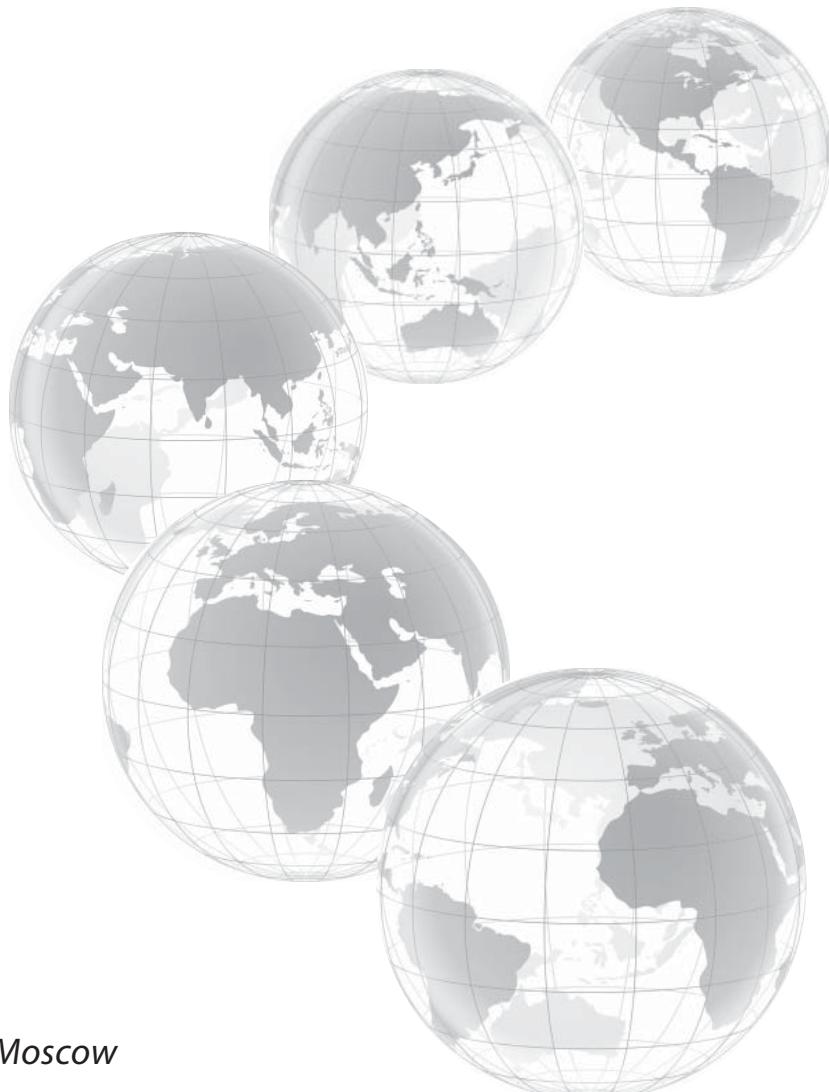


INTERNATIONAL SCIENTIFIC AND EDUCATIONAL JOURNAL

PARTNERSHIP OF CIVILIZATIONS'

Nº 4/2013



Moscow

THE EDITORIAL BOARD

A.I. Ageev
(Editor-in-Chief for
"The Partnership of
Civilizations" Journal)
T.T. Timofeev
(Deputy Chief Editor)
S. Farah
(Deputy Chief Editor)

O.P. Yermilina
(Executive Editor)
N.M. Guseinova
(Literary Editor)
Yu.V. Dorovskaya
(English translation)
B.D. Shulgın
(Design, Layout)
Yu.V. Strelnikova
(Proofreader)
I.P. Yershova
(Printing Manager)
V.M. Kokuev
(Internet Projects)
Yu.W. Bolshakova
(Subscription Department)

Opinions of the authors of published material do not always reflect the views of the scientific and editorial board and team. The editors bear no responsibility for the accuracy of the information contained in advertisements. The editors reserve the right not to enter into correspondence with authors. Submitted materials will not be returned. Any use of materials published in «The Partnership of Civilizations» journal is subject to written consent of the editors.

All inquiries about e-subscription to "The Partnership of Civilizations" journal should be addressed to: (495) 234 4693; e-mail: misk@inesnet.ru (the reference should be made to e-subscription to "The Partnership of Civilizations" journal)

Editors' address:
Office 4, bld. 1, 6/1, Sretensky Blvd., Moscow, 101000, Russia
Tel./fax: (495) 234 4693

© P. Sorokin — N. Kondratieff International Institute
T. 2, № 4(7)
Frequency of appearance — 4 times a year.
Number of copies 1,000
Free price

THE PUBLISHERS

- Pitirim Sorokin-Nikolai Kondratieff International Institute;
- Institute for Economic Strategies;
- MGIMO-University Center for Partnership of Civilizations;
- Center for Civilization Studies of the Institute of Europe RAS;
- International Futures Studies Academy;
- Lebanese-Russian House;
- Organization for Promoting Global Civilization (China).

