

**IN DEFENSE OF ARISTOTLE’S BIOCOSMOLOGY  
AS THE COMPREHENSIVE SUPERSYSTEM OF KNOWLEDGE:  
EIGHT CRITICAL COMMENTS ON THE ARTICLE OF M. BENETATOU**

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*Eight comments*

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*Abbreviations:*

BCA – Biocosmological Association

T\_SCSS – the type of a sociocultural supersuystem

This is an incredible moment in the world cultural history that two (Greek) thinkers of genius – Plato and Aristotle, founders of the modern types of rationality – appeared in the same place (Athens), time (4<sup>th</sup> century BC, in the cultural period of Classical Greece), and even cooperated with each other (one is a teacher of another). The incredibility of the moment is that these two greatest thinkers have created the two (polar to each other) supersystems of knowledge that are precisely of cosmological character, for they realize the comprehensive (all-embracing) knowledge with respect to the surrounding tangible (visible) world (cosmos or Kosmos). Significantly, besides the specific contents of their cosmologies, they indeed are the founders of the main modern types of mentality and scholarly

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endeavors – the Types of rationality. Further on, essentially, in applying these both polar types of rationality – mankind has at its disposal the truly all-encompassing mightiness regarding the rational cognition of the world.

Biocosmological Association (BCA) mainly focuses on the cultural heritage of Aristotle (this is the main scope of the BCA, together with the study of Integralist forms of knowledge). Paradoxically, however, Aristotle's (Father of Science) supersystem of knowledge – Biocosmology, taken as a whole (as the Type of rationality) – has been lost to the modern scientific community. Naturally, therefore, BCA strives to reveal (rehabilitate) Aristotle's true (Bio)cosmology – the comprehensive (super)system and Type of science and philosophy taken as a whole. A cornerstone is that we treat Aristotle's approach as an autonomic comprehensive Type of knowledge (independent from Plato's cosmology, which is polar to Aristotle's supersystem and Type of knowledge, but equally has the comprehensive quality). In this light, Marianna Benetatou's work is a really valuable piece of research, for it presents a fresh outlook and profound comparative analysis of both approaches – Aristotle's and Plato's. Therefore, her endeavors form a right perspective in developing BCA's main issues and approximation to fruitful results. Hopefully, BCA members will participate and develop this serious spirited open discussion, thus contributing to the true development of Biocosmology (neo-Aristotelism).

### **1. Aristotle's and Plato's indispensable contributions to the world culture**

Aristotle created the cosmology (supersystem of knowledge and Type of rationality) that is essentially Biocosmist and based on the Four-causal immanent aetiology, Integral<sup>2</sup> gnoseology, Functionalist (organicist, inherent ends-driven – teleological) methodology, bio-socio-Kosmist anthropology and socioculturology, Virtual ethics, and the derived Bio-sciences (of all classes) and Bio-metaphysics. Substantially, Aristotle created the first rational (super)system of knowledge (ready for use) that (foundationally) made possible the development of scholarly endeavors in the Current (Christian) era. Aristotle is rightfully called the Father of Science, whereas Plato – Father of Philosophy.

Ayn Rand (1963) wrote: “If there is a philosophical Atlas who carries the whole of Western civilization on his shoulders, it is Aristotle. He has been opposed, misrepresented, and – like an axiom – used by his enemies in the very act of denying him. Whatever intellectual progress men have achieved rests on his achievements.” We likewise have attempted to define four cycles of Aristotle's naturalist Type of rationality rehabilitation (on a scale of the world cultural evolution), emphasizing that ‘Aristotle 4.0’-age<sup>3</sup> has much to do with the Russian cultural (scientific) tradition.

Equally, Plato has generated the (Type of) knowledge equally of the cosmological (comprehensive, all-embracing) level. Following the conclusion of

<sup>2</sup> Which integrates empirical, intuitive, and logical cognitive approaches.

<sup>3</sup> See: Khroustski KS, “Rehabilitating Pitirim Sorokin's grand Triadologic concept: A Biocosmological approach”, 2014.

Raphael Demos, “Plato has exerted a greater influence over human thought than any other individual with the possible exception of Aristotle” (1927). This is certainly Plato who formed the foundations for the modern (mathematical-reductionist) science and, in general, for the currently dominating Sensate (and, for the present – long expected – Integral<sup>4</sup>) Types of SocioCultural SuperSystems (T\_SCSS), or, synonymic – Types of rationality, or Types of mentality. Raphael Demos states:

A philosopher in our day is considered a specialist in a field of knowledge distinct from that of science. Plato was a philosopher in a totally different sense. For him, philosophy was insight into the whole of truth, the study of reality in all its aspects; he was unaware of any barriers between this or that field of inquiry such as we erect today. Common sense ran into physics, physics into mathematics, mathematics into metaphysics; metaphysics, in its turn, led into ethics, politics, and religion. In reading the dialogues of Plato, we find abstruse discussions of ultimate principles joined to detailed descriptions of the parts of the human body, and investigations into the properties of geometrical figures along with inquiries as to the nature of the good life. (1927)

As it is well known, Plato indeed is the unique incredible thinker who for the first time (in the world cultural history, at the rational level) has generated the new (and which significantly throw light into the future of global development) cosmological foundational senses (basic principles). Thus, Plato is the first cultural luminary who introduced into the global cultural thought (mainly in the *Timaeus*) the following foundational concepts:

1. The concept of monotheism – of the existence of an invisible and supreme spiritual Being – the concept that was radically different from the prevalent polytheism of other Greek philosophers (including Aristotle) and that had a revolutionary significance for the further global history.

2. His other great discovery is the proposition of the idea of Trinity that was later adopted by the Christian Church. In fact, the doctrine of the Trinity owes far less to the Bible than it does to the metaphysical speculations of Plato. Not surprisingly, Church Fathers called Plato the “Divine Plato” and likewise as a “Christian before Christ”. In fact, while in Middle Ages and Modern era Aristotelism was (is) used as a Means – Platonism is precisely the End and placed at the heart of the Western mind. As Costica Bradatan states, “Platonism helped the Christian faith acquire its doctrinal, theological identity, rooting it in an old and venerated school of philosophical thought, and subterraneously connecting it to the mystical traditions of ancient Greece, ancient Egypt, the Middle East, and beyond”<sup>5</sup>.

<sup>4</sup> In the terms of Pitirim Sorokin’s dynamic cyclic sociocultural theory (substantiated in his phenomenal four-volume “Social and cultural dynamics”, 1937–1941).

<sup>5</sup> See: Bradatan, Costica. (2006). *The Other Bishop Berkeley: An Exercise in Reenchantment*. Fordham University Press. P. 21.

3. Plato's third innovative foundational contribution to the global culture is the substantiation of his anthropological Dualist principle – of the human being composition of two parts: an immortal soul housed inside a mortal body.

