

The Value of Biocosmology for Today and Some Issues on the Path toward its Practice: Comments on “Addressing the Scientific Community – the *Biocosmology Initiative*”

Xuefang CHI¹ & Ping YE¹

Значение Биокосмологии для современности и некоторые вопросы на пути к ее практическому применению: Комментарии к «Обращению к научному сообществу – Биокосмологической Инициативе»
Сюэфанг ЧИ¹ и Пинг ЙЕ¹

“Addressing the Scientific Community : the *Biocosmology Initiative*” (Hereinafter referred to as the “Initiative”), which is well suited to the needs of the “Integralist sociocultural era” in the 21st century, is the engine propelling substantive changes away from the “Transcendentalist or Dualist” attitude toward modern scientific knowledge. The thematic content is a highly condensed summary and generalization of the latest research findings widely recognized by Biocosmologists so far. It not only provides basic beliefs and principles for the academia that are cross-era, cross-disciplinary and cross-cultural nature as advocated by “big science”, but also presents a way of scientific understanding and thinking, as well as a picture of scientific knowledge structure oriented toward the future propelling the construction of the global community with a share future for humanity that are revealed in the development of human civilization as the world undergoes tremendous changes unseen in a century. However, since the Initiative is aimed at the entire academia and the entire intelligentsia, certain issues deserve further deliberation and discussion if Biocosmology and its foundational principles are to be taken to be the basis for scientific and cultural activities in the Anthropocene, particularly the 21st century.

Firstly, the term “global crisis” is used in the sense of the timing of putting forward the Initiative, but it is overly generalized without specifying what is closely related to the ultimate concern of Biocosmology - Entelechy. We should remember the “global” in “global crises” highlights threats to the lives and health of all human beings. If so, we can easily see that the COVID-19 pandemic is currently the most urgent global crisis faced by mankind, and may well be the greatest “global crisis”

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¹ Harbin Institute of Technology, Weihai, Shandong, CHINA.

for our generation.² Some scholars believe that the virus has become a new historical subject in the Anthropocene, and an inseparable part of human life, society and history. The outbreak and speed of the onset of the virus will also inevitably prompt us to reflect on the overall backlash of nature and other non-human substances and forces on us. At the same time, the COVID-19 outbreak also reminds us to reflect on our preparations for a possible super-disaster.³ Covid-19 is definitely not our last encounter with viruses. As man-made disasters appear more and more in the form of natural ones, and more and more man-made disasters are superimposed, we will perhaps find, when we think back to 2020 many years later, that this may be a possible first year when nature begins violently to fight against mankind.⁴ This viewpoint has epoch-making significance for it indicates that the COVID-19 had revealed the “tip of the iceberg” of “the conflict between life and development”. However, the Initiative adopted at the 22nd International Symposium on Biocosmology ignored the epoch-making significance of COVID-19, thus missing a great opportunity for the advancement of Biocosmology and the foundational role it can provide the Initiative.

In fact, the ongoing worldwide COVID-19 pandemic is a manifestation of the impact of technological and industrial revolutions on the universe-nature at the virus-level. Hitherto, the development of the above revolutions has not only transformed the natural substances (material revolution), energy (energy and power revolution), and information (computer, Internet, big data and cloud computing and other related scientific and technological revolutions), but it has also embarked on profound transformations of natural life (scientific and technological revolutions in terms of transgenesis, gene editing, cloning, genetic engineering, creation, modification and restoration of species as well as their germplasm and biodiversity). As a result of that, the issue of “life and development”, following those of “peace and development” and “environment and development”, is attracting worldwide attention and may become the theme of the development of human civilization in the 21st century. The “one front and two flanks” development pattern of the new era - “peace and development” and “environment and development” centered around the axis of “life and development”, has rich connotations: a new cosmology (on Life and Development”), a new peace and development theory (on a Community with a Shared Future for Mankind), and a new environment and development theory (on a Community of Life for Man and Nature). We believe that, as mankind faces the future, the post-

² Yuval Harari, author of *A Brief History of Humanity*, published “*The World After Coronavirus*” in Financial Times, March 20, 2020.

