Interpretări şi aplicaţii semiotice

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The ”Living Light” Language: A Methodological Approach

Abstract. The fact that, in its quality of both energy and information, the ”LIVING LIGHT” – (bio)electromagnetically generated by the biological systems – is a real or a potential sign for any world reality, represents an intuition that is more and more widely accepted. Suffice it to think that, through visible light, “the physical eye” reproduces the forms of reality (their significant) and through cerebral bioluminescence – “the mental eye” (“the third eye”) – generates the semantic dimensions (the signified) of the reality exterior and interior to the human being, so that such an intuition becomes as explicit as possible.

Keywords: biophotonics, semio-logics, resonance, language, methodology.

1. A biophotonic and semio-logic methodology

If it were only for these elementary considerations and it would be enough to consider that biophotonics – very generally assumed as a inter- / multidisciplinary science of the ”Living Light” – represents the introduction to a (bio)semiotics of the ”living language” too: an attempt to consider the world able to double “the innate ability of the brain and of the sensitive system to produce and to understand signs” (Danesi 1998, 14) through the competence to create explicative models of the world.

Referring, in a retrospective manner, to the philosophical thinking of humanity, through which the world itself was reflected in many ways, the founder of modern semiotics, the American Charles S. Peirce, presented two essential methods of creating a new theory (philosophic / semiotic system) (1990, 158-159):

— an idea that is considered to be interesting and fertile is adopted, developed and “forced” to produce new

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explanations for a set of phenomena more or less known;

— reformulating previous knowledge by solving the theories that have been in fashion for a certain period of time.

Both methods may be found in the genesis of the scientific and semio-logical (philosophic) perspective created by biophotonics. Having this role, biophotonics observes a few fundamental principles of scientific research that will be briefly mentioned in this book. In semiotic terms, we would say that everything that follows, "stands as a sign" for a series of aspects such as: the aspiration toward scientific accuracy, the desire of an honest and mutually beneficial dialogue, the possibilities of experimental validation of the statements and future recognition of what is nowadays considered with astonishment.

As we have already showed in our book *Signs of Light* (Stanciulescu 2003a, 83), under the circumstances in which scientific knowledge started to reveal the complex forms of cosmic and human reality, it is absolutely necessary for an integrating science of this reality to be created. It can no longer be identified with philosophy, religion or science proper, but with a "complexity science" created at the interface of all the disciplines for whom the world represents an object of interest. It represents *the emphasis of certain unifying paradigms, the elaboration of a unitary methodology,* respectively.

From the biophotonics perspective, the "Living Light" / auric bioluminescence (energy and information) could represent the unifying "language-object" for the living and the nonliving, for the physical and the metaphysical, while the *semiotic organon* could be the integrating "metalanguage". Consequently, *biophotonics could be defined as a "complexity science" having as methodology a "Semiotics of Light"* (Stanciulescu 2003b). From such a perspective, we can only mention a few categories of methodological arguments that support the biophotonics hypotheses: the methodological arguments of a "semiotics of light" (semio-photonics), able to unify the content elements of biophotonics with the form elements of semiology.

We could mention in this context some other categories of justifying arguments: instrumental arguments, having a general-theoretical or / and technologic character, useful to all types of scientific analyses (such as mathematics and computer science, computational

technology at the applicative level) and theoretical-applicative arguments, specific to one theoretical approach or another (such as those of the complex systems: the dissipating structures theory, the catastrophes theory, synergetics and "holonics"). By means of this intellectual approach, we pass from "metaphysics" (specific to humanities) to "physics" (set of sciences of nature).

2. Virtues of the logic thinking

If in the already mentioned book *Signs of Light* we have especially defined the *language-object* of interest for biophotonics, in the following lines we will synthesize a few considerations about the research methods on which such a discipline is based, its *meta-language* namely, extensively presented in our *Semiotics of light*.

