

Elaboration of the New Paradigm of Interdisciplinary Investigations*

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Abstract

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

Key words and phrases:

complex phenomena, theory of consciousness, criteria of scientific approach, cognitive paradoxes, epistemological verification, interdisciplinary investigations.

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INTRODUCTION

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

As to the first, this thesis concerns substantive theoretical work on the methodology of interdisciplinary investigations using the information-systemic approach under the general title “The Fundamentals of Nonstatistical Analysis” (or, *Nonstatanalysis*). As to the second, restrained optimism still exists in the scientific circles regarding the possibility of 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 cognitive activity, a breakthrough in scientific methodology will influence all social processes and the course of post-modern civilization. At the present “post-historic” moment, theoretical works that search out ways of making it through the methodological crisis deserve tolerant consideration.

1. LOOKING FOR THE WAYS OUT OF THE CRISIS

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

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

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

2. THE REFERENCE POINTS FOR ELABORATION OF THE SPECIAL META-THEORY

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

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

The subjectively determined basic criteria for Nonstatanalysis are the following:

- 1) determination of the limits of the meta-theory's field of expediency, or meta-theory's canon;
- 2) formation of a base of notions (prime concepts);

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

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

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

The sub-aim (1) means that we have to show that there are no parallel realities, and all phenomena and processes belong to 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). In other words, 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 this Law> is the transitional result of the process of cognition; but a <further usage of this Law> is a condition of intensification of the process of cognition.

When elaborating Nonstatanalysis, the MTA assertions are regarded as

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

The first sub-aim leads to creation of non-agnostic meta-theory (to cognize **objectively** existing Reality – it is the **objectively** determined aim of the cognitive process). Such meta-theoretical aim of approach and the **subjectively** determined criteria of approach form the limits of Nonstatanalysis's field of expediency or – canon (the *MT-canon*). The meta-theory is being built by adhering to the following demand:

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

Paul Dirac generalized the previous resembling demand:

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

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

3. WAYS OF FORMATION OF THE BASE OF NOTIONS

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

In the notional base of Nonstatanalysis, everything, which pertains to a meta-theory, can be called an *element* of such a system. A *pertinent element*, somehow or other, influences the system. Any system has at least two elements. The interaction of such two elements or the interaction of the system and any of its elements is a *relation*

(or reference). The <result of the relation of one element to the other> is its *sense* of the other. The sense of the element in reference to the meta-theory is simultaneously a *denotatum* and a *notion*. Within the context of a meta-theory, any element appears as a *denotatum-notion complex*. The sense of the element (as denotatum) is its *property*, and the sense of the element (as notion) is its *meaning*. Both denotatum and notion comprise the *cognitive sense* of an element. During the process of cognition, any element of a meta-theory may be described with denotatum as its property and notion as its meaning. The cognitive sense of any element of a meta-theory **must be set**. Nonstatanalysis has a few hard rules of *cognitive sense setting*, which are named *CSS principles* (see [Table 1](#) for the list of CSS principles). Here the following assertion is true:

- CSS principles **stipulate** the cognitive sense of the elements 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 consequence of setting its cognitive sense, such an element (as denotatum) is being *denoted* and (as notion) is being *introduced*. The denotatum-notion complex is a denotatum denoted by a notion, which, in turn, is being introduced.

To stipulate the cognitive sense of the elements – it is an *epistemological function* of CSS principles in the process of cognition. These principles, in turn, also are reiterative (service) elements of the same meta-theory and have their own installed cognitive sense. Thus appears a *functional tautology*. The cognitive sense setting appears as the self-organizing cognitive process of its own meta-theory. Each element of the meta-theory may be said to fulfil a discrete epistemological function in a cognitive process according to its cognitive sense.

A denotatum-notion complex, which has acquired both properties and meaning in consequence of cognitive sense setting, is an *object of cognition*. An object of cognition has a cognitive sense only in reference to that other necessary element of a meta-theory, which is the *subject of cognition* (e.g. a Human, observer, investigator, etc.). When the subject of cognition makes a *cognitive action* – <setting of the cognitive sense of 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 not only observes a phenomenon but also carries out the process of cognition, it is important to use the notion *cognitive frame of reference* together with the physics notions of *frame of reference* and *observer*.

When the subject of cognition makes a cognitive action <setting the cognitive sense of oneself as a denotatum-notion complex>, the resulting kind of functional tautology is called *consciousness*. (Human as subject of the cognitive process cannot consciously experience the outer world without simultaneously consciously experiencing of oneself as an object of cognitive process, which [this object] is a part of the outer world). In this manner, <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 CSS principles include that of *decomposition* and that of *dissociation* (for more kinds of CSS principles see [Table 1](#)). 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 [Table 2](#)). If the denotatum is denoted by a notion through the principle of dissociation, then the denotatum acquires *dissociational properties*. Such a denotatum-notion complex is regarded as an element of a *dissociational model*. The cognitive sense of the same entity (later transformed into the denotatum-notion complex) as appearing in decompositional and in dissociational models will be quite different. Because of differing models, the <principles of cognitive sense setting> stipulate differing *results* (output) for the subject of cognition. Having introduced some new notion according to some CSS principle from an existing, received notion, such a new notion will be transformed into one having a mono-semantic meaning. In this way, it is possible to create specific language. For example, a physicist introduces some notion, which is not familiar to the biologist and *vice versa*. But if those two representatives of different scientific disciplines introduce their two notions using the same CSS principle, then the two corresponding denotatum-notion complexes, even garbed in different terms, will have some similar cognitive sense and can be familiar to both scientists. The unitary tendency of CSS principles leads to creation of a new interdisciplinary language.

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

All notions/concepts/primitives of Nonstatanalysis have unequivocal treatment; that is, they are aperspectival, such that they are invariant in the *expedient quantity* of <cognitive frames of reference>. This means that when the expedient quantity of the subjects of cognition will use the same CSS principles to create notions, the problem of intersubjectivity will not arise. The term <expedient quantity> denotes a specific qualitative-quantitative characteristic, which is being used in Nonstatanalysis to describe the number of entities, which are being singled

out (or, enframed) during the cognitive action. The expedient quantity of ideas – it is a certain quantity of ideas of a certain quality, which is enough to make a true decision (in research, in business, etc.). Another example. The 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 and are being created 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 (mentioned above). For a scientific theory to be accepted, it must be adopted by the expedient quantity of scientists only, not by the all people on the Earth. In mathematics there is a notion <infinitely large quantity>. In Nonstatanalysis there is an additional notion <the quantity enough big (or, very big) but obligatorily limited>. I still cannot find an appropriate short term for this notion. For now, I will use the term <big but limited>. Answering a question “How many people live on the Earth?” one may reply “Big but limited quantity”. Or, to “How many stars are in Universe?” one also may 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 say “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 say “Big but limited quantity”. But the number of the CSS principles is limited to eleven, so it becomes possible to try to decipher esoteric texts. Also, all human languages are translatable one into another exactly because of the applicability of the twelve CSS principles. (Here an interesting question emerges whether we could understand animal language having gotten the theoretical knowledge about the CSS principles?).

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

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

The denotatum-notion complex can be formalized as the *term*. Such terms as subject of cognition, intellectual product, device, influence, Reality, cognitively independent entity (which transforms into the object of cognition), mirror, reflected phenomenon of Reality, information, artificial mean of information processing, intellect, theoretical base, means of cognition, hybrid intellectual complex, machine intellect, etc. 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). (In this present case, the scheme – it is a decompositional model of a cognitive process).

Just we mentioned such terms as intellectual product and information. There are four levels of intellectual product in Nonstatanalysis. 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).

Introducing the meaning of notion I say: “it is”. The *device* – it is the denotatum-notion complex (e.g., graphic model, see Fig. 2-3) which is used for a designation of real things, such as tools, physical instruments, 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 in a process of cognition is called *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 *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 conceptualizing 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) – they are a *combined* model notion which includes: (a) the model object (do not confuse with the object of cognition), a device and (or without) the artificial means of information processing; (b) the *intellect* as natural mean of information processing (see Fig. 7), and (c) the *means of formalization* of intellectual product. These <means of formalization> include: 1) **visual signs**: visual signal; graphic model (as a set of dots, lines and planes); alphabetic letter, symbol, scheme and figure (as a kind of graphic model); term (as a set of letters); sentence (as a set of terms); text (as a set of sentences, symbols, and schemes or figures); 2) **audible signs**: sound signal, speech; 3) other signs.

Since, first, Nonstatanalysis itself is an intellectual product on the MT level, second, any intellectual product may be taken as an object of study for Nonstatanalysis (in particular – for its applied ADC theory; see later in this article), therefore Nonstatanalysis formalizes itself by means of its own means of formalization (later we will say about its property of self-organization). So we again have functional tautology. The *theoretical base* of the process of cognition (theoretical network) is a combined model notion, which includes denotatum-notion complexes; subjective experience; model notions, model processes, model constructions; words; assertions (e.g. hypotheses, axioms, theorems, postulates, correlations, principles, rules, laws); languages; the *methodology* of 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, model construction) which has its cognitive sense only as an element of subject-object interaction. The actual human (involved in cognitive process), the cognitively active group of persons, a society, any bio-object of Earth, and even not biological object can be substituted by this model construction and formalized as a graphic model of the subject of cognition in the scheme of the process of cognition. The graphic model of the subject of cognition (using the decompositional model) includes the graphic model of the theoretical base in general, and partially overlaps the graphic model of the means of cognition, spinning out from it the graphic model of the intellect (see [Fig. 3](#)).

The means of cognition (as model notion) obtain a certain cognitive sense only in reference to a certain theoretical base, which is, therefore, called *correspondent*. For example, the denotatum-notion complex is formalized by means of the term, and, the term can evoke the correspondent denotatum-notion complex. That is why the means of cognition and the correspondent theoretical base (or, *vice versa*, the theoretical base and the correspondent means of cognition) are linked together by an *inversion link* (in contrary to the *causal link*) (the example of inversion link is shown in [Fig. 7](#)). The means of cognition (as denotatum) and the theoretical base (as notion) form the denotatum-notion complex – *cognitive space* (see [Fig. 3](#)), which is a stable model construction, but which can also evolve. To illustrate the point, consider this question: “What is the difference between the stick lying on the ground and one held in hand?” “Taking the stick in hand” corresponds with a change of characteristic (about the characteristics see later in the article) of the theoretically modelled 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 inversion link between the means of cognition and the theoretical base, the “taking the stick in hand” corresponds also with certain **changes** of the theoretical base (because the characteristic of the cognitive space can be fixed). In actual cases such changes are being recorded and sustain for a long time. Therefore, the “stick in hand” changes the subjective experience of the human. Such a new experience, formalized as a changed theoretical base, could (because of the inversion link) bring about the changing of the cognitive sense of the means of cognition in reference to the subject of cognition, and, in actual cases, leads to creation of more perfect tools. Any model construction is also an element of a theoretical base, and, therefore, a part of a cognitive space. Thus we come upon the conceptual tautology (the problem of the conceptual/semantic tautology is solved using the CSS principle of *tautological cycle*).

Cognitive space (as notion) and the correspondent cognitively independent entity (which later transforms into the object of cognition) (as denotatum) form the denotatum-notion complex – *experimental space*, which is a particular model construction. If the process of cognition spreads in experimental space, the scheme of cognitive process coincides with the scheme of the experimental space (see [Fig. 3](#)). If on the scheme of the experimental space the subject of cognition differentiates (separates) himself from the object of cognition (the subject is here – the object is there, beyond the looking-glass), then the means of cognition and the correspondent theoretical base form the *A-type cognitive space* (the A-space). For example, the investigator (as the subject of cognition) is **here**, but the object of investigation (as the cognitively independent entity) is **there** (in the cryostat, on the plate under the microscope, in the sky, in the open-air cage, in the ocean, under the Earth’s crust, etc.). Such a type of cognitive space has been formed historically on the basis of human subjective experience. This methodological rule has applied in this case:

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

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

However, is it possible to investigate the laws of brain/mind functioning with this decompositional methodology? Investigating brain function (or mind operation) using a decompositional model is not sufficient. Nonstataanalysis offers another scheme of experimental space – the dissociational model of the process of cognition (see [Fig. 6](#)). Such a scheme foresees that under the process of cognition the subject of cognition and object of cognition form a *subject-object complex*. That is to say: the subject of cognition cognizes itself – one more example of the functional tautology. Such a scheme corresponds with a particular theoretical base (as notion) and a means of cognition (as denotatum) which together form the *B-type cognitive space* (the B-space). Another methodological rule of the process of cognition is formulated here:

- The cognitively independent entity (which later 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 denotatum-notion complex) is an element of the dissociational model. Such a new methodological rule surpasses the old one gazing paradoxically from the aperspectivity of 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 to make transition from the A-space to the B-space (see [Fig. 1](#)). Such paradoxes are called *algorithms of interspatial transitions*. They are being derived by analyzing cognitive process errors, which are natural to be made having used the subjective experience as 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 of *dissociation* from the notion of cognitive space.

5. THE BASIC IDEA OF NONSTATANALYSIS

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

$$A + \Sigma_{CP} \leftrightarrow B \quad (1)$$

where A symbolizes the A-space; B symbolizes the B-space; Σ_{CP} symbolizes the expedient quantity of cognitive paradoxes; symbol \leftrightarrow means that the interspatial transitions are possible (this relation also presented by scheme, see [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. Cognitive process errors were not analyzed. Unexplainable phenomena were attributed to the interference of supernatural or chaotic forces, and as a result, miscellaneous belief systems appeared. Therefore, the value Σ_{CP} was insignificant, and, as consequence,

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

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

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

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

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

6. ELABORATION OF THE SPECIAL METHODOLOGY OF COGNITION

Studying changes in schemes of experimental space (for the system model of experimental space see [Fig.9](#)), understanding that the A-space is evolving (see [Fig. 3](#)), the theoretician can arrive at the notion of the *integrated information system* (IIS). This notion is introduced according to the CSS principle of the *transformation of notions during the interspatial transition* from the existing *information system* notion. 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](#)) with these consequent postulate:

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

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

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

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

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

If the B-space theoretical base be formed on the basis of this Postulate, then the First cognitive paradox (and all other algorithms of interspatial transitions) will not appear paradoxical from the B-space point of view (see [Fig. 1](#)), and one can elaborate a *new system of proofs* (including the phenomenon's reality criterion). In the B-space a new system of proofs is elaborated, which differs from the (dominant) logical one, yet it is **no less strict** because it is based upon the Law of IIS's development (the Law of changing the state characteristic of IIS). Using such a new system of proofs, the possibility of formulation of epistemologically verified assertions (which have a cognitive sense in reference to Nonstatanalysis) concerning complex phenomena is being verified.

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

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

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

7. PECULIARITIES OF THE META-THEORY'S CONSTRUCTION

The theoretical work "Fundamentals of Nonstatistical Analysis" consists of five parts. In the first part the basic approaches under the construction of the meta-theory are considered. Here the Applied theory of appearance (emergence), development and compatibility of different intellectual products (the applied ADC theory) is elucidated. The second part is devoted to formation of the B-space theoretical base.