There is one more (the fourth “for the first time”) foundational contribution of Plato to the global culture (which is much less known in the modern scholarly milieu). This point is well noticed by M.Benetatou, “In fact, creation is a vast experiment and perhaps the *Timaeus* describes explicitly for the first time in history the scientific method which in broad lines holds true even to our days.” (p.13) This statement is fully consistent with the judgment of Raphael Demos:

His ideas affect the intellectual climate of our day in two important ways: first, by entering into our Christian theology and contributing especially to its doctrine of the opposition between the spirit and the flesh; secondly, by entering into our scientific mentality. The fundamental assumption of modern science is the importance of the mathematical method in the understanding of things, and this was Plato's cherished doctrine. (1927)

## 2. Plato as a philosopher of science

In his “Introduction and analysis” to Plato's *Timaeus*, Benjamin Jowett states that “Plato probably did more for physical science by asserting the supremacy of mathematics than Aristotle or his disciples by their collections of facts.” (2009, p.51)<sup>6</sup> In characterizing Plato as a philosopher of science, worthy conclusions are made by Andrew Gregory, author of the “Plato's philosophy of science” (2000). In the “Conclusion” of his book, A.Gregory states that “the anti-empirical charges against Plato's conception of science are ill-founded”; Plato is a “scientific (proto-)realist” who believed that “the investigation of nature will produce worthwhile results”. In turn, in the Introduction, author notes that “while Plato was clearly not an empirical scientist himself, that is not a bar to his being a theoretical scientist or philosopher of science.” (Gregory 2000, p.2) Likewise, Gregory claims: “If there is no demarcation for investigation between the two worlds, then this serves to undermine the notion that Plato's science deals solely with intelligible objects and so eschews observation, and the view that it deals solely with physical entities and so can aim no higher than opinion.” (p. 11) Appreciably, he determines (in the Conclusion):

If we look for affinities to modern science with Plato, then most strongly of all there is the use of mathematics wherever possible. What is less often recognized is that the *Timaeus* offers a significant reductionist programme, based on the geometrical properties of the atoms. While this is undoubtedly crude, it is more sophisticated than the atomists. Plato's alleged anti-empirical attitude and pessimism about the results of the investigation of nature are often cited as significant differences with modern science, but we have seen that these allegations are groundless. (p. 273)

<sup>6</sup> See: Jowett, Benjamin. *Plato's Timaeus* (Rockville: Maryland, Serenity Publishers, 2009).

In her abstract, M. Benetatu notes that BCA negatively “contests the current mathematical-reductionist model” (p.7). This is certainly not the case. “Mathematical-reductionist model” (modern “scientific method”) is factually the basis for the current tremendous scientific and technical (technological) progress, without which many social and cultural achievements would have been impossible. Another thing is that all this cannot be a basis for cancellation of the opposite (Aristotelian) Biocosmology and the appropriate scientific method (of scientific Organicism). We consider this issue in the concluding parts of the paper.

### 3. Integral type of the “Classical Greece” cultural period

Andrew Gregory also concludes that “a main area of criticism of Plato has been his use of teleology” (p. 5). To some extent, Marianna Benetatu echoes this thesis, arguing that although Plato and Aristotle have held divergent views on metaphysics, however, “they both rely on the soul-body component in order to explain the macrocosmic and microcosmic level, or, as they both appropriately name it, the visible world.” (p.11)

In viewing this moment, we do need to refer to Pitirim Sorokin’s dynamic cyclic (triadologic) sociocultural theory. Due to his (well substantiated) periodization of the cultural epochs of Western civilization – Classical Greece refers to the Integral cultural type. For instance, this periodization is noted in the paper of John Uebersax (2012), entitled “Culture in Crisis: The Visionary Theories of Pitirim Sorokin”<sup>7</sup>. Therein, author emphasizes that Sorokin was especially interested in the process by which societies change cultural orientations. In this perspective, Sorokin “opposed the view, held by communists, that social change must be imposed externally, such as by a revolution.” The author stresses Sorokin’s main principle of *immanent causality* that acts *from within*, and which states that “external forces are not necessary: societies change because it is in their nature to change.” Therefore, although sensate or ideational tendencies may dominate at any given time, “every culture contains both mentalities in a tension of opposites.”

Thus, the period of Classical Greece (550 DC – 320 BC) is naturally Integral, and, therefore (as Pitirim Sorokin has shown in his theory) – a key moment is that this epoch imports “the third – intermediary or integral” sociocultural order (including the rational scholarly achievements), and which is “the result of the combined external and internal forces.” (Sorokin 2010, p. 634). Moreover, in this period, Greek organicism was the essential feature of dominating cultural forms. Due to the cultural background of this epoch, therefore, it would be very strange if Plato rejected organicism in favour of an alternative worldview (such as mechanicism). As Hamilton and Cairns stated in the Introduction to Plato’s works<sup>8</sup>,

<sup>7</sup> This is the web-published paper, URL: <https://satyagraha.wordpress.com/>

<sup>8</sup> See: Hamilton, Edith and Cairns, Huntington, ed. (1961). *The Collected Dialogues of Plato*. Princeton: Princeton University Press.

Plato was the culmination of several centuries of Greek speculation and he took full advantage of the insight which his predecessors had developed. But speculation assumes intelligibility. The insight that the world is system, is organic, therefore both orderly and alive, is the Greek view as far back as we have records. (1961, p. xvii)

Therefore, naturally, Aristotle's and Plato's conceptual frameworks (scientific systems) have the points of overlapping and sometimes sound in a similar way, especially in the areas of ethics, aesthetics and politics. However, from the outset, we should ideate (conceive) that their knowledge systems (taken as a whole) have radically polar bases (in P.Sorokin's terms, polar "basic premises" or "ultimate principles") and the derived conceptual constructions. First of all, Plato accepts as a basic principle the Dualist essence of the world and the separation of "eternal patterns" ("perfect ideas") from the physical (material, imperfect and corruptible) world (although primarily created by the Demiurge and which matter is harmonised with the eternal Ideas). Essentially, Plato has substantiated and proposed the 'external' aetiology and epistemology, wherein a scholar acts *'from without'* the objects of study and, thus, relying basically on the Idealist (mathematical) approach to the empirically evident (physicalist) world.

On the contrary, Aristotle introduced to the world culture the opposite (polar) approach that basically placed the scholar's activity *'from within'* the naturally organic world governed by the inherent telic causes. Herein, opposite to Plato's Dualist mathematical physicalism – we have the foundationally polar aetiology, gnoseology and methodology, based on Biocosmism, Hylomorphism and inherent (immanent teleological) forces.

In this light, the Biocosmological Association precisely endeavors to rehabilitate Aristotle's Biocosmology and, in this perspective – Pitirim A. Sorokin's Triadologic approach to civilizational and sociocultural studies. Sorokin's Triadology means the discovery and substantiation of the Three natural types of sociocultural (super)systems (we use the abbreviation – T-SCSS). Each T-SCSS is essentially autonomic, in its whole and all-embracing organization, but heterogeneous (and reducible to its own foundational principles or "ultimate true realities", in Sorokin's term). All the Three T-SCSS (called by Sorokin as "Sensate", "Ideational" and "Integral") are always synchronously active, but dynamic and cyclic (taking the dominance by turns) in their interrelations. The nature of life (and well-being of the world) is impossible without this natural dynamic (evolutionary) cyclicality.

#### **4. The essential metaphor of Sleep (aimless) processes and Awake (purposeful) activity**

Naturally, a person who is involved directly in the current social life (especially in her/his professional activity) will inevitably be subordinated to the expedient (purposeful) interrelations and activities within the social circle of the individual's belongingness and beyond (of the entire sociocultural order of her/his living). On the contrary, any cell (structure, body – analogy of the 'social agent') of a sleeping

organism (taken as a whole), although pursuing its/her/his own rehabilitation and development goals – all are set in the space that (in principle) is fully separated<sup>9</sup> from the surrounding world (cosmos) – viz. in a naturally Dualist situation. Thus, although harmoniously organized (within the whole Organism), they cannot be treated (in the case of Sleep processes) from the naturalist teleological positions (especially, that their activity is reduced to, or focused at subjects' potentials restoration and development), but can be precisely characterized as aimless, and, from the position of external observer – exclusively treated as chaotic (driven by chance).