The attempt to create a coherent image of the macro- and microcosmic world in which the human being is integrated as a reference element is an implicitly or explicitly formulated goal of the complexity science. The pioneers of such a perspective, who are forced to introduce into their papers information coming from the mythical tradition, art and poetry, from symbolic and formal languages, from religion, the sciences of nature and those of the living (biology, zoology, medicine etc.) in order to subordinate them to unique paradigms, are implicitly animated by an interdisciplinary opening, without being "experts in interdisciplinarity" (such a quality is, nevertheless, impossible) (Nicolescu and Cazenave 1994, 13). Such an opening cannot lack the *sine-qua-non* contributions of two disciplines, but, at the same time, tools of research of the unique and unitary reality: *logic and semiological.*

A heuristic approach such as that created by biophotonics could not have been carried out if lacking the privileges of the logic thinking. It is enough mentioning, in this context, that the whole ideological system of biophotonics is the result of the use, in one way or another, of the fundamental operations of logic, of the reference principles of correct thinking. We will mention only a few of them:

● *analysis and synthesis* are involved in the decomposition of the structures and functionality of the "biological lasers" systems, for example, in component elements, on the one hand, to argument their cooperation at the whole body level, on the other hand. Such a constructive effort could not be accomplished without following

analytically the theoretical and experimental research carried out in different fields of knowledge, to be then correlated synthetically, at the theoretical, coherent and global level defined by biophotonics;

● *induction and deduction* become premises necessary for the formulation of generalities starting from particular cases (such as, for example, the extrapolation of certain BEMPh (Biochemical, Electric, Magnetic, Photonic) processes and mechanisms described at the visual analyzer level, at the level of other analyzer system, of other sets of "biological lasers" that function in the human body) or, on the contrary, to reveal functioning principles specialized by the suggestions provided by the knowledge of certain global mechanisms (such as, for example, the analysis of the correspondence between macro-traps of energy-information of the chakra type and micro-traps at the level of the mitochondria and the DNA in the cellular nucleus).

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At the same time, the two thinking operations were efficiently used in order to formulate general conclusions, starting from data of certain relevant empirical experiments:

— describing the structural-functional mechanism of the bioluminescence emission at the level of the "molecular laser" system;

— transposing the knowledge regarding the liquid crystals to the level of explaining the photonic phenomena characteristic to biological structures;

— explaining the biophotons fluxes presence at the DNA level.

● *comparison and analogy* are involved in the accomplishment of the main objective of biophotonics: modeling the biological processes through the comparison and analogy with the technologic ones (see, for example, the correspondence between the systems of technical and biological lasers, between the brain and the cybernetic-computational systems, respectively).

● As integrating operation of the already mentioned aspects, *the inference* (the reasoning) constitutes, as Petru Ioan justifies (1995), an essential logic tool of founding statements with other statements. In the case of the construction represented by biophotonics – by its theoretical core, the *"Biological Lasers" Theory* (BLT) (Stanciulescu and Manu 2002) – we consider the "statement" of an existent theory, validated or to be validated, a theoretical hypothesis or an experimental conclusion that, as premises, permit the formulation of the conclusions that represent the further basis of the biophotonic

heuristic approach. The distinction between the "valid inference" and the "invalid inference" is superposed up to a certain point to the Aristotelian distinction between the *apodyctic reasoning* (used especially in the scientific demonstration or as a "didactic" argument) and the *dialectic reasoning* (used in debates or in critical examinations). Therefore, we can say that through its heuristic qualities, the inferential operation represents an essential method of achieving the interventions of a demonstrative-argumentative nature and, through this, it is a method of achieving the cognitive model created by biophotonics.

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Beside creatively using thinking logic operations, the biophotonics also respects logic thinking principles, the way they were formulated by the Aristotelian logic, the identity principle, the sufficient reason principle, the noncontradiction and the excluded middle principle, or by modern logic, such as, for example, assuming a paradoxical "included middle" principle (Lupascu 1983).