The third part is on the application of the B-space theoretical base for cognition of complex phenomena. The objects exist which are hard to be put under strict experimental/laboratory conditions, which are replicated with difficulty. Also, the influence produced upon objects under experimental investigation alters their inner states;

therefore, it is difficult to use statistical methods of data processing. Such objects I name *non-statistical phenomena*. To such a kind of phenomena, the rare and anomalous phenomena, some psycho-physiological and socio-political phenomena (such as historic events), and objects of physical research which are characterized by anomalous or poorly replicable properties may be attributed. At the present stage of development of the meta-theory there are series of anomalous phenomena, which really are cognizable using the B-space methodology. Perhaps **other forms** of living matter exist somewhere else in Universe, but even so, there is **only one possible** scheme of the creation of intellectual products. That is why the application of the B-space methodology is not restricted by the Earth's problems.

The non-statistical analysis of the psycho-physiological phenomena gave rise to the applied special theory of the bio-mental integrated information systems (Special theory of BMIIS) which is based on the *Second basic idea* of Nonstatanalysis, viz., the idea of discreteness of the bio-mental states (see [Fig. 8](#), [Fig. 6](#)). Already now, using the graphic level-by-level information-systemic models of different kinds and different orders of complexity (see [Table 3](#)), it is possible to formalize the general principles of brain function (see [Fig. 12](#)) and to formulate the epistemologically verified assertions concerning problems of memory, sleep, love, intuitive thinking, perception of music, and understanding of speech (see Tables 2e, f, g). Also, the applied sociological theory of *unpopular decisions* is being developed using the B-space methodology.

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

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

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

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

The fifth part of the work addresses the question of epistemological verification of a 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” and “Reality as it exists objectively and independently from the cognitive process”. 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, which can be used under the IIS-experiment, is being developed. The notion *IIS-experiment* is introduced according to the CSS principle of the *transformation of notions during the interspatial transition* (see [Table 1](#) for the list of CSS principles) from the existing notion *experiment*, and has the following meaning: the experiment concerned with the considerable change of the state characteristic of IIS.

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

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

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

Having got such a matrix, Nonstatanalysis acquires the property of self-improvement (mentioned above as the seventh criterion of approach), and the possibility of its *post-development* arises. During the post-development Nonstatanalysis stays simultaneously non-contradictory and expediently full meta-theory in any special case. 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**. That is why Nonstatanalysis does not require any **new** meta-theory above itself. In other words, at any moment, on each level of its post-development, Nonstatanalysis **always stays** Nonstatanalysis. And the supposition is made that the Gödel theorem cannot be applied to Nonstatanalysis in general, or, that such a theorem is true preferably for the theories that are formalized in the A-space. The possibility of post-development of Nonstatanalysis also allows it to solve the problem of functional tautology.

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

8. SOME PECULIARITIES OF THE APPLIED ADC THEORY

What is the cognitive sense of the denotatum-notion complexes formalized in the term *verification*? Verification – it is the cognitive action of ascertaining the cognitive sense of a formulated assertion in reference to a particular level of intellectual product. (The notion *ascertainment* is introduced according to the CSS principle of *opposing* from the notion *setting*). If the cognitive sense of the formulated assertion is set according to a certain canon, this means that such an assertion is verified. If we create our own 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 verifications, one for the A-space and one for the B-space:

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

As the meta-theory which is constructed with the epistemologically verified assertions, Nonstatanalysis foresees the possibility that the changes on the theoretically modelled scheme of the process of cognition can, in certain cases, **directly influence** real processes.

9. CRUX: DOES SUCH A WAY IS TRUE?

Nonstatanalysis as the MT-level intellectual product, being developed on the basis of existing, **reliable** but unexplainable experimental results (R-facts) in different spheres, including the bio-objects' cognitive activity, concerns the general problems of methodology of cognition. Interdisciplinary investigations (in their new paradigm) are understood as an expedient quantity of applied theories on a basis of Nonstatanalysis (i.e., which are using the B-space methodology, see [Fig. 13](#)). Both Nonstatanalysis and the new paradigm of Interdisciplinary Investigations require serious improvement, for example, in their closer definition of the criteria of approach under the creation of the MT-level intellectual product. The supposition is being made that such criteria could be determined **objectively**. Then, the objectively determined criteria of approach would be called *scientific*, and the intellectual product, which is created under the criteria of scientific approach, would be called *Science*. Do

Interdisciplinary Investigations (in their new paradigm) have valid grounds to be regarded as Science? I want to find an answer, and, therefore, I am extremely interested in exchange of ideas with scientists who share the basic principles of Nonstatalanalysis (even formulating those principles in a different manner, using different language, etc.), and whose intellectual products, with this regard, are compatible with Nonstatalanalysis.

The general practice exists, that a reviewer must decide whether the proposed way of solving such or other problem is good enough, adds something new to the present solutions of this problem, and, in result, is worth to be accepted (published, etc.). But could the MT-level intellectual product be reviewed? That is the question! The denotatum-notion complex, which is formalized as *review*, has its cognitive sense (as the AT-level intellectual product) only in reference to the **existing MT-canon** (as the MT-level intellectual product, which had led to creation of a meta-theory, such as “The modern scientific picture of the world”). For example, any new physics theory, to be accepted by critics, must, at least, correspond the dominated MT-level intellectual product “The modern scientific/physical 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, created using such a canon. Under the process of cognition the review plays a role similar to that of CSS principles (in the expedient quantity of the CFRs, it stipulates the cognitive sense of the intellectual product 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 the 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. “We cannot understand the new site of thinking if confined to the old site of thinking” – that is the R-factor. The ascertainment of the cognitive sense of my new MT-canon in reference to another author's new MT-canon is called here the *investigation for compatibility* (was mentioned above as the eighth criterion of approach), and is carried out using the B-space methodology. Nonstatalanalysis shows that in the purpose of improving 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 (the chain is a model construction). In this case, scientific interests must suppress mercantile ones. Therefore, the article which regards the possibility of creation of the 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 another author's the MT-level intellectual product, but not reviewed.

10. NONSTATANALYSIS AND PHILOSOPHY: INESCAPABLE COLLISION OF INTERESTS

What is Philosophy? Or, when to address the question purely in Nonstatalanalysis' manner (i.e., solving the problem of hypostatization): “What does the term *philosophy* imply?” The answer may be as follows below. 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 the subjective experience only when trying to explain the complex phenomena? (Attempts to cognize complex phenomena only on the basis of the human subjective experience, from Nonstatalanalysis's point of view, look as *cognitive infantilism*.) And, the second, do the particular criteria of philosophic approach (or particular philosophic canon) exist at all, and can such criteria be determined objectively? That is where the shoe pinches!

On the other hand, Nonstatalanalysis's applied ADC theory uses the non-statistical methodology of the B-space and takes any intellectual product as a non-statistical object (including philosophic and religious systems, esoteric texts, etc.). Up to now, Philosophy was regarded as a specific domain of application of intellectual efforts, the domain which stands above the scientific and other, so called, mundane domains. But the 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 may be formalized (explained) using the rigorous scientific approach. By definition, there are no intellectual products beyond the reach of the applied ADC theory. Or, maybe, we should regard a particular *philosophic product* besides the intellectual one? But then we would have to adopt that the philosophic product is not intellectual... A strange conclusion, isn't it?

So, the invitation for a discussion is issued.

THE LIST OF THE TABLES, FIGURES AND SCHEMES, MENTIONED IN THE ARTICLE

- [Table 1](#). The Principles of the cognitive sense setting.
[Figure 1](#). Schemes of the interspatial transitions.
[Figure 2](#). The standard scheme of the process of cognition
[Figure 3](#). Developing schemes of the process of cognition
[Figure 4](#). The transition from info-statics to info-dynamics.
[Figure 5](#). The graphic model of the integrated information system
[Figure 6](#). The ensemble of the states (conditions) of an integrated information system.
[Figure 7](#). The axiom-theorem inversion when proving the MTA assertions.
[Figure 7a](#) Types of cognitive loops
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[Figure 9](#). The representation of the Experimental space using system models.
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[Table 2](#). The properties of elements of the DIS- and DEC-models
[Table 2a](#) The information-systemic modeling of a hatch of ducklings.
[Table 2b](#). The information-systemic modeling of the religious systems.
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[Scheme 1](#). The selenocentric model of the solar system.
[Table 2d](#). The information-systemic modeling of the atom.
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[Table 2f](#). The information-systemic modeling of musical harmony.
[Table 2g](#). The information-systemic modeling of communication.
[Table 3](#). The degrees of complexity of the integrated information systems.
[Figure 11](#). Dependences between the 1st and the 2nd systemic characteristics of the IIS {object} under the condition that its 3rd systemic characteristic changes optimally.
[Figure 12](#). The disordered system of theories.
[Figure 13](#). The level-by-level structure of Nonstatanalysis with three adjusting feedbacks.

ILLUSTRATIONS AND COMMENTARIES

Table 1. The Principles of the cognitive sense setting.

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

New content

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

Enframing

The notion which includes more than one word is specially represented (enframed). For example: the notion of quantity <big but obligatory terminated> -- it is one notion..

Conceptual displacement

The old notion is being displaced on the unusual object. For example: the notion <cell's brain> is a displacement from the old notion <human's brain>. Another examples: <consciousness of the tree>, <stone's memory>, etc.

Definition of an element of model

For example: <the scheme of the process of cognition> -- it is an old notion which denotes a certain graphic model, but the notions <information>, <subject of cognition>, <intellectual product>, <device>, <influence>, <mirror>, <object of cognition>, <the reflected phenomenon of Reality> are new ones which have no cognitive sense beyond 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) commonly used old notions denote the objects which are in non-agnostic interaction, then the result of such an interaction exists which is being denoted using the new notion. For example: the non-agnostic interaction of the <man>, <woman>, <child>, etc. creates the new object <family>.

Dissociation

The commonly used old notion is kept, but the dissociated elements are not in antagonism one with another. For example: the old notion <epistemology> is kept and three dissociated new notions appeared, viz. <A-type of cognitive space>, <B-type of cognitive space>, <algorithms of interspatial transition>. Another example: the notion <NaCl> dissociates into <ion Na^+ >, <ion Cl^- > -- the dissociated notions can return back to the initial notion (as well as the dissociated physical objects can return back to the initial object).

Decomposition

The commonly used old 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 two parts, denoted using the new notions <first half-apple> and <second half-apple>. Having been put together the two half-apples 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 disappeared 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 being denoted. For example: the cognitive process of postulation of the 1st systemic characteristic of the IIS{human} into the A-space in consequence of the [DIS-DEC] transition> is denoted by the notion <consciousness>. Here the cognitive process is primary, the notion is secondary.

Transformation of concepts at interspatial transitions

Say, the notion <depth of knowledge (cognition) of Reality> transforms into the notion <degree of knowledge (cognition) of Reality> in consequence of the [AS-DIS] transition. [▲](#) [▲-3](#) [▲-7](#) [list](#)

Now let us see at the following figure:

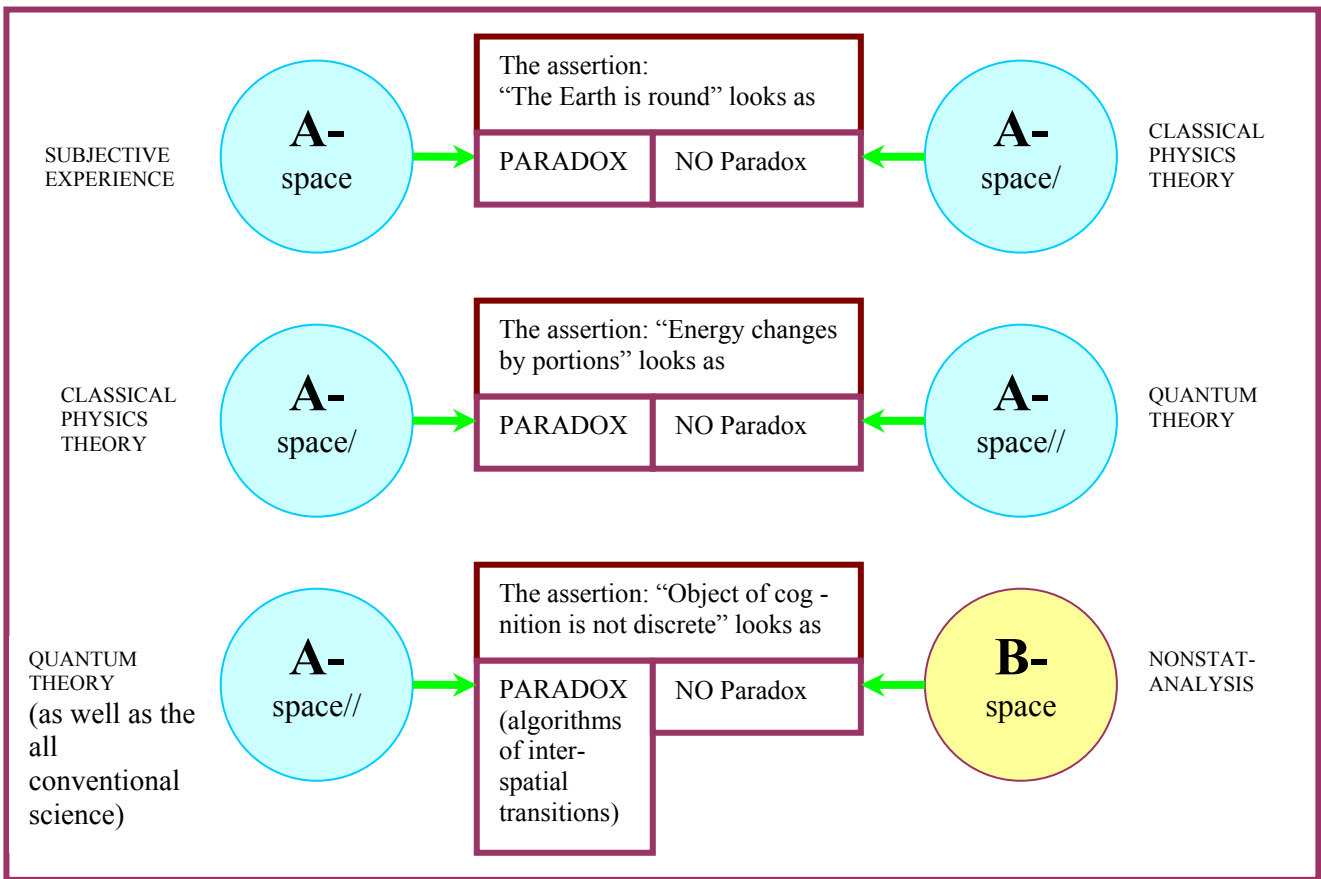


Figure 1. Schemes of the interspatial transitions.

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. This is the *phenomenon's reality criterion*. In other words, any phenomenon is real (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 planets situated in distant galaxies, his report may turn to be true, because despite 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. ▲ ▲-6 [list](#)

But, to construct the B-type of cognitive space we will have to regard all seven cognitive paradoxes. The algorithms of interspatial transitions are as follows:

First cognitive paradox (1CP)

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 (2CP)

In the A-space the following assertion is valid: the subject's knowledge of Reality is terminated. Other variant: every object has its place, or "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 into any possible IIS from the chain of integrated information systems. Other variants: there is no such information which the subject of cognition could not receive; the subject of cognition can become everybody; etc.