We do need the essential metaphorical approach aiming at the understanding of Bipolar and dynamic cyclic (Triadic) essence of life processes, including the realms of cognitive activities. In fact, it is not easy to understand the existence and essential foundations and matrix of the two polar types of life macro-orders in respect to bio-processes, sociocultural supersystems and types of mentalities (rationalities). Moreover, modern man (with her/his school and student days) is strongly taught regular habits (up to the level of subconscious attitudes) exclusively to the unipolar (one-dimensional, univariate, immutable) type of mentality (at present, this is precisely Plato's – Dualist and Anthropocentric – type of rationality). Therefore, in fact, it is not easy for a modern scholar (due to her/his already subconscious dispositions) to grasp the Bipolar essence of the real (actual) world and the Triadologic natural (synchronous, but dynamic and cyclic) existence of life and cognitive processes. Basically, in a result, modern scientist cannot grasp the essence of Aristotle's teleological (Hylomorphic, Functionalist) Biocosmology – his (super)system of knowledge and Type of rationality (taken as a whole).

In turn, the real situation is, as Anna Makolkin concludes, “The post-Christian man had turned the Aristotelian world upside down, having adjusted it to the politically correct Belief” (2008, p. 6). Since the High Middle ages and Scholasticism, Aristotle's crucial conceptions (although he is the recognized Father of Science) were either deleted, or badly misinterpreted in the contemporary curriculum. Joe Sachs states that from the Middle Ages to modern times, commentators disagreed on the interpretation of Aristotle's account of motion. He notices that an accurate rendering of Aristotle's definition of motion must include that “a potentiality, which must be, if anything, a privation of actuality, is at the same time that actuality of which it is the lack.”<sup>10</sup> and that Saint Thomas of Aquinas resolves this ‘contradiction’ between potentiality and actuality (in Aristotle's definition of motion) “by arguing that in every motion actuality and potentiality are mixed or blended.” (Ibid.) Sachs concludes that “the most serious defect in Saint Thomas' interpretation of Aristotle's definition is that, like Ross' interpretation, it broadens, dilutes, cheapens, and trivializes the meaning of the word *entelecheia*.” (Ibid.)

<sup>9</sup> Sensory denervation (i.e. separation of the sentient body from the surrounding world-cosmos) is the main feature of physiological Sleep processes.

<sup>10</sup> See: Sachs, Joe. *Aristotle: Motion and its Place in Nature*. URL: <http://www.iep.utm.edu/arismot/> (retrieved 28.03.2015)

In general, Western (Medieval) Christianity, relying on the philosophy of St Thomas Aquinas (and, in contradistinction to Eastern Orthodox theology) – eventually defined God as *actus purus*, actuality unmixed with potentiality. This is precisely the mechanism of establishing the modern unipolar type of thinking – that energies (actualities) and essences are the same substances (that they were always created), and that there are no natural inherent essences, i.e. natural intrinsic telic potentials. Not surprisingly, in modern translations of Aristotle – his cornerstone notion of *entelecheia* (we likewise will discuss this point below) is not used by contemporary commentators at all. Obviously, therefore, we nowadays cannot value the existing translations of Aristotle as a sufficient basis for the true perception of his works – aiming at the understanding of his whole system of knowledge – his teleological (Functionalist) Type of mentality and rationality.

In the same (metaphorical, of comparing Sleep processes and Awake activity) example – it can be clearly shown that the application of scientific knowledge to the realm of Sleep processes (with its general reign of Chaos and the major significance of Chance) – is much more complicated than the study of purposeful processes within an active wakefulness. Naturally, therefore, science could emerge primarily – in its bases and conceptual frameworks – precisely relating to the study of a real teleodiven (Hylomorphic Functionalist) – RealKosmist – world. In turn, scholarly study of Sleep processes, i.e. the emergence and flowering of modern (mathematical-reductionist) science actually could occur later, after 2000 years (as it is) – in modern times (by virtue of modern European scholars' efforts, including Descartes) – when conditions (Time) ripened; but, naturally, on the already existing (Aristotle's) basis of principles and conceptual constructs (matrix), although now used as building blocks – for constructing the cosmologically polar frameworks.

### **5. *Entelecheia, energeia, topos* – Aristotle's crucial notions that are not included into the reviewed article**

There is a special moment in Benetatou's discourse, which immediately catches the eye – this is the lack in her analysis of the key concepts for the Aristotelian type of knowledge – which are *entelecheia* (entelechy), *energeia* (energy) and *topos* (place). Essentially, they were originated by Aristotle and without their use a full assessment of Aristotle's system of knowledge is impossible for understanding in principle. In general, Aristotle's foundational theory of potentiality (*dunamis* – δύναμις) and actuality (*energeia* – ἐνέργεια), which are the principles of an important dichotomy that is essential for the Bipolar, dynamic and cyclic existence of each real natural (evident, tangible) thing – is beyond the critical analysis conducted by M.Benetatou.

*Dunamis* is the Greek word that is translated as capability, potency, potential, ability, power, strength, force. *Energeia* is a word based upon *ergon* that means “work”. In turn, *kinesis* is translated as movement (motion, change), used by Aristotle as a particular kind of *energeia*. Finally, *entelecheia* (both the terms *energeia* and *entelecheia* are the neologisms introduced by Aristotle) is the word that is constructed

of several semantic units. Following the conclusions of Mikko Telaranta<sup>11</sup>, they include: a) the prefix “in” (Greek ἐν-), which is indicated with “internal functioning”, that is “the functioning of the organism according to its own nature”; and which is “crucial for all Aristotelian teleological thinking”; b) the process of internal functioning which leads to the end that is also internal, thus “having the *telos* within”. Thus, studying the laws of nature, Aristotle discovered and kept in mind the purposive unity of living things.

Indeed, the term “organic” has the polar meanings for both thinkers. Plato used the term “organic” in the meaning of living body; and this is also the modern sense of this term. In cosmological aspect, for Plato “organic” meant harmonious (coherent) whole that was (and is) created/constructed through intervention ‘*from without*’ (by external divine – Transcendent – forces). However, as commonly cited, the term “organic” was first used by Aristotle who originally applied this term in the sense that is fundamentally different from modern meaning. Aristotle’s “organic” basically corresponds to the word *organon* that means in Greek “instrument” (“tool”). Thus, Aristotle’s “organic” essentially has the Functionalist – of inherently (predetermined) purposeful, operational, effective (aimed at the effective products and results) – significance. In his work, M.Telaranta stresses that “Aristotle emphasizes the function as an end, an outcome of an activity, which thus reveals what a thing is potentially.”