³ The so-called “super disaster” is a disaster on the scale of humanity and the whole planet. If the human race encounters a “super disaster”, how to plan without external assistance is the core problem of the contradiction between life and development.

⁴ Yang Xiaoli. Non-human viruses: life companions and historical subjects of the Anthropocene. *Journal of Shenzhen Social Sciences*, 2021: No. 1.

epidemic era, this development pattern is precisely the scientific-cultural theoretical basis of the Initiative. The dialectical materialist viewpoint running through the concept of life and development is that development involves not only science, technology and industry, but also a community with a shared future for mankind and a community of human and non-human life forms. In the harmonious development of the “Triadicity”, survival is the bottom line, and health is the goal. This may also be the value of the ultimate goal of the “Triune-Triadological” scientific knowledge advocated by Biocosmology, that is, the contemporary value of Entelechy.

Secondly, there are a number of conceptual issues in the Initiative. To start with, the word “science” used in the Initiative is not (natural) science in the narrow sense, but general science, or big science. In other words, “science” here is defined as the sum total of knowledge about all natural and man-made objects, including all divisions of sciences such as natural science, social science, thinking science, philosophy, mathematics, interdisciplinary science and synthetic science. This concept of big science is not only for the convenience of cognition, nor does it just serve the need for consistency and unity of thinking and logic, still less is it because individuals or academic communities feel it is important. Instead, as Whitehead puts it, whether the sense of importance is true lies in whether it corresponds to “matter-of-fact”.⁵ The matter-of-fact of the Initiative is to call on the academic community to consider and acknowledge the “essential return” from the traditional Dualist or Transcendental science to the Triadicity theory of scientific knowledge.

In addition, the concept of “physical subject” is relatively vague, so it is necessary to clarify the subject of human consciousness. Physical subjects range “from physical fields and energies, to a particle, atom, molecule, bacterium, subject of plant, animal and sociocultural (human) worlds; or, in Vernadsky’s approach, the stratum of Geo-, Bio-, Socio- and Noosphere”. From the epistemological and intellectual perspective, the classification of such diverse things as human, animals, plants, energy, particles, molecules, and noosphere, whether dead or alive, whether conscious or unconscious, into one category, i.e., the “class of tangible things” carried over from Aristotle’s time, is in accordance with the logic of classification of Aristotle’s works, but the use of multiple categories in this way is epistemologically unacceptable. For the Initiative states that “wherein every physical subject is naturally subordinated (subject to) and follows the single (universal, timeless and omnipresent) laws (fundamental principles)”, which confuses the human cognitive subject and the basic particle subject, claiming that both would “naturally obey and follow the law of unity”. And so far, it is not possible to speak epistemologically about the so-called “particle subject of knowledge”.

⁵ Alfred North Whitehead, *Modes of Thought*. New York: MacMillan Company Press, 1938, p. 4.

If Aristotle were alive today, it would be highly unlikely that he would agree to this interpretation or application of his concept of “physical subject”.

Ontologically speaking, the Aristotelian “classification of souls” gives a good classification, highlighting both the commonalities and particularities between humans and other living things, with differences embedded in their similarities. Human beings are endowed with not only vegetative souls (as in plants) and sensory souls (as in animals), but also rational souls. Therefore, simply the term “physical subject”, as is used in the Initiative, does not suffice for describing the human cognitive subject or the human rational subject. Third, the concept of Biocosmology needs further elaboration. The Initiative states that “the Biocosmological approach first argues that the real world is a Single (one whole) natural Dynamic Living Biocosmos”, but such a definition is overly general. Logically, the higher the level of generalization of a concept, the larger its extension and the smaller its connotation. Thus, the human body as a microcosmos, the earth as the mesocosmos, and the entire Nature (the universe) as the macrocosmos are all “the Single (one whole) natural Dynamic Living Biocosmos”. What, then, is the purpose of proposing that concept? We believe that purpose of concept is to help derive the following principles: “the Dynamic (Hylemorphist and Entelechist) coherent oneness of a subject, Bipolarity, Triadicity-in the Triune, Circular Cyclicity, Quaternity (Four-sidedness), Pentavalence, the ontogenetic (the subject life path) finitude”, as listed in the Initiative.