Third cognitive paradox (3CP)

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 CFR¹ and the second (third, and so on) subject of cognition creates his intellectual product in his own CFR², then there always is such a universal CFR* which is compatible with both the CFR¹ and the CFR². 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 11, 12 and Table 3.

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

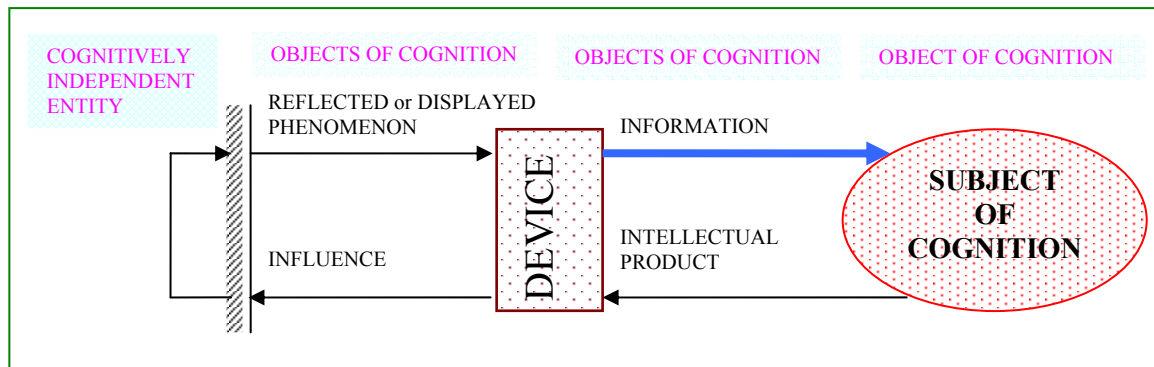


Figure 2. The standard scheme of the process of cognition

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 model (or modeled cycle)”. For example, the following definitions are being given here:

- “information” – it is the element of cognitive cycle that follows “device”;
- “subject of cognition” – it is the element of cognitive cycle that follows “information”;
- “intellectual product” – it is the element of cognitive cycle that follows “subject of cognition”;
- “device” – it is the element of cognitive cycle that follows “intellectual product”;
- “influence” – it is the element of cognitive cycle that follows “device”;
- “mirror” – it is the element of cognitive cycle that follows “influence”;
- “cognitively independent entity” – it is the element of cognitive cycle that follows “mirror”;
- “phenomenon of Reality” – it is the element of cognitive cycle that follows “mirror”, 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 taken 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 initial notions because just the cycle but not its elements will later be taken as the unit of investigation.

In Nonstatanalysis the following assertion is true: “The cognitively independent entity has no immanent properties”. This entity only after being enframed by the subject of cognition and then formalized as element of the DEC- or DIS-model transforms into the object of cognition. So, the notion “object of cognition” has its sense only in a certain cognitive space. During the process of cognition the reflected phenomenon, influence, device, information, intellectual product may be regarded as the object of cognition. The ancient people when describing Reality 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 about how does the consciousness function. But now, in need to construct the 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. ▲ [list](#)

As was stated in Section 6 of the main text above, the scheme of the process of cognition can evolve:

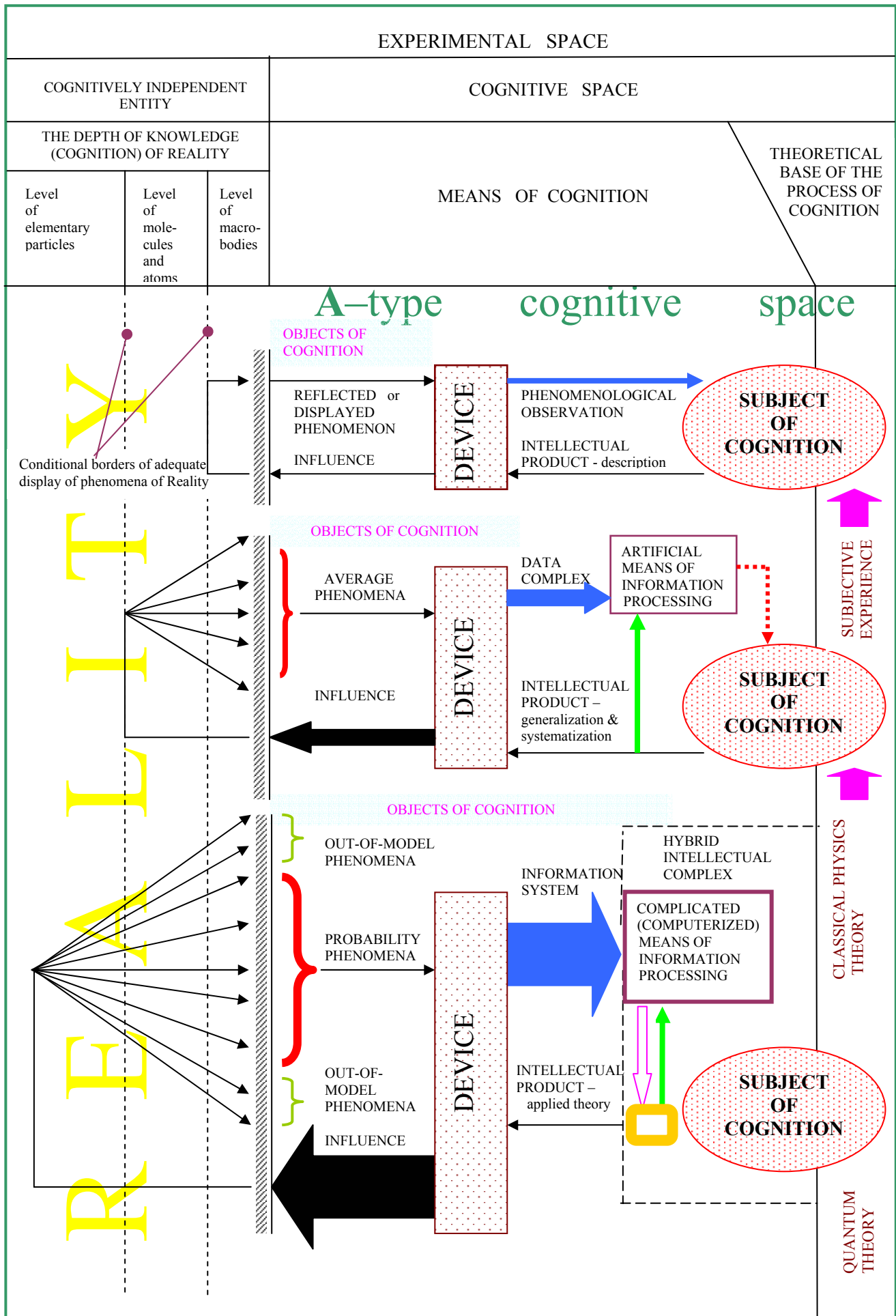
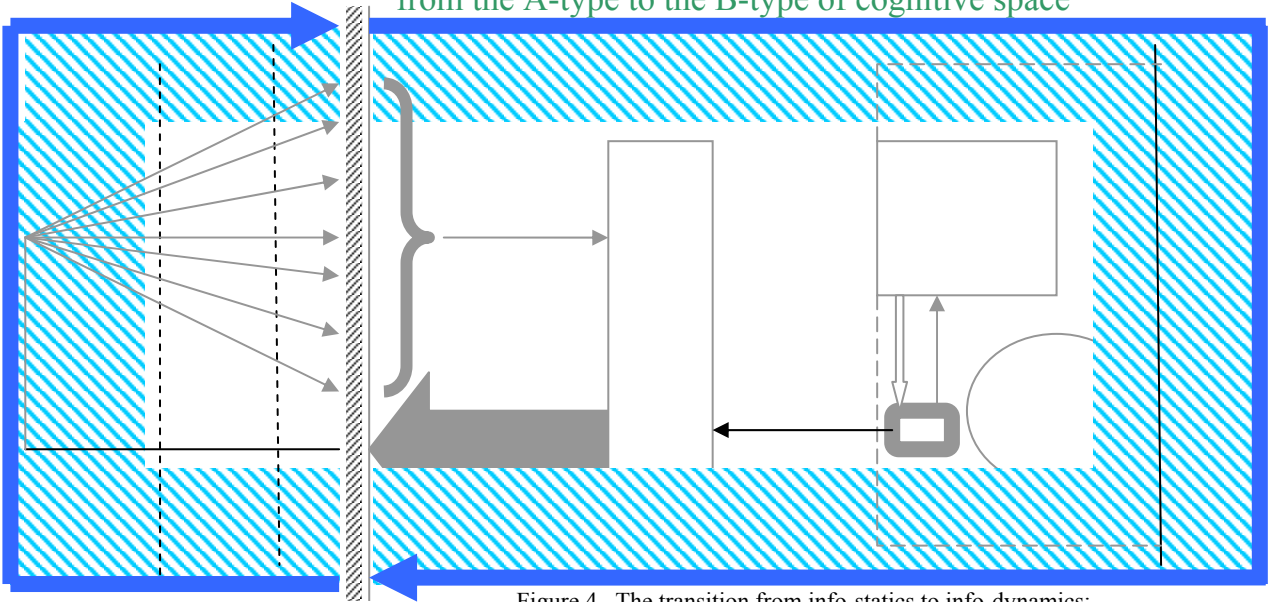


Figure 3. Developing schemes of the process of cognition ▲ ▲-6 list

Information system starts to embrace all Experimental space – transition from the A-type to the B-type of cognitive space



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

Figure 4. The transition from info-statics to info-dynamics; the moment of formulation of the Postulate of IIS.

B-type cognitive space



Figure 5. The graphic model of the integrated information system

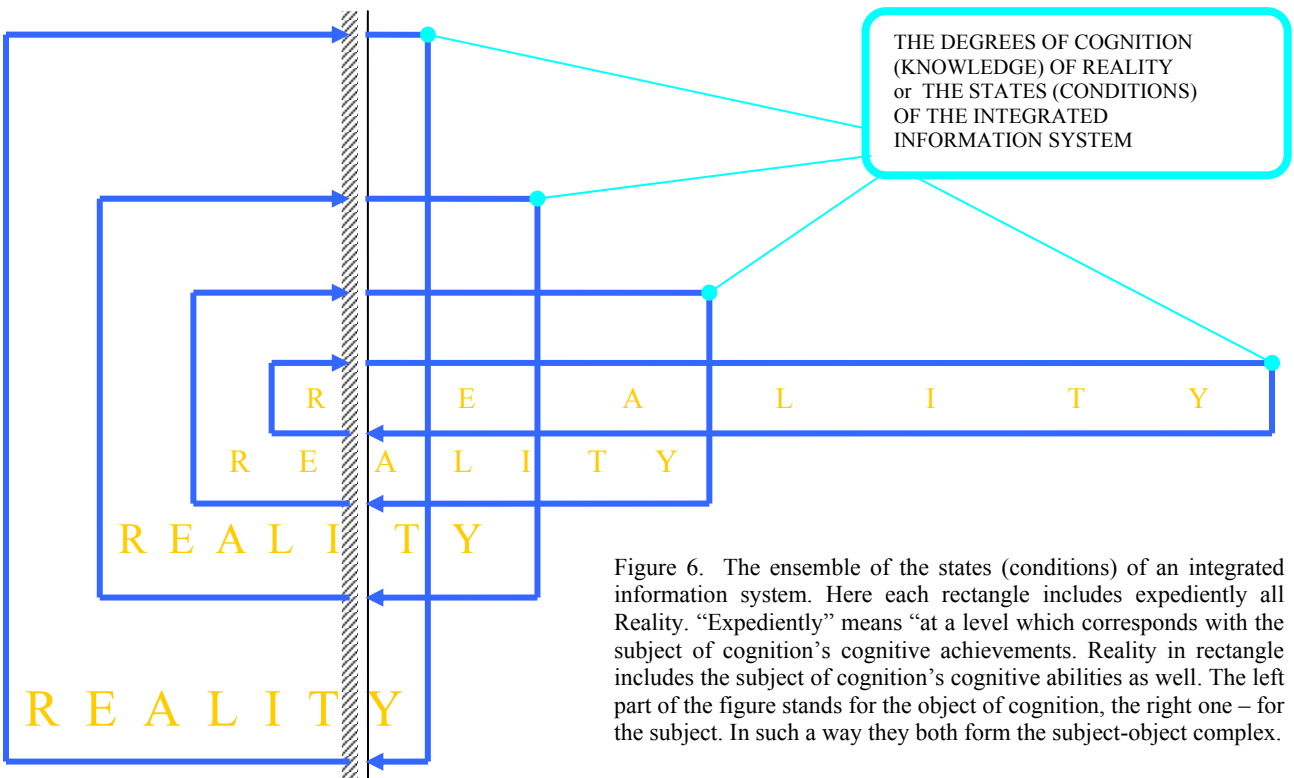

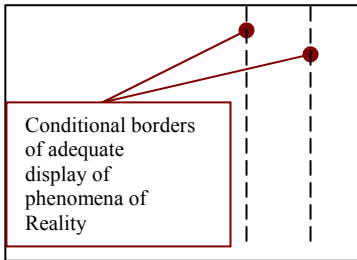


Figure 6. The ensemble of the states (conditions) of an integrated information system. Here each rectangle includes expediently all Reality. “Expediently” means “at a level which corresponds with the subject of cognition’s cognitive achievements. Reality in rectangle includes the subject of cognition’s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

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

Therefore, in the A-space the subject of cognition investigates not the Reality as it is, 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 state characteristic of the IIS{Reality}, which [state characteristic], in its turn, depends on the state characteristic of IIS{subject of cognition}, because any possible subject of cognition is a part 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 got “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 I can explain all phenomena up until the first (starting from the mirror) dotted line. But using my subjective experience I 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 groups of people. 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.



In the A-space the mental abilities of the investigator stay unchanged. He only invents complicated tools 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:

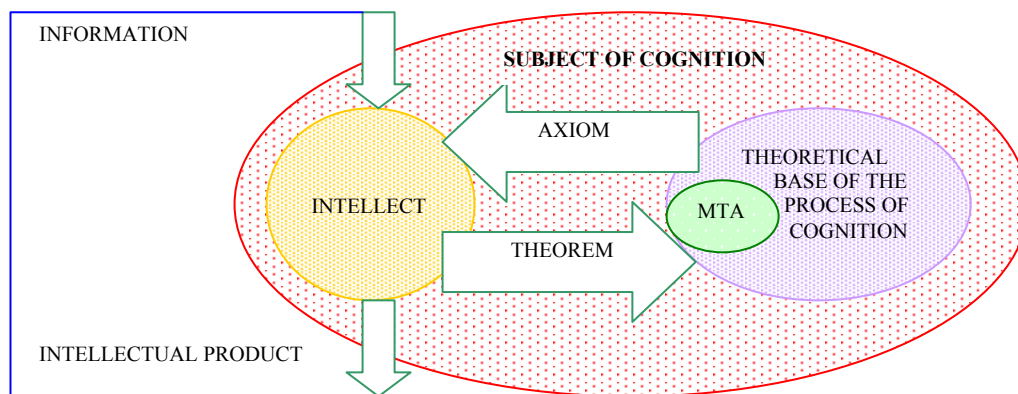


Figure 7. The axiom-theorem inversion when proving the MTA assertions.

