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Korpikiewicz Honorata, Dereniowska Małgorzata

Listening to Anima Mundi: The Organic Metaphor in the Cosmoecological Perspective

> We are of the universe – there is no inside, no outside… Meeting each moment, being alive to the possibilities of becoming, is an ethical call, an invitation that is written into the very matter of all being and becoming. We need to meet the universe half-away, to take responsibility for the role that we play in the world's differential becoming
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> – Karen Barad, *Meeting the Universe halfway. Quantum Physics and the Entanglement of Matter and Meaning.*

Introduction

In ancient Greece, philosophers were searching for logos – a "rational pattern to the world". This logos had been sought in the perfect order of Heavens. As a consequence of this idea it was concluded that the real and perfect world is unavailable for us. By "turning our attention away from our bodies, and from the body of the earth, the rational gaze was directed upward, toward the stars, and inward, toward a pure mental order. Thus the Greek search for logos became a quest for a very particular type of order – one that was distant, regular, immutable and certain".[1] From that perspective, a particular conceptualization of rationality arises. For Plato, knowledge of things obtained through the sensible world is highly questionable. Moreover, according to the prevailing view it would seem that "by defining reality as the rational – and identifying rationality with the regular, immmutable, and certain – the reality of the sensuous world has denigrated".[2] As a result, earthly and visible nature has been perceived as non-rational.[3]

At the same time, the image of the Earth as a living organism has been present in philosophical investigations since ancient times. In *Timaeus* Plato describes

[1] R. Frodeman, *Philosophy in the Field*, in: B.V. Foltz, R. Frodeman (eds.), *Rethinking Nature: Essays in Environmental Philosophy,* Bloomington, Ind.: Indiana University Press, 2004, p. 149–150.

[2] *Ibidem*, p. 150.

[3] P. Macnaghten, J. Urry, *Alternatywne przyrody. Nowe myślenie o przyrodzie i społeczeństwie.* Warszawa: Wydawnictwo Naukowe SCHOLAR, 2005, p. 26. Nowadays the terms of the long-standing denigration include, for instance, Feminine, Other, Oriental, and Animal.

the cosmos as a Living Creature, "that whole which encompasses within itself all *intelligible* living beings, just as this world is made up of us and all other *visible* beings. For by choosing as his model the most beautiful of intelligible beings, perfect and complete, the god made the world a single, visible, living being, containing within itself all living beings that are naturally akin to it".[4] The so called soul of the world animates all existing matter. The system of unity in multiplicity is reflected in the analogy between the macrocosms (universe) and the microcosms (human body), in which the mind is the most important part, a ray of the World Soul.[5] Using David Fideler's words, "in a body of the living universe, animated by the World Soul, all parts are interrelated through the power of sympathy and by the fact that the manifest cosmos is itself rooted in the *Nour* (Mind/Being), which is a dynamical system of unity-in-multiplicity".[6]

The relation between the human soul and the World Soul (*anima mundi*) is full of a natural sympathy. This relationship is interwoven with the faculty of reason. In the Middle Ages this metaphor has been popular, in particular, within Neoplatonic circles. Fideler emphasizes the works of Porphyry, for whom "self-knowledge was inherently connected with the Neoplatonic conception of the kinship between the human soul and the World Soul (*anima mundi*), its wisdom (*sophia*) and intellect (*nous*)".[7] However, this organic way of perceiving the world has been substituted and at some point even denied by the mechanical one during the scientific revolution of Enlightenment. It can be seen in works of people such as Galileo, Francis Bacon, and René Descartes. Within the mechanical view, the whole universe has been perceived as a machine whose elements work and are in relation to each other similar to the gears of a clock. Mechanistic view assumes that "the whole of nature, including the Earth and all her […] inhabitants, is no more than a dead machine to be exploited as we wish for our own benefit, without let or hindrance".[8] In other words the clockwork of the universe did not leave room for the world soul.

Using these metaphors, we can recognize the competing character of the mechanical and the organic. As Fideler notes, "nothing could be further from the

[4] Plato, *Timaeus and Critias,* trans. R. Waterfield, New York: Oxford University Press Inc., 2008, p. 19 (30c).

[5] For a detail analysis see: N. El-Bizri, "Microcosm/Macrocosm Analogy: A Tentative Encounter Between Graeco-Arabic Philosophy and Phenomenology", in: Tymieniecka A. T. (ed.), *Islamic Philosophy and Occidental Phenomenology on the Perennial Issue of The Microcosm and Macrocosm*, Netherlands: Springer, 2006, p. 3–23

[6] D. Fideler, Neoplatonism and the Cosmological Revolution: Holism, Fractal Geometry, and Mind in Nature," in: idem, *The Order and Beauty of Nature*, Michigan: Phanes Press, 1997, p. 141.

[7] El-Bizri, p. 6.

[8] Harding, p. 19.

Neoplatonic vision of the living universe than the mechanistic cosmology of the Scientific Revolution, which emerged from the first great cosmological revolution of the Western world".[9] This allows us to distinguish two views of the universe: *anima mundi* and *machina mundi*.[10] However, the contradiction between them might have a superficial character. We shall argue that, after the revision and examination of the common assumptions on the nature of nature (and the universe), these two perspectives can be to some extent compatible, or at least not inconsistens. Even though they are irreducible to one another, they are not transcendental convertible.

One of the important aspects connected with the image of the living universe is its association with primitivism, based on the assumption that the achievements of scientific and technological civilization predispose us to a higher degree of knowing the world. However, the point is that the organic perspective cannot be grasped from only within the mechanical framework of reference. As it will be shown with reference to Aldo Leopold, the recognition of the living characteristics of the universe can be understood as a moment of illumination. That is, it is a revelation that reveals and communicates the hidden voice of *anima mundi*. It is more available and achievable within immediate, perceptual experience rather than on the grounds of the rational investigation. As Weiner points out, "Perhaps this thinking is not primitive at all, since the ancient and modern lines of thought sometimes seem to be bending to meet, like the two ends of a hoop. The idea has arisen many times in the history of science. Often it strikes an investigator who has just seen more deeply than ever before into the workings of the planet".[11] Indeed, this topic of concern became a cornerstone of the critique of the mechanistic model in science.

