First target article*:

ELABORATION OF THE NEW PARADIGM OF INTERDISCIPLINARY INVESTIGATIONS

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Abstract

In the article, the idea is expressed that the theoretical framework for approaching the complex phenomena of Reality must be a part of some specific meta-theory. It is shown that, to construct such a meta-theory, the appropriate aim and criteria of approach must be correctly formulated. So, the two-part aim and eight criteria of approach are detailed. Also, the basic ideas of a new meta-theory are discussed. The postulate of the existence of an integrated information system is formulated, and it is shown that the necessary theoretical framework can be constructed on the basis of such a postulate. The idea is expressed that using such a new theoretical framework when formalizing the complex phenomena (including the consciousness-related phenomena), we can form a set of applied theories – the all-sufficient scientific discipline, and name it Interdisciplinary Investigations (in their new paradigm). The old paradigm presupposes to regard Interdisciplinary Investigations as a formal merger of the already existing different disciplines like Physics, Psychology, etc. It is shown, for example, that the applied theory of consciousness must be the element of such a new discipline. The article is much illustrated to make the author's ideas enough understandable.

Key words and phrases: intellectual product; meta-theory; aim and criteria of approach; cognitive paradoxes; integrated information system; complex phenomena; theory of consciousness; 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 enough clear and sufficiently substantiated. Second, an appropriate cognitive environment must exist which the idea is meant for. Finally, an appropriate historic moment must also be present for society to require such an idea.

As to the first, this thesis concerns substantive theoretical work on the methodology of interdisciplinary investigations using the information-systemic approach under the general title "The Fundamentals of Nonstatistical Analysis" (or, shortened, *Nonstatanalysis*). As to the second, restrained optimism still exists in the scientific circles regarding the possibility of approaching 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 the human's cognitive activity, a breakthrough in scientific methodology will influence all social processes and the course of development of all post-modern civilization. At the present "post-historic" moment, any theoretical work that investigates the ways out of the methodological crisis deserves tolerant and serious consideration.

I. *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 their objects of investigation. It is generally accepted that to study complex phenomena the different sciences/disciplines are required, though we may imagine a symbiosis of sciences. In my view, such a symbiosis is not always efficient because of each science uses its own special methodology, and differing methodologies are not always compatible. For example, the methodology of physics has been developed around physical objects, processes and forces and cannot be effectively used when investigating social or consciousness-related 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, all-sufficient scientific discipline.

The accumulation of information about phenomena which cannot be approached using the existing <theoretical base 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 the evolution of consciousness. There are no satisfactory explanations to a limitless array of rare and anomalous phenomena, etc. The situation presently looks like the crisis in physics at the end of nineteenth century. The question of cognizability of Reality again becomes topical. In our view, a possible way through the crisis could be constructing a <new theoretical base for the process of cognition> and <means of cognition> as constituent elements of a particular meta-theory (or system of knowledge). The new specially constructed meta-theory, in interaction with existing ones, would possibly provide approaches to any complex phenomenon of Reality. So, Nonstatanalysis is a candidate for such a meta-theory.

II. *REFERENCE POINTS FOR ELABORATION OF ANY META-THEORY*

The creation of an intellectual product (or, production of mental output) is a determinative feature of the human as the participant in the cognitive process (let us call him a *subject of cognition*). We accept that any intellectual product is created with a certain *approach*. We also assume that any approach may be described as having a certain aim and a certain set of consecutive cognitive actions or steps to achieve this aim. Such a set of cognitive actions we will call the *criteria of approach*. In practice, the aim and criteria of approach may correspond or not. We will call *rational* (reasonable, clever, etc.) and expedient such an intellectual product for which the aim and criteria of approach correspond. We will call a *field of expediency* a set of expedient intellectual products (various assertions) created/formulated under such aims and criteria that correspond to each other. Together taken, the aim and criteria of approach are called the *limits* of the field of expediency, or *canon*. Thus, every intellectual product may be attributed to a certain canon (since we will regard four levels of intellectual product, therefore we will also say about for kinds of canon).

1. Criteria of approach.

The human, involved in the cognitive process, creates an intellectual product, and thus carries out a certain experiment. The results of such an experiment may be evaluated regarding the extent to which the constructed

meta-theory (as the MT-level intellectual product) will make it possible to develop the applied theories, which, in their turn, will be able to explain certain classes of complex phenomena. To ensure the integrity of the experiment in constructing the meta-theory, we deliberately did not carry out our theoretical research on the basis of any others' results (we construct our meta-theory from a bland print). This allowed the opportunity to avoid the mistakes of others, and it now allows investigating our own meta-theory for compatibility with other authors' meta-theories. Therefore, the ideas in this article are offered as the author's original, subjective ideas. Now let us accept that in case some ideas or conclusions (as intellectual products) coincide with such of others', it would mean that two independent authors have determined for themselves the similar aim and criteria of approach when proposing their own ideas. As to the subjectively determined basic criteria for Nonstatanalysis, they are as follows:

1) determination of the limits of the meta-theory's field of expediency, or meta-theory's canon;
2) formation of a base of notions (a base of primordial concepts);
3) elaboration of the theoretical base of the process of cognition, including basic ideas and system of proofs (providing solution to the problem of subjectivity of the aim of approach);
4) level-by-level exposition of the material, and consecutive exposition of it on each level;
5) paying regard to the reliable results of scientific experiment (R-facts) as starting-points in working out the meta-theory;
6) elaboration of the questions of epistemological, theoretical, hypothetical and empirical verifications of the meta-theory;
7) possibility of post-development of the meta-theory in case there is a need of explaining the extremely complex phenomena;
8) compatibility with other authors' intellectual products (meta-theories), constructed under similar criteria of approach (providing solution to the problem of subjectivity of the criteria of approach).

2. Aim of approach.

The aim of approach, which is set for constructing of any meta-theory we will call a *meta-theoretical aim* (or abbreviated, MTA). Such an aim (in case of constructing of Nonstatanalysis) is formulated as the following two assertions:

(1) there is nothing outside integral and objectively existing Reality; and
(2) some general Law of Reality exists, simultaneously as the condition and the transitional result of the process of cognition (of the process of achieving the first sub-aim).

The sub-aim (1) means that we have to show that there are no parallel realities, and therefore all phenomena and processes belong to one, our Reality. In other words, we have to show that any phenomenon or process can be explained. But to achieve the sub-aim (1) we have to go through the sub-aim (2). It means that to achieve the sub-aim (1) we have first to develop a particular theoretical base of the process of cognition, the important element of which would be some general Law of Reality. <The fact of formulating of such a Law> is the transitional result of the process of cognition; but <further usage of this Law> is a condition of the progress of the process of cognition.

When constructing Nonstatanalysis, the MTA assertions were regarded as:

(1) **objectively** determined boundary sub-aim of the process of cognition, and
(2) **subjectively** determined transitional sub-aim of the process of cognition.

The first sub-aim leads to construction of the non-agnostic meta-theory, since to cognize **objectively** existing Reality – it is the **objectively** determined aim of the cognitive process. The second sub-aim is purely **subjective**. We must admit that Mario Bunge (1973) called the similar assertions as the "meta-physical prerequisites of every true initiative in any investigation".

3. Stringent requirement.

Such a **subjectively** formulated meta-theoretical aim and the **subjectively** formulated criteria of approach form the limits of Nonstatanalysis' field of expediency, or – its canon (the *MT-canon*). So, any meta-theory builds by meeting the following requirement:

- every assertion (as intellectual product) of any meta-theory must be within the limits of such a meta-theory's field of expediency (or correspond to its MT-canon).

In our case we will talk about Nonstatanalysis' MT-canon. We must also admit that there are other understandings of this problem. So, Paul Dirac (a famous physicist) has generalized his own similar requirement as follows:

- The scientific theory must meet the requirements of harmony and beauty.

However, as it seems for us, such a requirement appears to be of small practical application. In contrary to Dirac's requirement, in Nonstatanalysis it is accepted, that when a certain assertion is within the limits of its field of expediency, such an assertion is *epistemologically verified* (expedient in reference to its MT-canon). So, the reference point under the construction of any meta-theory (including Nonstatanalysis) is that it must be constructed with epistemologically verified assertions. Such is the first criterion of approach. In the next chapters we will detail the rest of them.

III. *WAYS OF FORMATION OF THE BASE OF NOTIONS (SECOND CRITERION OF APPROACH)*

The necessity of formation of the meta-theory's specific base of notions is taken as a second criterion of approach. It is a fact that every scientific discipline uses its own notional base and terminology. There are also many, so called, received or commonly understood notions from our every-day usage which do not have a mono-semantic meaning. Examples include such concepts as <thought>, <consciousness>, <mind>, <intellect>, <subtle matter>, <soul>, <intuition>, <physical field>, <mental energy>, <system>, <state>, etc. As result, when we try to set out a new meta-theory in a verbal/writing form, we necessarily face the challenge of a *conceptual* (semantic) *tautology*. This problem inevitably arises out of the attempts to give definitions of the **primordial concepts** (the way in which this problem is solved will be shown in Part IV).

Let us accept that everything, that bears relation (pertains) to any system (in our case, to the meta-theory as some system of concepts and assertions), can be regarded as the *element* of such a system. The element, in virtue of its very presence, influences the system in such or other way. Any system has at least two elements. In the presence of such two elements of one system a *relation* (or *reference*) emerges as between them, so between of the system as a whole and any of its elements. Let us call the <consequence of the presence of one element together with the other> as its *sense* of the other. The sense of the element in reference to the meta-theory (as a system) is simultaneously a *denotatum* and a *notion*. Within the context of a meta-theory, any element appears as a *denotatum-notion complex*. All meta-theory's assertions consist of the denotatum-notion complexes. The sense of the element as a denotatum is its *property*; the sense of the element as a notion is its *meaning*. The sense of the element must be set. The sense of the element, set during the process of cognition, we will call a *cognitive sense*. During the process of cognition, any element of a meta-theory may be described with <denotatum> as its property, and with <notion> as its meaning. Nonstatanalysis has a few hard rules of *cognitive sense setting*, which are named the *principles of cognitive sense setting* (or abbreviated, the CSS principles; see Table 1 for the list of them). Here the following assertion is true:

- the CSS principles **stipulate** the cognitive sense of the element of a meta-theory.

Both the property and meaning of an element depend on a certain CSS principle. In other words, both properties and meaning of the element as denotatum-notion complex are **acquired**. In the result 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 its turn, is being introduced.

To stipulate the cognitive sense of the elements – it is an *epistemological function* of the CSS principles in the process of cognition. These principles, in turn, also are the elements of the same meta-theory and have their own installed cognitive sense as *functional elements*. Thus in first time we encounter with a problem of *functional tautology*: the CSS principles stipulate their own cognitive sense as the elements of a meta-theory. For example, the notion <CSS principle> is introduced using the CSS principle "Enframing" (see Table 1). Each element of the meta-theory may be said to fulfill a discrete epistemological function in a cognitive process according to its cognitive sense. We must also admit that the problem of functional tautology solves in its own specific way (see Part VII).

Now, let us regard some important notions. Let us call *object of cognition* a denotatum-notion complex, which has the acquired both properties and meaning in consequence of cognitive sense setting. The object of cognition has a cognitive sense only in reference to that other necessary element of a meta-theory, which is the *subject of cognition* (e.g., a human, observer, investigator, etc.). Let us call the *cognitively independent entity* some entity that is not the element of the meta-theory as a system, or that is beyond the process of cognition. Let us call *enframing* the attempt to make the cognitively independent entity the element of that system. During the process of cognition the subject of cognition enframes some cognitively independent entity, which means the setting of the cognitive sense of that

entity and transformation it into the object of cognition. So, <enframing> is a first of the array of *cognitive actions*, being made by the subject of cognition during the process of cognition. For example, if you look at, so called, ambiguous picture, you can enframe the painted figure as a pretty girl in one case, or as an ugly witch in the other.

When the subject of cognition makes a cognitive action – <setting of the cognitive sense of some cognitively independent entity and thereby transforms it into the object of cognition>, this means that the subject of cognition links the *cognitive frame of reference* (CFR) with the object of cognition and starts carrying out the process of cognition. Since the subject of cognition observes not only a phenomenon but also carries out the process of cognition, it is important to use the notion <cognitive frame of reference> together with the existing notions – the *physical frame of reference* and the *observer*. Therefore, the notion <cognitive frame of reference> introduces using the CSS principle "Transformation of concepts at interspatial transitions" (see Table 1).

When the subject of cognition makes the cognitive action – the <setting the cognitive sense of <u>oneself</u> as a denotatum-notion complex>, this will engender the another kind of functional tautology which we will call *consciousness*. We assume that the human as a subject of the cognitive process cannot consciously experience the outer world without simultaneously experiencing oneself as an object of cognitive process, which [this object] is a part of the outer world too. In this manner, <the losing of consciousness> describes as a kind of absence of one's own cognitive sense within one's own meta-theory (e.g., personal worldview/mindset).

The first conclusion from all being said above is that the <u>cognitively independent entity has no immanent properties</u>. Its properties are being set in the process of cognition and depend on the CSS principles being used by the subject of cognition. Among all kinds of the CSS principles (see Table 1) are 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* (see also Fig. 11). 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 object of cognitin) as appearing in decompositional and in dissociational models will be quite different. The properties of the element of those models will be also different. Therefore the second conclusion is that the principles of cognitive sense setting stipulate the different *results of the process of cognition* made by the subject of cognition.

A particularly important thing is that having introduced a new notion according to some CSS principle from the existing or received notion, such a new notion will be transformed into the one which already has a <u>mono-semantic meaning</u>. In this way, it is possible to construct a specific language. For example, a physicist introduces a notion, which is not familiar to the biologist and *vice versa*. But if those two representatives of different scientific disciplines introduce their notions using the same CSS principle, then the two correspondent denotatum-notion complexes, even garbed in different terms, will have similar cognitive sense and will be familiar to both scientists. Therefore the third conclusion is that the CSS principles may be regarded as having an aperspectival, unitary tendency. The unitary tendency of CSS principles leads to creation of a new *interdisciplinary language*.

Let us now regard another important problem within the context of the formation of the base of notion. The notions sometimes are being transposed from one domain of knowledge to another. For example, 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 we will call a *notion-metaphor transmutation*. On the other hand, if the notion is being used without referring to its correspondent denotatum, such a practice we will call a *notion's hypostatization*, which presumes that the notion "in-itself" is regarded as a self-dependent (physical) entity. During the construction of the interdisciplinary language, a <u>similarity of cognitive sense is important, but not the similarity of the terms</u>. Such a formation of interdisciplinary language allows also an avoidance of the notion's hypostatization.

It is important to admit that all primordial concepts of Nonstatanalysis have unequivocal treatment; that is, they are aperspectival, such that they are invariant in the *expedient quantity* of the <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 (or, enframed) during the process of cognition. 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 Applied ADC 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 meta-theories of the different authors. But objectively, we cannot take into account all possible meta-theories that have been constructed before and are

being constructed today throughout the world. Therefore we say that the expedient quantity of such meta-theories (which are of a certain quality) is enough to solve the problem of subjectivity. 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 necessarily limited>. It is hard to find an appropriate short term for this notion, but for now, we will use the term <big but limited>. A few examples: answering a question "How many people live on the Earth?" one may reply: "Big but limited quantity"; or, answering a question "How many stars are in the Universe?" one may also reply: "Big but limited quantity". 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 answer: "Big but limited quantity" (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 answer: "Big but limited quantity". But the number of the CSS principles is limited to twelve, so it shows ways of deciphering the ancient and esoteric texts (when we encounter a lot of words/terms with unknown sense in the text, we can try to find out which CSS principle could be used to introduce the term). Also, all human languages are translatable one into another exactly because of the applicability of these twelve CSS principles. Here an interesting question emerges whether we could be able to understand the supposed alien's language having used the CSS principles. It must be also noted that Nonstatanalysis uses not only the verbal exposition, but also the language of information-systemic models, so that in certain cases the verbal exposition plays a secondary or collateral role.

All assertions presented in Part III are the elements of Nonstatanalysis' Applied Theory of Sense and Relation.

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

The denotatum-notion complex can be formalized as a *term*. Such terms as <subject of cognition>, <intellectual product>, <device>, <influence>, <Reality>, <cognitively independent entity> (which transforms into the object of cognition), <mirror>, <reflected phenomenon of Reality>, <information>, <artificial means of information processing>, <intellect>, <theoretical base>, <means of cognition>, <hybrid intellectual complex>, <machine intellect>, etc. are used to formalize the *model notions*. The model notions are the elements (denotatum-notion complexes) of the *Scheme of a process of cognition* (see Fig. 2 and Fig. 3). (In this case, the scheme – it is a decompositional model of a cognitive process). We have just mentioned such terms as <intellectual product> and <information>. Nonstatanalysis regards four levels of intellectual product. They are the *level of description* (the D-level), the *level of generalization and systematization* (the GS-level), the *level of an applied theory* (the AT-level), and the *level of meta-theory* (the MT-level). These four levels of intellectual product correspond with the four forms of information: *phenomenological observation*, *data complex*, *information system*, and *integrated information system* (see Fig. 10). The assertion concerning the existence of four levels of intellectual product is the element of Nonstatanalysis' Applied ADC Theory.

1. Definition of the main concepts.

Now, let us introduce the meaning of the terms mentioned above. The *device* – it is the denotatum-notion complex (e.g., graphic model, see Fig. 2 and Fig. 3) as element of the Scheme of the process of cognition, which is used to designate real things, such as tools, measuring instruments, laboratory equipment, sense organs, etc., and has a certain cognitive sense in reference to the subject of cognition. The *change* of the cognitive sense of the device in reference to the subject of cognition during the process of cognition we will call *information* (see Fig. 2). 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 (such is the non-shannonian concept of information; the shannonian one regards information as a sequence of digits on some material carrier like paper or type and which can exist independently of the subject of cognition).

The *process of cognition* – it is the closed, circular *model process* of creation of an intellectual product by the subject of cognition in consequence of the processing and conceptualization of information (see Fig. 2). The process of cognition is carried out by the <means of cognition> using a correspondent <theoretical base of the process of cognition>. The *means of cognition* (see Fig. 3) – it is a *combined model notion* which includes: (a) the *model objects* such as device and artificial means of information processing; (b) the *intellect* as a natural means of information processing (see Fig. 7), and (c) the *means of formalization* of intellectual product. The <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.

It is important to note here that since, first, Nonstatanalysis itself is the MT-level intellectual product, second, any intellectual product can be taken as an object of study for Nonstatanalysis (in particular – for its Applied ADC Theory), therefore Nonstatanalysis formalizes itself by means of its own <means of formalization> (later we will say about Nonstatanalysis' property of self-organization or self-improvement; see Part VII). Thus we encounter the problem of functional tautology in second time.

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 objects, model constructions; words; assertions (e.g. hypotheses, axioms, theorems, postulates, correlations, principles, rules, laws); languages; the *methodology* of the process of cognition (including the methodology of investigations, methodological rules, etc.).

The <intellect> and <theoretical base> schematically belong to the subject of cognition (see Fig. 7). The *subject of cognition* – it is a model notion (or, a model construction) which has its cognitive sense only as an element of the subject-object interaction. The real human (involved in cognitive process), the cognitively active group of persons, a society, any Earth's or extraterrestrial bio-object, and even not biological object can be substituted by this model notion/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 (if to regard the decompositional model) includes the graphic model of the <theoretical base> in general, and separates from the graphic model of the <means of cognition> the graphic model of the intellect (it is assumed that <intellect> is a means of information processing; see Fig. 7).

The means of cognition (as a 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 the correspondent <theoretical base> (or, *vice versa*, the theoretical base and the correspondent means of cognition) are linked by an *inverse link* (in contrary to the *causal link*).

The means of cognition (as a denotatum) and the theoretical base (as a notion) form the denotatum-notion complex named *cognitive space* (see Fig.3), which is a stable model construction, but which can also evolve. If the elements of one system are linked by inverse link, then it is incorrect to ask which element is primary, or more important, and which one is secondary, or less important. Both those elements are equally important and have no sense one without the other. For example, the knowledge how to use the computer has no sense if we do not have a computer; and *vice versa*, there is no sense in a computer in case we do not know how to use it. Let us accept that if we use such or other <theoretical base of the process of cognition> and the <means of cognition> correspondent to it, it means that we conduct our cognitive activity in some <cognitive space>. The main importance of introducing the term <cognitive space> is that they are not the <theoretical base>, nor the <means of cognition> that evolve, but their system as a whole.