Intellect – it is the element of a cognitive cycle 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  stands for the Meta-theoretical aim of approach.

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: my previous experience helps me to recognize things (or, vice versa, some thing evokes some

remembrance). Therefore, the cognitive loop – it is one pair/set of cognitive acts: <P-C>, <C-P-C>, <C-P>, <P-C-P> – such are types of cognitive loop. The cognitive loops may be represented using the graphic models:

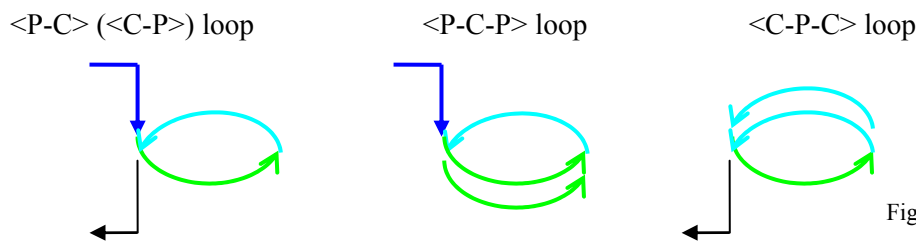


Figure 7a. Types of cognitive loops

From the theoretical base's point of view the processed information (which schematically flows from intellect) is being regarded as such, that may help to prove the MTA assertions (the aim of the process of cognition is to prove the MTA assertions). In other words, we must to prove its usefulness when proving the MTA assertions. Such a portion of information we will call *theorem*. In case the usefulness of such a portion of information is proved, it becomes an element of the theoretical base, or - it is being conceptualized. Later, during the processing of new portion of information, we will base upon that previously conceptualized information which already be called *axiom*. So, one and the same portion of information changes its functional role when proving the MTA assertion from theorem to axiom. In other words, the theorem-axiom inversion takes place. ▲ ▲ ▲ [list](#)

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 state characteristic of IIS{subject of cognition}) can be changed dramatically (see [Fig. 6](#)). Now let us look at the following figure:

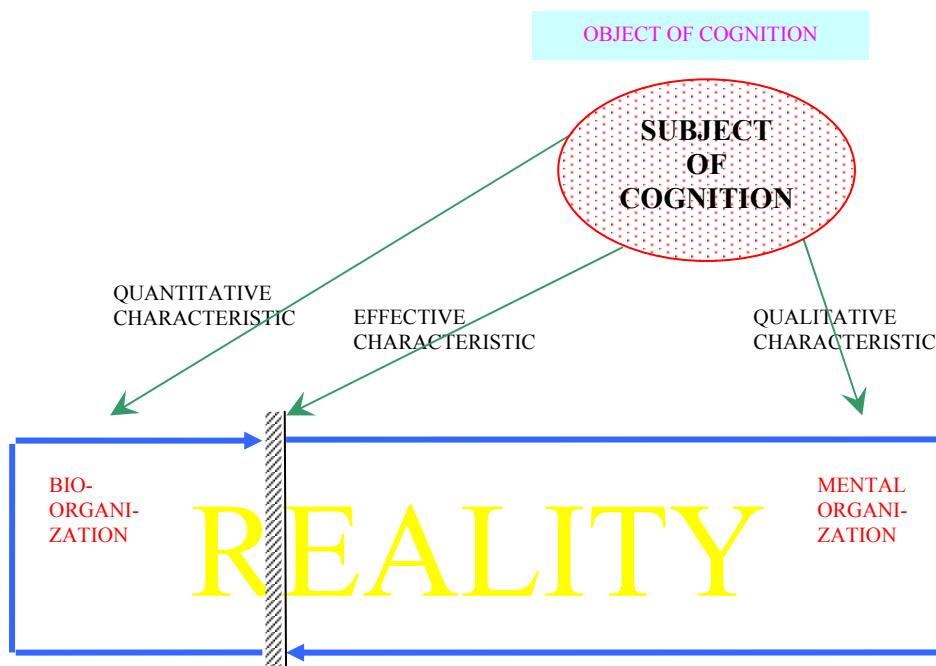
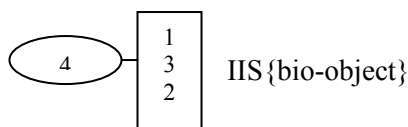


Figure 8. Representation of the subject of cognition as the graphic model of the integrated information system

The IIS{bio-object} may also be shown 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 the special relation:

$$1 \text{ (m/o)} + 2 \text{ (b/o)} + 3 \text{ (eff)} \Rightarrow 4 \text{ (veritas)} \quad (4)$$

called the *equation of expediency*. ▲ [list](#) 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 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 days of life he could be described by a consecutive chain of the equations of expediency. Such a chain is called *veritas chain*:

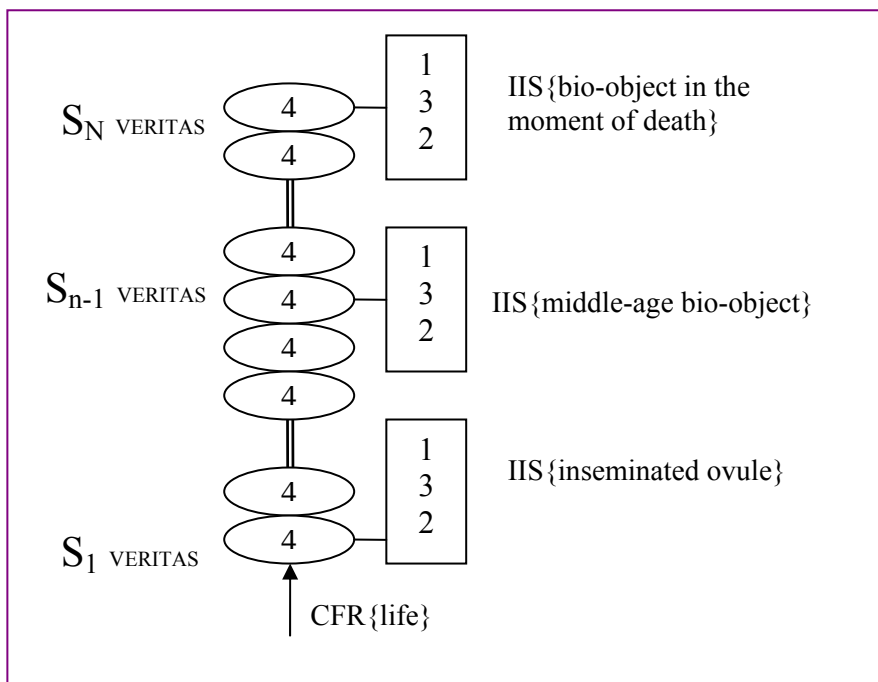


Figure 8a. Veritas chain of the bio-object's life-time.

Speaking strictly, veritas – it is the solution to the equation of expediency. Every veritas has its meaning of the 4th (state) entropy characteristic. Here, S_1 is minimal, S_N is maximal. ▲

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

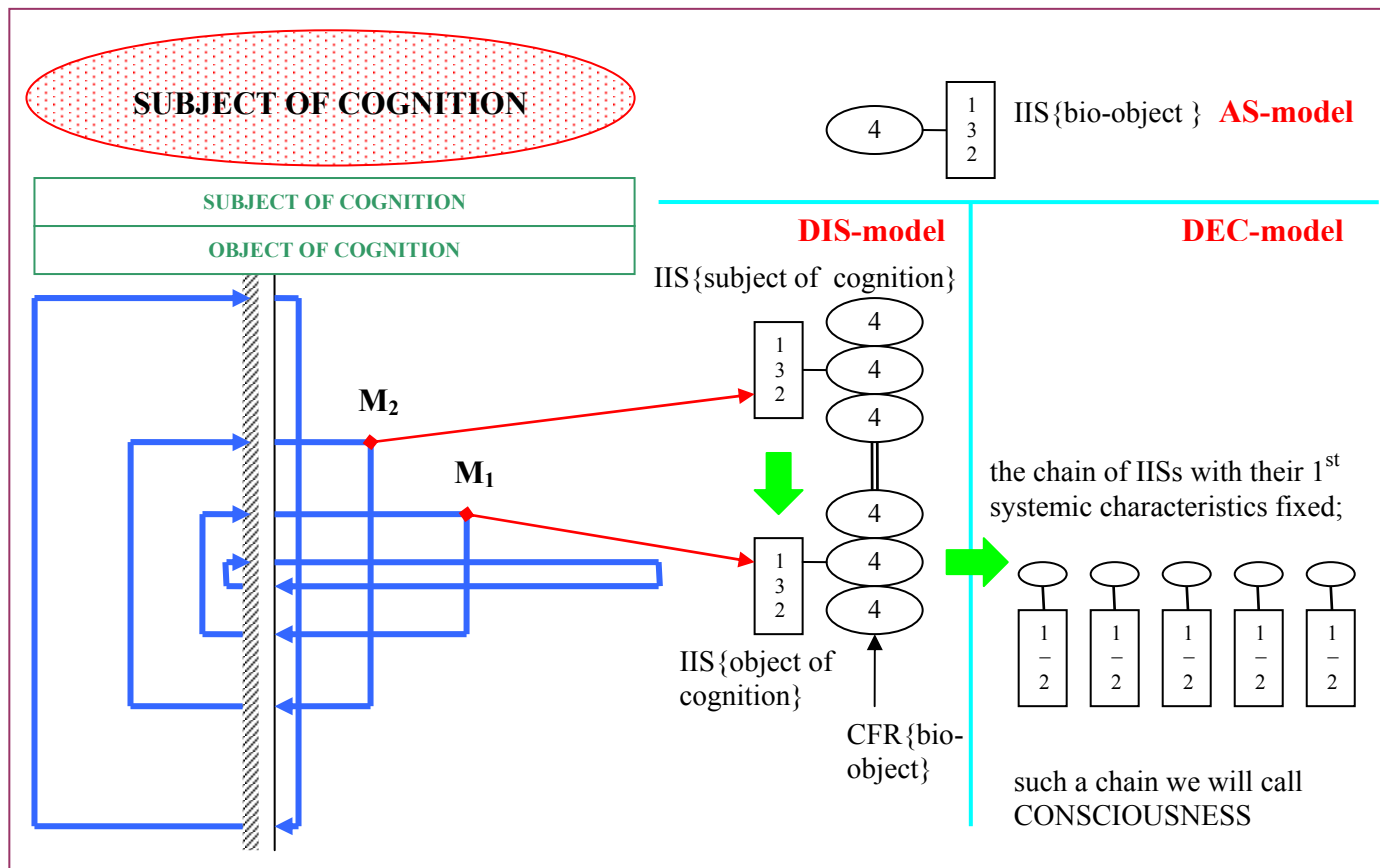


Fig.8b The subject-object complex.

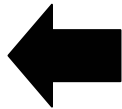
In Fig. 8b, the subject of cognition, being in the mental state M_2 , investigates himself as the object of cognition, which is in the mental state M_1 . In this figure, the link between the B-space's scheme of the process of cognition and the system of AS-DIS-DEC-models is shown. [▲ list](#) Having 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 Tables 2a-g)



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 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 follows:



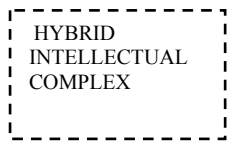
The change of the size of the arrow shows the gradual enhancement of the energy of influence upon Reality when going (in this case) from the mere phenomenological observation to the high-energy physics – **quantitative** characteristic of the influence.



The size of the bracket 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 using 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.



It stands for the subject of cognition during the modern physical experiment. And something very interesting happens here.



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.

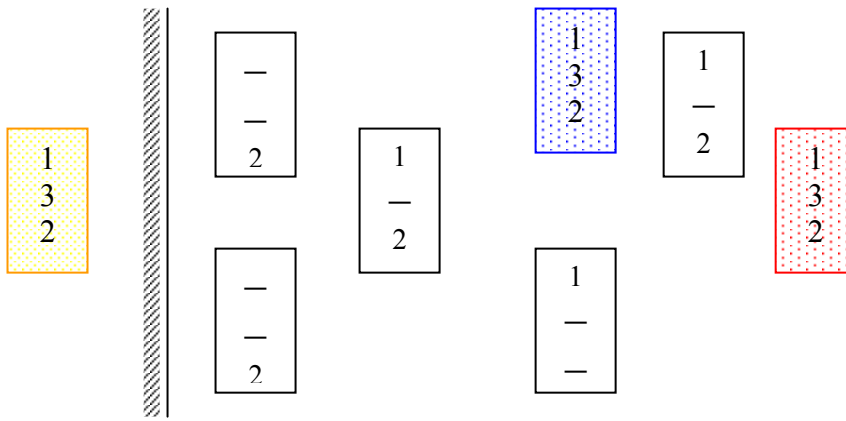


This arrow indicates the presence of features of “machine intellect”; the “machine intellect” is being regarded as a process of changing of the entropy of a quasi-closed system (here – the Hybrid Intellectual Complex) in consequence of information processing and conceptualization. As was stated above, 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 “machine intellect”. 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 system 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 object of cognition (shown as yellow rectangle), information (blue), and the subject of cognition (red). ▲ But in real, information only can evolve into a new form (this process is called the transition from info-statics to info-dynamics, see Fig. 4):

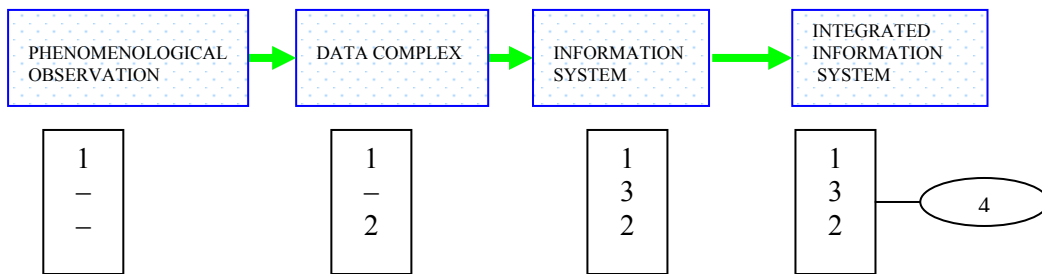
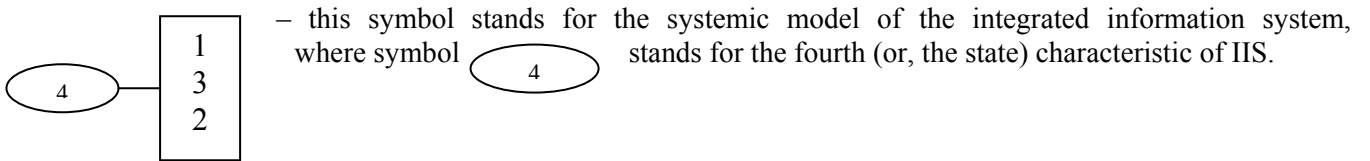


