European Journal of Science and Theology, *June 2015, Vol.11, No.3, 143-154*

A TRANSDISCIPLINARY APPROACH ON HOLY TRINITY

Gabriel Crumpei[1], Maricel Agop[2], Alina Gavriluț[3*] and Irina Crumpei[4]

[1]Psychiatry, Psychotherapy and Counselling Centre, Vasile Conta No. 2, 700106, Iaşi, Romania
[2]'Gheorghe Asachi' Technical University of Iaşi, Department of Physics, Bd. D. Mangeron 67, 7000050, Iaşi, Romania
[3]'Al. I. Cuza' University', Faculty of Mathematics, Carol I Bd. 11, Iaşi, 700506, Romania
[4]'Al. I. Cuza' University', Psychology and Education Sciences Department, Carol I Bd. 11, Iaşi, 700506, Romania

(Received 14 September 2014, revised 14 February 2015)

Abstract

We aim at an exercise of transdisciplinary approach between Science and religion, but also interdisciplinary between disciplines and theories which appeared in the second half of the 20th century (e.g. topology, chaos theory, fractal geometry, non-linear dynamics, all of which can be found in the theory of complex systems) and which impose a reformulation of the theories of Quantum Mechanics starting with the beginning of the century, on the triangle substance-energy-information. We insist on the information which is vaguely defined and whose belonging to the wave-corpuscle duality is more stated than demonstrated. The interdisciplinary approach and the transdisciplinary one help us make this integration and bring arguments that information, along with energy and substance, build together our whole Universe.

Keywords: Holy Trinity, wave-corpuscle duality, complex systems, topology

1. Introduction

Contemporary research paradigms have shown significant changes dictated by the evolution of the theory of knowledge, as well as by the new techniques and technologies. The hyperspecialization developed in the late nineteenth century and early twentieth century was a stage when scientific disciplines crystallized. This allowed a positivist and analytical approach, which in the end proved to be too restrictive and simplifying. A holistic approach of the knowledge of reality from the Renaissance encyclopaedists' point of view, has proven to be increasingly necessary, thus creating the appearance of the interdisciplinary approaches among research disciplines, allowing the integration of knowledge in a complex epistemological, which is closer to reality. Interdisciplinary approach proved increasingly evolved into a broad coverage

[*]Corresponding author, e-mail: gavrilut@uaic.ro

uniting different disciplines, but that need to be seen together, in order to integrate knowledge of reality.

Basarab Nicolescu [1, 2] defines transdisciplinarity through three methodological postulates: the existence of levels of Reality, the logic of the included middle, and complexity. In the presence of several levels of Reality, the space between disciplines and beyond disciplines is full of information. Disciplinary research concerns, at most, one and the same level of Reality; moreover, in most cases, it only concerns fragments of one level of Reality. On the contrary, transdisciplinarity concerns the dynamics engendered by the action of several levels of Reality at once. The discovery of these dynamics necessarily passes through disciplinary knowledge. As the prefix 'trans' indicates, transdisciplinarity concerns that which is at once between the disciplines, across the different disciplines, and beyond each individual discipline. Its goal is the understanding of the present world, of which one of the imperatives is the overarching unity of knowledge.

2. The change of knowledge paradigms in the last century

In recent decades, research has evolved from the study focused on disciplines, to the interdisciplinary one. Thus, the notion of interdisciplinarity emerged in much broader sense, linking different disciplines of knowledge domains.

An approach to Science from the perspective of Theology was a solution less used, even if a series of authors, with both scientific and theological training attempted to bring both the two fields on a common uncontradictory line; this attempt takes also a institutionalized form, as the Vatican has theologians who are specialized in exact sciences.

The apparent contradiction and competition between Theology and Science is due to the two currents of opinion, on the one side deism, which considers that everything is explained through an omnipresent and omni-powerful Creator, God the Creator, who, by divine mercy maintains and upholds the nature, and the other opinion, the atheist one, which appeared in the 19th century and is determined by the mechanicist way of thinking, specific to the then scientific theories, marked by the conceptions of Newton and Kepler, in which the Universe was a great mechanism autonomous to itself in functioning. The same causality principles, determinism and linearity were to be searched and discovered in all empirical fields, man itself being a complicated mechanism, but a wonderful one (machine man).