Returning to the etymology of the term *entelecheia*, we are to note that this word was invented by Aristotle and (in its scholarly significance) became a cornerstone of his scientific approach. Joe Sachs translates *entelecheia* as “being-at-work-staying-itself”<sup>12</sup>. In his book on Aristotle’s *Physics*, Sachs gives a detailed description of *entelechy* and gives his critical opinion on the present use of this term:

Aristotle invents the word by combining *enteles* (complete, full-grown) with *echein* (= *hexis*, to be a certain way by the continuing effort of holding on in that condition, while at the same time punning on *entelecheia* (persistence) by inserting *telos* (completion). This is a three-ring circus of a word, at the heart of everything in Aristotle’s thinking, including the definition of motion. Its power to carry meaning depends on the working together of all the things Aristotle has packed into it. Some commentators explain it as being-at-an-end, which misses the point entirely, and it is usually translated as “actuality,” a word that refers to anything, however trivial, incidental, transient, or static, that happens to be the case, so that everything is lost in translation just at the spot where understanding could begin. (Sachs, 2004, p.245)

<sup>11</sup> See the web-publication: Telaranta, Mikko. (2012). *Aristotelian Elements: In the Thinking of Ibn al-‘Arabi and the Young Martin Heidegger*. URL: <https://helda.helsinki.fi/bitstream/handle/10138/32903/aristote.pdf?sequence=1> (retrieved 28.03.2015)

<sup>12</sup> See: Sachs, Joe. *Aristotle: Motion and its Place in Nature*. URL: <http://www.iep.utm.edu/arismot/> (retrieved 28.03.2015)

An essential point is, as it clearly follows from the significance of *entelecheia* (introduced into science by Aristotle) – entelechy (as the notion in its original essence) is hardly applicable nowadays, i.e. Aristotle's *entelecheia* is basically unacceptable in the (post)modern systems of knowledge based on Plato's cosmology (Plato's type of rationality), viz. which have the Dualist foundation and mathematical-physicalist (mechanistic-constructive) approach to the study (of) and impact on the surrounding world (objects under study). In this, in Plato's approach, an essential moment is that all pre-existing materials – for a divine (Transcendent), or anthropocentric (Transcendental) creative and constructive activities – are characterized as “chaos”; and that all the constructive efforts are realized on the basis of knowing (likewise pre-existing) “eternal patterns” (“immortal forms”), approaching to which is possible exclusively on the basis of mathematical achievements. At the same time, essentially, exactly as it is noticed by Richard McDonough<sup>13</sup>: “By ‘chaos’ Plato does not mean the complete absence of order, but a kind of order, perhaps even a mechanical order, opposed to Reason”. Substantially, this primordial “chaotic order” survives the imposition of Form and is “always threatening to break out and undermine the rational order of the world.” (Ibid.)

In general, during the long history of Western civilization, Aristotle's notion *entelecheia* (in its genuine sense) was factually deleted from the domain of modern scholarly endeavors. This is not surprising, for, substantially, Western civilization is basically enrooted in Platonic type of mentality (rationality). “The safest general characterization of the European philosophical tradition is that it consists of a series of footnotes to Plato” (Whitehead 1967, p.39)<sup>14</sup>. Due to this foundation, it is typical that the notion entelechy (*entelecheia*) is not used, for, in principle, it is unacceptable and cannot be used in the Western mind-set wherein the world (cosmos) is the space filled with material bodies that are (primordially) subdued to a mechanistic chaotic order and are the objects to divine (of a Demiurge) or anthropocentric (of a human mind, analogy to divine Demiurge's) active intervention (*‘from without’*, following an *‘external’* epistemology) and constructive (due to mathematical abstract laws) reorganization and shaping of the physical world.

Therefore, it is not surprising that M.Benetatou does not mention *entelecheia* (or *energeia*, or *topos*) in her analysis, for she is (as we all are) the products of the existing (Western, globalized) type of education and institutional setting of (modern) scientific activity that are foundationally set exclusively on the Platonic (Dualist) type of mentality<sup>15</sup>. Equally, in the result, it is not surprising that modern translators and commentators of Aristotle do not use *entelecheia* (and other cornerstone notions of

<sup>13</sup> See: McDonough, Richard. *Plato: Organicism*. URL: <http://www.iep.utm.edu/platoorg/> (retrieved: 28.03.2015)

<sup>14</sup> See: Whitehead, Alfred N. (1978). *Process and Reality*. New York: Free Press.

<sup>15</sup> Notably, Plato himself realized his conceptual constructions in the Integralist realm (of his sociocultural epoch), but having substantially formed the rational bases and general vector (of global significance) precisely of (to) the Dualist pole and type of knowledge. Significantly, this direction (in its full meaning) nowadays is completely realized and has the total characteristics of P.Sorokin's Sensate T<sub>SCSS</sub>.

Aristotle's type of rationality) as the inconceivable and unacceptable notions. We can note that this practice grows to a greater extent, over the time.

In this light, hereafter, two translations (excerpts) of Aristotle's *De Anima* (412a21-412a28) are exemplified: the first is made by Robert Drew Hicks, from his monumental edition of Aristotle's *De Anima* (1907); editor of the second translation and commentaries is the distinguished scholar Jonathan Barnes (1984). Both translations are placed below. The original term *entelecheia* is returned into the text (and marked in bold) in those places where it was replaced by translators onto "actuality" (significantly, in this passage of *De Anima* Aristotle speaks about the polar Sleeping and Waking cycles of life activity):

Such substance is actuality [**entelecheia**]. The soul, therefore, is the actuality [**entelecheia**] of the body above described. But the term 'actuality' [**entelecheia**] is used in two senses; in the one it answers to knowledge, in the other to *the exercise of knowledge*. Clearly in this case it is analogous to knowledge: for sleep, as well as waking, implies the *presence of soul*; and, whilst waking is analogous to the exercise of knowledge, sleep is analogous to the possession of knowledge without its exercise; and *in the same individual the possession of knowledge comes in order of time before its exercise (all italics are mine. – K.K.)*. Hence soul is the first actuality [**entelecheia**] of a natural body having in it the capacity of life. And a body which is possessed of organs answers to this description. (Hicks, 1907)

But substance is actuality [**entelecheia**], and thus soul is the actuality [**entelecheia**] of a body as above characterized. Now there are two kinds of actuality [**entelecheia**] corresponding to knowledge and to reflecting. It is obvious that the soul is an actuality [**entelecheia**] like knowledge; for both sleeping and waking presuppose the existence of soul, and of these waking corresponds to reflecting, sleeping to knowledge possessed but not employed, and knowledge of something is temporally prior.

That is why the soul is an actuality [**entelecheia**] of the first kind of a natural body having life potentially in it. The body so described is a body which is organized. (Barnes, 1984)

We see that both commentators do not use the original term *entelecheia* in the main text (replacing it with "actuality")<sup>16</sup>. At the same time, in 1907, Hicks used "entelechy" (in its proper sense) in the Introduction and Notes. Likewise, we can argue that Hick's expressions (in the passage that is exemplified and which are emphasized in *italics*) are more close to the true sense of Aristotle's writings than the translations of J.Barnes. These are Hick's "to exercise knowledge"; "presence of soul" and, importantly, the link to "the same individual" wherein "the possession of knowledge comes in order of time before its exercise." – in contradistinction to Barnes's "existence of soul"; "waking corresponds to reflecting," and "sleeping to

<sup>16</sup> Notably, in the Russian four-volume edition of Aristotle's works edited by Valentin Ferdinandovich Asmus (1976), the original notion *entelecheia* is essentially used.

knowledge possessed”. In other words, Hick’s translation (in the beginning of the 20<sup>th</sup> century) is evidently closer to Aristotle’s theory of motion (*kinesis*) and his foundational principles, including potentiality and actuality theory.

