

DOES THE HOLISTIC APPROACH CONSTITUTE A REALISTIC AND POSSIBLE OPTION FOR A FUTURE OF PROFOUND HUMAN KNOWLEDGE AND FOR A MODERN SCIENTIFIC RESEARCH?

Gheorghe Săvoiu¹, Mladen Čudanov², Vesna Tornjanski³

¹Romanian Statistical Society, Bucharest, e-mail: gsavoiu@yahoo.com

²University of Belgrade, Faculty of Organizational Sciences, e-mail: cudanov.mladen@fon.bg.ac.rs

³University of Belgrade, Faculty of Organizational Sciences, e-mail: vtornjanski@gmail.com

Abstract. *The holistic approach had old traditions in health research, especially. In the introduction to this article, the paradigm of holism is studied etymologically. First Holos is compared with Logos as notions generating completely different attitudes, passing through holism and holistic, with educational or academic and research or investigative accents, to finally reach the major meaning of holistic approach in human knowledge and scientific research. In a distinct section of this paper, the principles of this method of holistic approach are described, starting from the Gestalt Phenomenon and its derived theoretical notions. Another brief section exemplifies a major typology and exemplifies some holistic approaches. At the end of this paper, a few remarks provide adequate conclusive support for the future of education and scientific research according to the specific topic of the article.*

Keywords: *Holos, Logos, Holism, Holistic Approach, Gestalt Psychology, Gestalt Phenomenon (GP), Gestalt Principles (GPs), Laws of Perception, Academic Education (AE), Scientific Research (SR), Holistic Approaches in Academic Education and Scientific Research (HAs AE&SR), profound human knowledge.*

1. INTRODUCTION

The human knowledge and research had evolved from Mythos to Theos and Logos, and, finally, to Holos. The human profound evolution outlined in these four major and only apparently abbreviated steps, has lasted for mankind for a long interval of time that lasted more millennia. *“Thus, 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.”* (Savoiu, Manea, 2011) [1]. During this timeline, even *“Holos 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 synthesized in the famous expression: know thyself).” [Savoiu, Iorga, 2015, p. 4] [2]. The essence of the last transformation from Logos to Holos, based on holism and holistic approach in academic education and scientific research, covered almost entirely the last half of a century, since the 1970s, and is nearing the end in this third decade of the XXI century. This integral substitution from Logos to Holos was achieved by changing a set of values, especially educational and investigative values, with the obvious contribution of newer and original technologies to solve transdisciplinary and multi-disciplinary phenomena such as Big data, Internet of Things (hereafter: IoT) and, especially of the most complex phenomena, based on or through the Artificial Intelligence (hereafter: AI). An important role was also played by resources, multi-disciplinary methodologies, and transdisciplinary dialogues, especially those supported by a new mentality of the contemporary researcher and of the new and profound attitude to scientific knowledge:

Table no. 1: Landmarks of Logos turning into Holos, based on the holistic approach

Logos’ specific signs	Holos’ specific signs
Logos approaches, based on the word logos, became during the first six decades of the XX century a synthetic research, rational type of discourse, and even specific rationality, based on a central philosophic scientific and research concept especially. Logos, as the development of research, has finally yielded to intensive and emerging development, which was able to push society towards a new operating mode, of an aggregative, systemic and prepare the new holistic	Holistic approaches based on Holos in education & scientific research and overlap the principles that process raw materials or the units of unorganized world’s energy, using these units, equipping all with specific structure and individuality. The Holistic approaches are divided into three manners of thinking to know the past, present and future. Holistic approaches based on a consciousness of Holos impose new types of education and integrative research for all academics

approach of research, inspired by scientific trans-disciplinarity of education and research. The transition from relativist logos to the current integrative Holos is a hope's vital sign in our times, plagued by a lot of uncertainties and risks.	and researchers in keeping with Confucius's principle of reciprocity: "Treat all the others as you yourself wish to be treated", turned by Gandhi, millennia later in: "Be the change you wish to see in the world", implicitly in the research world
--	---

Sources: Ghereș, M., Savoiu, G., (2010), *Economia mediului. Tratat*, Ed. Universitară, București, pp. 347 – 348 [3], and Savoiu, G. Iorga – Siman, I. (2015). From Pseudo-Interdisciplinary Holism to Holistic Approach Based on Inter-, Trans-, Cross-, and Multidisciplinary Sciences and Research. *ESMSJ*, vol 5(2), p.6. [2].

