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Three new suggested guidelines for increased transparency regarding open access article processing charges (APCs)

Jaime A. Teixeira da Silva[1]

Abstract

The article processing charge (APC) lies at the heart of the gold open access (GOA) business model. Small and larger society-based, as well as commercial publishers, rely – to different extents – on the APC and the GOA model to thrive. There is wide debate regarding what amount of APC is considered to be exploitative, and the issue of low APCs is often erroneously associated with "predatory" OA publishing. Independent of this debate, there is still, surprisingly, considerable opacity related to the APC used to cover the cost of GOA. In a bid to increase transparency, a simple 3-point plan at increasing academic and financial transparency of authors and journals/publishers regarding APCs is proposed: 1) indicate which author paid the APC in multi-author papers; 2) indicate the value of the APC paid; 3) provide online proof or certification of APC payment, including the indication of any discounts or waivers.

Keywords: funding; opacity vs transparency; open access; open access mega-journal; Plan S

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Dear *Epistemes Metron Logos* Editors,

Open access (OA) lies at the heart of the current academic publishing platform, especially the issue of sustainability and who will foot the cost. Often subject to heated debate, the cost of paying for knowledge, via OA, is constantly at the fore of such discussions[2]. On one extreme (fully scholarly objective) lies platinum OA, in which the publisher, institute or funder covers all costs associated with publication of intellect, and does not charge authors an article processing charge (APC). On the other extreme is subscription-based publishing that does not have publishing costs for authors, where copyright is usually transferred to the publishing entity, and where the option of converting an article to OA exists, at a cost, the APC, i.e., the gold open access (GOA) business model (Crawford, 2018; Morrison, 2018; Khoo, 2019; Asai, 2020). In between, one can find a whole range of academic and exploitative models, abuses of OA and of APCs, including "predatory" OA publishing and the black/pirate OA market (e.g., Sci-Hub) (Teixeira da Silva et al., 2019a) and the APC-metrics gaming model (Teixeira da Silva, 2017), a large, important and complex discussion that lies beyond the objectives and scope of this letter.

APCs also lie at the core of emerging OA publishing plans like Plan S[3], mega publishing ventures such as OA mega-journals (Teixeira da Silva et al., 2019b), which can be profitable APC cash cows based on paper volume-APC ratios[4], or new experimental publishing models such as Elsevier's OA mirror journals[5], and given the gradually increasing value of the OA market[6], and the constant debate regarding the sustainability of OA[7], it makes sense to ensure that additional measures are in place to reduce, as much as possible, abuse, and to make the issue of APC accountability and transparency front and center of the OA debate. That said, not all academics are able to pay APCs, and it is not uncommon to find journals with APC waivers or discounts (Lawson, 2015).

One of the key tenants of fair, equitable and sustained academic publishing is the

[2] https://poynder.blogspot.com/2020/02/plos-ceo-alison-mudditt-discusses-new.html (February 19, 2020; last accessed: June 30, 2020).

[3] https://www.coalition-s.org/ (last accessed: June 30, 2020).

[4] https://scholarlykitchen.sspnet.org/2020/05/07/guest-post-the-megajournal-lifecycle/ (May 7, 2020; last accessed: June 30, 2020).

[5] https://www.elsevier.com/about/open-science/open-access/open-access-journals/mirror-journals (last accessed: June 30, 2020).

[6] https://deltathink.com/open-access-market-sizing-update-2019/ (November 17, 2019; last accessed: June 30, 2020).

[7] https://sustainingknowledgecommons.org/2019/11/27/oa-apc-longitudinal-survey-2019/ (November 27, 2019; last accessed: June 30, 2020).

transparency of operations. Yet, for publicly or privately funded research published in OA journals or in subscription-based journals whose OA is covered by an APC, apart from an acknowledgement that indicates the funder or source of funding, it is rare or almost impossible to find the following details regarding the APC: 1) which author paid the APC in multi-author papers; 2) the value of the APC paid; 3) certification of APC payment, and/or an indication of any discounts or waivers. For example, one of the most widely accepted recommendations for publishing industry standards, by the ICMJE[8], only provide a superficial guideline for journals that does not address these three aspects, and provide no guidance for authors. These gaps accentuate the weakness and porosity of such guidelines, reducing their effectiveness in serving as a tool of transparency for the publishing industry (Teixeira da Silva, 2020).

In order to address these gaps, three new guidelines are suggested, information that fits perfectly within an acknowledgement, and that would supplement journal requirements for APCs of submitting authors (e.g., Lubowitz et al., 2017):

1) When there are two or more authors in a manuscript, the author responsible for paying the APC should be clearly indicated. As a subset of this guideline, it should also be clearly indicated if the author, their institute, or a funder / funding agency covered the APC, or if there was shared responsibility.
2) The precise value of the APC that was paid, and the currency and date of receipt, should be indicated.
3) Any special agreements covered between the author, author's institute or funder and publisher to offer discounted APCs should be noted. Related to this, if the authors were offered a discount, the reason for the discount and the value of the discount should be clearly indicated.

The responsibility of the accuracy of these three aspects related to APCs should lie with the authors and with the editors. Apart from the issue of openness and transparency, especially in a publishing world clamoring for open science, these three simple guidelines would address the issues of fairness associated with the possibility of opaque backroom negotiations between authors and editors or publishers to lower APCs.

Conflicts of interest

The author declares no conflicts of interest of relevance to this topic.

[8] In section "F. Fees" (p. 11), the following is stated: "Journals should be transparent about their types of revenue streams. Any fees or charges that are required for manuscript processing and/or publishing materials in the journal shall be clearly stated in a place that is easy for potential authors to find prior to submitting their manuscripts for review or explained to authors before they begin preparing their manuscript for submission". http://www.icmje.org/icmje-recommendations.pdf (December, 2019; last accessed: June 30, 2020).

Author contributions

The author contributed to all the intellectual discussion underlying this paper, literature exploration, writing, data collection and analysis and interpretation, reviews and editing, and accepts responsibility for the content of the paper.

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Reflections in classical philosophy concerning the superiority of spiritual power vs. physical vigor, by Xenophanes: Frag. 2D = 2W

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Abstract

Xenophanes of Colophon (570-475 BC), a Pre-Socratic philosopher of the Eleatic School, faced life with his outspoken spirit, criticizing any values of his time considered obsolete, such as the anthropomorphic representation of the gods. He was the first philosopher who challenged the sporting value to the spiritual one. Revolutionary and innovative, in his second elegy expresses his preference for spiritual power, and he stands ironical towards the Greeks who give the physical rhyme excessive importance. According to Xenophanes, the athletic victory is simply due to the speed of the feet and does not affect the spiritual life of the city, while, on the contrary, the one who affects the ethical values of society is the one who produces thoughts and is interested in the common good. Obviously Xenophanes feels unjust, and reacts to the great mismatch that exists between the real athletes' offer and the great honors that the society ascribes to them. Characteristically, Euripides will be influenced by Xenophanes' ideas, while Isokrates, as well as other wise and intellectuals of the Classical Ages, will highlight the superiority of spiritual values as compared to athletic offerings, arguing that the greatest spiritual value is wisdom and the resulting benefit.

Keywords: philosophy, bioethics, reception, non-human living beings, moral approach, respect, proper treatment

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Περίληψη

Ο Ξενοφάνης από την Κολοφώνα (570 - 475 π.Χ.), προσωκρατικός φιλόσοφος της Ελεατικής σχολής, αντιμετώπισε τη ζωή με κριτικό πνεύμα, επικρίνοντας με την ιδιαίτερη σατυρική του φλέβα όποιες αξίες της εποχής του θεωρούσε ξεπερασμένες. Ρηξικέλευθος και καινοτόμος, εναντιώνεται στην ανθρωπομορφική παράσταση των θεών, υποστηρίζοντας την πνευματικότητα του ανωτάτου Όντος, που μόνο με την πνευματική του δύναμη τραντάζει το σύμπαν. Ο Ξενοφάνης επισημαίνει την ανωτερότητα των πνευματικών αξιών εν συγκρίσει προς τις σωματικές επιδόσεις και την αθλητική προσφορά. Πιστεύει ότι η μεγαλύτερη αξία στον άνθρωπο είναι ο νους και όχι το σώμα, και εκφράζει απερίφραστα την προτίμησή του στην πνευματική δύναμη, ειρωνευόμενος τους Έλληνες που δίνουν στη σωματική ρώμη υπερβολική σημασία. Αυτό συμβαίνει επειδή, κατά τον Ξενοφάνη η αθλητική νίκη οφείλεται απλά στην ταχύτητα των ποδιών και δεν επιδρά στην πνευματική ζωή της πόλης, ενώ, αντίθετα, εκείνος που επηρεάζει τις ηθικές αξίες της κοινωνίας είναι αυτός που παράγει διανοήματα και ενδιαφέρεται για το κοινό καλό. Προφανώς ο Ξενοφάνης νοιώθει να αδικείται, και αντιδρά για την μεγάλη αναντιστοιχία που υπάρχει ανάμεσα στην πραγματική προσφορά των αθλητών και τις μεγάλες τιμές που της αποδίδει το κοινωνικό σύνολο. Είναι χαρακτηριστικό ότι αργότερα ο Ευριπίδης θα επηρεαστεί από τις ιδέες αυτές του Ξενοφάνη, ενώ και ο Ισοκράτης, καθώς και άλλοι σοφοί και διανοούμενοι, θα επαναλάβουν την ίδια ιδέα, υποστηρίζοντας οτι η μεγαλύτερη πνευματική αξία είναι η σωφροσύνη και η απ' αυτήν προκύπτουσα ωφέλεια.

Λέξεις κλειδιά: Ξενοφάνης, σοφία, αθλητισμός, πνεύμα, σώμα, αξίες, αθλητική νίκη, κοινό καλό

1. Introduction

Xenophanes of Colophon (570 - 475 B.C.), a Pre-Socratic philosopher of the Eleatic School, is an "*itinerant minstrel*", who roamed for many years in the western Mediterranean and ended up in Elea of Southern Italy. Xenophanes lived his life with his perspicacious spirit, criticizing any theories and morals of his era that he considered obsolete. Preserved elegies and excerpts of his satirical poems under the title *Silloi*, reveal a groundbreaking and highly innovative mind, surely a creation of the Ionia region, which during the 6th century B.C. had become the cradle of philosophy and sciences. He evolved into a high-level critical thinker, with a humanistic moral perception. Karl Popper, in his work *The World of Parmenides*, devotes his essay *The Unknown Xenophanes. An attempt to establish his greatness*,

arguing that Xenophanes was very close to be a precursor and dynamic representative of the main ideas of European enlightenment.[4]

Xenophanes opposed polytheism and gives a monotheistic theory about deity. He supported the rationality of supreme power, which led him in (a) the rejection of the anthropomorphism expressed by Homer and Hesiod, (b) the discovery of monotheism, and, finally, (c) to the clairvoyance that God is not alike in body and intellect with man.[5] This completely new theory emerged in Xenophanes, according to Popper, as a solution to the greatest of all problems, the problem of the universe, that is, as a revelation of the problem of the cosmic universe. The spirituality of the supreme Being, which is found in nature, is, according to Xenophanes, the nature itself which is so imposing, that only with its spiritual power rocks the universe.[6]

Xenophanes, among others, opposes also those who admit the soothsaying theories, while fooling the Orphic and the Pythagoreans for reincarnation.[7] Neither the bacchanalian deflections of Bacchus' believers,[8] nor the illusionist Epimenides,[9] do not elude from the wonderful quip of this bright mind, of the closed in on itself character.[10] His sharp eye has noticed anything remarkable of the countries he passed, the differences of the people's morals, their natural quirks, even the fossils of marine animals in Syracuse, Malta and Faro. These findings draw important conclusions, while formulating theories that extend to many areas, showing his wide range of knowledge, for which the modern but younger Heraclitus accuses him.[11]

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[4]Karl R. Popper (1998), *The World of Parmenides*: *Essays on the Pre-Socratic Enlightenment*, London and New York: Routledge, pp. 33 ff.

[5] Xenophanes, Frag. 10-14. See William Keith Chambers Guthrie (1962), *A History of Greek Philosophy*, Volume I (Chapter 6), Cambridge: Cambridge University Press, pp. 360-402.

[6] Xen. Frag. 21 D.

[7] Xen. Frag. 7.

[8] Xen. Frag. 17. See Geoffrey Stephen Kirk, John Earle Raven, and Malcolm Schofield (1983), *The Presocratic Philosophers*, 2nd ed., (Chapter 5), Cambridge: Cambridge University Press, pp. 163-180.

[9] Xen. Frag. 20.

[10] See more in: *Eduard Zeller (1963), Die Philosophie der Griechen in ihrer geschichtlichen Entwicklung, 6 Bde, 5. Aufl. Leipzig,* (*Reprint Hildesheim 1963*). *Zeller-Nestle (1928), Grundriss der Geschichte der Griechischen Philosophie***,** Leipzig: Reisland.

[11] Xen. Frag. 40.

Among the multiplicity of phenomena Xenophanes' look distinguishes the spiritual unity of the world. All of his poetry is reformation and confession, while in his elegies, which are intended for a happy feast, he opposes the fairy tales of the old world, institutes a religiousness based upon just actions.[12] He finds words so as to shed the innocent joy of life,[13] and to condemn the humble avarice,[14] thus exposing his personal conviction to the essence of the world. The basic concept of his philosophy concerning the worldview is the unity of all beings.[15] This "*everything is one*" is for him the deity, indestructible, always alike to herself, that is, unchangeable.

From his words, one perceives that he distinguishes the senses from the sensual perception, recognizing the relative nature of the latter,[16] and first pointing to the supremacy of the intellect in front of the uncertainty of the feeling. Xenophanes first formed the idea of spiritual progress in the evolvent of mankind. While popular beliefs considered the most important assets of civilization as gifts of worthy gods, he first understood that they were creations of man himself.[17] Assessing, in fact, the virtues of the social man, he claims that the greatest virtue is "*wisdom*".

2. Material and Method

For the analysis of Xenophanes' philosophical approach concerning the comparison between spiritual power vs. physical vigor, it is used the 2D-2W fragment of his elegy. The method used for this study was the philosophical one. Researchers attempted to set from the outset the study's limitations so that they become the main guiding principles of the study, as philosophical research depends to a large extent on the framework determined by the researcher himself. Xenophanes' views and studies have attempted to analyze the particular personality of the particular philosopher and to identify the place and time related factors which influence his opinion and the development of his interest in social evolution. Achieving the above goal was done using descriptive logic. With descriptive logic and morality, which deals with what is right and what is wrong with the particular social structure being studied, Xenophanes' own particular views on the superiority of the spiritual offering towards the physical one have been investigated. Subsequently, the authors, using inductive logic, sought

[12] Xen. Frag. 1.
[13] Xen. Frag. 22. See G.S. Kirk, J.E. Raven, and M. Schofield, op. cit.
[14] Xen. Frag. 21.
[15] Aristotle, *Metaphysics* 1 5 p. 986 b. 18 ff. Plato, *Sophists* 242 d.
[16] Xen. Frag. 38, 36. See W.K.C. Guthrie, op. cit.
[17] Xen. Frag. 18.

to answer the central research question, whether these perceptions are the reason for a timeless reflection.

3. Analysis - synthesis and Results

Physical strength or spiritual novelty? Philosophic view of the argument. Since the 7th century B.C. Tyrtaeus expressed concerns and corresponding views in this field. He, in expressing the Spartan ideal, argues in his poems that various performances, such as the speed of the runner being tested in athletic competitions, physical strength in wrestling, and others, are rejected as insignificant. The seeming virtues are of no value, but value for the "common good" is only the prowess of the fighter who defends his homeland.[18]

Albin Lesky observes that some reflections on the views of Tyrtaeus are also found in Solon, whose basic idea of morality is *the healthy measure and the right meditation*.[19] Solon, according to Diodorus Siculus and Diogenes Laertius argues that boxers, runners and other athletes do not offer anything to save cities, but only those who differ in wisdom and virtue can preserve their homeland when it is in danger.[20] He also does not think it is fair of the Athenians to honor the athletes only - even if Solon himself has established rewards for the Olympic champions - ignoring those who are sacrificed in the wars.[21] According to *Lucian*, Solon himself explains to Anacharsis that the excessive exercise of young people in Athens seeks to make them useful in the wars, so that with their physical strength they are able to grab an enemy or carry their injured friend.[22] And, it is to be understood that the state, honoring the winners with so many prizes, such as a spectacular return to the homeland in tripartite chariots, setting up statues at the expense of the state, delegating the presidency to public games and theaters, free food in the *Prytaneion*, and other public honors, was aiming precisely for that objective.[23]

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[18] See more in Bruno Snell (1975, 4tte), *Die Entdeckung des Geistes. Studien zur Entstehung des europäischen Denkens bei den Griechen*, Vandenhoeck & Ruprecht, Göttingen.

[19] Albin Lesky (1971, 3tte), *Geschichte der Griechischen Literatur*, Bern und München: Franke Verlag.

[20] Diodorus Siculus, 9.2.5, Diogenes Laertius, 1.56.
[21] Diogenes Laertius, 1.55.
[22] *Lucian*, *Anacharsis* or *Athletics*, 28.
[23] Op. cit. 36.

Xenophanes, similar to Tyrtaeus, does not welcome the virtues that other Greeks like, such as wrestling, boxing, racing. Instead, he proposes "wisdom", which offers the state a greater benefit because *its treasuries become bigger*, but also because wisdom contributes more to an organized life than the sports, which are so much admired by the people.[24] As a criterion of virtue he considers the interest of the city, hence the *xynon esthlon*, as Tyrtaeus calls the common good. By rejecting man's athletic effort, he thinks that wisdom is the only virtue and the greatest asset in human life.