To illustrate the point, consider this question: "What is the difference between the stick lying on the floor and the one being held in the hand?" <Taking the stick into the hand> corresponds with a change of characteristic (about the characteristics see later in the article) of the theoretically modeled cognitive space which already includes the human (as denotatum-notion complex) which is formalized as the subject of cognition, and the stick (as denotatum-notion complex) which is formalized as an **additional part** of the means of cognition. But because of inverse link between the means of cognition and the theoretical base, <taking the stick into the hand> corresponds also with certain **changes** of the theoretical base (because the characteristic of the cognitive space can be fixed; if the characteristic of a system of elements {**A**, **B**} is fixed, then the change of the characteristic of the element **A** necessarily brings about to the change of the characteristic of the element **B**). In actual fact such changes are being saved and sustain for a long time. Therefore, the <stick in a hand> changes the human's theoretical base (named *subjective experience*). Such a new experience/knowledge, formalized as a <changed theoretical base>, can (because of the inverse link) bring about the change of the cognitive sense of the means of cognition in reference to the subject of cognition, and, in practice, lead to creation of more perfect tools.

The cognitive space (as a notion) and the correspondent cognitively independent entity (which later transforms into the object of cognition) (as a denotatum) form the denotatum-notion complex named *experimental space*, which is a particular model construction. If the process of cognition spreads in experimental space, the Scheme of the process of cognition coincides with the scheme of experimental space (see Fig. 3).

2. Solution to the problem of conceptual (semantic) tautology.

A theoretical base (as well as a cognitive space) is a model construction. On the other hand, any model construction is an element of a theoretical base, and, therefore, a part of a cognitive space. So, here we encounter the problem of functional tautology in the third time (as we have mentioned earlier, the solution to this problem will be given in Part VII). But now let us see how the problem of conceptual (semantic) tautology solves. For example, when defining the term <information> we say that it is the element of the Scheme of the process of cognition that follows another element named <device> and precedes the element named <subject of cognition> (see Fig. 2 and Fig. 3). But what is the <subject of cognition>? It is the element that follows <information> and precedes <intellectual product>. What is <intellectual product>? It is the element that follows <subject of cognition> and precedes <device>. Well, but what is <device>? It is the element that follows <intellectual product> and precedes <influence>. In the same way we define <influence> as the element that follows <device> and precedes <mirror>; the <mirror> follows <influence> and precedes <Reality>; the element named <Reality> follows <mirror> and precedes <reflected phenomenon of Reality>. The last one follows <mirror> and precedes <device>. This element, in its turn, follows <reflected phenomenon of Reality> and precedes <information>. But what is information? It is the element that follows <device> and precedes <subject of cognition>. It may be seen that having given definitions to this element of the Scheme of the process of cognition we have completed a circle which we will call a *tautological cycle*.

It must be admitted that the presence of tautology in definitions given to prime concepts prohibits the construction of a consecutive and non-contradictory theory. But what we have in our case? First of all it must be said that we will regard the Scheme of the process of cognition in its development, since its part, namely, the cognitive space, evolves by definition. If the elements of some system are defined using the CSS principle "Definition of the element of the model" by forming the tautological cycle, and the system as a whole can evolve, then we will deal with evolving tautological cycle too. It means that the presence of tautological cycle on every stage of the development of a system do not prohibit us of constructing a consecutive theory, because we are mainly interested to learn how the system evolves as a whole (to learn the law of its evolution). In other words, if some system does evolve, work or function, then it does not matter how or whether we have given non-tautological definitions to its constituent elements.

So, in Nonstatanalysis the problem of tautology when giving definitions to primordial concepts is solved by putting those concepts into developing tautological cycle.

3. Types of cognitive space. Cognitive paradoxes.

We have mentioned above that subjective experience may be the element of the theoretical base of the process of cognition. Let us define subjective experience as a system of knowledge that is being formed through the human's lifetime. The way in which this system of knowledge is being formed can be described as follows: the subject of cognition (here, the human) differentiates (separates) himself from the object of cognition. For example, the investigator (as the subject of cognition) is **here**, but the object of investigation (the cognitively independent entity just after being enframed) is **there**, to wit, 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. Let us now accept that if the theoretical base of the process of cognition is formed on the basis of the human's subjective experience, then the <means of cognition> and the correspondent <theoretical base> form the *A-type cognitive space* (the **A**-space). Such a type of cognitive space has been formed historically, when the human (as the subject of cognition) had been carrying on the process of cognition using the following methodological rule:

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

Specifically, the object of cognition and the subject of cognition (as denotatum-notion complexes) were regarded as the elements of a decompositional model. However, to divide the object into constituent parts, the influence must be exerted upon the object. Let us accept that to regard something in such or other manner means, at first, to select some methodology of investigation. According to this methodology, the <means of cognition> were developed in the direction of enhancing of the influence upon Reality (see Fig. 3). Such a rule was useful when a human intended to investigate the insides of a coconut, and thus the investigator cracked it open with a stone.

However, the question is a valid one: is it possible to investigate the laws of brain/mind functioning using the decompositional methodology? Nonstatanalysis says that it is not sufficient to use only the decompositional model when investigating/formalizing the brain/mind functioning, and offers another scheme of experimental space – the dissociational model of the process of cognition (see Fig. 6). Such a scheme foresees that during the process of

cognition the subject of cognition and the object of cognition form a *subject-object complex* (see Fig. 8b). That is to say: the subject of cognition cognizes itself. Such a scheme corresponds with a particular <theoretical base> and <means of cognition> which together form the *B-type cognitive space* (the **B**-space). And quite another methodological rule of the process of cognition formulates here:

- the cognitively independent entity (which after enframing transforms into the object of cognition) cannot be divided into parts, but rather the subject-object complex (as a model construction) can exist in discrete states (see Fig. 8b).

Thus regarded, the subject-object complex (as a denotatum-notion complex) is the element of the dissociational model. Such a new methodological rule surpasses the old one gazing paradoxically from the point of view of the human's subjective experience. Therefore it is called the paradox (here, it is the *First cognitive paradox*). There are several cognitive paradoxes, which make it possible for the subject of cognition to make transition from the **A**-space to the **B**-space during the process of cognition (see Fig. 1). Such paradoxes are called the *algorithms of interspatial transitions*, and are being derived by analyzing the cognitive process errors, which are natural to be made having used the subjective experience as the theoretical base during the process of cognition. Thus, Nonstatanalysis operates with two different notions of cognitive space – the **A**-space and the **B**-space (each space with its own theoretical base and means of cognition). These notions are introduced according to the CSS principle "Dissociation" from the notion <cognitive space>.

V. *FIRST BASIC IDEA OF NONSTATANALYSIS*

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

$$A + \Sigma CP \leftrightarrow B \qquad (1)$$

where letter **A** symbolizes the A-space; letter **B** symbolizes the B-space; ΣCP symbolizes the expedient quantity of cognitive paradoxes; symbol $\leftrightarrow$ means that the interspatial transitions are possible (this relation also is presented in Fig. 1). 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; the cognitive process errors were not analyzed; the 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,

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

That is why there was no necessity to distinguish between different cognitive spaces, in that cognitive space was regarded as homogeneous and uniform. The process of cognition was based primarily on subjective experience. However, during 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 apparatus, human beings have made considerable steps toward analyzing errors in the cognitive process. Now, the factor ΣCP cannot be disregarded, and it becomes apparent that

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

This strict non-equivalence leads to the idea of dissociability of the cognitive space (see Fig. 12, the dissociational model of the first degree of complexity). The dissociability of the cognitive space (shown above as the relation (1)) constitutes the essence of the *First basic idea* of Nonstatanalysis. This is a hazardous but necessary step in the direction of development of a theory of cognition (epistemology), but in our view, exactly such an idea is required to overcome the epistemological crisis. It can be expected that the studying of the complex phenomena will be more adequate and effective if during the process of cognition we will make a transition from the A type of cognitive (epistemological) space to its B type. The important peculiarity of the B-space is that it allows transformation of human cognitive abilities when investigating a certain kind of phenomena (e.g., psi-phenomena). Such a transformation is not possible and not necessary when we carry out the process of cognition in the A-space. For example, the phenomenon of intuition, to be explained, requires to be regarded in the B type of cognitive (epistemological) space.

Since the notions <A-space> and <B-space> are introduced according to the CSS principle "Dissociation", the B-space's theoretical base **by no means antagonizes** that of the A-space (see Table 2 for the properties of the elements of DIS-model). Those spaces are mutually complementary. The dissociated cognitive (epistemological) space and the methodological rules of the process of cognition (to wit, the algorithms of interspatial transitions) form Nonstatanalysis' Applied Theory of the Process of Cognition (or *epistemology*).

VI. *ELABORATION OF THE SPECIAL METHODOLOGY OF COGNITION (THIRD CRITERION OF APPROACH)*

Studying the changes in the Scheme of the process of cognition, understanding that the A-space is evolving (see Fig. 3), we can arrive at an idea of the *integrated information system* (or, abbreviated – IIS). This notion is introduced according to the CSS principle "Transformation of concepts at interspatial transitions" from the existing concept <information system>. The IIS is the main concept of Nonstatanalysis and the fourth form of information (following phenomenological observation, data complex and information system; see Fig. 5, Fig. 10). The notion is introduced through the following postulate:

    1) a particular information system exists which include **expediently full** information (knowledge) about the experimental space including the object of investigation.

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

    2) such an information system already cannot be regarded as a set (collection) of discrete data about the object of investigation;
    3) such a system describes by three systemic characteristics and one state characteristic;
    4) such a system possesses some properties, universal for all similar systems;
    5) such a system evolves according to some *law of development*, universal for all similar systems.

Having put together, these assertions compose the Postulate of the existence of an integrated information system (or, shortened, the Postulate of IIS) which makes it possible to elaborate a theoretical base for studying of all kinds of phenomena, i.e., to achieve the aim of approach, which was formulated as MTA assertions. In other words, it will be the B-space's theoretical base. The expression <there is nothing outside the integral and objectively existing 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 disclaimed. The general Law of Reality is a **condition** for carrying out the process of cognition when we try to approach the complex phenomena. This also means that the laws of the process of cognition must *ab ovo* correspond with the laws of development of the phenomena and processes of objective Reality, which are being cognized (investigated or studied), otherwise the very cognition will be impossible. The last assertion constitutes the essence of the *Second basic idea* of Nonstatanalysis.

From the point of view of our every-day knowledge (our subjective experience), the general Law of Reality may appear to be a boundary knowledge (a boundary aim of the process of cognition), but, in real, it is only a transitional sub-aim. From the moment of achieving of such a transitional result (the Law has been formulated) one must also formulate a special methodological rule, which will make it possible to carry out a cognitive process using this Law as a new knowledge. Such a rule is the *Fifth cognitive paradox,* which puts restraining conditions on the process of cognition. So, the boundary is only the first of the MTA assertions, but not the second one. It must be also stressed that we will regard the Law of IIS development as a candidate for one of the most general laws of Reality.

If the B-space's theoretical base is formed on the basis of the Postulate of IIS, then the First cognitive paradox (and all other algorithms of interspatial transitions) will not appear as paradoxes from the B-space's point of view (see Fig. 1), and it becomes possible to elaborate a *new system of proofs*. According to this system, any phenomenon must be regarded as a real in case it can be explained using the B-space's theoretical base. Such a system of proofs differs much from the (dominant) logical one, yet it is **no less strict,** because the B-space's theoretical base is grounded on the Law of IIS development (the law of changing of the state characteristic of IIS). Using such a new system of proofs, the possibility of formulation the epistemologically verified assertions (which have a cognitive sense in reference to Nonstatanalysis) concerning complex phenomena is being verified (the assertions with the help of which the explanations to those phenomena are given).

It is important to emphasize that using the B-space's theoretical base the process of cognition does not cease even in case when the subject of cognition has the information (for example, in the form of the phenomenological observation) about the only one single event, phenomenon, or process, i.e., when the recurrence/replication of the phenomenon is not available. This becomes possible because of the specially developed *non-statistical* methodology of cognition. It implies formalization of the phenomenon using the graphic model of IIS – the IIS{phenomenon} (as the consequence of the first assertion of the Postulate). It is important to emphasize that in the graphic form of IIS, a single**, isolated** phenomenon may be represented. Then, a special methodology of the theoretical investigations develops (as the consequence of the last four assertions of the Postulate). This methodology presupposes that the IIS{phenomenon} must possess all properties of the integrated information system, and be amenable to the Law of IIS development. Using such a methodology, a task could be fulfilled of "returning back" into science the objects, which are of non-statistical nature (or making the rare and anomalous phenomena the objects of scientific scrutiny).

Since the transitional (second) MTA sub-aim was formulated subjectively, therefore the *problem of subjectivity* of the MTA assertions (of the two sub-aims, taken together) takes place. Therefore, the more phenomena are being explained (or formalized) using the theoretical base, which is developed using the Law of IIS development, the more the problem of subjectivity of the aim of approach is being solved.

In general, the Postulate of IIS makes it possible to eliminate the problem of *informational infinity and scarcity* from the theoretical modeling. Simply speaking, this problem emerges in cases when we have or too little information about the phenomenon investigated, or we have a superfluity of information (as in cases of DNA studies, the studies of the climate, the political situation, etc.) so that we cannot cope with it. Now then, in such cases we can always represent the object of investigation in the form of the graphic model of IIS – the IIS{object of investigation}. According to the Postulate of IIS, every IIS includes all possible (or, expediently full) information about the experimental space (including the object of investigation). Then, using the theoretical knowledge about the IIS' universal characteristics, properties and the Law of IIS development we will be able to estimate the change of the different characteristics of the IIS{object of investigation} in consequence of the different factors' actions, and, as result, to foresee what will be the object's physical characteristics in the necessary place or moment.

VII. *PECULIARITIES OF THE META-THEORY'S CONSTRUCTION (FIFTH AND SEVENTH CRITERIA OF APPROACH)*

1. Structure of Nonstatanalysis.

The theoretical work "Fundamentals of Nonstatistical Analysis" consists of two main parts (see the Third target article on the author's home-page). In the first part the basic approaches under the construction of the meta-theory are considered. Here the Applied theory of **a**ppearance (emergence), **d**evelopment and **c**ompatibility of intellectual products (or, in short, the Applied ADC Theory) is presented. Also, the question of formation of the B-space's theoretical base is detailed.

The second part is on the application of the B-space's theoretical base. It is assumed there that the phenomena and processes exist which are hard to be put under strict experimental/laboratory conditions, or that replicate with difficulty. Also, the fact is taken into consideration that the influence produced upon the objects under experimental investigation alters their inner states, and, therefore, it is difficult (and sometimes impossible) to use statistical methods of data processing. We will refer to such kind of objects as the *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. Those phenomena also include the phenomenon of UFO, the phenomenon of anomalous information acquisition, etc. At the present stage of development of the meta-theory there are series of anomalous phenomena, which really are cognizable using the B-space's theoretical base. We believe that the application of the B-space's theoretical base is not restricted by the Earth's problems, and if the **other forms** of living matter exist somewhere else in Universe, but even so, there must be **only one possible** scheme of the creation of intellectual products (the Scheme of the process of cognition is universal), and, say, the IIS{UFO}, or the IIS{alien} must obey the same Law of IIS development as any other integrated information systems.

It is important to emphasize that, when constructing Nonstatanalysis, we take as a starting point the existence of the **reliable**, uncontested, well-documented experimental results which do not find their explanation within the frames of any of the existing scientific theories. We will refer to such results as *R-facts*. To take those facts as a starting point was formulated as the *Fifth criterion of approach* when constructing the meta-theory (see Part II).

The non-statistical analysis of the psycho-physiological phenomena gave rise to the applied theory of the bio-mental integrated information systems (the Applied Theory of BMIIS) which grounds on the mentioned earlier Second basic idea of Nonstatanalysis (which may be also called the idea of discreteness of the bio-mental states; see Fig. 6, Fig. 8b). Already now, using the graphic level-by-level information-systemic models of different kinds and different orders of complexity (see Fig. 12), it is possible to formalize the general principles of mind functioning (see Fig. 14 for the Theory of Consciousness) by formulating the epistemologically verified assertions concerning the problems of memory, sleep, love, intuitive thinking, perception of music, and understanding of speech (see Figures 11e, 11f, and 11g). Also, the applied sociological theory of *unpopular decisions* is being developed using the B-space' theoretical base.

2. New Paradigm of Interdisciplinarity.

The B-space's theoretical base is being used for revision of some biological, historic, and physical ideas. The non-statistical methodology manifests itself as a unified methodology of cognition, applicable in any scientific field. Making use of the non-statistical methodology leads to the formulation of the *new paradigm* of Interdisciplinary Investigations as a separate, all-sufficient discipline which has its own (non-statistical) methodology of investigation and a specific class of the objects of inquiry – the non-statistical phenomena. Such a paradigm differs from the presently dominating one: the Interdisciplinary Investigations as a mechanical merger of the different existing disciplines like Physics and Psychology (see Bunge, 1973).

An important thing to be emphasized is that in Nonstatanalysis the kind of methodology of cognition (the A-space's methodology or the B-space's methodology) stands for *criterion of selection* (enframing, or singling out) of a phenomenon as an object of investigation. Such an approach is substantially new. Hitherto, at first, the object of investigation was subjectively selected and only then the methodology of investigation was developed in reference to such an object. For example, the social phenomena (all social phenomena without distinction between them) were traditionally taken as the objects for Sociology, but the objects for Interdisciplinary Investigations (in the new paradigm) include only those social phenomena that cannot be investegated using the existing (statistical) methodology. In general, it is accepted in Nonstatanalysis that according to the two kinds of the methodology of cognition, there are two correspondent kinds of phenomena:

1) the phenomena which are cognizable using the statistical methodology under the process of cognition (or are cognizable in the A-space);
2) the phenomena which become cognizable only after applying the non-statistical methodology of the process of cognition (or are cognizable only in the B-space).

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

3. Relation between the model of Reality and Reality as it exists as some cognitively independent entity.

The second part of the work addresses also the question of empirical verification of a meta-theory. This question is based on the *Third basic idea* of Nonstatanalysis, which solves the problem of correlation between the theoretical model of Reality on the one side, and Reality as it exists objectively and independently from the cognitive process on the other side. We state that the existing theories, which solve 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 the A-space. In addition, the applied theory of devices used under the *IIS-experiment* is being developed. The notion <IIS-experiment> is introduced according to the CSS principle "Transformation of concepts at interspatial transitions" (see Table 1) from the existing notion <experiment>, and has the following meaning: the experiment concerned with the considerable change of the state characteristic of IIS.

One important conclusion that follows from the Third basic idea is that having made the change in the theoretical IIS-model of some real process, we, thereby, can produce a physical influence at that process.

4. Post-development of the meta-theory.

The **three basic ideas** of Nonstatanalysis are mutually linked and form the non-contradictory construction (skeleton) of this meta-theory:

1) the First basic idea shows that such a Theory of the process of cognition (epistemology) **can be constructed** which will make it possible to cognize the objectively existing Reality;

2) the Second basic idea shows that the human (as the subject of cognition) **can cognize** objectively existing Reality, because, having been theoretically modeled, both Reality and the process of cognition are regarded as the elements of the same models and obey to the same laws;

3) the Third basic idea shows how to make the **full adequate transition** from the theoretical models to the real processes.

Having got such a skeleton, Nonstatanalysis acquires the property of self-improvement, and, as result, the possibility of its *post-development* arises (see Part II for the *Seventh criterion of approach*). During its post-development, Nonstatanalysis always stays simultaneously non-contradictory and expediently full meta-theory, whatever the level of development of its theoretical base is. The *expedient fullness* of Nonstatanalysis means that such a meta-theory, 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** (they all are epistemologically verified assertions). That is why Nonstatanalysis does not require any **new** meta-theory above itself. In other words, at any moment and on each level of its post-development, Nonstatanalysis **always stays** Nonstatanalysis. Here the supposition is being made that the Gödel theorem cannot be applied to Nonstatanalysis, or, that such a theorem is true preferably for the theories that are constructed in the A-space.

5. Solution to the problem of functional tautology.

The possibility of post-development also allows us to solve the problem of functional tautology.

- On the one hand, Nonstatanalysis 1) is being regarded as the MT-level intellectual product – the object of cognition; 2) it plays the role of some meta-theory that provides necessary theoretical base for formalization of intellectual products of any level – the subject of cognition. (In other words, the functional tautology is realized in the very construction of Nonstatanalysis).

