretical system are considered. Here the Applied theory of **a**ppearance (emergence), **d**evelopment and **c**ompatibility of different intellectual products (the ADC Applied theory) is elucidated. The second part is devoted to formation of B-space theoretical base.

The third part is on the application of the B-space theoretical base for cognition of complex phenomena. The objects exist which are hard to be put under strict experimental/laboratory conditions, which are replicated with difficulty. Also, the influence produced upon objects under experimental investigation alters their inner states, therefore, it is difficult to use statistical methods of data processing. Such objects I name *non-statistical phenomena*. To such a kind of phenomena, the rare and anomalous phenomena, some psycho-physiological and socio-political phenomena (such as historic events), and objects of physical research which are characterized by anomalous or poorly replicable properties may be attributed. At the present stage of development of the theoretical system there are series of anomalous phenomena, which really are cognizable using B-space methodology. Perhaps **another** forms of living matter exist somewhere else in Universe, but even so, there is **only one possible** scheme of the creation of intellectual products. That is why the application of B-space methodology is not restricted by the Earth's problems.

The non-statistical analysis of the psycho-physiological phenomena gave rise to the Applied special theory of the bio-mental integrated informational systems (Special theory of BMIIS) which is based on the *Second basic idea* of Nonstatanalysis, viz., the idea of <discreteness of the bio-mental states>. Already now, using the graphic level-by-level information-systemic models of different kinds and different orders of complexity, it is possible to formalize the general principles of brain function and to formulate the epistemologically verified assertions concerning problems of memory, sleep, love, intuitive thinking, perception of music, and understanding of speech. Also, the Applied sociological theory of *unpopular decisions* is being developed using B-space methodology.

The fourth part of the work shows the possibility of using of the B-space theoretical base for revision of some biological, historic, and physical conceptions The non-statistical methodology manifests itself as a unified methodology of cognition, and can be used in any scientific field. Making use of the B-space methodology leads to creation of the *paradigm* of Interdisciplinary investigations as separate discipline which has its own (non-statistical) methodology and special object – the non-statistical phenomena. Such a paradigm differs from the presently dominated – Interdisciplinary investigations as mechanical merger of different disciplines.

The kind of methods of cognition (A-space or B-space) stands for the criterion of selecting (enframing or singling out) a phenomenon as object of cognition. Such an approach is substantially new. Hitherto, at first, the object of investigation was subjectively determined and then the methodology of investigation was developed in reference to such an object. For example, the social phenomena are taken as objects for sociology, but the objects for interdisciplinary investigations (in the new paradigm) may include social phenomena that cannot be cognized using the existing (statistical) methodology. From the point of view of Nonstatanalysis there are only two possible kinds of phenomena:

1. Phenomena which are cognizable enough using the statistical methodology under the process of cognition (cognizable in A-space);

2. Phenomena which are cognizable using only the non-statistical methodology of the process of cognition (cognizable in B-space).

The non-statistical methodology can be used for cognition (investigation) of both statistical and non-statistical phenomena of Reality, but, for cognition of statistical phenomena, the existing scientific methodologies may be used satisfactorily.

The fifth part of the work addresses the question of epistemological verification of a theoretical system. This question is based on the *Third basic idea* of Nonstatanalysis, which solves the problem of correlation between the <theoretical model of Reality> and Reality as it exists objectively. The existing theories, which are solving the similar problems (e.g., the physical similarity theory, the physical analogy theory, the theory of systems of isomorfism and homomorfism, etc.), are good enough preferably in A-space.

In addition, the Applied theory of devices, which can be used under the IIS-experiments, is being developed. The notion <IIS-experiments> is introduced according to the CSS principle of the <transformation of notions during the inter-space transition> from the existing notion *experiment*, and has the following meaning: the experiment concerned with the considerable change of the state characteristic of IIS.

It is important to accentuate that all Nonstatanalysis's applied theories are being built with epistemologically verified assertions and not with incoherent thoughts and speculations. This means that any theorist may get similar results having determined similar criteria of approach and enframing similar phenomena.

The **three basic ideas** of Nonstatanalysis are mutually linked and form the non-contradictory construction (matrix) of this theoretical system:

1. The First basic idea shows that such a Theory of the process of cognition **can be created** which will make it possible to cognize the objectively existing Reality;
2. The Second basic idea shows that the Human **can cognize** objectively existing Reality because, theoretically constructed, both Reality and the process of cognition are regarded as elements of the same models and obey to the same Laws;
3. The Third basic idea shows how to fulfil the **full adequate transition** from the theoretical constructions to the real processes.