As a consequence of being taken for granted, the exclusivism of a mechanistic view of the world and the universe not only denied an existence of the soul of the world (understood as a metaphor) but as a consequence it scalped nature from its living elements. Schelling associates this approach with the post-Cartesian notion of clockwork, where nature is subordinate to humans' ends: "the entire new European philosophy since its beginning (with Descartes) has the common defect that nature is not available for it and it lacks a living

[9] Fideler, p. 141.

[10] The expression *machina mundi*, related to the universe, appeared in 1565 in the works of Nicholas of Cusa. Quoted by: H. Grossman, "Descartes and the Social Origins of the Mechanistic Concept of theWorld", in: G. Freudenthal and P. McLaughlin (eds.), *The Social and Economic Roots of the Scientific Revolution. Texts by Boris Hessen and Henryk Grossmann* (Boston Studies in the Philosophy of Science 278), New York: Springer, 2009, p. 199.

[11] J. Weiner, *The Next One Hundred Years: Shaping the Fate of Our Living Earth,* New York, Toronto, London, Sydney, Auckland: Bantam Books, 1990, p. 191.

ground".[12] The image of a universe as a machine has been present long before Descartes,[13] nonetheless, it was the influence of Cartesian thought that solidified the mechanistic image of the Universe as the legitimate one. As Henryk Grossmann explains, "mechanics […] became the new religion and it gave to the world a new Messiah: the machine. Descartes was so dominated by mechanistic ideas that he could not think of the world or any of its parts without immediately comparing them with some machine".[14] Immediately, Descartes's preoccupation with the machine spread among his contemporaries and became a part of an Enlightenment inheritance.[15] The implications of the presentation of the universe as inanimate, dead and soulless have led, ultimately, to the expansive attitudes toward environment that have caused the ecological crisis. Facing serious destabilization of the living conditions on our planet, the issues of human attitude toward the world – including human perception – have became an ethical concern.

The question of human responsibility for life on Earth posed by the global ecological crisis can be understood as an extension of an anthropocentric point of view to a wider perspective, sometimes called ecocentrism or holism. Current discussion about the necessity of ecological ethics as extending even at a cosmic level (planetary ethics) suggests the need to re-think this kind of holistic consideration: what does it mean for us? Is it a mere hyperbolic exercise?

There are some attempts to seek connections between the cosmos and life on Earth. For example, the search for life in the universe underlies the astrobiological

[12] F. W. J. Schelling, *Philosophical investigations into the Essence of Human Freedom*, trans. J. Love and J. Schmidt, New York: State University Press of New York, 2006, p. 26.

[13] For a comprehensive study of the mechanistic metaphor in philosophy and science, see H. Grossman, op. cit.

[14] *Ibidem*, p. 219.

[15] For instance, in "Meditations on First Philosophy" Descartes uses the following analogy to a sick body: "And a clock made of wheels and counter-weights follows all the laws of nature no less closely when it has been badly constructed and does not tell the time accurately that it does when it has completely satisfies the wish of its maker. Likewise, I might regard a man's body as a kind of mechanism that is outfitted with and composed of bones, nerves, muscles, veins, blood and skin in such a way that, even if no mind existed in it, the man's body would still exhibit all the same motions that are in it now except for those motions that proceed either from a command of the will or, consequently, from the mind." R. Descartes, *Meditations On First Philosophy In Which The Existence Of God And The Distinction Of The Soul From The Body Are Demonstrated,* Indianapolis/Cambridge: Hackett Publishing Company, 1993, p. 55. See as well the following passage: "Perhaps not all bodies exist exactly as I grasp them by sense, since this sensory grasp is in many cases very obscure and confused. But at least they do contain everything I clearly and distinctly understand – that is, everything, considered in a general sense, that is encompassed in the object of pure mathematics." *Ibidem*, p. 52.

research;[16] others ask about the influence of cosmic factors on the Earthly biosphere. Indeed, this question is a very old one.[17]

The perspective of the cosmic influence on a living Earth supplies an organic way of perceiving the relation between the human and the cosmic and turns our attention to Maurice Merleau-Ponty's phenomenological notion of "the flesh of the world".[18] This point is crucial to David Abram's work on the Gaia hypothesis:

> For when my intelligence, or mind, does not think of itself as something separable from the living body, but starts to recognize its grounding in these senses and this material flesh, then it can no longer hold itself apart from the material world in which this body has its place. As soon as my awareness forfeits its claim to a total transcendence and acknowledges its dependence upon this physical form, then the whole of the physical world shudders and wakes. This experience corresponds to the second, unfinished phase in Merleau-Ponty's writing, when he refers less often to the body as the locus of perceptual experience and begins to write of the collective *Flesh,* his term for the animate, sensitive existence that encompasses us (of which our own sentient bodies are but a part).[19]

According to this position, the whole Earth is alive since animal bodies are sensitive to the natural cosmic rhythms. If we take a look at the heavens and then go back to embodied matter on earth, it becomes clear that there is no split between the sky and "fallen" earthly matter that are intertwined from the very beginning of life on our planet. This phenomenological hypothesis sheds light on Bruno Latour's proposal that an assumed separation between nature and culture, grounded on mechanistic view, allows an absolute characteristic of modernist projects.

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[16] For a comprehensive study of this area, see: G. Horneck and Ch. Baumstark-Khan (eds.), *Astrobiology. The Quest for the Conditions of Life*.Verlag, Berlin, Heidelberg: Springer, 2002 and B. Jakosky, *Science, Society, and the Search for Life in the Universe*. Tucson: The University of Arizona Press, 2006.

[17] More recently a Russian geologist Vladimir Vernadsky has explored those issues. According to Vernadsky, any living matter is completely interwoven with inanimate processes. See more, for instance, in: D. Sagan, L. Margulis, R. Guerrero, *Descartes, Dualism, and Beyond*. In: L. Margulis, D. Sagan, *Dazzle gradually. Reflections on The Nature of Nature*. Vermont: Chelsea Green Publishing. White River Junction, 2006, p. 200.