- On the other hand, when trying to construct the theory of consciousness we also encounter the problem of functional tautology: the human, as a barer of cognitive ability – the subject of cognition, tries to explain his own cognitive ability – the object of cognition.

So, the problem of functional tautology can be solved if for explanation of the phenomena or processes that contain functional tautology we will use the meta-theory that has been built on the principle of functional tautology as well.

It must be also admitted that the meta-theory's property of self-improvement (or, otherwise, the possibility of its post-**development)** allows to formulate the epistemologically verified assertions concerning the methodology of carrying out of certain kinds of experiments which would not adversely influence the **developing** object of investigation (e.g., the bio-object). Simply speaking, to explain some complex phenomenon or process that evolves, we have to use the meta-theory that evolves too. In such a case there will be no necessity to kill or damage the object of investigation.

VIII. *SOME PECULIARITIES OF THE APPLIED ADC THEORY (SIXTH CRITERION OF APPROACH)*

In Part III of the article we have regarded the problem which is a correct way of introducing the meta-theory's primordial concepts, but now we will regard the problem how to formulate correct assertions. Let us start with assuming that any meta-theory consists of some assertions. But how to verify that such or other assertion is true? Let us first to find out what is the cognitive sense of the denotatum-notion complex formalized by 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 "Opposition" from the notion <setting>). If the cognitive sense of the formulated assertion is set in reference to a certain canon, this would mean that such an assertion is verified. If we construct our own intellectual product like hypothesis or theory, we set the cognitive sense of all our assertions (since we formulate an appropriate canon), 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 Applied ADC Theory regards the two kinds of verification of assertion: one for the A-type of cognitive (epistemological) space, the other one for the B-type:

- For development of the A-space, the formulated assertion must be **empirically**, **hypothetically**, and **theoretically** verified:

1) *empirical verification* ascertains the fact whether 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). We have mentioned earlier that *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.

2) *hypothetical verification* ascertains the fact whether 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).

3) *theoretical verification* ascertains the fact whether 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 the B-space, the formulated assertion must be **epistemologically** verified:

  epistemological verification ascertains the fact whether the assertion, which concerns the methodology of going from the intellectual product's MT-level to the AT-level, then through the GS-level to the D-level (or *vice versa* – in opposite direction), are (or, are not) within the limits of the MT-level intellectual product's field of expediency (or, within the MT-canon).

The epistemological verification, in case of the limits of Nonstatanalysis' field of expediency, encompasses also the assertions concerning the methodology of carrying out the IIS-experiments.

IX. *CRUX: IS SUCH A WAY TRUE? (EIGHTH CRITERION OF APPROACH)*

Interdisciplinary Investigations (in their new paradigm) are understood as an expedient quantity (a set) of applied theories on the basis of Nonstatanalysis, i.e., which are using the B-space's theoretical base in reference to the different kinds of non-statistical phenomena (see Fig. 15). We have already mentioned several of such applied theories. It is also important to accentuate that all Nonstatanalysis' applied theories are being constructed with epistemologically verified assertions, but not with incoherent thoughts and speculations. This means that any theorist might construct a similar set of applied theories having determined the similar aim and criteria of approach. We have already mentioned that to solve the problem of subjectivity of the aim of approach we have to show that there are no phenomena that could not be explained within the frames of Nonstatanalysis. To do so, we had to formulate the Postulate of IIS and, on its basis, to construct the B-space's theoretical base of the process of cognition, and we presume that the more phenomena are explained, to the more extent this problem is solved. But let us now see how to solve the problem of subjectivity of the criteria of approach, and why it is so important to solve it?

We understand that Nonstatanalysis as a new meta-theory requires further improvement, in particular, in the closer definition of the criteria of approach under the construction of the MT-level intellectual product, which [those criteria] were formulated subjectively (they are the author's personal original ideas). But we suppose that the criteria of approach could be determined **objectively**. If it being the fact, then the objectively determined criteria of approach would be called *scientific*, and the intellectual product, created under the *criteria of scientific approach*, would be called *Science*. Do Nonstatanalysis' Interdisciplinary Investigations (in their new paradigm) have valid grounds to be regarded as a scientific discipline? We want to find an answer, and, therefore, we are extremely interested in exchange of ideas with scientists who make attempts to construct their own meta-theories (even when formulating their main principles in a different manner, using different approaches, the bases of prime concepts, etc.). But let us put a closer look at the expression "exchange of ideas". What do we mean by it?

The general practice exists, that analyzing somebody's new ideas, a reviewer must decide whether the proposed way of solving such or other problem is enough good, if it adds something new to the present solutions of the problem, and, in the final analysis, is worth to be accepted (published, etc.). But the question is a valid one: is it permissible to review the MT-level intellectual product? The denotatum-notion complex, which is formalized as a notion <review>, has its cognitive sense (as the AT-level intellectual product) only in reference to the **existing meta-theory** (as the MT-level intellectual product) or to its MT-canon. For example, any new Physics' theory, to be accepted by critics, must, at least, correspond the dominated MT-level intellectual product "The Modern Scientific Picture of the World". The review performs the following epistemological function: it ascertains the cognitive sense of the investigated intellectual product (hypothesis, theory, etc.) in reference to the established MT-canon and, consequently, to the meta-theory, constructed by using such a canon. Under the process of cognition the review plays a role similar to that of the CSS principles: in the expedient quantity of the CFRs, it stipulates the cognitive sense of the intellectual product which is 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 meta-theory (or, its MT-canon) dominating in certain scientific circles. If the reviewer uses only his personal subjective experience/mindset (as the meta-theory) instead of using the dominating non-personified meta-theory, the resulting review mustn't be treated as a serious, professional or scientific.

The ascertainment of the cognitive sense of the **existing** avowed (but already not personified) MT-canon in reference to the personified **new** MT-canon is called *revision* (reconsideration). But, the new canon **has no** cognitive sense in reference to the existing canon (because, by definition, it is a new canon). That is why we cannot understand the new way of thinking if confined to the old way of thinking – it is the R-fact. But, the ascertainment of the cognitive sense of, say, our own new MT-canon (our own new meta-theory) in reference to the other author's new MT-canon (his own new meta-theory) we will call the *investigation for compatibility* (formulated in Part II as the *Eighth criterion of approach*), which must be carried out using the B-space' theoretical base (see Second target article on the author's home-page for several examples of such an investigation).

As it follows from the Applied ADC 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 (here, the chain is a model construction). Therefore, the article which regards the possibility of construction of some new meta-theory (in this case, for approaching the complex phenomena of Reality) using the correspondent new MT-canon can **only** be investigated for compatibility with the other author's MT-level intellectual product, but not reviewed. That is what we mean when using the expression "the exchange of ideas". If the chain of expedient quantity of the mutually compatible intellectual products of different authors has been built, it would mean that the problem of subjectivity of the criteria of approach used when constructing the meta-theories as the elements of such a chain is solved, and the resulting (common) meta-theory will have to be treated as scientific.

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

What is Philosophy? We may also address this question purely in Nonstatanalysis' manner (i.e., solving the problem of hypostatization): "What does the term *philosophy* imply?" The answer may be as follows: 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 meta-theory* (or, maybe, 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, say, Laws of Dialectics are formalizable in the 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 only the subjective experience when trying to explain the complex phenomena? We must admit that the attempts to approach the complex phenomena only on the basis of the human subjective experience look as *cognitive infantilism* from Nonstatanalysis' point of view. 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 where the shoe pinches!

On the other hand, Nonstatanalysis' Applied ADC Theory uses the non-statistical methodology and takes any intellectual product as a non-statistical object of investigation (including philosophic and religious systems, ancient teachings, etc.). In other words, by definition, there are no intellectual products beyond the reach of the Applied ADC Theory. But as to Philosophy, it up to now 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 Applied ADC 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 the intellectual products can be formalized using the rigorous scientific approach. But, maybe, the case is that Philosophy as a collection of ideas is not the intellectual product, but some specific *philosophic product*? If it is the case, then we would have to adopt that the philosophic product is not intellectual... A strange conclusion, isn't it? Suppose, Nonstatanalysis is a true scientific meta-theory, then what role Philosophy will be left to play then? So, the invitation for a discussion is issued.

ILLUSTRATIONS AND COMMENTARIES

1	$\text{<NOTION>}|_{NC}$	New content
2	$\text{<NOTION>}|_{EF}$	Enframing
3	$\text{<NOTION>}|_{CD}$	Conceptual displacement
4	$\text{<NOTION>}|_{DEM}$	Definition of the element of the model
5	$\text{<NOTION>}|_{AN}$	Analogy
6	$\text{<NOTION>}|_{AS}$	Association
7	$\text{<NOTION>}|_{DIS}$	Dissociation
8	$\text{<NOTION>}|_{DEC}$	Decomposition
9	$\text{<NOTION>}|_{DPH}$	Definition of the phenomenon
10	$\text{<NOTION>}|_{DPR}$	Definition of the phenomenological (and cognitive) process
11	$\text{<NOTION>}|_{TIST}$	Transformation of concepts at interspatial transitions
12	$\text{<NOTION>}|_{OP}$	Opposition

Table 1. The Principles of the cognitive sense setting. ▲

New content
The old term is used, but during the elaboration of the theoretical base this notion will acquire a new content.

Enframing
The notion which includes more than one word is specially represented (enframed). For example: a term for specific quantity <big but necessarily terminated> is regarded as one notion (the brackets < > will is used to enframe the multi-word notions).

Conceptual displacement
The existing notion displaces on the new object. For example: the notion <cell's brain> is a displacement of the existing notion <brain> on the object called <cell>. Another examples: <consciousness of the tree>, <stone's memory>, etc.

Definition of the element of the model
For example: <the scheme of the process of cognition> – it is the existing notion which denotes a certain graphic model, but such notions as <information>, <subject of cognition>, <intellectual product>, <device>, <influence>, <mirror>, <object of cognition>, <the reflected phenomenon of Reality> are the new notions which acquire their cognitive sense only as the elements of that model.

Analogy
The notion from one scientific (and not scientific) field is used in another scientific field. For example: the psychological notion <power of imagination> was introduced by analogy with the physical concept <power>.

Association
In case the two (or more) existing notions denote the objects which are in non-agnostic interaction, then the result of such an interaction exists which denotes by the new notion. For example: the non-agnostic interaction of the elements denoted as <man>, <woman>, and <child> creates the element which denotes by a new notion <family>.

Dissociation
The existing notion keeps, but the dissociated elements are not in antagonism one with another. For example: the old notion <epistemology> keeps, but the new three notions coin to denote the new three dissociated elements: <A-type of cognitive space>, <B-type of cognitive space>, <algorithms of inter-spatial transition>. Another example: the notion <NaCl> dissociates into <ion Na^+>, <ion Cl^->. It is important to indicate that the new dissociated notions can associate back into the initial notion (as well as the dissociated physical objects can return back to the initial object).

Decomposition
The existing notion disappears, but the decomposed elements are in antagonism one with another. For example: the initial notion <apple> disappears after the object is decomposed into the two parts, which are denoted using the new notions: <first half-apple> and <second half-apple>. Having been put the two half-apples together will never give the former apple. Another example: the notion <Soviet Union> decomposes into <Ukraine>, <Russia>, <Georgia>, etc.; or the notion <Hindustan> decomposes into <India>, <Pakistan> which are in antagonism one

with another. In both cases the initial notions disappear and cannot be resurrected by putting mechanically the decomposed elements together.

Definition of the phenomenon
The obvious (and not very obvious) phenomenon requires being denoted. For example: the notion <sunrise> has its correspondent obvious physical phenomenon of rising of the sun, etc. Here the phenomenon is primary, the notion is secondary.

Definition of the phenomenological process
The phenomenological (and cognitive) process requires of being denoted. For example: the cognitive process of <postulation of the 1-st systemic characteristic of the IIS{human} into the A-space in consequence of the [DIS-DEC] transition> is denoted by the notion <consciousness>. As well as in former case, here the cognitive process is primary, the notion is secondary.

Transformation of concepts at interspatial transitions
The notion <depth of knowledge (cognition) of Reality> transforms into the notion <degree of knowledge (cognition) of Reality> in consequence of the [DEC-DIS] transition (see Fig. 4).

Opposition
A new notion acquires its sense in opposition to the sense of some existing notion. For example: the notion <ascertainment> introduces by opposition to the notion <setting>. ▲

Now let us see at the following figure:
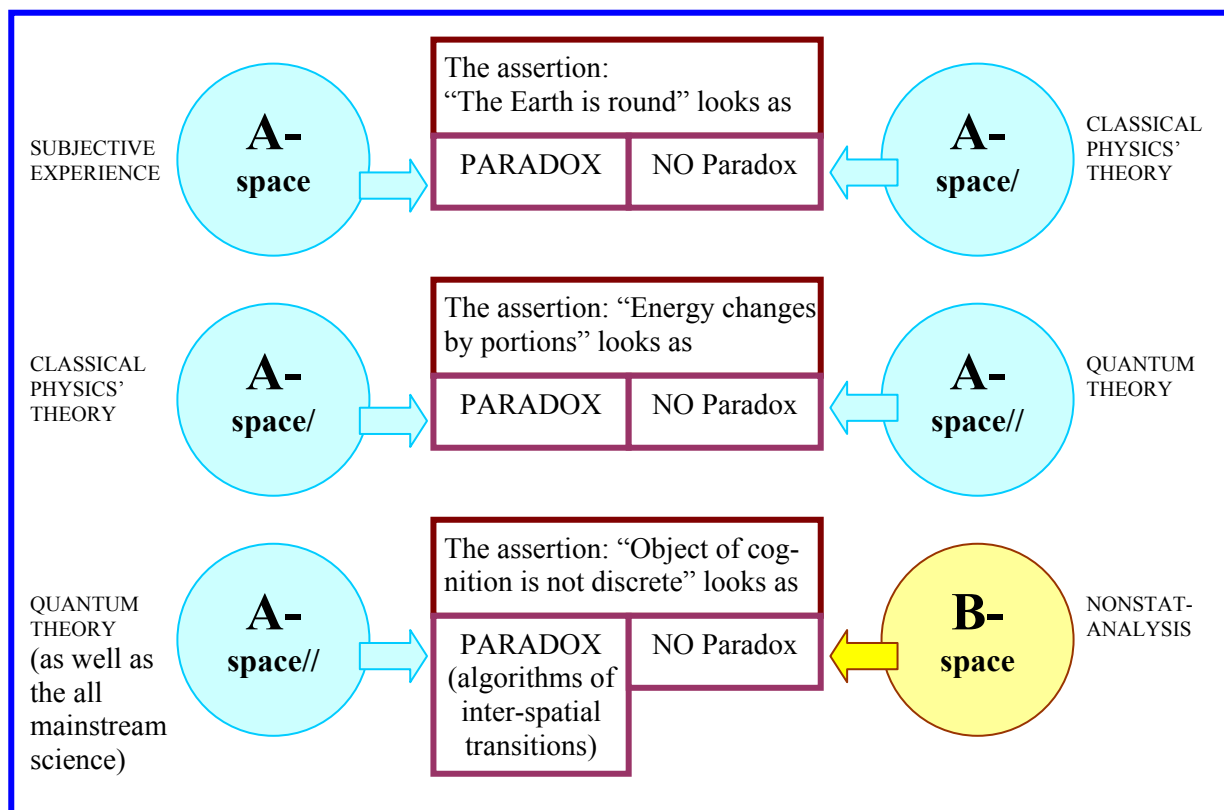
Figure 1. Schemes of the interspatial transitions. ▲

If the assertion concerning a certain imaginary phenomenon looks paradoxically from both the A-space (subjective everyday experience) and the B-space (especially theoretically constructed), then such an imaginary phenomenon is impossible, it cannot exist in principle, it is not real. Such is the *phenomenon's reality criterion*. In other words, every phenomenon is real (or has a potentiality to be real) which can be explained (formalized) using or the A-space's, or the B-space's theoretical base of the process of cognition. For example, if anybody reports that he subliminally gets information about the planets localized in distant galaxies, his report may turn to be true, because in spite of his report looks paradoxically in the A-space, the B-space's theoretical base can formalize (explain) the phenomenon of <distant events perception> (or clairvoyance) having used the theoretically constructed idea of the <intersystem interaction of the integrated information systems> which takes place in no-time, no-space. But if somebody reports that having put $1 into the empty box he can at the next moment drag out $2, this phenomenon is

not possible in principle, it is not real, because nor the A-space's, nor the B-space's theoretical bases have possibilities to formalize (explain) that phenomenon. But, to construct the B-type of cognitive space we will have to regard all seven cognitive paradoxes called the algorithms of interspatial transitions. Here are three of them.

First cognitive paradox (1-CP):
- In the A-space the following assertion is valid: to cognize (study, investigate) the object, it must be divided into constituent parts.
- In the B-space the following assertion is true: the object of cognition cannot be divided into parts, but rather the subject-object complex (as a model construction) can exist in discrete states.

Second cognitive paradox (2-CP):
- In the A-space the following assertion is valid: the subject's knowledge of Reality is terminated. Other variant: every object has its place; "who was born to creep cannot fly".
- In the B-space the following assertion is true: the subject of cognition can get any possible knowledge (information) about Reality in his cognitive frame of reference (CFR). It takes place because the IIS{subject of cognition} can evolve acquiring any permissible values of its 4-th (state) characteristic. Other variants: there is no such information which the subject of cognition could not receive; "every baker can become a king"; etc.

Third cognitive paradox (3-CP):
- In the A-space the following assertion is valid: quot homines, tot sententiae (*lat*.: how many people, so many thoughts). Other variants: my thought – it is my thought, your thought – it is your thought; our thoughts are incompatible; thoughts differ; etc.
- In the B-space the following assertion is true: if one subject of cognition creates his intellectual product in his own CFR^1 and the second (third, and so on) subject of cognition creates his intellectual product in his own CFR^2, then there always is such a universal CFR^* which is compatible with both the CFR^1 and the CFR^2. Other formulation: all thoughts are compatible.

Because of the level-by-level structure of Nonstatanalysis, the rest of the paradoxes will be introduced in commentaries to Figures 12, 13, 14, and 15. ▲

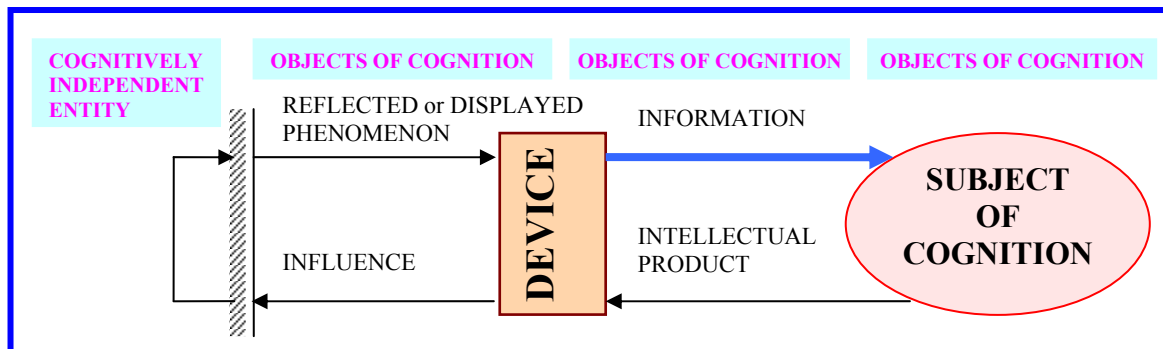Now, let us now regard a *big circle* of the process of cognition:

Figure 2. A standard scheme of the process of cognition. ▲

The process of cognition – it is the cycled process of creation of intellectual product in consequence of information processing and conceptualization. The notions given in this figure have been introduced according to the CSS principle "Definition of the element of the model". For example, the following definitions are being given here:

<information> – it is the element of the scheme that follows <device>;
<subject of cognition> – it is the element of the scheme that follows <information>;
<intellectual product> – it is the element of the scheme that follows <subject of cognition>;
<device> – it is the element of the scheme that follows <intellectual product>;
<influence> – it is the element of the scheme that follows <device>;
<mirror> – it is the element of the scheme that follows <influence>;
<cognitively independent entity>– it is the element of the scheme that follows <mirror>;
<reflected phenomenon of Reality> – it is the element of the scheme that follows <mirror>;
<device> – it is the element of the scheme that follows <reflected phenomenon of Reality>, and so on infinitely.