Xenophanes points out the supremacy of spiritual power over body vigor,[25] and criticizes the problem of excessive prizes for athletes to the detriment of the people of the spirit. As it appears in his 2nd elegy (Frag. 2D = 2W), he is a fierce opponent of the prizes that cities attribute to athletes.[26] And not only expresses its preference for spiritual value as compared to physical, but he is also ironic to the Greeks who give the physical vigor excessive importance.

According to Xenophanes, the athletic victory is simply due to the speed of the legs, and it does not affect the spiritual life of the city. On the contrary, the one who, in his opinion, influences the ethical values of society is one who has a strong mind, produces thoughts and interests for the common benefit. When an athlete is declared a champion, at pentathlon, or at speed running race, or at wrestling, or at boxing, or at pankration, or at chariot races, he becomes reputed within the city, he is offered honorary position, is publicly fed by the Prytaneion and generally receives many prizes. However, Xenophanes argues, that the athlete does not deserve all these prizes. Spiritual art is far superior to a robust body. The practice of delivering such prizes to those who have physical strength is unreasonable and unfair, as the mighty body is placed higher than a sacred art. Assuming that a worthy athlete is among the people, this will not better regulate the life of the city, nor will it improve things, as common wealth is not reinforced by a sporting victory.[27]

Xenophanes, with his reference to the 'wealth' of a city, generally means its moral and spiritual substance and its refulgence. Some Scholars interpret Xenophanes' critical

[24] Xen. Frag. 2, 19-22.

[25] See Konstantina Gongaki (2003), *The conceptions of the ancient Greeks concerning Athletics*, Athens: Typothito - G. Dardanos (in greek), pp. 264 ff.

[26] Xen. Frag. 2 (2D=2W). See: Cecil Maurice Bowra (1938), Xenophanes and the Olympic Games, *American Journal of Philology*, 59: 257-279. Miroslav Marcovich (1978), Xenophanes on Drinking Parties and Olympic Games, C.S., 3: 1-26. Harold A. Harris (1964), *Greek Athletes and Athletics*, Bloomington and London, p. 47.

[27] Xen. Frag. 2. See James H. Lesher (1992), Xenophanes of Colophon. Fragments: A Text and Translation with a Commentary, Toronto - Buffalo - London: University of Toronto Press (Phoenix Presocratics, vol. iv), xvi+266 pp.

attitude towards athletes as a result of the fact that he feels wronged. He complains, therefore, that he does not consider it fair to reward physical power instead of spiritual offering. He knows the excessive prizes of a victory, and he reacts to the mismatch between the real offering of the athletes and the great prizes attributed to them by the community. In fact, it is due to Xenophanes' vision of *the supremacy of mind vs of the uncertainty of feeling*, which he first pointed out, clearly projecting as the founder of a rational enlightenment, as *Zeller-Nestle* said.

The criticism, then, on the same issue is not enough for Xenophanes' remarks. In contrast, Euripides, another challenger and innovator, influenced by Xenophanes according to Athenaeus, sharpens criticism. In the satirical drama *Autolykos* makes harsh accusations against the athletes, describing them as *the worse of evils that exist in Greece* and accusing them, unjustly, that they are not beneficial to the city, neither in war time nor in periods of peace.[28] The main expresor of the view that the spiritual values, and especially the wisdom and its resulting benefits, are more important and lasting than the development of physical strength, is Socrates. He does not underestimate the offering of physical strength, at a time when the resolution of differences between city-states is done through war and in fact the athlete reflects the heroic ideal of the era. Knowing, of course, that wisdom is the highest value, in his *Apology* he claims his feeding in Prytaneion for his spiritual offering in Athens.[29]

Plato, then referring to the *guardians* of his ideal *Republic*, defends the perspective that superior of all are the martial athletes who are in charge of protecting the city.[30] The ideal, however, of "*kalokagathia*" (nobility, goodness), which is a basic element of Athenian civilization, consists of the desired harmonization of the soul and body.[31] According to Glenn Morrow,[32] whenever Plato decreases the value of physical activity as an attitude, this is not the expression of a mental disdain for one-dimensional body bravery, but a dislike of the professionalism of Greek sports during the 4th B.C. century.

Apart from the abovementioned, Xenophanes' dissatisfaction with the exorbitant honors towards the athletes is reinforced, by Isocrates, who in his *Panegyricus* writes about the Olympic Games in 380 B.C. and reiterates the problem of providing high wages to physical strength, in contrast with the non-existent recognition of those who

[28] *Euripides, Autolykos,* frag. 282 Nauck. From Athenaeus: *Deipnosophists*, 10.413 f - 414 c.
[29] Plato, *The Apology of Socrates*, 26 c-e.
[30] *Plato*, *Timaeus* 87 c - 88 c.
[31] Plato, *Republic* C 402 a.
[32] Glenn Morrow (1960), *Plato´s Gretan City. A Historical Interpretation of the Laws*, Princeton, New Jersey: Princeton University Press, p. 332.

cultivate their spiritual powers for the general good.[33] But *Diogenes the Cynic*, Plutarch, Philostratus, Galen, Lucian, are some personalities of ancient intelligentsia who hold a similar attitude. Every intellectual proposes another value from the total of spiritual values, depending on his general philosophical view. Xenophanes and Euripides, for example, as they criticize every traditional value, are expected to expand their arrows in the field of sports as well. There are also others among the critics who belong to The Second Sophistic School and therefore express the tendency to return to the ancient romance.[34]

4. Conclusion

Most of the above mentioned, however, criticize athletes for their pratfall, but they also use them as an example for the effort they make to win. Critical comments against sport were, in the end, stereotypes that did not cause any harm to the glamor of the institution. Thus, the critique finally confirms the ideal of the "*kalos* and *agathos*" (beautiful and good) citizen, who, by harmonizing the needs of his spirit and body in a composition, gives value to his constituent parts.

In general, the aggressive, however, and radical reclassification of the scale of traditional values Xenophanes attempted, in fact, highlights his great concern for the good rule of law (*eunomia*) of the city. Behind the victory in the Panhellenic athletic games he does not see the revelation of divine favor, such as Pindar[35] and some modern athletic scholars. With Xenophanes the new philosophical education vigorously asserts its position in the state. It is bad for the individual, for the state and for every society to over-honor the corporality of man and to ignore his spiritual existence. It is not fair for lustiness and physical achievement "to stand in front", while *sofia* (wisdom*)*, philosophical knowledge, spiritual culture are neglected or degraded. Therefore, the issue of the athletic life and spiritual life that Xenophanes puts forward seems the same as today. The City itself, the "common good", and the search for the work's appraisal that contributes to the city's bliss, is the criterion of Xenophanes' values. This does not seem to be anything else than the state's attempt to change a world of individual consciousness and one-dimensional people, as described by

[33] Isocrates, *Panegyricus* 1-2.

[34] Graham Anderson (1993), *The Second Sophistic*: *A Cultural Phenomenon in the Roman Empire*, London, New York: Routledge, pp. 69-86.

[35] Konstantina Goggaki (2004), The Athletic Victory as a Value in the Pindaric Odes. *Nikephoros*, 17: 123-134.

Marcuse,[36] with a new one - through education - of collective consciousness and respect for the bicomponent nature of man.

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[36] See more in: Herbert Marcuse (1964 1st), *One-Dimensional Man: Studies in the Ideology of Advanced Industrial Society*. Konstantina Gongaki (2013), *The Olympic Ideal. Global crisis and Perspectives*, Athens: Gutenberg (in greek), pp. 457 ff, 484 ff.

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The Reception of the Non-Human Living Beings in Philosophical and Practical Approaches

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Abstract

In this paper, the author explores the reception of the non-human living beings in modern philosophical and practical approaches. The analysis is aimed at examining both the views of the representatives of classical anthropocentrism, as well as the theses of the representatives of various non-anthropocentric teachings. Anthropocentrism is, in short, a worldview that is based on Aristotle's vision of man as a special being among other natural beings. Advocates of the questioning of the dominant anthropocentric perspective of the *cosmos*, on the other hand, are trying to establish the new relation by relativizing of the difference between humans and non-human living beings, by attributing specifically human qualities and categories, such as dignity, moral status and rights, as well as feelings, memories, communication, consciousness and thinking to non-human living beings. Non-anthropocentrists, consequently, believe that it is necessary to relax the usual strict hierarchy among beings in nature, that is, the discrediting of animals in relation to man, and that within the applied ethics, *alias* bioethics, it is possible, even necessary, to establish the "animal ethics".

Keywords: philosophy, bioethics, reception, non-human living beings, moral approach, respect, proper treatment

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The dominant anthropocentric image of the world,[2] and the ensuing consequentialist relation of man to nature and animals,[3] has been questioned over the last decades by non-anthropocentric expansion of ethics, and by ever louder posing of (bio)ethical demands for a fundamental and new settlement of relations between humans and animals. If one attempts to summarize the basic views of the leading authors P. Singer,[4] T. Regan[5] and K. M. Meyer-Abich,[6] which are representative of present discussions of the new regulation of human-animal relationships, then the main views are as follows:

1.) Animals are beings that are capable of suffering[7], with their own interests and needs that are similar to the basic needs of people.

2.) If there is such similarity, the principle of equality requires that the interests of animals are respected as well as the similar interests of humans.

3.) Animals have their own value, which for some (Singer and Regan) stems from their consciousness, while others (Meyer-Abich) attribute additional importance to the affinity of animals and humans.

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[2] About Aristotle's paragraph from the *Politics* (1256b15-22) which is emphasized as a paradigm of the leading western tradition and its unquestionable anthropocentrism, consult: Ž. Kaluđerović, „Aristotelovo razmatranje *logosa*, „volje" i odgovornosti kod životinja", pp. 311-321, in: *Filozofska istraživanja*, 122, god. 31, sv. 2, Zagreb 2011.

[3] In Article 5, point 13 of the „Zakon o dobrobiti životinja Republike Srbije" ("Law on Animal Welfare of the Republic of Serbia"), for example, "animal" is defined reductively but unambiguously as any vertebrate which has a capacity to feel pain, suffering, fear and stress. Internet address: http://www.paragraf.rs/propisi/zakon_o_dobrobiti_zivotinja.html. For more details see: Ž. Kaluđerović, "Animal Protection and Welfare - Contemporary Examinations", *forthcoming*.

[4] P. Singer, *Practical Ethics*, Cambridge University Press, New York 2011; P. Singer, *Writings on an Ethical Life*, HarperCollins Publishers Inc., New York 2001.

[5] T. Regan, *The Case for Animal Rights*, University of California Press, Berkeley 2004; T. Regan, *All That Dwell Therein*, University of California Press, Berkeley 1982.

[6] K. M. Meyer-Abich, *Praktische Naturphilosophie*, C. H. Beck, München 1997; K. M. Meyer-Abich, *Wege zum Frieden mit der Natur*, Hanser, München und Wien 1984.

[7] At the end of the well-known passage about the non-human part of animal creatures, which, as is often stated, is a departure from the mainstream of Western philosophy, J. Bentham says: *"The question is not* Can they reason*?", or* Can they talk*?" but* Can they suffer*?"*. Consult: J. Bentham, *An Introduction to The Principles of Morals and Legislation*, p. 144. Internet address: http://www.earlymoderntexts.com/assets/pdfs/bentham1780.pdf.

Singer talks about animals - "personalities", and Regan about "subjects of life". Both of them derive from that the "rights" of animals[8] on the basis of their type of treatment and protection of their lives, which is why it is forbidden to kill them for the purpose of eating.[9] Meyer-Abich speaks of the "dignity" of animals, and from that derives the "rights" of animals, which prohibit the keeping of animals in massive farming, but not the killing of animals after a life that was suitable for an animal, for the purpose of feeding people. It is noted that these basic thoughts are partially overlapping, but also that the results diverge at the central point of killing of animals.

Is it enough if Meyer-Abich, in order to explain his opinion, indicates that the condition of our existence to live from the rest of our lives, and that, in the end, vegetarians also eat life by eating plant foods?[10] Is it advisable when Regan, in order to explain his contrary opinion, indicates that all mammals have an "inherent value"[11] that makes them "subjects of life" because of their consciousness, thereby providing them with "rights" in which man should not interfere, with the exception of severe cases of conflict like the necessary defence?

In order to ensure that the demands for higher or lower own "rights" of animals, would not remain only calls without any prospect of success, it should be clarified to what extent they are compatible with the usual thinking about (bio)ethics, and to what extent they can be realized in practical and political frameworks. In other words, what is lost and whether anything is lost, if the "dignity" of animals and the corresponding animal "rights" are also recognized in addition to human dignity[12] and human rights.

From the philosophical aspect, at the first glance understandably tense situation greatly diminishes, since most western philosophers have believed and/or believes that, as already mentioned, only human beings have moral dignity, given that

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[8] See: B. Sirilnik, E de Fontene, P. Singer, *I životinje imaju prava*, Akademska knjiga, Novi Sad 2018, pp. 15-97.

[9] J. R. des Jardin states critical views on Singer's and Regan's views. Dž. R. de Žarden, *Ekološka etika*, Službeni glasnik, Beograd 2006, pp. 193-200. Consult also: J. McMahan, *The Ethics of Killing*, Oxford University Press, Oxford 2002, pp. 194-203.

[10] K. M. Meyer-Abich, *Praktische Naturphilosophie*, C. H. Beck, München 1997, s. 426.

[11] T. Regan, *The Case for Animal Rights*, University of California Press, Berkeley 2004, p. 243.

[12] Human dignity has often been linked to I. Kant's second formulation of the categorical imperative: *"Act so that you use humanity, as much in your own person as in the person of every other, always at the same time as end and never merely as means"*. See: I. Kant, *Groundwork for the Metaphysics of Morals*, Yale University Press, New Haven and London 2002, pp. 46-47. Consult also: I. Eterović, *Kant i bioetika*, PERGAMENA, Cent. za int. bioet. Fil. fak. Sveuč. u Zagrebu, Zagreb 2017, pp. 104-110; Ž. Kaluđerović, "Bioethics and Hereditary Genetic Modifications", in: *Conatus - Journal of Philosophy*, Volume 3, Issue 1, Athens, Hellas, 2018, pp. 31-44.

the required legal equality of men and animals does not mean that life is equal to life in any case. Regan explains this with his famous example of a packed lifeboat in which there are several people and one big dog.[13] It is assumed that the boat could be kept afloat only if one of the passengers would be thrown from the deck into the river or the sea. To the regret of all animal lovers and to the joy of all anthropocentrists, Regan "throws" the dog from the deck - surely with a heavy heart, but with the justification that the damage that death brings with it for one individual consists in the loss of its opportunities for life, and that these are greater for a man than for a dog. If a collision occurs, the value of the lives of different individuals must be measured, and individuals with more modest possibilities of experience should be scarified to the individuals with a wider life horizon and a higher value of life that goes with it. A common hierarchy of values that stems from the primacy of man remains unchanged if a disputable case arises.[14]

Neither the circumstance that animals cannot take responsibility and cannot make autonomous decisions, from the point of view of non-anthropocentrists, does not have to be an obstacle to the approval of the appropriate "rights" to them. However, according to the anthropocentric concept of rights, a legal subject may only be a being that at the same time may be the subject of duty, which can therefore be conscious of its duties and which can fulfil them. The German philosopher L. Nelson in regards to the symmetry of the law and duty that reflects upon Kant, already at the beginning of the last century warned that for a certain legal subject is less constitutional to have the interests that could be injured than for some subject of duty. Following this, Nelson develops a maxim that speaks of Kant's categorical imperative, in the sense that one never acts so that he cannot approve of his method of action, and even if the interests affected by his actions are his own.[15] This philosopher, by broadening Kant's concept of law, does not proceed towards the mind-governed person as the sole proprietor of rights, but introduces also all individuals that are governed solely by interests. All holders of interest are, according to Nelson, at the same time personalities. Then, he

[13] T. Regan, "The Dog in the Lifeboat: An Exchange". Internet address: http://www.nybooks.com/articles/1985/04/25/the-dog-in-the-lifeboat-an-exchange/.

[14] This does not mean that the notion of conflict can easily stretch to cases where a person wants to kill an animal to eat it, although he could be fed in another way. In other words, according to this interpretation, the basic right of the animal to life should have priority over the mere interest of man to eat with the greatest possible pleasure. A similar assessment can also be found in Singer, who condemns the killing of animals for the purpose of eating, unless it is necessary for the survival of man.

[15] L. Nelson, *Kritik der praktischen Vernunft*, 2. Aufl., s. 133, in: L. Nelson, *Gesammelte Schriften in neun Bänden*, hrsg. von P. Bernays, W. Eichler, A. Gysin, G. Heckmann, G. Henry-Hermann, F. von Hippel, S. Körner, W. Kroebel und G. Weisser, Band 4, Felix Meiner Verlag, Hamburg 1972.

states that each person, as such, has dignity that is equal to the dignity of any other person. From this, the person's subjective right is exercised to respect its interests. According to this fundamental approach to personal dignity, any being who has interests, that is, every person, has the right to respect their interests. This right is the right of personality. Every person is a subject of law, because it is by its notion one subject of interest, it could be said on Nelson's trail.[16]

Such clauses of the opening of an order on the equal treatment of human and animal interests make it acceptable and possible to recognize the "dignity" of animals and to install the "rights" of animals, without violating human dignity and human rights.[17] Nevertheless, the acceptance of animals into the circle of right-holders leads to possible restrictions on the freedom of man, by a certain legal subject who, within the philosophical hierarchy of values, is placed below men. For this reason, certain experts in legal science (J. Caspar) discuss the issue of moral acceptability of animal "rights" in a culture that so far has not considered animals as "moral subjects of comparison".[18] In other words, it should be seen on the basis of which legal - (bio)ethical reasons, a man allows to himself to be bound to the living beings that he has left behind in the history of the development of life.