At the beginning of the 20th century, this atheist current gradually managed, through Physics discoveries, to suffer great fractures. The clear and deterministic world of Newtonian physics was replaced by unpredictability, non-linear dynamics, a-causality and a series of non-intuitive concepts, not only for the common person, but also for scientists. The theories of the second part of the 20th century, chaos theory, fractal theory, that of non-linear dynamics, which constituted the science of complexity, all come with a model upon reality, at all

its scales, completely different from the one from the classical period of Science, a model through which unpredictability, a-causality, a-spatial and a-temporal realities are found in a non-linear dynamics, with the structured, causal part, with the type of information that we customarily got used to see described by Newtonian theories and which represent the so-called objective, conventional and current reality. Without being too obvious, in less than a century, the certainties Science had been accustomed to offer to people came to be so relative that the empirical phenomena studied always needed interpretations from different gnoseological perspectives. These raised ontological problems, with questions of epistemological nature, so that the understanding of the phenomena should need more and more interpretations of a metaphysical nature which had been present in the ancient Greek philosophy or in the German classical philosophy, but also in oriental philosophical-religious views, as well as Taoist, Buddhist, etc. Not accidentally, specialists from Quantum physics (the first being Fritjof Capra, with his Tao-Physics [3]) directed their search towards the approach of these conceptions for understanding the phenomena from Quantum Physics. Phenomena such as complementarity, non-localization, Heisenberg uncertainty relations [4] from Quantum Physics, which are to be found under equivalent forms in the unpredictability and non-linear dynamics of the complex systems have forced the way to interpretations which should provide them with coherence. In spite of conceptual difficulties and of their character which is non-intuitive for the human intellect, they can acquire coherence from a metaphysical interpretation and, why not, theological.

3. Theological description of the Holy Trinity

The dogma of the Holy Trinity is the basic principle of the Christian religion, as it underlies all the professions of faith of the Church and it also conditions the whole Christian moral, personal and social order. The content of this dogma is the statement of the basis of knowledge, which is that God is one as being and threefold as person: the Father, the Son and the Holy Spirit. The three persons or hypostases own all the whole being and all the godly attributes, without splitting or separating the being and also without mingling or immersing the godly persons one into another. The dogma of the Holy Trinity is the truth most full of mystery from the Christian learning, about which the theologians consider they represent a mystery, that cannot be penetrated by the human mind through reasoning, as it is accessible only through divine revelation and it can be acquired only by faith.

The dogma sustains that the persons of the Holy Trinity, the Father, the Son and the Holy Spirit are different from each other, each of them having their own personal characteristics, through which they are different as individual persons, they distinguish themselves, as they cannot be confused one with the other, although every godly person has the full divine being, which cannot be separated, split, as it is always one and the same. To put it different, the persons lead to a distinction between them, internal personal distinction, owned by each

and every of the persons. Thus, God the Father is non-born and who does not come from another, the Son is born, the Holy Spirit comes from the Father, so that through these characteristics we can immerse ourselves deeper into the Holy Trinity Mystery. It is important to bear in mind that to the Christian mind, the three godly persons are not only three manifestations or concretizations of the only divine being, but personal and eternal existential beings of it. Apart from these personal internal characteristics called properties, the persons of the Holy Trinity can be distinguished through the fact that an external godly activity is attributed to them, an activity which is called predicate. Thus, the Father is the Creator, the Son, the Redeemer, the Holy Spirit, the bringer of solace, the perfectioner. "The Father is the creator of the world: From Him come all" (Romans 11.36) and the author of the redemption plan, "earlier than the establishment of the World" (Ephesians 1.4), "That through Christ, all should come to terms with themselves" (Colossians 1.20), coming to terms with oneself being the redemption achieved by the Son. The Son is the one through whom all things were achieved (John 1.3), including the redemption "both righteousness and jolliness and redemption" (I Corinthians 1.30) [5].