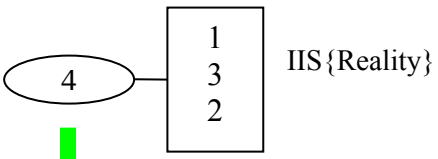
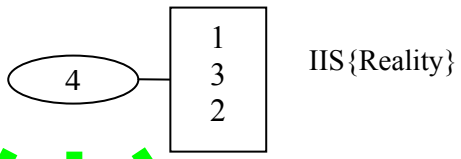
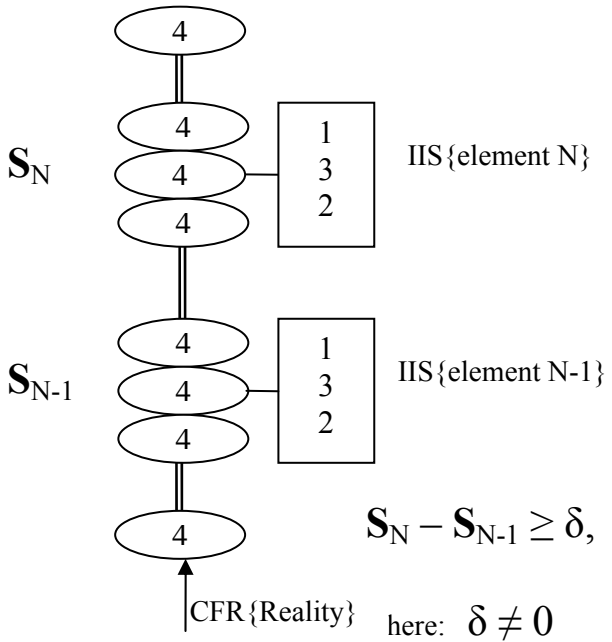
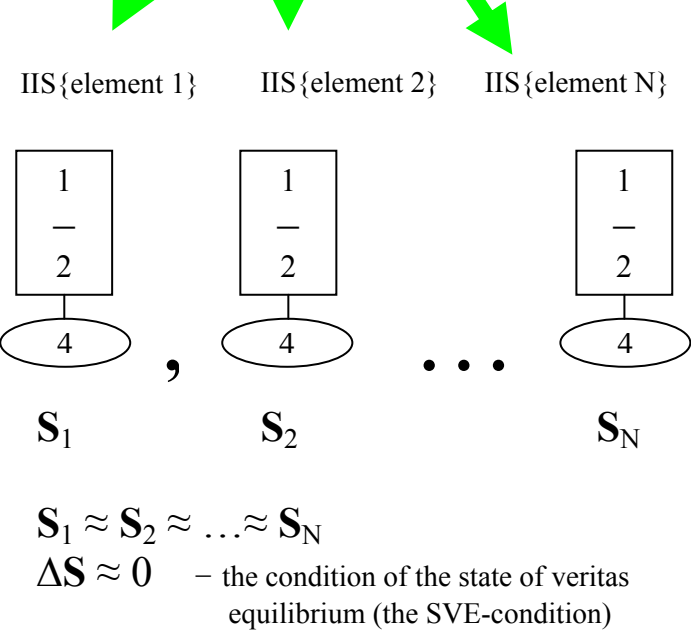
Figure 10. The scheme of development of the forms of information.



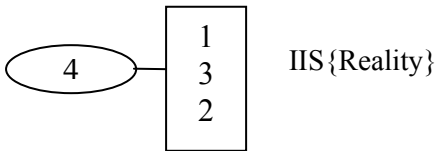
Here:

- cipher 1 stands for the 1 SC (the first 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 SC (the second systemic characteristic) – it says about the quantity of information (amount of the carried out experiments, etc.);
- cipher 3 stands for the 3 SC (the third systemic characteristic) – it says about the effectiveness of information (it characterizes the experimental space, cleanliness of the carried out experiments, sequence of measurements, etc.). ▲ ▲-6 list

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

AS - m o d e l	
	
<p>DIS - m o d e l</p>  <p>$S_N - S_{N-1} \geq \delta,$ here: $\delta \neq 0$</p>	<p>DEC - m o d e l</p>  <p>$S_1 \approx S_2 \approx \dots \approx S_N$ $\Delta S \approx 0$ – the condition of the state of veritas equilibrium (the SVE-condition)</p>
<ol style="list-style-type: none"> 1. The state characteristic of IIS {element} changes according to the Law of IIS development. 2. The element is only being described by the state characteristic in the selected CFR. 3. There is no antagonism between elements. 4. Inverse link between the elements. 5. Presence of the superposition of the elements. 6. Convertibility of processes. 7. Absence of the entropy additivity: $S \neq \sum S_N$ 8. The initial element (formalized in AS-model) does not disappear. 9. The Law of IIS development is valid. 10. Presence of interference properties. 11. The property of mutual transmutation. 	<ol style="list-style-type: none"> 1. The state characteristic of IIS {element} is conventionally unchanging. 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 the antagonism between elements – there cannot be two elements in the same place at the same moment of time. 4. Causal link between the elements. 5. Absence of the superposition of the elements. 6. Irreversibility of processes. 7. Entropy additivity: $S = \sum S_N$ 8. The initial element (formalized in AS-model) disappears. 9. The classical physics' laws are valid. 10. Absence of the interference properties. 11. Absence of the property of mutual transmutation.

We cannot have all information about the entity which we call Reality. So, according to the Postulate of IIS, the entity “Reality” may 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 (such assertion corresponds the first MTA assertion). But in the AS-models, the process of cognition is impossible, since there cannot exist such a distant independent subject of cognition (say, from some alternative Reality) which can link his cognitive frame of reference with our Reality as a whole, because any possible subject (according to the first MTA assertion) must be a part of our Reality. So, the presented state of affairs contradicts the second MTA assertion which postulates the possibility to cognize Reality. Therefore, to remove this contradiction, we objectively have to introduce the two more kinds of model (see Table 2 above).

In the DEC-model the 4th (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 a state of veritas equilibrium (the SVE condition). But if during the interaction between the elements of the DEC-model the SVE condition infringes, this would mean that analyzing such an interaction we must go from the DEC-model to the DIS-model (or, to make a [DEC-DIS] transition). There are 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. ▲ [list](#)

Now, let's regard the following fact. Everybody has many times seen the hatch of ducklings that follow their duck-mother. We may replace the duck-mother with the moving ball and the ducklings will keep following it. Look at IIS modeling of this fact:

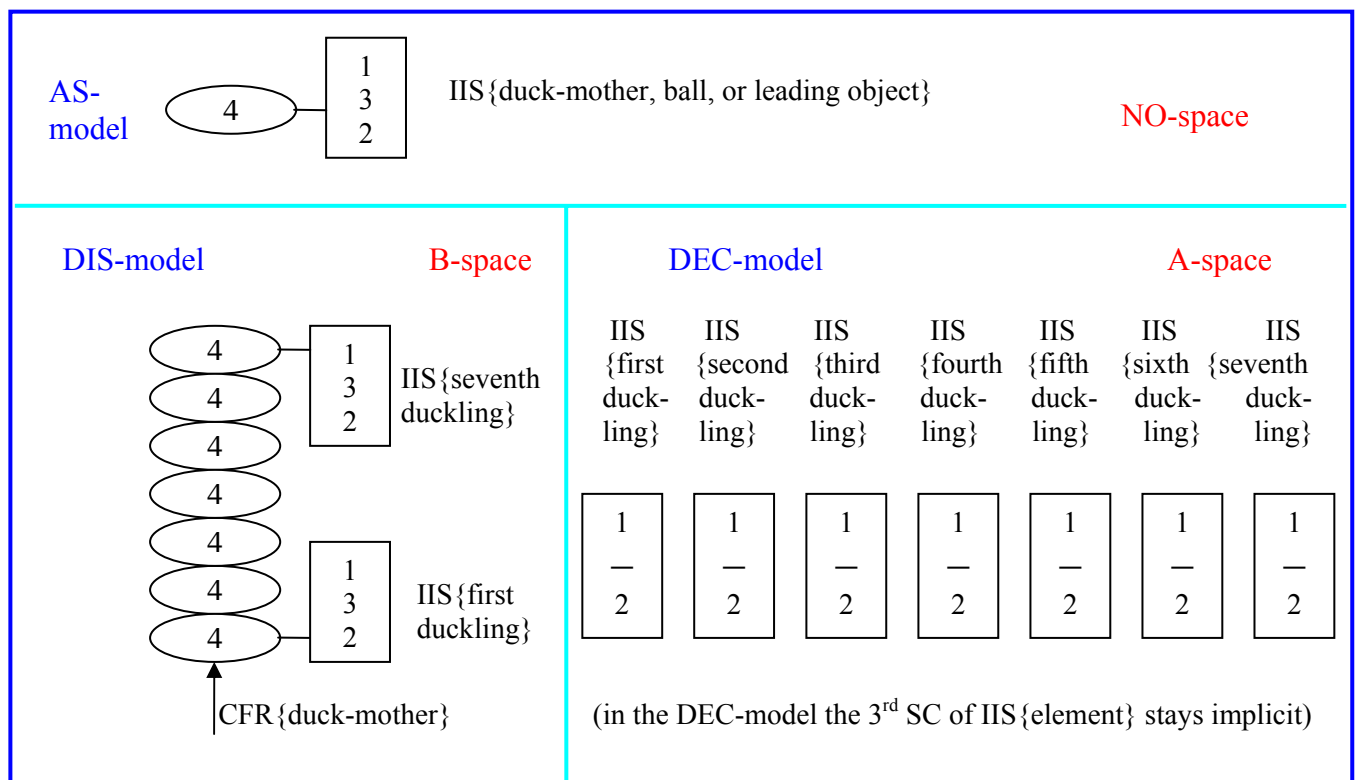


Table 2a The information-systemic modeling of a hatch of ducklings.

That fact looks strange (paradoxically) from the A-space. But there is nothing strange having approached this R-fact (reliable, well-documented fact) in the B-type of cognitive space: in the AS-model the systemic (qualitative, quantitative and effective) characteristics of the IIS {leading object} stay implicit. That is why the ducklings do not discern between the duck-mother and the ball. The DIS-modeled chain of IISs reacts upon the AS-modeled initial IIS which does not disappear in DIS-model. In other words, the DIS-modeled chain of elements simply cannot exist without AS-modeled initial element. But when ducklings grow up the [DIS-DEC] transition takes place and they forget their duck-mother. It happens because in the DEC-model the initial element does not exist. ▲

One more example. We cannot have all information (knowledge) about the independent entity called “God”. Therefore, according to the Postulate of IIS we can represent this cognitively independent entity using the graphic AS-model of IIS:

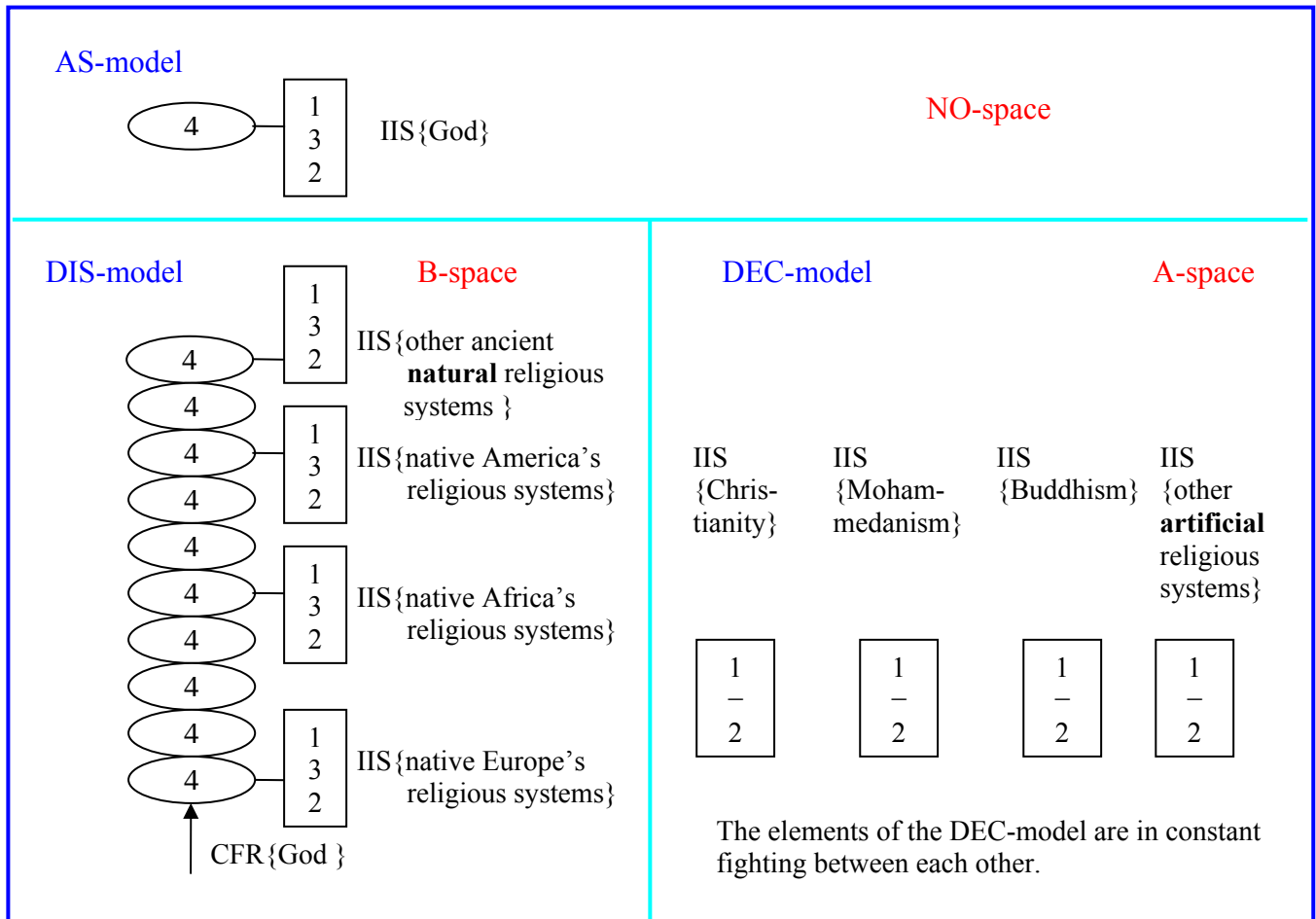


Table 2b The information-systemic modeling of the religious systems.