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[16] Nelson explicitly states that there is no general, philosophically grounded order that, because of the interests of animals, one should ignore one's own interests. Thus, it may very well be permissible to hurt the interests of an animal if it would be harmed by some prevailing interest of people. This, consequently, also applies in the case when it is not possible otherwise to preserve an interest in one's own life, or to maintain one's own spiritual and physical strength, but by destroying the life of an animal. L. Nelson, *System der philosophischen Ethik und Pädagogik*, 3. Aufl., s. 174, in: L. Nelson, *Gesammelte Schriften in neun Bänden*, hrsg. von P. Bernays, W. Eichler, A. Gysin, G. Heckmann, G. Henry-Hermann, F. von Hippel, S. Körner, W. Kroebel und G. Weisser, Band 5, aus dem Nachlass hrsg. von G. Hermann und M. Specht, Felix Meiner Verlag, Hamburg 1970.

[17] When Aristotle in *Rhetoric* (1373b6-17) talks about the special and general laws, the general laws he simply called natural laws. The explanation of natural laws is linked with general understandings of the just and unjust in harmony with nature, which, according to him, has been recognized by all nations. The Stagirites believes that with Empedocles it is just that very kind of law, i.e. that the philosopher from Agrigento referred to that right when he was forbidding to kill living beings, since it is impossible for ones to do that justly and the others to do that unjustly. Empedocles (and Pythagoras) claims (**DK**31B135) that for all living beings applies only one legal norm, and that those who had hurt a living creature shall receive punishments that cannot be redeemed. For more details consult: Ž. Kaluđerović, "Ancient Assumptions of Contemporary Considerations of Nature, Life and Non-Human Living Beings", *forthcoming*.

[18] J. Caspar, *Tierschutz im Recht der modernen Industriegesellschaft*, Nomos Verlaggesellschaft, Baden-Baden 1999, s. 154.

In this context, Caspar speaks of the modern concept of human dignity, which includes responsibility[19] and empathy for creatures. A man who is capable of acting has brought animals into dependence to himself, and is therefore obliged to take care of their interests and the rights that arise from them. Man's autonomy has a mutual relationship with responsibility for his conduct. Without this responsibility there is no human dignity either. The greater the dependence of animals from the powerful-acting capable for self-determination man, the more actual becomes his responsibility.

Another element of human dignity, which, according to Caspar, recommends the denial of freedom in favour of the animal "rights", exists in the quantum of compassion towards the weak, without pursuing own motives. They establish the conditions and contents of personal responsibility and lead the inner motive to overcome the egoism of individual needs and instincts, through the limitations of belonging to the group and beyond the boundaries of one's own species. Thus, they are the driving power of a type of ethics of solidarity, love for the neighbour, mercy, and that form of humanity that does not ask much for the price, but works.

As an intermediary result of the digression on the consent of the new "animal ethics"[20] with the usual anthropocentrism, it is possible to postulate this:

a.) Animal "rights" at the expense of humans do not represent any contradiction to the symmetry of rights and duties in the usual (bio)ethics. Nelson's concept that any personal holder of interest can be a right holder whose interests should be treated the same as own interests, is a single systematic bridge between Singer's and Regan's views.

b.) There are (bio)ethical reasons to give animals the "right" to a treatment that is appropriate to them, some would add to this the basic "right" to life, whereas in disputable cases man's right to survive is more valuable.

c.) Restrictions on the action of man for the benefit of animals can rather be (bio)ethically justified as a fulfilment of responsibility and compassion for the weak.[21]

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[19] For more details about the concept of responsibility see: I. R. Lerga, *Bioetika i odgovornost u genetici*, PERGAMENA, Zagreb 2007.

[20] About the concept of "Animal ethics" see: *Encyclopedia of Environmental Ethics and Philosophy* (eds. J. B. Callicott, R. Frodeman), Macmillan Reference USA, Farmington Hills, MI, 2009, pp. 42-53. Consult also: D. Jamieson, *Ethics and Environment*, Cambridge University Press, Cambridge 2008, pp. 112-120.

[21] These examples and parts of comments have been taken and paraphrased from: K. Zajler, „Dostojanstvo životinja i zakoni ljudi", pp. 9-15, in: Udruženje za zaštitu i prava životinja *Sloboda za životinje*, br. 1, Beograd, novembar 2006.

The question may be raised as to how this, by non-anthropocentrists increasingly (bio)ethically required "dignity" of animals, and the resulting animal "rights" are regulated, and whether they are aligned with the consideration of the "moral status" of animals. According to the "Law on Animal Welfare of the Republic of Serbia",[22] Article 4, the basic principles of the protection of animal welfare[23] are based on the mentioned pathocentric concept, since it focuses on the "universality of pain", and Article 2 states that the welfare of animals, that is regulated by this law,[24] refers to the "animals that can sense pain, suffering, fear and stress".[25] When the second point of Article 4 of the Law stipulates that the principle of caring for animals "implies a moral obligation and the duty of man to respect the animals and take care of the life and welfare of animals",[26] it only shows that it is the obligation of man to protect animals, and it does not entitle the animals the "right" to that protection. This, therefore, refers to the moral duty of man, and not to the "right" of the animals.[27] The rights holder can only be a man, because he alone has the dignity of personality, which is an attitude that is in accordance with the usual anthropocentric theses, and it does not differ much from the majority of similar norms in other European countries.[28]

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[22] The Law was posted on the website of the Ministry of Agriculture, Water Management and Forestry of the Republic of Serbia on 19 January 2009 and became effective on 10 June 2009. „Zakon o dobrobiti životinja Republike Srbije". Internet address: http://www.paragraf.rs/propisi/zakon_o_dobrobiti_zivotinja.html.

[23] Animal welfare is usually, however estimated based on internationally accepted concept of the so-called "Five Freedoms". Internet address: http://www.aspcapro.org/sites/pro/files/aspca_asv_five_freedoms_final_0_0.pdf. Similar views are stated in the point 4 of Article 5 of the "Law on Animal Welfare of the Republic of Serbia". „Zakon o dobrobiti životinja Republike Srbije". Internet address: http://www.paragraf.rs/propisi/zakon_o_dobrobiti_zivotinja.html. In London, for example, already in 1824 the first society for the prevention of cruelty to animals was established, whereas a regulation pertaining to animal welfare in the UK was adopted in 1911, and, including numerous amendments, it is still in force today.

[24] On the relationship of the "rights" of animals and "welfare" of animals see: D. Marić, *Etika životinja*, Zalihica, Sarajevo 2010, str. 195-217.

[25] „Zakon o dobrobiti životinja Republike Srbije". Internet address: http://www.paragraf.rs/propisi/zakon_o_dobrobiti_zivotinja.html.

[26] „Zakon o dobrobiti životinja Republike Srbije". Internet address: http://www.paragraf.rs/propisi/zakon_o_dobrobiti_zivotinja.html.

[27] Consult: E. D. Protopapadakis, "Animal Rights, or Just Human Wrongs?", pp. 279-291, in: *Animal Ethics Past and Present Perspectives* (ed. E. D. Protopapadakis), Logos Verlag Berlin GmbH, Berlin 2012.

[28] For example, "Zakon o zaštiti životinja Republike Hrvatske" ("Law on Animal Protection of the Republic of Croatia") (Internet address: https://narodne-

Article 7, paragraph 1, of the "Law on Animal Welfare of the Republic of Serbia" states that it is forbidden "to abuse animals", while in paragraph 3 of the same Article it is prohibited to "deprive an animal of life, except in cases and in the manner prescribed by this Law".[29] Such argumentation is substantially getting closer to the recognition of the "dignity" of animals. Of course, the trouble with such regulations is an animal is not a legal subject pursuant to the laws of the state, and therefore it cannot even sue anyone, despite the law on their welfare being adopted in the Serbian Parliament. Lawsuits cannot be filed on behalf of injured parties that are cows, pigs or hens, since they are animals, and animals cannot participate in any court proceedings.

Article 6, paragraph 1 of the Law states that the owner or holder of the animal is obliged to "treat the animal with the care of a prudent owner and to provide conditions for keeping and care of animals that correspond to the species, breed, sex, age, as well as physical, biological and production specifics and characteristics of the behaviour and health of the animal; ... The owner or keeper of the animal is responsible for the life, health and welfare of the animal and must take all necessary measures to ensure that no unnecessary pain, suffering, fear and stress or injury is inflicted on the animals".[30] Despite this very well-conceived and harmonized with the highest European standards text,[31] the life of animals in the stays or their position during transport is still quite poor. The answer to why this is so partly lies in the fact that there is no concretization of general legal norms of such laws in the legislation, and partly because the adopted regulations limit the minimum standards that are not consistent

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novine.nn.hr/clanci/sluzbeni/2017_10_102_2342.html), "Zakon o zaštiti i dobrobiti životinja Bosne i Hercegovine" ("Law on Animal Protection and Welfare of Bosnia and Herzegovina") (Internet address: http://vfs.unsa.ba/web/images/dokumenti/Zako_o_zastiti_i_dobrobiti_zivotinja.pdf), or "Zakon o zaštiti dobrobiti životinja Crne Gore" ("Law on Animal Protection and Welfare of Montenegro") (Internet address: http://www.sluzbenilist.me/PravniAktDetalji.aspx?tag=%7B92A63CC4-3155-49BD-BB32-EC9624638EB3%7D).

[29] „Zakon o dobrobiti životinja Republike Srbije". Internet address: http://www.paragraf.rs/propisi/zakon_o_dobrobiti_zivotinja.html.

[30] „Zakon o dobrobiti životinja Republike Srbije". Internet address: http://www.paragraf.rs/propisi/zakon_o_dobrobiti_zivotinja.html.

[31] The last around fifty years on the European continent were marked by dramatic changes in the area of ethical-moral and legal-political regulation of the protection and welfare of animals. They are the result of legislative activities of individual states as well as of the transposition into the national legislation of a large number of relevant documents adopted under the auspices of the European Council and the various decisions of the bodies of European Union, and of the standardizing of the legislations of European countries. For more detailed consultations on the perspectives and achievements of bioethical institutionalization in the European Union see: I. Rinčić, *Europska bioetika: ideje i institucije*, PERGAMENA, Zagreb 2011.

with the high goals that are postulated by such laws. Regardless of the fact that the Law is "a matter of general interest", because the need for it is imposed by the process of integration of the Republic of Serbia into the European Union and harmonization of the regulations with the EU directives, in itself it does not prohibit any injury or damage to animal health, but only prohibits "stunning, or depriving the animal of life contrary to the provisions of this Law".[32] After all, Article 15 of the Law sets out the nine bases on which an animal may be deprived of life "in a human manner". These include points 3 and 4, according to which an animal can be slaughtered if it is to be used for food, and if it is used for scientific and biomedical purposes. In the collision of rights, traders of cattle and scientific institutions are favoured, since they can rely on their basic rights to freely exercise their own profession, as well as to the freedom of scientific research,[33] namely to the rights guaranteed to them by the highest legal act of the state, the Constitution,[34] while the "Law on Animal Welfare" is an act of a lower ontological rank, that is, a derived act.

If a (bio)ethical right should be legally perceived as well, it must be possible for it to be sought by court, i.e. the owner of the right must either personally, or if he cannot do so, through a guardian or other legal representative, file a lawsuit before the court for violation of his rights, and possibly procure an exemption. For animals, this is not currently foreseen,[35] although, for example, Article 1 of the "Law on Animal Welfare of the Republic of Serbia" states: "This law regulates the welfare of animals, rights, obligations and responsibilities of legal and physical persons, i.e. entrepreneurs, for the welfare of animals, treatment of animals and protection of animals against abuse ..."[36]

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[32] „Zakon o dobrobiti životinja Republike Srbije". Internet address: http://www.paragraf.rs/propisi/zakon_o_dobrobiti_zivotinja.html.

[33] The society truly has a complex task to balance between the scientific freedom of research and the responsibility of preserving social norms and social values. *"Scientific freedom ... is an acquired right, generally approved by society as necessary for the advancement of knowledge from which society may benefit"*. But *"scientific freedom and responsibility are basically inseparable"*. Consult: AAAS Committee on Scientific Freedom and Responsibility, *Scientific Freedom and Responsibility*, American Association for the Advancement of Science, Washington DC 1975, p. 5. Internet address: https://www.aaas.org/sites/default/files/SRHRL/PDF/1975-ScientificFreedomResponsibility.pdf.

[34] See: „Ustav Republike Srbije" ("Constitution of the Republic of Serbia"), Kanc. za sarad. s med. Vlade Republike Srbije, Beograd 2006, p. 19, 22, 26.

[35] Consult: https://www.washingtonpost.com/archive/politics/1988/08/07/european-seal-herd-perishing/232cffdb-9d38-4fee-b710-bf371965ad06/?noredirect=on&utm_term=.9408f6d6c3f6; https://www.cbsnews.com/news/chronology-of-mad-cow-crisis/.

[36] „Zakon o dobrobiti životinja Republike Srbije". Internet address: http://www.paragraf.rs/propisi/zakon_o_dobrobiti_zivotinja.html.

If there is an intention to really take care of the protection of animals, it is certainly not enough to devote to them one state goal that protects them so to say indirectly; instead, according to non-anthropocentrists, they should be given the "rights" that are similar to basic rights, to which a lawyer could refer to on their behalf when filing a lawsuit, and which can directly compete with the basic rights of scientists, meat producers and those who carry out the transport of animals. How could these basic "rights" of animals look like?

Firstly, they should be granted the "right" of respect for their animal "dignity",[37] "the right" that will protect them from abuse in experiments. The conflict between monkeys, dogs and cats harassed in experimental laboratories, on the one hand, and the interests of medicine, pharmaceutical industry, and researchers on the other hand, could induce people to finally seriously assess whether animal suffering[38] is in a proper relationship to the benefit for man that comes out of it. In this assessment, it will be also significant whether the dignity of man justifies to deprive other living beings of their "dignity" in order to carry out sometimes suspicious experiments on them, whose results can often not even be applied to man.

Animals should, furthermore, be guaranteed the basic "right" to life appropriate to their species, the view that is based on the parts of the fourth and fifth articles of the "Universal Declaration of Animal Rights": "Wild animals have the right to live and reproduce in freedom their own natural environment ... Any animal which is dependent on man has the right to proper sustenance and care".[39]

This also applies to the fundamental "right" of animals to life. As long as modern societies are meat-eating societies, it will be possible only to gradually implement this basic "right" of animals and therefore anchor it only in the vicinity of closer legal regulations. This basic "right" would primarily prohibit the excessive production of animals for slaughter, which then also leads to their destruction. Then, in order to gradually achieve the protection of life for the benefit of animals, a different programming of eating habits of new generations of people would have to occur.[40]

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[37] Justified care of the protection of non-human living beings does not mean that the author of this paper considers that some kind of "moral status" should be recognized for animals, that would be in conformity to the human moral phenomena. Taking care of all current and future "rights" of animals, in the end, is essentially a human task.

[38] Consult: https://www.worldanimalprotection.org/.

[39] "Universal Declaration of Animal Rights". Internet address: http://www.esdaw.eu/unesco.html.

[40] Consult: Ž. Kaluđerović, „Presokratske anticipacije ne-antropocentrizma", pp. 151-170, in: *ARHE*, god. XIII, br. 25, Novi Sad 2016.

In guaranteeing the basic "rights" to animals, which, in addition to determining the state's goal, should also enter into the Constitution,[41] all of this could be taken into consideration together with the statement that any vertebrate has the right to have its dignity respected, and to a life that is suitable to its species. According to this interpretation, man would be permitted to intervene only for reasons of public interest, certainly within the framework of the law.[42] The first of these two sentences, in which in the form of a basic "right" animals are granted the "right" to "dignity" and life appropriate to the species, would probably mean that the keeping of animals in massive farming, which is being practiced today, due to the Constitution would have to, at some point be abolished and replaced by keeping animals in the manner appropriate to their species. The second sentence, according to which man is permitted to interfere in the life of animals for reasons of public interest, would be a regulation between the absolute protection of the life of animals and the relative readiness of a society which to some degree tortures animals, to take care of this protection of life. Movement of the society in that direction should represent an intention of the state which is to protect the animals, which is connected with the continuous flow of smaller and larger steps of the legislator, who will take care of that state's goal by promoting the appropriate way of life.

All this can seem pretty utopian, but time will show if people are mature for such a step in evolution. The present ecological, and not only ecological, crisis urges mankind to, among other things, determine in a new way its attitude towards animals. *Homo sapiens* is the first species that has ever been able to freely decide whether they will give up eating other living beings. The first step has been made - people have ceased to eat each other for a long time, and cannibalism is barely present in the so-called "primitive" nations. Whether man will soon make a second step by stopping to eat animals, to respect the fundamental "right" animal to life? It is unlikely that this will happen in the foreseeable future, but this does not mean that we should not continue to work on strengthening the protection and welfare of non-human living beings.

[41] On the basis of the 1992 plebiscite, in Switzerland, the Constitution guarantees the inherent value of animals, i.e. it already speaks of "dignity of creation" ("die Würde der Kreatur").

[42] In order to make this proposal be legally and dogmatically viable and practical for implementation, it would be necessary to implement a specific and serious research.