THE SCIENTIFIC EDITORIAL BOARD FOR

THE PARTNERSHIP OF CIVILIZATIONS JOURNAL

Yakovets, Yuri Vladimirovich — Professor, RANS Academician, President of the Pitirim Sorokin — Nikolai Kondratieff International Institute (Chairman of the Board)

Ageev, Alexander Ivanovich — Professor, RANS Academician, Editor-in-Chief of the journal, President of the International Futures Studies Academy (Deputy Chairman of the Board)

Farah Suheil — Professor at the Lebanese University, RAS and RANS Academician (Deputy Chairman of the Board)

Bolshakov, Boris Yevgenievich — Professor, RANS member, Head of the School of Sustainable Development

Valiev, Khussain Khasenovich — Professor, member of the Parliament of the Republic of Kazakhstan

Vinokurova, Uliana Alexeevna — Professor, RANS Academician, Prorector of the Arctic State University of Arts and Culture

Glaziev, Sergey Yurievich — RAS Academician, RF Counselor to the President

Zapesotsky, Alexander Sergeevich — RAS corresponding member, RAE Academician, Rector of the Saint Petersburg Humanitarian University of Trade Unions

Kuzyk, Boris Nikolaevich — RAS Academician, Director of the Institute for Economic Strategies

Malitikov, Yefim Mikhailovich — Professor of Chicago and Denver University (USA), President of the International Association "Znanie" ("Knowledge")

Mathews Robin — Professor at Kingston University (UK)

Maurice Aymard — Professor, Higher School of Humanities and Social Sciences, General Secretary of the UNESCO International Council for Philosophy and Humanistic Studies

Popov, Veniamin Viktorovich — Professor, Director of the Centre for Partnership of Civilizations of the Institute for International Research at Moscow State Institute for International Relations (University) under the RF Ministry of Foreign Affairs

Petrosyan, Valery Samsonovich — Distinguished Professor of the Moscow State University, RANS Academician

Timofeev, Timur Timofeevich — RAS corresponding member, Director of the Center for Civilization Studies of the Institute of Europe RAS

Zhang Shaohua — foreign member of RANS, chairman of the Organization for promoting global civilization (China)

Chistilin, Dmitry Konstantinovich — RANS foreign member, President of the Simon Kuznets International Institute for Self-Organization and Development (Ukraine)

Shmelev, Nikolai Petrovich — RAS Academician, Director of the Institute of Europe RAS



10 Revolutions for 100 Years

Opening Remarks of the Editor-in-Chief

“Stability” has quietly evolved into the concept of “Idol”. Development goals in many countries are to achieve some or other stability: financial, economic, political, demographic, etc. And stability is really important for the existence of society, for the inheritance of cultural traditions, building life strategies, for trust between people, for long-term investments, for security, for many things.

However, we understand that stability like a golden age has remained in the past, if it were once at all. Perhaps stability seemed and seems only a short period of history, though it takes effort to find such gap. We live and we will live in times of instability, in times of changes. So we are extremely lucky. Shaking, shocking, and changing the very foundations of the current world order, a world view of new generations. However, many problems, challenges, difficulties, crises we receive, such is human nature, as if each time anew as children, although many centuries ago, the actual words ever spoken about changes, about life in general.

A few grand revolutions are programmed for the coming century. Some of them are worth special mention.

First — this is a revolution of the “end of the world”. Humanity periodically tends to experience a strong sense of the last frontier. And today, many people and their communities feel close perspective of some global cataclysm in the future as quite of

common life and significantly important. From such a worldview it can follow quite cynical behavior whether there is a lot of sense in the long-term self-improvement, care about trust, reputation, if the end of the world comes in a moment? Meanwhile, the category of cyclicity in Chinese philosophy of time, the theme of salvation in Christian eschatology allows us to find useful answers to the present day. But the relationship secrets of earthly and heavenly, mortal and immortal, substance, energy, matter, information — all this can revolutionize the consciousness of the Earthmen in the 21st century.

The second revolution is brewing in neurogenetics. Scientific facts are sometimes more impressive than science fiction. That is produced by modern science the fact of existence in the brain of every person a “matrix of standards” prescribing to man, originally based on his nature, to behave in solidarity, right, and elevated. There is not only the matrix of standards, but also an “error detector” which teaches man to the right path. In the coming century, longing for immortality or a very long and healthy life, more and more Earthmen will understand neurogenetic bases of the right way of life.

