

FROM PSEUDO-INTERDISCIPLINARY HOLISM TO HOLISTIC APPROACH BASED ON INTER-, TRANS-, CROSS-, AND MULTIDISCIPLINARY SCIENCES AND RESEARCH

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Abstract. A brief survey of the approach and procedures of human knowledge and research, from *Mythos* to *Theos*, and then to *Logos* and finally to *Holos*, represents the beginning of this paper. The central section describes the leap from pseudo-interdisciplinary holism to the modern integrative and holistic approach and to integrative science.

Keywords: *Mythos*, *Theos*, *Logos*, *Holos*, pseudo-interdisciplinary holism, holistic research, inter-, trans-, cross- and multidisciplinary sciences and research, integrative science.

1. INTRODUCTION

Historically, scientific research defines a civilization, generating a certain type of own culture and a unique conscience of its own in human evolution, transforming history and human evolution into a long series of mixes, as many inter-, trans-, cross- and multidisciplinaryities exploited in a significant manner and, more especially, in a completely different manner, oscillating between research of major existential impact and research with cultural allusions and resonances in the conscience of the era.

The evolution of initial knowledge and subsequent research overlaps an approach outlined in four steps, which has taken an approach that lasted millennia, from *Mythos*, rooted in ancient myth and mythical consciousness, from which humanity took a first step towards *Theos* or the theist mixture, manifested with the appearance and existence of the pyramid-layered state and its theistic conscience, then passing through the *Logos*, the Word, which became essential in medieval times (continuously diversified in meanings and types of significance, from a quantitative logos to the theist one, or from the idealistic logos to the natural logos, finally moving from the mechanistic to the rational logos, to the relativist logos, etc.) and finally stopping in a *Holos* [1] that was initially difficult to predict, redefined through today's systemic, integrating approach, much-needed for salvation through knowledge and full, thorough research of nature, of the environment, of the ecosphere and, especially, of our human nature (holism being unimaginable outside the essential Socratic investigation of *know thyself*).

This whole sequence of steps can also be redefined as a long oscillation between safeguarding and destroying, between conquering and being conquered, between colonizing and being colonized, between eating or consuming and being eaten or consumed, between surviving and disappearing, between researching others and letting others research or investigate you... [2]

Transformation from *Mythos* to *Theos* overlaps the change of primitive technologies, complemented by resource concentration through agriculture, animal raising, weaving and pottery, within the framework of human groups, and implicitly cultural development as an aggregation of varieties of zoological and botanical knowledge, and experiments related to agriculture and animal husbandry. Mythological nature was comprehensive in point of dimensions, and also animistic and spiritualistic in point of substance. Nature and people did not exist in separation, and all the less in opposition.

The transition from *Theos* to *Logos*, initiated by new discoveries in the field of metal smelting technologies, measuring land borders and development of calendars to keep track of time, in parallel with developing writing, in order to write and convey messages, with an immediate impact on population growth and complexity of social organization, this transition has generated a first pressure on science and research, diversifying them and consolidating the existing ones. The *gens* and the tribe surviving exclusively on a maternal support, through the fertility specific to *Mythos*, they were substituted by the layered pyramid of the state, redefined as official organization and characterized by a strict hierarchical structure and a strict discipline, shifting the major emphasis on male domination; father domination represented the key of thought in the new *Theos*. Order in relation to knowledge and research developed *on earthas it is in heaven*, through networks of information interconnections, which that stretched from the deepest areas of both the living nature and lifeless nature, to some of the most sensitive areas of human conscience, through a social order rooted in the cosmic principles, the consciousness of heaven and earth protection rising high above human knowledge and understanding, while checking his wish for knowledge.

Transformation from *Theos* to *Logos* represented a leading to other values, generated by different technologies, and completely new resources. *Logos* gradually became a rational discourse, and even rationality, defining a central concept of both philosophy and other sciences, and of the first contacts rational of a number of scientific research processes.

Logos gave rise to the concept of quantitative measure, or *metron*, and gave human civilization an inexhaustible route to cover in achieving knowledge and research of nature, with a major impact in formulating new theories and in the emergence of new sciences, based on increasingly complex observations and reasoning.

Logos and *metron* delineated a new consciousness in their relationship with knowledge and scientific research. The last

three centuries were circumscribed to the departure from Newtonian mechanistic logos (a logos of the universality of the laws of motion, confirming that the environment is a divine clockwork moved by the primary power and functioning harmoniously and eternally in keeping with the strict laws of nature likely to allow the thinking mind to know the past, present and future) and allowed entering the Einsteinian relativistic logos, where humans, as entities endowed with a mind and consciousness, are free to investigate, for their own purposes, nature, environment, and even science and research themselves... In a way, even the notion of relativist Logos became invincible in research issues.