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The Universe and the limits of Knowledge: Bohm's Notion of the Implicate Order of Nature

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Abstract

According to Bohm the whole scientific description of the Universe is governed by fragmentation of our perception of what reality is. Physics' tendency of acknowledging the ultimate structure of matter in the elementary particles has caused a widespread fragmentary view of the Universe. Thus, Physics seems to be unable to conceive the "undivided wholeness of the universe" and to acknowledge in that Wholeness the common, single bed of the whole of reality. According to Bohm that single bed of nature, Implicate Order, is the single origin of both mind and matter. Inside the multidimensional Implicate Order, a universal enfoldment of everything prevails. The Implicate Order coheres deterministically to the Universe and the depths of its inwardness are totally unknown to us, since we humans are part of its wholeness too. Physics as a science provides us only with abstractive descriptions of the Universe, since science offers only abstractions from reality. These abstractive descriptions are what constitute the Explicate Order of the Universe. Thus, each belief we have that through the science of Physics we are able to arrive at an ultimate deciphering of the Universe is inherently illusive. The science of Physics can provide us with knowledge only in the fragmentary level of the Explicate, that means analyzable, Order of the Universe recognizing its cognitive limits in front of the Implicate Order. The laws that govern the Implicate Order of the Universe are unknowable and unanalyzable by man and in the depths of these laws Bohm insists that a final truth about reality cannot be fixed.

Keywords: fragmentation, Wholeness, Universe, Physics, elementary particles, Explicate Order, Implicate Order, common background, quantum physics, single origin of everything, universal enfoldment, mind, reality, Theory of Everything, Metaphysics

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Περίληψη
Σύμφωνα με τον Bohm όλη η επιστημονική περιγραφή του Σύμπαντος διέπεται από την αντίληψη της αποσπασματικότητας για το τι είναι η πραγματικότητα. Η τάση της Φυσικής επιστήμης να αναγνωρίζει την έσχατη δομή της ύλης στα στοιχειώδη σωματίδια έχει προκαλέσει μία ευρέως διαδεδομένη αποσπασματική εικόνα για το Σύμπαν. Έτσι η Φυσική επιστήμη μοιάζει να αδυνατεί να συλλάβει την «αδιαίρετη ολότητα του σύμπαντος» και να αναγνωρίσει σ' αυτήν την Ολότητα το κοινό, ενιαίο υπόστρωμα όλης της πραγματικότητας. Για τον Bohm αυτό το ενιαίο υπόστρωμα της φύσης, που καλείται Υπόρρητη Τάξη, είναι η κοινή καταγωγή τόσο της ύλης όσο και της νόησης. Μέσα στην πολυδιάστατη Υπόρρητη Τάξη επικρατεί μία καθολική αναδίπλωση των πάντων. Η Υπόρρητη Τάξη συνέχει αιτιοκρατικά το Σύμπαν και τα βάθη της εσωτερικότητάς της μας είναι παντελώς άγνωστα, αφού και μείς ως άνθρωποι είμαστε μέρος της ολότητάς της. Η Φυσική, ως επιστήμη, μπορεί να μας εφοδιάσει μόνο με αφαιρετικές περιγραφές του Σύμπαντος από τη στιγμή που, γενικά, η επιστήμη προσφέρει αφαιρέσεις από την πραγματικότητα. Έτσι κάθε πεποίθησή μας ότι μέσω της Φυσικής επιστήμης μπορούμε να φτάσουμε στην έσχατη αποκρυπτογράφηση του Σύμπαντος είναι εγγενώς απατηλή. Η Φυσική επιστήμη μπορεί να μας παρέχει γνώση μόνο στο αποσπασματικό επίπεδο της Ρητής, δηλαδή αναλύσιμης, Τάξης του Σύμπαντος αναγνωρίζοντας τα γνωστικά της όρια μπροστά στην Υπόρρητη Τάξη. Οι νόμοι που διέπουν την Υπόρρητη Τάξη του Σύμπαντος είναι μη γνώσιμοι και μη αναλύσιμοι απ' τον άνθρωπο και στα βάθη αυτών των νόμων ο Bohm επιμένει ότι μια τελική αλήθεια για την πραγματικότητα δεν μπορεί ποτέ να είναι οριστική.

Λέξεις κλειδιά*:* αποσπασματικότητα, Ολότητα, Σύμπαν, Φυσική, στοιχειώδη σωματίδια, Ρητή Τάξη, Υπόρρητη Τάξη, κοινό υπόστρωμα, κβαντική φυσική, ενιαία ρίζα του παντός, καθολική αναδίπλωση, νόηση, πραγματικότητα, Θεωρία των Πάντων, Μεταφυσική.

Preface

The objective of this article is to bring attention to the deep and prototypical thought on the nature of the Universe from one of the most renowned theoretical physicists and philosophers of the 20th century who marked through his works the Modern Physics. It is about David Bohm and his monumental work by the title: "*Wholeness and the Implicate Order*". In this work Bohm explores a dynamic dialectic between the severe scientific knowledge of physics and the quasi-Metaphysics that the former may affirm. The terminal "quasi-Metaphysics" is a terminal of my own and it is proposed in this article so as to have a better understanding of Bohm's full vision about reality. Demonstrating the fragmentary nature of both sciences in general and the physical sciences in particular, Bohm attests in defense of a holistic perception of knowledge and reality (Bohm, 2002). He perceives two levels of knowledge and

reality about nature: the Explicate and the Implicate Orders. He contends that the Implicate Order of nature is the fundamental energetic and connective bedrock of the Universe, the prime reality of the natural world which is mentally impenetrable by man (Bohm, 2002). We will firstly explain his thoughts on what the Implicate Order is and in what way it pervades the whole of natural reality. We will then be confronted by all the crucial questions that traditionally agonise the Western Philosophic and Scientific thought. One of them is the question of the relationship between matter and intellect, the question of if the Universe is deterministically ordered or not as well as the question of if the Implicate Order could be a divine creation. The first two questions are original ones that can be found in Bohm's own works (Bohm, 2002). The last one is a question of my own and I will try to answer it under the aspect of Bohm's notion of the Implicate Order of nature. In these questions arrives the terminal "quasi-Metaphysics" that, in my personal view, is emerged inside the notion of the Implicate Order. Because of these questions that remain open in different possible answers and approximations (Bohm, 2002), I give the perspective that Bohm's view of both material and mental aspects of reality might offer us a "quasi-Metaphysical" perspective of the whole reality.

The article is divided in two chapters. In the first chapter it will be explained the way in which Bohm conceives the Wholeness as the fundamental reality of the natural world as defined as the Implicate Order. It will also become clear how and why Bohm gave a grand defense for a non-fixed theory about reality. In the second chapter the connections between the Implicate and Explicate Orders will be clarified. We are going to understand how the Implicate Order could be seen as a single origin of everything in the Universe. This will include an explanation of how Bohm's conception of monism fits into discussions on the relationship between the material and mental aspects of reality. There can be found in general the questions that affirm the "quasi-Metaphysics" of Bohm's thought. An attempt will be made to comprehensively answer whether and to what extent the Implicate Order can be expressed in Modern Physics by a Theory of Superstrings, in the pursuit of a Theory of Everything. Thereafter it will be explained which is the deeper nature of the Implicate Order as the common "background" of the whole Universe (Bohm, 2002), and it will be investigated how far the depths of the Implicate Order can constitute a divine creation or not. Finally, by completing this presentation in the afterword, I will attempt to interpret Bohm's thoughts about the deeper nature of reality.

I. BOHM'S CONCEPTION OF WHOLENESS AND THE NOTION OF THE IMPLICATE ORDER OF NATURE

1. Fragmentation and Wholeness.

According to Bohm (2002), the modern man lives a life full of fragmentation. That fragmentation becomes sensable in his way of thinking, and in the way in which he perceives himself and the world (Bohm, 2002). The dominance of fragmentation on the image that man has of himself and the world in which he lives is due to the fragmentation by which modern, scientific thought is mainly and inherently characterized (Bohm, 2002). Science divides reality into parts and therefore reality is organized as a cumulative classification of parts from which the sense of the whole has been missing (Bohm, 2002). Man affected by the fragmentation of science tends to see himself and the universe under the aspect of multiple fragmentation that the different sciences provide (Bohm, 2002). The knowledge of reality is divided up and with the knowledge of reality even the very reality as such is divided up. Reality occurs in the scientific thought as acknowledgement of parts of analysis and fragmentation therefore becomes the standard of approaching and knowing the reality (Bohm, 2002). Man finally experiences himself and the universe as an aggregate of divided parts. That sense of dissolution is about to be a deep-rooted delusion in the mind and is due to the common tendency of our thought to run fragmentarily (Bohm, 2002: 32). The dominance of fragmentation makes its presence everywhere sensible to the individual and to the society and it involves mental dangers. The outcome of that dominance is the feeling of despair, the different individual and social crises and the general confusion of mind (Bohm, 2002).

Inside that general experience of fragmentation the common worldview that Physics provides as a science is that of the breakdown of the divided elements of nature; that of the individuality of the elementary physical particles. Physicists get used to viewing the Universe as constructed by undivided monads that interact variously with each other (Bohm, 2002: 18-19). They speak about the elementary particles of matter and the laws governing their performance. It is about the Standard Model of elementary particles in modern Physics (Redhead, 2006). Thus the Universe in modern Physics is analyzed on the philosophical base of the traditional atomic theory and is usually seen under the aspect of an extreme mechanistic perception (Bohm, 2002). But the fact that physicists speak about the elementary particles and the fundamental forces of nature does not mean that they reach the ultimate deciphering of the Universe.

Under the dominance of the fragmentation modern man has a difficulty in methodically cultivating the sense of unity and the transcendentality of the whole

(Bohm, 2002). But at the same time that he is struggling with perceiving the whole he is seeking by nature that Wholeness in which he can find a sense of unity of the divided elements and the chaos of theories. For Bohm (2002) the deceptive appearance of fragmentation is delusive. The Universe, and so on the very man as part of the Universe, is not pervaded by division but by unity (Bohm, 2002. Bohm & Hiley, 1993). The reality for Bohm (1984, 2002) is Wholeness and not fragmentation, unity and not division.

Wholeness is the reality of the natural world (Bohm, 2002: 9, 32). Inside the Universe there is a whole reality which is "undivided and unanalysable" and this fact is acknowledged by man implicitly (Bohm, 2002: 10, 12, 14). Every piece of knowledge of the fragmentation declares implicitly its origin in that undivided Wholeness of the reality from which even the very consciousness as a premier act of intellectuality is not missed (Bohm, 2002). For Bohm (2002) the human intellect does not objectify the natural world, adjudging about the nature of reality, but she is even the same a part of that very reality for which she articulates reason and produces knowledge. The intellect does not trace the objectivity of Reality but it is part of that very Reality which it yearns for perceiving (Bohm, 2002: 76). Consequently the intellect is part of the Universe and has its origin in the common bed of the whole natural world. [2] Inside that common, single bed of nature the distinction between matter and intellect is removed as soon as the depths of its inwardness are totally unknown to man (Bohm, 2002: 265-7). That almost mystic reality is the deeper reality of the Universe that Bohm names as the "Implicate Order" (Bohm, 2002: 225, 235) and we can say that it constitutes the single origin of everything.

2. The Wholeness of the Universe is beyond our limited scientific insights and thoughts: a defense for a non-fixed theory about reality

Unfortunately, man does not realize clearly that the scientific views of the natural world do not exhaust the objective reality of how the natural world really is in its deeper structure. [3] In other words the scientific thought about the natural world does

[2] See:. Jeans, Sir J. (1993: 203-4, 210, 247-8, 276, 308), where it is cited the deeper "bedrock" of nature, which by being beyond the phenomena is cognitively impenetrable by the perceptual power of man.

[3] See: Jeans, Sir J. (1993: 253). Also: Nilsson, Nils J. (2014: 66), where is cited the aphoristic maxim of the physicist Niels Bohr: "It is wrong to think that the task of physics is to find out how nature *is*. Physics concerns what we can *say* about nature…". In Bohm's notion of the Implicate and Explicate Order of nature the word "*is"* refers to the unknown depths of the Implicate Order that pervades the

not coincide with the objective reality of the very natural world (Bohm, 2002). According to Bohm (1984, 2002), all the scientific views are not but partial, approximate aspects of the objective world that they try to describe. They are *forms of insight* subjected to constant alternation and improvement (Bohm, 2002: 6-7). [4] Besides, the knowledge as such is a constant *procedure* and not a system of fixed truths (Bohm, 2002: 63, 80). When these insights receive the definite character of a fixed knowledge of how the natural world really is then they comprise the cause of the fragmentation (Bohm, 2002: 32). The root of the dominant fragmentation according to Bohm (2002) is the tendency of man to perceive his own thoughts about the natural world as fixed truths. The fixation in the fragmentation thus drags the man off the perception of the "undivided wholeness of the universe" (Bohm, 2002: 227, 262). [5]

Fragmentation goes together with the fixing of our insights, because all the scientific insights are limited (Bohm, 2002). The wholeness of reality is ever beyond our scientific insights and thoughts because our very insights and thoughts are parts of the whole reality in which they exist (Bohm, 2002). Reality is not exhausted by our thoughts (Bohm, 2002). Besides, scientific theories are just mental pictures of the natural world (Nilsson, 2014) and models of description of reality (Dear, 2007).

The scientific descriptions of the Universe are not then objective truths that correspond to the objective reality of the Universe (Bohm, 2002. Dear, 2007). They have a degree of truth but only in an approximate form (Bohm, 2002). According to Bohm (1984, 2002) they are *abstractions* from a deeper unity of nature in which it is implicitly acknowledged the inherent Wholeness of the Universe. That Wholeness can be never fully exhausted by science – science is even a part of that Wholeness - and that's why it demands from us stopping fixing our scientific theories and taking for granted that our insights must be seen as a never-ending process "with ever-changing form and content" (Bohm, 2002: 80). Accordiing to Bohm (2002) that Wholeness can only be perceived via the dynamicity of the notion of the Implicate Order of Nature. And even the Implicate Order of Nature should not be seen as a fixed, final or absolute theory about reality (Bohm, 2002). Besides, the laws of the Implicate Order are

Universe (or the Multiverse) while the word "*say"* refers to the scientific explanation that the Explicate Order can offer us about the nature of the Universe (or the Multiverse).

[4] See also: Planck, M. (1998: 18, 20, 27), where Max Planck points out that "the scientific worldview is not something final" and "therefore the constant alternation (unfailing refinement) of the worldview does not denote a disruptive vacillation but a progress, an improvement, an accomplishment".

[5] See also: Heisenberg W. (1978: 38), where Heisenberg characteristically writes: "in natural sciences we are not interested about the universe as a *whole,* which includes even us, but how we steer our attention toward some *defined parts* of the universe and we set them as objects of our research".

impenetrable by human understanding (Bohm, 2002) and that means that the Implicate Order is open to different approximations and interpretations.

3. Wholeness and the Implicate Order

The sense of the Wholeness of reality leads us then to the Implicate Order which pervades that Wholeness in an inscrutable way. Quantum physics is acknowledged as the main evidence for that Implicate Order of nature (Bohm, 2002: 222, 234). In quantum physics we come to limited states of measurement where the discontinuity of movement becomes inevitable but not also fundamental, according to Bohm (2002). The discontinuity of movement in quantum physics is an abstraction from the continuity of the whole "*flowing movement"* of the Implicate Order (Bohm, 2002). Everything that we know as the ultimate elements and forces of nature are not but "*projections"* and "*unfoldments"* of the Implicate Order of nature in which the "*wholeness of the flowing movement"* is undivided and continuous (Bohm, 2002). Thus, the elementary particles for which Physics articulates knowledge today, and which are constantly increased in number with the advance of scientific research, do not constitute the ultimate reality of the Universe. The latter is pin-pointed and acknowledged by Bohm (2002) only in the Implicate Order of nature and its unknown laws. And the Implicate Order has unknown laws since our intellect, as a part of the wholeness of the Implicate Order and as a partial outcome of the laws governing the Implicate Order, cannot have knowledge of them (Bohm, 2002). Our intellect can just offer us implicitly the possibility to think that the wholeness of reality can never be exhausted by our understanding (Bohm, 2002).

The Implicate Order that pervades the Wholeness of the natural world might act deterministically and not probabilistically (Clegg, 2017: 89). The question of if Physics should acknowledge an Implicate Order causally determining the Universe is something that doesn't find the scientists in unanimity. [6] In opposition to the dominant probabilistic interpretation of the Copenhagen cycle for the phenomena of quantum physics Bohm offers a reliable alternative view of a deterministically ordered universe (Clegg, 2017: 89). For Bohm (2002) the Universe which we see and in which we live

[6] See: Michael Redhead (2006: 66) where Redhead points out the fact that: "contemporary physics has widely accepted the possibility of indeterminism [as for the quantum phenomena of the elementary particles]". It has to do with the prevailing probabilistic Copenhagen interpretation in Quantum Physics. The unavoidable indeterminism in Physics is again accepted by Stephen Hawking (2016: 63-64). Against the indeterminism stands the faith in the "deeper deterministic simplicity" that pervades the Universe and generates the "intricate and phenomenally random attitude [of the elementary particles]" (Polkinghorne, 1997: 99-100).

is naturally unfolded from the interiority of a deeper undercurrent reality that he names "Implicate Order". The difficulty in the perception of the Implicate Order is our persistence in the fragmentation, because of which we stray from the sense of the whole (Bohm, 2002). The elementary particles which Physics speaks of are not but "*abstractions"* and "*projections"* of that Implicate Order that deterministically produces all the wondrous multi-complexity of the natural world (Bohm, 2002).

The Implicate Order is the base of reality and she has not a definite form. In accuracy its form is totally unknown to us. We can feel it, but we can never totally or absolutely know it (Bohm, 2002: 226, 235). That is why the Wholeness that the Implicate Order indicates is something that is not susceptible to a final definition or a fixed, determined knowledge of how she really is (Bohm, 2002). The laws governing as Implicate Order the Wholeness of reality of the Universe can never be the content of human knowledge, as the very human knowledge itself is a production of that Wholeness (Bohm, 2002). Even the very notion of the "Implicate Order" should not be regarded as something fixed or final according to Bohm (2002) but just as a kind of perspective, a kind of looking at cosmos ant the wholeness of reality.