No one among listed above elements has its cognitive sense beyond the scheme of the process of cognition. They acquire their cognitive sense when they are being regarded together as elements of the big cognitive cycle. One may well see that all definitions are nothing but pure linguistic tautologies. Yes, but since the scheme evolves (we will see it later), it solves the problem of linguistic tautology when introducing primordial concepts, because the cycle as a whole will be the object of our interest.

As was mentioned earlier, in Nonstatanalysis the following assertion is true: "The cognitively independent entity has no immanent properties". This entity transforms into the object of cognition only after being enframed by the subject of cognition and then formalized as the element of the DEC- or DIS-model. So, the notion <object of cognition> has its sense only in a certain model. During the process of cognition the denotatum-notion complexes such as the <reflected phenomenon>, <influence>, <device>, <information>, <intellectual product> may be regarded as the object of cognition too (it is shown in the figure).

Previously, when describing Reality, the human did not even put the question how do the sense organs work (the <device> was not being regarded as the object of cognition), saying not of how does consciousness functions. But now, in need to construct, say, the applied theory of consciousness, the very subject of cognition must be regarded as the object of cognition. Our task will be to learn in which way Nonstatanalysis achieves this aim. ▲

As was stated in Part IV of the main text above, the Scheme of the process of cognition can evolve (see Fig. 3). It must be taken into consideration that for correct understanding of the idea of evolution of the Scheme of the process of cognition, Figures 3, 4, 5, and 6 must be regarded as one whole.
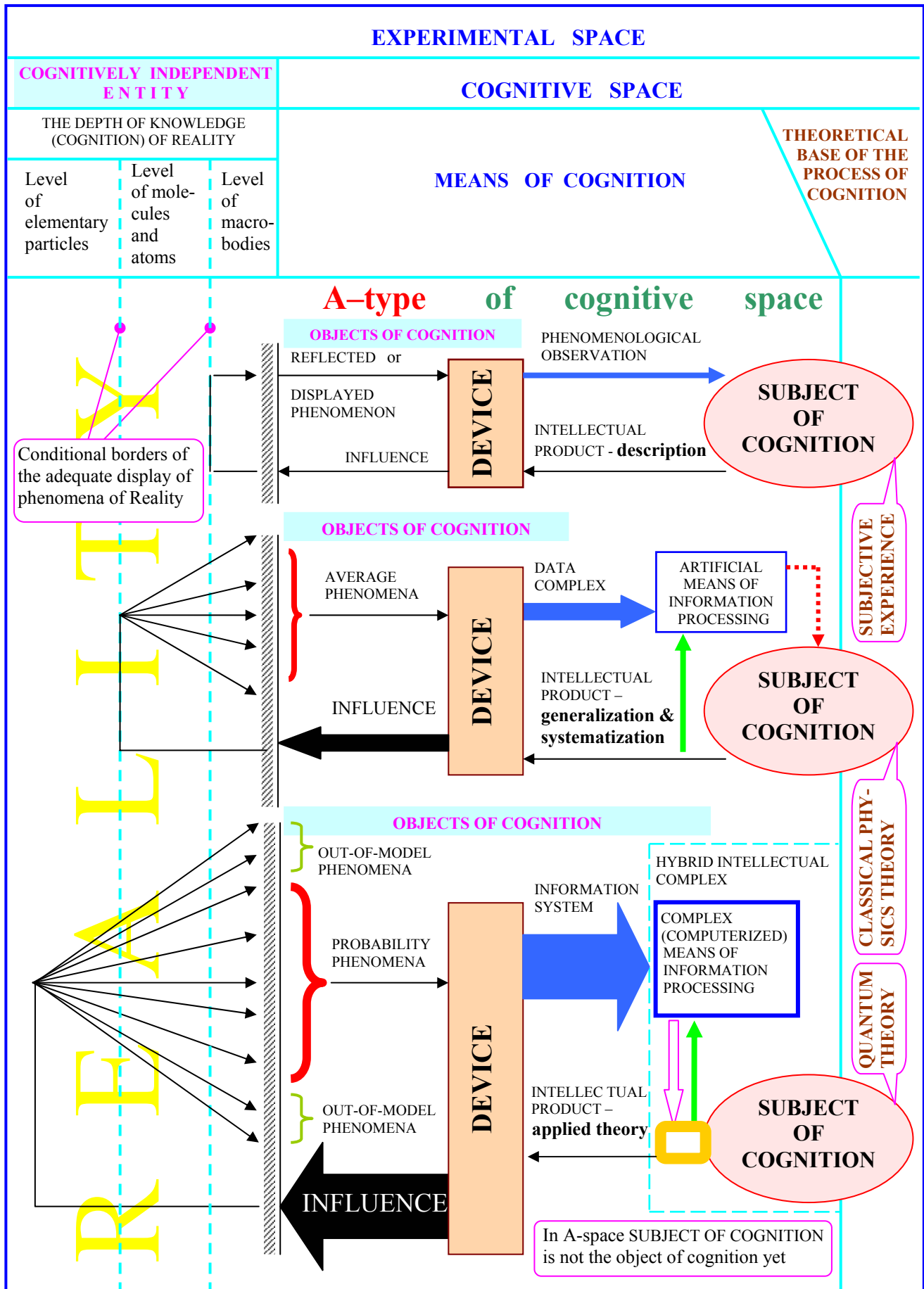
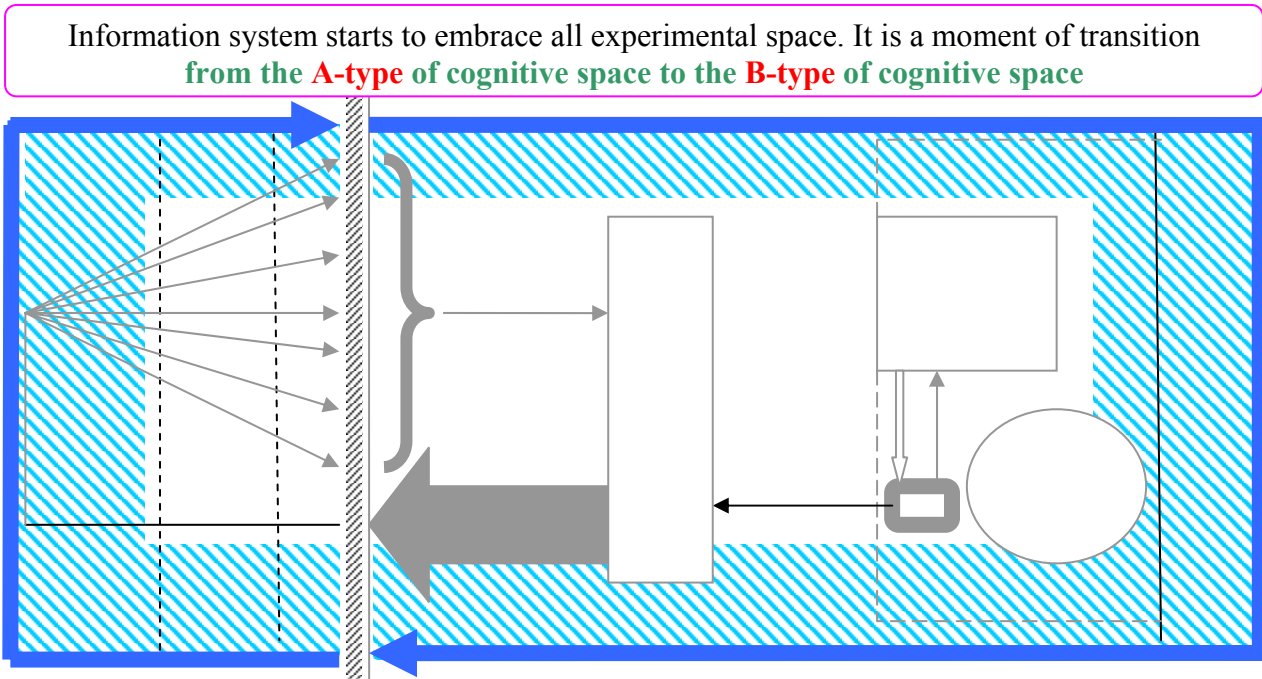**Figure 3. Developing schemes of the process of cognition.** ▲

Information system starts to embrace all experimental space. It is a moment of transition
from the A-type of cognitive space to the **B-type** of cognitive space

Figure 4. The transition from info-static to info-dynamics:
the moment of formulation of the Postulate of IIS. ▲

The notion DEPTH OF
KNOWLEDGE OF REALITY
transforms into DEGREE OF
KNOWLEDGE OF REALITY

B–type of cognitive space

REALITY

Figure 5. The graphic model of the integrated information system. ▲

THE DEGREES OF COGNITION
(KNOWLEDGE) OF REALITY or
THE STATES (CONDITIONS) OF THE
INTEGRATED INFORMATION
SYSTEM

R   E   A   L   I   T   Y

R E A L I T Y
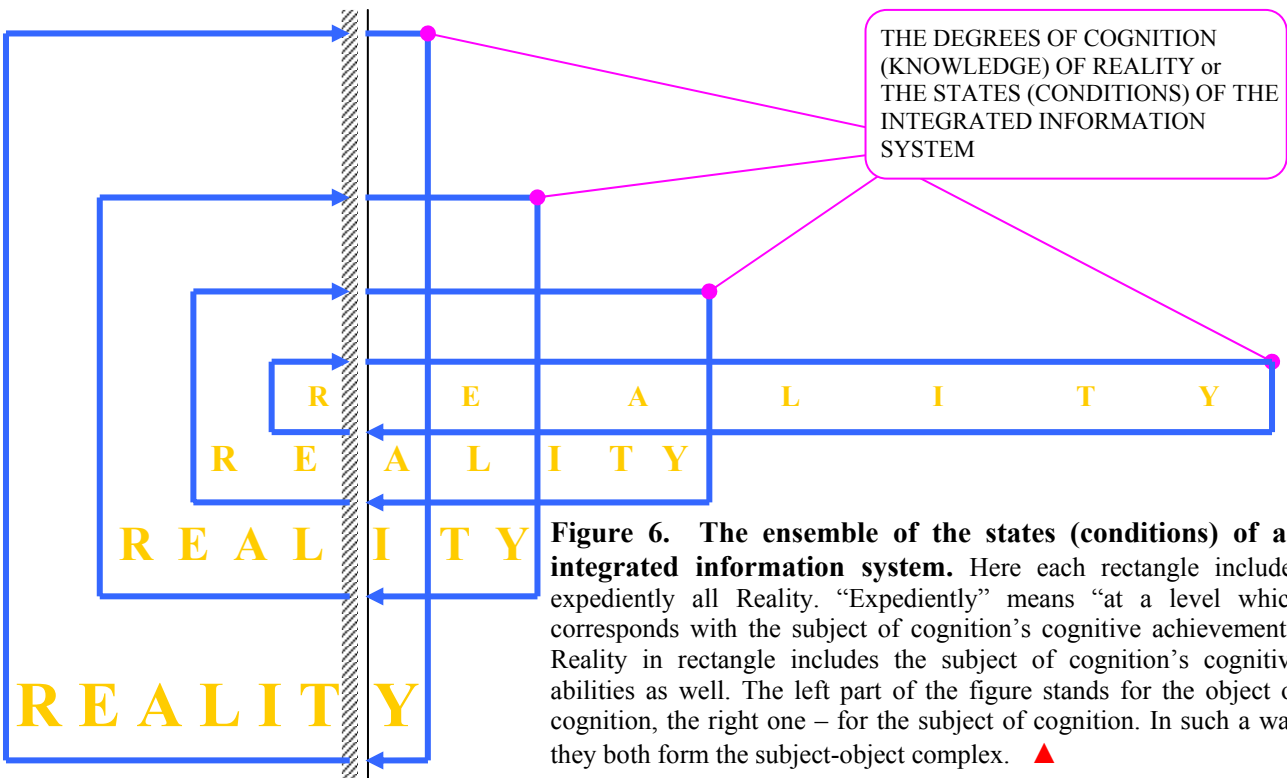
R E A L I T Y

REALITY

**Figure 6. The ensemble of the states (conditions) of an
integrated information system.** Here each rectangle includes
expediently all Reality. "Expediently" means "at a level which
corresponds with the subject of cognition's cognitive achievements.
Reality in rectangle includes the subject of cognition's cognitive
abilities as well. The left part of the figure stands for the object of
cognition, the right one – for the subject of cognition. In such a way
they both form the subject-object complex. ▲

CONVENTIONAL SYMBOLS & COMMENTARIES to the Figures 3, 4, 5, 6, 7, 8, 9, 10.

REALITY

In the A-type of cognitive space Reality is not explicit. Metaphorically speaking, it exists like beyond the mirror (or beyond the looking-glass), the symbol of which is shown as ▨|.

Therefore, in the A-space the subject of cognition investigates not Reality, but the reflected (reverberated, displayed) phenomena of Reality.

REALITY

Inversely, in the B-type of cognitive space Reality is encompassed (embraced) by the frames (margins) of the integrated information system and the degree of knowledge (the degree of cognition) of Reality depends on the value of the 4-th (state) characteristic of the IIS{Reality}, which [state characteristic], in its turn, depends on the value of the 4-th (state) characteristic of the IIS{subject of cognition}, because any possible subject of cognition is a part of Reality.

Conditional borders of the adequate display of phenomena of Reality
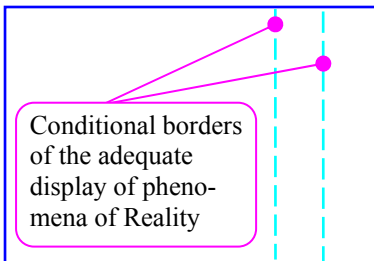
Adequate reflection – it is such kind of reflection of the phenomenon of Reality which enables the subject of cognition to explain the phenomenon using a theoretical base which he has "at hand". Every human (as well as every bio-object) has, at least, his personal subjective experience as a theoretical base of the process of cognition. Using my subjective experience we can explain all phenomena up until the first (starting from the mirror) dotted line. But using our subjective experience we fail to explain, for example, the phenomenon of Brownian motion. In such a case the classical physics' molecular theory is required. This means that the natural origins of Brownian motion go beyond the first dotted line. "Conventional" means here that those margins are different for the different investigator. As the case in point, for a certain people even the phenomenon of thunder is a great puzzle. Therefore, regarding the first type of the theoretical base [the subjective experience] we must discern between the educated and not-much-educated subjective experience.

SUBJECT OF COGNITION

In the A-space the mental abilities of the investigator stay unchanged. He only sometimes invents more complicated tools (shown in the figure as <device>) as to produce the more powerful influence upon Reality and to register the reflected phenomena, so to help him to process the incoming information. This symbol can also be represented as follows:
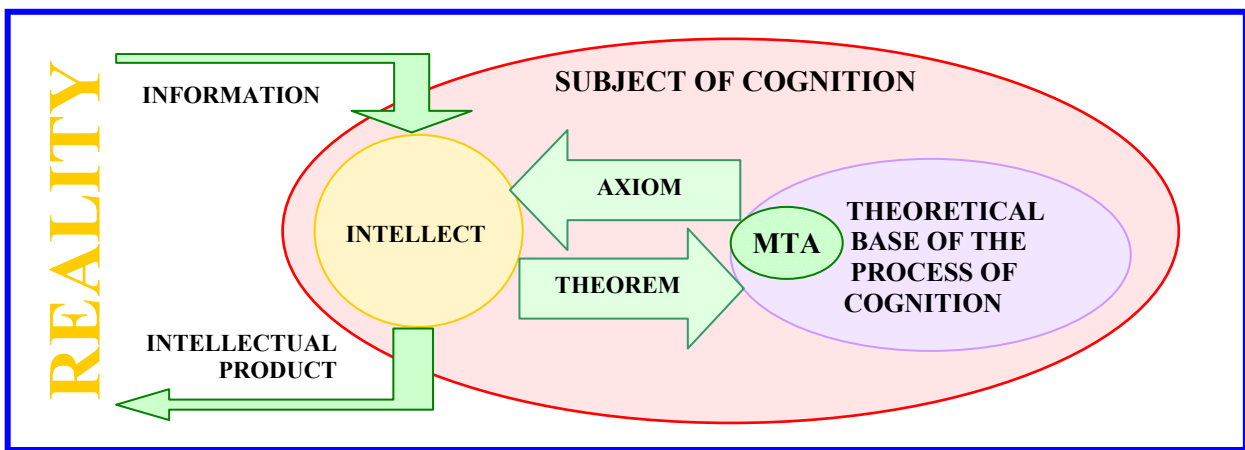

Figure 7. The axiom-theorem inversion when proving the MTA assertions. ▲

Intellect – it is the element of the Scheme of the process of cognition which is responsible for processing of incoming information. Processing – it is a perception, selection of incoming signals (outer or inner), and putting them into an appropriate form. (This term in computer science has, a bit, another meaning). The theoretical base of the process of cognition is responsible for conceptualization of information. Conceptualization – it is the transformation of the processed signal into the element of subject's knowledge (or, the subject's theoretical base of the process of cognition), viz.: concept, notion, scheme, model, etc. Here, the symbol   MTA   stands for the Meta-theoretical aim of approach.

From the theoretical base's point of view the processed information (which schematically flows from intellect as shown in Fig. 7) is regarded as such, that may help to prove the MTA assertions (the aim of the process of cognition is to prove that the MTA assertions are true). In other words, we must prove usefulness of such information in proving the MTA assertions. Such information we will call *theorem*. In case the usefulness of received information is proved, it becomes an element of the theoretical base, or – it is being conceptualized. Later, during the processing of new information, we will use the previously conceptualized information which we in this

moment call *axiom*. So, one and the same information changes its functional role from theorem to axiom when proving the MTA assertions. In other words, the theorem-axiom inversion takes place.