Initiating a presentation of a *holistic approach* with the meaning of the word *holistic* is to discuss first of all about *Holos*, an ancient word with Greek origins. This old and original word generated a paradigm with many implications for education and research. It comes from an ancient Greek language and the first and the most expanded meaning was "entire" or "all". The original paradigm was viewed exclusively as an inflectional table or a table of notions, derived from the primary meaning of this *Holos*, as universal, from a universe equivalent to an ordered cosmos and not from chaos or from chaotic cosmos. In a purely linguistic investigative manner, some excerpts from some dictionaries of synonyms and antonyms (Fig. no.1 & 2) are relevant for the multitude of *pro significances* and for the variety of *anti meanings*, possessed by *Holos*, and its millennial paradigm.

absolute	alternative	full	overarching
abundant	ambitious	full-blown	plenary
accepted	ample	full-scale	profound
across-the-board	astrophysical	fully	related to holism
adequate	astronomical	general	relating to holism
aggregate	balanced	generalized	rounded
airy	ball-of-wax	global	supernaturalist
alimentary	based on holism	healthful	taken as a whole
all	basic	included	thorough
all together	big	inclusive	total
all-around	bird's-eye	inclusivity	unabridged
all-embracing	blanket	integral	uncondensed
all-encompassing	broad	integrated	uncut
alleviative	broader	international	undivided
all-in	bulk	large	unexpurgated
all-inclusive	catchall	mass	universal
all-out	common	multinational	unmitigated
all-over	complete	mystic	utter
all-pervading	comprehensive	new age	whole
all-pervasive	crystal healing	occult	wholemeal
all-present	embedded	of holism	wholesome
all-purpose	entire	one-size-fits-all	wholistic
all-round	exhaustive	outright	widespread
all-together	extensive	overall	world
			worldwide

Source: Realized by authors

Fig. 1. Some Modern Synonymes of *Holos* with the Significance of *Proholistic*

abbreviated	cut	fractional	minor
abridged	deficient	fragmental	narrow
atomistic	determinate	fragmentary	partial
atomistical	diffuse	fragmented	poor
based on organicism	diminished	inadequate	reduced
basic	disintegrated	incomplete	restricted
brief	divided	insignificant	scattered
circumscribed	exclusive	insufficient	separated
compact	finite	lean	short
customer-focused		limited	slight

Source: Realized by authors.

Fig. 2. Some Modern Antonyms of *Holos* with the Meaning of *Antiholistic*

The Greek word *holos* (ολος) means *entire* or *whole*. The similitude with the English word *whole* is rather an accident and not a certainty, and more important the identity of meaning is not a complete one. Even the Greek word *Holos* (ολος) comes from an Indo-European root *solo*, meaning whole, firm, sound, or correct. *Holos* also expresses the essence of modern *holism* just as "the whole is greater than the sum of its parts", being a term first used by Aristotle, initially with a synergistic meaning ["The totality is not, as it were, a mere heap, but the whole is something besides the parts; there is a cause" or "the whole is not the same as the parts"] and which can be found in Aristotle's *Metaphysics*, as an obsession for logic definition (Marc, 2016) [4]. This line of thought follows the thinking often attributed to Socrates: "A disorderly mob is no more an army than a heap of building materials is a house".

Redefined by Jan Smuts in 1926, *Holos* is already transformed into *holism*. *Holism* becomes the essence of *Gestalt theory* and generally it is opposed to the tendencies of analyzing, and breaking down the whole into parts. sometimes to the point where you "can't see the forest for the trees". The reborn term of *holism* was defined in Jan Smuts's journal, entitled *Holism & Evolution* (1926) as "the tendency in nature to form wholes that are greater than the sum of constituent parts through creative evolution". This conceptualization of a new *holism* is completed by the same South African general and statesman, Jan Smuts, with the finding that "there is a tendency towards the whole even in the individual cells" and with the idea of the existence of "the reciprocal influence of the whole and its parts", all these being able to create evolution (Smuts, 1926) [5].

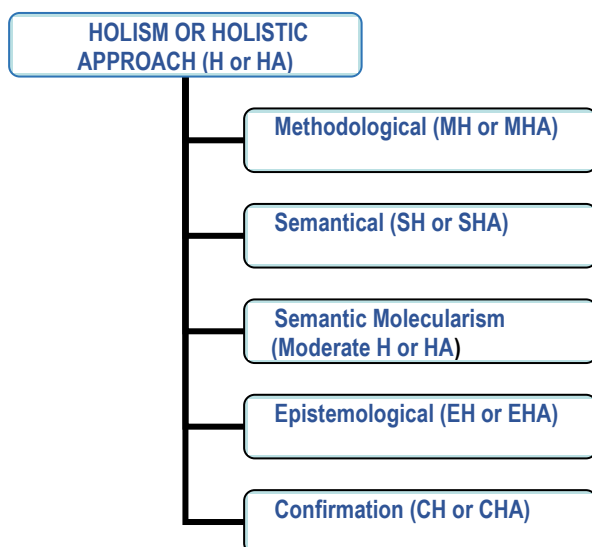
The conceptualization of the new *Holos* focuses on multidimensionality and transdisciplinarity, capitalizing on aggregative and integrative research (from purely physical to mathematical, economic, biological, social, psychological, educational, cultural, and other related) culminating in a harmonized adaptation of the human species as a whole (Bruner, 1970) [6], It has a dual focus on the i) limited type of adaptation of the individual, as well as the ii) development of new technologies,