Bohm gives some *intuitive perspectives* of how we can perceive the Wholeness of the Universe via the Implicate Order that could unify it. The main feature of the Implicate Order is the "*universal enfoldment"* of all the phenomena that we perceive in the Universe as "*unfoldment"* of that universal enfoldment (Bohm, 2002). "*Everything is enfolded into everything*" inside the net of the Universe (Bohm, 2002: 225). This means that the nature of the Implicate Order is multidimensional and enables the inherent unity of all the elementary matter particles into a nexus of fundamental, but unknowable for man, deterministic and undivided junction. The multidimensional reality of the Implicate Order (Bohm, 2002: 240) surpasses the common perception of the quarto-dimensional spatiotemporal continuity, which modern Physics discusses after Einstein's Theory of General Relativity.

Inside that multidimensional reality the "universal flow of movement" pervades the Implicate Order of the Wholeness, generating the discontinuities of movement of the subatomic natural world with a rather fundamental ambiguity since the latter are considered as prime "*abstractions"* from the unaffected unity of the "universal flow of movement" (Bohm, 2002: 62-3, 237). That ambiguity does not, of course, refer to the very physical process of the quantized states of position and energy, but to our cognitive ability to analyze that physical process of quantum which reaches the limits of the infinitesimal in every attempt of ours to measure either the position or the momentum of the elementary particles (Heisenberg, 1978: 30. Gubser, 2017: 27-8). According to Heisenberg's principle of uncertainty, in which there cannot be

concurrently and accurately defined position and momentum for a particle (Gubser, 2017: 25-6), this is mainly due to the grand velocities and energies that are observed in the range of the subatomic natural world. Each time scientists want to see, through their experimental research, what is exactly happening on that level they come up against the resistance of nature (Jeans, 1993). [7] The measurement in that level is limited and finite, and can only lead us to the acknowledgment of the deeper deterministic simplicity [8] which pervades the Implicate Order and remains unknown to us since it is far away from our measuring abilities (Bohm, 2002). The Implicate Order of Nature is that which, being cognitively impenetrable by the finite human intellect, constitutes the prime and fundamental reality of the natural world, the energetic structure of the whole Universe (Bohm, 2002). All the elementary particles of matter and force originate from that and all the wondrous complexity of nature is created from that.

Inside the Implicate Order the movement is as a consequence continuous and the laws governing its nature are unknown. To the contrary in the Explicate Order of quantum physics, namely in the scientific description and analysis of the fundamental phenomena of the subatomic natural world, the movement is non-continuous and the laws governing its operation are known, even though yet again not completely known (Bohm, 2002). That deficiency of the Explicate Order is what reveals for a cohesive Implicate Order (Bohm, 2002: 234); the former leads us to the acknowledgement of the latter. So we can continue by explaining how exactly the Explicate Order is associated with the Implicate Order of Nature. Through understanding Bohm's supposed relation of the two Orders, we shall attempt to articulate the reason of a fundamental metaphysics that is not directly named as such in Bohm's own work.

[7] Q. v. the idea of Heraclitus about the fundamental property of nature to love concealing its deeper reality. "Nature loves being hidden" Heraclitus says and that might be totally profound at the subatomic level of the natural world where our knowledge about what exactly is happening there confronts the majesty of the resistance of nature to our willingness to obtain a deeper and deeper access to its mysteries.

[8] The idea of the "deeper deterministic simplicity" of nature can be found in Polkinghorne (1997: 99-100) and can be seen as parallel to Bohm's notion of the Implicate Order (2002). Bohm believes in the deterministic action of the Implicate Order of nature, but he does not necessarily attribute to that action a form of simplicity since it might have an inconceivable complexity for the human understanding. Thus the question arrives: the deeper bedrock of the natural world is characterized by a form of simplicity or a form of intricacy? This is something rather unclear in Bohm's works. In the "*Wholeness and the Implicate Order*" the deeper bedrock of nature seems to be simple, a single origin of everything. But elsewhere, especially in his work "*Causality and Chance in Modern Physics*", the idea of the infinity of nature as a Wholeness might stand for an intricate account of the natural world (Bohm, 1984).

II. THE ACKNOWLEDGEMENT OF THE COGNITIVE LIMITS AND THE DYNAMICAL DIALECTIC OF PHYSICS AND METAPHYSICS

1. Implicate and Explicate Orders

Until now we explained how the Implicate Order constitutes the deeper bedrock of the natural world from which the totality of the Universe is unfolded. But what is the Explicate Order to which Bohm refers? The Explicate Order is exactly that "*unfoldment*" of the Universe from the depths of the mysterious Implicate Order (Bohm, 2002). The Explicate Order is all that our senses can perceive in our interrelation with the natural world and at the same time all that we can know about the natural world through science in general (Bohm, 2002). Our senses are far too more limited than the heightened experimental measuring instruments of the scientific laboratories (Jeans, 1993). Therefore whatever we are able to know about the Universe through Physics constitutes the Explicate Order of the Universe.

The Explicate Order has a relative degree of autonomy from the Implicate Order from which it inherently originates (Bohm, 2002: 226). The Implicate Order is not knowable by man, which is in opposition to the partial knowledge that the Explicate Order allows us to reveal pertaining to Physics (Bohm, 2002). As Bohm put it, the Implicate Order is "universal and primary" whereas the Explicate Order is "derivative and secondary" and thus, appropriate for providing us with knowledge about the Universe "only in certain limited contexts" (Bohm, 2002: 235). All the partial and specific theories of Physics are what constitute the analyzability that characterizes the Explicate Order. Classical Mechanics, Quantum Physics, the theory of Relativity are all "certain limited contexts" in which our knowledge about the Universe is analyzed through the mathematical, experimental and theoretical method (Bohm, 2002). Each physical theory is valid in the context that it is practiced in, and in the limits that that context imposes to it (Bohm, 1984, 2002). The Explicate Order can thus be seen as a specific, limited state of the universal Implicate Order.

The *sub-totalities* of the Explicate Order - a sample of which we cited above - are generated by the universal Wholeness of the Implicate Order and as a result the knowledge that they give to us is neither final nor absolute (Bohm, 2002: 226). Only the Implicate Order involves the real depths of Nature and even this should not be seen as something final or absolute (Bohm, 2002: 270-1). The scientific descriptions of the Universe which constitutes the analyzability of the Explicate Order have only a

relative autonomy and provide limited knowledge about the world in which we live. What characterizes the descriptions given by the Explicate Order is the fact that they are systems of repeatability in which can be found "recurrent and relatively stable elements that are outside of each other" (Bohm, 2002: 226). Those elements are the particles and the fields which contemporary Physics speaks about and which constitutes the mechanistic view of nature (Bohm, 2002). Both the particle and the field theory of matter and force have a specific relative autonomy and complementarity between them (Heisenberg, 1978: 27, 34-5). Nevertheless, both of them constitute "*abstractions"* from the undivided nature of the Implicate Order in the depths of which the ultimate nature of matter and force remains unknown and unknowable (Bohm, 2002: 226). In the dominant mechanistic view of the Universe the elementary particles and the fields are perceived as constituents of the basic reality. But under the aspect of the Implicate Order the elementary particles are just "*abstractions"* that appear and occur in our knowledge about the natural world (Bohm, 2002: 233-4). The outward stability of their existence probably deceives us that they indeed constitute the "basic building blocks of nature" (Hawking, 2016: 74-5), but we ought to acknowledge just their *relative* autonomy over the Implicate Order that federates and unites the Universe (Bohm, 2002). In other words the elementary particles do not constitute the ultimate nature of matter and force.

Bohm describes with three equal definitions the elementary particles, the fields and the usual view of space and time in modern Physics as well: "*abstractions*", "*projections*" and "*unfoldments*" (Bohm, 1984, 2002). With the use of that terminology he makes clear the fact that all our scientific knowledge about the natural world is not but fragmentary and limited. The limits of the descriptions given by the Explicate Order coincide with the limits of our knowledge about the Universe. Of course those limits are not absolute concerning the objectivity of the world. Through their acknowledgement we are led to the perception of the "undivided Wholeness of the Universe" and the Implicate Order that pervades it. We realize that the Whole is not exhausted by the parts (Redhead, 2006: 51, 60-1) and that the Whole should always be open to ever-changing forms of insights that try to define it (Bohm, 2002).

2. The universal *enfoldment* inside the Implicate Order: relation of matter and intellect.

That mysterious nature of the Implicate Order is what can raise metaphysical pretensions in Bohm's system of description of the Universe. Everything resides in the Implicate Order in the form of enfoldment (Bohm, 2002: 225). Actually that enfoldment of reality that lies inside the Implicate Order is governed by different grades and "various phases in different stages of enfoldment" (Bohm, 2002: 258).

Inside the Implicate Order is acknowledged the deeper reality of nature which is the "undivided Wholeness of the Universe" (Bohm, 2002: 227). In that Wholeness the enfoldments of elements of the reality generate the unfoldments of the reality in "inanimate matter", "life forms" and "consciousness" (Bohm, 2002: 246-7, 249-250). Life, energy, matter and mind are all united in the Wholeness of the Implicate Order where the universal *enfoldment* of the unknown causes generating their distinct forms really dominates (Bohm, 2002). The universal *enfoldment* resides inside the "common higher-dimensional ground" of the whole Universe (Bohm, 2002: 266). This "common higher-dimensional ground" constitutes the single origin of everything, and *everything* means: forms of energy, matter, life, mind and consciousness (Bohm, 2002).

The Universe is governed by a fundamental unity according to Bohm and that is why man can be aware of himself as a part of that universal unity (Bohm, 2002: 264-7). [9] The notion of the Cosmic Heritage that joins us and links us with the Universe is rather a recent achievement in the history of Physics (Field & Chaisson, 2014: 198). Man shares together with the whole Universe the common descent of a "single totality" that acts as Implicate Order (Bohm, 2002: 266). In that single origin of everything matter and mind find their common base. The special monism that Bohm appears to promote in his work "*Wholeness and The Implicate Order*" concerning the relation of matter and mind could be named as "monism of dualist character". The "monism of dualist character" avoids the reductive attribution of matter to mind or of mind to matter, thus promoting the faith in an independent but common base of both (Polkinghorne, 1997: 84-5). Therefore the dualist monism of matter and intellect is grounded in the assumption of the "common ground" (Bohm, 2002: 250, 265) that resides in the depths of the Implicate Order of the Universe. Inside the "higher-dimensional ground" of the Implicate Order "mind and body are ultimately one" (Bohm, 2002: 265). That "common ground" of the Implicate Order from which everything is generated is something that surpasses the nature of both the matter and the intellect (Bohm, 2002: 265). "This ground is what is primary, self-existent and universal" (Bohm, 2002: 247) and the depths of its inwardness are totally unknown to us (Bohm, 2002: 267).

3. Implicate Order and Theory of Everything.

Under the aspect of that fundamental ignorance that covers the Implicate Order of Nature, it could be tested how far a Theory of Everything in contemporary Physics

[9] Q. v. Spinoza's notion of unity of the metaphysical monism under the aspect of which man is regarded as a finite part of the infinite "God or Nature" - the primordial and the only one substance of the universe. Spinoza's "God or Nature" is the ultimate *One* of the Reality by which all the *many* things of the whole natural world are causally produced.

could be epistemologically acceptable. In this crucial point, it seems that Physics and Metaphysics are perplexed equally dynamically with the question of matter to intellect relation. The formulation of a Theory of Everything constitutes the absolute vision of physicists (Theodosiou, 2008). The aim of such a theory is to unite the disparate physical theories and fundamental forces of nature into a single cohesive unity, able to provide the fundamental knowledge of the ultimate structure of matter and force (Theodosiou, 2008).

Until now physicists have commonly accepted the so-called "Standard Model" of the elementary particles of matter and force (Hawking & Mlodinow, 2011). It is the physicists' vision to reduce into a single theory the two great theories of 20th century Physics: Quantum Mechanics (subatomic natural world) and the Theory of Relativity (gravity and space-time), such that each of the two still has its own autonomy (Hawking & Mlodinow, 2011). The Superstring theory is the rather contemporary candidate for such a union (Theodosiou, 2008). It is a "high promising theory" since it can conjoin the quanta of matter and energy with the field vision of natural forces in the universe into a single interpreting account (Gubser, 2017: 9-10). The Superstring theory provides a tentative vision about how all the natural forces can be described, offers unity in the nature of the elementary particles, since all of them are seen as differently vibrating strings, and speaks about ten dimensions, since the vibration of the strings is located, for many technical and mathematical reasons, on a multidimensional reality of a super-symmetrical state (Gubser, 2017. Theodosiou, 2008). The mathematics that describe it are too bizarre so as to fulfill the needs of the pursued super-symmetry (Gubser, 2017). Nevertheless the Superstring theory has not been yet experimentally tested and thus the question remains open and it might remain such for many years (Gubser, 2017. Kaku, 2016).

A Theory of Everything may not be accepted epistemologically, since the deep laws governing the Implicate Order are unknown to man. In accuracy, a Theory of Everything in the way Physics desires it, cannot be identified with the absolute knowledge of the ultimate nature of reality. Perhaps, it might have a unified interpreting strength in the exegesis of the Universe, but again it seems that it is judged as *abstractive* in front of the acknowledgement of the Implicate Order, considering that it cannot exhaust the unknown laws that govern the latter. Bohm lived and wrote in an era in which there was a high interest in the pursuit of a Theory of Everything. [10] However, in his work "*Wholeness and the Implicate Order*" faith in such a theory

[10] Since 1984 and afterwards (that means four years after the first publication of the work "*Wholeness and The Implicate Order*" in 1980) the String Theory, with its unifying power and its reference to the multidimensional nature of reality, started being acknowledged as a viable candidate theory about the

is not promoted. Contrariwise, it is pinpointed that any given scientific vision of the Universe is inherently impotent, while humane, to get access to an absolute knowledge of reality (Bohm, 2002).

4. The depths of the Implicate Order as the "common ground" of the whole Universe and the question of God

Bohm sets inside the unknown depths of the Implicate Order, except for matter, life, mind and consciousness. This way it cannot be everything reduced to the ultimate nature of matter since even that one (if it really is one) is hidden inside the Implicate Order and it does not exhaust the reality of the Universe. The "common ground" of the whole Universe - which acts as a single origin of everything - is neither the matter nor the intellect; it is something beyond both of them, which are generated by that (Bohm, 2002). In a way energy could be the primary candidate for that "common ground" inside the Universe (Bohm, 2002. Heisenberg, 1987), but again in Bohm's thought the Implicate Order is totally unknown and unanalyzable (Bohm, 2002).

We say that energy could be the primary candidate for the "common ground" because Bohm speaks about the "immense ocean of cosmic energy" from which our Universe could be born as a "sudden wave pulse" (Bohm, 2002: 244). The nature of the Implicate Order is thus energetic and that might mean that energy constitutes the common background of the whole Universe. Nevertheless, the universal enfoldment of everything - which is inside the depths of the Implicate Order - seems to affirm a single origin of everything, the nature of which could not be seen as a totally known form of energy. Therefore, a problem arises: is energy the ultimate nature of everything or not? Is there any ultimate nature of energy which could be seen as the single origin of everything? In my personal view I think that according to Bohm there is not such an ultimate nature of energy since the Implicate Order, even if it is energetic, is unknown to man and it should not be seen as a final or ultimate stage of truth and reality (Bohm, 2002: 270). But if this "common ground" should not be seen as a final or ultimate stage of reality then how does Bohm say that it is "self-existent" (Bohm, 2002: 247)? Could it not be a divine creation in its deeper roots? Perhaps

description of the Universe in its ultimate nature and thus started gaining more and more ground among physicists from then on (Gubser, 2017). It is worthy to think about what attitude Bohm would have towards the Superstring Theory. My personal view is that he would acknowledge its power and its success but only inside the limits of it being an Explicate-Order description. Thus, he would acknowledge its interpretive power only at the level of abstractive analysis. Superstring Theory would be probably judged by him as another *abstraction* from the unknown and unanalyzable Implicate Order of the Universe (Bohm, 2002) or the infinite Wholeness of Nature (Bohm, 1984).

Bohm defines the "common ground" as "self-existent" only in comparison with the "sub-totalities" of matter and mind. But this is just a proposal.

If the Implicate Order of the Universe could be seen as a work of a transcendent God, then it could really constitute the deeper background of reality and offer unity in the Universe from the very beginning and by default. The Universe could be a divine creation that, as a vast living organism, started from the unknown creating power of God and continued its development according to that power which God set inside it from the very beginning (Polkinghorne, 1997: 107, 125-6, 149). The parameter of God is not included in Bohm's work, howbeit is not even excluded. Someone could assert that since the "common ground" is "self-existent" (Bohm, 2002: 247) then a place for God is surely excluded. But, in my personal view, since even that "common ground" should not be seen as an "absolute end of everything" (Bohm, 2002: 270) then a place for God is not excluded at all. Howbeit, the problem remains: if the "common ground" is "self-existent" how is it not at the same time the "absolute end of everything"? Since we cannot define the final truth (Bohm, 2002: 270-1) how can we then assert with final certainty that the "common ground" is "self-existent" or not? I think that the response in this question should not be a fixed assertion as this attitude best suits Bohm's vision about truth and reality. What becomes really clear according to Bohm (Bohm & Hiley, 1993. Bohm, 2002) is that we should acknowledge the fundamental, ontological unity of the Universe feeling ourselves and our existence as a part of that unified whole.

AFTERWORD

Arriving here I hope that the promise given in the beginning is finally met with success and the originality and the depth of Bohm's thought about the nature of reality to be clearly featured. We explained how the notion of the Implicate Order is acknowledged as essential for the conception of the "undivided Wholeness of the Universe". We saw that the Explicate Order of reality (which Physics as a form of science speaks about) is perceptible and knowable for man, whereas the Implicate Order of reality (which Physics is unable to give even the humblest description of) is inherently unseen and unknown for all of us.