Having got such a matrix, Nonstatanalysis acquires the property of self-improvement, and the possibility of its *post-development* arises, staying simultaneously non-contradictory and expediently full in any special case. The *expedient fullness* of Nonstatanalysis means that such a theoretical system, taken at any moment of its post-development, is obligatorily being formed by **such three** (neither more nor less in qualitative and quantitative sense) basic ideas. The *non-contradiction* of Nonstatanalysis means that its three basic ideas are linked in a **special way**. That is why Nonstatanalysis does not require any **new** meta-theory above itself. In other words, at any moment, on each level of its post-development, Nonstatanalysis **always stays** Nonstatanalysis. And the supposition is made that the Gödel theorem cannot be applied to Nonstatanalysis in general, or, that such a theorem is true preferably for the theories that are formalized in A-space. The possibility of post-development of Nonstatanalysis also allows it to solve the problem of functional tautology.

The theoretical system's property of self-improvement (or, otherwise, the possibility of its post-**development)** allows formulation of epistemologically verified assertions concerning the methodology of carrying out of certain kinds of experiments which would not damage (or hurt) the **developing** object investigated (e.g., the bio-object).

8. *SOME PECULIARITIES OF THE ADC APPLIED THEORY*

What is the cognitive sense of the denotatum-notion complexes formalized in the term *verification*? Verification – it is the cognitive action of ascertaining the cognitive sense of a formulated assertion in reference to a particular level of intellectual product. (The notion *ascertainment* is introduced according to the CSS principle of *opposing* from the notion *setting*). If the cognitive sense of the formulated assertion is set, this means that such an assertion is verified. If we create our own theory, we set the cognitive sense of all our assertions, but if we investigate the other author's intellectual product, we must ascertain the cognitive sense of all of his/her assertions in our CFR (otherwise we will not understand his/her ideas). The ADC Applied theory regards the two kinds of verifications, one for A-space, and one for B-space:

- For development of A-space, the formulated assertion must be **empirically**, **hypothetically**, and **theoretically** verified. *Empirical verification* ascertains the fact if the assertion, which concerns the methodology of carrying out the experiment, is (or, not) within the limits of the D level intellectual product's field of expediency (within the D canon). In general, the *experiment* – it is the change of the cognitive sense of the object of cognition (within its set sense) in reference to the subject of cognition. *Hypothetical verification* ascertains the fact if the assertion, which concerns the methodology of going from the intellectual product's D level to the GS level (or *vice versa*), are (or are not) within the limits of the GS level intellectual product's field of expediency (or, within the GS canon). *Theoretical verification* ascertains the fact if the assertion, which concerns the methodology of going from the intellectual product's D level, through the GS level to the AT level (or *vice versa*), are (or are not) within the limits of the AT level intellectual product's field of expediency (or, within the AT canon).

- For development of B-space, the formulated assertion must be **epistemologically** verified. *Epistemological verification* ascertains the fact if the assertion, which concerns the methodology of going from the intellectual product's TS level to the AT level, then through the GS level to the D level (or *vice versa*), are (or, are not) within the limits of the TS level intellectual product's field of expediency (or within the TS Canon). Such verification, in case of the limits of Nonstatanalysis's field of expediency, encompasses also the methodology of carrying out the IIS-experiments.

As a theoretical system constructed with the epistemologically verified assertions, Nonstatanalysis foresees the possibility that the changes on the theoretically modeled scheme of the process of cognition can in certain cases **directly influence** real processes.

9. *CRUX: DOES SUCH A WAY IS TRUE?*

Nonstatanalysis as TS level intellectual product, being developed on the basis of existing, **reliable** but unexplainable experimental results (R-facts) in different spheres, including the bio-objects' cognitive activity, concerns the general problems of methodology of cognition. Interdisciplinary investigations (in their New paradigm) are understood as an expedient quantity of applied theories on a basis of Nonstatanalysis (i.e., which are using B-space methodology). Both Nonstatanalysis and the <New paradigm of Interdisciplinary investigations> require serious improvement, for example, in their closer definition of the criteria of approach under the creation of the TS level intellectual product. The idea is that such criteria could be determined **objectively**; then, the objectively determined criteria of approach could be called *scientific*, and the intellectual product, which is being created under the criteria of scientific approach, may be called *Science*. Do Interdisciplinary investigations (in their New paradigm) have valid grounds to be regarded as Science? I want to find an answer, and, therefore, I am extremely interested in exchange of ideas with scientists whose intellectual products (to accept or not such an idea, theory, etc.) are compatible with Nonstatanalysis.