The Holy Spirit is the perfectioner of the works of the Father and of the Son, the one who gives life onto holiness, the one who prepares redemption and speaks through prophets.

The work of every godly person must not be thought of as taking place separately from the other persons, but as together-work, as they are all works of the same will of God. These attributes of the Holy Trinity assume the presence of some paradoxes and antinomies. In Theology, antinomy does not represent the contradiction between two ideas. They are complementary, every hypothesis is justified in its own way, not excluding the other one, because even if they are apparently contradictory, they do not exclude one another. The main antinomies are the ones linked to the ratio of the being and the person.

In every divine person, the Father, the Son and the Holy Spirit is to be found the whole being of God, without splitting the being into persons. The three persons are eternal, without beginning and without end, even if the Father gives birth to the Son and generates the Holy Spirit, without being there a temporal succession of the phenomena.

This reference to time represents eternity, which has no beginning, no end, but a continuous present, from where it results that the Son is always reborn and the Holy Spirit is forever regenerated.

No matter how paradoxical they may seem, these presentations which make the Christian dogmas are not considered to be contradictory, even if a human being considers it to be so. As a follow-up, they are neither rational, nor irrational, but over-rational or over-logical.

Another dogma which is considered a mystery is the embodiment of the Son (kenosis). The paradox of the mystery of kenosis of the Son of God who was embodied, is that, through kenosis, the Son of God becomes also a hypostasis of the human existence, as a finite, limited and created entity, but also the potentiality of the human being to become just like Him, God through grace.

Kenosis does not mean that the Son of God renounces his qualities of God, but only his diminishment from the godly grace, so as to be able to take our humble embodiment, to identify himself with us. Through kenosis, every person has one's own natural, unchanged properties, every hypostasis communicates its qualities to the other, by working all the human items in a godly manner and the godly items in a human manner.

4. The theological approach of the corpuscle-wave-information trinity

From a transdisciplinary perspective, Theology must be invited, along with the other approaches, to the knowledge adventure, in a holistic form which should be as complete as possible. Still, scientists manifest reticence in appealing to this type of collaboration. There is, however, a trend which feels the need of a religious approach even within the scientific knowledge, which is catalogued under the expression 'intelligent design'. Some theologians, however, with further specializations in the field of Science are willing to work together in such a transdisciplinary approach. The mystery which still persists on over some concepts which were discovered a century ago is connected to the wave-corpuscle duality in explaining the nature of light. Another mystery is to be found behind the famous formula of Einstein's theory which links energy to substance $E = mc^2$. From the viewpoint of Quantum Physics theory, the collapsing of the wave formula, the emergence of the corpuscle, of the elementary particles and thus of atoms and molecules is not yet fully understood. Even if the experimental highlight of Higgs' boson in the summer of 2013 comes to confirm certain hypotheses from certain theories (e.g. string theory, the theory of the energy of the vacuum, etc.), there still remain many mysteries in understanding such phenomena.

Surprisingly for some, the same central problems exist also in the Christian dogma, which doesn't name them mysteries, but sacred mysteries. The Holy Trinity, a central concept of Christianity, is associated to what Christianity names a great sacred mystery, i.e. something which cannot be understood through contingent, immediate knowledge, but only through mystical knowledge. This trinity is presented in Christianity as being an expression of God the one, but expressed through three forms of expression. The sacred mystery consists exactly in the coexistence of three expressions within the same entity. Presently (the last century) Science has put forward for discussion another triad which underlies reality and everything else that exists, the wave-corpuscle duality, to which, in the last centuries, information is added. These are not just labels, just simple words. While the wave presupposes an expansion into the Universe into an a-spatial, a-temporal context, therefore the infinite, the corpuscle presupposes the existence of concentrated energy, a space and time, a spatio-temporal reality, matter, thus with gravitational effects or other attraction forces which create the atom, the molecule, the macromolecules, the cells, etc. The information mediates the wave-corpuscle unity; in order to collapse the wave function, there must be a correspondence between the wave and the