In his Notes, Hicks discloses the essential features of *entelecheia* (soul, formal cause) referring to their Bipolarity. In other words, we can admit that (in Aristotle’s sense) *soul*, *causa formalis* and *entelecheia* are very close in their meaning and essentially Bipolar. Hicks states: “Of whatever exists potentially the entelechy is the notion, essence or formal cause».” (p.342) Another noteworthy statement is made in the Introduction:

In other words, the soul is the power which the living body possesses and the lifeless body lacks. This is first actualization or first entelechy. Again, the actual possession of faculties unused still stands to the exercise of these faculties in the relation of potency to act. Life itself, the use of actual power, is the second stage, energy. The actual use must be preceded by actual power. (Introduction, p.xliv)

In this place Hicks draws the conclusions: “In Aristotle the body is the natural instrument of the soul,” while “In Plato body is opposed to soul.” (Ibid.) We can add, herein, that Aristotle’s soul (*entelecheia*, *causa formalis*) itself is the natural function (instrument, *organon*) of the comprising Kosmic organic world. However, an evident contradiction in Hicks’ reasoning can be noted: If potentiality and actuality of the thing are equally essential and interrelated within the same function – “life itself” is both potential power and actual energy, not only “the use of actual power”. Another valuable conclusion that is made by R.D. Hicks (in his Notes), “This being so, the first entelechy, whether it is or not operant, equally gives form to matter, and is soul in both cases alike.” (p.313)

In general, from above stated, we clearly see that *first entelechy* refers to *dunamis* (viz, which formation takes place purely within the realm of Potency), while the *second entelechy* – to *energeia* (i.e. which is put into operative activity), which thus is manifested in the realm of Actuality.

Paul Fearne uses the definition to entelechy (taken in the Oxford English Dictionary) that it is “a move from potentiality to actuality” (Fearne, p.26). Fearne also notes that, in *De Anima*, Aristotle propounds a conceptual framework which commentators (on the work) have called ‘entelechism’. Hugh Lawson-Tancred (translator of *De Anima*, 1986) is one of them. The first part of his Introduction to *De Anima* is titled *Entelechism*<sup>17</sup>. In the part four (of this Introduction), “The Development and Scope of Entelechism”, H.Lawson-Tancred argues that “the theory of the soul advanced by Aristotle in the *De Anima* is an exercise in what might be called Meta-biology.” This special character of Aristotle’s masterpiece means that “it seeks to give a coherent conceptual framework within which the phenomena of life can be most comprehensively, economically and adequately explained.” (Ibid.) In

<sup>17</sup> See the Introduction in: Aristotle. *De Anima (On the Soul)*, trans. Hugh LawsonTancred, London: Penguin, 1986.

respect to this work, P.Fearne adds that the author “employs the notion of entelechism to help explain how Bionoesis comes to be nascent.” (p.26)

Normally, Aristotle’s principles of potentiality and actuality are understood as opposed and separated to each other. However, as it is stated above, Aristotle basically unites (within the thing’s whole living activity) the opposite poles of Potentiality and Actuality, for that end introducing the notion (neologism) of Entelecheia. In turn, if Aristotle’s *entelecheia* naturally integrates both poles of Potentiality and Actuality (respective to the thing’s given *organon*-function), then the *entelecheia* of the whole individual naturally has the hierarchical ontogenetic essence (substance and structure), and the dynamic cyclic process of its/her/his self-actualization, in this consistently implementing the stages-cycles of the *first entelecheia* (with the result of forming the potential abilities) and *second entelecheia* (with the result of self-realizing the actual activity).

In an obvious way, in the light of aforesaid, and without the detailed consideration of *entelecheia* (a cornerstone notion for the principles of Potentiality and Actuality, and their organic dynamic interrelation) – an adequate understanding and application of Aristotle’s supersystem of knowledge (Biocosmology) is impossible in principle. Likewise, besides *entelechism* – it is impossible to characterize in full (and, further, to analyse) Aristotle’s conceptual frameworks without taking into consideration his cornerstone principle of *hylomorphism* and the essential notion of *place* (τόπος, an innermost – individual, first – position in the world, which is inherently used by the thing). Substantially, Aristotle’s Kosmos (Biocosmos and Biocosmology) is finite, (primarily) qualitative, and hierarchically differentiated. In this Kosmos there is no space (as in Plato’s biocosmology) but only *place*, and everything is ever the combination of matter and form (*hylomorphism*), while any change (movement and development in Kosmos) is based on the Four Causes (material, formal, efficient, final) and the dynamic (organic) interrelation of the synchronous but polar and autonomic (independent in their organization) realms of Potentiality and Actuality. On the contrary, Plato’s (bio)cosmology is essentially Static, basically dealing with a created (*from without*) world – within the space (with its dimensions of height, depth, and width within which all things chaotically exist and move), but not in relation to the inherent *place*. While the principle of *hylomorphism* reflects the unity (of form and matter) of each thing and living being; the notions of *entelecheia* and *place* points to the unity of the thing and its/her/his surroundings (environment), and the organic unity of the thing and Kosmos on the whole.

## **6. Aristotle’s Biocosmological teleology (Organicism) vs Plato’s biocosmological teleology (organicism)**

Indeed, as Marianna Benetatou states, for Plato, the world is a “living animal, endowed with reason and movement.” (p.15) In turn, the main feature of a living body is its/her/his purposeful life activity. Therefore, inevitably, Plato and Aristotle are representatives of their own (original) organicistic and teleological approaches. In this perspective, Plato’s *Timaeus* and Aristotle’s *De Anima* are certainly the main

sources on this issue. First of all, the teleology of the *Timaeus* (of Transcendent essence) ought to be usefully compared to that of Aristotle's (Immanent) philosophy of Nature. In respect to Plato's approach, an immediately striking moment (in comparison with Aristotle's naturalist philosophy) is the full absence of a telic, goal-driven causality that is substantially immanent (intrinsic, inherent) to the natural things. Contrary to Plato's approach, Aristotle's teleodiven causes (all Four) are the originative factors in the formation of all things, especially of organisms (and their organs) – *organon* (*οργάνων*) – ultimately for their inherent and effective – Functionalist – activity in the one whole Kosmic (Biocosmist) dynamic whole. This is fully opposite (polar) to Plato's approach wherein the organic order (with the single – *for everyone* – divine *Righteousness* and *Goodness*) is implanted by a Demiurge (*from without*) into the *elemental* (*chaotic, mechanistic*) *space*, and is based on the *transcendent* “*eternal patterns*” (“*immortal forms*”).

The current misinterpretation of Aristotle (the dissolution of his realistic Hylomorphist supersystem of knowledge in Plato's Dualist realm; we call it the contemporary ‘cosmological insufficiency’) – caused the misunderstanding of Aristotle's teleology and organicism. Helen S. Lang (in her “The Order of Nature in Aristotle's Physics”, 1998) emphasizes that Aristotle's teleology deals with an “immediate active orientation in the moved, the element, for its actuality, to which it is moved – its natural place.” (p.192); and that Aristotle's teleology is, properly speaking, “nothing other than this immediate intrinsic relation of moved to mover.” (Ibid.)