The process of cognition requires the incessant sequence of actions like: …– processing – conceptualization –
– processing – conceptualization – processing –… (or, using abbreviations: …–P–C–P–C–P–…). But those actions are graphically formalized not like a continuous chain, but, rather, a helix, or **loops** (parts of the helix): during the processing of new signals, the results of the previous conceptualization play a crucial role (and *vice versa*). Or, in every day terms: our previous experience helps us to recognize things (or, *vice versa*, some thing evokes some reminiscence). Therefore, the cognitive loop – it is one pair/set of cognitive actions: <P-C>, <C-P-C>, <C-P>, <P-C-P> – such are types of cognitive loop. The types of cognitive loops may be represented using the graphic models:
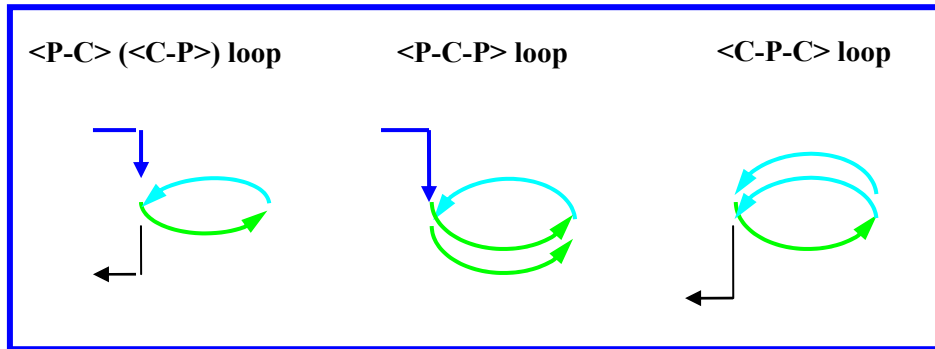
Figure 7a. Types of cognitive loops. ▲

According to the Second basic idea of Nonstatanalysis, the laws of cognition correspond with the basic laws of Reality. In case the bio-object (human) investigates himself, he may be regarded as closed experimental space and be formalized using the systemic model of IIS. In the B-space the mental abilities of the investigator (or the 4-th (state) characteristic of the IIS{subject of cognition}) can be changed dramatically (see Fig. 6). Now let us look at the following figure:
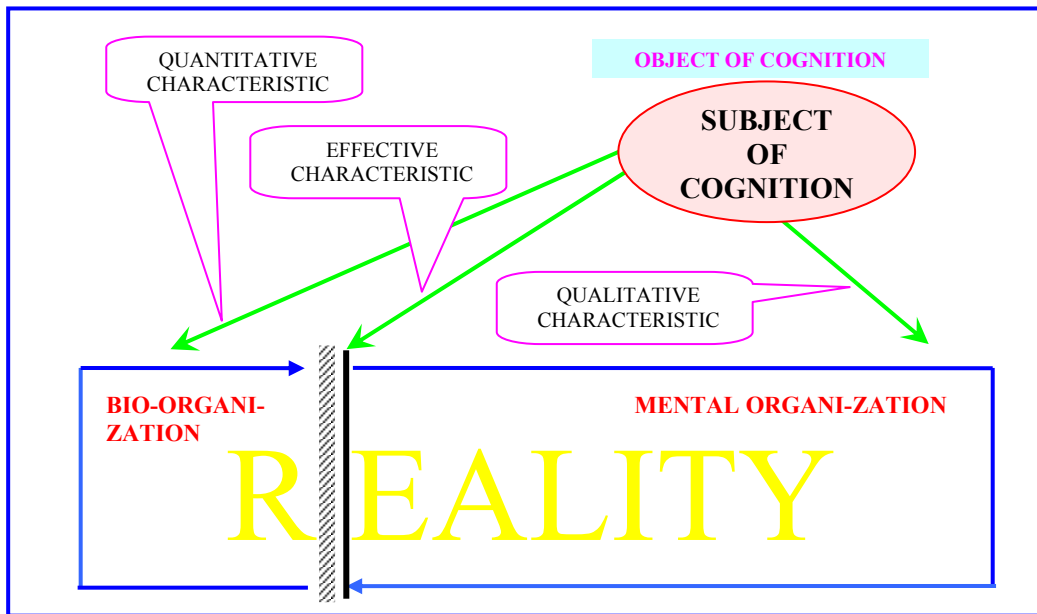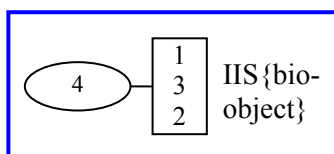

Figure 8. Representation of the subject of cognition as the graphic model of IIS. ▲

For the sake of convenience, the IIS{bio-object} represents as systemic model:

Here the cipher 1 stands for the mental organization (m/o) – qualitative characteristic; the cipher 2 stands for the bio-organization (b/o) – quantitative characteristic; the cipher 3 stands for the effectiveness of interaction between the first and the second systemic characteristics (eff) – effective characteristic; the cipher 4 stands for the state (entropy) characteristic. If the assertion: "the bio-object is alive" – is true, or is *veritas* (absolute truth), so we may right down a special relation:

$$1 \ (m/o) + 2 \ (b/o) + 3 \ (eff) => 4 \ (veritas) \qquad (4)$$

called the *equation of expediency*. For a bio-object to be alive, the correlation of the systemic characteristics of IIS{bio-object} must be always expedient. (The disease – it is some inexpedient correlation of systemic characteristics). Since the bio-object was alive from the moment of fertilization (insemination) till the moment of his death, therefore at each moment of his life he could be described by a certain equation of expediency. But the bio-object evolves, so through his life-time he could be described by a consecutive chain of the equations of expediency. Such a chain is called *veritas chain* (see Fig. 8a):
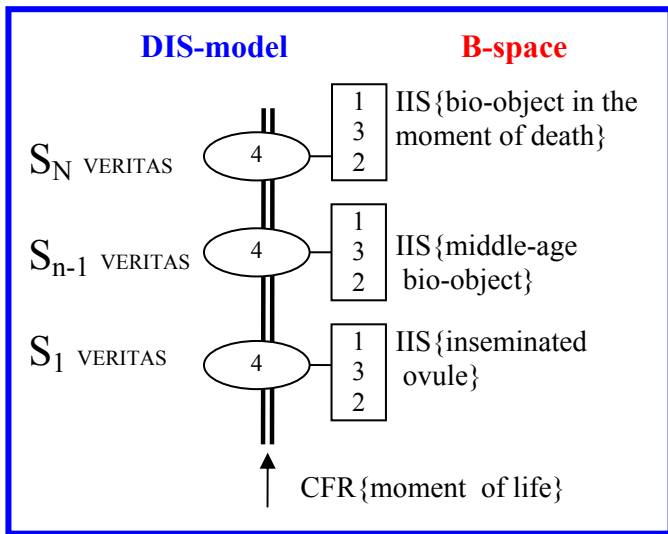
Figure 8a. Veritas chain of the bio-object's life-time. ▲

Speaking strictly, veritas – it is the solution to the equation of expediency. Every veritas is, per se, a certain value of the 4-th (state) entropy characteristic of the IIS{bio-object}. In figure, S_1 is minimal, S_N is maximal.

So, having formalized the subject of cognition using the graphic model of IIS, we have got the possibility to regard the subject of cognition as the object of cognition. From this moment we may start to construct the applied theory of consciousness. Let us now see how the subject-object complex looks like.
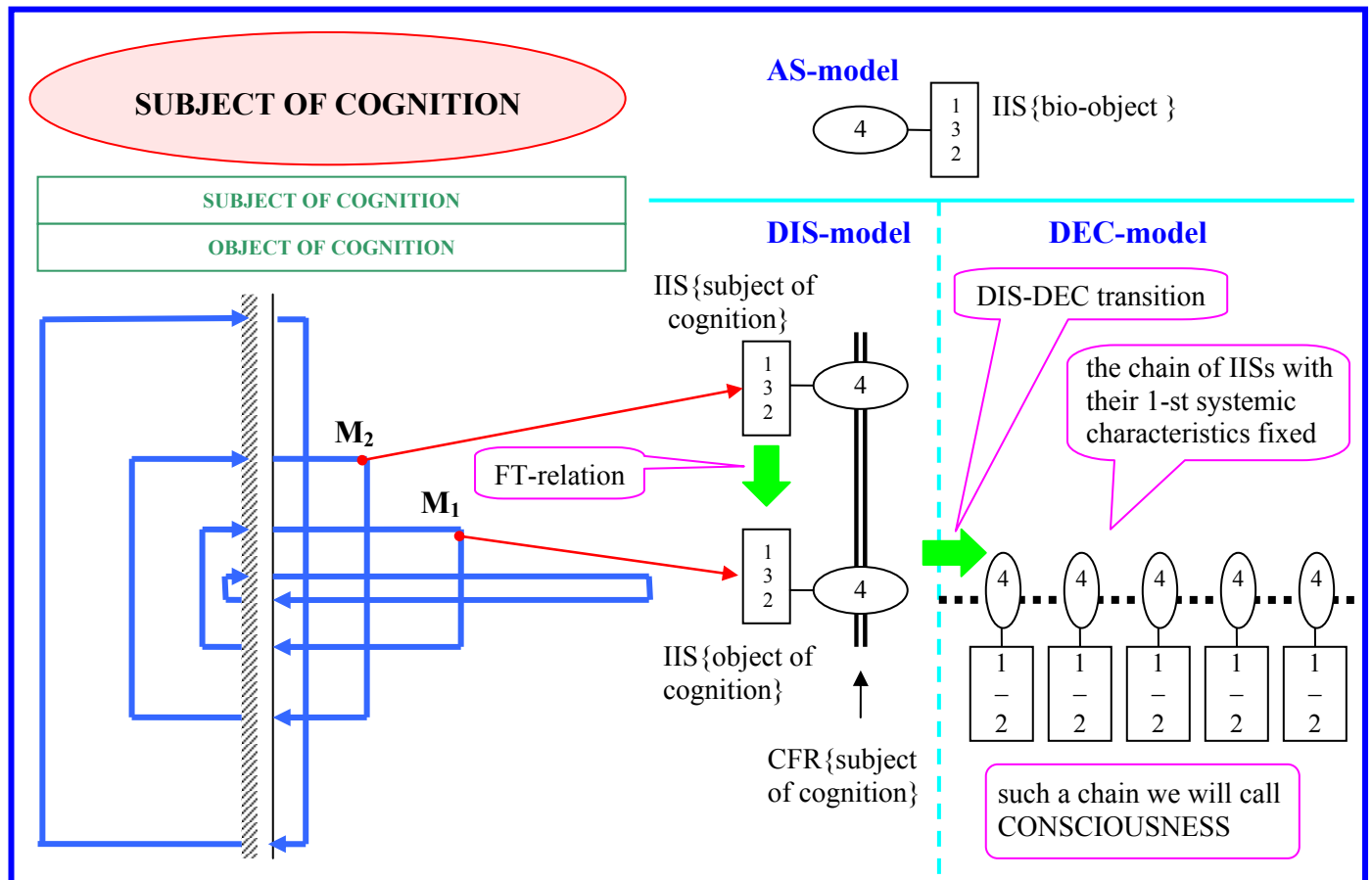

**Figure 8b. The subject-object complex.** ▲

In Fig. 8b, the subject of cognition, being in the mental state M_2, investigates himself as the object of cognition, which is in the mental state M_1. Here, the traditional self-reflection is substituted by the IIS graphic modeling. In this figure, the link between the B-space's Scheme of the process of cognition (blue rectangles) and the system of AS-DIS-DEC-models is shown. Having formalized the subject of cognition using the graphic model of IIS, we (according to the Second basic idea of Nonstatanalysis) can spread such formalization on all Reality (see Fig. 2a-g).

DEVICE — The change of the size of the rectangle shows the gradual complication of the device – **qualitative** and **quantitative** characteristics of the device.

The change of the size of the blue arrows says about the change of the **quantitative**, **quantitative** and **effective** characteristics of the informational flow. During the evolution of the Schemes of the process of cognition, information evolves as shown in Fig. 10 below.
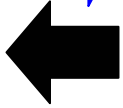
The change of the size of the black arrows shows the gradual enhancement of the energy of influence upon Reality when going (in this case) from the mere phenomenological observation to the high-energy physics – it is a **quantitative** characteristic of the influence.

The size of the red brackets shows how many reflected phenomena of Reality are being explained within the frames of a correspondent theoretical base, or, in this case, within the frames of a correspondent physical theory.

Green brackets indicate the accumulation of a certain kind of reflected phenomena, obtained during the experiment (here, during the high-energy physics' experiment) which already cannot be explained within the frames of the existing scientific theory. But, according to Brillouin (1964), we must take into account and explain all experimental results and reject nothing, whatever strange they may be.
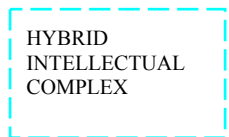
HYBRID INTELLECTUAL COMPLEX — This dashed rectangle stands for the subject of cognition as a participant of the modern physical experiment. It is called Hybrid Intellectual Complex because we use as natural, so artificial means of information processing. And something very special happens here: we mean the emergence of artificial intelligence.

This dotted line is taken for the roughly processed (or, pre-processed) information but already convenient enough for the final processing and conceptualization by the subject of cognition.

This arrow shows that the ramification of intellectual product takes place: a certain part of cognitive efforts is being undertaken to construct the means of pre-processing of information – from the simplest counting machines to the modern computers. So, we can say about a *small circle of the process of cognition*. The circle shown in Fig. 2 we will call a big one.

This arrow indicates the presence of the features of Artificial Intelligence; the Artificial Intelligence is being regarded as a process of changing of the entropy of a quasi-closed system (here – the Hybrid Intellectual Complex) in consequence of information processing and conceptualization. As was stated above, the natural cognitive abilities of the subject of cognition conventionally stay unchanged for thousand of years, but the qualitative characteristic of the intellectual product does change. And the factor which brings about such a change is called machine intellect.

This torus substitutes for the "mixed intellectual product" – something is being taken from the subject of cognition and something is being added by the Artificial Intelligence. In general, any serious scientific applied theory – it is a result of the mixed efforts of teams of scientists armed with the modern means of information processing.

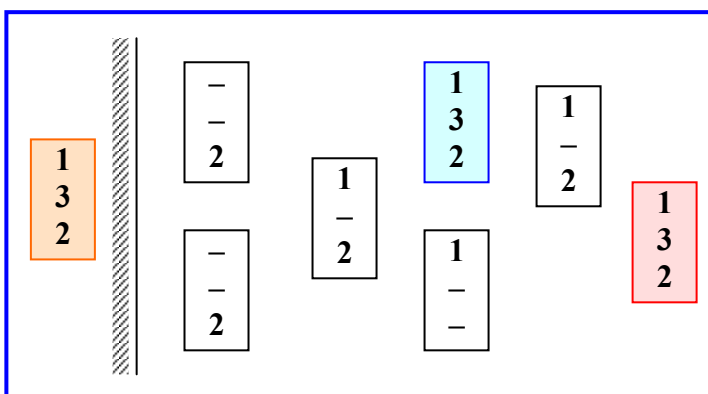In Figure 9 the experimental space is represented using the system models:

Figure 9. Representation of experimental space using systemic models. ▲

As can readily be seen, only three elements, which are being described by the three systemic characteristics, have a potentiality for farther development: the cognitively independent entity (shown as yellow rectangle), information (blue), and the subject of cognition (red). But in real, information only can evolve into the new form (this process in Fig. 4 is called the transition from info-static to info-dynamics).
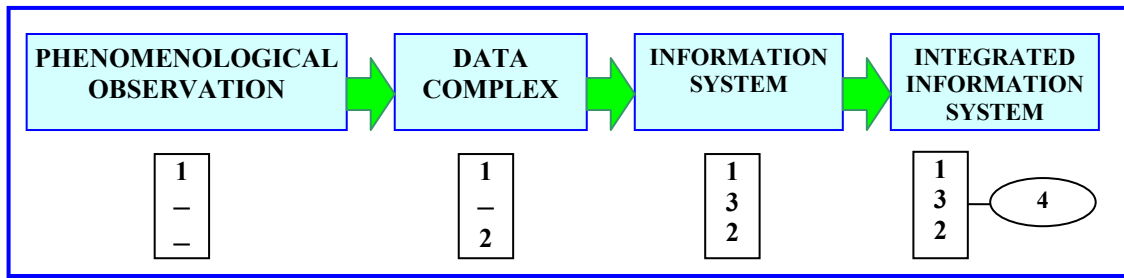
Figure 10. The scheme of development of the forms of information. ▲

– this symbol stands for the systemic model of the integrated information system, where symbol ⟨4⟩ stands for the 4-th (state) characteristic of some IIS.

Here:

- cipher 1 stands for the 1-st systemic characteristic – it says about the quality of information (it determines by the precision of the measuring devices, etc.);
- cipher 2 stands for the 2-nd systemic characteristic – it says about the quantity of information (the amount of the experiments being conducted, etc.);
- cipher 3 stands for the 3-rd systemic characteristic – it says about the effectiveness of information (it characterizes the experimental space, cleanliness of the experiments, sequence of measurements, etc.).

Now let us see what kinds of IIS graphic models are used in Nonstatanalysis, and what the properties of the elements of those models are.
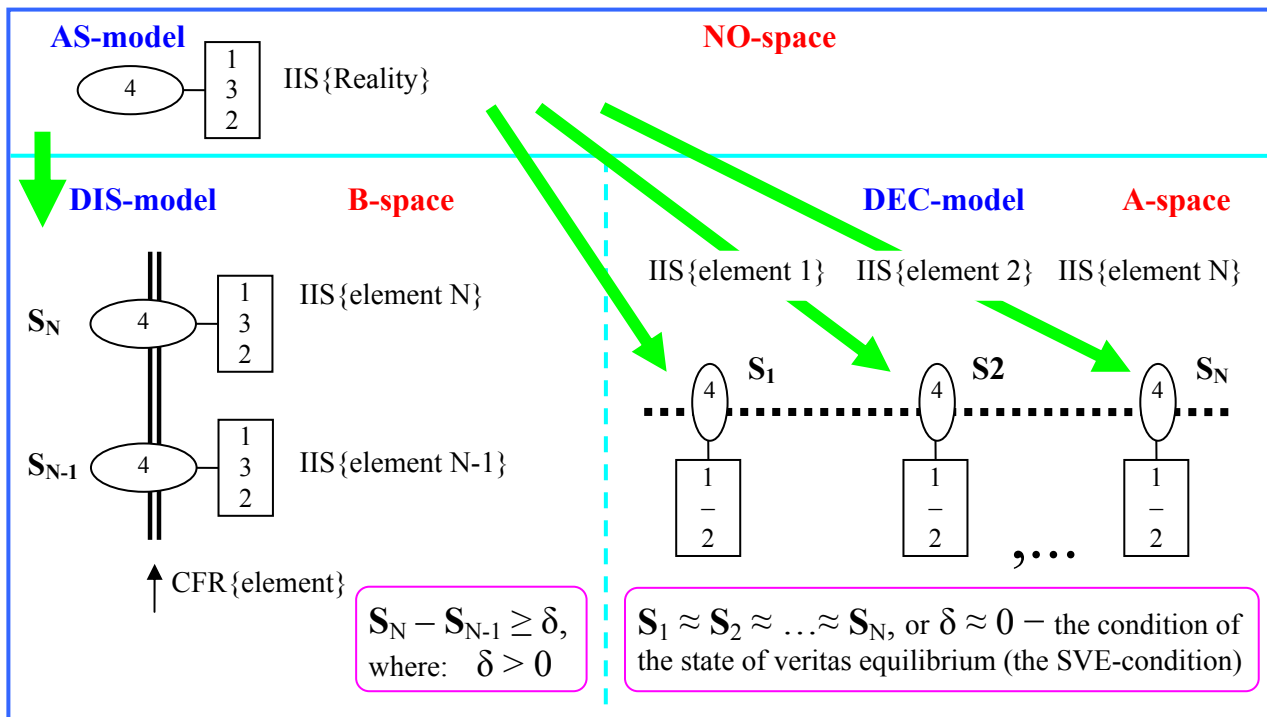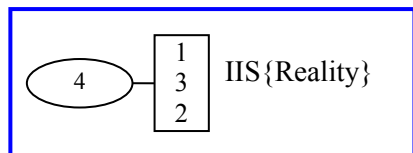

Figure 11. The system of associational (AS), dissociational (DIS) and decompositional models (DEC). ▲

We cannot have expediently full information about some cognitively independent entity which we call <Reality>. So, according to the Postulate of IIS, this entity can be formalized as the graphic model of IIS:

This kind of model is called *associational* (the AS-model), since the IIS{Reality} is the initial element for any other possible elements (this assertion corresponds the first MTA assertion). But using the AS-models, we cannot carry on the process of cognition (that is why we say about the NO-space – a type of cognitive space where the process of cognition is impossible), since there cannot exist such a bystanding independent subject of cognition (say, the inhabitant of some alternative Reality) which could link his cognitive frame of reference with our Reality as a whole. We have

accepted that any possible subject (according to the first MTA assertion) must be a part of our Reality. So, the absence of a subject of cognition contradicts the first MTA assertion which postulates the possibility to cognize Reality. Therefore, to resolve this contradiction, we objectively have to introduce the two more kinds of model (see Fig. 11 above). The elements of the DIS- and DEC-models have quite different properties (see Table 2):

Properties of the elements of DIS-model	Properties of the elements of DEC-model
1. The state characteristic of IIS{element} changes according to the Law of IIS development.	1. The state characteristic of IIS{element} is conventionally unchanging.
2. The element is only being described by the state characteristic in the selected CFR.	2. The element is only being described by the first and second systemic characteristics (the third one is not being taken into consideration).
3. There is no antagonism between elements.	3. There is the antagonism between elements – there cannot be two elements in the same place at the same moment of time.
4. Inverse link between the elements.	4. Causal link between the elements.
5. Presence of the superposition of the elements.	5. Absence of the superposition of the elements.
6. Convertibility of processes.	6. Irreversibility of processes.
7. Absence of the entropy additivity: $S \neq \sum S_N$	7. Entropy additivity: $S = \sum S_N$
8. The initial element (formalized in AS-model) does not disappear.	8. The initial element (formalized in AS-model) disappears.
9. The Law of IIS development is valid.	9. The classical physics' laws are valid.
10. Presence of interference properties.	10. Absence of the interference properties.
11. The property of mutual transmutation.	11. Absence of the property of mutual transmutation.