methodologies, and research methods, as well as through a new vision on the modern research approach. *Holos* also imposes a new ethical approach structured on three levels, through the global ethics of scientific research, the specific ethics of research in a certain significantly differentiated scientific field, and the individual ethics of a simple researcher in his activity (fundamental, experimental, investigative, published, and so on) (SavoIU, Iorga, 2015, p. 6) [2]. Inside modern scientific research, *Holism*, derived from *Holos*, becomes more and more a specific view, “denying that all large-scale social events and conditions are ultimately explicable in terms of the entities or individuals who participated in, enjoyed, or suffered them” (Encyclopedia Britannica, 2010) [7]. In a dictionary explanation of *Holism* and *Holistic* significances, these words are related to or concerned with wholes or with complete systems rather than with the analysis of, treatment of, or dissection into parts” (Merriam-Webster, 2022) [8].

A modern *Holistic Approach* brings together all the information, data, and connections, going up to accidental references with a relative degree of relevance about the whole complex phenomenon observed, investigated, quantified, associated or correlated, anticipated evolutionarily and, finally, improving the scientific knowledge about it. The *Holistic Axis* of the modern research approach is generated by the idea that all parts of a complex system under investigation are interconnected.

2. GESTALT PHENOMENON AND DERIVED PRINCIPLES OF HOLISTIC APPROACH

Holism and *Holistic Approaches* already have a typology adequate to the specificity of the complex researched phenomenon as one can remark from fig. no. 3:



Source: Realized by authors from (SavoIU, Iorga, 2015, p. 5) [2].

Fig. 3. A typology of *Holism* or *Holistic Approach*

Methodological (*Holism* or *Holistic Approach*) means the complex phenomenon’s study at its own autonomous macroscopic level, Semantical (H or HA) denies the claim of translation of the complex system without residue into statements about the actions and attitudes, associations and correlations of entities. Epistemological or confirmation (H or HA) appear and coexist in the case of new sciences that cannot be tested in isolation or unidisciplinary, but only in contact with and in their dependence on other sciences (based on inter-, multi- and transdisciplinarity) even calling on the entire language of scientific research. Moderate (H or HA) or Semantic Molecularism is an inevitable compromise with linguistic origins, trying to place holism within relatively broad knowledge and scientific research fields but not with the entire universe of knowledge and research (e.g. economic science). (SavoIU, Iorga, 2015, p. 5) [2].






The *Holism* and *Holistic Approaches* resulted in Gestalt Psychology (GP) in the 1950s, as a response to behaviourism. In a free and creative translation, the German word *Gestalt* (pronounced divided in “Ge + Shtalt”) has the meaning of “*configuration, pattern, form or combination*” (an arrangement of elements in a particular way of thinking) sometimes even the clear significance of “*holism and structure*”. Thus Gestalt tries to offer a solution for understanding the way individual elements or entities are integrated and structured by our cognition as a psychical whole using a *Holistic Approach* (Bustamante, 2021) [9].

Gestalt Psychology (hereafter: GP) is not only a school of thought considering all individuals in their social context but also a new way to investigate social complex phenomena for finding the specificity and understanding the impact in which the human brain perceives all its experiences as a whole. GP takes into account that specific properties characterizing individuals are different from the sum of their individual parts (in fact GP tends to apply the *Holist Approach* in Psychology).

Historically, the Gestalt school of thought has two significant influences of a purely philosophical nature in Kantian epistemology and in Husserl's phenomenological method. who tried to offer more knowledge about the individual consciousness, and also to understand through which mental processes a human individual forms a certain conception about the universe and the specific population in which he lives. (Jorge, 2010) [10]. Gestalt also has three outstanding researchers in Psychology as mentors, Max Wertheimer, and his inaugural article on Gestalt Psychology, titled *Experimental Studies of the Perception of Movement* (1912), Wolfgang Köhler especially for his book on *problem-solving*, entitled *The mentality of Apes* (1917), and Kurt Koffka with his famous book entitled *Principles of*

Gestalt psychology (1935). These three mature researchers and psychologists carefully observed the functioning of the human brain and formulated their original Gestalt theory and the principles derived from it.