From the perspective of epistemology and theory of knowledge, these are the principles which humans have discovered and used to control destiny,⁶ but the Initiative fails to reflect this voluntarist nature of human consciousness. In fact, from an ontological point of view, the body as the microcosmos, the earth as the mesocosmos and the universe as the macrocosmos constitute a three-tier gradually expanding structure of concentric circles. There is a three-dimensional structure of consciousness, life and environment in the microcosmos of human body, from which, as per the holographic theory, can be derived that the mesocosmos and the macrocosm have likewise three-dimensional structures. In other words, the prefix “bio” in the English word “Biocosmology” can mean either “biological” or “living”, or even “organic” by extension. All three meanings exist, and the Chinese version of the Initiative has it translated as *youji* (organic). We suggest the translation of *shengming* (life) for “Biocosmology”, which would be rendered *shengming yuzhou lun* (life

⁶ The Chinese expression is “制天命而用之”; the English expression is “use it to control destiny”. This is a famous aphorism of Xunzi, an ancient Chinese Confucian thinker. Its meaning : Human beings not only can understand and conform to the law of nature, but also can discover the law of interaction between human and nature, and then human beings can change the state of nature, create natural things that benefit human beings and nature.

cosmology). Is there anything new in such a translation? Indeed, there is, for we need to confirm a new concept with the idea of a “life cosmology”.

“Life cosmology” refers to the comprehensive theory of the relationship between humans and the universe of life, including the universe of human consciousness, the universe of life and the organic universe. The “organic universe” includes the universe from the physical field and energy to the particle, the atom, the molecule and the macromolecule. The universe of life includes the universe of animals (including human beings), plants and microorganisms. The universe of human consciousness includes general consciousness, special consciousness and concrete consciousness. For example, Transcendentalist scientific consciousness belongs to general consciousness, and the Dualist one, to special consciousness, while pragmatism and realism belong to concrete consciousness. Organicism belongs to special consciousness, while holism or system theory belongs to general consciousness. Amending the above is significant in three ways : *First*, it highlights human voluntarism in the Anthropocene and the central position and value of human consciousness in the universe of life and the organic universe, and gives flesh to the noosphere (the sphere of human consciousness) theory of Vladimir Ivanovich Vernadsky, which in turn helps to clarify the hierarchical structure of the “Triune-Triadological” theory of scientific knowledge in the noosphere.

Second, the purpose of “life cosmology”⁷ is to remind humans of their moral responsibilities for the universe, i.e., human intervention or even transformation of the inherent existence mode of the Entelechy of the biocosmos or certain components of the organic cosmos, or the movement toward the Entelechy would be right if it does not harm their integrity, stability and beauty, and be wrong otherwise.⁸ *Third*, the Initiative states that “presently, in the twenty first century, when the Integralist sociocultural era is inescapable, and which naturally comes into its own – Integralism equally requires an understanding of both poles of scientific knowledge; because it equally uses (integrates) their powers and means to produce true Integralist cultural knowledge.” In essence, the Integralist sociocultural process happens at the level of human consciousness. According to the Doctrine of Four Causes by Aristotle, we believe the material cause here is to replace the Transcendentalist/Dualistic theory of knowledge with the Triadic theory, the formal cause is the subjectivity of human consciousness of Vernadsky’s noosphere, the moving cause is both the pull of the development of the Integralist sociocultural era and the thrust of moral consciousness with which humans handle the

⁷ The Biocosmology is further extended to be interpreted as the life cosmology, where life can be interpreted as both human (biological and cultural) life and other non-human(biological) life.

⁸ “original whole” refers to the overall natural state of the natural thing in the relation between human and nature in which it is located.

contradiction between survival and development, and the final cause is the harmony and balance among the general, the special, and the concrete Entelechist.

Thirdly, the relationship between the “Triune-Triadological theory” and the “Transcendentalist/Dualist theory” of science, and that between organicism and integralism need to be further clarified. Epistemologically speaking, it is almost impossible to integrate organicism with the modern Transcendentalist/Dualist science, which is at present absolutely dominant because, from the perspective of organicist (naturalist) science, the three types of scientific knowledge – the Transcendentalist/ Dualist, the Organicist, and the Integralist – “have equal rights.” Apparently, it is what the English cross-cultural scholar C. P. Snow calls the “schism between science and culture”. In essence, it exposes the crisis of Western Transcendentalist/Dualistic scientific paradigm since the 17th century. It is almost impossible get out of the crisis by simply replacing the Transcendentalist/Dualist theory of scientific knowledge with the “Triadic theory” from the perspective of epistemology and the theory of knowledge.