Table 2. The properties of the elements of the DIS- and DEC-models. ▲

In the DEC-model the 4-th (state) characteristics of the IISs{elements} are such ones that the difference between them may be neglected. So, during the interaction between the elements of the DEC-model, the total veritas stays unchanging – it is a condition of the *state of veritas equilibrium* (the SVE condition). But if during the interaction between the elements of the DEC-model the SVE condition breaks, this would mean that to investigate such an interaction we must go from the DEC-model to the DIS-model (or, to make [DEC-DIS] transition). We regard seven types of inter-model transitions: [AS-DIS], [AS-DEC], [DIS-AS], [DIS-DEC], [DEC-DIS], [DEC-DIS-AS], [DEC-AS]. The last of them is prohibited.
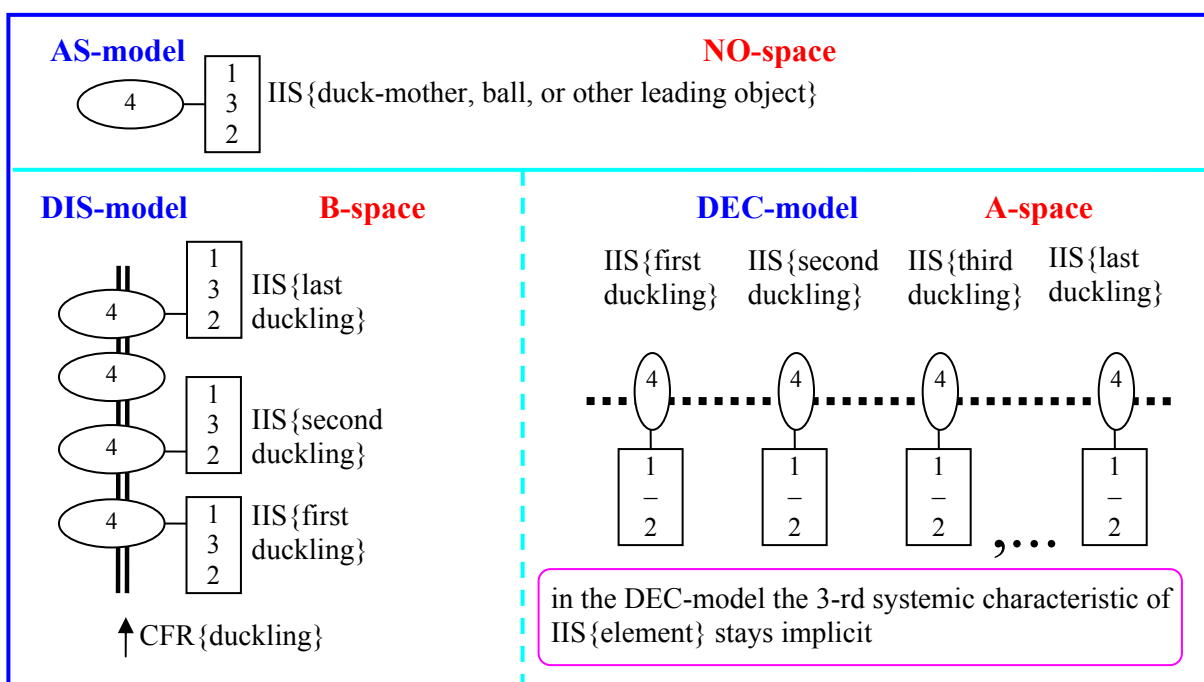
Now, let's regard the following fact (see Fig. 11a):

Figure 11a. The IIS graphic modeling of a hatch of ducklings. ▲

Everybody has many times seen the hatch of ducklings that follow their duck-mother. If we replace the duck-mother with the moving ball, the ducklings will keep following it. This fact looks strange (paradoxical) since it cannot be explained on the basis of the human's subjective experience. Let us now try to explain it within the frames of Nonstatanalysis. Since we cannot have expediently full information about the cognitively independent entity called <duck-mother>, therefore, according to the Postulate of IIS, we can represent this entity using the IIS graphic model – the IIS{duck-mother}, and regard it as the element of the AS-model (see Fig. 11a). As to the ducklings, we will formalize them as the integrated information systems – the elements of the DIS-model. By definition, the DIS-model – it is a dissociated AS-model. It means that there cannot be the DIS-model without simultaneous existence of the AS-model (and *vice versa*). The [AS-DIS] and the [DIS-AS] transitions do naturally and easily. This means in practice that whatever objects have been formalized as the integrated information systems that constitute the chain of IISs – the elements of one DIS-model, this chain will always require the existence of some special IIS – the element of the AS-model. And again, it does not matter what element has been formalized as the IIS – the element of the AS-model. It is because, that as in the AS- so in the DIS-models the systemic characteristics of the IIS{object} stay implicit: the IIS{duckling} makes no difference between the IIS{duck-mother} and the IIS{ball} – only the very fact of the existence of the IIS{duck-mother} (or the IIS{ball}, etc.) plays here a cardinal role.

It is important to admit that when we try to explain this fact on the basis of our subjective experience (or, using the A-space's theoretical base), we formalize the ducklings as the elements of one DEC-model. In other words, we see the ducklings and their mother as the real objects (or the IISs with their 1-st and 2-nd systemic characteristics explicit) which move being arranged in a line. The direct [DEC-AS] transition is prohibited, that is why the behavior of the ducklings after replacement of the duck-mother by the ball looks so puzzling for us. In contrary, in the B-space we already talk not about the real objects, but about the IIS{objects} – their IIS-models, with their systemic characteristics implicit.

When ducklings grow up the [DIS-DEC] transition takes place and they forget their duck-mother. But this fact, to be formalized, requires the application of the IIS-models of the third order of complexity (see Fig. 12).

One more example. Since we cannot have expediently full information about the cognitively independent entity named <God>, therefore, according to the Postulate of IIS, we can formalize this entity using the IIS graphic model – the IIS{God}, and regard it as the element of the AS-model (see Fig. 11b):
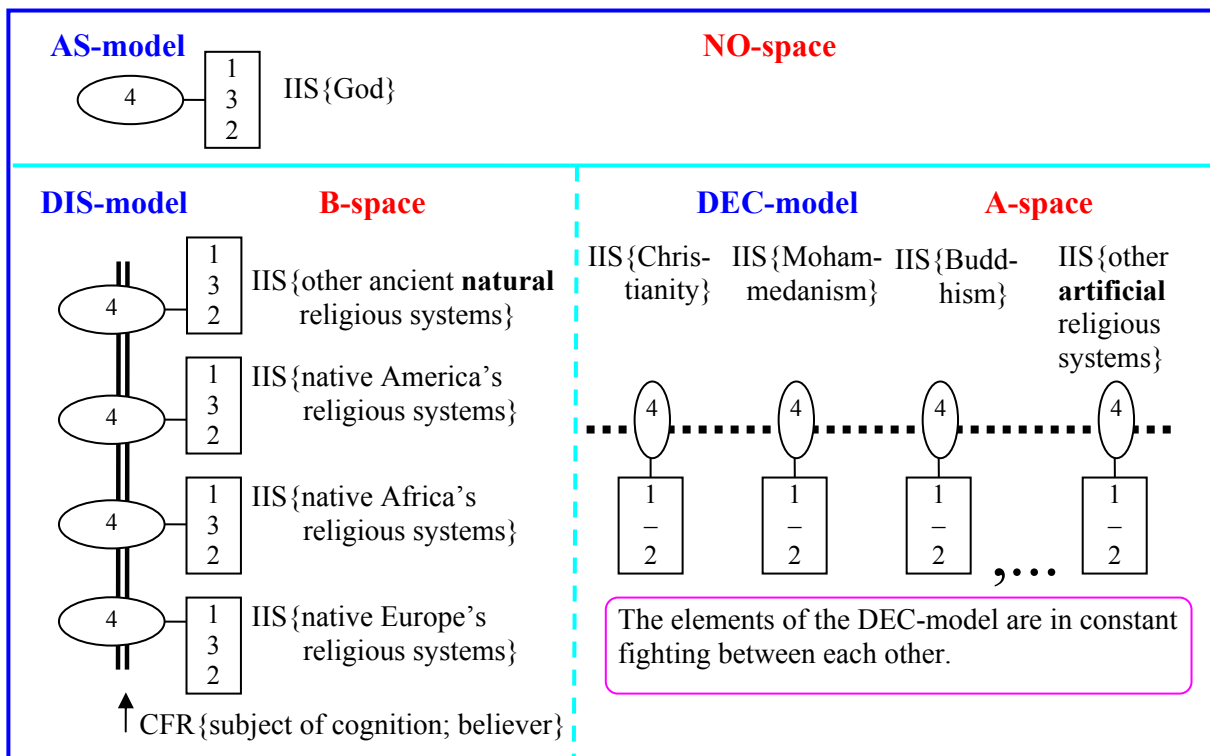

Figure 11b. The IIS graphic modeling of God. ▲

As was stated earlier, in the NO-space (using the AS-model) the process of cognition is impossible, therefore, to approach the entity formalized as the IIS{God} we have to make transition either to the B-space (and to use the DIS-model), or to the A-space (and use the DEC-model). Having made transition to the A-space (DEC-model) we receive a set of existing artificial official religions, which, as elements, possess the universal properties of the

elements of DEC-model (see Table 2). But since, as was already stated, the [DEC-AS] transition is prohibited, therefore nor the Christianity, nor the Mohammedanism, nor any other **artificial** religious system provide true understanding of God (as the universal reason of everything). But having made transition to the B-space (DIS-model), we can construct a chain of IISs, used to formalize the various natural belief systems, which, as elements, possess the properties of the elements of the DIS-model. It means that all world's ancient **natural** religious systems are compatible (they talk about the same things, in spite of using somewhat different approaches, notional bases, system of proofs, etc.). Hence in this case the [DIS-AS] transition is possible, then, after making it, we may come to the true understanding of God.

Next example. Since we cannot have expediently full information about the cognitively independent entity named <solar system>, therefore, according to the Postulate of IIS, we can formalize this entity using the IIS graphic model – the IIS{solar system} and regard it as the element of the AS-model (see Fig. 11c):
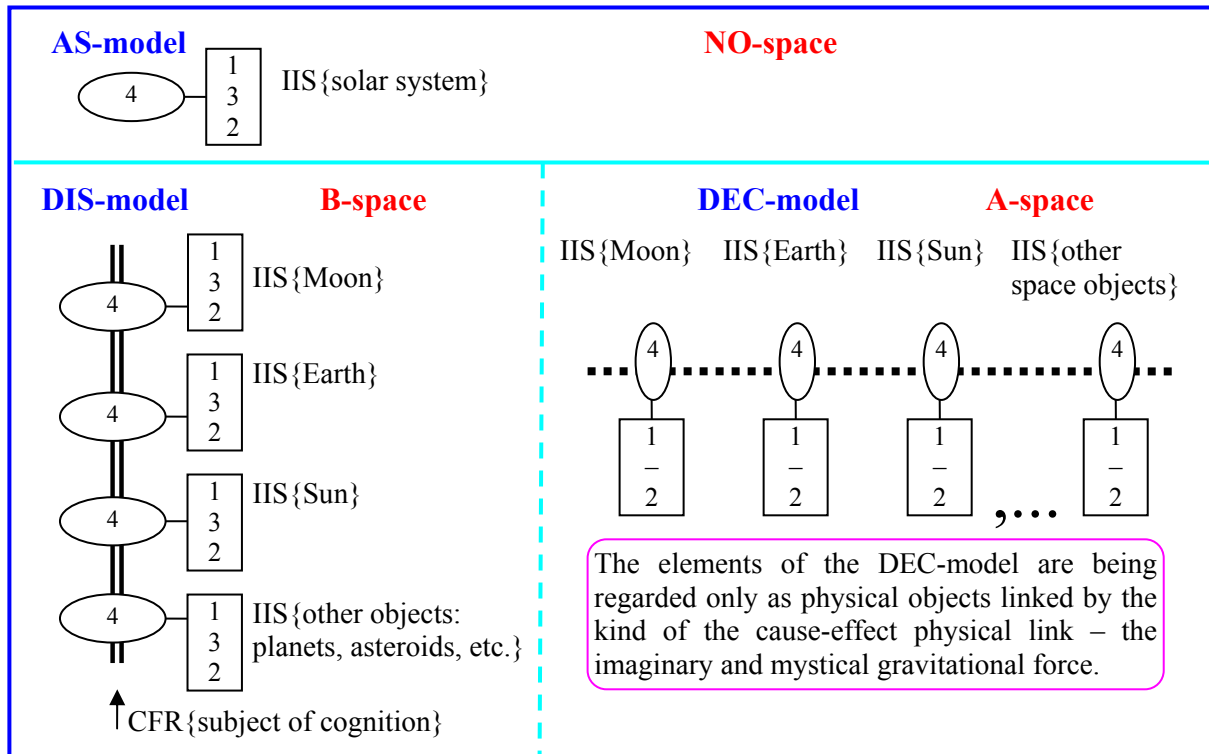

Figure 11c. The IIS graphic modeling of the solar system. ▲

The further line of reasoning concerning the transitions to the B- and the A-spaces is as in a previous case. The only thing that needs to be pointed out is that both the geocentric (Ptolemaic) and the heliocentric (Copernican) models of a solar system are the DEC-models. So, it would be interesting to see what the DIS-model of the solar system implies. Let us look at Scheme 1.

We start our reasoning from the R-fact that the Moon faces the Earth always by its one side, so, it is put that it doesn't move. So, the stationary physical frame of reference {X, Y, Z} is linked with the Moon. In a scheme, the axis X_1 is parallel to axis X; axis Z_1 is parallel to axis Z. The symbols used here mean the following:

M – the center of the Moon's mass;
E – the center of the Earth's mass;
ψ – angle between the XY plain and the Sun's orbital plane; it changes periodically;
k – axis of Earth's rotation;
R – segment, that links the centers of Moon's and Earth's mass; its length changes periodically.

The Earth's center of mass **E** moves only in horizontal direction to and back from the Moon's center of mass **M**. So, the question here is: what persuade the Earth to move to and back from the Moon? Is this the Sun's (or other planets') "rude" gravitation that causes such a complex movement? It is very doubtful. Such a movement is rather the consequence of the inter-system interaction of the IIS{Earth} and the IIS{Moon}. Or, in the other words, the relation between the Earth and the Moon is far from being purely the relation between the "dead" physical objects. Speaking metaphorically, the Earth exists in the Moon's information field, or, is, in a certain sense, being "controlled" from the Moon.
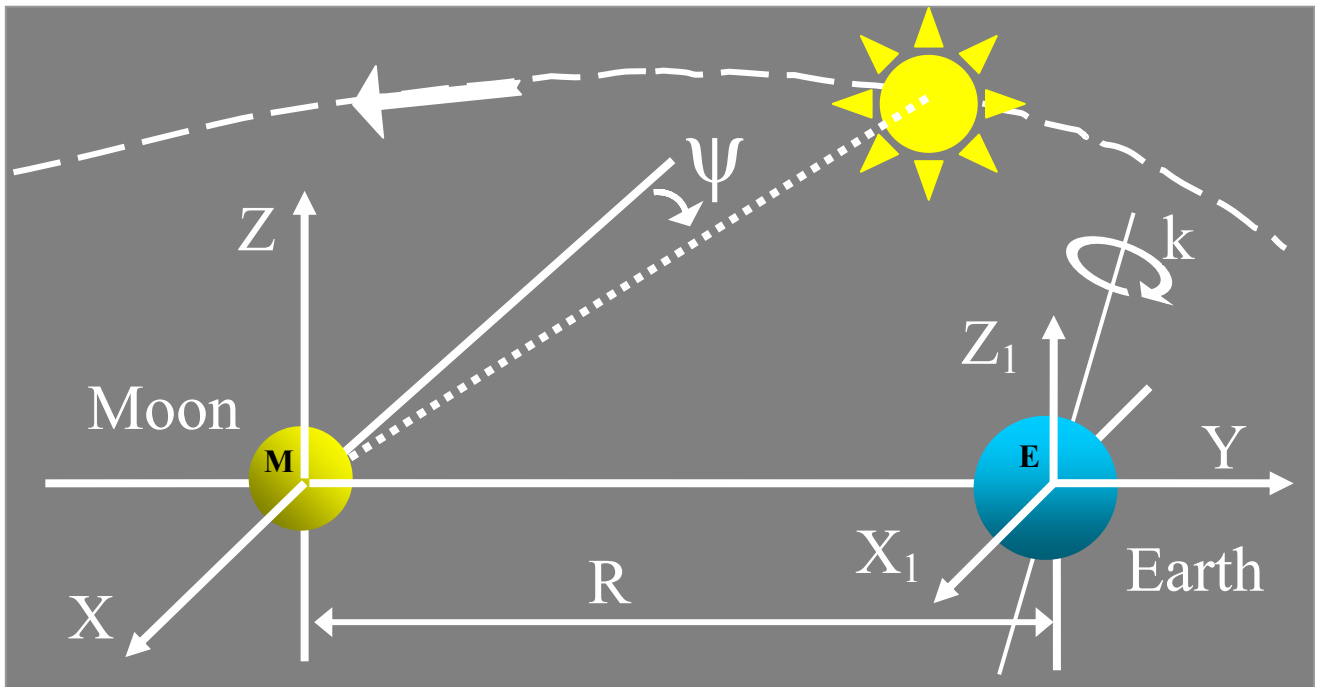
Scheme 1. The selenocentric model of the solar system. ▲

The idea presented on the scheme would be more understandable after being animated. But to realize such a computer animation, the exact astronomic data of movement of the solar system objects is required (saying not about the skill to write down such a complex computer program).

Another example. Since we cannot have expediently full information about the cognitively independent entity named <structure of the matter>, therefore, according to the Postulate of IIS, we can formalize this entity using the IIS graphic model – the IIS{structure of the matter} and regard it as the element of the AS-model (see Fig. 11d):

Figure 11d. The IIS graphic modeling of the structure of the matter. ▲

Then, having made the [AS-DEC] transition and being, consequently, in the A-space (using the DEC-model), we come to conclusion that the atom consists of (or <u>decomposes</u> into) protons, neutrons, electrons, etc. In other words, we imagine, say, the atom as a system of decomposed elements. But we are free to chose between the two cognitive spaces, and having made the [AS-DIS] transition and being, consequently, in the B-space (using the DIS-models) we come to the conclusion that the IIS{structure of the matter} (or, in this case, the IIS{atom}) <u>dissociates</u> into the

IIS{proton}, the IIS{neutron}, IIS{electron, etc.} that constitute the chain of IISs – the elements of the DIS-model. But which conclusion concerning the structure of the matter is more adequate? As has been proved experimentally, the following β-decay transmutations take place: $n \rightarrow p + e^- + \tilde{v}$; $p \rightarrow n + e^+ + \tilde{v}$. The electrons and positrons arise during the β-decay, but they are not the constituent parts of proton or neutron – this is the R-fact. So, the elementary particles have rather the properties of elements of the DIS-model but not such of the DEC-model, and the idea is being expressed here that to describe processes in micro-world the Law of IIS development would be more suitable.

