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TRANSDISCIPLINARY ANALYSIS OF THE FORECAST OF NONLINEAR NOOEVOLUTION OF MANKIND IN THE XXI CENTURY

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Abstract

In the article, based on the best achievements of the classical sciences researches and discoveries of the young research sectors, the transdisciplinary analysis of the present state of humanity is made and the means of accurately predicting its evolution in the coming decades

are proposed. Methodological foundations are: synergetics, cognitivistics, transdisciplinary, nooscience, nootechnology etc. It is stated that the main factor influencing the social evolution of mankind was the changes in the means of life support, caused by the continuous accumulation of scientific knowledge and the improvement of technologies. The article contains a table of the evolution and change in the characteristics of the five main societies: pre-agricultural, agrarian, industrial, knowledge and noosociety. The reasons for the fallacy of old and even recent forecasts are explained. The necessity of transdisciplinary approach is shown. It is proved that the modern point of bifurcation of the world science and economy is not in the necessity of choosing a strategic path of development in the 21st century, but in the immediate legislative and financial support of ecologically safe nootechnologies and many promising nooscientific and cognitive studies noted by Ukrainian scientists. It is necessary to go for a fast and complete ban on industrial production, even in their smart version. It is predicted that the organization of effective response to the emergence and pandemic spread of infectious diseases together with the elimination of the danger of environmental and other collapses is proposed.

Keywords: evolution, bifurcation point, cognitivistics, nanotechnology, nootechnology, noosciences, transdisciplinary

Introduction.

In the future, in the course of their education, the young generation will gain knowledge that the 2020 year has emerged as the most serious bifurcation point in the whole hopping evolution of the Homo Sapiens population. Fast growing amount of the scientific researches in the field of problem of time, complexity, cognitivistics and synergetics convincingly have proved that it is impossible to remain in a linear worldview paradigm. The processes occurring in nature and in society are non-linear. Due to the nonlinearity of the interaction of the human population with the entire environment of their stay, there will inevitably be a "bifurcation point" in the near future, from which further evolution will occur in a completely unpredictable manner due to a number of global shocks and anomalies ([2; 14; 15], etc.). The convincing evidence of this is the development of an all-planetary coronavirus pandemic 2020.

Problem analysis.

Although synergists persuaded themselves and other scientists of the multiple trajectories of human movement and its environment as a complex system and the inability to predict all the details of the trajectory that will be reproduced, they, together with other specialists in futurology and other sciences, tried to perform their specialist and to propose possible scenarios for changes in world politics and the economy in the long term.

The professional ethics of academics and youth educators make us take a direct part in this flow of predictions, bearing in mind that in the history of mankind it is easy to find many examples that intellectual activity produces important and "breakthrough" results not through a mechanism of collective reflection and democratic voting present for one of the variants of the fan offered, and by individual "illumination" with a significant advance of their time and little chance of immediate

dissemination of this discovery to the entire planet. For example, the concept of "ecology" and "ecological sciences" (predicted by E. Haeckel, 1866) entered the world intellectual and industrial circulation with the achievement of its point of bifurcation as early as the middle of the twentieth century.

We have every reason to believe that even in the recent past, the planet has been dominated by highly disciplined predictions that quickly "flew" their star point and gave way to others with similar specific shortcomings. Immediately after World War II, space races and the prospects of transferring humanity's productive activity to other planets or even stellar systems were at the top of predictive glory. The end of the twentieth century. at the point of bifurcation in the development of the means of creating, accumulating, disseminating and using information, which led to the emergence of a hypothesis about the emergence of a post-industrial new society, which had to be called "information", "informational" or generally "network".