It's time to confess the fact that Explicate and Implicate Orders are both intertwined into a non-dissolvable, cognitive wholeness in which is affirmed knowledge and ignorance. The Explicate Order of nature authorizes us always to have a limited access to the knowledge of the Universe, while the Implicate Order, being invisible and mysterious, keeps us in absolute ignorance of how or what exactly it is (Bohm, 2002). In the fragmentation and abstraction of the Explicate Order, the knowledge that Physics as a form of science is able to offer us does not stop being knowledge, but it

is deprived of the privilege to claim being an absolute knowledge. In the acknowledgement of the Implicate Order that unites the Universe man realizes the limits of his knowledge and so his ignorance about the deeper nature of reality. Human knowledge is an output, a part of the Wholeness of the Implicate Order and hence it cannot scientifically analyze its descent to that Wholeness, it can only implicitly intuit it (Bohm, 2002).

Man seems standing inside a *fundamentally ignoring knowledge*. While he can partly know the reality he inherently is in a clear ignorance about the deeper nature of reality. In the context of experiencing of that *fundamentally ignoring knowledge* man can recognize the deep complexity of Physics and Metaphysics the way this one is featured by a fruitful and endless dialectic between the *known* that the former provides and the *unknown* that the latter affirms.

The presentation of Bohm's theory about the "undivided Wholeness of the Universe" today, I believe, it is rather a lofty attempted reminder of the fundamental Metaphysics or "quasi-Metaphysics" that unavoidably arrives at the forefront each time man hankers after obtaining a deeper knowledge of the reality of the natural world. The reality of the Universe is a reality of Wholeness (Bohm, 2002) in which man realizes his partiality and the imperfection of his knowledge. Speaking about the unknown nature of the Wholeness is nothing more than defining the full scope of the appearance and the reappearance of Metaphysics in our thought. I speculate that the notion of the Implicate Order cannot but constitute a forceful voice over the metaphysical philosophy in opposition to the notion of the Explicate Order that is constantly analyzed by the science of Physics.

As soon as man realizes his ignorance about the deeper nature of reality he is able to cultivate a sense of humility and admiration in front of the Universe (Planck, 1998). Feeling his common descent with the whole natural world he can live out his unity with the Universe through the acknowledgement of the Implicate Order as the matrix of that common descent of everything. Bohm's vision about the realization of that fundamental unity of man and Universe reminds us of something from Spinoza's vision about the unity of the metaphysical monism. Reality is the *One* of the *Wholeness*.

If this *One of the Wholeness* is a final or an absolute stage of the *real* this is something that we will never be able to answer with accuracy and certainty (Bohm, 2002: 270-1). And maybe here the value of our intellectual life inside the Universe can be found. Only we are those who direct questions at that one and about that one. The answers that we receive satisfy us only unto a small grade. Maybe finally we are indeed led through Physics to the *really ultimate* which, according to Max Planck

(1998), is nothing else than the existence of God. Perhaps God is the ultimate truth (Polkinghorne, 1997). But in any case, that which we should do according to Bohm (1984, 2002) is to be alerted and forewarned of the pretensions of our knowledge. We are a part of the Universe and our knowledge about it is really limited. Nevertheless, this is not enough to distract us from our deep desire to come closer to the reality in its ultimate and more perfect form (Hawking, 2016). The deep understanding of our existence and the existence of our world is something that is going to steadily and constantly lead our cognitive power in its limits.

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On Sports Biomechanics Methodology

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Abstract

Sports biomechanics is one of the most fascinating and formalised disciplines in sports science. While it uses a host of methods, on closer look, it lacks a thorough epistemological / methodological foundation besides what it implicitly borrows from the sciences it uses, such as mathematics and physics. Here, I shall attempt to portray what such a basic epistemological understanding would include and also try to address issues directly related to such an approach. I shall start by describing the most general context in which sports biomechanics exist and then, I will attempt to provide a structural context to bridge the gap between sports biomechanics and practice. In the conclusion it is suggested a more holistic approach in biomechanics.

Keywords: Epistemology, models, theory, structure, technique

Introduction

As Latour has pointed out in his classic work "Laboratory Life", even in the most famous, Nobel-Prize winning laboratories, too many hard scientific facts have been "constructed" (1). At one point they are just hypotheses, opinions or ideas, and at another point they have become "hard facts" without anybody knowing how it happened. They are simply repeated in internal discussions so often that they magically transform into facts.

Under this prism, we shall consider the methodology of biomechanical modelling for sports. That is, we shall attempt to fit biomechanics research in our general approach about theory (2,3). While phrases such as "biomechanics of tennis strokes" are

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trending, such models are nowhere to be found in tennis. I have made a first attempt to present such a model in 2016 (4). Here I shall expand on the methodology of such models by covering a serious void in sports science which has created the most profound confusion in both sports scientists and practitioners: *epistemology*. In particular, I shall attempt to clarify the following concepts: method & methodology, structure, axiom, theory, model, truth, reality, verification, logic, statistics. Then, I shall attempt to present the rationale that such models should follow in an extended context (a bird's eye view)

Basic epistemological background for coaches and researchers

In previous articles, we have been trying to lay the foundations of theory and understand where science became confused and why; several papers have been produced in this direction and this brief discussion reflects those findings (3,5,6). My approach is not historiographical but theoretical, i.e., purely epistemological. Our team has the unique advantage that it has been built around the work of the great mathematician D.E. Lekkas, who has created a whole mathematical field (theory of music: 7).

"Theory" is of course a Greek loanword (*θεωρία*: *theōrēa*). It is an abstract interpretation of an axiom. Abstraction is the process of eliminating meaning (or content) and adding generality (for example, the word "mammal" is more abstract and general than the word "human"). Axioms are the first postulates in an axiomatical (theoretical) system. Axioms are always completely abstract (this is why e.g. Einstein's theory of relativity *cannot* have the speed of light as an axiom). Axioms (and all resulting products, such as theories and models) are evaluated based on their consistency, their theoretical productivity and their elegance. Theories always identify with the axioms.

Unfortunately, Latin Scholars did not produce any term for the symmetrical Greek term *theōrēsē* (*θεώρηση*, meaning perspective). Therefore, "theory" confusingly means both a universal abstract standard and a personal point of view. This is in line with another disappointing selection on behalf of the Latin Scholars, who, despite translating every Greek Grammar term word-by-word (*claque*), they chose to call the basic Latin grammatical mode "indicative mood" (*modus indicativus*), the exact opposite from the Greek term; indeed a setback, an anachronistic choice with political connotations. There is no term in English for the Greek grammatical mood but is it very easy to make one up: it would be very accurate to use *definitive mood* as the exact translation of the Greek term (*enclisis horistikē*). When Greek is used to speak about the world, the world is defined; *conceived*. When any language that has some type of

indicative mood is used, the world is indicated; *perceived*, as if there is no *fraud of the senses* anymore. Do not forget that the only reason epistēmē, theory and mathematics were produced in the first place was to solve the problem of the fraud of the senses – which is not even a "problem" since it has no solution. It is just an obstacle.

Inevitably, this recidivism to past conceptualisations of the world, exemplified by the basic linguistic mode of indicative mood, rendered the foundational distinction between truth (*veritas*, *alētheia*) and reality (*pragmatikotēta*) non-applicable. In science it makes total sense to identify truth and reality. However, reality is about things themselves ("Dinge an sich" as Kant put it), to which we have no access, whereas truth is only about abstract theory. We cannot verify any theory in the real world because verification is about truth, not reality. What we can do is use the method of theory (analysis-synthesis & abstraction structure) and create theories in abstraction; only afterwards we may select theoretical systems that suit our needs. Both Latin and Greek have compatible terminologies for describing a truthful representation of reality: *verdict* (meaning: to speak truthfully, Gr. *etymegorēa*)

Models, on the other hand, are not perspectives; they are idealisations of the world, meaning we have eliminated content from the world (through abstraction). Models may be described mathematically, however this does not prove them right or wrong for a specific use when we apply them back to the world. Because models fall in between theory and *theorēsē*, there is a term used in music that may describe their mathematical side: *theorētika*, or, *theoretics*. Theoretics are applied theories.

In sports science there cannot be axioms because e.g. kinesiology is not an abstract field as mathematics is. Tennis cannot have theories either, only perspectives and models. Models in tennis cannot be verified with experiments, nor can they be produced experimentally in the sense that observations cannot translate directly to models. We make observations and we select aspects of our observations that we, for whatever personal reason or bias, wish to describe. We conduct experiments in order to select models according to our needs; however, experiments cannot verify or falsify anything that is theoretical. I do understand this sounds strange since scientists have been addicted to another *modus* of thinking for centuries. However, this is not how theory works because in logic we are only allowed to go from a cause to an effect, not the other way around (this is a common fallacy known as *begging the question*). Cause-effect relationships are always theoretical, i.e. set only by us, never by the phenomenon itself. Even "trivial" cause-effect relationships are set by us: why does the apple fall? Because of gravity? Because of gravitons? Because it is ripe? Because its stem is cut? Because of God's will? We must not confuse stimulus-stimulus, Humean types of addictions to event-sequences with cause-effect relationships! The

biomechanical models of the Fosbury Flop, of a tennis serve, the Kinetic Chain, all are abstractions that any *one* application of them (or many, in order to produce "statistically significant results") can neither verify them nor disprove them; testing them with expensive lab equipment will only tell us which interpretation of the model works for us now, under the existing requirements, biases, needs and means. By the way, statistics is *not* a proving method; logic is – and logic never allows us to evaluate/infer the causes (models) from observations (measurements).

Let me conclude with causes. Philosophers, since Aristotle, discussed the ways to discover the causes of phenomena. Later scholars, even modern ones, missed that Aristotle discussed inferences using geometry (i.e. mathematics) as his reference point. In the Middle Ages thinkers such as Bacon, Scotus and Grosseteste made significant contributions in the systematisation of procedures to discover the cause of phenomena. However, even *they* missed that phenomena do not present themselves with their causes; how could they? The causes are always set by us and never dictated by the phenomenon. For example: an athlete sprains her ankle in a rally. What is the reason?

- Bad shoes
- Bad surface
- Lack of concentration
- The tension from the previous point that she disagreed with the umpire
- Bad footwork
- Physiological factors (dehydration / exhaustion, overtraining, hormones etc.)
- Bad mood because she had a fight with her girlfriend's second mom last night
- A ball boy that coughed
- Bad Karma
- Good Karma (something bad happens to avoid something even worse)

Not only are any of the previous reasons equally valid, but for different professionals, different reasons apply. For example: for her nutritionist, the relevant reason is the dehydration and the exhaustion; for her trainer it is her footwork; for herself it is the umpire (the most immediate source of frustration is usually to blame) and for her yoga teacher it is her karma.

My approach is neither subjective nor objective: it is theoretical. This last part is what science has lost: contrary to the classical dichotomy between subjective and objective, there is this third possibility: *theoretical*. Trying to fit science between the subjective-objective bipole is one of the greatest misunderstandings of the last many centuries.

In Classic Antiquity, epistēmē was a way out of this bipole: being subjective is too personal and being objective is impossible due to *the fraud of the senses*. The latter is not a matter of using better measuring techniques since the cause is never part of the phenomenon, but it is set only by us in theory, thus it is neither subjective (based on my senses) nor objective.

Biomechanics in contemporary research

Understandingly, contemporary research does not distinguish the aforementioned concepts. Even *methodology* is confused with *method* as one may understand from the titles of various articles (e.g. 8). Methodology addresses the ways in which methods are constructed. A new methodology may also be a Paradigm if it is incompatible with existing methodologies. New or different measuring techniques do not necessarily constitute a Paradigm.

A general idea one has about the trends in biomechanics research is that it is of two sorts: presenting simple and general principles as well as guidelines on one hand (9–11) and on the other hand providing a more elaborate mathematical analysis of movements (12,13). The principles and the guidelines presented are usually related to various themes in Physics, such as the Newton's Laws, Kinetic Energy, momentum – but they may also be related to e.g. physiology (Range of Motion, Electromyography etc.).

On the mathematical side, there is a pluralism of models used: analysis, geometry, trigonometry, calculus, and linear algebra, just to name a few (14,15). Dressing up or expressing a phenomenon with mathematics does not "prove it" (if that makes any sense to begin with) – let alone make a mathematically expressed observation "prescriptive" for future actions. So, on what grounds can anyone claim that while all models in biomechanics are descriptive, it is implied that they are "objective", prescriptive and one can freely (inductively) generalise? Statistics! However, statistics are not a proving method or logical, which is the only general proving method in mathematics, dictates to start from the abstract theory and then go to the world (16). Quasi-mathematicity is a generalised methodological disease in science often used in an attempt to present something as being important because it has been described with equations; as the Latin proverb goes, *quid quid latine dictum sit altum videtur*. In formal philosophical language this is also known as *bullshiting* (17,18).

In this respect, the use of deterministic models seems promising (19). In deterministic models a goal is broken down into its constituents and this analysis can extend to many levels. For example, *time* could be the goal in 100 m sprint analysis, which could be further broken down to *speed* and *distance* (on a first level), but also stride length,

stride rate, stride time, velocity at take-off etc. (multi-level analysis). All levels should be mechanically interconnected. The problem with deterministic models (and the solution at the same time) is that if the analytic method is not used in the beginning, subjectivism could become a problem (20). Why? Because theory is neither subjective nor objective; it is *theoretical*, a third distinct case. Mathematics in general are universal, intersubjective and infinitely generalizable as much as they are infinitely precise. Thus, they cannot be a product of neither personal perspective, nor bound to the specifics of this world. They only exist on a third level, one that is unknown to science: the theoretical level.

Finally, there are various computer imaging models, either 2D or 3D that demonstrate movements. In the same way, there could also be artistic or graphically designed models. The means used for the creation of an imaging illustration is not important; what is important is the methodology: has it been created by copying players (via statistics)? Has it been created based on the experience of the designer? Has it been created as an artistic approach to the movement? All these models are methodologically similar even if the former (the mathematical ones) are quantitative and the latter (the imaging ones) are qualitative. The critical difference is made only if the model has been conceived in abstraction as the method of theory dictates. The method of theory consists of the two pairwise methods, analysis-synthesis and abstraction-structure (20). The former is all about breaking down an entity into segments (analysis) and also combining the segments to create the same (re-synthesis) or a different entity (synthesis), and the latter refers to the inclusion of the said entity, as a whole, to supersets (abstraction) and subsets (structure). An athlete in analysis is broken down into e.g. tissues (analysis) or may be included in the superset of performers (abstraction). A great methodological danger exists when confusing these methods, e.g. to reduce talent (an abstract-structural component) to analytical-synthetical components, such as the type of tissue an athlete may have.

Structural analysis of Technical Form

In a holistic approach (synthetically), such as the Distal Method, technique has its place in a broader, unifying picture; technique, in itself (analytically), should also be based on unifying principles when describing various shots. In the former case, a bird's eye view is needed if general expertise is also desired; in the latter case, it would be too complicated if each shot needed a totally different biomechanical approach.

Let us first see the greater picture which is comprised of the following components:[2]

1. Sense: information received from various receptors, such as proprioception. Two examples of sense are pushing and pulling sensations.
2. Feeling: the conscious experience of a sensible stimuli. We may take it for granted, but it requires some form of training to be able to interpret sensible stimuli into feelings (a tacit process, mainly taking place at the earliest stages of life).
3. Emotion: the psychological imprint of feelings. A hug produces sensible stimuli from many parts of our body and it may feel "soft". A soft hug from our friend could make us experience the emotion of happiness, whereas the same hug from a total stranger at night in a dark park would make us experience the most horrific fear.
4. Biomechanics: the abstract structure of body mechanics in theory (a combination of physics, geometry and physiology).
5. Technical form: the translation of abstract biomechanics to a concrete movement formation. Technical form refers to distinct movements, skills or shots. Technical form may also be described as applied biomechanics or *simplified synthesis* (or *simplified tactics* in a simpler model).
6. Technical style: after years of training the technical form becomes personalised, i.e. adapted to both our specific body kinesiological characteristics and to our preferences (even to our neurotic patterns, enters psychotherapy).
7. Movement synthesis/structure: both are movement sequences. Movement sequences that have no further aim are called syntheses (compositions). Movement patterns that have an aim related to a specific shot are called movement structures. Applied technical form is movement synthesis and simplified tactics is movement structure.
8. Tactical form: sequences of movements with an aim regarding the outcome of the whole rally (a point). May also be viewed as *applied structure* or *simplified strategy*.

[2] Readers may also compare these ideas with: Hay, J. (1985). The biomechanics of sports techniques (3rd Edition). Eaglewood Cliffs, NJ: Prentice-Hall; Κόλλιας, H.A. (2003). Biochinetics of Sports Movement. [Βιοκινητική της Αθλητικής Κίνησης]. Thessaloniki: Christodoulides; Ae, M. (2020): The next steps for expanding and developing sport biomechanics, Sports Biomechanics

9. Tactical style: the personalised expression of technical forms after years of deliberate and well-structured practice.

Note: Forms are taught, styles are the long-term (*distal*) expressions of forms and occur spontaneously at some later stage of evolution (which may be defined as *maturation stage*).

10. Planning: the process of projecting to the future structured ideas that will be used as goals.
11. Strategy: set of sequences of movements with an aim regarding the outcome of the whole match. Strategy may also be viewed as applied planning.
12. Life purpose: sets of sequences of movements with an aim regarding the outcome of all matches.

Note: many different technical form combinations can express a specific tactical form and many different tactical form combinations may express a specific strategy (and many strategies may express a life purpose). Strategy is not obvious from a partial knowledge of tactics used and tactics is not obvious from a partial knowledge of technical forms used (also, life purpose is not obvious from a partial knowledge of strategies used).