[18] M. Merleau-Ponty, *Basic Writings*, T. Baldwin (ed.), London and New York: Routlege, 2004, p. 263. Merleau-Ponty describes the notion of flesh as follows: "this interiorly worked-over mass, has no name in any philosophy. As the formative medium of the object and the subject, it is not the atom of being, the hard in itself that resides in a unique place and moment: one can indeed say of my body that it is not elsewhere, but one cannot say that it is here or now in the sense that objects are; and yet my vision does not soar over them, it is not the being that is wholly knowing, for it has its own inertia, its ties. We must not think the flesh starting from substances, from body and spirit – for then it would be the union of contradictories – but we must think it, as we said, as an element, as the concrete emblem of a general manner of being." See as well p. 254: "the body belongs to the order of the things as the world is universal flesh."

[19] D. Abram, "The perceptual implications of Gaia", *The Ecologist* 15.3 (1985), p. 96–103.

He argues that "they are going to be able to make nature intervene at every point in the fabrication of their societies while they go right on attributing to nature its radical transcendence; they are going to be able to become the only actors in their own political destiny while they go right on making their society hold together by mobilizing nature".[20] Muller continues Latour's argument by stating that

> Once we make explicit the proliferation of nature/culture hybrids concealed through employing the machine metaphor and recognize the complicated linkages that we have been unable to comprehend fully, we then can become 'non-modern.' We become attuned to a different embodied resonance, one that is more therapeutically sensitive to environment. This new embodied resonance is made conceptually manifest in a new constellation of metaphors informing environmental thought.[21]

The metaphor that employs organic and embodied perception is, however, often relegated to the controversies of environmentalism. At this point, it is necessary to highlight common misunderstandings of this hypothesis. The first pertains to the anxiety about the status of human culture, the human condition and the very possibility of overcoming the so-called ecological crisis. As the cause of the collapse of earthly ecosystems, humans are considered parasites on Mother Earth. This view, suggested by James Lovelock, amongst many others, is a myth. Environmental philosophy can do well without dehumanisation.

The second addresses the view that cultures that were able to live in harmony with nature were mainly pre-modern, indigenous and oral ones.[22] Does that mean that re-establishing the balance between human beings and nature is impossible within the modern world? Radical environmentalists blame technological civilization and its achievements and even propose a necessity to return to a simpler life.

However, we argue that the very problem lies not in the question of whether a primitive or a technological social structure is better, but rather it lies in the heart of the human understanding of the world. It has been recognized that the relation to the world, including nature, is a function of the way of perceiving the world by humans.[23] For indigenous people, the sacred nature was alive, rhythmic,

[20] B. Latour, *We Have Never Been Modern*. Trans. C. Porter. Cambridge, MA: Harvard University Press, 1993, p. 32.

[21] B. Muller, *Metaphor, Environmental Receptivity, and Architectural Design*, in: G. Backhaus and J. Murungi (eds.), *Symbolic Landscapes.* Dordecht, London: Springer, 2008, p. 191.

[22] For a comprehensive study of this issue, see more in D. Abram, *The Spell of The Sensuous. Perception and Language in a More-Than-Human World*. New York: Vintage Books, 1996. See as well D. Abram, *Language and the Ecology of Sensory Experience: An Essay With An Unconstructive Footnote*. "Call To Earth", I/1 (2000): 8.

[23] See, for instance, D. Abram, *The Spell of The Sensuous. Perception and Language in a More-Than-Human World*.

and cyclic. For modern man and woman, nature is rather a mechanism with resources and functions serving to human ends. In other words, the contrast is not between primitive and modern hyper-mediated culture, but rather between but rather between different representations and perceptions of nature, exemplified here as the mechanistic and organic views on nature. Putting it in Abram's terms – between mechanistic and organic models of perceptions.

There is, therefore, a potential within the modern culture to approach nature differently. This potential is conceived, for instance, in the organic view of the world: the living universe. A crisis of perception disables humans from perceiving their connectedness with the animate Earth. A zoologist Stephan Harding believes that

> The crisis [ecological crisis] is at root one of perception; we no longer see the cosmos as alive, nor do we any longer recognize that we are inseparable from the whole of nature, and from our Earth as a living being. But there is hope, for as crisis deepens, the call of anima mundi intensifies. […] in this time of crisis, we need only pay heed to our thorough embeddedness within the earthly web of life to feel the buried seed of anima mundi begin to stir and blossom in our minds and sensing bodies. As the seed breaks open, we see the wisdom in letting go of the objectivist assumptions of modern science, without abandoning the considerable achievements and benefits that it has undoubtedly brought us".[24]

In light of this remark, what is needed is a revision of the meanings of the cosmos and the Earth together with the juxtaposition of the two epistemological approaches to the perceptual experience.

The cosmic harmony of existence

> The greatest forms of the beautiful are order and symmetry and determinateness, which the mathematical kinds of knowledge most of all display. And since these make their appearance as causes of many things (I mean such things as order and determinateness), it is clear that these kinds of knowledge would also speak about these things in other places.
>
> – Aristotle, *Metaphysics*

The cosmos has always fascinated those who have been aware of it. Greek philosophers noticed that there is symmetry, proportion and harmony in the world. They noticed it in the motion of celestial bodies, which was believed to be

[24] S. Harding, *Animate Earth. Science, Intuition, and Gaia,* Vermont: Chelsea Green Publishing Company, 2006, p. 29

regular and they observed that they revolved around circular orbits. They also imagined a perfection of harmonic sounds produced by the bodies as they rotated. This quest for symmetry as perfection is still a current topic, as modern physicists have asserted:

> Humans, for thousands of years, have been drawn instinctively to equate symmetry to perfection. […] The symmetries that we sense and observe in the world around us affirm the notion of the existence of a perfect order and harmony underlying everything in the Universe. Through symmetry we sense an apparent logic at work in the universe, external to, yet resonant with, our own minds.[25]

The Earth, which for Plato was only the reflection of the world of platonic ideas as imitations, was not that perfect. But it was still possible to find harmony in the symmetrical and proportional structure of living beings, in buildings raised by human, in numbers, and geometric structures, which, according to some, belonged to the world of ideas[26]. Moreover, the sounds which were said to be pleasant to the ear, of both a celestial and terrestrial nature, were based on the same numerical harmonic relations. They assumed that if people made a conscious effort to co-exist with nature, respecting non – human beings and accepting whatever fate brings, people's lives would reflect the ideas of harmony.[27] We can see clearly that aspects of such a cosmic perspective have been appropriated by modern science: "As we have seen, the homely metaphors of commonsense and everyday life offer us no guidance when we look at the bewildering cosmos in which we find ourselves […] Only mathematics, in whose code nature writes her secrets, can tell us what is *real*".[28]

The postulated perfection of the World hides some danger: if the world was perfect (*perfect,* according to Aristotle, meant finished, one which met its destination or achieved its aim), it would not be able to develop. This was noticed by Empedocles who postulated that perfection was based on imperfection which, therefore, would allow the possibility for development.[29]

[25] L. M. Lederman, Ch. T. Hill, *Symmetry and the beautiful universe.* Amherst, New York: Prometheus Books, 2004, p. 14–15.