The first years of the XXI century. can be safely called "genomic", because the complete decoding of the DNA of Homo Sapiens Sapiens pushed all the philosophical and other proposals to combine the laws of the material and spiritual worlds in the concept of "Soul". Scientists have convincingly proclaimed the onset of genoeugenics because of the inevitability of accurately predicting diseases and even the life course of future adults, based on a detailed analysis of the genes of several weeks of embryo. If, first, supporters of genoeugenics operated primarily in socio-economic categories and clearly hinted at the need to protect high-quality (healthy) lives from low-quality (irreversibly affected patients, the care of which requires the efforts of several healthy people) [13; 17], then, after the discovery in bacteria that have been and are waging an ancient war on viruses, the CRISPR / Cas9-specific defense system undergoes a bifurcation transition to a new trajectory of medical development. It turned out that the system was not intended to repair radiation or other DNA damage, but to identify "hostile" areas that appeared as a result of viruses penetrating and executing their own reproduction programs by embedding their genetic material into the DNA of the host cell.

Almost immediately and truly promising was the use of the CRISPR mechanism for the controlled alteration of the genome of a diseased human with DNA damage. The first successes have already been achieved in the treatment of ailments that underlie defective genes. The cost of the manipulations is enormous at the moment, but it will definitely decrease in the future. But it should not be forgotten that due to the deficiencies of the genes of disease and death make up a small part (2-4%) of all deaths, much inferior to the mass and traditional diseases— epidemics and pandemics, strokes, heart attacks, etc.

The use of the CRISPR tool outside of medicine is promising, first and foremost, in the accelerated creation of plants and productive animals to provide the increasing population of the Earth with quality food. The media-borne epidemic of the fear of GMOs and any similar research deserves special mention, based on US experience. The country's media made another noise at the time of the cloning experiments. Citizens have never received explanations from scientists who are interested not in creating a whole organism from a non-germ cell, but in growing tissues (for example, skin) and organs (liver, kidneys, etc.) for hopelessly ill people from their own cells. In this case, the possibilities of reproductive medicine are greatly expanded, because the danger of rejection of the transplanted organ, which was previously part of the body of a completely different person, disappears.

Unfortunately, the unjustified activity of the defenders of divine teaching in the United States has led to a complete ban on such attempts to grow organs for patients who need their replacement. Thousands of young scientists have flown to the UK to continue their research, and the US organ transplant market is growing. Doctors could only shake hands. This situation prompted a small international group of thugs to kill women in Mexico and bring all their bodies to the US for sale in various private clinics. By the time of his detention, only one such group had managed to reduce the population of Mexico by more than 600 women ... These were the consequences of interfering with the scientific progress of those ignorant people who considered only their own ideas and beliefs to be correct.

In the subject of our presentation, the inspired media outbreak of GMO products can slow down promising projects, although they are the most relevant right now, not half a century later. At that time, people, following V. Vernadsky's wishes, are guaranteed to learn to make virtually unlimited amounts of healthy food from individual stem cells of plants or animals in special "breeding reactors" (the first experiments in this sector of technology proved to be quite successful).

The fallacy of old and even recent forecasts

Unfortunately, we cannot give the same high appreciation to the numerous attempts to make a long-term forecast for all of humanity. Consider first an example of a completely unsuccessful attempt by scientists and French leaders to make an accurate prediction to the limit of 2100 [16].

This happened in the second half of the 1980s at the time of the accelerated development of information technology and the apparent success of the emergence of the first effective personal computers to help a person not in his manual-mechanical or other similar activities, but in most types of intellectual work. France chose the path of creating a national Minitel information system

back in the 1970s, that is, long before the present Internet. This name is an acronym for a long phrase that can be played a little as a "mini-TV". But the features involved an extensive network of small-screen display in one unit with a keyboard of arbitrary help and other useful information. The average citizen was so pleased with the convenience and capabilities of the system that they agreed to go from it to the Internet almost yesterday— only in 2012.

In such an atmosphere of France's success in modern technologies, backed by the relatively successful start of the use of a large experimental nuclear superpowered "Super Phénix" reactor, which in the long term promised the high profitability of uranium extraction and use, not from concentrated and rare fields, but from all over the world granity-stone. The government has instructed specialized agencies to look critically at world events up to the limit of 2100.