The general practice exists, that a reviewer must decide whether the proposed way of solving such or other problem is good enough, adds something new to the present solutions of this problem, and, in result, is worth to be accepted (published, etc.). But could the TS level intellectual product be reviewed? The denotatum-notion complex, which is formalized as *review*, has its cognitive sense (as the AT level intellectual product) only in reference to the **existing TS canon** (as the TS level intellectual product, which had led to creation of a theoretical system, such as "The modern physical picture of the world"). For example, any new physics theory, to be accepted by critics, must, at least, correspond the dominated TS level intellectual product "The modern physical picture of the world". The review performs the epistemological function of ascertaining the cognitive sense of the investigated intellectual product (hypothesis, theory, etc.) in reference to such a canon and, consequently, to the theoretical system, created using such a canon. Under the process of cognition the review plays a role similar to that of CSS principles. In the expedient quantity of the CFRs, it stipulates the cognitive sense of the intellectual product being investigated. In other words, the expedient quantity of the subjects of cognition (scientists, investigators, etc.) will treat such a product (will decide whether to accept or not such an idea, theory, etc.) according to its cognitive sense, which is ascertained by such a review. For a review to be treated as professional (scientific, good, etc.), the reviewer must use the theoretical system (or TS canon) dominating in the scientific circles. If the reviewer uses only his personal subjective experience/mindset (as the theoretical system) instead of using the dominating non-personified theoretical system, the resulting review mustn't be treated as a serious.

The ascertainment of the cognitive sense of the existing avowed (but already not personified) TS canon in reference to the personified **new TS canon** is called *revision* (reconsideration). But, the new canon **has no** cognitive sense in reference to the existing canon. We cannot understand the new site of thinking if confined to the old site of thinking – that is the R-fact. The ascertainment of the cognitive sense of my new TS canon in reference to the another author's new TS canon is called here the *investigation for compatibility*, and is carried out using B-space methodology (the eight criterion of approach). Nonstatanalysis shows that in the purpose of improving the ADC Applied theory it would be better not to search out who was the first to express such or other idea, but rather to try to build a <*chain* of expedient quantity of the mutually compatible intellectual products of different authors>. (The chain is also a <model construction>). In this case, scientific interests must suppress mercantile ones. Therefore, the article which regards the possibility of creation of the new theoretical system (in this case, for approaching the complex phenomena of Reality) using the correspondent new TS canon may **only** be investigated for compatibility with another author's TS level intellectual product, but not reviewed.

10. *NONSTATANALYSIS AND PHILOSOPHY: INESCAPABLE COLLISION OF INTERESTS*

What is Philosophy? Or, to frame the question purely Nonstatanalytically (solving the problem of hypostatization), what does the term *philosophy* imply? The denotatum-notion complex, which is formalized in the term <philosophy>, in the expedient quantity of the CFRs has its cognitive sense as a model notion <intellectual product of the level of theoretical system> (or, of the <level of description>?) which is created under the <criteria of a philosophic approach> using the subjective experience (or something else to the extent that Laws of Dialectics are formalizable in A-space) as a theoretical base of the process of cognition. Such a definition evokes, at least, two questions. The first, is it sufficient to use the subjective experience only when trying to explain the complex phenomena? (Attempts to cognize complex phenomena only on the basis of Human subjective experience, from Nonstatanalysis's point of view, look as *cognitive infantilism.*) And, the second, do the particular criteria of philosophic approach (or particular philosophic canon) exist at all, and can such criteria be determined objectively? That is the question!

On the other hand, Nonstatanalysis's ADC Applied theory uses the non-statistical methodology of B-space and takes any intellectual product as a <non-statistical object> (including philosophic and religious systems, esoteric texts, etc.). Up to now, Philosophy was regarded as a specific domain of application of intellectual efforts, the domain which stands above the scientific and other, so called, mundane domains. But the ADC Applied theory says that whatever you are (a philosopher, a scientist, a taxi driver, an artist, a hunter, a farmer, etc.), you are the creator of intellectual products. And the process of creation of intellectual products may be formalized (explained) using the rigorous scientific approach. By definition, there are no intellectual products beyond the reach of the ADC Applied theory. Or, should we regard a particular <philosophic product> besides the <intellectual product>? But then we would have to adopt that the <philosophic product> is not intellectual... A strange conclusion, isn't it?

So, the invitation for a discussion is issued.

Referred material:

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