The source of GP is also a new linguistic, and a new semantic attitude. Thus, when reading a text, one perceives each word and sentence as a whole with a holistic approach to identifying the real meaning, rather than seeing only individual letters. Finally, the purpose of the entire text depends on certain arrangements of letters in a specific structuring and grouping in words, expressions, sentences, phrases, etc. (Bustamante, 2021) [9]. Perhaps, the most important results of GP were *Gestalt Principles* (GPs), and *Laws of Perception*, explaining in detail how this behaviour of “*pattern - seeking*” operates in reality. They offer a powerful framework to understand how human perception works. They remain simple to assimilate and implement even today (Fig. no. 4), being used not only in Psychology, but also in Arts, by visual artists, in Education, by teachers and educators and yet in Business Communication.

PRINCIPLE'S-IMAGE (STANDARD GRAPH)	PRINCIPLES' ESSENCE (WORDS' CONTOUR)
 PROXIMITY	PROXIMITY can be applied when objects placed together, and the eye perceives them as a group.
 SIMILARITY	SIMILARITY appears when objects look similar to one another, and the eye perceives them as a group or pattern.
 CONTINUANCE	CONTINUANCE comes out when the eye is compelled to move from one object through another.
 CLOSURE	CLOSURE arises always when an object is incomplete or is not completely and clearly enclosed.
 FIGURE & GROUND	FIGURE & GROUND emerges when the eye differentiates an object from its surrounding surface or area.

Source: Realized by authors

Fig. 4. A synthesis of *Gestalt Principles* (GPs)

The *Laws of Perception* and other more detailed classifications include supplementary: i) *prägnanz*, which called the “*law of simplicity*” or “*law of good figure*”; ii) *common region*, which proposes that elements located within the same closed region to

be perceived as belonging to the same group: iii) *symmetry* according to which symmetrical components are grouped together; iv) *common faith*, when elements tend to be perceived as grouped together if they move together, etc. (Dresp-Langley, 2015) [11].

Gestalt and its own experimental research appear as a scientific Psychology in European Universities during the early decades of the 20th century, being closely linked to German thinking and to some of its most representative epistemological theories. Gestalt psychologists offered some answers and gave contours to the basis of phenomenism. Holism, holistic approach and structuralism provide scientific explanations for why changes in spacing, organization and timing can radically transform how information is received and assimilated in the human brain or mind.

In Gestalt theory, *Holistic Approach* means to provide support that looks at the entire or whole phenomenon including all explanatory variables (e. g. Universe, Terra, Mankind, Human body, Global Economy, Education, Research, and other related), and not just their reduced parts or small entities’ factors or causes.

Holistic Approach appears in Gestalt Psychology because of its central tenet based on those “mental shortcuts”, able to understand the perception of the whole as different from the sum of individual elements (the whole being different from the sum of its parts). Gestalt sustains the opposite path of the general idea that the complex perceptions become clear only by identifying the primitive sensations it caused, and suggests, the whole is grasped even before the brain perceives the individual parts (e.g. looking to a photograph, one sees the image of a face rather than a nose, two eyes and the shape of a chin, etc.), and this is the explained human brain reality: human mind or brain transcends the specific parts to focus on the whole, losing somehow its objectivity.

In science, *Holism* and *Holistic Approach* seem to be somehow limited for only one researcher, but unlimited for one selected and extended team of researchers.

Holism and *Holistic Approach* do offer great satisfaction and advantages in modern research, directing theoretically and leading practically everything towards pure originality, beauty, truth and specific values of knowledge and satisfaction in complex investigation for scientific research themselves (Savoiu, 2013) [12].

Contemporary *Holos*, on which more integrative *Holism* and *Holistic Approach* are based, cannot be complete before academic education and scientific research are able to solve the issues of priorities for knowledge in teaching students, and in major investigations for the human population.

3. A MAJOR HOLISTIC APPROACHES' TYPOLOGY AND SOME EXAMPLES

Holistic Approaches in Academic Education and Scientific Research (hereafter: HAs AE&SR) have their real roots or basic sources in Gestalt Psychology with its principles and the Laws of Perception. HAs AE&SR influenced and will still influence modern education and research in a multitude of disciplines, from linguistics, to design, from architecture to visual communication, from economics, to politics, from biology, to human and veterinary medicine, from marketing to antimarketing, from permaculture to organic farming, from holistic management to quantum physics, from antropology to teleology, etc. Thus, for the authors of this paper, HAs AE&SR are in fact integrated forms of multi- and trans-disciplinarity and offer many advantages for a scientific investigation, such as: integration, aggregation, comprehensibility, universality, and full-inclusion in new knowledge about complex phenomena.