The order was executed on the basis of the best modern techniques of technological and other forecasting at that time, using as many scientists and experts as possible. Funding was virtually unrestricted, with a good transport network facilitating seminars with dozens of participants.

The Ministry of Research and Technology of France (MDTF) became the contracting authority, and the government agencies— the National Center for Scientific Research, the Research and Technology Exchange Group and others— were the contractors. They, in favor of France, had to create a forecast of events for all the 21st century. The work was led by T. Hoden, professor and long-time director of the MDTF Predictions Division. Its result is a very large collective monograph "2100: The History of the Next Century", with an analysis of possible events and the end of a lengthy list of the best scientists and experts of the state involved in many meetings and seminars [16].

During the 1988-1989 interval, at each of the many thematic seminars, with the participation of groups of dozens of representatives of the scientific elite of France, they analyzed all the important and possible world problems and "imbalances"— from demographics to educational and military ones. It was summarized in many diagrams and charts on 600 pages of text with the most detailed description of the hundred-year competition between the USSR and the US with the participation of satellite states. The direction of the creators of the book's creators is underlined by the key concepts that are capitalized on the cover: 12 billion earthlings; revolution of mind; century of women; marine settlements; city savages. Customers were satisfied and a book about the next century was published.

Familiarity with the text testifies to the striking fact that no one has ever suggested the disappearance of one or two competitors— all were convinced of the complete impossibility of what actually happened almost immediately after the publication of the printed book

began. It is perhaps impossible to explain this failure of the French at all, since at that time objective observers in the USSR and beyond were noticeable systemic signs of its rapid degradation and approaching disintegration (February 1988— Sumgait, April 9, 1989— Tbilisi, June 1989— Fergana etc.).

If the French attempt to look into the future and please the authorities as completely as possible ended in an unacceptable failure, then our second example— the predictions of the Club of Rome— deserves a combination of positive reviews and criticism.

In the years when the worldwide spread of the well-known "Testament" of the Austrian noble-ethologist K. Lorenz on the dangers and catastrophes in the near future of mankind (its translation is published in the book [6]), in the capital of Italy began its non-governmental association of the best known as the Club of Rome.

The members of the Club were dissatisfied with the state of studying environmental and other problems and almost no attempt to predict the future. We decided to start with this task. Under the guidance of the world's foremost researcher of processes in the very complex systems of D. Forrester (1918-2016), an international group of relatively young scientists, whose leader was D. Meadows, tried to calculate the course of events in interaction with the greatest possible accuracy and detail humanity and the environment. Taking into account dozens of parameters, compiling even more mathematical equations and using the best computers at that time, it was possible to bring the forecast to 2100.

The results for the general public and the media were presented in 1972 in the form of a considerable book, The Limits to Growth. The leadership of the USSR did not find the positive for itself, so the Soviet youth became acquainted with it, perhaps the last on the planet— in 1991 [7]. Since 1972, this report has been used in millions in many languages as a textbook or as a supporting material in secondary and high schools, not only in environmental courses but also in other disciplines. Apparently, there was no other scholarly work in the history of the sciences that would immediately make a greater impression on the world community than the report "Growth Limits."

Recall that the Forrester-Meadows team has completed a dozen basic and several auxiliary forecasting options for various developments in all sectors of the industry, taking into account some advances in technology, in the recycling of garbage and others. In all cases, the destructive impact of humans on the environment inevitably led to a total collapse in the range of 2050— 2100.

But there was also the 13th version without the Collapse, which relied on the exponential improvement of technology, on the transformation of all industries into a cure for the biosphere. The subsequent events of 1972-1992 corresponded to the worst variants of the evolution of mankind, so option-13 is absent in the new calculations of D. Meadows group

(sources [8; 9]), leading to advice to prepare for the inevitable war of all against all for the leftover food, drinking. they, energy and other resources.