[26] Also today many researchers claim that mathematics and other sciences lead to a deeper understanding of a hidden order, as Lee Smolin said: "Both mathematical and physics education is a kind of an introduction into a certain mystical order". L. Smolin, *Życie Wszechświata. Nowe spojrzenie na kosmologię,* trans. B. Czyżewska, Warszawa: Amber, 1997, p 209. Originally published as: *idem*, *The Life of the Cosmos,* New York: Oxford University Press, 1997.

[27] H. Korpikiewicz, *Kosmoekologia. Obraz zjawisk*. Poznań: Wydawnictwo Naukowe, 2006, p. 11–19.

[28] D. C. Reanney, *The Death of Forever: A New Future for Human Consciousness.* Melbourne: Longman Cheshire, 1991, p. 156.

[29] Korpikiewicz, p. 12.

Observation of nature has proved Empedocles to be right, for nature does not always realize its possibilities. The bodies of animals and plants are not perfectly symmetrical, while snowflakes and coastal lines are not perfectly fractal. Also the celestial bodies which were supposedly built from the perfect "fifth substance" are not perfectly spherical and move on conic sections (but not on circular orbits). Even the laws of nature, although being highly symmetrical, manifest themselves via breaking their symmetry.[30] Is it really true that nature is almost symmetrical, as defined by Richard Feynman?[31] Is breaking the symmetry its way to solve the dilemma between unification and diversity? The answers seem to be proven, as Lederman and Hill argue: "In fact, most substances are chaotic and random configurations of atoms at high temperatures […] the enormous size of the universe itself is believed to be mostly a consequence of a phenomenon similar to spontaneous symmetry breaking". [32]

Human longing for perfect structures is represented in pre-modern art's preoccupation with perfect proportions of the human body, buildings and landscapes. The correlation between proportion and beauty is deep. Even average people perceive proportional objects as beautiful. The same ideas are represented in sciences such as physics, cosmology and theoretical astronomy. In all of these, researchers declare themselves to be looking for a theory, one which is perfect, symmetrical and thus beautiful.[33] This is our eternal dream. As Steven Weinberg said:[34]

> Plato and the neo-Platonists taught that the beauty we see in nature is a reflection of the beauty of the ultimate, the *nouns*. For us, too, the beauty of present theories is an anticipation, a promotion, of the beauty of the final theory. And in any case, we would not accept any theory as the final theory unless it was beauty.

As a result we look for perfection in the surrounding world but also try to create perfect and harmonic objects, buildings, products as well as mathematical equations. However, in the Universe seeing a perfection of ideas is just the beginning of the concept which interests us here.

[30] This phenomenon is called *spontaneous symmetry breaking*. Great explains is given by example "a pencil on its top" and "the mexican hat potential" in Lederman and Hill, p. 190–191.

[31] Korpikiewicz, p. 62.

[32] Lederman and Hill, p. 198–200.

[33] Steven Weinberg has defined some particular qualities which make theory (physical theory) beautiful. These features are: simplicity, the sense of inevitability, and principles of symmetry, which means that our object is the same from different points of view. S. Weinberg. *Dreams of a Final Theory,* New York: Pantheon Books, 1992, p. 134–137.

[34] *Ibidem*, p. 165.

At a time of global ecological crisis, knowledge of ecological relations between different levels of life on Earth becomes a starting point for scientific, philosophical and even ideological discussions. The holistic paradigm gives new perspectives on these considerations. The key for creating a new formula is a comprehensive and holistic vision of social and ecological categories. If we look more closely at the ecological relations between living nature and the inanimate world we can conclude that these relations may have deeper roots – the living, generative cosmos.

Defining cosmoecology

One of the pioneers in the search for knowledge of cosmic influence was Alexander L. Czyżewski (1897–1964), "the father of heliobiology" and a Nobel Prize candidate in 1938. In his works he was interested mostly in the influence of the sun on life on Earth. He was especially interested in the influence of solar activity on a series of earthly occurrences (both in living and non-living nature). He pointed out that there was a relation between the activity of the Sun and occurrences such as: rainfall, the water level of great lakes, hurricanes, magnetic storms, earthquakes, volcanic eruptions, bird migrations, blossoming of plants, the propagation of animals, epidemics, and even social movements – revolutions and wars. He had started to consider the planetary process as a category of living creature, before James Lovelock had published the hypothesis of Gaia:

> The analogy between physiological mechanisms of living organisms and physiochemical mechanisms of the solar system is more obvious when we consider electromagnetic phenomena (…) interplanetary space is expressed as electromagnetic power, being the *nerve fiber* along which current from the Sun is flowing. Interplanetary space also expresses corpuscular radiation by *the vascular system* which brings nourishment for planetary life.[35]

The history of cosmoecological research is quite long.[36] More recently, in the eighteenth century, geologist James Hutton described Earth as "a kind of superorganism, alive and pumping." Hutton suggests that "planetary physiology" is an appropriate method to study the processed on the planet Earth.[37]

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[35] A. Czyżewski, *Ziemnoje echo słonecznych bur'*. II. Moskow: Mysl', 1976, p. 83.

[36] For instance the writings of Marcus Porcius Cato (234–149 b.c.e.) it is observed that corn is higher when the sun is brighter. The sun's activity has an influence on the weather. The weather affects the cycle of growth of plants. This influences, as a result, the prices of the crops. Reduced sun activity (which symptoms are fewer bright spots, and that affects the darker color of sun) results in a decrease in the harvest.

[37] Weiner, p. 192.