We likewise fully agree with the author that while Plato's approach realizes divine (Transcendent) and anthropocentric (Transcendental) interventions (into) and constructive shaping of the global (or local) world, which is elementally chaotic (mechanistic) – “Aristotle's teleology is incompatible with any form of mechanical explanation.” (p.57); and that “Aristotle's physics is not proto-mechanistic physics with teleology added on.” (p.146) H.S. Lang stresses an important thing that “although the term «teleology» is regularly applied to Aristotle, it is a modern one, and is quite definitely fixed in meaning by contemporary use.” (p.36) Thus, due to this misinterpretation, “Aristotle's teleology is often identified with his account of «final causes» as if, apart from them, the rest of his physics (or philosophy more generally) were not teleological.” (p.274). Indeed, all the Four causes of Aristotle's aetiology (*c.formalis*, *c.finalis*, *c efficiens*, *c.materialis*) are equally teleodiven and subdued to the inherent telic forces. As Richard McDonough determines,<sup>18</sup> “Aristotle holds that what is real are substances, roughly, individual packages of formed matter.”

In Helen Lang's conclusion, in Aristotle's teleology, indeed, “there is no difference between the order of nature and teleology of nature.” (p.274) In respect to Aristotle's central notion of an intrinsic force, she adds that “in natural things, matter is never neutral to form, and form never needs to impress itself or be impressed (by

<sup>18</sup> See: McDonough, Richard. *Plato: Organicism*. URL: <http://www.iep.utm.edu/platoorg/> (retrieved: 28.03.2015)

another) upon matter.” (p.53) This order presents “the teleology of nature: all natural things (and artifacts insofar as they are made of natural things) are oriented toward its proper place, and hence activity, by an intrinsic relation that never fails (but can be hindered from the outside).” (p.278) Essentially, the author refers to Aristotle’s theory of potentiality and actuality. She stresses “the active orientation of potency toward actuality”, and that it is crucial to the account of “things that are by nature.” (p.47) This is a cornerstone for Aristotle’s teleology of nature being “everywhere a cause of order,” (p.47) including “his account of elemental motion.” (Ibid)

Therefore, in Aristotle’s theory, “what is potential is not thereby passive: in natural things what is potential is caused by its proper actuality because it is actively oriented toward it.” (p.64) H.Lang concludes that “this active orientation of the potential for the actuality that completes it lies at the heart of the order and teleology of nature.” (Ibid.) Likewise, the author argues that “this position stands in sharp contrast not only to Plato but also to later philosophy, including the Stoics and Philoponus.” (Lang, 1998, p.64)

At large, we do not have opportunities, in this critical review, to go deeper into this (extremely important and extensive) issue – of comparing the organicist and teleological systems of Plato and Aristotle. However, we definitely cannot agree with M.Benetatou who has found an “inexact interpretation of the Platonic theory” by Aristotle in his *De Anima*, and, on this ground (of finding this “major distortion”) – her making a serious conclusion that Aristotle’s criticism and his whole “refutation of the Platonic theory is a piece of cake.” (p.15) To our mind, certainly, this is an interesting finding but which is not of ‘cosmological’ significance; i.e. this is not a reason to unite both teleological (organicistic) systems (of Plato and Aristotle) which are categorically (cosmologically) distinct, precisely polar to each other.

Author critically argues that “Aristotle does not compare his theory with the Platonic theory of ideas” (Benetatou, p.7) With regard to the insolency of Aristotle’s criticism, perhaps, there is a simple reason. Indeed, it is really difficult (or impossible) for a thinker (even a great thinker) to evaluate his contemporary (another great thinker, and, moreover, his teacher) from the position of philosophy (foundations) of science. This is precisely a matter for the later generations of scholars – from a distant future outlook when the properties and manifestations of the two great systems became evident. However, paradoxically, nowadays, in the 21<sup>st</sup> century, nearly 25 centuries later and at the peak of technological progress – we still have a difficult situation – the extreme dominance (rather, dictate) of Plato’s type of mentality (Plato’s transcendent biocosmology) and the erasure (silence) as concerns Aristotle’s (equally essential) supersystem of naturalist knowledge (Biocosmology).

Therefore, making a general conclusion, a statement is that Plato’s Dualist and Transcendent (Idealist, theological) Static biocosmology, including his organicism and teleology – all this is radically (fully) distinct (polar) to Aristotle’s Biocosmology that is naturally Hylomorphist and Immanent (Functionalist), and essentially Dynamic – Bipolar and cyclic (regarding the alternation of the cycles of Potentiality and Actuality, united by the thing’s *entelecheia*), and thus naturally Hierarchic and Heterogeneous. In this order, we (in BCA) introduce the notion of dynamic Triadicity

(and Triadologic approach) – in reflecting and studying the natural interrelation between the Three realms of life processes (of all levels): two Polar (AntiKosmist and RealKosmist); and the third intermediate and basal (axial) – Integralist (AKosmist)<sup>19</sup>.

## 7. Plato's foundations for modern European scholars' contributions and the current scientific revolution

“Does Plato outline a mathematical-reductionist model of the physical world?” – this is the main author's inquiry (and the part of article's title). M.Benetatou definitely considers and substantiates that the answer is “No” – Plato's philosophy and science is not the foundation for the currently dominating (or, rather dictating) mathematical-reductionist (mathematical-physicalist) approach in modern science (so-called “scientific method”). She concludes that “a strictly mathematical-reductionist model of scientific research is first developed in the Enlightenment rationalism.” (p.8) In achieving this conclusion, as M.Benetatou explains – she was focused on understanding “the inner logic of Platonic and Aristotelian writing” and, in this, applied her own translation of the texts wherein avoided the use of “short, disjointed sentences,” aiming at clarifying the rationality of the text.

Despite the obvious value of such an approach, our overall conclusion (as a result of studying the issue from a cosmological standpoint) is completely the opposite – we are firmly convinced that the answer (to the main question of Benetatou's article) is definitely “Yes” – exactly Plato's (bio)cosmology is the foundation for the modern scientific method (mathematical-reductionist approach) and the current amazing scientific revolution.

Similarly, in the scope of this article (critical response) – we cannot delve into this (very broad) subject-matter. We can only note that Descartes is the bright representative (one of the founders) of the Enlightenment era in global culture, and, therefore – he naturally is the representative of the Integralist T\_SCSS (type of cultural activity), and thus naturally applied conceptual constructs from both supersystems of knowledge – Aristotle's and Plato's. John Herman Randall Jr., renowned specialist in Aristotle, asserts that modern scholars “have come at Aristotle from the standpoint of the later medieval developments and problems” (Randall 1960, p.iv); and that the early modern scientists (including Bacon, Descartes, and Kant) had discarded Aristotle in rebellion against his religious interpreters.” (Ibid.) In a similar vein, David Charles (in his “*Aristotle on Meaning and Essence*”, 2000) argues that Aristotle's actual account is distinct from the one often described and attacked as “the Aristotelian essentialism.” He states: “Aristotle's account of essentialism is, I argue, distinct from that offered by its major competitors (whether conventionalists or Platonists, as these are characterized in Chapter 1), and is immune to some of criticisms developed by (for example) Descartes, Locke, and Quine. (p. 3) He concludes, “Aristotle is not, in my view, the type of Aristotelian essentialist they attack. Indeed, the form of essentialism he defends is preferable (in certain major respects) to the alternatives currently available.” (Ibid.) In the same way, Alexander

<sup>19</sup> More broadly, these issues are studied in the previous works, Khroutski 2013, 2014.

Herzen, in the 1845, said about the “revolt against Aristotle” because of the “originality of the new thinking” and that “one must not forget that Aristotle of the Middle Ages was not the true Aristotle, but the one transcribed to Catholic morals, ... Descartes and Bacon, alike, denied him as the canonized pagan” (Herzen A.I., 1946).