Next example. Since we cannot have expediently full information about the cognitively independent entity named <love>, therefore, according to the Postulate of IIS, we can formalize this entity using the IIS graphic model – the IIS{love} and regard it as the element of the AS-model (see Fig. 11e):
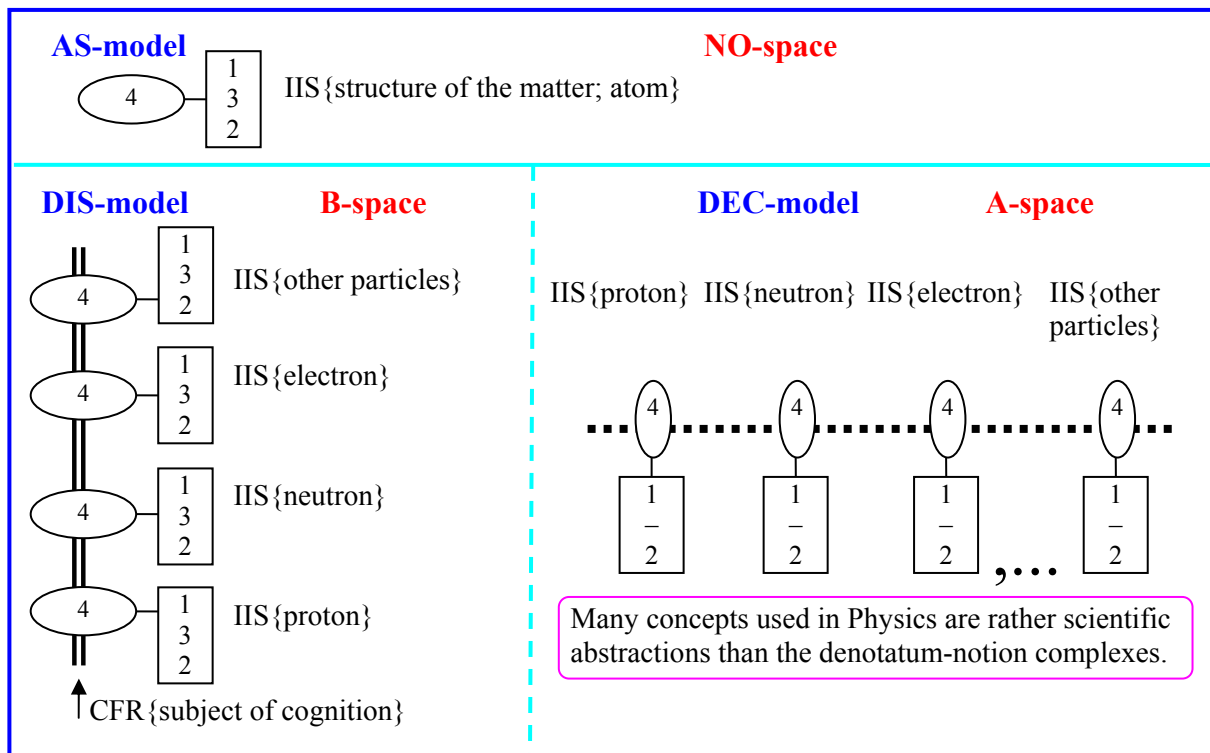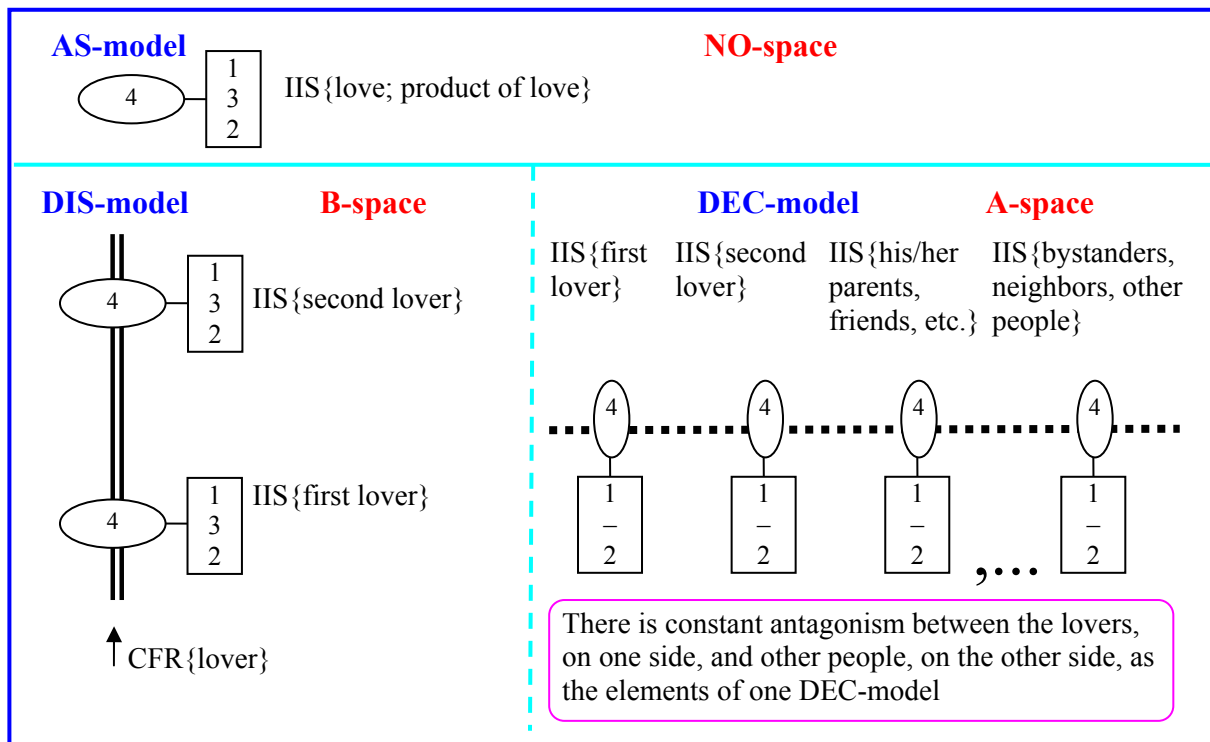

Figure 11e. The IIS graphic modeling of love. ▲

Here we want to indicate that in the DIS-model the systemic characteristics of the IIS{first lover} and the IIS{second lover} stay implicit. That is why the lovers do not see the real characteristics of each other – they accept themselves as a whole, as they are – they interact as two integrated information systems (through the inverse link between the elements of the DIS-model). The chain of IISs as the elements of the DIS-model gives rise to the one IIS as the element of the AS-model. In other words, the elements of the DIS-model create the new entity – the love, which is formalized in the AS-model. But having made the [AS-DEC] transition to the A-space, we regard the parents (friends, other people) and lovers together as the elements of the DEC-model which possess the correspondent properties (see Table 2).

In the DEC-model the systemic characteristics of the IIS{first/second lover} are explicit. That is why when, say, the daughter says that HE is the "best in the world", the parents (friends, other people) say that he is a "swindler, rascal, drinker, narcomaniac, coon, etc.". The cases also may be that when the lovers start to learn the characteristics of each other (they want to make the systemic characteristics of the IIS{love partner} explicit), the [DIS-DEC] transition takes place and, in final event, the state of love expires. The difference in properties of the elements of the DIS-, and DEC-models also explains the R-fact that who has never been fallen in love cannot understand the man who has been fallen in love. It must be also admitted that to formalize perverted forms of love we will have to apply the IIS-models of higher orders of complexity (see Fig. 12).

One more example. Since we cannot have expediently full information about the cognitively independent entity named <musical harmony>, therefore, according to the Postulate of IIS, we can formalize this entity using the IIS graphic model – the IIS{musical harmony} and regard it as the element of the AS-model (see Fig. 11f):
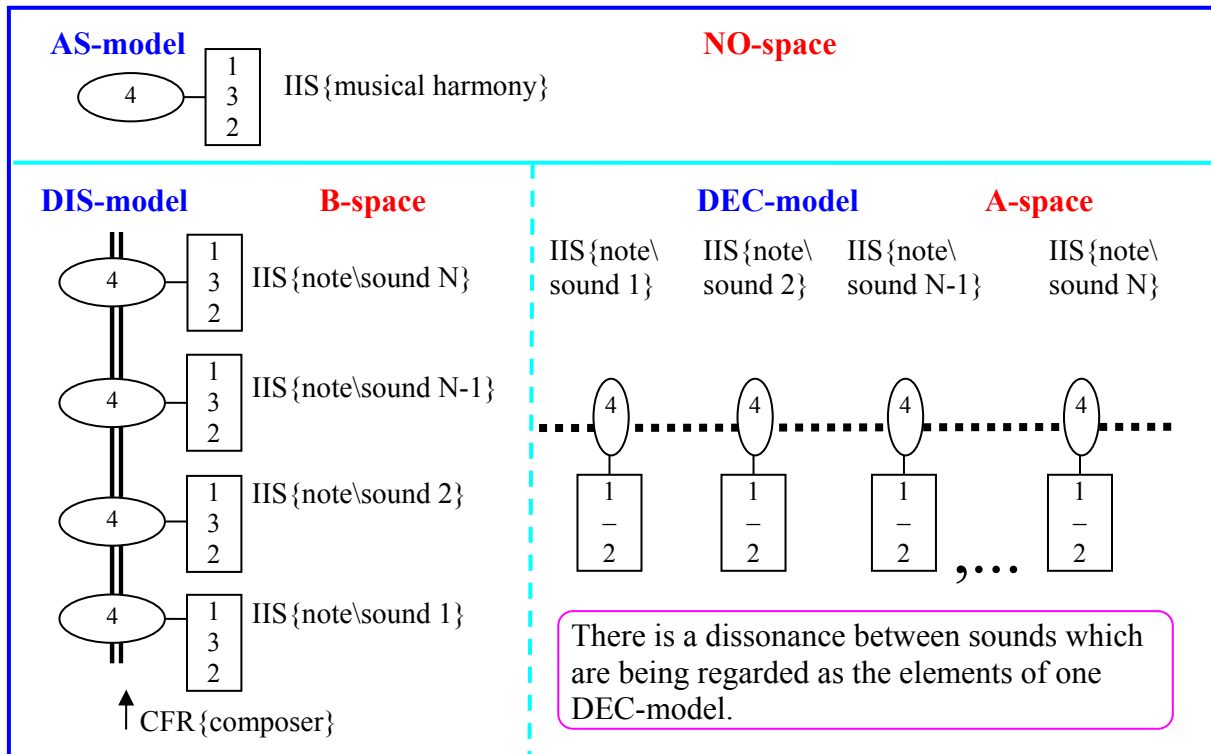
Figure 11f. The IIS graphic modeling of musical harmony. ▲

Only notes (sounds), formalized as the IISs – the elements of the DIS-model, create musical harmony, formalized as the IIS{musical harmony} – the element of the AS-model. For the sounds to be consonant they must be the elements of the DIS-model and constitute the chain of IIS within a certain CFR. The task for a composer is to catch the moment when the different sounds (formalized as the ISSs) start to create the veritas chain. And as result, a new tune, formalized as the IIS – the element of the AS-model, appears. The human understands music because the Law of IIS development lays in background as of the human's cognitive processes, so the evolution of sounds (do, C-sharp, re, D-sharp, mi, fa, F-sharp, col, G-sharp, la, A-sharp, si). That is why the following R-fact takes place that when the child practice gamut and does not play the last note and run outdoors, then his daddy (who was sitting near him and reading the newspaper) unconsciously stands up, approaches the piano and finishes the gamut.

According to the Third cognitive paradox, such a cognitive frame of reference (GFR) always may be found so that any possible set of notes (sounds) will be regarded as a beautiful (talented, outstanding, etc.) musical composition from the point of view of that GFR. That is why the R-fact takes place that tastes differs.

Next example. Since we cannot have expediently full information about the cognitively independent entity named <communication>, therefore, according to the Postulate of IIS, we can formalize this entity using the IIS graphic model – the IIS{communication} and regard it as the element of the AS-model (see Fig. 11g).

In the DEC-model every element has its own particular cognitive sense. But after the [DEC-DIS] transition the set of words acquires its certain new cognitive sense because we will have the veritas chain of the IISs{words}. The same is true when we say about the sentences which constitute the text. As a case in point, when one translates the text from the foreign language, the meanings of the different words, being mechanically put together, do not give him the understanding of the whole sentence (it is because the elements of the DEC-model have the property of entropy additivity; see Table 2). Such a translation may be called <word-by-word translation>. Only after making the [DEC-DIS] transition the translator starts to understand the meaning of the whole sentence (the entropy of the new, intuitive knowledge <u>does not equal to</u> the mechanical sum of the entropies of constituent elements). Such a translation may be called <translation by sense>, which exactly enables understanding and communication.

In general, for a human to perform true translations, or to create top-list music compositions, he must be skilled in making the [DEC-DIS] transitions. In other words, for an intellectual product to be treated as talented, it must be constructed in the result of making a substantial [DEC-DIS] transition – the transition during which the 4-th (state) characteristic of the IIS{human} changes badly.
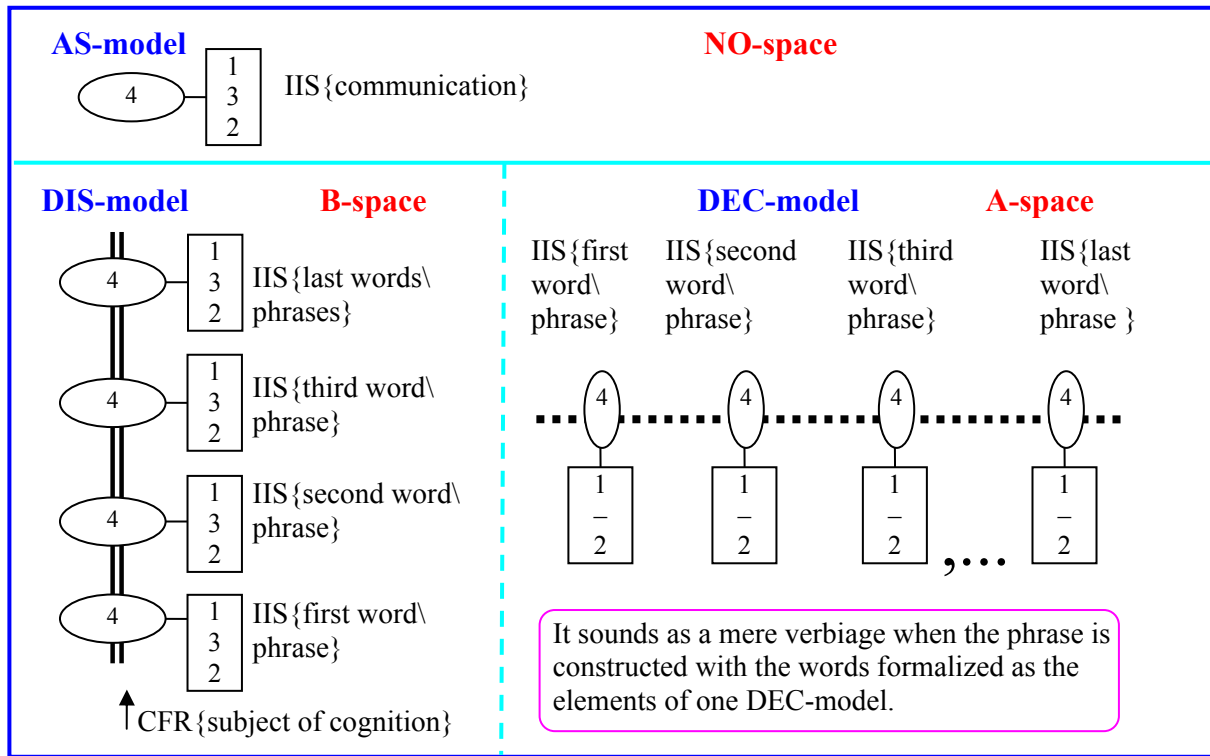
Figure 11g. The IIS graphic modeling of communication. ▲

Now, we would like to make several final commentaries concerning the Figures 11a-g. We have shown that at least seven complex problems find their explanation if during the process of cognition we use the B-space's theoretical base. In such a way we achieve the aim formulated as the first of the MTA assertions (see Part II) – to show that Reality is cognizable. The more phenomena we explain – to the more extent the problem of subjectivity of the aim of approach is solved. In the way described above we can formalize many other problems. To do so we may use the following cliche:

Since we cannot have expediently full information about the cognitively independent entity named <X>, therefore, according to the Postulate of IIS, we can formalize this entity using the IIS graphic model – the IIS{X}, and regard it as the element of the AS-model (see Fig. N):
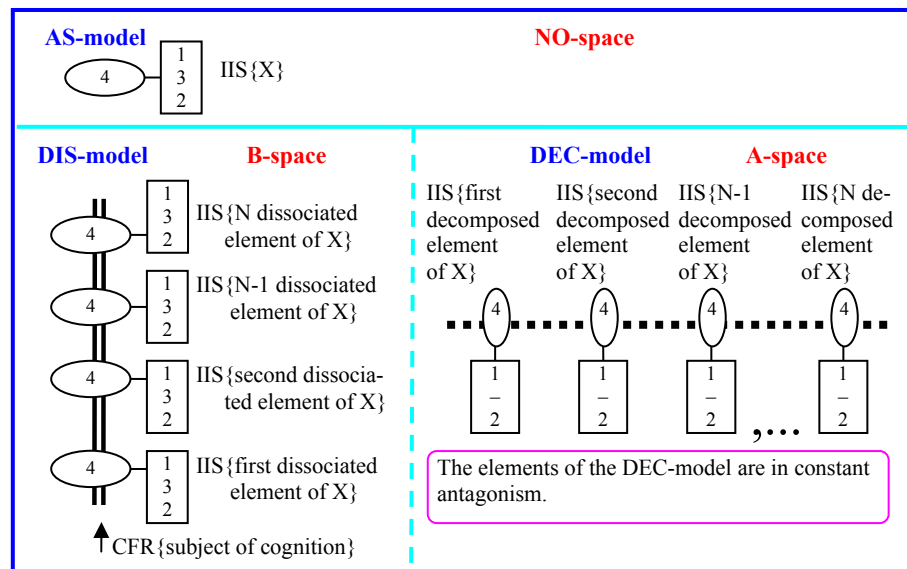
Figure N. The IIS graphic modeling of X.

Since in the NO-space (using the AS-model) the process of cognition is impossible, therefore, to approach the entity formalized as the IIS{X} we have to make transition either to the B-space (and to use the DIS-model), or to the A-space (and use the DEC-model). Having made transition to the A-space (DEC-model) we receive ... Having made transition to the B-space (DIS-model) we receive ... And so on.

Therefore anybody may try to use this cliche when formalizing the problems he wishes to approach.

In commentaries to Figures 11a and 11e we have mentioned that to approach some problems, the application of the IIS-models of higher order of complexity are required. In the Fig. 12 the IIS-models up to the fourth level of complexity are depicted.
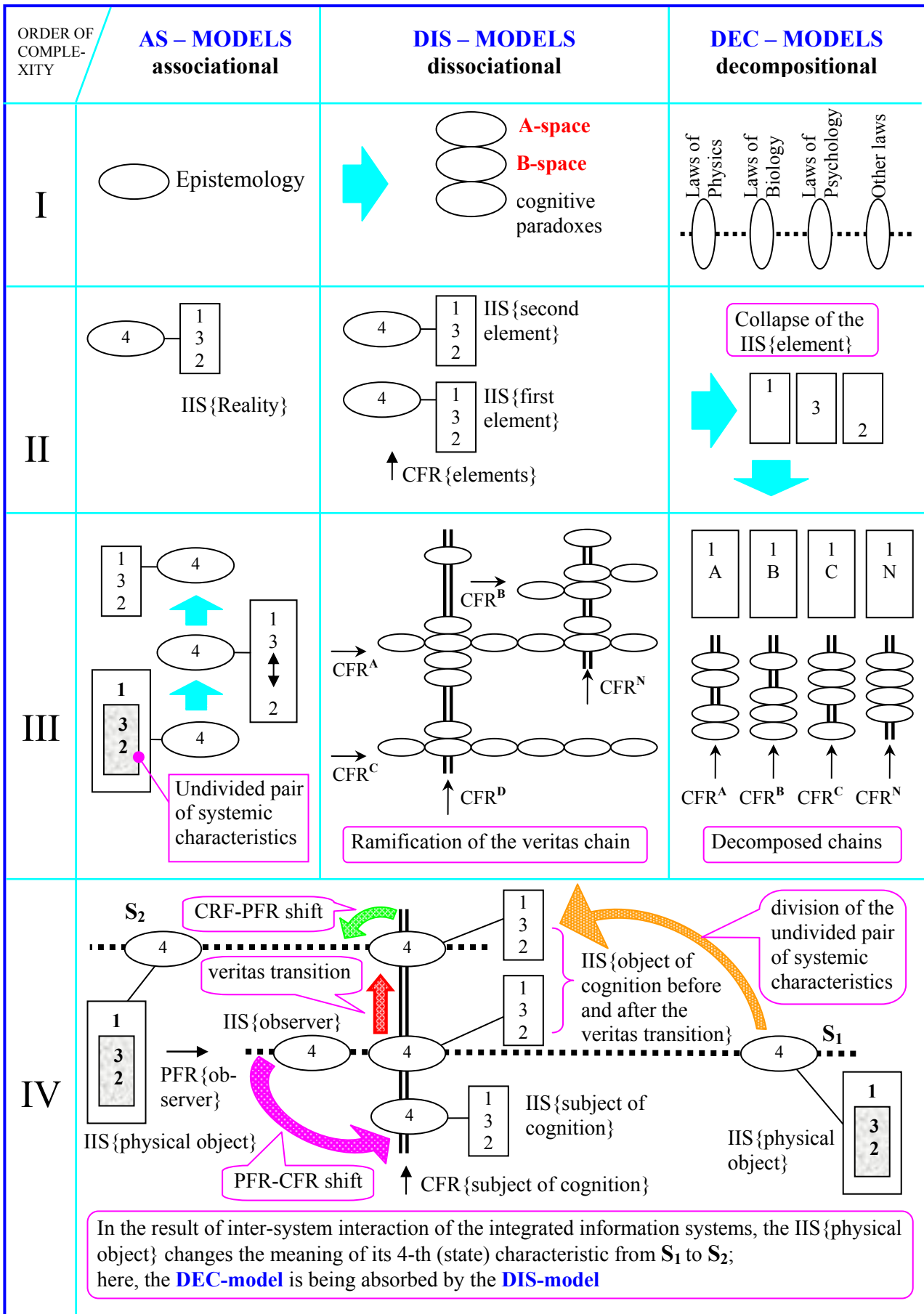
Figure 12. The degrees of complexity of the integrated information systems. ▲

The IIS-models of the third and fourth orders of complexity are used to formalize more complex problems, such as the cell division, the formation of the DNA helix, the phenomenon of anomalous information acquisition, the nonlocality phenomenon, the phenomena of teleportation and telekinesis, etc. (see the Second and the Third target articles on the author's home-page).