At the beginning of nineteenth century Polish heliophisicist – Jan Mergentaler (1901–1995) – investigated the influence of the sun on the Earth and its organisms.[38] Another important figure is Bohdan Kiełczewski (1912–1998), who worked on biometeorology and chronobiology and discovered particular connections between cosmic factors and life, such as dependences between chromospheric flash and the mortality of organisms. It was Kiełczewski's initiative to propose the term *cosmoecology* for investigations that relate to the influence of the cosmic environment on the environment of the Earth. The genesis of this term derives from the Greek language: *kosmos* – the order, *oikos* – the environment.[39]

In a general overview, cosmoecology considers the influence on life on Earth of such cosmic elements as solar radiation, solar activity, solar and lunar gravitation, meteorite disasters, explosions of supernovae, magnetic and electric fields, changeability, and disturbances of planetary atmospheres. All of these play an important role in such aspects of life such as diversity, the potential of development of life, and the adaptation processes of living organisms. In other words, cosmoecology reflects a deep need to explore the connections between all parts of the universe. This inspiration is expressed by Daryll Reanney who claims that the world of science realized that all should be explained in order to explain the whole.[40]

The significance of raising the issue of cosmoecology lies in its implications for understanding the human place in nature. This is no longer the cosmic perspective detached from human existence, where the question "What really matters for human beings?" dissolves as nonsense in the abstract context of infinite time and space. It is rather a timidly recognized turn toward the present, living Earthly matter, toward a perceptual experience that receives *anima mundi's* messages. In that respect, cosmoecology – by pointing out the influence of cosmic factors on human body – supports the organic metaphor.

Searching for the cosmic influence on the Earth

From the earliest time, humankind was apparently aware of the dependence of life on the earthly biosphere under the sun. Initially only the influence of infrared radiation (thermal) was appreciated. The other types of radiation, such as ultra-violet, until

[38] For further discussion of this problem, see J. Mergentaler, "Aktywność Słońca a biologia", *Urania*, vol. 8 (1979) and idem, *Słońce – Ziemia,* Warszawa: Wiedza Powszechna, 1978.

[39] The first mention of this subject appears in B. Kiełczewski, H. Korpikiewicz. „Perspektywy astrologii naukowej" *Problemy Astrologii*, 1980, p. 7–21.

[40] See Reanney, *The Death of Forever: A New Future for Human Consciousness,* Melbourne: Longman Cheshire, 1991.

quite recently remained underestimated. Only in the last 100 years was corpuscular (solar wind) radiation coming from the Sun recognized together with the existence of the earthly magnetosphere. The magnetosphere protects us not only from this wind (van Allen`s belts), but also along with the heliosphere, from cosmic radiation. Corpuscular radiation and some ranges of electromagnetic radiation increase their own intensity in their dependence on solar activity, which on Earth appears with great frequency: magnetic storms, radio- disturbances and auroras, together with changes of the weather and the climate, changes in the vegetation of plants and migrations of animals, and also increases in the intensity of many diseases, particularly infectious diseases and ailments of the circulatory system.[41]

We seldom realize that it is the Sun that is at the bottom of meteorological occurrences on Earth. The movements of particles of air occur under the influence of the kinetic energy provided by the sun. Occurrences of rock weathering are the direct or indirect results of the sun's radiation (warming of rocks, the wind and the rain), and also its gravitational pull.[42]

From the moment of Earthly origin, cosmic dust, as well as greater blocks of meteor bodies, have been falling onto our planet. It has been estimated that at present moment around 20–50 tons fall every twenty-four hours. Meteoric bodies have inspired countless beliefs, myths and legends, and have caused physical changes. These changes include: the state of the atmosphere (the ozone-layer) and disturbances in the propagation of radio waves. Meteorites are even sometimes a cause of disaster on a large scale. Great collisions, which leave behind evidence in the form of large craters and also cataclysms such as the fabled sunken island of Atlantis, were described by Plato.[43]

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[41] H. Korpikiewicz, *Kosmoekologia z elementami etyki holistycznej. Hipoteza Gai – Uranosa,* Poznań: Wydawnictwo Prodruk, 2002, p. 23–192. The other example comes from the results of the research of a previously mentioned Russian heliobiologist, Czyżewski. He analyzed data of cholera epidemics (cholera asiatica) and the sun activity during these periods. It turns out that the epidemics of the disease appeared at a time of higher sun activity. Similar results hold for epidemics of flu, typhoid, plague and diphtheria. Epidemics of diphtheria and 35% of cases of plague are the only cases among the above mentioned diseases which appear at the maximum intensity of sun activity. The explanation of this fact is a correlation of the above factors. The resistance of the human organism changes in accordance with sun activity. At maximum sun activity, the antiseptic ability of our blood, saliva and gastric juices are decrease. See *ibidem*, p. 83.

[42] The sun and the moon have a major influence on the weather, which entails several occurrences in the biosphere. Both these bodies, by virtue of their own gravitational activity, affect the occurrence of tides of water (which is the most well-known process) as well as in the lithosphere. Each type is liable to be the cause of releasing the energy what may result in earthquakes or the eruption of volcanoes. They are also the cause of tides in the atmosphere which change the weather, so they have an indirect influence on the growth of plants and animal life.

[43] It is worthwhile to mention that there exist the numerous hypotheses which unite the events of great extensions of animals of former epochs (among other things 65 million years ago) with the impact of a col-

Objects more distant from Earth as well as force fields working in the interplanetary space have also influenced life on Earth. The visible radiation sent by stars has provided a source for the navigation of people and animals. Ionizing radiation can be destructive for earthly life. Thus, the eruption of stars near the sun will simultaneously cause the disappearance of the magnetic field of the Earth and the protective framing of the magnetosphere preserving the biosphere.

The electric field of Earth's atmosphere is also involved, since it is necessary for life. It has been proven that animals devoid of negative ions die even when the composition of air is breathable. A condition applies to similar cosmonauts in space ships. The electric field of the atmosphere comes into being mostly because of the cosmic ionization of the upper layers of the atmosphere. The field holds the definite state of electric charges of the Earth's surface and those flowing under its shell in the form of currents producing the magnetic field of our planet. All changes of the magnetic field, both of drastic (the inversion of poles) and of weaker intensity (magnetic storms, per current in the rhythm of the activity of the sun) have a bearing on organisms of plants and animals.