In our opinion, as already mentioned above, we cannot insist (in respect to early modern scientists) solely on the ‘revolution against Aristotle’ but, likewise and chiefly – on the fact that the historical time (cycle, age) has come (cultural conditions became ripe – *from within*) for the implementation of the foundations of Plato’s (bio)cosmology in the scientific and practical sphere of life of modern man and society. Significantly, Plato’s Dualist (bio)cosmology (in which address we use the metaphor of “Sleep processes”) – is the cosmological foundation for modern constructive applications of mathematics – *from without* – upon the primarily chaotic mechanical world. In fact, this is certainly a more complex approach than the Aristotelian Biocosmological (natural and effective) – Functionalist, *from within* – active self-realization and active participation in (effective contribution to) the Kosmic whole (and, accordingly, scholars’ naturalist grasping of these processes). Therefore, this historical process (of scientific development as the realization of Plato’s cosmology) took 2000 years to turn into reality the shift from Transcendent level – of understanding the divine Integral Good Kosmos, realized by Demiurge, on the basis of “eternal patterns” and by shaping the chaotic (mechanical) space of material things – into the Transcendental (Anthropocentric) level and the application of mathematical-reductionist approach, thus tackling the topical problems in the given field, viz selecting the objects for scientific – *from without* (now, by a human being her/himself) – intervention and the further practical reconstruction of the natural world (bringing it into order). Basically, however, all this (long) process has one the same – Platonic – essence.

At this point, Descartes is a direct follower of Plato’s cosmology and scientific approach. Plato is the founder of the Dualist (bio)cosmology – Type of rationality. On this basis (within this cosmology), 2000 years later, Descartes advanced the foundational ideas of the modern – mathematical-reductionist – method (principles of which likewise are founded by Plato). Thus, based on the unshakable belief in the Dualist essence of the world (cosmos) and the availability of developed mathematical methods and the means of experimental research – Descartes and other early modern and Enlightenment geniuses have successfully (and successively) advanced and developed the modern forms of scholarly endeavors and scientific-and-technological advance. In this way, issues of the conventional adoption of necessary requirements for contemporary research activity is rather a technical procedure, but, of course, a revolution (in the results of technological progress) as well. However, the main revolution (on the rational intellectual level) was realized precisely in the 4<sup>th</sup> century BC when Plato had substantiated the Dualist cosmology and the essence of Abstract (Idealist – mathematical) approach to cognizing and constructive reshaping of the outward things (the outside world-nature-cosmos). Indeed, nearly all the founders of modern science (16–21 centuries), including Newton, Galileo, Copernicus, Kepler, Bacon, Descartes, Faraday, Maxwell, Leibniz, Haeckel, Pasteur, Darwin, Kant,

Rousseau, Voltaire, Hume, Spinoza, Bruno, Berkeley, Mill, and many others were the deep believers in God.<sup>20</sup>

Indeed, as M. Benetatu concludes herself (in studying Plato's *Timaeus*): "The fundamental condition of consciousness is creating, putting order, finding laws along with arranging, shaping and constructing." (p.13) Likewise, it is useful to reiterate the aforementioned conclusions a) of R. McDonough: "By 'chaos' Plato does not mean the complete absence of order, but a kind of order, perhaps even a mechanical order, opposed to Reason"; and b) of A. Gregory: "What is less often recognized is that the *Timaeus* offers a significant reductionist programme, based on the geometrical properties of the atoms." Also, we cannot ignore the remarkable citation of Descartes (his *Principia*), that is included into Benetatu's article, and which precisely points to the modern shift (of Plato's method) from Transcendent to Transcendental level (also called the establishment of sciences upon a secure metaphysical foundation): "*We shall not stop either to examine the ends which God has given to himself by creating the world and we shall entirely reject from our philosophy the search for final causes, because we should not presume on ourselves so much as to believe that God shared with us his plan: but, considering him the maker of everything, we shall only endeavor to find by the faculty of reasoning which he placed in us, how these [things] which we perceive by means of our senses could be produced*" (*Principia*, I. 28).

Again we see the truth of Alfred North Whitehead's statement: "The safest general characterization of the European philosophical tradition is that it consists of a series of footnotes to Plato". In general, a cornerstone moment is that the current mathematical-reductionist approach (modern scientific method, with its huge constructive abilities) is the absolutely essential asset of modern global culture, especially in the areas of medicine, food, energy, housing, economic achievements, breakthroughs in the fields of transport and communications, etc. All this is the current superb technological revolution (realized on the bases of Plato's foundational principles), which actually gave mankind the new opportunities in a constructive transformation of the world. For instance, God created the horse, and man (in the same way) – motor vehicles with a capacity of thousands of horsepower.

However, on the one hand, while modern scholars have realized the full (or over-full) potential of Plato's (bio)cosmology – on the other hand (in their unintentional immense passion), modern science organizers and scholars did erase (cancel, delete – from the sphere of scientific activity, in institutional aspect) the real potential of Aristotle's Biocosmology. This unfavorable process started yet in the Middle Ages (with a huge negative contribution of St Thomas Aquinas). In the present, an idea to focus on the exceptional importance of Descartes (or any other modern European scholar) and their contributions to the emergence of modern foundations of science is hardly appropriate. We really should go back to the original texts of both Greek geniuses, and thus to set the record straight – to rehabilitate the

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<sup>20</sup> In more detail, see the article by Tihomir Dimitrov, 2010, entitled "Founders of Modern Science Who Believe in GOD".

initial existence of the two independent (opposite to each other) cosmologies – Aristotle’s and Plato’s.

Indeed, we have nowadays (in medical term) the ‘*cosmological insufficiency*’ and a really dangerous state of affairs in respect to sociocultural development. In fact, Aristotle’s Biocosmology is the polar, but essentially equal (to Plato’s) supersystem of knowledge – polar Type of Rationality (polar T\_SCSS, hence – the autonomic type of scholarly endeavors). Without the true understanding and (equal) use of Aristotle’s Biocosmology (as the Type of rationality) – contemporary cultural figures (including men of science) cannot, in principle, effectively respond to development issues and crises challenges (while they possess only the knowledge of Plato’s method). Indeed, due to Plato’s approach – they need every time (as a starting point) the situation of a “primary chaos” (mechanical order) – for their further studying the case and the eventual (re)constructive activities (using mathematical laws and bringing the situation into a sought-for organic order). Therefore, if they face a natural order (and, for sociocultural and civilizational development – this is a natural normal state of things) – modern scholars (public men), however, first need to deconstruct the given organic situation into mechanical chaos (thus, every time, ‘reinstating chaos’, for they do not know any other cosmological disposition and methodological approach), and, only afterwards – to start building the desired order. It is not surprising, in this light, that we have already two world wars in the 20<sup>th</sup> century and the coming third world war in the 21<sup>st</sup> century.

Indeed, in the modern situation of existing ‘cosmological insufficiency’ (when only Plato’s Dualist approach is accepted, while Aristotle’s Biocosmology is not allowed within the scope of scientific and philosophical activity) – modern cultural (public, scientific) professionals have no other choice! Therefore, we do need to overcome the existing *cosmological insufficiency* – to decisively rehabilitate Aristotle’s naturalism and the Biocosmological Functionalist approach, and to reinstate generally the natural status of Aristotle’s Biocosmology as the equal pole and Type of contemporary cultural activity that is essential in resolution the topical issues of current sociocultural development. In this perspective, special importance is laid to the development of Integralist (system, holistic) methodologies – which are intermediate and posed *in-between* two poles, although cosmologically are autonomic, and which apply the means from both poles: Aristotle’s and Plato’s.