corpuscle. There is no wave with attached corpuscle without informational component found in modulated frequencies (which comes from the spin). This energy-substance-information unity can be well-framed into what theologians describe as hypostases of God, God the Father, God the Son and the Holy Spirit. As a support for this overlapping is the theological opinion on kenosis, on the twofold nature of Jesus, Man and God. Christ is the Son of God, but at the same time a man, Jesus of Nazareth, thus the embodiment of the Word, a symbiosis between the finite and infinite which is difficult to accept by the philosophers of the time. This was considered to be another sacred mystery, that of the divine and the human nature of Jesus. It was a re-becoming of Jesus with the aim of making himself known to man from an axiological value perspective, to undertake the original sin of man in order to render him the chance of redemption. Death through the sacrifice of Jesus and the Resurrection represent the mystical context of the establishment of Christianity, with its role along the centuries in building the western civilisation. All these mystical facts, knowledge facts are described by physicists with a faulty phrase: the collapse of the wave formula.

We are lead to approaching the wave-corpuscle duality from a totally new perspective: the determinist movement, meaning the one associated to a permanent movement and which coincides with one of the streamlines must simultaneously overlap a non-deterministic movement, meaning the one associated to a spontaneous movement and which coincides with the continuous zigzag trajectory. Such a desideratum involves a movement on continuous and non-differentiable curves and in particular on fractal curves. Thus we are lead to fractal space-time.

5. The place of information in the wave-corpuscle duality

In Scale Relativity Theory, the dynamics of any physical system is described through dimensions which can be expressed through fractal functions, functions which are dependent both on coordinates and on time, but also on resolution scales. Moreover, any quantity can be written as sum between a differentiable part, i.e., dependent both on coordinates and time, but also on the resolution scales. In such a context, the differentiable part is proved to be compatible only with the predictable states of the physical system, while the fractal part is proved to be compatible only with the unpredictable states of the same physical system.

The analysis of wave-corpuscle duality in Broglie's theory involves the simultaneous existence of two types of movements: a deterministic movement, which is predictable and associated to a continuous movement of hydrodynamic type along a continuous line, which is specific to the corpuscle character, and a zigzag movement, random and unpredictable, which is specific to the wave character. Broglie's model introduces the two types of movements only as hypotheses, but the real problem, how much it is wave, how much corpuscle, as well as the wave-corpuscle structural compatibility (the structure of the wave

should be compatible with the corpuscle structure) has not been solved yet. A new approach modality of the problematic involved in the wave-corpuscle duality resides, in our view, in supposing that the movement of a particle takes place along continuous and non-differentiable curves. This means passing from a classical approach of movement in an Euclidean space to a non-conventional, non-standard approach, with the assumption that movement takes place within a fractal space-time. Thus, Broglie's difficult problem can also be solved, meaning that this could not justify the uniform movement of the particle within the wave field (incompatibility with the straight-line, uniform movement of the wave-corpuscle duality).

The postulate through which motions are introduced on continuous and non-differentiable curves solves this problem of the straight and uniform movement, meaning that on the new fractal manifold the movement is free (on geodesics). By accepting such a postulate, on the basis of the model of Scale Relativity Theory, it results that the geodesics of a fractal space-time support a double representation, a stochastic, unpredictable one, described by Schrödinger type equations and specific to the wave character, and at the same time a deterministic, predictable representation, through the fractal hydrodynamic model, which is specific to the corpuscular character. In Schrödinger's representation, only the module of the square wave function has physical significance, while in the second case we talk about average movements of some fluid particles which are submitted to a datum force, a force which is induced by the unpredictable part (non-differentiability of the motions curves).