The next important figure. According to the Law of IIS development, any integrated information system evolves, having formed the <big but necessarily terminated> ensemble of states called <veritas chain>. In other words, if in the equation of expediency (see commentary to Fig. 8 above) the 1-st and 2-nd systemic characteristics are changing voluntary and the 3-rd one is changing optimally, then we will always receive a set of solutions which do not go beyond such ones, described by the veritas chain. I repeat: this Law touches any possible IIS. If, on the one hand, the 3-rd systemic characteristic changes optimally, and, on the second hand, we have a standard veritas chain (i.e., no part of the chain is characterized by the non-optimal change of the 3-rd systemic characteristic), then the 1-st and the 2-nd systemic characteristics change as shown in the figure below:
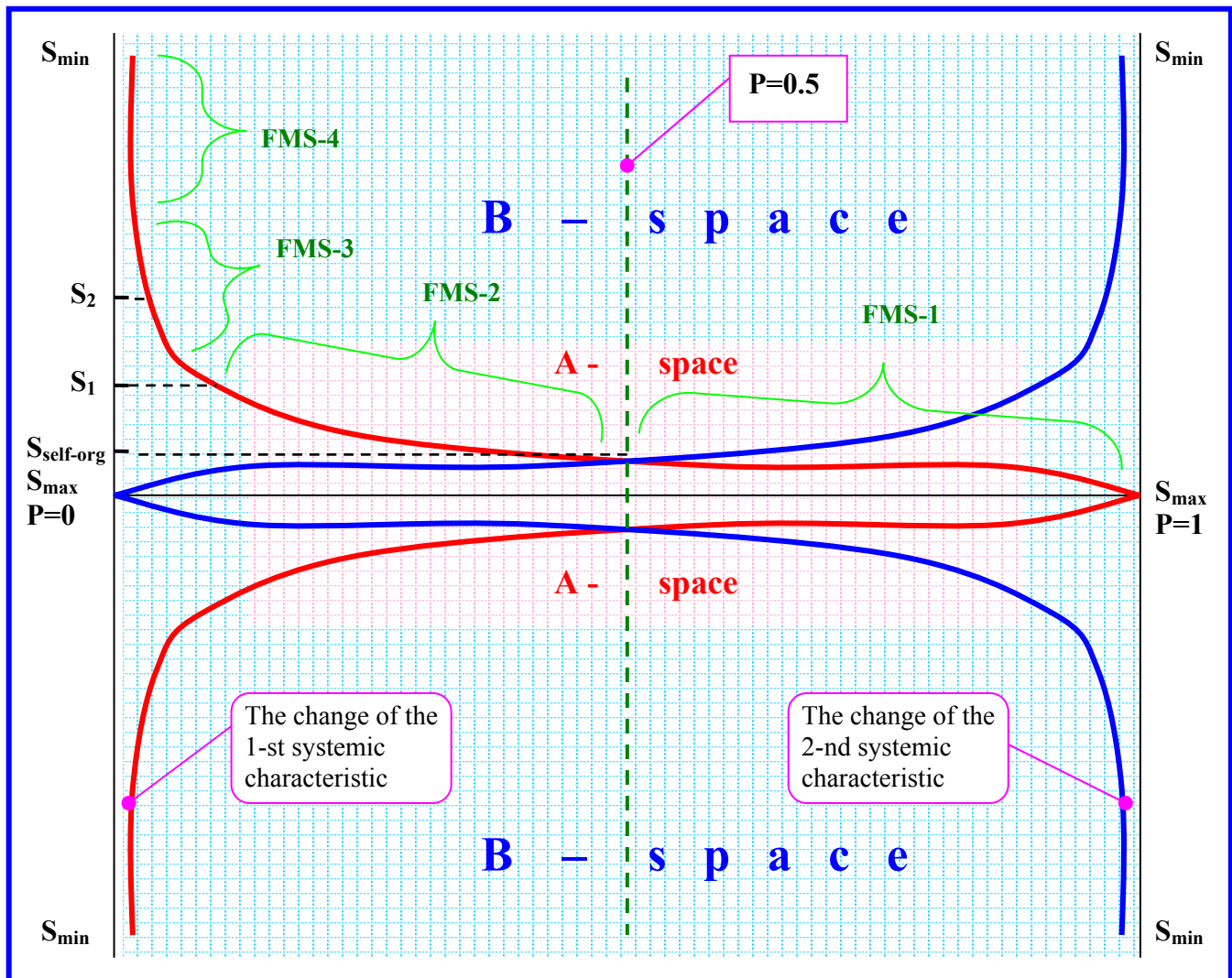
Figure 13. The dependences between the 1-st and the 2-nd systemic characteristics of the IIS{object} under the condition that its 3-st systemic characteristic changes optimally. ▲

So, we deal with a *Double Gaussian Distribution* where the apex of the first distribution lays on the line which serves as asymptote for the second distribution. Here, zone FMS-1 corresponds any material (physical) object in Reality; zone FMS-2 corresponds the bio-object's mental activity (when it is in the state of bio-mental norm); zone FMS-3 corresponds intuitive, extrasensory, etc. mental activity; and zone FMS-4 corresponds the reflex activity and unconscious mental control of functioning of the bio-object's organs (this zone is infinitely long but terminated).

    − stands for the area on the plot where the Law of IIS development works (the B-space, DIS-models);

    − stands for the area on the plot where the laws of modern Physics are valid (the A-space, DEC-models).

The lower the entropy **S** of the IIS{object}, the lower the probability **P** that the IIS{object} exists in such a state.

Seeing at this plot, one remarkable conclusion may be done: since any object of Reality (no matter if it is animate or inorganic) can be formalized as the IIS{object}, therefore it describes by its 1-st (mental, informational, conscious) systemic characteristic. This means that Nonstatanalysis makes no difference between animate and inorganic objects. When the entropic value of the 1-st systemic characteristic passes through the **P = 0.5** (green

dotted line) to the left from **P = 1**, the process of self-organization of the object begins: the object tries to keep its anti-entropy states, or, which is the same, it tries to keep its 1-st systemic characteristic with **S** less than $S_{self\text{-}org}$ and with **P** less than **P = 0.5**. There is one natural object that keeps the value of its entropy near $S_{self\text{-}org}$ and the value of its probabilistic characteristic near **P = 0.5** – it is the water. In other words, the water can be regarded as the simplest bio-object which plays the role of calibrator of the permissible value of the cell's entropy: $S_{cell} < S_{self\text{-}org}$.

It is possible now to introduce the next two cognitive paradoxes.

Fourth cognitive paradox (4-CP):
- In the A-space the following assertion is valid: any planning action may be realized; or, there are no objective reasons for any planning actions to be not realized.
- In the B-space the following assertion is true: for the planned action to be realized, the expediency of such an action must be formulated.

When one needs to solve a certain problem which requires to do a transition from FMS2 into FMS3, then it is impossible to formulate such a problem (which to be solved needs to do the [FMS2-FMS3] transition) in such a way that, after having done the [FMS2-FMS3] transition, the other problems could not be solved, which were not planned to be solved before. For example, one can solve the problem of paying $100 of his debt by getting the lucky lottery numbers. But, <u>having got</u> the lucky lottery numbers he would be able not only to pay $100 for his debt, but also to buy a new flat, a new car, and solve many other problems which he did not even plan to solve before. So, to do the [FMS2-FMS3] transition, or to do the veritas transition from the entropy state S_1 to S_2 (see Fig. 11), the equation of expediency must be solved upon the fourth cognitive paradox so that the state S_2 were a solution to that equation. In other words, for the dream to become a reality, the expediency of such a dream must be formulated.

Fifth cognitive paradox (5-CP):
- In the A-space the following assertion is valid: the more knowledge (information) we have – the better.
- In the B-space the following assertion is true: having done the [FMS2-FMS3] transition, one is only permitted to take the expedient information. Other variant: we may not plan to take information from FMS3 if we stay in FMS2 – we must reach FMS3 first; and only after achieving FMS3 we will see what information it is expedient to take. One example: we cannot plan to investigate a certain island's volcano if the problem of reaching of that island was not previously solved (or, cannot be solved in principle). In other words, the Fifth cognitive paradox puts restraining conditions on the process of cognition.

Using the B-space's theoretical space we provide explanation to various complex phenomena. But our explanations must be put in some form, say, into the form of applied theories of those phenomena. In Figure 14 we may see what order of complexity of the IIS-models is used when constructing Nonstatanalysis' applied theories in comparison with some existing scientific theories.
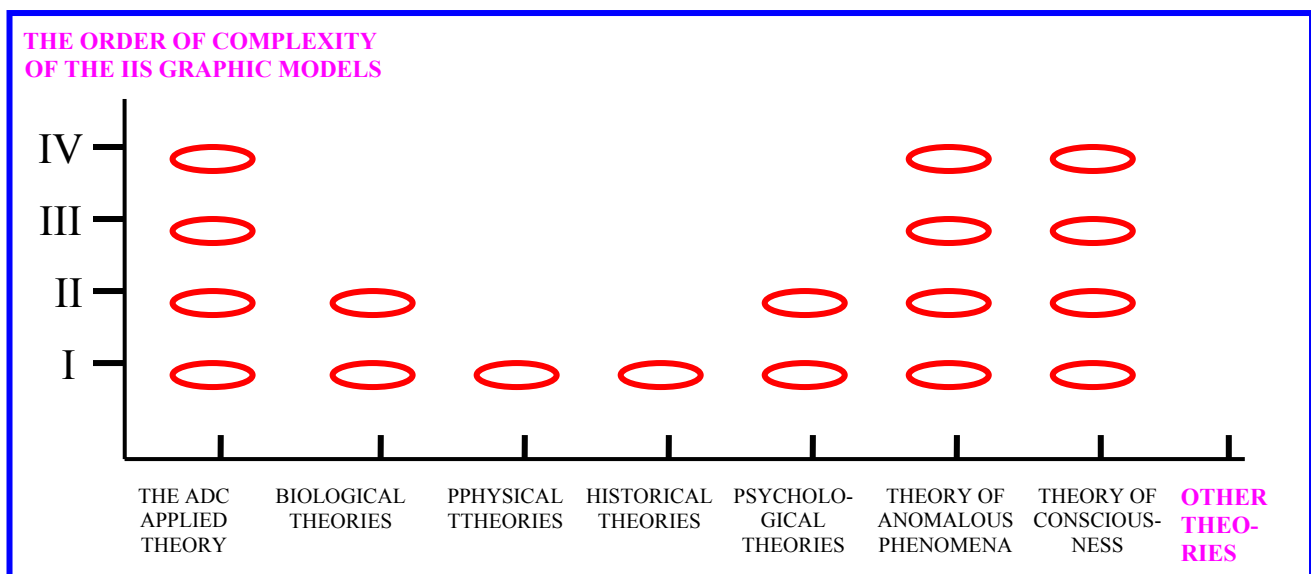

Figure 14. The disordered system of theories. ▲

Here we may introduce the next cognitive paradox.

MT-level   **NONSTATANALYSIS**

AIM of approach
CRITERIA of approach

First feed-back

The Applied ADC Theory is used to formalize Nonstatanalysis as the MT-level intellectual product. At the same time it itself is one of Nonstatanalysis' applied theories. So, the Applied ADC Theory and Nonstatanalysis are in the FT-relation with each other.

MT-canon;
Notional base; CSS principles;
First cognitive paradox;
First Basic idea, two types of the cognitive space;
Postulate of IIS;
IIS-modeling, the AS-, DIS-, and DEC-models;
Second cognitive paradox; Third cognitive paradox

B-space's theoretical base
Fourth cognitive paradox; Fifth cognitive paradox;
Law of IIS development; properties of IISs;
Intersystem interaction of IISs;
Second basic idea – bio-mental states;
Sixth cognitive paradox – interdisciplinary investigations; System of proofs; R-facts; the criterion of the phenomenon's reality.

Seventh cognitive paradox – compatibility

Third basic idea – methodology of the IIS-experiment

Second feed-back

Solving the problem of subjectivity of the aim of approach

Third feed-back

Solving the problem of subjectivity of the criteria of approach

THE DEEPENING UNDERSTANDING OF THE COMPLEX PHENOMENA OF REALITY

AT-level   **INTERDISCIPLINARY INVESTIGATIONS (new paradigm)**

THE APPLIED ADC THEORY | THE APPLIED THEORY OF SENSE AND RELATION | THE APPLIED THEORY OF CONSCIOUSNESS | THE APPLIED THEORY OF INTERACTIONS | THE APPLIED THEORY OF THE RARE AND ANOMALOUS PHENOMENA | THE APPLIED THEORY OF THE ORIGINS OF LIFE | THE APPLIED THEORY OF DECEASES | OTHER THEORIES

PRACTICAL APPLICATIONS

GS-level   **HYPOTHESIS**

D-level   **OBSERVATION & REGISTRATION**

D-, GS-, AT-, and MT-level INTELLECTUAL PRODUCTS

PSI-effects

UFO; ball-lightning; other phenomena

R-facts

R-facts

R-facts

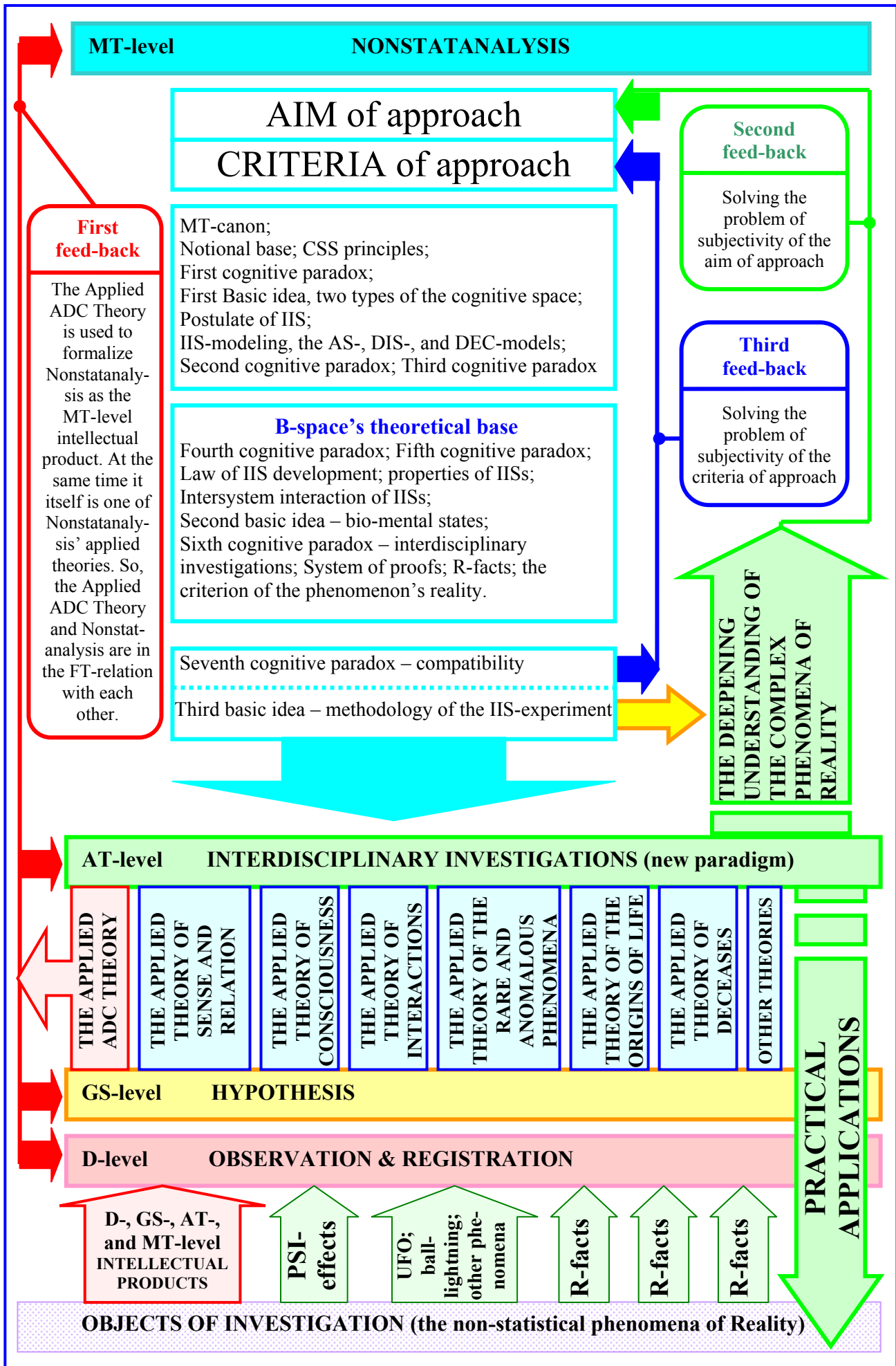**OBJECTS OF INVESTIGATION (the non-statistical phenomena of Reality)**

Figure 15. The level-by-level structure of Nonstatanalysis with three self-adjusting feedbacks. ▲

We have already mentioned in Part III about the possibility to elaborate, so called, interdisciplinary language. But now we will talk about the possibility to carry on the interdisciplinary investigations as such. And the following cognitive paradox gives us such a possibility.

Sixth cognitive paradox (6-CP):
- In the A-space the following assertion is valid: the theoretical base developed to explain the physical phenomena and processes cannot be used in other scientific fields.
- In the B-space the following assertion is true: in case the theoretical base of the process of cognition has been constructed using the Postulate of IIS, then such a theoretical base can be used in any possible field of study.

The presented above methodological rule of the process of cognition means that, for example, when constructing the Applied Theory of Deceases we face some intractable difficulties, we are free to apply solutions found during the construction of, say, the Applied Theory of Consciousness. Such an exchange of solutions is a correct methodological action because to construct those applied theories we use the same B-space's theoretical base. But the Sixth cognitive paradox also means that the application of the B-space's theoretical base may further the development of the existing disciplines as well (see Fig. 14).

And finally, let us look at the Fig. 15 (above) and introduce the last cognitive paradox.

Seventh cognitive paradox (7-CP):
- In the A-space the following assertion is valid: any thought (intellectual product) has its space-time localization. Scientists often argue in such a manner: "It is my idea", or "I am the first who have expressed this idea".
- In the B-space the following assertion is true: every intellectual product was preceded by the former history of development of the intellectual activity and this product will have an influence upon the further its development. According to the Applied ADC Theory, the veritas chain of the mutually compatible MT-level intellectual products may be formed (see the Second target article on the author's home-page, Appendix **A**), and, consequently, the problem of subjectivity of the criteria of approach may be solved (see Fig. 15 for the **Third feed-back**).

In that figure we may also see that the more phenomena are being formalized (explained, understood, approached) by using the B-space's theoretical base, to the more extent the problem of subjectivity of the aim of approach is being solved (see therein for the **Second feed-back**). Let us remember that the first MTA assertion requires to show that any possible phenomenon belongs to our Reality and can be explained (see Part II). The yellow line in the figure means that in the B-space there is no clear-cut distinction between the theory and practice; to wit, the specific theoretical knowledge (here, the IIS graphic modeling) may be used as a powerful means of a direct influence upon the real processes when trying to solve the problem of subjectivity of the aim of approach.

One may also see that the Theory of consciousness is (and, obviously, must be) the one from a set of Nonstatanalysis' applied theories, which [that set] is called the Interdisciplinary Investigations (in their new paradigm). The term <new paradigm> is used here to show that we regard Interdisciplinary Investigations as some new, all-sufficient scientific discipline, but not as a mechanical merger of the different existing sciences. We insist that the theories, which do not take into consideration the inverse link (the FT-relation) between the different levels of intellectual product (see therein for the **First feed-back**), cannot be effective when approaching the consciousness-related phenomena and the complex phenomena in general.

Last note: in Fig. 15, the D-, GS-, AT-, and MT-level intellectual products (shown as the red arrowed box) are the objects of investigation for the Applied ADC Theory (shown as the red arrowed box too).

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