Interdisciplinary nooprediction of the future

All predictions of foreign scientists were based on old industrial technologies or their improved version - smart technologies. These industries destroy the biosphere and pose the threat of pandemics and environmental collapse. Nobody noticed the appearance in the huge stream of nanotechnology of two ecologically ideal — nanophotocatalyzing and obtaining bioplastics through the use of certain bacteria. The understanding that these nanotechnologies are environmentally friendly belongs to the Ukrainian philosopher and inventor Korsak K.V., who in the 1990s delved into environmental problems and created a popular textbook "Fundamentals of Modern Ecology" that had six increasingly sophisticated publications ([4] and others).

It was the entry into the bifurcation point of the manufacturing technology world, the beginning of the path to combining the treatment of the biosphere with improving the quality and safety of members of the Homo Sapiens population, even as its population grew. Unfortunately, total disregard for this phenomenon has shifted nothing in the world view of the future. Even worse, the modern composition of the Club of Rome is preoccupied with anti-scientific propaganda and calls for all possible efforts to be made to “study for the future” [15]. The world's leading culprits in the report of the Club of Rome on the occasion of its 50th anniversary proclaimed the exact Sciences (Sciences). On several pages of the report describing "learning for the future" we find only a list of its excellent results, but there are not even minimal attempts to emphasize the content, curricula and duration of this miracle tool.

In interaction with students and graduate students, within the study time, we familiarize them with bifurcation in technologies and sciences, emphasize that nootechnology covers except social production all social phenomena and processes— nooeducation, noothinking, noopedagogy, noophilosophy, etc. Korsak K. and Korsak Y. received author's certificates on "nooglossaries"— dictionaries [3], containing explanations of 225 terms and concepts from the future one, the acceleration of which will inevitably come in the 2020s. In the explanations we rely on both traditional and more modern pedagogical means.

To the former we include a considerable table with comparative data of the main models of societies. Let us limit it to the most important indicator (Table 1). For its construction, we used the proposal of the American sociologist and futurist E. Toffler (1928-2016) to imagine evolution as the rise of humanity to progress on the crests of three waves— agrarian, industrial and

informational [12], but supplemented it with the proposal of a much higher modern "fourth".

Table 1

Traditional and new perspectives on the defining features of major societies and characteristics of relevant education and science systems

CHARACTERISTICS	Society				
	Pre-agricultural	Agrarian	Industrial	Informational	Noosociety
1. The period of domination	Prehistoric (an exception nowadays)	6,000 BC—1660 (common in the 3rd world)	1660-1960 (exists in many countries)	formed after 1960	The perspective of mankind in the 21st century
2. The main sources of energy	Muscle man, fire campfire	Fire, animals, water and wind	Coal, oil, gas, nuclear fission, hydroelectric power	Oil, gas, coal, nuclear fission, windmills, hydroelectric power plants	Light of the sun, thermonuclear energy
3. Common machines	Missing	Simple mechanisms	Thermal and electrical	Electrical, electronic and biological	Noomachines
4. The nature of production	Manual for immediate consumption	Mostly manual for consumption and exchanges	Machine, mass-conveyor	Robotic, partially flexible	Nooproduction
5. Distribution of active population: in the agricultural sector; in industry; in sector-3 (education, service ...)	The distribution is rudimentary	>40% 15 – 25% 10 – 15%	10 – 20% > 40% 15 – 25%	< 10% < 30% > 50%	1%, 9% 90%
6. The dominant political system	tribal hierarchy	Absolutism	Totalitarianism or democracy	A developed democracy	Conscious democracy, social cohesion activism of citizens
7. Education	Family and tribal	Family and religious	The state	State and public	Individual-civic, self-education
8. The importance and obligation of education for the entire population	There was no education (as a system)	Very small	Great	Very big	It becomes necessary for most citizens
9. General characteristics of education	There was no education (as a system)	Very short	It lasted	Very long lasting	Continuous
10. Education standards	Missing	Local	National	International	World
11. The importance of higher education	Missing	Not significant	It is essential	Huge	Force majeure
12. The importance of scientific research	It did not exist	Very small	Great	Very big	Science is an integral part of modern technology
13. Technology	Hand primitive	hand perfect	Machine	Micro-, nano- and biological	Nootechnology
14. The role of education and science in the productive forces of the country	Missing	Insignificant	Great	Crucial	Irreplaceable