With regard to this last principle, we have to mention Basarab Nicolescu's opinion, who formulates two postulates meant to support a coherent and unitary image of the world (nature), in accordance with modern sciences data (1994: 20): *the existence of the (hierarchic) levels of reality and the "included middle" logic.*

On the one hand, even if the passage from the macrophysical to the microphysical (and, implicitly, human, the human being representing both a macro- and a microcosmos) level has not been sufficiently well mathematically formalized, the co-existence of the two "worlds" cannot be denied: they simply exist. As a particular case, their complementary and continuity can be found, for example, at the level of the "bio-lasers" systems, that manifest themselves at the level of human organism both as hierarchic systems (of intricate bio-lasers) and as relatively autonomous co-functional systems (of chained bio-lasers, such as cells are).

On the other hand, the physical or / and bio-psychic reality, implicitly described by biophotonics, reveals the reality of some contradictory couples, such as: corpuscle and wave, continuity and discontinuity, separability and inseparability, symmetry and antisymmetry, manifest and nonmanifest etc. Such couples can be described by another principle, different of that of the Aristotelian "excluded middle", by the "included middle" principle, respectively: *there is a third "T" element that is, at the same time, A and non A.* Such a paradoxical manifestation of the "T condition", which, in fact, re-

actualizes intuitions of the archaic tradition (see the primitive man's belief that he fulfils simultaneously and ontologically the quality of human being and totemic animal) or intuitions of the philosophical thinking (let us remember, for example, Hegel's unity principle and the fight of contraries principle), "proves to be the ideal tool for the complexity analysis" (Nicolescu 1994, 23).

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Among the values of the "included middle" logic there also exists the one that emphasizes the visible-invisible relationship. Such a relationship is the main object of semiological research: the analysis of the empirically revealed aspects for the discovery of deep causes and, consequently, hard to detect. *The semiological analysis is implicitly logic* because, in most of the analyzed effects, the procedures of finding the causes that are based on syllogisms, operations mentioned above, which do not allow but a mediated formulation of conclusions. In this direction, semiosis (action of the signs), the main object of semiology, seems now to be a fundamental process, as John Deely defines it, including the physical universe in the human biosemiosis (1997, 5-6).

3. Virtues of the analogic modeling

The *significans* quality, which defines the human being, is the result of hierarchic modeling competence that is activated, as Thomas Sebeok shows (1986), within the limits of the following three "systems" (cf. Danesi 1994, 39):

— *primary modeling system*, that refers to the capacity of the human being to replicate, simulate, imitate, represent;

— *secondary modeling system*, that presupposes the use of the first system in the fields of the abstract meaning, in the forms of the symbolic language that "translates" nature (the referential element) into culture sign systems;

— *tertiary modeling systems*, that refer to the competence of elaborating abstract ideas, on the ground of the first two systems (through the logical operations of induction, deduction, analogy etc).

The analytical exercise of this paper is subordinate to the last modeling competence. Because, at the crossroads between the principles and the operations that logic thinking provides for the scientist, biophotonics has established as heuristic manner of reference that of the analogical modeling. In order to reveal in an explicit manner the virtues of such an approach of the biological

body, we can efficiently use the synthesis proposed by Gheorghe Mustata (2002) with regard to this topic.

We can see that defining the modeling process as material or mental imitation (approximation) of an existent system through the creation of analogies that reproduce the organization and functioning principles of the system, implicitly implies the idea of analogic correspondence (which proves a certain redundancy of the phrase "analogical modeling"). In this first interpretation there appear two references that need to be compared: the reference reality and its model. In a more complex perspective, for the (theoretical and empirical) approximation of the reference reality (the human body system, in our case) one may use, for comparison, a mediating system, a tertiary "witness" (the technical laser system or the computer, in the case of biophotonics explanations).