The influence of the gravitational field on the development of organisms remained unnoticed for a long time. For instance, in environments where buoyancy diminishes the activity of the gravitational pull, organisms have different anatomy and physiology, such as other centers of blood production. Experimental research on the Earth and in space show that a slightly higher gravitational pull can affect organisms favorably, especially the growth of muscular and bone tissues, but a longer stay in weightlessness is unhealthy. This explains why some types of sport activities have a better influence than others on health and physical condition.[44]

However, the most profound factors in revealing a connection between the cosmos and the Earth are the cosmic rhythms of life. The universe is full of phenomena which occur rhythmically. Most from them take place under the influence of the movements of orbital bodies and the rotary motion round the axis. Cosmic rhythms modify the living conditions on Earth. They are connected with the beginning of existence of life, and furthermore they are necessary for them.

These conditions have such far-reaching effects that without certain gravitational rhythms – especially those of the moon and its movement, the principal conditions for the life on Earth would not be satisfied. The stability of the orbit is an example of such conditions. Life would not be able to come into being even

lision of Earth with a cosmic body. The dust from of the break-up of such a body can stop solar radiation, which is reflected in the biosphere. Also the dust from dust-clouds of the Galaxy (dark nebulae) can apparently, during the course of the sun around the nucleus of the Galaxy, cause an ice-age and extinctions of species. See more in: E. O. Wilson, *Diversity of Life.* New York: W. W. Norton & Company, 1993.

[44] For example, hiking in the mountains produces much better effects than walking on a flat terrain.

if the remaining parameter of the location of the Earth in relation to the sun was suitable. What is meant here is the distance of the planet from the Sun, its inclination to the ecliptic and its orbits (or turning on its axis).

Cosmic rhythms consist of elements such as: the movement of Earth round the axis, round the sun, the circulation of the moon round Earth and other periods of the circulation and resonances. They have influenced series of specific rhythms of organisms living on Earth. One may mention here the daily, seasonal rhythms or tides. They regulate the physiological reactions of an organism in dependence with the cosmic rhythms. The adaptive response of earthly organisms to cosmic rhythms which are, in fact, biological rhythms is investigated by chronobiology.[45] Even though there might be some speculative component in the conceptualization of the chronobiology, the fact remains that the relation between cosmic rhythms and animate realm on earth is not coincidental.

Gaia – Uranus Hypothesis

A conviction of the relationship of all Earthly matter: both animate and inanimate, and the representation of Earth as a living creature, has persisted in the works of philosophers since before Plato. One of the current versions of this metaphor, formulated in 1970 by James Lovelock, is the hypothesis of Gaia. The idea was based on the innumerable quantity of relationships among ecosystems of the biosphere.[46] Though the concept of Gaia defined by Lovelock has had a strong influence on environmental thought, nowadays it has been broadly criticized.[47] In particular, Lovelock's unquestioningly and indisputably positive attitude toward technology and his engagement with industry, intertwined with his anti-humanist implications of the Gaia metaphor, are very problematic for his critics.[48] For that reason, we understand the Gaia hypothesis only as an inspiring metaphor – an ancient metaphor – whose significance lies in emphasizing the organic aspect of the Earth.[49]

[45] For further discussion of this problem, see H. Korpikiewicz, *Kosmoekologia. Obraz zjawisk*, p. 136–137.

[46] J. Lovelock, *Gaia A new look at life on Earth.* Oxford: Oxford University Press, 1979.

[47] There are not enough possibilities for the verification of this hypothesis in an empirical way, so it turns to be basically an intellectual exercise. For further discussion of this problem, see W. Zweers, *Participating with Nature. Outline for an Ecologization of our World View*. Transl. J. Taylor, Utrecht: International Books, 2000, p. 48–49. For the comprehensive critique of the Gaia hypothesis, see E. Kohák, *The Green Halo. A Bird's View of Ecological Ethics*. Chicago and La Salle: Open Court, 2008 , p. 129–135.

[48] See, for instance, Kohák, p. 133–135.

[49] Even though the Gaia hypothesis raised numerous problems, still it is consider as a useful metaphor worth considering. See, for instance, T. Volk, *Gaia's Body. Toward a Physiology of Earth*. Cambridge,

This line of exploration allows us to consider together, under a common name, the environment connecting the Earth and the Heavens, where all the occurrences are joined. This hypothesis, by analogy to the hypothesis of Gaia, has been given the double name composed of the names of the Greek Gods of Earth (Gaia) and Heavens (Uranus): the hypothesis of Gaia-Uranus.[50]

The interesting inspiration that has been undertaken by philosophers and ecologists from the Gaian view is the juxtaposition of the organic with the mechanistic model of the world. Obviously, the Gaia hypothesis is not the only inspiration in a course toward a holistic science by revealing the role of *the organic* perception of an animate characteristic of the world. Of course, this recognition is not a new one. As an example, as Fideler illustrates, twentieth-century physics offers grounds an organic approach toward nature:

> Because of the implications of quantum mechanics, chaos theory, and the realization that we inhabit an evolutionary, self-organizing universe are starting to work themselves out, it is no exaggeration to say that we are truly living in the midst of a new Cosmological Revolution that will ultimately overshadow the Scientific Revolution of the Renaissance. And if the mechanistic worldview left us stranded in Flatland – a two-dimensional world of dead, atomistic matter in motion – the merging cosmological picture is far more complex, multidimensional, and resonant with the traditional Neoplatonic metaphot of the living universe.[51]

However, in social sciences these inspirations remain distant. Freya Mathews explicates this issue in the following way:

> In Einstein's cosmology in particular, there were intimations and interpermeation – of everything participating in everything else, of mutual holding and enfolding at the structural base of existence. (…) Yet such ideas were hard to find in our culture at that time. (…) from the viewpoint of modern Western thought in general, the idea of a world alive with meanings of its own appeared atavistic, a throwback to a primitive anthropomorphic realism that had been superseded and invalidated both by scientific culture and by epistemological insight of modern philosophy.[52]

Massachusetts, London, England: The Mit Press, 2003, ix: "Even if the system I portray is not the same as Jim Lovelock's Gaia, I still use this term for what I consider equvalent – the biosphere – and give Lovelock credit for pointing to aspects of its integration. (…) there is an intimate connection between life forms and the composition of atmosphere, ocean, and soil."