Table 1 is convincing enough that not the "passionarity" of peoples or the unique leadership qualities of leaders and heroes determined the evolutionary development of humans from the moment of their separation from the animal world, but the means of livelihood that relied on the evolution of intelligence, knowledge and production competencies.

Even without explanations of all terms of table. 1 nevertheless gives an idea that the leading sciences have been changing throughout the historical period. The beginning and middle of the stormy twentieth century. marked by the dominant influence of physics and other sciences that were able to create new means of attack and defense. Even a slight decrease in the severity of the arms race, together with the accentuation of environmental problems, caused the end of the twentieth century the transition of leadership to the biological sciences.

But biological and ecological direction has been the leading only a few years. Much more important implications for scientists were the directing of almost unlimited funds to decipher the human genome, the study of the brain and the accelerated development of medical research, the results of which were especially needed billionaires from the United States and parts of European countries. As noted above, most of our work today is created by medical scientists, specialists in molecular biology, researchers of the human brain and human nervous system, other cognitive researches [1; 10; 11].

In addition to the tables and diagrams in the topic of "predicting the future," we offer students and infographics in the form of a wave diagram in Fig. 1.

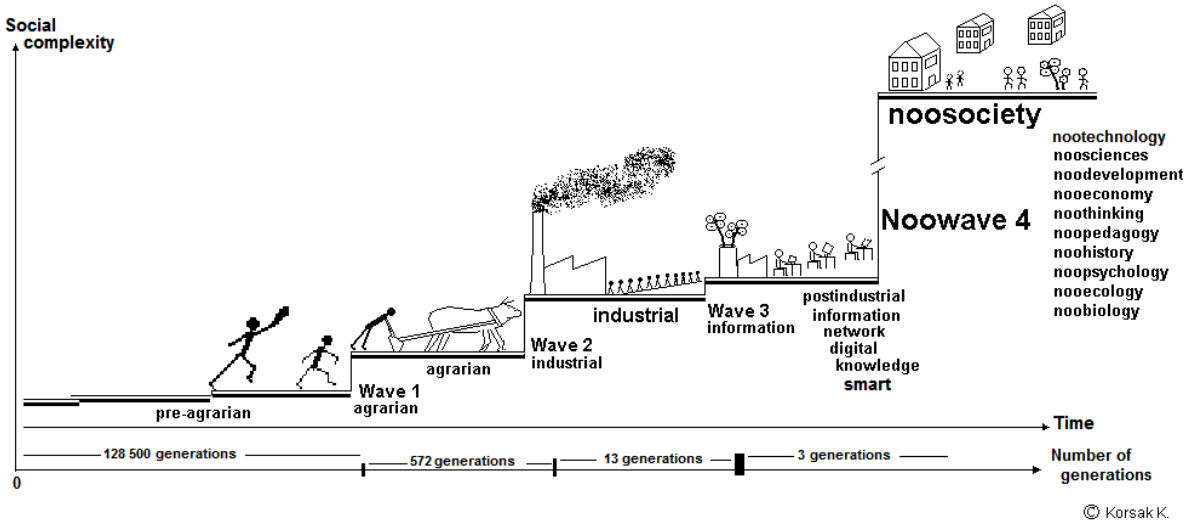

Fig. 1. Graphic reproduction of the evolution of humanity from ancient times to the distant future (the number of generations is indicated)

In it the main emphasis is placed on the beginning of the arrival of the "infinitely high" fourth wave, which is emphasized by the introduction of a

gap in the fourth vertical line. This wave will, in practice, mean the prohibition of industrial technologies and their replacement by nootechnology and nooprocessing. Please refer to fig. 1 to pay attention to all terms and marks, without reducing the "study" to a single glance.