The two procedures, that presuppose semiological approaches, are justified through reference heuristic and pragmatic reasons and through (Mustata 1982, 6, 36):

— the simplification and the reduction of the too complicated terms of the original to more accessible terms of an intuitive knowledge; this objective is correlated with all the figurative schemes, drawings and approximations, the algorithms and the mathematical formalizations used in this paper as ideal (theoretical) models;

— the knowledge of structural and functional reference points as the analogic model of the artificial type (for example, the technical lasers system represents such a model type), allows for the explanation through comparison and extrapolation of certain unknown or / and directly inaccessible of the original (the human body system, as a system of intricate and chained "biological lasers", in our case), on the one hand, allowing a series of experimental accomplishments (such as the use of the biological substratum for the holographic data stocking in computer technology), on the other hand.

With the help of these attributes, we can state that the model proposed by biophotonics is defined as an *analogon* that can substitute the original in the process of its scientific knowledge. In order to check this statement, we only have to remember the *main features of a model* (Mustata 2002, 12-13) and to see to what extent they correspond to the biophotonics assertions:

● *the model creates a scheme of the analyzed object by emphasizing its essential features:* defining the human body in terms of the structural and functional points of reference of the "biological

lasers" system type represents such a scheme;

● *the model also simplifies the issue by means of the approximation of biological laws with mathematical formula:* finding, at the human body level, some phenomena of a physical-chemical nature that can be mathematically formalized allows for such an approximation;

● *the model has to correspond to a technical accomplishment and has the role of reflecting it:* the analogy of the human body systems with "technical lasers" systems, even if this reflection is not always completely appropriate (given the existent differences between the two categories of systems);

● *the model contains an element of scientific imagination:* the biophotonics represents a creative synthesis of a data set coming from different disciplines;

● *the model presents a character of a limited historical reality reflection:* the description of the nervous system with analogical terms with computational technology could be surpassed by the creation of computers with field memory, able to provide new suggestions for the better understanding of the human brain.

In this last perspective, the biophotonics could constitute one of the latest gains of the "biological revolution" that presupposes, according to Edgar Morin, the following phases (1973, 25-30):

— an opening of biology toward the sub-adjacent physical-chemical structures;

— an argumentation of the fact that there is no "living matter", but "living systems", a particular organization of the physical-chemical matter, respectively;

— the introduction of some organization principles unknown in physics and chemistry, implying cybernetic notions of information, code, messages, programs, control etc, but specific to modern technology.

Revealing all these perspectives can transform biology / biophotonics in a discipline / theory able to couple two principles, both ontological and epistemological: the self-organization and the complexity principles. Such principles are described by von Neumann as being very important for the new biology, as: "Complexity refers not only to the "natural machine" that sets forth a number of unities and interactions superior to the artificial machine, but also to the fact that the living being is submitted to a totally different functioning and development logic, a logic where inter-

determination, chaos, hazard interfere as factors of a superior organization or self-organization" (cf. Morin 1973, 29). Such a description is found in the main statements of biophotonics that model the attributes of the "living machine" by analogy with the artificial one.

Thus, they introduce an order principle in the living generating mechanisms: that of light carrying energy and information.

4. Semio-logics of the "Living Light"

Taking into account the fertility proved by the modeling method at the level of scientific research (let us only remember that it stood at the basis of the helicoid screw that Crick and Watson associated with the DNA), we express our hope that it would become for biophotonics too a frame of value reference. In other words, we hope that the model conceived by us regarding the biophotonic (bio-electro-magnetic) activity of the human body and its complex consequences manifest an essential virtue: that of the *scientific prevision,* of its opening to the future in a double hypostasis, deductive and inductive.

We have to mention that any prevision has a semiotic character, standing for an accomplishment that is supposed to be carried out. For example:

● *The deductive prevision* deals with the formulation of certain conclusions through the passage from the known to the unknown, from the objective law (expressed in empirical or abstract terms) to the consequences of its possible manifestation in one context or another.