But ontologically, all instruments, machines, equipment, and facilities, or even all artificial and natural objects created by the Transcendentalist/Dualist science, technology and engineering have to function on land, in sea, in the polar regions, or even on the moon or Mars. They are not dualistic beings, but exist in the organic system of man and Nature, or has an organic and integrated existence with inherent Entelechy. Besides, they are artificial objects. Humans are responsible for recycling and re-using them in accordance with the ecological principle of recycling, in a manner that is harmless to the biocosmos and the organic cosmos. The current problem is that the manufacturers, users, and recyclers (in the laboratory, the factory, and in engineering projects) do not belong to one organization, nor are they in one scientific community, but the overall division of labor among the three reflects the application of the “Triadic theory of science”. As the proverb has it, facts speak louder than words. It is not by reasoning that one can claim “Triadic theory of science” should replace the Transcendentalist/Dualistic theory of science, but the necessity for such replacement has to be tested through praxis. At the level of operation, the systematic viewpoint of the “Triadic theory of science” as epistemology may be implemented if we explicitly require the establishment of systematic and integralist outlook in the three kinds of organizations mentioned above. The Initiative is somewhat pessimistic about this for “truth is rightly called the daughter of time and not of authority” and “the main law of history is its cyclicity....” That has to be changed. The Initiative is an appeal to “people of foresight to unite” so as to accelerate this change. In fact, the worldwide environmental movement, especially the Green University movement, is helping not only to accelerate this change,

but also to train top-notch professionals equipped with a “Triadic knowledge structure” to help bring about this change.

Fourthly, the development of the environmental movement throughout the world to the stage of ecological civilization movement is an important theoretical front for breaking the “orthodox” dualism of scientific knowledge and truly carrying out and implementing the “Triadic theory of scientific knowledge”. The worldwide environmental movement originated from a rational reflection on the causes of the unprecedented global ecological crisis⁹ in the second half of the 20th century. It made people realize that the root cause of the crisis lies in the “orthodox” view of human progress through the “conquest” of Nature, that of human development based on economic determinism, and an ethics ignoring the relationship between man and Nature – the view of civilization that stresses only ethical relationships among humans, as well as the mode of social production, life styles, behavior patterns and modes of thinking based on industrialism and consumerism. It is impossible to get out of the crisis through science and technology alone, or through industry, nor can the crisis be resolved through country-by-country changes. Rather, a global ecological revolution is necessary.

This ecological revolution is essentially one of ecological concepts whose purpose is to construct the ecological world outlook, ecological values, ecological rights and ecological interests based on the ecological framework for the relationship between man and Nature, and establish the beliefs, attitudes and behavior norms of respecting Nature. By now, this revolution has gone through two stages. The first stage is the transformation of people’s outlook on the environment, and the representative achievements of this stage include Carson’s *Silent Spring* (1962), *Only One Earth* by Barbara Ward and René Dubos (1972), the World Environmental Protection Movement promoted by the World Conference on Environment and Development for 20 years from 1972 to 1992. The second stage is the transformation of the development view, with notable achievements being *Our Common Future* (the Brundland Report) by the World Commission on Environment and Development (1987) and “Agenda 21” adopted by the UN World Conference on Environment and Development (1992), which have helped to transform environmental protection movements into the global movement of sustainable development with coordinated developments of economy, society, and environment. In

⁹ Global ecological crisis refers to the destruction of the structure and function of the earth's ecosystem caused by the development of science and technology, industrial production and economic development, as well as the pollution of the earth's ecological environment, which leads to the phenomenon that is not suitable for the survival of human beings and all life on the earth. The main manifestations are: the destruction and depletion of natural resources, the deterioration and pollution of the ecological environment, the destruction and accelerated loss of biodiversity, the imbalance of human society and the increase of human malignant diseases, as well as the abnormal global climate, the accelerated melting of the Arctic ice cap, the accelerated rise of sea level and so on.

institutes of higher learning, this is mainly reflected in the green university movement throughout the world and innovative approaches to green education.