Non-predictability, described through the non-differentiability of motion curves can be related to a Shannon-type fractal informational entropy, which, based on a maximization principle, leads to an egalitarian uncertainty principle. Within this uncertainty principle, the interaction constants are specified on the basis of an Onicescu-type informational energy [6]. Now, we mention the fact that only the constant value of the Onicescu informational energy settles the interaction constants within the uncertainty relations. Through the maximization principle, the integrally invariant functions are simultaneously probability density and movements on constant energy curves. Practically speaking, through the principle of informational maximization, the unpredictable, wave character given by the probability density is linked to the corpuscle character given by the energy. Within this frame one can define two 1-forms that we will further specify.

The unpredictable part must be directly correlated to non-differentiability and is manifested through the existence of a potential, also called fractal potential. The principle of maximization of the informational energy gives a concrete form to the force field. As a result, the informational energy not only stores and transmits the information through interaction, but also connects it directly to the deterministic part through interaction. So, practically speaking, the owner of all 'mysteries' is the fractal potential, which imposes the intelligent, fractal environment and the informational energy which gives strength.

As above-specified, on the basis of the non-predictable component one can define a fractal entropy in Shannon's sense and, starting from here, a fractal informational energy in the sense of Onicescu. By using the maximization principle of fractal entropy in Shannon's sense, one can demonstrate that, if fractal informational energy in Onicescu' sense is constant, then the ratio between the corpuscle energy and the frequency of the associated wave is a constant at any resolution scale.

6. Information - definitions and conceptualization

In an etymological sense, the information is what gives shape to the spirit. It comes from the Latin verb informare, which means 'to give shape' or 'to form an idea on something'.

The perception on the information is as heterogeneous as possible, the concept of information being a subject for reflection and analysis in: information theory, communication theory, knowledge theory, Logics, Semantics, Philosophy, Theology, etc. [7, 8].

The word 'data' comes from the Latin word datum, which is grammatically the past participle of the Latin verb dare, 'to give'. Even from the Antiquity the sentences or facts normally considered as obviously true were called 'data'. The initial raw data is, in the widest of meanings, numbers, signals, letters, images and other forms of data produced by devices which convert the physical quantities into symbols.

The definition of knowledge is a subject still currently under debate by the philosophers of the field of Epistemology. The classical definition, described but not completely approved by Plato, sustains that an assertion must fulfil three criteria in order to be considered knowledge: it must be justified, true and credible. Continuing in view of this idea, knowledge was reconstructed as a separate concept, which highlights the relevant traits, but which is not illustrated adequately by any definition.

Mainly, data forms information and information constitutes knowledge. Actually, the phenomena are not reduced only to an inclusion of a field into another. The information needs data and operation and memory systems, whereas knowledge supposes an accumulation of information, but also of superior psychological systems, such as generalization, abstractization, synthesis, correlation and significance. This diversity under which information is presented determines both the defining difficulty and a unitary understanding of its significance at different levels of reality.

With Quantum Mechanics, the necessity to define information emerged, but also in the case of the new Physics paradigms related to chaos theory, fractals and non-linear dynamics theory. The science of complexity, which attempts at modelling the structure of matter at different scales or reality levels, needs a new approach of information as a defining notion along with energy and substance. This is the reason why defining information becomes even more complicated from the perspective of the new paradigms. Traditionally speaking,

there are two meanings of the information notion: one with the Aristotelic acceptation, which designates the formation and structuring of a specific form, of an organization within an initially non-homogenous matter, the other signifying the transmission of a message. Information can also be seen as a proper fact, as a relation fact, as a fact of action transmission. That is why we are talking about an objective information transmission which is related to the structure of the Universe, be it macroscopic or microscopic, but also of a subjective meaning, which involves human communication, not only between human beings, but also among them and the various information technology devices and technologies.

The theory of information is connected to Shannon and Weaver, who, in the 1950s and 1960s defined information as an entity which is neither true nor false, neither significant nor insignificant, neither credible nor doubtful, neither accepted nor rejected. As a result, it is not worth to study anything else than a quantitative component of information, but not also the semantic part, which allows for the association of information with entropy by the second thermodynamic principle, the information or the quantity of information being equal and opposite with the entropy.