The third revolution is information. It is also the fourth. Exponentially leaped the graphics of perfection of information systems, their reliability and performance. And while this exponent shows no signs of falling off. Following the technological progress — the expansion of the Internet and social networks that revolutionize society. The “Arab Spring”, noisy, fanciful, bloody, rooting, certainly in violations of justice, is catalyzed and maintained in its logistics exactly social networks and the new generation of telecommunications.

Self-organized, spontaneous resort to the facilities of Internet, with an inconspicuous cyber-service of mega-corporations leads to enormous social disruptions. Revolutionary piquancy of the situation is also in the fact that the purpose of these mysterious players may not even be selfish but experimental. After all, Chernobyl, and Pol Pot’s Cambodia is a consequence of experiments. The German fascism is also a consequence of the experiment. This row can easily be continued.

The fifth revolution is a new great migration. Hundreds of millions of people each year change their place of residence. Within their states and crossing their borders. This is neither good nor bad, it is natural. As nature. In it any thickening of substances, especially live, violating fundamental natural balances exceeding the loads (on the soil, atmosphere, water), lead to the forced adjustment by force majeure. And before the face of floods and earthquakes, hurricanes, volcanic eruptions, desertification, epidemics, shocks, human conflict is a trifle, isn’t it?

The sixth revolution is economic. Category GDP has long since become an idol no less victim-loving than “stability.” The main victim of GDP is growing consumption of non-renewable resources for the universal equivalent that has become an idol too. The most irreplaceable resource is human life on the earth. The dream of spiritual emancipation, of overcoming the alienation of man from other people, from culture, creativity, from himself though has lost its former inspiring gloss, but has not disappeared at all. And this dream now undermines the apprising dictate of traditional idols – progress measurers. It strengthens the movement in favor of integrated reporting, taking into account

not only the financial results of economy, but also environmental and social. The UN measurement system is being improved, applying new indicators of “happiness”, “net welfare”, “achieving the Millennium Goals”, etc. Soon these practices will gain enough strength and will press the entrenched economic determinism, leaving it an auxiliary status. This will be a revolutionary change for systems of administration, education and business.

The seventh revolution will be carried out by bankers and financiers. They have accumulated vast experience in it. They will do this at least for reasons of utilizing experience as a valuable asset. It should not disappear!

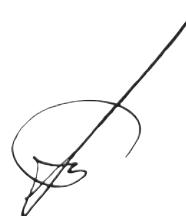
The eighth revolution has already manifested its pace and slogans. Transparency. In All. For all. One after another, the bastions and redoubts of mysteries, enigmas, curtains and shelters surrender to such winner. The issue of today is rather how, when, and to what extent successfully counterrevolution of new classification will unfold, protection of personal and other data.

The ninth revolution will take place in the military — technological complex. By the importance it can be compared with the appearance of tanks, toxic substances, armored trains, automatic guns, airplanes,

and submarines in the First World War and intercontinental ballistic missiles and nuclear weapons — after World War II. Military technologies are becoming more precise, unnoticeable, efficient, terrible and unimaginable.

As for the tenth revolution there are several contenders to it. One more influential than other. And they are intertwined with each other in a tangle as the previous nine.

Untangling these tangles, looking for ways out from the deadlocks and labyrinths, revolutions and counter-revolutions, rising to the heights of noosphere — the work and joy will be enough for 100 years, and a thousand and ten thousand years. But the longest journey always begins with the first steps. When there is the one hundred year plan, the way is easier, more intelligent and humane.



A.I.Ageev, Editor-in-Chief For
“The Partnership of Civilizations”
Journal, Professor, RANS Academician



Contents

A.I. Ageev. 10 Revolutions for 100 Years. Opening Remarks of the Editor-in-Chief	3
4 TH WORLD CONGRESS OF GLOBAL CIVILIZATION How to Prevent a Global Catastrophe. Vision of Scientists. Press release to the 4 th World Congress of Global Civilization “On the Path to the Noospheric Civilization”	10
On the Path to the Noospheric Civilization. Recommendations of the 4 th World Congress of Global Civilization	13
<i>Centennial plan for the integrated enhancement of the global ecological environment</i> Dao Jie. The Greatest Contribution to the Human Beings in 21 st Century: “The One Hundred Year Plan for Comprehensive Governance of the Global Environment and Ecological Systems”	19
Michael Murphy. Making the World a Better Place.	23
<i>Establishment of the Organization for the Integrated Enhancement of Global Ecological Environment and Enhancement of the UN role in the implementation of the strategy for global sustainable development</i> Dang Ying. No Time to Delay: Establish the Structure for Comprehensive Governance of the Global Environment and Ecological Systems	25
<i>Ordering of Social and Humanitarian Environment and Population and Migration Dynamics</i> Martin J. Pasqualetti. Social Barriers to Renewable Energy..... A.I. Lipkin. Types of Multiculturality in Contemporary World	30 34