	Level I	*Level II*	*Level III*	*Level IV*
Fundamentals	Sense	**Biomechanics**	Synthesis/structure	Planning
maturation stage	Feeling	**Technical Form**	Tactical form	Strategy
maturity stage	Emotion	Technical Style	Tactical style	Life purpose

Table 1. A proposed, multilevel structural analysis of Technical Form.

In Table 1 the different components are shown. The fundamentals are always necessary before we move on to the maturation stage. In the maturity stage the full potential of the individual has been expressed and if a proper training method has been used, world-class performance should be the outcome.

A lot may be said about the interconnections of these 12 components; however, I shall focus on the biomechanics and technical form ("technique" from now on). The most important question for biomechanics and technique is how do we progress from the fundamentals to the maturation stage (which is an important question for all four levels). The answer is through sense and feeling (and through emotion we may

progress from technical form to technical style). I have already argued, this connection is so crucial that it may be the only way to actually make distance learning possible (21); but it is quite true for any type of learning when it comes to teaching technique. Here we shall see in much greater detail how biomechanics are transformed to technique.

From biomechanics to technique

The technical form is what we may observe and reach a conclusion such as "that performer belongs to that specific school", whereas the technical style is what makes us exclaim "I recognise from the movement alone that it is that specific performer!". There are many reasons technical forms develop; even quite odd ones, such as politics. Some reasons include:

- Disabilities or movement limitations, such as in the story of the overweight Kung Fu master who developed a Kung Fu style that worked for him and his students followed without necessarily being overweight.
- Imitation, such as the case in Eagle Claw or Mantis Kung Fu where insect movements are imitated. In tennis this is how people develop their technical form, imitating top players who supposedly have some kind of optimum technical form (this assumption has created a never-ending vicious cycle, besides being counter-theoretical).
- Deception, such as the drunken style boxing.
- Political and religious matters that pose limitations to how a movement may be performed.
- Biomechanics, taking into full consideration the optimum mechanics of a movement in order to produce a result in the most efficient way.

I will argue next that the best bridge from biomechanics to technique is *structure*. Structure is the word Latin Scholars selected to express the Greek term *domē* (δομή). Alas, they again chose to stop prematurely. Therefore, in e.g. English only two terms are available and consequently, only two ideas are conceivable: "structure" and "structuring". However, the inherent quadrupolar structure of the Greek language goes all the way. Four symmetric terms exist:

1. *Domē* (abstract archetype)
2. *Domēkē* (the methodology of creating / constructing)
3. *Domēsē* (the actual process of creating / constructing)
4. *Domēma* (the final tangible product after creating / constructing)

Let us attempt to correlate these four terms one by one with our concepts about biomechanics and technique:

1. Biomechanics: the abstract idea of a movement drawn on a piece of paper
2. Teaching methodology: practice programs, skill segmentation, practice distribution, pedagogical principles.
3. The actual training which takes place.
4. The technical form or the technical style.

There is the much sought-after bridge between theory and practice. It should also be mentioned that the Distal Method provides tools for all these four stages since it has been created based on these epistemological principles (22).
Going from *domē* to *domēkē* and then to *domēsē* and to *domēma*, all four and in this order, is not just a random idea but an Aristotelean theoretical necessity in Classical Epistemology[3]. Any deviation from this naturally ordered symmetry, results in a distorted view. As is customary in Classical Epistemology, one is free to choose any other way that one can demonstrate it to be:

1. Consistent
2. Theoretically productive
3. Elegant

Measuring methods are an important part of the sports biomechanics methodology but I will not go into that at all. Measurements cannot be prescriptive, even if they concern top players or successful trials. In Classical Epistemology, models are made first, and then measurements take place: for theory, world is not the start of our theoretical work but its end. If verification of theories in the world could happen, then of course observations could be used to improve theories – as is the case in the scientific method. However, no verification of theories via observations, at any level, is possible. If it was possible then all the achievements of Classical Epistemology would be in vain and epistēmē could never have emerged: witchcraft would be all there is (as is almost the case nowadays with the so-called experimental method).

The future

A unified prescriptive biomechanics' methodology should emerge. At some point it should also become an interdisciplinary field accounting for all possible combinations presented in Table 1; for example:

[3] Classical Epistemology, as is described in the author's articles in Epistēmēs Metron Logos Journal

- Technical biomechanics
- Biomechanical technique
- sensory biomechanics
- biomechanical sense
- emotional biomechanics
- biomechanical emotions
- tactical biomechanics
- biomechanical tactics etc.

Bioinformatics will play an increasingly important role in the study of sports biomechanics. However, bioinformatics, expert systems, Artificial Intelligence and the like are not panacea. It is important to understand that the means are always of secondary importance in relation to the methodology.

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Life after COVID-19: Understanding the environment for humanity's survival and sustenance

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Abstract

The unprecedented restrictive measures imposed to stem the spread of Covid-19 disease have altered, among other things, our environmental footprint. First reports are notably encouraging, showing reductions in CO_2 emissions and improvement in air quality. This essay attempts to examine whether a "positive side" could be detected in this pandemic whose impact seems cataclysmic with thousands of deaths and fears for a deep, profound global economic recession. I will cautiously argue that the longer-run environmental impact of the pandemic might be positive, though noting that a blind approval of the environmental amelioration due to the imposed restrictions entails a great risk as it may be an offshoot of a dark eco-fascist ideology promoting authoritarian and anti-democratic ideas towards improving the environment. Alongside, I will lay emphasis on the need of a new policy, i.e. a new ethical approach and deontology, oriented towards rationalizing our relationship with the natural world. At any rate, the speed of environmental deterioration does not allow a retrospective re-contemplation of the events occurring within our socio-political reality. It is essential that world economies prosper again without abandoning the environmental protection and that data collected during the lockdown period should serve as guidance for governments and institutions during the implementation of their recovery plans.

Keywords: Covid-19, environmental ethics, bioethics, ecofascism, political ecology, sustainability

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1. Introduction

Since first being recorded in China in December 2019, Covid-19 (the disease caused by Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-COV-2)) has been the cause of death for at least 500,000 people worldwide while the total number of confirmed cases has surpassed 11,000,000.[2] The crisis emanating from the new coronavirus has the peculiarity of directly and immediately affecting all citizens of the world in their personal and professional lives. There is no sector of public life untouched by the new reality.[3] The pandemic has forced us to confront unprecedented and previously unimaginable situations. Our everyday routine is unrecognizable. Our lives have changed dramatically. Our individual freedoms have been dangerously curtailed as governments, in an effort to prevent the spread of the virus, adopted a series of severely restrictive measures including the surveillance of citizens.[4] In general, the implemented measures are considered "a necessary evil" [5], since they may negatively affect, among other things, the mental health and prosperity of citizens.[6] According to studies, the restrictive measures may lead to increased suicide rates, since they negatively impact the economy, increase social isolation and reduce access

[2] "Covid-19 Dashboard by the Center for Systems Science and Engineering (CSSE) at Johns Hopkins University, " Johns Hopkins University, accessed July 6, 2020, https://coronavirus.jhu.edu/map.html.

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to support networks.[7] Concerns have also been raised regarding increased domestic violence[8], reduced physical activity[9], the risk of internet addiction and online gambling[10], as well as increased alcohol consumption.[11]

There are thoughts that the current situation may lead to what Carl Schmitt (1888-1985) characterized as "State of Exception" (*Ausnahmezustand*). Drawing on this idea, Italian philosopher Giorgio Agamben warns that a society under permanent condition of "emergency" cannot be a free society at all.[12] Danger lies in individuals or societies becoming habituated to some of these restrictions and even calling for their extension in the fear of a new severe wave of the virus that could potentially cause massive death tolls after the summer of 2020. There is also the risk that recurring crises may lead to changes that could threaten freedom and democracy,[13] especially at a time where our political systems are challenged; in order to combat the pandemic a question arises: Which is more effective, democracy or autocracy? All this comes in a period when the

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Mass Media face a lack of credibility with regard to their key role in the provision of true information and the debunking of misinformation about the pandemic.

The active state response to COVID-19 was, of course, urgent and imperative, as the public health systems in almost all countries – both within and outside Europe – appeared unprepared, or, even worse, inadequate to deal with this new infectious disease.[14] In fact, under the particular situational pressure, medical and paramedical staff was called upon to make decisions regarding which patients would be admitted to ICU or would have access to a limited number of respirators.[15] Doctors faced hard dilemmas as they were essentially forced to decide who lives and who is left to die, even though such a responsibility does not fall within their medical duties.[16] The lightning-fast spread of the virus and the inadequacy of public health systems compelled the scientific community into a race for the development of safe and effective preventive vaccines or therapeutic prescription drugs for the treatment of serious complications of the coronavirus, unlike other rare or relatively new diseases in the past that were not immediately researched. However, what would have happened if the virus was only limited in the developed countries and did not massively hit the western world? In other words, what if there were no profits to be earned in resolving the problem?

Undoubtedly, the pandemic raises a number of moral issues, many of which are new while others are preexisting that should be reviewed in the light of the new data. Thus, Covid-19 was recently characterized as the "perfect moral storm".[17] Despite all aforementioned matters being deemed particularly interesting, the sole objective of the

[14] Emanuel, Ezekiel J., Govind Persad, Ross Upshur, Beatriz Thome, Michael Parker, Aaron Glickman, Cathy Zhang, Connor Boyle, Maxwell Smith, and James P. Phillips, "Fair allocation of scarce medical resources in the time of Covid-19," *New England Journal of Medicine* 382 (2020): 2049–2055, https://doi.org/10.1056/NEJMsb2005114.

[15] Yascha Mounk, "The extraordinary decisions facing Italian doctors," *The Atlantic*, March 11, 2020, https://www.theatlantic.com/ideas/archive/2020/03/who-gets-hospital-bed/607807/.

[16] Evangelos D. Protopapadakis, "Επιλογή ασθενών προς εισαγωγή σε ΜΕΘ σε έκτακτες περιστάσεις [Selection of patients for admission to ICU in emergencies]," Webinar: Relationship between law and ethics in a pandemic period, May 13, 2020, https://www.eeai.gr/images/pdf/2020/perilipsi-WEBINAR-EEAI-2020-NEW.pdf.

[17] Vicki Xafis, G. Owen Schaefer, Markus K. Labude, Yujia Zhu and Li Yan Hsu, "The Perfect Moral Storm: Diverse Ethical Considerations in the COVID-19 Pandemic," *Asian Bioethics Review* (12), pp. 65–83, https://doi.org/10.1007/s41649-020-00125-3.

current study is to investigate the impact of lockdown on the environment and, alongside, to identify the perspectives that the scientific discussion has hitherto created for a future moral resolution of the environmental issue.

2. Environmental impacts of lockdown

The coronavirus pandemic has significantly impacted our environmental footprint, since the restrictive policies of governments altered energy needs worldwide. Early reports indicated that emissions of greenhouse gases have fallen sharply across continents and air quality has improved[18] thanks to the shutdown of factories and the small number of operation aircrafts.[19] According to published data, at the peak of the lockdown period, worldwide CO_2 daily emissions were reduced by 17% compared to 2019, actually returning to the levels of 2006. In 2019, CO_2 emissions averaged 100,000,000 tons daily, mainly due to the burning of fossil fuels and cement production. At the beginning of April this year – peaking on April 7 – emissions declined to 83,000,000 tons daily. On what concerns the cumulative change in emissions from the beginning of the year up until the end of April, it was estimated that China contributed by 242 million tons, USA by 207 million, Europe by 123

[18] Ruixiong Zhang, Yuzhong Zhang, Haipeng Lin, Xu Feng, Tzung-May Fu, and Yuhang Wang "NOx Emission Reduction and Recovery during COVID-19 in East China," Atmosphere. 11 (4): 433, https://doi:10.3390/atmos11040433; Jonathan Watts, Niko Kommenda, "Coronavirus pandemic leading to huge drop in air pollution," *The Guardian*, March 23, 2020, https://www.theguardian.com/environment/2020/mar/23/coronavirus-pandemic-leading-to-huge-drop-in-air-pollution; Corinne Le Quéré, Robert B. Jackson, Matthew W. Jones, Adam J. P. Smith, Sam Abernethy, Robbie M. Andrew, Anthony J. De-Gol, David R. Willis, Yuli Shan, Josep G. Canadell, Pierre Friedlingstein, Felix Creutzig and Glen P. Peters, "Temporary reduction in daily global CO2 emissions during the COVID-19 forced confinement," *Nature Climate Change* (2020): 1–7. https://doi:10.1038/s41558-020-0797-x.

[19] "On average, a Jumbo Boeing 747 consumes around 150,000 litres of fuel in a 10 hrs flight. A total of around 400 billion litres of fuel is consumed annually by the commercial flights. Additionally, aircrafts fly at 8-13 km height from ground level emitting huge amount of NOx, CO2 and various hydrocarbons, which, indirectly, leads to the depletion of O3. These emissions affect radiative forcing and stratospheric ozone. The aircraft contrails mostly seen in the temperate regions cause warming of the Earth's atmosphere": Umesh Chandra Kulshrestha, "Environmental Changes during - COVID-19 Lockdown: Future Implications," Curr World Environ 2020; 15(1), DOI:http://dx.doi.org/10.12944/CWE.15.1.01.

million and India by 98 million[20]. Therefore, the reduction in CO_2 emissions this year is expected to be of the annual level necessary over several decades to reach the goals set by the Paris Agreement on climate change.

Having said the above, could there be a positive aspect to a pandemic that left thousands dead in 196 countries and is expected to cause one of the most severe economic crises in nearly a century, disproportionately affecting the society's most vulnerable? Although cautiously argued, the answer could be affirmative; there are two sides to every coin and the significant reduction in harmful pollutants is estimated to contribute to the salvation of thousands of human lives. Moreover, atmospheric pollution causes many more deaths than pandemics such as Covid-19, while people exposed to long-term pollution are more vulnerable to the coronavirus consequences, due to an increased probability to develop chronic respiratory problems. By calculating the reduction in atmospheric pollution and presupposing its consequent health impacts, Marshall Burke, Professor of Geology at Stanford University, deduced that in China alone "the lives of 4,000 children under 5 and 73,000 adults over 70 were saved".[21] His calculations, however, are predictions and not actual measurements; moreover, his suppositions were not based on multiple factors, such as other negative

[20] Corinne Le Quéré, Robert B. Jackson, Matthew W. Jones, Adam J. P. Smith, Sam Abernethy, Robbie M. Andrew, Anthony J. De-Gol, David R. Willis, Yuli Shan, Josep G. Canadell, Pierre Friedlingstein, Felix Creutzig and Glen P. Peters, "Temporary reduction in daily global CO2 emissions during the COVID-19 forced confinement," *Nature Climate Change* (2020): 1–7. https://doi:10.1038/s41558-020-0797-x.

[21] Marshall Burke measured the PM2.5 levels in the atmosphere, which are suspended particles and comprise a significant parameter of atmospheric pollution, impaction health as well as the environment (climate change, reduced visibility, erosion of monuments).

effects of lockdown on health.[22] Nonetheless, they comprise a useful reminder of the hidden impacts of the modern lifestyle on our health.[23]

In relevance to the environmental impacts of the lockdown, it is worth mentioning that the benefits from the reduced human activity extend, globally, to the wildlife. Animals have been returning to places that had been inaccessible due to human activity. We recently witnessed the canals of Venice being so clean that jellyfish were spotted swimming;[24] in Thailand's beaches, the largest increase in births of sea turtles in the last two decades was observed.[25] Furthermore, fish biomass could increase due to the steep reduction in fishing.[26] Of course, long-term human absence may not be considered a positive contribution. If a species claims a new geographical area, it could lead to the extinction of other species, leading to ecosystem disruptions.[27]

Undoubtedly, the worldwide lockdown has had its own profound impact. It is still early to evaluate the environmental implications of the restrictions, but many are

[22] In the same context, Dr. Klea Kastougianni, Professor of Biostatistics and Epidemiology in the National and Kapodistrian University of Athens expressed her confidence that certain deaths and health problems have been prevented due to the short-term reduction in atmospheric pollution. Elias Palialexis, "Πάνω από 8.500 θάνατοι κάθε χρόνο από ατμοσφαιρική ρύπανση στην Ελλάδα [More than 8,500 deaths a year in Greece by air pollution]," *Athens News Agency – Macedonian News Agency*, May 31, 2020, https://www.amna.gr/home/article/462016/Ereuna-EKPAA--sto-APE-MPE-Pano-apo-8500-thanatoi-kathe-chrono-apo-atmosfairiki-rupansi-stin-Ellada.

[23] Jeff McMahon, "Study: Coronavirus Lockdown Likely Saved 77,000 Lives In China Just By Reducing Pollution," *Forbes*, March 16, 2020, https://www.forbes.com/sites/jeffmcmahon/2020/03/16/coronavirus-lockdown-may-have-saved-77000-lives-in-china-just-from-pollution-reduction/#2e50610c34fe.

[24] "Jellyfish seem swimming in Venice's canals," *Cnn*, April 23, 2020, https://edition.cnn.com/travel/article/jellyfish-venice/index.html.

[25] Jack Guy and Carly Walsh, "Sea turtles thriving in Thailand after beach closures," *Cnn*, April 20, 2020, https://edition.cnn.com/travel/article/thailand-sea-turtles-coronavirus-scli-intl-scn/index.html.

[26] Tristram Korten, "With Boats Stuck in Harbor Because of COVID-19, Will Fish Bounce Back?," *Smithsonian Magazine*, April 24, 2020, https://www.smithsonianmag.com/science-nature/fish-stop-covid-19-180974623/.