In the case of biophotonics, one may say that the prevision manifests itself in hypostases such as:

— all the concrete described effects regarding the penetration of light in the cellular body through the liquid membranous crystals (such as the cell optic activity, the creation of energetic centers in the zones of the constitution of the organites, the nuclear and cellular division, the creation of energy resources and deep information of the body etc) are empirically inferred from the well-known action of the difraction, refraction, dispersion laws etc;

— the theoretical application of the anti-Stokes rule at the semiconductor "molecular laser" system level suggests the deviation to the left of the emitted radiation, in relation to the incident one; in

accordance with this mechanism, for example, the biophotonics stipulates the increase of the incident flux frequencies in the visible spectrum through their deviation toward the ultraviolet spectrum, a mechanism that has been confirmed by a series of experimental research;

— formulating certain hypothetical laws of the brain holographic activity, for example, permits the elaboration of some predictions regarding insufficiently known aspects of language, thought etc, aspects that may be checked by experimental means.

● *The inductive prevision* presupposes the passage from the existent to the inexistent, from certain data manifested in reality to those that are still in a virtual condition and are to be expressed in the future. In this category of previsions may be included the possible predictions regarding the future health condition of a human subject, through the evaluation of his bioluminescent emission (aura). The validation of such correlations constitutes an empirical proof for certain hypotheses formulated by the BLT, such as the hypothesis according to which the bioluminescent field comprises an information able to determine gradually the structural modification of the cells, tissues, bodies submitted to its influence.

By means of these deductive-inductive mechanisms, that anchor the human knowledge from the present to the future, we express once again our hope that, by its predictive force, the model conceived with regard to the influence of light on certain processes and bio-psycho-logic phenomena may contribute to the obtaining of certain nuanced answers to questions such as: *Who are we? Where do we come from? Where are we heading to?*

All in all, we could say that all the categories of arguments mentioned in this chapter have, finally, the role to reveal:

— *the necessity of approaching the complex structures (such as the living body) with inter- and transdisciplinary research methods*, taking into account the presence and manifestation of (bio)physical, (bio)chemical, biological, psycho-logic phenomena at the level of these structures;

— *the use of certain theoretical or practical (experimental) results of these disciplines with the goal of validating the biophotonics; hypotheses;*

— the justification of the conclusion that, being established at

the interference of border (interdisciplinary), theoretical and applicative sciences with the sciences of complex systems, *the BLT may be able of a kind of generalization in the terms of a "metaphysical physics"* that the future seems to be needing, having light as a unifying paradigm, in the multitude of its forms and interferences with living and dead matter.

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I am fully aware of the fact that many of the statements or / and justifications present in this volume will be ignored by extremist analytical minds who will consider them as "doctrines of the limbic system and of the right hemisphere, rituals of the dream, natural human reactions, the term is definitely appropriate here, to the complexity of the environment they live in" (Sagan 1976, 186). Even if some phenomena may be considered in this manner, others, whose reality cannot be denied, have to be assumed also by modern scientific rationalism. For example, if we were to give credit to Weddington, and we do not have reasons not to, it seems that the epoch of the "anti-metaphysical aggressiveness" has passed.

This, because scientists, just as philosophers, have started to understand what Aristotle understood long ago: that *physics has its crown in metaphysics, and the latter has its roots in physics.* Jean Charon's pleading for a "metaphysical physics" (1977) has as its target both the rationalist positivism and the holistic spiritualism. This is a principle which the present study is essentially reconsidering, in a theoretical and applicative modality, too. Because, in essence, this introductive study is arranging in a coherent manner the puzzle-elements of an amazing subject: the connection between the human being and his / her frame of life, mediated by the principles of the "*Language of Living Light*" (Stănciulescu and Poenaru 2015) which biophotonics assumed explanatory. The research is correlating in an original and exciting manner many of the theoretical studies and practical applications already valorized by the authors in different other contexts, all of them concluding that: having in mind a certain "holographic resonance", between human being and the objects around him / her, determined by the synergy of materials and colors, shapes, volumes and accessories, the most general and important benefit of using this synergy is to *generate around human beings, a specific living medium of life*, an omnipresent and constant source of (bio)luminescence, acting at the level of the "soul" (biofield, auric body, vital force) for adequately sustaining and stimulating the human

"body" harmony. All the above must be understood in the light of what our ancestors said: "*We should first cure the soul, and then the body*".

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