[50] First mention on Gaia-Uranus Hypothesis appeared in: H. Korpikiewicz, *Koncepcja wzrostu entropii a rozwój świata,* Poznań: Wydawnictwo Naukowe UAM, 1998, p. 121–138.

[51] Fideler, p. 142.

[52] F. Mathews, *For Love of Matter. A Contemporary Panpsychism*. Albany: State University of New York Press, 2003, p. 3.

Insight from the Gaia hypothesis became an inspiration to a "participatory understanding" of the world, that "makes peace with nature by rediscovering and embodying a world-view that reconnects us with a deep sense of participating in a cosmos suffused with intelligence, beauty, intrinsic value and profound meaning".[53]

There are at least two levels of Gaia-Uranus hypothesis (as well as cosmoecology) which may carry import for environmental thought. The hypothesis reflects the major change in the scientific approach toward the Earth: from an objective, abstract description of the world, which assumes the static image of the Earth, toward a living picture in which everything is connected and communicates, and in which humans are embedded.

The shift from the dominanting interpretation of the mechanical metaphor toward the organic one leads us through various revolutions in the scientific method that follows from Descartes to a new orientation in how we perceive the world, while placing importance on the question of perception.

This change has been grasped by Abram, who draws on Maurice Merleau-Ponty's phenomenology of the body and vision in order to explicate the perceptual implication of the Gaia Hypothesis. Abram suggests that we usually say in our common language: "we dwell on the Earth" instead of "that we live within the Earth", whereas the Gaia Hypothesis implies that "we shall have to admit that we live *in* this planet rather than on it".[54]

To understand the Gaia-Uranus hypothesis means to be immersed in the living world. Only from within that world the distinction between space and time is unified into the experience of pulsing, rhythmic Earth where everything is connected to each other.

The fluid creativity commonly associated with the human mind or intellect is, actually, an extension (and recapitulation) of a deep creativity already underway at the most immediate level of bodily experience. For Merleau-Ponty, it is the organic, sensitive body itself that perceives the world and, ultimately, comprehends the world – not some interior and immaterial mind.

Lincoln Michell considers two models of the possibility of (scientific) knowledge: "one *dis*-embodied and inherited from Descartes; the other *em*-bodied and *inspired* by the Gaia hypothesis and phenomenologically conceptualized by Merleau-Ponty." Doubtless, Michell emphasizes the importance of the change in the scientists' attention which is called "*the Gaia shift*".[55]

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[53] Harding, p. 19.

[54] D. Abram, *The perceptual implications of Gaia,* op. cit.

[55] L. Michell, „Embodied Perception in a Breathing World", in: S. Edwards and P. Sherwood (eds.), *Breath Based Mental Health Promotion*, Durban, South Africa: Aim Print, 2008.

It has been shown that the Gaia hypothesis inspired both ecologists as well as philosophers' attempts to find an alternative approach to the Cartesian epistemological model which is followed by the body-mind distinction.

Yet the Gaia-Uranus Hypothesis does more to recognize the primacy of perceptual experience and the "earthly" locus of *logos*. Cosmic influences on life on earth (daily rythms that determine the processes of earthly ecosystems – vegetation etc.) reveal how subtle and organic are the bodies and relations between them (both human and non-human), in contrast with the mechanistic model of body and world. The rhythmic characteristic of life – one of the key biological concepts – is very obvious. At the same time, the image of nature that has drawn upon the scientific concepts that objectified time and space (necessarily by separating them) retains the associations with the static and mechanic. This is the case even for twenty-first century science.

As much as the implication of the Gaia Hypothesis is turned toward the invisible air and the breathing Earth, the Gaia-Uranos Hypothesis emphasizes, perhaps even exaggerates, the key of the rhythms on our planet.

> According to David Abram, the return to senses and perceptual experience can be realized by "re-awakening the forgotten intimacy and solidarity between the human animal and the animate Earth, that we have a chance of slowing and finally constraining the onrushing pursuit of knowledge and technological process that we manifest at the expense of this breathing world".[56]

> Abram, drawing on Merleau-Ponty's notion of *the flesh of the world*,[57] suggests an alternative way of conceiving the earthly biosphere (in contrast to mechanistic one); it is the biosphere "as it is experienced and lived from within by the intelligent body – by the attentive human organism who is entirely a part of the world that he, or she, experiences".[58]

According to Abram, perception is communication and communion: "Perception, then – the whole play of the senses – is a constant communion between ourselves and the living world that encompasses us".[59] Thus, the question

[56] Harding, p. 50.

[57] As Abram asserts, "One of the major accomplishments of his [Merleau-Ponty's] investigations was to show that the fluid creativity that we commonly associate with the human mind, or intellect, is in actuality an extension (and recapitulation) of a deep creativity already underway at the most immediate level of bodily experience. For Merleau-Ponty, it is the organic, sensitive body itself that perceives the world and, ultimately, thinks the world — not some interior and immaterial mind. (…) Merleau-Ponty disclosed this perceptual interchange between body and world as the very foundation of truth in history, in political thought and action, in art, and in science." See in: Abram, *The perceptual implications of Gaia*.

[58] See Stephen Harding interpretation of Abram's work: Harding, p. 47.

[59] Abram, *The perceptual implications of Gaia*.

arises: what does that mean for us? How can we participate and communicate with our environment?

The answer might be found in the works of Aldo Leopold. That kind of experience – the communion between human being and its environment – inspired him to deeply understand his mission. In *The County Sound Almanac* Leopold describes his encounter with a dying wolf that he shot during a hiking and hunting trip. It is worth mentioning that at this time wolves and hunters had the same species of deer as prey and Leopold promoted a conservationist project that assumed a reduction of the wolf population in the United States in order to eliminate "competition" between hunters and wolves. During that encounter with an old wolf, Leopold is unexpectedly thrilled by a green flame in her dying eyes. And suddenly, his perception of place transformed into a new experience – the experience of a connection with the *anima mundi*:

> There was something new to me in those eyes, something known only to her and to the mountain. I thought that because fewer wolves meant more deer, that no wolves would mean hunter's paradise. But after seeing the green fire die, I sensed that neither the wolf, nor the mountain agreed with such a view.[60]