As was stated above, the [DEC-AS] transition is prohibited: nor the Christianity, nor the Mohammedanism, nor any other **artificial** religious system leads to God. On the other hand, all the world's ancient **natural** religious systems are compatible, are the elements of the DIS-model, and hence, the [DIS-AS] transition is possible. ▲

Next example. We cannot have all information (knowledge) about the independent entity called “solar system”. Therefore, according to the Postulate of IIS we can represent this cognitively independent entity using the graphic AS-model of IIS:

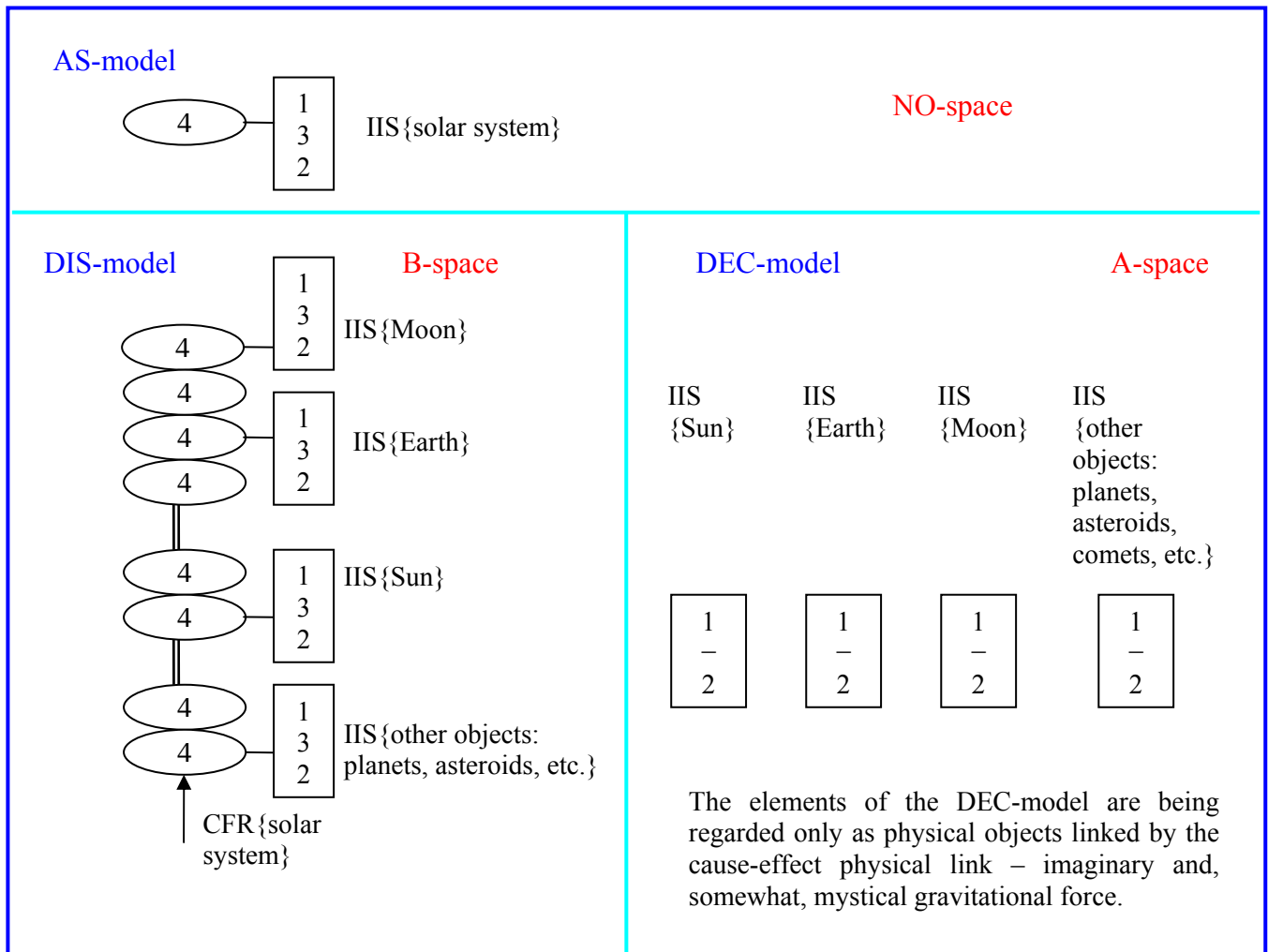
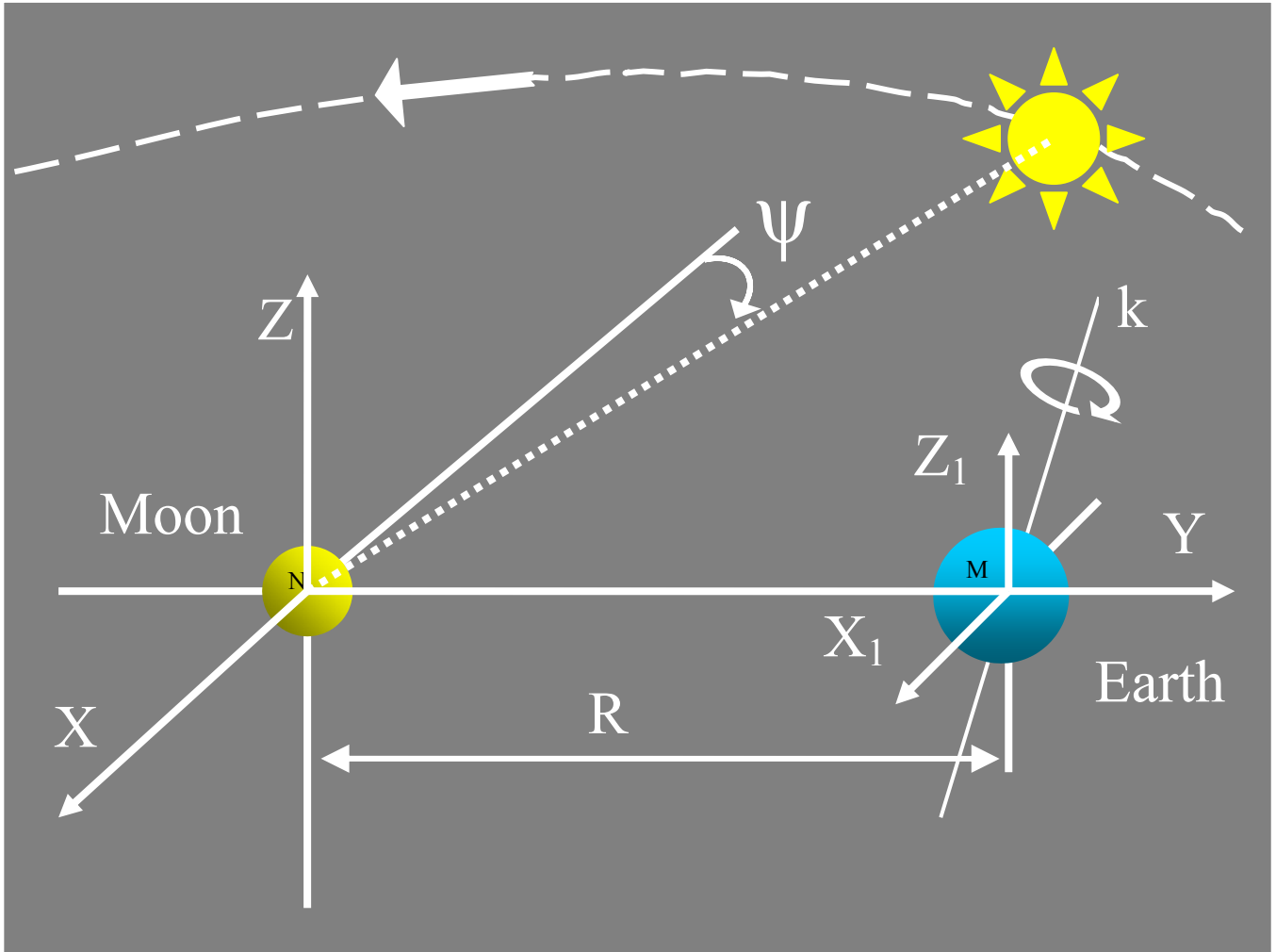


Table 2c The information-systemic modeling of the solar systems.

Both geocentric (Ptolemaic) and heliocentric (Copernican) systems are DEC-models. So, it would be interesting to see what the DIS-model of the solar system may look like. ▲

Let us look at the following scheme:



Scheme 1. The selenocentric model of the solar system.

The Moon faces the Earth always by its one side – it is the R-factor; so, it, conventionally, doesn't move. The stationary frame of reference $\{X, Y, Z\}$ linked with the Moon. Axis X_1 is parallel to axis X ; axis Z_1 is parallel to axis Z . Here:

N – the center of the Moon's mass;

M – the center of the Earth's mass;

ψ – angle between the XY plane 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 M moves only in horizontal direction to and back from the center of Moon's mass N . So, the question here is: what persuades 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? I doubt. It 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.

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

Another example. We cannot have all information (knowledge) about the independent entity called “atom”. Therefore, according to the Postulate of IIS we may represent that entity using the graphic AS-model of IIS. Then, having made the [AS-DEC] transition and being, consequently, in the A-space, we say that the atom consists of protons, neutrons, electrons, etc. 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 we already say that the IIS {atom} dissociates into the IIS {proton}, the IIS {neutron}, IIS {electron, etc.}.

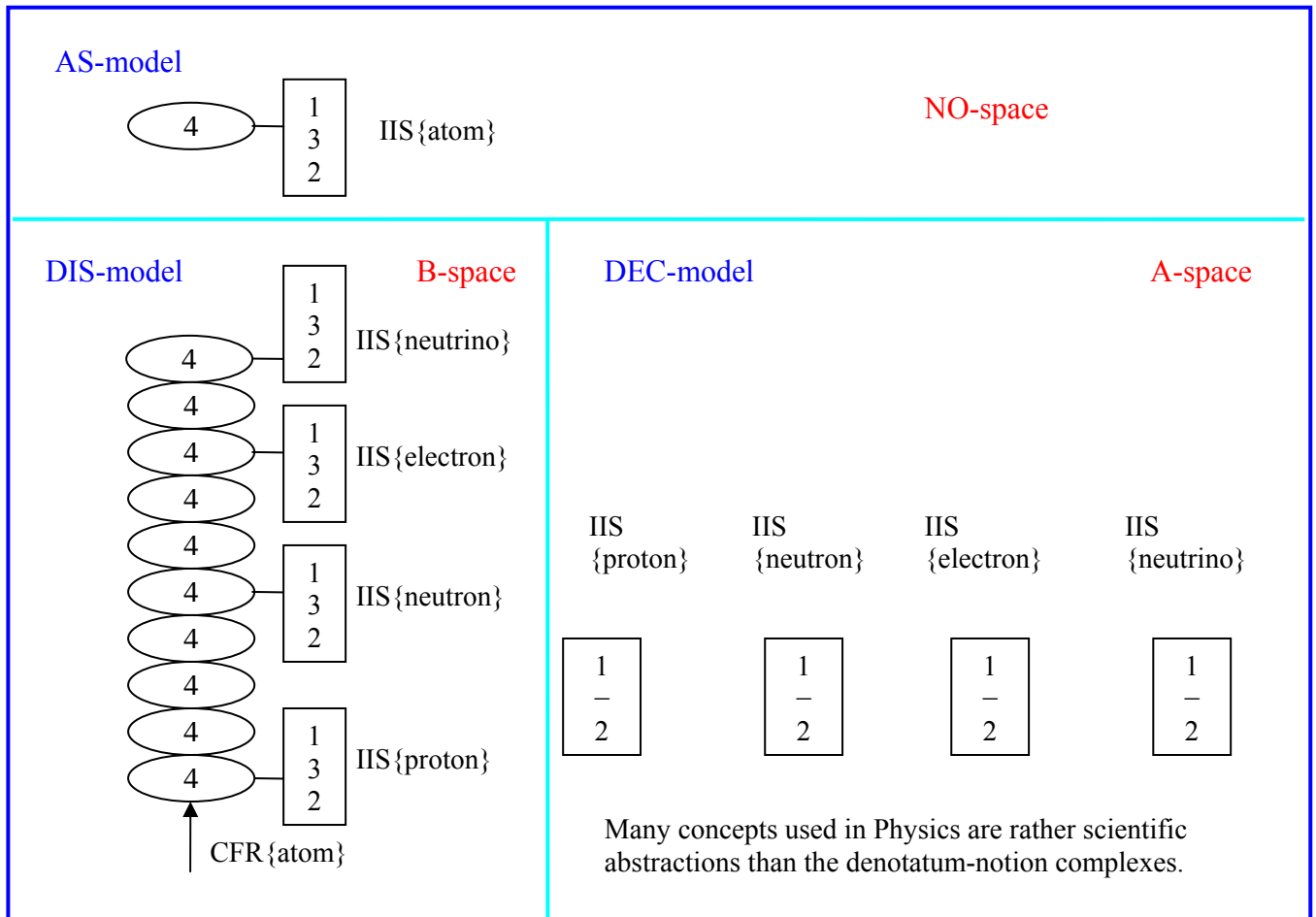


Table 2d. The information-systemic modeling of the atom.

Let us now see what type of cognitive space is more scientifically correct to choose in this case. As was proved experimentally, the following β -decay transmutations take place: $n \rightarrow p + e^- + \tilde{\nu}$; $p \rightarrow n + e^+ + \tilde{\nu}$. The electrons and positrons arise during the β -decay, but they are not the constituent parts of proton or neutron. So, the elementary particles have properties of elements of the DIS-model but not the DEC-models, and the idea is being stated here that to describe processes in microworld the Law of IIS development would be more suitable. ▲

Next example. We cannot have all information (knowledge) about the cognitively independent entity called “love”. Therefore, according to the Postulate of IIS, we may represent that entity using the graphic AS-model of IIS:

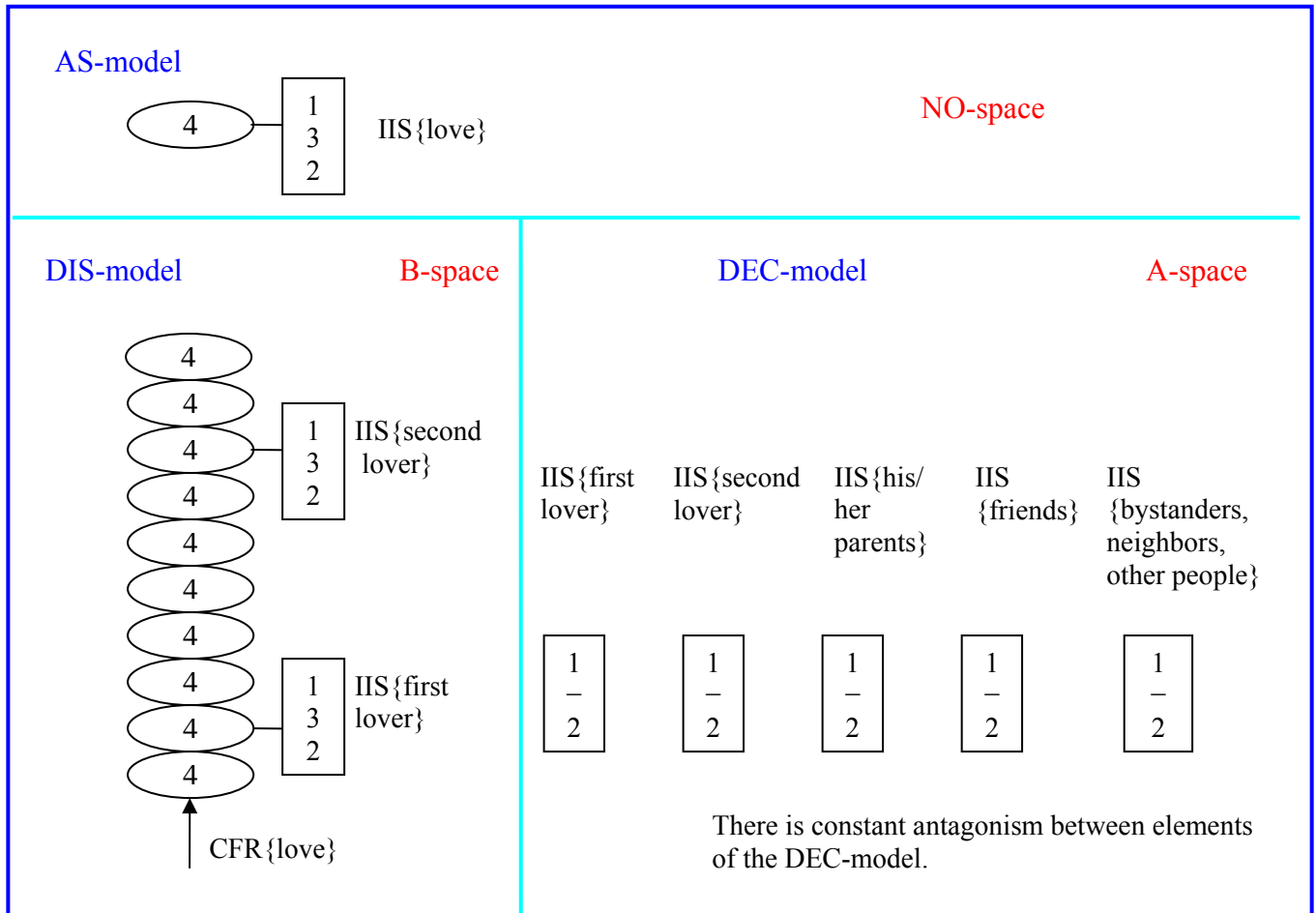


Table 2e. The information-systemic modeling of love.