Albert Einstein was right when he noted that the problems created by the prevalent way of thinking cannot be solved by the same type of thinking, that a society having the conscience of relativistic logos cannot find relativistic solutions to the problem of science and research. This is the result of a crucial insight into the current existence of humanity. A new viable civilization must generate the development of a culture and conscience very different from the conception that characterized most of the past century, and the alternative is a human civilization centered on sustainable human development based on scientific knowledge and research, new technologies and new resources. The new development of scientific knowledge and research has combined extensive development (obviously unable to provide sustainability, finally conducive to chaos) and intensive development (propelling human society towards a new way of knowledge and research, of a systemic, aggregating, holistic type). [3]

The new transition can be detected in the rapid transition from relativistic Logos to Holos, and is a vital sign of hope in our so critical times. In Erwin Lászlo's model, introduced in 2006, in his book entitled *The Chaos Point: The World at the Crossroads*, this transition is based on a holistic approach, promptly transformed into a cultural and scientific force, related to major research (holism captures the deepest spiritual instincts: to fulfill you as a human being through knowledge; to generate, through research, communities that are independent, creative, healthy and comprehensive, both locally and globally; to include, in scientific and research activity, as many resources, items and dimensions of nature in general, and also human nature, in particular by being environmentally friendly; to know, to connect and to feel that you are part of the whole meaning and the whole mystery of the existence of human society, as the entire scientific research activity tries to preserve the essence of the existence of human society; to feel part of a civilization in which scientists and researchers think, publish and finally behave like responsible citizens of the planet, of the Earth's community which provides them a home and a vital mystery.

If in science holism seems limited and overlaps the principle that process raw materials or the unorganized energy units of the world, uses and organizes them, offers them a specific structure, character and individuality, and finally, personality, integrative holism does the same thing especially to create beauty, truth and specific values of knowledge and

scientific research for themselves [4].

Contemporary *Holos*, on which modern integrative holism is based, is not complete before it is able to solve the issues of priority of permanent knowledge of existential sources, in order to maintain a balance on planet Earth and not destroy life, correctly anticipating long-term structural and functional problems, while grounding them on success criteria for short periods of reference, and on the day to day evolution of scientific research and the development of multidimensional integrative knowledge.

2. FROM PSEUDO-INTERDISCIPLINARY HOLISM TO MODERN INTEGRATIVE HOLISM

The term holism was first used by Aristotle, in the superior sense of being the whole or the universal, the completeness or the continuum of the parts, in his *Metaphysics: The whole is more than the sum of its parts*. In terms of its specifically contemporary significance, holism and holistic have been introduced into sciences and research language by the South African statesman Jan Smuts, in 1926 [5].

Epistemological Holism or Confirmation Holism coexist, in connection with which new disciplines or sciences cannot be tested in isolation (unidisciplinarily), but rather at their contact and in their dependence on other scientific disciplines or sciences (appealing to inter-, trans-, cross- and multi-disciplinarity), as well as Semantic Holism, in accordance with which a certain terminology, methodology, type of modelling, theory or simply a certain part of language can be understood and valued in knowledge and scientific research only in relation to a broader segment of language, or in a pluri-methodological, multi-model and even multi-theoretical context, by a larger segment of language, possibly the entire scientific or research language.

There is also an inevitable compromise with linguistic origins, called *Moderate Holism* or *Semantic Molecularism*, which tries to place holism within very broad knowledge and scientific research fields (for example, social science), rather than the entire universe of knowledge and research, which actually brings together all these areas that have their own language, methods, theories, and especially a specific form of thinking (from e-grammar or e-syntax to e-languages, in the most spiritualized meaning, initially given by Noam Chomsky and completed by a growing virtuality exacerbated by the impact of contemporary Internet).

Holism is reflected by the Holos culture and consciousness of the 21st century; both holism and Holos are very different from the logos of the previous century, be it relativistic (see Table no. 1). The final transformation from Logos to holism based on Holos approach in scientific research covered almost entirely the last half of a century, since the 1970s, and is nearing the end in this decade, by its innovative approach to other values, which are generated by the new and original technologies, with other resources, and especially supported by a new mentality of the researcher and of scientific knowledge:

Table 1 Landmarks of Logos turning into Holism based on Holos approach, and the ethics of modern research