The first exemplification of two different types of HAs AE&SR identify distinctive HAs in qualitative and quantitative research. Some significant differences between qualitative research (QLR) and quantitative research (QTR) are shown in fig. no. 5:

QUALITATIVE RESEARCH (QLR)	QUANTITATIVE RESEARCH (QTR)
Data collected are words or images	Data collected are numbers
Small-scale studies are associated with it	Larger-scale studies are associated with it
Looks in-depth at some phenomenon	Aims to collect & generalise large data amount
Tends to take a holistic perspective	Tends to look at specific variables
Data analysis is placed throughout the data collection	Concentrates on data analysis after it has been collected.
QLR relies on researcher directly involved	QTR relies on researcher more detached & objective

Source: Realized by authors from (Denscombe, 2021, pp. 47-49) [13].

Fig. 5. Some distinctions between QLR and QTR

Holistic Approach means to look at phenomenon as a whole interconnected entity, and thus to understand the bigger picture. *Holistic Approach* tries not only to think outside “the box” but also to remove “the box” completely. Finally, HAs AE&SR are qualitative when their holistic approaches are more visible and essential, whereas HAs AE&SR are quantitative as soon as become much more particularistic. Moreover, HAs AE&SR quantitative suggest a final course of action and HAs AE&SR qualitative research develop the initial understanding. (Collins, 1992, pp. 181-186) [14].

Some examples of HAs AE&SR. constitute the final part of this section, having the role of concretizing the theoretical notions in the article.

Holistic Approach in medicine tries to prevent and offers therapeutic solutions for a better health and applied medicine, thus emphasising the necessity of examining a person in whole, including his body, mind, feelings, and its environment, and not only some isolated organs, functions etc. The term *Holistic Approach in medicine* or simply *Holistic Medicine* appeared in the late of the XX century and its *International Association of Holistic Health Practitioners* was founded in 1970, assuming its current holistic name after more than one decade, in 1981 (Encyclopedia Britannica, 2020) [15].

There is also a *Holistic Approach* in therapy, well-known as *Gestalt Therapy*, which Frederick and Laura Perls founded in the 1940s. It focuses on the phenomenological method of awareness that distinguishes perceptions, feelings and actions from their interpretations. Gestalt Therapy considers that explanations and interpretations are less reliable than what is directly perceived and felt, and thus it generates a therapy rooted in dialogue, in which patients and therapists discuss not only conceptual and concrete differences, but also the real perspectives of good health (Yontef & Simkin (1981) [16].

Holistic Approach in design was described as a reality in modern research by Gregg Berryman in his book, *Notes on Graphic Design and Visual Communication* (1979) [17]. In fact, modern design just applies Gestalt principles and laws redefining many of perceptual factors and rebuilding a visual frame of references, providing young designers with a “reliable psychological basis for the spatial organization of graphic information”. *Holistic Approach in design* becomes more and more useful in the creation of posters, magazines, logos and billboards in a meaningful and organized way. Recently, *Holistic Approach in design* “has also been applied to the design of websites, user interfaces and digital experiences” (Graham, 2002; 2008) [18, 19].

Holistic Approach in education, represents forms of applied *Gestalt Theory* as a natural reaction to behaviorism, and suggests that students can perceive the whole of the learning goal, and only after this profound understanding they will discover the relations between entities and the entire system, but teachers must provide structured lesson’s framework and only after this action they can explain into details, revealing based on Gestalt principles the relation between contents and the major lesson’s purpose (Bustamante, 2021) [9].

Holistic Approach to organisation is a direct contradiction of the last century’s direction of organisation. Based more on Logos than on Holos, XXth century organisation is founded on the

particularisation of work by job division. Inherited from the Greco-Roman tradition of trireme building and passed by Venetian Arsenal and Adam Smith's pin manufacture example, it was perfected in Ford Motor Company, where specialization of work enabled mass production of motor cars [20]. While the coordination was concentrated in a few positions from technostucture and top management, the rest of the organizations' tasks were as far from the holistic as possible, so this approach can be dubbed "anti-holistic". Becoming one of the major drives of economic progress in the last century [21] it also leads to a wide array of problems with job satisfaction, alienation [22] and problems which can be detected on the global scale [23]. Opposed to that approach is research rooted on earlier works of Adizes [24], Mintzberg [25] and Senge [26], currently articulated in the theory of "teal organisation" of Frederich Laloux [27]. It describes a self-management team approach based on the holistic work perception and despecialization of work.