## 8. George Chapouthier’s comments

Prof. Chapouthier<sup>21</sup> expressed the following critical opinion about the article of Marianna Benetatou:

It emphasizes that, contrary to some of Aristotle’s objections, Plato’s theory is not so far from his (Aristotle’s). By an in depth analysis of Plato’s texts, Marianna Benetatou provides evidence for the use of the four causes by Plato. Since “Aristotle does not compare his theory with the Platonic theory of ideas” (p.7),

<sup>21</sup> The National Center for Scientific Research, Paris, France.

“Aristotle’s refutation is, according to Benetatou, based on an inexact interpretation of the Platonic theory” (p.7). Thus, according to her, the mathematical reductionist approach of the universe, clear in the philosophy of Descartes and his followers, should not be attributed to Plato.

This convincing and intelligent analysis, very clearly written, should be taken seriously and, to a given extent, rehabilitate Plato in the light of the neo-Aristotelian thinkers. But Benetatou’s article does not, in my opinion, refute the Aristotelian roots of the Neo-Aristotelian movement. It only suggests that Plato is not so far away from it and that Aristotle should not be so critical of his master. The fruitful philosophical consequences of the Biocosmological explanation and of the Neo-Aristotelian stance could not be changed by this interesting study. If, as claimed by Benetatou: “Plato envisaged the world as an organic living and intelligent whole” (p.18), it is however clear that his emphasis on animals, living beings and “biological” processes, cannot match the studies and the discoveries of Aristotle in this field. Biocosmology should thus remain an Aristotelian view.

We both have a biological (medical) background<sup>22</sup> and, therefore, use to exercise metaphorical examples from physiology. Giving an example, it is well known that any human (mammal) organism is the subject to the principle of homeostasis. In the aspect of nervous regulation, homeostasis is the constant balance (and which is an evident Triadologic example) – of the three regulating systems: two polar – sympathetic nervous system (SNS) and parasympathetic nervous system (PNS); and intermediate Integral (basal) – metasymphathetic nervous system (MNS). Thus, for instance, the normal (healthy) parameters of heart rate is 60–90 (beats per minute); while normal blood pressure is 100–140/70–90 (mm Hg). In all cases, it means the balanced (harmoniously cooperated, but synchronous and autonomic) activity of all the Three systems (two polar – SNS and PNS; and one intermediate – Integral – MNS). However, if we have the hard domination (dictate) of one of the two polar systems (either MNS or PNS) – we inevitably face a disastrous state of the organism (its hemodynamics): heart rate either 150 or 20; blood pressure either 300/150 or 60/0; in both cases – the severe (life-threatening) hemodynamic instability.

We can easily transfer this example into the vital – permanently balanced – interrelation of polar systems of mentality and cultural activity (polar Types of rationality – Aristotle’s and Plato’s), which is equally essential for a normal sociocultural development, including the institutions of science and philosophy (wherein we mention the balance of the two polar T\_SCSS and the third – intermediate – Integral T\_SCSS). Therefore, the fundamental principle for a well-being sociocultural development is the permanent autonomic and synchronous

<sup>22</sup> To the point, as Aristotle himself is; his medical background and that biology was a natural pursuit for him are well known.

existence and well-coordinated dynamic interrelation of the Three T\_SCSS (with its polar Types of rationality – Aristotle’s and Plato’s).

### **Concluding remarks**

Foremost, we are deeply grateful to Marianna Benetatou for her presenting a really profound, original, interesting, appreciable and thought-provoking research aimed at the comparative analysis of the Platonic and Aristotelian philosophical systems. Firstly, M.Benetatou’s research unveils an evident truth that both thinkers, equally, built their great systems of rational knowledge aiming at the universal (thus all-embracing and universalizing – cosmological) substantiation and understanding of the real world. Essentially, these are the polar cosmologies: Plato’s supersystem is ultimately reduced to the Transcendent Static world of idealistic prototypes (exemplars, patterns); Aristotle’s supersystem – to the natural inherent Dynamic Functionalist essences of the particular things. Conceptually, both great thinkers achieved brilliant (phenomenal) results having created effective (foundational for the world culture) rational cosmologies (supersystems of comprehensive knowledge) but which are essentially polar (opposite) to each other. Essentially, in their mutual polarity, as a natural result, these two supersystems-cosmologies (Types of rationality) – form the foundation(s) of really all-encompassing (scholarly) knowledge. In general, this is the reflection of the natural Bipolarity of the real world (Kosmos), and, following Aristotle’s Biocosmology and its principles of natural Dynamicity, Cyclicity, Hierarchical order and Functionalist heterogeneity – of the (natural) Kosmos’ real Triadic (Triadologic) essence, which is especially significant in the Integralist realm, both in studying as Integralist forms of life, as Integralist forms of cognition.

First of all, Marianna Benetatou reminds us of (points to) the essential (indefeasible) significance of Plato’s (bio)cosmology. Indeed, in our diligence to develop the neo-Aristotelian (Biocosmological) issues, and, in this, emphasizing the Dualist Idealistic Static essence of Plato’s cosmology and the derived forms of Transcendent and/or Anthropocentric (Transcendental) organicism and teleology – we sometimes lose sight of the generally great and indispensable significance of Plato’s contribution to the global culture. At the same, the evidence of today’s cultural (crisis) situation leads us to urgently accelerate and achieve the clear understanding and permanent right balance of interaction between the two polar cosmologies (Aristotle’s and Plato’s). In this way, naturally, our first aim is to rehabilitate the vital significance of Aristotle’s Biocosmology, thus overcoming the existing ‘cosmological insufficiency’. In a predictable manner, only further (on) we could count on finding out the optimal variants of harmonious (local and global) sociocultural evolution (chiefly, developing the Integralist forms), i.e. adequately applying Aristotle’s Hylomorphic Functionalist Dynamic (Bipolar) Organicism and Teleology as well.

We are to agree with Anna Makolkin: “Aristotle is more than relevant to the current reality – he is urgently needed to lead us away from the pathway of our own destruction.” (2013, p.686) The point is that Plato’s Dualist ‘external’

(bio)cosmology has its essential imperative (in the case of facing a living body with the inherent organic order) – always to restore the ‘primary’ chaos (for the subsequent constructive intervention *from without*) and its eventual (re)construction of achievement of the desired order. Therefore, if we persist (in keeping on and developing the modern tradition and general disposition) of rendering exclusively Plato’s Dualist cosmology and the derived mathematical-reductionist (‘scientific’) method – we then, on the one hand, will continue the celebration of technological progress; but, on the other hand (bringing forward the complete dominance or dictate of Plato’s Dualist (bio)cosmology; and as it is metaphorically shown above) – we shall inevitably achieve the disastrous disruption of natural harmonic (‘homeostatic’) existence and evolution, with (instead) induction of crises, wars and catastrophes into the global sociocultural realm (among them, invariably, in series, the third world war). Certainly, we are to do our best to avoid this disastrous self-destructive way of global wars and catastrophes (although with concurrent technological progress), which reasons lie in our current *cosmological insufficiency*.

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