Weaver connected Shannon's mathematical theory with the second thermodynamic principle and asserted that entropy is the one which determines the information generation ratio. The formula of information is identical to the one of entropy, elaborated by Boltzmann.

Thus, information is, by the above relation, entropy. It should also be noted that Octav Onicescu also formulated the hypothesis regarding the fact that the degree of organization of a system can be 'measured' with the help of informational energy.

This quantitative approach of information is applied in the field of telecommunication and information technology. Under this approach it is important to establish the quantity of information and its true or false character in transmitting information, to which probability notions can be connected in order to find, with the receptors, the source-transmitted information. Even within this technological approach, two aspects of information are highlighted: information as a product, which reflects a static overview, and the approach as a process, which highlights the genesis and the scope of information. In fact, the two aspects represent the information as potentiality and the information expressed and involved in the dynamics of the becoming and structuring of matter.

Upon attempting to structure the multiple informational approaches, Lucas Introna from the London School of Economics [9] distinguishes two archetypes: the informational and the communicational one. The first was patented with the explosive development of informational technology and is connected to the making (development) of 'productive' informational systems. The second has its origins in the communicational frame of Shannon and Weaver [8], being less important in the field of informational system field, but it is more widely accepted in the theories of communication. Similarly, Stonier [7]

has the opinion that the fundamental aspect of information is connected to the fact that this is not a mental construction, but a fundamental property of the Universe. Any general theory of information must start with the study of the physical properties of information, as it is manifested in the Universe. This action must be taken before attempting to understand the variants and the more complex forms of human information. The next step must involve the examination of the evolution of informational systems beyond the physical systems - first in the area of Biology, then in the human, cultural area.

The scientific approach of the theory of information starts from the classical opinion that Mathematics is the general language of nature. The structure of the Universe is written in the mathematical language, and its letters are geometrical forms, symbols and mathematical relations. This approach which makes connections to the Euclidean geometry has suffered a drastic correction imposed by the theory of fractals developed by Benoît Mandelbrot [10, 11], who imposed another geometry, the fractal geometry. Thus, Science does not do anything else than decipher the information contained in the structure of matter, by physical and mathematical modelling. According to this paradigm, the information is to be found in nature, outside, beyond the observer and independent from it. As a consequence, information must have existed before the emergence of conscience.

To put it different, the information is the fundamental component of reality, such as matter and energy, as the nature is filled with information. On a larger scale, knowledge is 'more fundamental' than its observer and interpreter. Thus, the reunited concepts of matter and information can explain the emergence, the forming, structure and dynamics of mind and knowledge. Information has an objective natural existence; people absorb it in their minds and the computer memory modifies and multiplies it through thought and brings it to the 'middle' of society via the language.

At the opposite end of this materialistic-objective approach of information is the belief according to which information is something one person communicates to another, whereas the meaning of information can be understood only if we take into account the presence of alive beings endowed with reason, placed into a socio-cultural context and analyzed from a historical perspective.

A fundamental trait of information is connected to its subjectivity. Whatever can be information for a person can mean nothing to other people. Also, as Wurman [12] was saying, whatever is considered as information for a person can be data for another person. On the other hand, starting from the same set of data, different people, through different processing, can infer different information. If the data has a physical, tangible existence, the information exists only with the receptor, thus it is tangible.

7. Information as an expression of topological transformations

If during the 20th century it was studied from the elementary particles' point of view, of the wave component from the spectral viewpoint and materially under the form of substance and energy, the information was not treated at its true value, according to the role it has in Quantum Mechanics. The information technology era, as well as the theory of complex systems, with the chaotic aspects in which information has a potential character, but which explains the dynamic evolution patterns of the system which is highlighted in the phase space, have imposed the comeback on the role of information at quantum level. An analysis of the particle behaviour in the wave-corpuscle duality can be regarded from the perspective of the fractal space-time, with the unpredictable and non-linear evolution, allowing that, on the basis of Shannon's information theory we connect it to entropy and further to informational energy in the sense of Onicescu. There still remains an essential question: where can we search for and find the information in this quantum dynamics. It must be present both in the wave structure and in the particle properties. This connection cannot be made otherwise than in the phasic component of the wave, which is to be found in the spinning of the particle and which allows for the transfer of information from the spectral reality to the corpuscle one, as the Fourier transform demonstrates. The phase is given by the magnetic component of the electromagnetic field and represents the unpredictable, potential part, described by the complex function of Schrödinger's wave formula, as these characteristics can be explained both through the fractal theory and through the topological transformations supported by the phase from the electromagnetic wave, respectively by the spin from the particle description.