Holistic Approach to innovation management in banking is an example of Holos that ensures a strong foundation for a better understanding of the dynamics in banking, an effective response to all the challenges that the global marketplace is exposed to and a valuable source for new business opportunities aimed at creating a sustainable competitive advantage in banking services [31]. Tornjanski et al. (2015) [31] have concluded that traditional forms of innovation management in banking do not contribute to sustainability. Contrarily, new approaches with a holistic view and systematic acting should be taken into account [45], as well as the adoption of effective instruments and structures with the purpose to energize superior value creation for customers and stakeholders.

Holistic Approach to the ecosystem represents a multidimensional concept founded on various "assets" that (inter)act in an integrated manner to boost the efficiency and effectiveness of desired outcomes for all involved parties. The existing theoretical fund contains numerous examples of a holistic approach to a ecosystem phenomena. To name just a few: entrepreneurial ecosystem [32], (e)learning ecosystem [33], open innovation ecosystem [34], collective intelligence ecosystem [35], privacy protection ecosystem [36], secured digital business ecosystem [37].

Holistic Approach in the context of Society 5.0 is a dimension developed in Japan in 2016. with the aim to design a "super smart society" for the world. The concept, bright vision and growth strategy are designed for a sustainable future, founded on human-centricity, prosperity and well-being for all [35], [38-44].

Depicted examples signify the weight of the Holos approach that should be taken into account

for further development in science and research areas.

4. SOME FINAL REMARKS

The authors of this paper consider education and research as the human activities able to expand the human knowledge in universe.

Holistic Approach remains that of benevolent cooperation and competitive trust as guiding criteria for optimizing education, research, resources, consumer satisfaction, housing, health, culture, sociability, etc. by researching the social, spiritual, political, economic, technological, demographic and ecological aspects of life, transforming violence and absurd competition into inadequate or even impossible solutions.

The *holistic approaches in academic education and scientific research* (HAs AE&SR) did not disappear at all after Socrates' simple and valid observation that an individual cannot know everything. The modern team of researchers familiar with the holistic approach in the new multi- and transdisciplinary horizon of current sciences or methodological holism is becoming more and more clearly the optimal option that emphasizes the importance of studying complex systems as integrative and coherent systems whose component parts can be much better known and understood both in relation to each other, and in their relation to the whole or system. The *Antiholism* error characterizes the limited and unidirectional and isolating approaches in the investigation of complex systems or living organisms, and this error cannot be completely removed by knowing only the parts, entities and individual characteristics. The excess of atomism will be eliminated by the holistic approach in very near future...

The approach of triple bottom line in management and economy illustrates science-oriented holism [28] as the hypothesis of business performance is tested against financial, environmental and social data (which in other cases can be extended by e.g. political, historical or emotional context). This opposes antiscientific holism which dubs all hypothesis beyond empirical testing... The modern *Holistic Approach* is identical with integrative science according to Kafatos and Drăgănescu. They have used the concept of integrative science as a result of the expansion of contemporary holism (Iordache, 2008, p. 215) [28].

"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 Romanian philosopher Lucian Blaga gave that antinomy of knowledge in itself), and even simultaneously paradise-like and Luciferic [...] Integrative science is simultaneously horizontal or

inter- and transdisciplinary, using transversality, also articulating, through this integration, cross- and multi- disciplinary into scientific research (Kafatos and Drăgănescu, 2003, pp.11-23) [29]. Mihai Drăgănescu styled this type of science and scientific research by the name of orthophysics, and Amoroso by Noethic theory (Amoroso, 2001) [30].

Thus, *Holistic Approach's* performance in education and research gradually become fundamental indicators not only in the contemporary context, but especially in the future, and the character of this new integrative science turns into the aspiration of scientific knowledge.

All the holistic approaches in academic education and modern research reality are less and less of the one-sided type, but more and more of multi-, and trans-disciplinary knowledge and investigation, and, no doubt, the need is increasingly felt for continuous approaches of the multi-, and trans-disciplinary human survival based on knowledge, and modern research.

“The importance of the education and research team work and through academic and 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” (Săvoiu, Iorga 2015, p.7) [2].