In order to understand what Leopold means by the statement that the mountain does not agree with his view, we will follow the interpretation conducted by Stephan Harding. The word "mountain" has been used in the sense of "the wild ecosystem in which the incident took place, for the ecosystem as an entirety, as a living presence with its deer, its wolves and other animals, its clouds, soils and streams. For the first time in his life, Leopold felt completely at one with this wide ecological reality. He felt that it had a power to communicate a sacred magnificence. (…) He experienced the ecosystem as a great being, dignified and valuable in itself".[61]

We argue that precisely in this sense we can read and interpret the idea that only nature conceived as a person can be saved. To apprehend the world in this way cannot mean anthropomorphizing it. It means to be immersed in a lived universe

[60] A. Leopold, *Thinking Like a Mountain*, in: idem, *A Sand County Almanac.* New York: Oxford University Press, 1966, p. 129–133. In this famous essay, author questions the issue of perception. According to his commentator, Daniel Berthold, Leopold narrative is an allegory of self-transformation that, ultimately, pertains to the human perception. The way how we perceive the world determines, ultimately, what will be recognized. As Berthold concludes, "'To 'think like a mountain,' however mystical, however extraordinary its demands upon our perception, has highly practical ecological consequences: to think like a mountain is to think ecologically, from the perspective of the welfare and flourishing of what is normally 'outside' and 'other' to us, the environment itself." See more in: D. Berthold, *A. Leopold: In Search of a Poetic Science*, *Human Ecology Review, Vol. 11, No. 3, 2004, p. 211.*

[61] Harding, p. 43.

and be able to listen to what is being communicated. And this is precisely the heart of environmental ethics, a holistic ethics that recognizes the Other – nature – with neither scientific nor cultural myths about the nature of nature. According to Timothy Morton, the main obstacle which keeps humanity at a distance from environment is our idea of nature: a social construct. The biggest paradox occurs, according to Morton, in the recognition that "the best way to have ecological awareness is to love the world as a person".[62]

The world loved as a person has to be understood in a way that follows, for instance, from the perceptual implications of cosmoecology. In that respect, "the communication and the communion between humanity and nature" is possible not as a radicalized call for a denial of the constitutive elements of our culture, but rather as a "natural", pulsing experience of existence. Environmental philosophy has developed as a result of the recognition of the ecological crisis affected by human actions. However, the ecological crisis is an extension of a crisis in Western culture. Nonetheless, the call for a "new spirituality", as an eventual solution, does not mean a radical change in our nature – it would be rather a recognition of forgotten potentialities. Therefore, the subject to change is not "human nature, but the cultural orientations of the global society".[63] In this respect, David Abram emphasizes the cultural assumptions, which stand behind the distance between human beings and nature:

> All of us raised in the culture that asks us to distrust our immediate sensory experience and to orient ourselves instead on the basis of an abstract, "objective" reality known only through quantitative measurements, technological instrumentation, and other exclusively human involvements.[64]

What is interesting in Abram's approach is the fact that, actually, we do not need to build more sophisticated theories, ideas or myths about nature and human relationships with the environment. This recognition has been explicated by Erazim Kohák, who observes: "we need neither mystical intuition nor alternative realities. Clear perception and faithful articulation of pure world as constituted by life will do quite nicely."[65]

This may be an inspiring and instructive point in searching for onto-epistemologies that are more adequate for ecological problems. The crisis can be transformed from our current position by means of our reason and perception. We do not need

[62] T. Morton, *Ecology without Nature. Rethinking Environmental Aesthetics.* Cambridge, Massachusetts, and London, England: Harvard University Press, 2009, p. 20.

[63] Kohák, p. 9.

[64] Abram, *Language And The Ecology of Sensory Experience...* , p. 217.

[65] Kohák, p. 28.

other myths or alternatives; rather, alternative methods of approaching the crisis (of culture and of environment) are needed. Let us conclude with a quote from Giorgio Agamben that remarks on the consequences for human beings:

> In our culture, man has always been thought of as the articulation and conjunction of a body and a soul, of a living thing and a *logos*, of a natural (or animal) element and a supernatural or social or divine element. We must learn instead to think of man as what results from the incongruity of those two elements, and investigate not the metaphysical mystery of conjunction, but rather the practical and political mystery of separation. What is man, if he is always the place – and, at the same time, the result – of ceaseless divisions and caesurae? It is more urgent to work on these divisions, to ask in what way – within man – has been separated from non-man, and the animal from human, than it is to take positions of the great issues, on so-called human rights and values. And perhaps even the most luminous sphere of our relations with the divine depends, in some way, on that darker one which separates us from the animal.[66]

The organic metaphor enables us to overcome dualisms by linking *logos* with living things. It does not aspire to substitute the mechanistic perception that provides grounds for many scientific methodologies. In that respect we can understand the juxtaposition of those two approaches not as competing, but as at least partially complementary.

[66] G. Agamben, *The Open. Man and Animal*. Kevin Attell trans. Stanford, California: Stanford University Press, 2002, p. 16.

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Korpikiewicz Honorata, Dereniowska Małgorzata

Listening to Anima Mundi: The Organic Metaphor in the Cosmoecological Perspective

Keywords: cosmoecology, Gaia-Uranus Hypothesis, organic model of perception, mechanistic metaphor, Anima Mundi.

Abstract: This paper is an attempt to revise an organic epistemological approach toward nature. The sources for such a view are found in the metaphor of the Earth as a living organism, which can be traced even to ancient Greek philosophy. Drawing on the notion of cosmoecology and the Gaia-Uranus Hypothesis, we re-think and supplement the holistic perspective in environmental ethics by emphasizing the role of the embodied of nature, and by turning our attention back "from the heavens to earth".

Słowa kluczowe: kosmoekologia, hipoteza Gai-Uranosa, organiczny model percepcji, metafora mechanistyczna, Anima Mundi.

Abstrakt: Artykuł jest próbą rewizji organicznego modelu poznania natury, którego źródła czy inspiracje wywodzą się z metafory Ziemi jako żywego organizmu. Inspirując się kosmoekologią oraz hipotezą Gai-Uranosa dokonamy analizy i uzupełnienia perspektywy holistycznej w etyce środowiskowej oraz wskażemy na rolę ucieleśnionego modelu percepcji dla rozwijania postawy etycznej odpowiedzialności wobec natury.