Complex numbers, with their real and imaginary part, proved to be the most suitable in describing the rotation movement around its own axis, but this model is a dynamical one, which supports transformations at the level of topological dimension through successive passage from the topological dimension 0 (of the point) to the 1 topological dimension (of the line), etc. Thus, a complex space is organized, possible infinite dimensional, which explains the difficulty of highlighting the informational component. The successive passage through the Euclidean, fractal and topological dimension determines a quantitative but also qualitative dynamics of energy. The moment this qualitative diversity is expressed is given by the moment of topological transformations at every level. This practically-unlimited diversity provides also quality along with quantity to energy in its dynamics. From the perspective of the complex systems theory, we can find, in the above-described phenomena, the main characteristics specific to complex systems: non-linear dynamics, fractal geometry, with a potential latent informational energy, along with a dynamics of a practically-infinite diversity, obtained through topological transformations within the complex space of the phase.

The topological transformations are not dependent on scale; they have the same qualitative information, no matter what the reality level is, which makes the information ubiquitous, just as the substance and energy both at microcosm level and at macrocosm level. The witticism 'in every sand grain there is the entire Universe' could hide a much deeper truth, because the fractal structuring of the Universe, with the auto-similarity fractal property, would lead to the hypothesis of the holographic Universe of David Bohm, which would transform this expression into a general ontological principle.

8. Conclusions

The transdisciplinary approach, even if it is difficult to achieve because of the language barrier and of the different knowledge methodologies, but also of the prejudice induced by different reality reasons it explores, can bring new ideas, which could lead to unifying theories or at least to new hypotheses which should lead to new paradigms.

In our paper we aimed at treating the information correlated to substance and energy, in a long-time formulated triad, but not upheld by logical argumentation. The religious and philosophical conceptions which overlap the artistic ones uphold this trilogy, whereas today it can be sustained by applying the complex systems theory and the theory of complex analysis and topological transformations.

References

[1] B. Nicolescu, Futures, **44(8)** (2012) 711-718.
[2] B. Nicolescu, *From Modernity to Cosmodernity - Science, Culture, and Spirituality*, SUNY Press, New York, 2014.
[3] F. Capra, *The Tao of Physics: An Exploration of the Parallels Between Modern Physics and Eastern Mysticism*, Shambhala Publications of Berkeley, California, 1975.
[4] W. Heisenberg, *The Physical Principles of the Quantum Theory*, Courier, Dover, 1949.
[5] I. Todoran and I. Zăgrean, *Teologia Dogmatica*, Editura Institutului Biblic şi de Misiune al Bisericii Ortodoxe Române, Bucharest, 1991, 31.
[6] O. Onicescu, *Enérgie informationnelle*, C. R. Acad. Sci. Paris A, **263** (1966) 841-842.
[7] T. Stonier, *Information and the Internal Structure of the Universe*, Springer Verlag, Londra, 1990, 155.
[8] W. Weaver and C.E. Shannon, *The Mathematical Theory of Communication*, University of Illinois Press, Urbana, 1963.
[9] L. Introna, *Management, Information and Power: A Narrative of the Involved Manager*, Macmillan, London, 1997.
[10] B. Mandelbrot, *Fractal Objects*, in Romanian, Nemira, Bucureşti, 1998.
[11] B. Mandelbrot, *The Fractal Geometry of Nature*, W.H. Freiman, New York, 1983.
[12] R.S. Wurman, *Information architects*, Graphis, New York, 1997, 51.