<i>Enhancement of the Role of Science in the Validation and Implementation of the Strategy for Global Sustainable Development. The first General Meeting of the International Academy for Global Researches</i> I.V. Ilyin, A.D. Ursul. Global Studies and the Evolutionary Approach.....	40
V.I. Vernadsky Doctrine of Noosphere as a Foundation of the Strategy for Global Sustainable Development on the Basis of Partnership of Civilizations	
A.D. Ursul, T.A. Ursul. To the Noosphere	
Civilizaation through Sustainable Development	43
Caroline H. Ebertshaeser. Man and the Cosmos	
According to Vernadsky and Chardin.	53
A.O. Gliko, V.A. Chereshnev. Atlas of Temporal Variations in Natural, Anthropogenic and Social Processes.	
Volume 5. Three Environments Issue and Person	65
<i>On the Establishment of the Global System for Monitoring, Forecasting and Emergency Response (GSMFER)</i>	
E.M. Malitikov. Project of International Aerospace System For Global Monitoring	69
SCIENTIFIC HERITAGE OF V.I. VERNADSKY AS A FUNDAMENTAL BASIS OF SCIENTIFIC AND EDUCATION REVOLUTIONS OF THE 21ST CENTURY	
S.Yu. Rumyantseva. On Comparison of Evolution Theories for Vernadsky, Kondratieff, Kuznets, and Schumpeter Cycles	75



4th World Congress
of Global Civilization
“On the Path to the
Noospheric Civilization”

Moscow, 3–5 December 2013

IV Всемирный конгресс
глобальной цивилизации
«На пути к ноосферной
цивилизации»
Москва, 3–5 декабря 2013 г.

全球文明第四届世界大会
2013年12月3–5日 莫斯科



The Organization for Promoting
Global Civilization



Международный институт
П. Сорокина – Н. Кондратьева



RUSSIAN ACADEMY OF SCIENCES
Institute of
Far Eastern Studies



Неправительственный
экологический фонд
имени В.И. Вернадского



ИНСТИТУТ ЭКОНОМИЧЕСКИХ СТРАТЕГИЙ
INSTITUTE FOR ECONOMIC STRATEGIES



ФИНАНСОВЫЙ УНИВЕРСИТЕТ ПРИ ПРАВИТЕЛЬСТВЕ РОССИЙСКОЙ ФЕДЕРАЦИИ



THE CONGRESS ORGANIZERS:

- Organization for Promoting Global Civilization;
- Pitirim Sorokin — Nikolai Kondratieff International Institute;
- RAS Institute of Far Eastern Studies;
- Nongovernmental Ecological V.I. Vernadsky Foundation;
- Institute for Economic Strategies;
- Financial University under the Government of the Russian Federation;
- Faculty of Global Processes at Lomonosov Moscow State University.

ОРГАНИЗАТОРЫ КОНГРЕССА:

- Организация по поддержке глобальной цивилизации;
 - Международный институт Питирима Сорокина — Николая Кондратьева;
 - Институт Дальнего Востока РАН;
 - Неправительственный экологический фонд им. В.И. Вернадского
- совместно с:
- Институтом экономических стратегий;
 - Финансовым университетом при Правительстве РФ;
 - Факультетом глобальных процессов Московского государственного университета им. М.В. Ломоносова.

大会举办单位:

- 全球文明推进组织(OPGC)
- 俄罗斯索罗金-康德拉季耶夫国际研究所
- 俄罗斯科学院远东研究所
- 维尔纳茨基非政府生态基金会

大会协办单位:

- 经济战略研究所
- 俄联邦政府财经大学
- 莫斯科大学全球进程系



How to Prevent a Global Catastrophe Vision of Scientists

Press release to the 4th World Congress of Global Civilization
“On the Path to the Noospheric Civilization”
Moscow, 3–5 December 2013

1 Humanity in the 21st century has faced with the threatening global catastrophe.

The catastrophe has many faces.

Environmental — depletion and critical rising in prices of vital natural resources, environmental pollution that has reached the critical level, climate change and the growing number of natural and man-made disasters and accidents.