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. It is the result of inverse link between the elements of the DIS-model. They create the new entity – the love, which is formalized in the AS-model. But the parents (friends, other people), taken together with the lovers, are the elements of the DEC-model. In the DEC-model the systemic characteristics of the IIS{first/second lover} are explicit. That is why, say, the daughter says that HE is the “best in the world”, but the parents (friends, other people) say that he is ”swindler, rascal, drinker, narcomaniac, coon, etc.”. 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-factor that who has never been fallen in love cannot understand that one who has been.

To formalize the pervert forms of love we will have to regard the IIS-models of higher degrees of complexity (see [Table 3](#)). ▲

One more example. We cannot have all information (knowledge) about the cognitively independent entity called “musical harmony”. Therefore, according to the Postulate of IIS, we may represent this entity using the graphic AS-model of IIS.

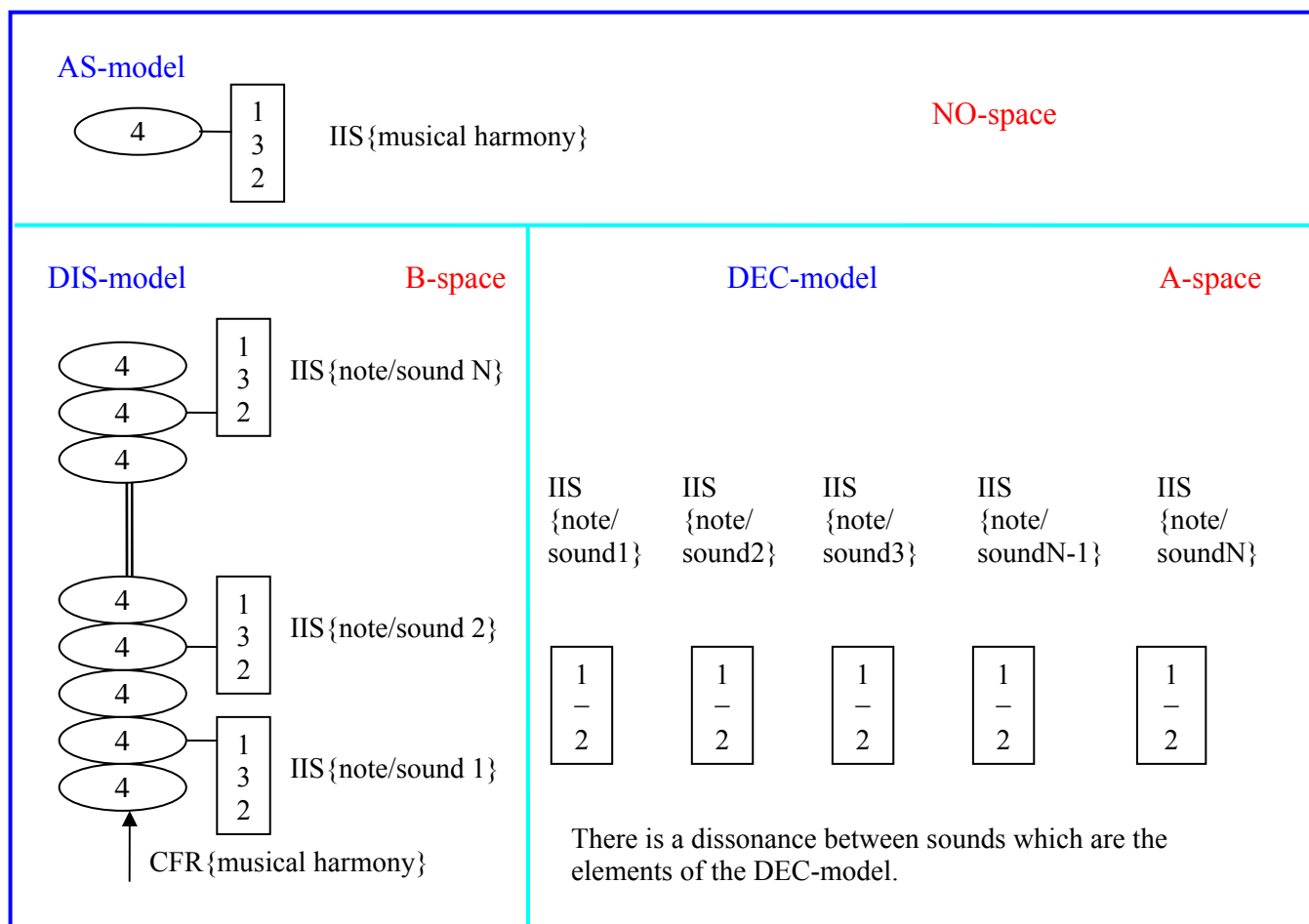


Table 2f. The information-systemic modeling of musical harmony.

Only notes (sounds), as elements of the DIS-model, create musical harmony. For the sounds to be consonant they must be the elements of the DIS-model. To notify the moment when the different sounds (formalized as the ISSs) create the veritas chain, the composer must himself (as the IIS{composer}) become the element of such a chain, or to do the [DEC-DIS] transition. The human understands music because the Law of IIS development lays in background as 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 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. ▲

We cannot have all information (knowledge) about the cognitively independent entity called “communication”. Therefore, according to the Postulate of IIS, we may represent this entity using the graphic AS-model of IIS.

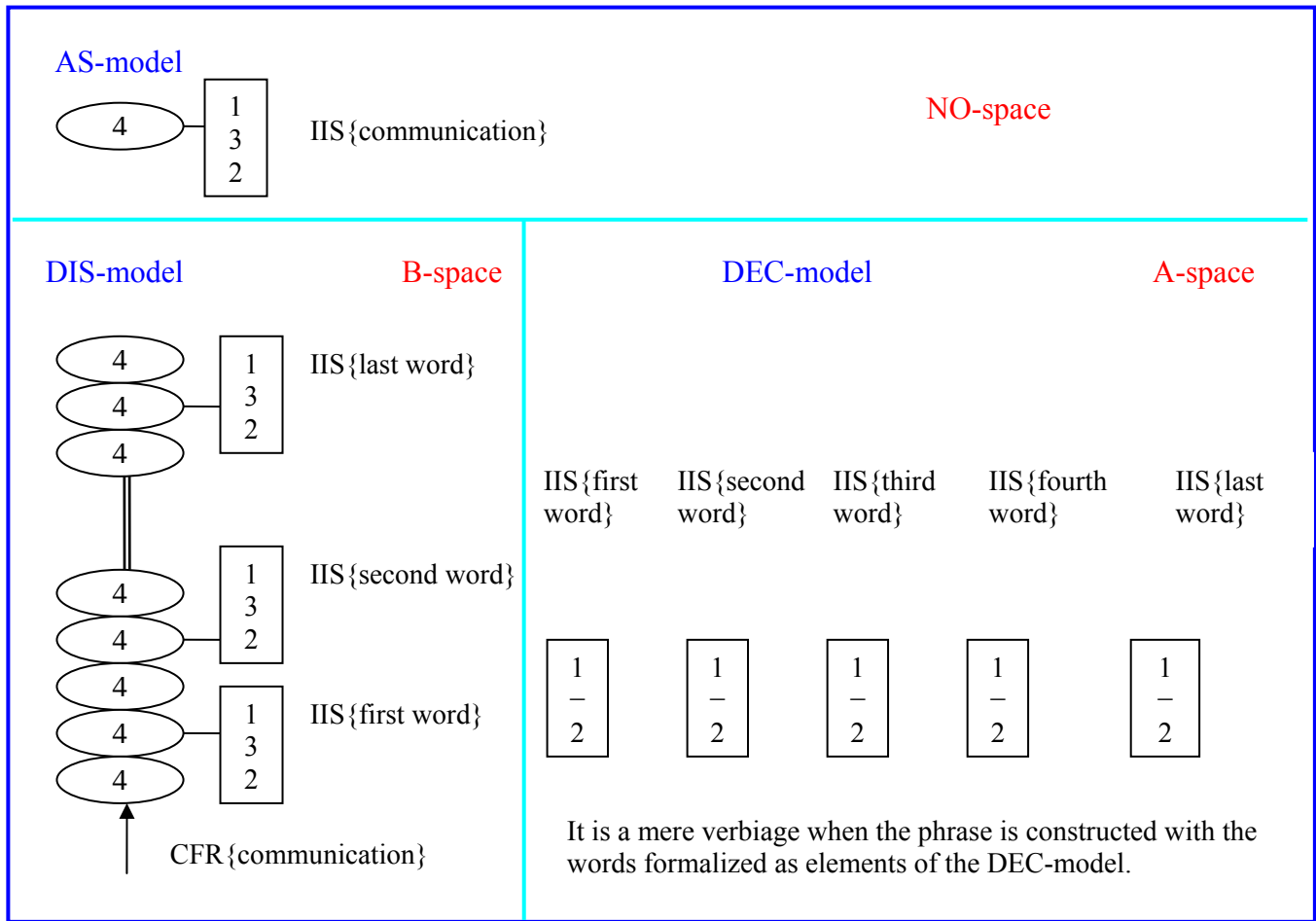
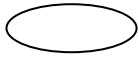
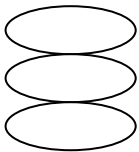
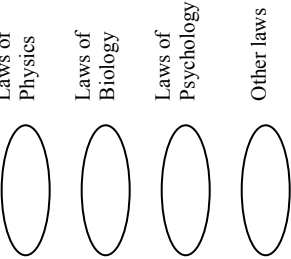
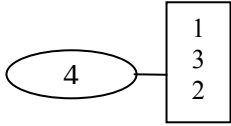
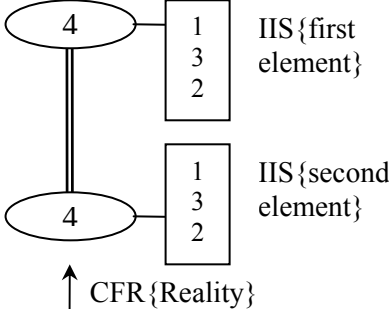
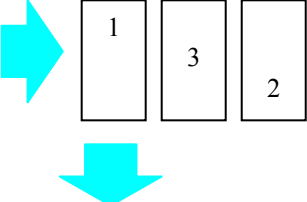
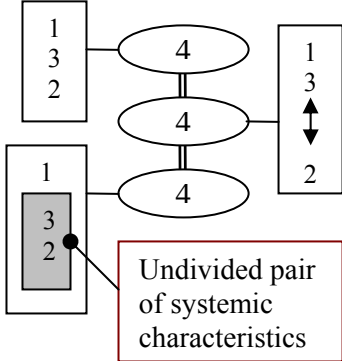
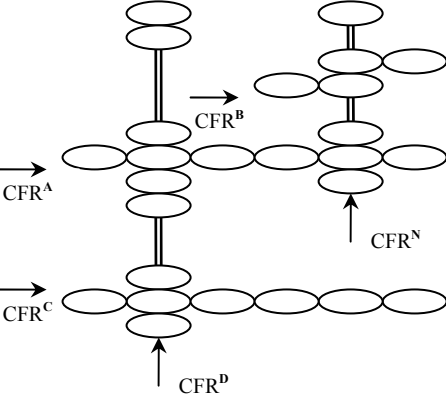
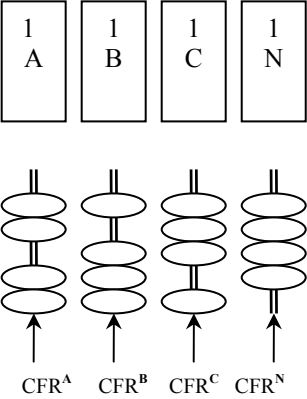
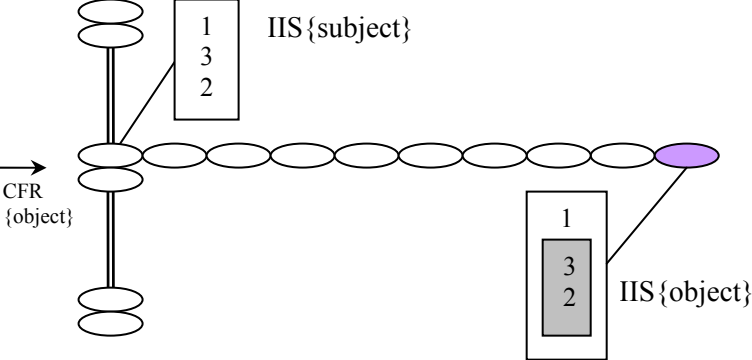


Table 2g. The information-systemic modeling of communication.