The year 1990 saw the birth of the Talloires Declaration on building green universities¹⁰, which has been signed by presidents of hundreds of universities and colleges throughout the world. It is a landmark for the incorporation of environmental awareness, culture, knowledge, responsibility, policy, as well as environmental protection for the purpose of sustainable development into the education and teaching process of colleges and universities. J. A. Palmer, a British environmental education expert, proposed that environmental education should not only adhere to the tradition of positivism or empiricism, but also develop the traditions of hermeneutics and critical theory. Based on that, he discovered the 5 most important factors affecting people's view of Nature: life in the wild (including experience with wilderness), school education, influence of parents and other relatives, influence of relevant organizations, and influence of TV and other media.¹¹

Now the ecological revolution has entered a new stage (2007-), that of world ecological civilization movement, which is mainly signaled by changes in the concept of civilization. China took the lead in proposing and practicing ecological civilization, aiming to become not just a participant in the world ecological civilization movement, but also a major contributor and leader in that movement.¹² As the source and cultural centers of the chain reaction in outlooks on the environment, development, and civilization that was triggered by this ecological revolution, Chinese institutions of higher learning, institutes for scientific research, culture and art agencies, news media, and other institutions, in accordance with the "Overall Plan for the Reform of the System of Ecological Civilization" and the "Indices for Green GDP" promulgated by the national government and taking the demonstration zones, model zones, and experimental zones for ecological civilization as carriers, have been active in promoting the social transformation toward ecological civilization.

Moreover, the movement to build green universities in China has had a history of more than 20 years. The idea of green university is embodied in many aspects, including green education, green research,

¹⁰ See: Wang Min, Wei Dongying, Zhang Ying. "Emergence and development of green universities," *Journal of Environmental protection*, 2010: No. 13.

¹¹ J.A. Palmer. *Environmental Education in the 21th Century: Theory, Practice, Progress and Promise*, Routledge, 1998.

¹² XI Jinping pointed out that: "If ecology thrives, civilization thrives; if ecology declines, civilization declines". The Chinese government has realized that it needs to properly handle the contradictions between development and protection, between clear waters and lush mountains and mountains of gold and silver, and between natural value and natural capital. It is necessary to move from industrial civilization to ecological civilization. Without the transformation of civilization concept, it is impossible to fundamentally change the concept and behavior habit of "conquering" nature.

green campus, green culture, green management, and so on. Green education, in particular, has been highly successful: courses in ecological philosophy, ecological ethics, ecological civilization and social transformation are being offered on many campuses, expeditions are organized for students to go into various communities and the wilderness to experience society and Nature through various activities, as are projects for them to conduct research on environmental and social issues, and sessions for “discussion on social transformation” from industrial civilization to ecological civilization are organized for students to express and debate their views. All these initiatives have helped college students to change from a spontaneous to a conscious recognition of the harmfulness of the Dualism in the “orthodox” view of “conquering Nature” and that of a moral education which ignores ecological ethics of organicism and holism. Both the “Three Green Projects” of Tsinghua University and the “One Center, Three Advances” model of Harbin Institute of Technology in promoting the building of green universities in China are of great significance for cultivating science and engineering students to become “Earth-friendly engineers”.¹³ They directly facilitate the entrance of the “Triadic theory of scientific knowledge” to the college campus, to the classroom, and to the student’s mind. It is no exaggeration to say that the worldwide environmental movement, especially the green university movement, still plays an important role worth our attention for breaking away from the “orthodox” Dualism of scientific knowledge and truly carrying out and implementing the Triadic theory.