[27] Kieron Monks, "Rays, sharks, and dolphins enjoy new freedom as humans retreat from the oceans," *Cnn*, April 29, 2020, https://edition.cnn.com/travel/article/marine-conservation-uae-spc-intl/index.html.

optimistic that future data will show that our home-life has become "greener".[28] Nonetheless, the greatest public health crisis in modern times may also have undesirable environmental consequences. Activists and organizations – mainly through online means in deference to the restrictive measures[29] – express concern for the tons of plastic products and the use of chemicals applied for disinfections for protection from the virus.[30] Governments and citizens are struggling to increase their reserve stocks of surgical masks, gloves and protective gear in general. All this plastic, however, has to end "somewhere". Environmental champions fear that oceans will not remain unaffected. The Oceans Campaign Director for Greenpeace USA, John Hacevar notes: "Right outside my house there are discarded masks and gloves all over the neighborhood. It has been raining for two days, and all that quickly ends up in the sewers. Here in Washington they end up in Anacostia river and then in the Atlantic ocean".[31] Furthermore, an increase in illegal activities has been noted, such as the deforestation of the Amazon tropical forest[32], poaching in Africa[33] and illegal logging

[28] Rachel Moss, "Is The Coronavirus Lockdown Good For The Planet?," *HuffPost*, April 22, 2020, https://www.huffingtonpost.co.uk/entry/coronarivus-lockdown-planet-climate-change-environment_uk_5e9ed8cbc5b6b2e5b837e72c?fbclid=IwAR38SGas95jar2Ys4ZKWVJcr7ATCbRsWpVyIENCtfsWny4f-BU20Zjul910.

[29] "Environmental activism goes digital in lockdown – but could it change the movement for good?" *The Conversation*, May 7, 2020, https://theconversation.com/environmental-activism-goes-digital-in-lockdown-but-could-it-change-the-movement-for-good-137203.

[30] "Discarded coronavirus masks clutter Hong Kong's beaches, trails," *Reuters*, March 21, 2020, https://www.reuters.com/article/us-health-coronavirus-hongkong-environme/discarded-coronavirus-masks-clutter-hong-kongs-beaches-trails-idUSKBN20Z0PP.

[31] Rob Picheta, "Coronavirus is causing a flurry of plastic waste. Campaigners fear it may be permanent" *CNN*, May 4, 2020, https://edition.cnn.com/2020/05/04/world/coronavirus-plastic-waste-pollution-intl/index.html.

[32] Evan Simon and Aicha El Hammar Castano "Deforestation of Amazon rainforest accelerates amid COVID-19 pandemic," *ABC News*, May 6, 2020, https://abcnews.go.com/International/deforestation-amazon-rainforest-accelerates-amid-covid-19-pandemic/story?id=70526188; Jamie Roberton and Lorand Bodo, "Deforestation of the Amazon has soared under cover of the coronavirus," *NBC News*, May 11, 2020, https://www.nbcnews.com/science/environment/deforestation-amazon-has-soared-under-cover-coronavirus-n1204451.

[33] Meredith Deliso, "Conservationists fear African animal poaching will increase during COVID-19 pandemic," *ABC News*, April 14, 2020, https://abcnews.go.com/International/conservationists-fear-african-animal-poaching-increase-covid-19/story?id=70118142; Emma Newburger, "Filthy bloody business: Poachers kill more animals as coronavirus crushes tourism to Africa," *CNBC*, April 24, 2020,

in Tunisia.[34] It is also expected that in African countries there will be a surge in the demand for "high value products" such as rhinoceros horn and ivory.[35] To all this we must add that the economic repercussions of lockdown could mean cutting back investments in green energy technologies.[36] For example, a number of governments announced that they are lowering environmental standards[37], suspending environmental monitoring requirements, reducing environmental enforcement, and restricting public participation[38], at a time when the 2020 United Nations Conference on Climatic Change has been postponed for 2021.[39] With the 2020 coronavirus outbreak spreading rapidly within the European Union, the focus on the European

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https://www.cnbc.com/2020/04/24/coronavirus-poachers-kill-more-animals-as-tourism-to-africa-plummets.html.

[34] Layli Foroudi, "Under the cover of lockdown, illegal logging surges in Tunisia," *Thomson Reuters Foundation News*, May 1, 2020, https://news.trust.org/item/20200501041915-qph07/.

[35] Meredith Deliso, "Conservationists fear African animal poaching will increase during COVID-19 pandemic," *ABC News*, April 14, 2020, https://abcnews.go.com/International/conservationists-fear-african-animal-poaching-increase-covid-19/story?id=70118142; Emma Newburger, "Filthy bloody business:' Poachers kill more animals as coronavirus crushes tourism to Africa," *CNBC*, April 24, 2020, https://www.cnbc.com/2020/04/24/coronavirus-poachers-kill-more-animals-as-tourism-to-africa-plummets.html.

[36] Emma Newburger, "Coronavirus could weaken climate change action and hit clean energy investment, researchers warn," *CNBC*, March 13, 2020, https://www.cnbc.com/2020/03/13/coronavirus-could-weaken-climate-change-action-hit-clean-energy.html.

[37] The United States' Trump administration suspended the enforcement of some environmental protection laws via the Environmental Protection Agency (EPA) during the pandemic. This allows polluters to ignore some environmental laws if they can claim that these violations were caused by the pandemic: Oliver Milman and Emily Holden, "Trump administration allows companies to break pollution laws during coronavirus pandemic," *The Guardian*, March 27, 2020, https://www.theguardian.com/environment/2020/mar/27/trump-pollution-laws-epa-allows-companies-pollute-without-penalty-during-coronavirus.

[38] David Boyd, "COVID-19: 'Not an excuse' to roll back environmental protection and enforcement," June 1, 2020, https://www.ohchr.org/EN/NewsEvents/Pages/DisplayNews.aspx?NewsID=25794&LangID=E. Dr. David R. Boyd was appointed as the UN Special Rapporteur on human rights and the environment for a three-year term commencing August 1, 2018.

[39] This Conference was crucial as nations were scheduled to submit enhanced nationally determined contributions to the Paris Agreement.

Green Deal has been diminished. Some have suggested either a yearly pause or even a complete discontinuation of the deal. Many believe the current main focus of the European Union's policymaking process should be the immediate, shorter-term crisis rather than climate change.[40]

3. The danger of downgrading human life in favor of environmental progress

Blind approval of the environmental progress caused by the lockdown restrictions poses a great risk since sometimes there is an underlying opinion that the world would be a better place without us, or more often, without some of us. For example, there are messages posted in social media networks, stating that "we" the people are "bad news for the planet". A characteristic example is a post referring to the drop in atmospheric and water pollution wherein it is emphasized that "the corona-virus is the Earth's vaccine" and "we are the virus". This post received around 300,000 "likes" and has been reposted more than 70,000 times in less than two weeks. Be that as it may, the trivialization or even the encouragement of human death and suffering so long as it contributes to the salvation of environment is an example of a dark ideology, an eco-fascism[41] promoting autocratic and fascist ideologies for the environmental good.[42] Moreover, the greatest failure of eco-fascism is that while allegedly aiming at the rationalization of stable environmental ethics, it neglects the essence as well as the mission of ethics. Ethics "is but a convention, to which moral subjects accede with the aim to promote their best interests". Ethics' ultimate goal can only be the promotion of the quality of human life and the creation of an environment wherein humans are

[40] Milan Elkerbout, Christian Egenhofer, Jorge Núñez Ferrer, Mihnea Catuti, Irina Kustova, Vasileios Rizos, "The European Green Deal after Corona: Implications for EU climate policy," *CEPS*, March 31, 2020, https://www.ceps.eu/ceps-publications/the-european-green-deal-after-corona/.

[41] Michael E. Zimmerman defines "ecofascism" as "a totalitarian government that requires individuals to sacrifice their interests to the well-being of the 'land', understood as the splendid web of life, or the organic whole of nature, including peoples and their states". Michael Zimmerman, "Ecofascism," *in Encyclopedia of Religion and Nature*, ed. Bron Taylor (London: Continuum 2008) 531–532.

[42] Sierra Garcia, "'We're the virus': The pandemic is bringing out environmentalism's dark side," *Grist*, March 30, 2020, https://grist.org/climate/were-the-virus-the-pandemic-is-bringing-out-environmentalisms-dark-side/.

worth living. An ethic that promotes the downgrading or destruction of human life in favor of all the other creatures is not a human ethics.[43]

4. Towards a rationalization of our relationship with the environment

The anxious pursuit of financial enlargement as the single goal of development has driven our cognitive – scientific potential to an impasse, rendering us incompetent to manage our achieved progress. Our relationship with the natural environment became so antagonistic that more people are now displaced due to global warming than wars, giving rise to a population of environmental refugees and immigrants.[44] It is for this reason that Professor Tasios noted that the "development" promised by the "modern" way of life is actually deceitful. On the contrary, in order to realize such a development, a four-pronged strategy is necessary, whereby environmental, economic, social and cultural sustainability are pursued equivalently. To underpin

[43] Evangelos D. Protopapadakis, "Οικοφασισμός: Η Περίπτωση του Kaarlo Pentti Linkola [Ecofascism: The case of Kaarlo Pentti Linkola]," in *Enviroment – Society – Ethics*, ed. Elena Papanikolaou (Athens: Procceedings of the 2nd International Meeting on Environmental Ethics, 2010), 93.

[44] Konstantina Vratsanou, Hara Giannakopoulou, Constantina Skanavis, Valentina Plaka, "Περιβαλλοντική μετανάστευση: Προκλήσεις και προοπτικές [Environmental migration: Challenges and perspectives]," in *Environmental Sociology*, ed. Evangelos Manolas (Athens: Gutenberg, 2017), 67-92.

such an approach, a new Policy, or rather a new Ethics,[45] is required, capable of managing and integrating the above components.[46]

As of the last decades of the 20th century there has been increasing interest in the human-nature relationship and the effects of human interference on the physical environment. Proposed solutions promote a new orientation or a new "morality" that acknowledges an "intrinsic value" to the natural world. Such solutions are, for example, the "Land Ethics" of Aldo Leopold (1887-1948), that demonstrates people belonging to the biotic community (the land) and not owning it; the deeply ecological stance expressed by Norwegian philosopher Arne Naess (1912-2009), advocating for forms of identification with the non-human world; the ecological feminism, which rejects as patriarchal the prevailing attitude with regard to the natural world. These theories have not been without reasonable criticism. Consequently, it is imperative to investigate whether and to what degree they comprise cohesive and firm moral theories, i.e. whether they can yield effective solution to the already exceedingly acute environmental problem, or, at least, lay the groundwork for the evolution of

[45] Perhaps the manner in which Kant perceives moral duty, freedom, dignity and autonomy of the moral person is sufficient in indicating what we ought to do and what to avoid concerning our relationship with the natural world surrounding us. It is the opinion of Professor Protopapadakis that the Kantian ethics suffices to "convince us that it is our duty to abstain from all deliberate acts which would bring about the deterioration or even destruction of the natural world, since it dictates the simple truth that: if man, by reason and deliberation destroys the natural environment, he acts in a manner irrational and inappropriate to human nature". See Evangelos D. Protopapadakis, "Climate Change: A Challenge for Ethics," in *English through Climate Change*, ed. Walter Leal Filho and Evangelos Manolas (Orestiada: Deparment's of Forestry and Management of the Environment and Natural Resources Democritus University of Thrace Publications, 2012), 167-178; Evangelos D. Protopapadakis, "Το δικαίωμα του ανθρώπου στο Περιβάλλον, η διαγενεακή δικαιοσύνη και ο Immanuel Kant [Human's right to environmental, Intergenerational equity and Immanuel Kant]," in *International Environmental Policy*, ed. Evangelos Manolas, Evangelos Protopapadakis and Georgios Tsantopoulos (Orestiada: Deparment's of Forestry and Management of the Environment and Natural Resources Democritus University of Thrace Publications, 2013), 182-190.

[46] Theodosis Tasios, "Προίμιο για έναν διακλαδικότερο ηθικό προβληματισμό για το περιβάλλον [Prelude for a more interdisciplinary ethical concern for the environment]," in *Environmental Ethics - Challenges and Perspectives*, ed. Evangelos Protopapadakis and Evangelos Manolas (Orestiada: Deparment's of Forestry and Management of the Environment and Natural Resources Democritus University of Thrace Publications, 2012), 195-205.

environmental ethics.[47] Evangelos Protopapadakis, Head of the Greek Unit of the UNESCO Chair in Bioethics (Haifa), for example, claims that Leopold's Land Ethics does not comprise a cohesive and integrated system, while at the same time it incites a peculiar moral absolutism. Within this framework he notes that the central concepts of this theory lack clear demarcation and that the reasoning has no probative value while at the same time such positions entail a high potential risk. Nevertheless, regarding the fertility of Leopold's theory, he seems convinced that beyond the stimulus it has hitherto offered to environmental ethics it can also serve in the future as a springboard for evolution and progress, precisely because as a point of intense objections it lends itself to creative philosophical dialogue.[48]

Regardless if only mankind or nature as a whole is the ultimate goal of environmental protection, at the core of environmental ethics lies the effort to express a basis of interest in the natural world. Environmental ethics investigates the prospects of a sustainable relationship between economic and ecological systems, and seeks for indications of this relationship in reference to social justice and political institutions.[49] Current environmental problems have accumulated, especially over the last decades, and, among other factors, result from a lack of both environmental ethics and

[47] Evangelos D. Protopapadakis, "'Supernatural Will' and 'Organic Unity in Process': From Spinoza's Naturalistic Pantheism to Arne Naess' New Age 'Ecosophy T' and Environmental Ethics," in *Studies on Supernaturalism*, ed. George Arabatzis (Berlin: Logos Verlag, 2009), 173-193; Evangelos D. Protopapadakis, "The stoic notion of cosmic sympathy in contemporary environmental ethics," in Антика, савремени свет и рецепција античке културе (Belgrade: Друштво за античке студије србије, 2012), 290-304; Evangelos D. Protopapadakis, "Μια άγρια πράσινη φλόγα: Ο Aldo Leopold και η ηθική της γής [A wild green flame: Aldo Leopold and the land ethics]," in *Environmental Ethics - Challenges and Perspectives*, ed. Evangelos Protopapadakis and Evangelos Manolas (Orestiada: Deparment's of Forestry and Management of the Environment and Natural Resources Democritus University of Thrace Publications, 2012), 128.

[48] Evangelos D. Protopapadakis, "Μια άγρια πράσινη φλόγα: Ο Aldo Leopold και η ηθική της γής [A wild green flame: Aldo Leopold and the land ethics]," in *Environmental Ethics - Challenges and Perspectives*, ed. Evangelos Protopapadakis and Evangelos Manolas (Orestiada: Deparment's of Forestry and Management of the Environment and Natural Resources Democritus University of Thrace Publications, 2012), 128.

[49] Robert Audi, ed., *The Cambridge Dictionary of Philosophy* (Cambridge: Cambridge University Press, 2015).

environmental education.[50] The rate of natural degradation compels citizen participation in the environmental decision-making process.[51] In this respect, citizens must acquire the capacity to understand the environmental issues, to identify their origins and to evaluate potential solutions while also demonstrating participatory skills.[52] If we wish to ensure the longevity of economic activity we must strive for its coexistence alongside an environmental sustainability.[53]

5. Conclusion

The Covid-19 crisis will eventually be overcome and, looking ahead, the impending global recession should be seen as an unmissable opportunity to kickstart a new equitable economy and a more ethical financial system. Our economies must prosper again while rebalancing our relationship with nature. Data collected by governments during the lockdown period are great tools to navigate the recovery plans. Investments should be environmentally responsible, supporting the transformation to a future of green tech, clean energy and agroecology.[54] Henceforth, retrospective reflection on devastating events in the socio-political reality or passive acceptance should not be an

[50] Christos Zerefos, "Περιβάλλον και Βιοηθική [Environment and Bioethics]," 2nd National Conference Greece-Europe 2020: Education, Lifelong Learning, Research, New Technologies and Innovation: Lamia, 2018, https://eproceedings.epublishing.ekt.gr/index.php/inoek/article/view/2441/2265.

[51] "All model projections indicate that Earth will continue to warm considerably more over the next few decades to centuries. If there were no technological or policy changes to reduce emission trends from their current trajectory, then further globally-averaged warming of 2.6 to 4.8 °C (4.7 to 8.6 °F) in addition to that which has already occurred would be expected during the 21st century". "The basics of climate change," *The Royal Society*, accessed May 1, 2020. https://royalsociety.org/topics-policy/projects/climate-change-evidence-causes/basics-of-climate-change/. Xafis, Vicki. Schaefer, G. Owen. Labude, Markus K. Zhu, Yujia. and Hsu, Li Yan. "The Perfect Moral Storm: Diverse Ethical Considerations in the COVID-19 Pandemic." *Asian Bioethics Review* (12), pp. 65–83, https://doi.org/10.1007/s41649-020-00125-3.

[52] Constantina Tsampoukou – Skanavis, *Περιβάλλον και Επικοινωνία* [Environment and Communication] (Athens: Kaleidoscope publications, 2004) 13-14.

[53] Evangelos D. Protopapadakis, "Η Οικολογική Ηθική ως παράμετρος της οικονομικής δραστηριότητας [Ecological Ethics as a parameter of economic activity]," in *Business Ethics*, ed. S. A. Antoniou (Athens-Komotini: Sakkoulas Publications, 2008), 313.

[54] Anna Turns, "Five eco lessons I've learnt from lockdown," *Wicked Leeks*, May 15, 2020, https://wickedleeks.riverford.co.uk/opinion/environment-ethics-local-sourcing-food-waste/five-eco-lessons-ive-learnt-lockdown.

option. It is important that, as Dr. Maria Neira of the World Health Organization (WHO) accurately noted, "when we at last take off the mask, let's keep on breathing clean air". The protection of the planet as well as of our daily lives is everyone's both a right and a duty. A radical change in our mentality and in the manner in which we have been realizing our desires are called for.[55]

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