<p>Logos, or the word, became during the XX century a synthetic research rational type of discourse, and even a specific rationality, a central philosophic scientific and research concept especially. Logos, as the development of research in the last three centuries has finally yielded to intensive and emerging development, which was able to push society towards a new operating mode, of an aggregative, globalized, systemic and thus prepare the new holistic type of research, inspired by scientific inter-, trans-, cross-, and multi-disciplinary sciences and research... Transition from relativist logos to the current integrative holism based on Holos is the vital sign of hope in our times, plagued by uncertainties and risks.</p>	<p>Holism is based on Holos in science & scientific research and overlaps the principle that processes raw materials or the units of unorganized energy of the world, uses and organizes them, equipping them with specific structure, character and their own individuality, and even a distinct three thinking manners to know the past, present and future. Holism based on Holos consciousness must impose a new type of integrative research and ethics for all researchers in keeping with Confucius's principle of reciprocity: "Treat others as you yourself wish to be treated", turned by Gandhi, two and a half millennia later, in the formulation: "Be the change that you want to see in the world", implicitly in the research world ...</p>
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Source: Ghere , M., S voiu, G., (2010), *Economia mediului. Tratat, [Environmental Economy, Treaty]*, Ed. Universitar , Bucure ti, pp. 347 – 348.

Holism based on Holos approach focuses on inter-, trans-, cross-, and multi- disciplinary sciences and on the multidimensional and integrative research (physical, mathematical, economical, biological, educational, cultural, etc.) generating an harmonized adaptation of the human species as a whole [6], not only on the restricted kind of adaptation of the individual, an adaptation based on developing new technologies through a new vision on research and ethical approach on two levels, both globally as the ethics of research in a particular scientific field, and individually, as the ethics of a simple researcher in his/her own (experimental, publishing, and so on) activity.

Logos established the epicenter of the development of science and scientific research after subsequent measurements in a Eurocentric area, showing an unusually high proportion of leading scientists and researchers of particularly important impact in human evolution, around 80%, of the dominant figures, who were born in a hexagon bordered by Glasgow, Copenhagen, Krakow, Naples, Marseilles and Plymouth, and then extending the area by a radius of less than 100 miles of this area, the rest up to 98-99% could be easily included. [7]

Holism fully extended not only the area of world science and research development, but it also abandoned the classical investigation and observation limited by resources and time in favour of systematic experiment whose methodology is based on statistical physics and which has a maximized degree of coverage, using the survey theory, followed by statistical inference with an ever smaller error, and also in favour of scenario-directed forecast centered on the modern theory of

probability and the new types of fuzzy or neutrosophic logic.

The concept of pseudo-interdisciplinary holism is connected somehow with the individualism and systemism. Based on this, it becomes necessary to be provided for the science and the scientific research the need of a real systemic approach, based on *inter-, trans- cross- and multidisciplinary sciences and research* and against a pseudo holistic one.

But systemism and pseudo-holism are used interchangeably in most of the ecological sciences and research being equal to partial holism, due to methodological limitations, consisting especially in the limited resources available for inter-disciplinary research only.

An investigated reality is a totality transcending its components (entities, sub-systems, systems etc.) and has emergent and global properties, reducible to any properties of any part included in the reality). Reality acts on its entities more strongly than they act on reality and the interaction between two fields of reality is a whole-whole affair. The economic, political or social changes are supra-entities although all of them affect the individual structures of the analyzed reality.

The proper research of a reality in a holistic manner is the research of its global properties and changes.

The economic, political or social changes and facts are explainable in terms of supra-entities or units such as the state or supra-components forces such as the aggregate destiny of the reality. All the hypotheses and theories are either beyond empirical testing (antiscientific holism) or are tested against economic, political and sociological and historical data (science-oriented holism) [8]

The modern holism means that living matter or reality is made up of organic / unified wholes that are more and more important than the simple sum of their own parts, and holistic investigation could be considered a system of research or exhaustive scientific analysis [9].

Kafatos and Dr g nescu use the concept of integrative science as a result of the expansion of the contemporary holism. [10] Integrative science is reconsidered as a way of scientific and Luciferic knowing and research with a dominantly transverse or transdisciplinary sense, and not a paradise-like one (in the meaning Lucian Blaga gave that antinomy of knowledge in itself), and even simultaneously paradise-like and Luciferic, in the opinion of the authors of this paper, that is simultaneously horizontal or interdisciplinary and transdisciplinary by transversality, also articulating, through this integration, cross and multi-disciplinarity into scientific research (Mihai Dr g nescu styled this type of science and scientific research by the name of orthophysics, and Amoroso [11], in 2001, Noethic theory).

Thus, the holistic performance of research gradually becomes its fundamental indicator in the contemporary context, and its character of an integrative science turns into the aspiration of superb sciences, in the meaning assigned to them by Penrose.

3. CONCLUSION

The holistic approach to contemporary reality is less and less of the one-sided type of interdisciplinary investigation, and, no doubt, the need is increasingly felt for continuous approaches of the inter-, trans-, cross- and multidisciplinary type, namely the need for modern research based on research team work and through research projects, along with the obvious obsolescence of unidirectional or exclusive observation, and the ultimate goal is also one of adequacy within today's globalized, political, economical and social context.

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