In DEC-models every element has its own particular cognitive sense. But after the [DEC-DIS] transition the set of words acquires its certain 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. When one translates the text from the foreign language, the meanings of 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). 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 does not equal to the mechanical sum of the entropies of constituent elements). In general, to be skilled in making the translations, in creating music compositions, etc. means to know how to do the [DEC-DIS] transitions. ▲

Table 3. The degrees of complexity of the integrated information systems

DEGREE OF COMPLEXITY	AS – MODELS associational models	DIS – MODELS dissociational models	DEC – MODELS decompositional models
I	 Epistemology	 A-space B-space cognitive paradoxes	
II	 IIS {Reality}	 IIS {first element} IIS {second element} ↑ CFR {Reality}	<p>Collapse of the IIS {element}</p> 
III	 Undivided pair of systemic characteristics	 CFR ^A , CFR ^B , CFR ^C , CFR ^D Ramification of the veritas chain	 1 A, 1 B, 1 C, 1 N CFR ^A , CFR ^B , CFR ^C , CFR ^N Decomposed chains
IV		<p>the DEC-model is being absorbed by the DIS-model</p>  IIS {subject}, IIS {object}, CFR {object} Intersystem interaction of integrated information systems	

The AS-model of the third order of complexity is used to formalize the different types of problems. As shown in the Table 3, the 3rd and the 2nd SCs are undivided – it is the first type of problems. ▲-7 ▲-comments ▲-love [list](#)

The next important figure. According to the Law of IIS development, any integrated information system evolves, having formed the <big but obligatory terminated> ensemble of states called veritas chain. In other words, if in the equation of expediency the 1st and 2nd SCs (systemic characteristics) are changing voluntarily and the 3rd 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 pertains any possible IIS. If, on the one hand, the 3rd SC 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 3rd SC), then the 1st and the 2nd SCs change as shown in this figure:

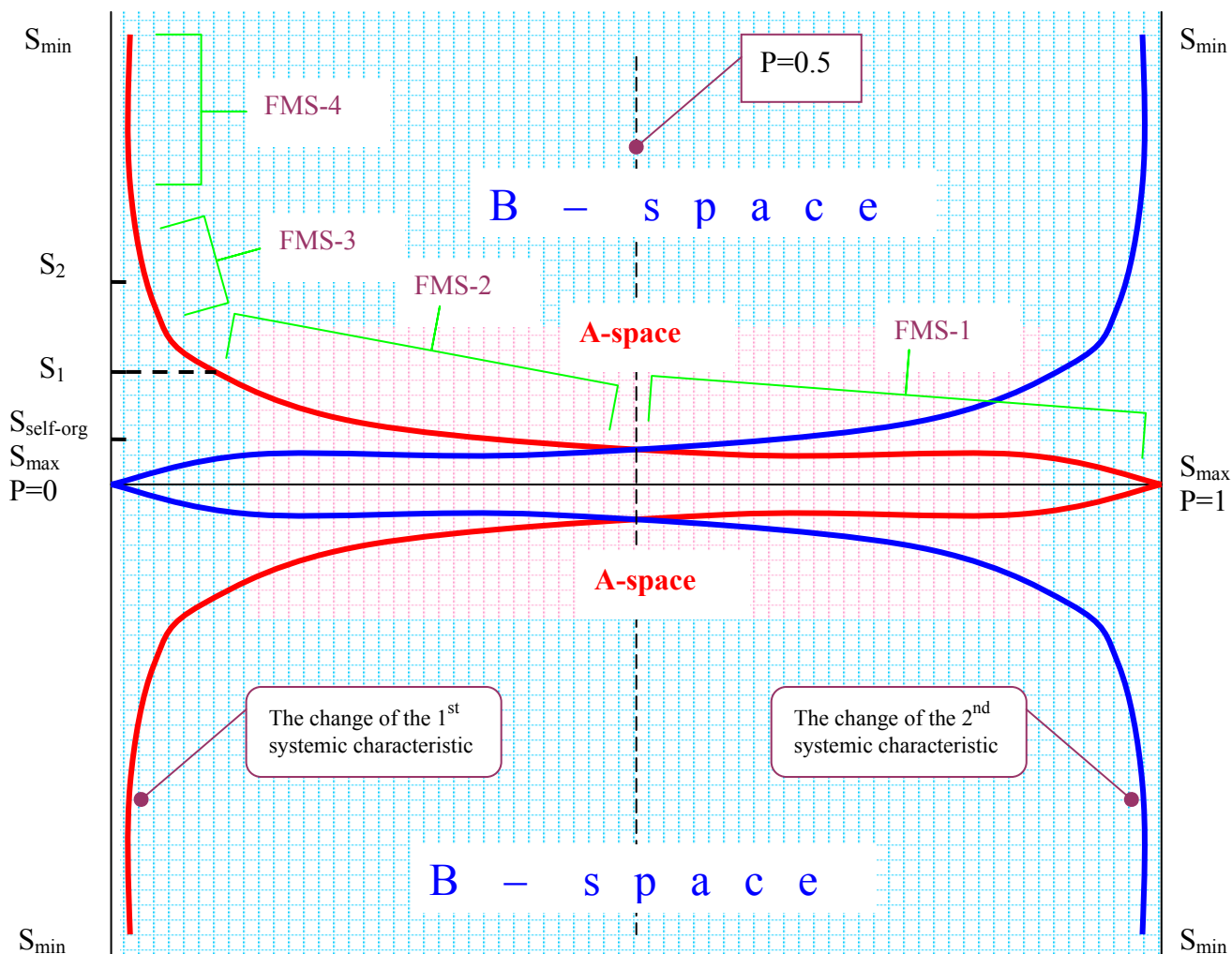


Figure 11. The dependences between the 1st and the 2nd systemic characteristics of the IIS {object} under the condition that its 3rd systemic characteristic changes optimally.

Here, FMS-1 corresponds any material (physical) object in Reality; FMS-2 corresponds the bio-object's mental activity (when it is in the state of bio-mental norm); FMS-3 corresponds the intuitive, clairvoyance, extrasensory, etc. mental activity; and 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 represented in the form of IIS {object}, it is described by its 1st (mental, informational, conscious) characteristic. This means that Nonstatanalysis discerns no difference between animate and inorganic objects. When the 1st SC passes through the $P=0.5$ (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 1st SC with S less than $S_{self-org}$ and with P less than $P=0.5$. There is one natural object that keeps the value of its entropy near $S_{self-org}$ and the value of its probabilistic characteristic near $P=0.5$ – it is the water. In other words,

the water is the simplest bio-object and plays the role of calibrator of the permissible value of the cell's entropy:
 $S_{\text{cell}} < S_{\text{self-org}}$. ▲

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

Fourth cognitive paradox (4CP)

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 were not solved, which were not formulated before. For example, one can solve the problem of paying \$100 of his debt by getting the lucky lottery numbers. But, having got 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.

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 was a solution to that equation. In other words, for the dream to become a reality, the expediency of such a dream must be formulated.

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.

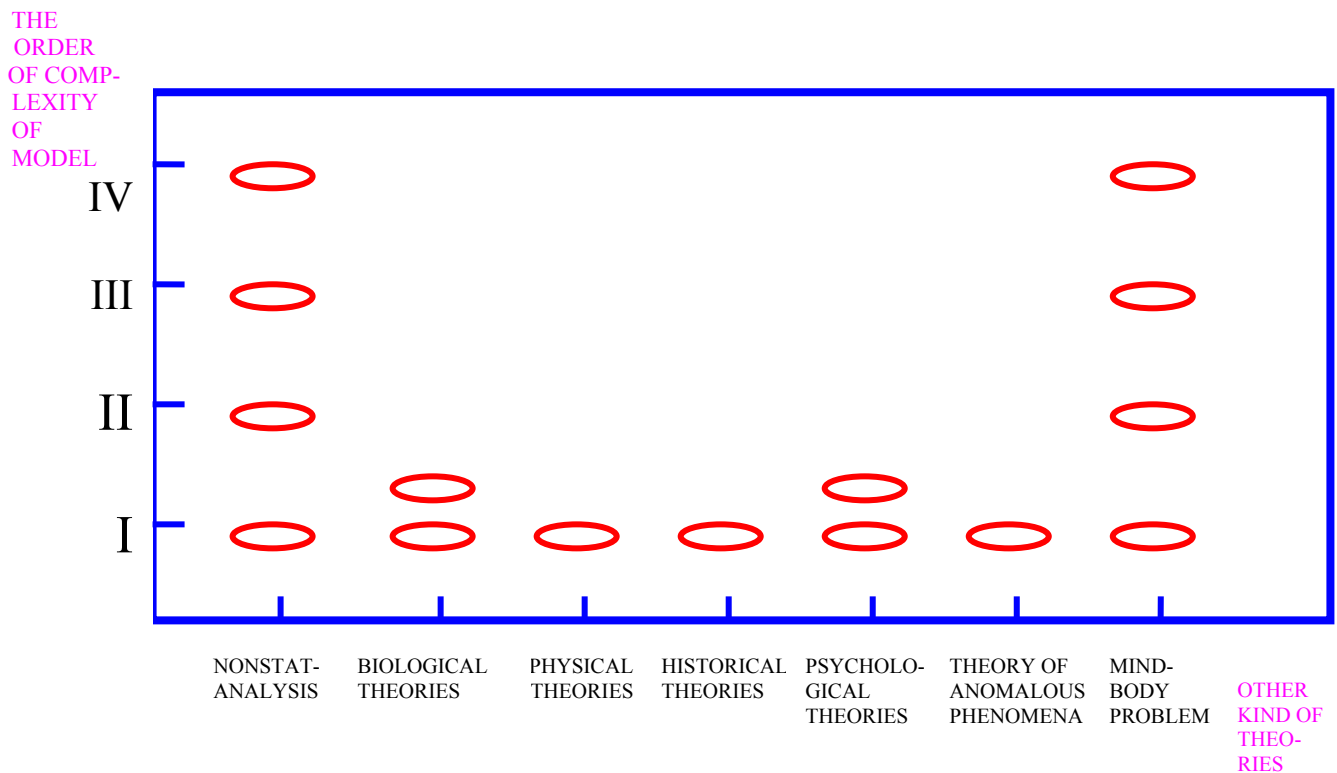
In the B-space the following assertion is true: for the planned action to be realized, the expediency of such an action must be formulated.

Fifth cognitive paradox (5CP)

In the A-space the following assertion is valid: the more knowledge (information), 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 already being in 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, this paradox puts restraining conditions on the process of cognition.

Figure 12. The disordered system of theories



In this figure we may see what order of complexity of the IIS-models is used in different scientific theories. For example, to solve the mind-body problem we must use the IIS-models of the fourth level of complexity. Other solutions won't be sufficient and scientifically correct. Here we also may introduce next cognitive paradox. [▲ list](#)

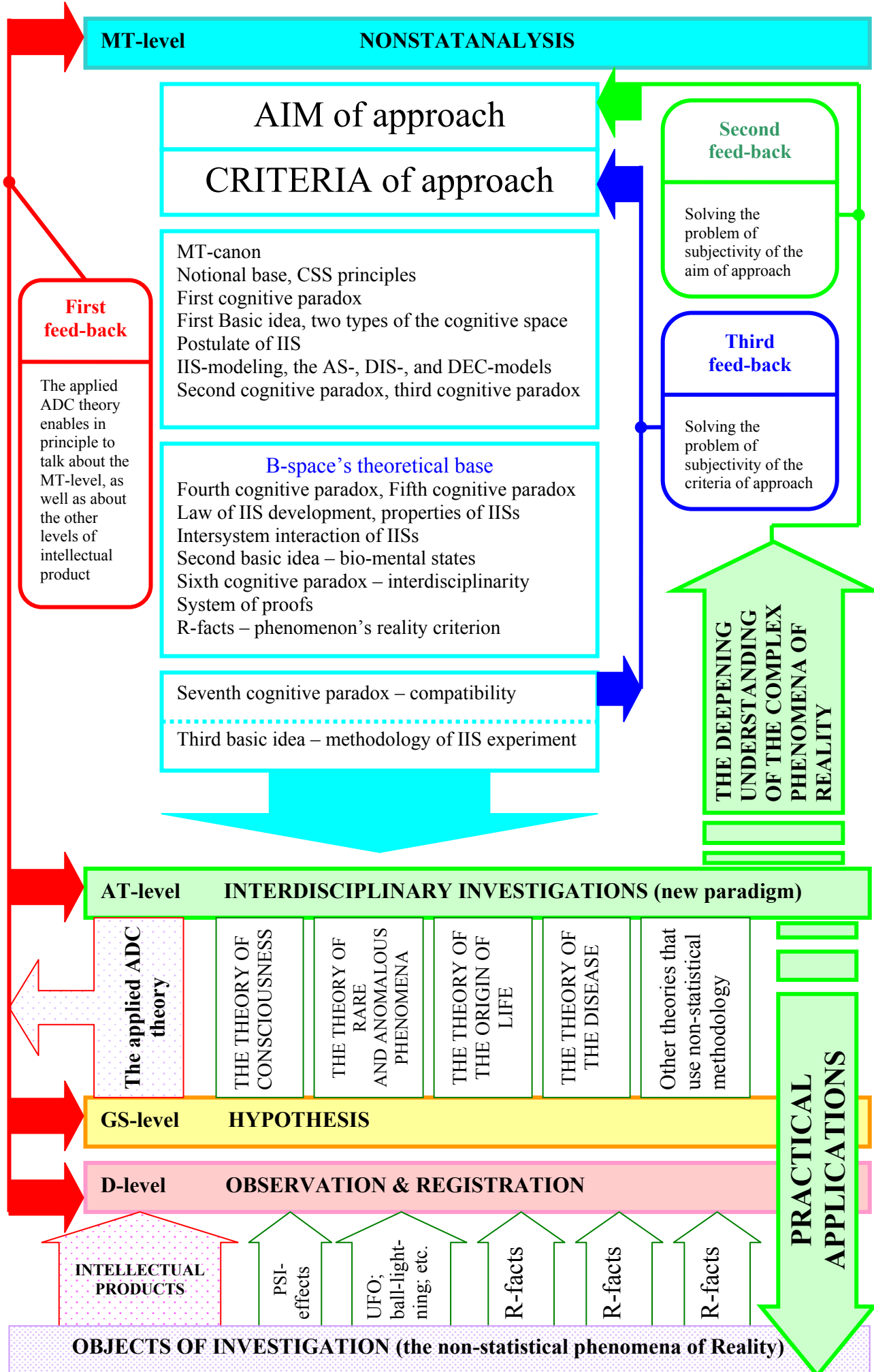
Sixth cognitive paradox (6CP)

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 formed using the Postulate of IIS, then such a theoretical base can be used in any possible scientific field.

Hence we say about the new paradigm of the Interdisciplinary Investigations.

Figure 13. The level-by-level structure of Nonstatanalysis with three adjusting feedbacks.



Let us introduce the last cognitive paradox.

Seventh cognitive paradox (7CP)

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 “It was me who expressed that idea at first”.

In the B-space the following assertion is true: every intellectual product was preceded by the former history of development of the Science and this product will have an influence upon the further development of the Science. According to the applied ADC theory, the veritas chain of the mutually compatible MT-level intellectual products may be formed (see the next publication, Appendix A), and, consequently, the problem of subjectivity of the criteria of approach may be solved (see the Third feed-back above).

In the Fig. 13 we may 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 (the Second feed-back above). Let us remember that the first MTA assertion postulates that any possible phenomenon belongs to our Reality and can be explained.

One may also see that the Theory of consciousness is (and, obviously, must be) one from the set of Nonstatalysis' applied theories, which [that set] is called the Interdisciplinary Investigations (new paradigm, viz.: we regard Interdisciplinary Investigations as the new, self-sufficient scientific discipline, but not as a mechanical merger of different existing sciences). Other theories, which do not take into consideration the inversion link (FT-relation) between different levels of intellectual product (see the First feed-back above), cannot be effective when approaching consciousness and the complex phenomena in general. [▲ list](#)

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