In Fig. 1 horizontal line is an attempt to reproduce periods of dominance of several different worldviews, more precisely, the basis of the behavior of people in their interactions. There is no need to explain the reason for the existence of the first variant and its repeated recurrence in the case of insurmountably lethal threats to the life of Homo Sapiens. It is noted that the ancestors of the Ukrainians were among the active participants in the creation of the "first wave" by many inventions, which in total led to the formation of a family of Indo-European languages, the corresponding culture and half of the world's monotheistic religions. At the moment, through the discovery and offering of nootechnology and nooscience, the spread of "spiritualization" has begun, from the territory of Ukraine, to the transition to a highly cultural nooculture society.

However, at the time of creation of this text, noobrainers failed to disseminate information about nooscience and nootechnology and to reach at least the level of interest of the world media, which is characteristic of the case of Swedish Greta Thunberg. This girl, along with her leaders, offers nothing constructive in dealing with world collapses and only exacerbates global negative eschatology.

For a long time now, authors have compiled a list of more than 100 global processes and trends and are constantly updating it with new and new ones. We are convinced that many of them are "positive". Therefore, it is hoped that humanity as a whole will quickly understand and show some capacity for thought. We in our planned works (in particular— within the framework of the Kiev club "ANTIKOLAPS") will develop this topic, because nootechnology is becoming more, and in 10-20-30 years people will still realize their importance and will use it seriously.

Conclusions.

In formulating the conclusion, let us emphasize that the planetary concussion through the pandemic of a coronavirus infection makes it possible to rethink existing human values. In particular, the value of the family, family communication, the autonomy of each person, the focus on their own contribution to the common cause increases. It demands the changes in the way of thinking, personal cognitive patterns. This can be an impulse to direct the bifurcation movement of mankind to accelerate the creation of conditions for the complete destruction of all prerequisites for the global spread of any new infectious diseases.

This requires the use and replication of high-tech nootechnology and 3D printers (using

natural materials), along with low-power solar power plants, to allow all families on the planet to easily immerse themselves in full weekly or multi-week isolation from all neighbors (new nature of settlement in Fig. 1). Then the potential attacks of even the ultra-infectious protozoa will not have a chance to reach the entire planet, but will be securely localized and successfully overcome by modern and future medical and molecular technologies.

We sincerely hope that the year 2020 will commence the unification of human and other human resources not by autonomous high-speed electric transport or by reaching the farthest point of land in one hour, but in the spread of nootechnology, nootools and nooscience for the sake of self-sufficiency, every family, or cities. This will not prevent people from communicating (the Internet will soon become "space"), but will forever protect not only repeats of "Spanish flu" but also coronaviruses or other pandemics. It will give the new dimensions of cohesion – virtual or distance (online) communication.

We suggest, in our opinion, one of the real options for eliminating not only epidemics but also environmental, spiritual, intellectual and all other threats to the continued existence and evolution of the Homo Sapiens population. That population continues to grow by two every second due to excess birth rates. And all these changes cause the challenges in the social life of humans.

The new social reality shows that nonlinear evolution of Homo demands the transdisciplinary approach. Contemporary divided societies need effective social cultural and nootechnologies in a transcultural and social diversity. Transdisciplinary approach could give some theoretical and practical issues for sustainable Homo Sapiens social and cognitive evolution. The core research focus of transdisciplinary is finding of a cognitive (noo) base of diversity and cohesion, technical and ecological, spiritual and physical mutual determination faced the new challenges and threats of the mankind.