5. REFERENCES

- [1] Săvoiu, G., Manea, C., (2011). Environmental Statistics and Human Ecology, *Romanian Statistical Review*, vol. 59 (9), pp. 76-101.
- [2] Săvoiu, G. Iorga – Siman, I. (2015). From Pseudo-Interdisciplinary Holism to Holistic Approach Based on Inter-, Trans-, Cross-, and Multidisciplinary Sciences and Research. *ESMSJ*, vol 5(2), pp.4-7.
- [3] Ghereș, M., Săvoiu, G., (2010), *Economia mediului. Tratat, [Environmental Economy, Treaty]*, Ed. Universitară, București, pp. 347 – 348.
- [4] Marc, S. C. (2016). *Aristotle's Metaphysics*, The Stanford Encyclopedia of Philosophy (Zalta E. N. Winter Edition), Available online at: <https://plato.stanford.edu/archives/win2016/entries/aristotle-metaphysics/> Accessed 16 December 2022.
- [5] Smuts, J. (1926). *Holism & Evolution*, London: MacMillan and Co, Ltd.
- [6] Bruner, J.S., (1970), *Toward a Theory of Instruction*, Cambridge – Massachusetts: The Belknap Press of Harvard University, University Press.
- [7] “Holism”. (2010). Britannica, The Editors of Encyclopaedia. Encyclopaedia Britannica, 4.08.2010, Available online at: <https://www.britannica.com/topic/holism>. Accessed 14 December 2022.
- [8] “Holistic” (2022). *Merriam-Webster.com Dictionary*, Merriam-Webster, Available online at <https://www.merriam-webster.com/dictionary/holistic>. Accessed 14 December, 2022
- [9] Bustamante, N. (2021). *What Is Gestalt Psychology? Definition and Examples*. Simply Psychology. Available online at: <https://www.simplypsychology.org/what-is-gestalt-psychology.html> Accessed 17 December 2022.
- [10] Jorge, M.L.M. (2010). Implicaciones epistemológicas de la noción de forma en la psicología de la Gestalt. *Revista de Historia de la Psicología*. vol. 31, núm. 4 (diciembre)
- [11] Dresp-Langley, B. (2015). Principles of perceptual grouping: Implications for image-guided surgery. *Frontiers in Psychology*, vol. 6, 1565, Available online at: <https://www.frontiersin.org/articles/10.3389/fpsyg.2015.01565/full>. Accessed on 19 December 2022.
- [12] Săvoiu, G., (2014). Principles, landmarks and stages of scientific research in the field of economics, which were finalized by papers published in prestigious journals, *Amfiteatru Economic*, pp.1–13. Available online at: https://www.amfiteatruconomic.ro/RepereAleCercetarii/SavoIUgheorghe_Principles.pdf Accessed on 15.12.2022.
- [13] Denscombe, M. (2021). *The good research guide: research methods for small-scale social research projects*. 7th edn. London: Open University Press.
- [14] Collins, E. C. (1992). Qualitative research as art: Toward a holistic process, *Theory Into Practice*, vol 31(2), pp.181-186, DOI: 10.1080/00405849209543540
- [15] “Holistic medicine” (2020). Britannica, The Editors of Encyclopaedia. Encyclopaedia Britannica, 23.02.2020, Available online at: <https://www.Britannica.com/science/holistic-medicine>. Accessed 16.12.2022.
- [16] Yontef, G., & Simkin, J. (1981). Gestalt therapy: An introduction. *Gestalt Journal Press*. vol. 4 (1), pp. 89-92.
- [17] Berryman, G. (1979). *Notes on Graphic Design and Visual Communication*, William Kaufmann, Los Altos, CA: Crisp Publications.
- [18] Graham, L. (2002). *Basics of Design: Layout and Typography for Beginners*, New York: Delmar/Thomson Learning.
- [19] Graham, L. (2008). Gestalt theory in interactive media design. *Journal of Humanities & Social Sciences*, 2(1). pp. 1-12.
- [20] Read, C. (2010). Specialization and Surpluses. In *The Rise and Fall of an Economic Empire* (pp. 22-31). Palgrave Macmillan, London.
- [21] Groenewegen, P. (1987). Division of labour. *The New Palgrave: A Dictionary of Economics*, 1, 901-6.
- [22] Dickens, P. (1997). Local environments, the division of labour and alienation from nature. *Local Environment*, 2(1), 83-87.
- [23] Alatas, S. F. (2003). Academic dependency and the global division of labour in the social sciences. *Current sociology*, 51(6), 599-613.
- [24] Adizes, I. (1971). THE ROLE OF MANAGEMENT IN DEMOCRATIC (COMMUNAL) ORGANIZATIONAL STRUCTURES: A Study of the Yugoslav Self- Management, the Israeli Kibbutz and the

Peruvian Comunidad Industrial. *Annals of Public and Cooperative Economics*, 42(4), 399-420.

[25] Mintzberg, H. (1989). The structuring of organizations. In *Readings in strategic management* (pp. 322-352). Palgrave, London.

[26] Senge, P. M. (1997). *The fifth discipline. Measuring Business Excellence*.

[27] Laloux, F. (2014). *Reinventing organizations: A guide to creating organizations inspired by the next stage of human consciousness* (Vol. 1). Brussels: Nelson Parker.