Fifthly, the essence of the Initiative is to call for the scholarly community to recognize the necessity of replacing the hegemonic Transcendentalist/Dualistic theory of scientific knowledge with the new “Triadic theory”, but it ignores a key element for the switch to the new theory of scientific knowledge, namely the stage of civilization development. According to Danilevsky, each civilization is the embodiment of its own (natural) culture-historical type. And the latter (in each individual case) naturally leads the civilization subject to recognize and realize its inherent mission and position in the world development. and the latter (in each individual instance) – leads the civilizational subject to realizing and actualizing its inherent mission and place in the world evolution. For example, the results of the dominance of the Anglo-Saxon civilization “have manifested themselves in a sharp (radical) adherence to a unified Transcendentalist cosmology that enables the ideal-abstract (mathematical) conditions and possibilities of human consciousness’s successful confrontation with the external (admittedly Chaotic) material world – cosmos”. Since the 17th century, the world-cosmos has existed for man to re-create Nature – with the ultimate aim of subjugating natural forces

¹³ Ye Ping, Chi Xuefang. *From Green University Movement to National Ecological Civilization Publicity and Education*. Beijing: China Environmental Publishing Group, 2018: p. 48–59.

to human will. Human beings have been constantly plundering the wealth of Nature in order to modernize their society. Scientific thought as an important basis for that endeavor unconditionally obeys the basic principles of the Transcendentalist cosmology, i.e., the principles of objectively and empirically examining the world using mathematical and physics tools. Fundamentally speaking, in order to transfer the Transcendentalist cosmology and the Dualist view of science to the organicist view, it is necessary to abandon pragmatism as the guiding ideology of science, and even more important to change the Anglo-Saxon civilization that underpins the development of scientific thought.

In this regard, the Chinese civilization, especially in the Chinese society today, has the potential for leading mankind out of its current dilemma. Currently, ecological civilization has been widely accepted in China as the direction for the future development of human civilization. The Chinese President Xi Jinping, in particular, has declared that China has put forward and put into practice the construction of a global community with a shared future for mankind and a biocommunity of human and nature at international conferences attended by heads of state throughout the world. The ideal of the two communities has become the consensus of all Chinese people.

Some scholars regard a life-oriented culture as the foundation of ecological civilization, and have dug into Chinese bioethical traditions, reinterpreting and reconstructing them for the modern era. Chi Xuefang has constructed a mode of understanding and thinking with a “four-dimensional structure” based on a distinction between bioentity and biocollective, and that between bioontology and bioepistemology.¹⁴ She has given a comparative and systematic interpretation of the bioethics tradition of China all the way from the Ancient dynasties Xia, Shang and Zhou to the later imperial of Yuan, Ming, and Qing, based on that, suggests that the traditional theories of Chinese Confucianism, Taoism and Buddhism are important not only for explaining the life and death process of individual life and the nature of life, but also for explaining collective life, including family life, national life, and the cosmic or natural life. Moreover, she has proposed that those intellectual traditions of China can provide good ground for the co-evolution between the order of natural life or “the way of generating life” of Daoism and the cultural life order of “the benevolence of generating life” of Confucianism, which can serve as the starting point, the theoretical basis, the standard for evaluation, and the ultimate goal for the reconstruction of the Chinese bioethics tradition. These views fit neatly with those of biocosmology, suggesting that China today, compared with the Western world,

¹⁴ Chi Xuefang, *The life culture foundation of ecological civilization: Interpretation and Reconstruction of Chinese Bioethics Tradition*. Harbin: Northeast Forestry University Press, 2022 edition.

probably can provide more fertile soil for the new “Triadic theory” of scientific knowledge to take root and flourish.

Reminiscing on the Initiative, we can see that its essence is to enrich and improve the frame of scientific knowledge for the academia, and that it is nothing more than to infiltrate the methodology of biocosmology, with its vital, dynamic, indivisible and systemically integrated life culture into traditional scientific knowledge, and form a new frame for scientific knowledge with the “Triadic theory” as the working philosophy for the academia. The Initiative, as an emerging scientific and cultural force, supports the movement of human beings towards ecological civilization while cultivates and establishes life-oriented civilization in the scholarly community. It is also a force for thought and knowledge that plays an important role in the construction of Green University throughout the world, especially in improving awareness in the cultivation of college students of science and engineering majors. Moreover, it is a non-negligible sociocultural force underlying the mindsets of decision-makers in economic and social spheres and thus a driving force as well as a constraining force for development. We hope and expect to see the presence of experts and scholars who firmly believe in the “Triadic theory” as they take part in making decisions relevant to the destiny of the region, of the country, of mankind, of the natural world, and even of the cosmos-world.