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ТРАНСДИСЦИПЛІНАРНИЙ АНАЛІЗ ПРОГНОЗУ НЕЛІНІЙНОЇ НООЕВОЛЮЦІЇ ЛЮДСТВА В XXI СТОЛІТТІ

У статті, спираючись на найвищі досягнення класичних наук та фундаментальні відкриття багатьох молодих наукових секторів, виконано трансдисциплінарний аналіз сучасного стану людства і запропоновано засоби точного прогнозування його еволюції у найближчі десятки років. Методологічні засади: синергетика, когнітивістика, трансдисциплінарність, ноонауки, ноотехнології, тощо. Зазначається, що основним фактором, який мав вирішальний вплив на соціальну еволюцію людства, були зміни засобів життєзабезпечення, спричинені постійним накопиченням наукових знань та вдосконаленням технологій. Наведено таблицю змін суспільств і вказано їх головні характеристики. Пояснено причини помилковості не тільки старих, а й останніх

прогнозів суспільного розвитку в майбутньому. Показано необхідність трансдисциплінарного підходу. Доведено, що сучасна точка біфуркації світової науки та економіки полягає не в необхідності політичного вибору стратегічного шляху розвитку у XXI столітті, а у безпосередній законодавчій та фінансовій підтримці екологічно безпечних ноотехнологій та багатьох перспективних ноонаукових досліджень, які розвивають українські вчені з настанням XXI століття. Людству слід піти шляхом швидкої і повної заборони індустріальних виробництв, включаючи їх смарт-варіанти, які пошкоджують довкілля і поступаються екологічно безпечним ноотехнологіям. Запропоновані засоби і способи організації ефективного захисного реагування на виникнення та пандемічне поширення інфекційних захворювань. Разом з перемогою над пандеміями можна ліквідувати небезпеку від екологічного та інших колапсів.

Ключові слова: еволюція, точка біфуркації, когнітивістика, нанотехнології, ноотехнології, ноонауки, трансдисциплінарність

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ТРАНСДИСЦИПЛИНАРНЫЙ АНАЛИЗ ПРОГНОЗА НЕЛИНЕЙНОЙ НООЭВОЛЮЦИИ ЧЕЛОВЕЧЕСТВА В XXI ВЕКЕ

В статье, опираясь на высокие достижения классических наук и фундаментальные открытия многих молодых научных секторов, выполнен трансдисциплинарный анализ современного состояния человечества и предложены средства точного прогнозирования его эволюции в ближайшие десятки лет. Методологические основы: синергетика, когнитивистика, трансдисциплинарность, ноонауки, ноотехнологии и так далее. Отмечается, что основным фактором, который имел решающее влияние на социальную эволюцию человечества, были изменения средств жизнеобеспечения, вызванные постоянным накоплением научных знаний и совершенствованием технологий. В статье приведена таблица изменений обществ и указаны их главные характеристики. Объяснены причины ошибочности не только старых, но и последних прогнозов общественного развития в будущем. Показана необходимость трансдисциплинарного подхода. Доказано, что современная точка бифуркации мировой

науки и экономики заключается не в необходимости политического выбора стратегического пути развития в XXI веке, а в непосредственной законодательной и финансовой поддержке экологически безопасных ноотехнологий и многих перспективных ноонаучных исследований, которые развивают украинские ученые с наступлением XXI века. Человечеству следует пойти по пути быстрого и полного запрета индустриальных производств, включая их смарт-варианты, которые также повреждают окружающую среду и уступают экологически безопасным ноотехнологиям. Предложены методы и средства организации эффективного защитного реагирования на возникновение и пандемическое распространение инфекционных заболеваний. Вместе с победой над пандемиями можно ликвидировать опасность от экологического и других коллапсов.

Ключевые слова: эволюция, точка бифуркации, когнитивистика, нанотехнологии, ноотехнологии, ноонауки, трансдисциплинарность.

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