[28] Iordache, V., (2008). *Explorări dincolo de individualism și holism: F.A. Hayek și D.C. North*, Ars Docendi, București. p.215

[29] Kafatos, M., and Drăgănescu, M., (2003). *Principles of Integrative Science*, Bucuresti: Editura tehnică.

[30] Amoroso, R., (2001). *The Physical Basis of Consciousness: A Fundamental Formalism*, Communication at the Vth Conference of Structural – Fenomenological Modelling, categories and functors for modelling reality, Romanian Academy, Bucharest, June 14-15, 200.

[31] Tornjanski, V., Čudanov, M., & Săvoiu, G. (2015). *A holistic approach to innovation management in banking: a review*. *Econophysics, Sociophysics & Other Multidisciplinary Sciences Journal (ESMSJ)*, 5(2), 8-15.

[32] Theodoraki, C., Dana, L. P., & Caputo, A. (2022). *Building sustainable entrepreneurial ecosystems: A holistic approach*. *Journal of Business Research*, 140, 346-360.

[33] Chang, V., & Guetl, C. (2007, February). *E-learning ecosystem (eles)-a holistic approach for the development of more effective learning environment for small-and-medium sized enterprises (smes)*. In 2007 Inaugural IEEE-IES Digital EcoSystems and Technologies Conference (pp. 420-425). IEEE.

[34] Fasnacht, D. (2019). *Open Innovation Ecosystem: The Winner Takes It All*. Fasnacht D.(2018) *Open Innovation Ecosystems*. In: *Open Innovation Ecosystems. Management for Professionals*. Springer, Cham. DOI, 10, 978-3.

[35] Tornjanski, V., Čudanov, M., & Marinković, S. (2020). *Shaping a new business landscape by empowering collective intelligence: Synergetic effects of open innovation, human and artificial cognitive and emotional intelligence*. In *Proceedings of the 2nd Virtual International Conference: Path to a Knowledge Society- Managing Risks and Innovation - PaKSoM 2020*, Niš, Serbia (pp. 127-136).

[36] Elrick, L. E. (2021). *The ecosystem concept: a holistic approach to privacy protection*. *International Review of Law, Computers & Technology*, 35(1), 24-45.

[37] Tornjanski, V., Knežević, S., Ljubanić, D., Glišić, V., Žižić, D., & Travica, J. (2021). *Towards secured digital business ecosystems: From threats to opportunities*. In *Proceedings of the 1st E-business technologies Conference - EBT 2021*, Belgrade, Serbia (pp.1-14).

[38] Keidanren - Japan Business Federation (2016). *Toward realization of the New Economy and Society. Reform of the Economy and Society by the Deepening of "Society 5.0"*, Keidanren, Tokyo. Retrieved from: http://www.keidanren.or.jp/en/policy/2016/029_outline.pdf.

[39] Fukuyama, M. (2018). *Society 5.0: Aiming for a new human-centered society*. *Japan Spotlight*, 1, 47-50.

[40] Ferreira, C. M., & Serpa, S. (2018). *Society 5.0 and social development*. *Management and Organizational Studies*, 5(4), 26-31.

[41] Japan Government - JG (2020). *Abenomics*. Retrieved from: <https://www.japan.go.jp/abenomics/>.

[42] Tornjanski, V., Knežević, S., & Milojević, S. (2020a). *Synergetic effects of integrated collaboration between humans and smart systems in banking: an overview*. In *Proceedings of the XVII International Symposium SYMORG 2020*, Zlatibor, Serbia (pp. 683-692).

[43] Tornjanski, V. & Čudanov, M. (2021b). *Towards Society 5.0 Era: Organisational Empowerment of the Sustainable Future*. In *Proceedings of the 3rd Virtual International Conference Path to a Knowledge Society- Managing Risks and Innovation - PaKSoM 2021*, Complex System Research Center, Niš, Serbia. *Mathematical Institute of the Serbian Academy of Science and Arts, Belgrade, Serbia* (pp. 413-422).

[44] Tornjanski, V., Knežević, S. & Vulević, B. (2021a). *Towards Sustainability: Shaping the Project Management Landscape in the context of the Society 5.0*. In *Proceedings of the 25th International Congress on Project Management - IPMA 2021*, Belgrade, (pp. 173-184).

[45] Marinkovic, S., Rakocevic, S. B., & Tornjanski, V. (2022). *ENHANCING INNOVATION MANAGEMENT COMPETENCES IN BANKING*. In *Proceedings of the 25th EISIC - Excellence in Services International Conference*, Universita di Verona, Italy (pp. 1-15).