Demographic — spread of depopulation, unregulated migration and epidemics, hunger and poverty of a large part of the population on the Earth.

Technological — aging of fixed capital, slowing innovation renewal of economy and labor productivity growth, the growing polarization between vanguard and lagging countries.

Economic — the decline in economic growth, a series of financial and economic crises, growth of the parasitic “bubble economy” and the widening gulf between rich and poor civilizations, countries and social strata.

Geopolitical — increasing tensions and the number of inter-state and socio-political conflicts, international terrorism, a new round of arms race and a threat of a clash of civilizations.

Sociocultural — the crisis of science losing its creative and prognostic potential, excessive pragmatization and a loss of fun-

damentality of education, spread of commercialized, impersonal mass culture, moral degradation and undermining the foundations of the family — the main unit of society.

All these are harbingers and components of the oncoming civilizational catastrophe which is a consequence of the decline and decay of the industrial world civilization prevailed in the last centuries, sensate socio-cultural system.

2. The scope and depth of the occurring transformations stumped the governmental and international, business and scientific elite now prevailing. It has failed to understand the nature and prospects of changes occurring in the world nor it was able to develop and implement a radical long-term strategy to meet all the realities of the new century, seeks to restrict itself to half-measures and pseudo-innovations prolonging the agony of the outdated systems and deepening the crisis. Such a short-sighted policy only multiplies the threats to the global civilization.

3. The path to prevent a global catastrophe is shown by such great thinkers as Vladimir Vernadsky and Nikita Moisseev, Pitirim Sorokin and Nikolai Kondratieff, Joseph Schumpeter and Fernand Braudel as well as by modern schools of thought developing their ideas.

Crises and catastrophes are to be surmounted on the basis of the scientific and technological revolution of the 21st century, a wave of epochal and basic innovations, establishing integral humanistically noospheric civilization. Scientists developed and presented, at the United Nations headquarters, at the UN Conference on Sustainable Development RIO+20 and to the leaders of the G-20, the “Global Outlook “The Future of Civilizations” for

2050, and reports “The Foundations of a Long-term Strategy for Global Sustainable Development Based on Partnership of Civilizations” and to the G20 summit — report “Scientific Bases for a Strategy to Surmount the Crisis of Civilization and Taking the Path of Global Sustainable Development.”

4. The 4th World Congress of Global Civilization (Moscow, December 3–5, 2013) will discuss the projects of the Centennial Plan for the integrated enhancement of the global ecological environment, establishment of the Organization to implement the plan and formation of the Global System for Monitoring, Forecasting and Emergency Response as well as revealed the significance of V.I. Vernadsky doctrine of noosphere as the basis for a long-term strategy for global sustainable development. It will be held the first general meeting of the International Academy for Global Studies, will be taken the appeals to the United Nations and governments of the world on these issues.

5. Relying on a long-distance vision and understanding the depth of global transformations occurring in the world, the scientists propose:

- adopt the Centennial Plan for the integrated enhancement of the global ecological environment, implying not only harmonization of development of society and nature on the noospheric principles but also partnership of civilizations, nations, social strata to prevent a global catastrophe;

- establish the Organization for the integral enhancement of the global ecological environment that has sufficient authority and resources to implement the Centennial Plan;

- set a Global System for Monitoring, Forecasting and Emergency Response;

— Using V.I. Vernadsky's doctrine of noosphere, to develop and adopt a long-term strategy to surmount crises and take the path of global sustainable development on the basis of dialogue and partnership among civilizations, nations, social strata and generations.

6. To prevent the global catastrophe needs fruitful synthesis of power and science. Recent decades have seen a dangerous separation of power from the advanced science and power without science is short-sighted, fussy and strategically useless. It is taken shape the signs of overcoming this separation. It is established a Scientific Advisory Board at the UN Secretary General. Scientists have taken the next step: it is established an International Academy of Global Studies, which brings together scientists from different branches of learning, countries and civilizations to validate a long-term strategy to surmount the crisis of civilization, take

the path of global sustainable development and for arming the new generation of leaders with this strategy, to whom the responsibility for the adoption and implementation of strategic decisions to prevent a global catastrophe passes for three decades.

7. The Congress participants address the UN and governments of the world with an appeal before it is too late to heed the warnings and recommendations of scientists to develop and implement a long-term strategy that could prevent a global catastrophe and enter the path to the humanistically-noospheric civilization. They also appeal to the media and the Internet community to bring the vision and recommendations of scientists to authorities, global civil society, leaders of the new generation. Only together we are able to prevent the global catastrophe and to ensure the future for generations to come.

On the Path to the Noospheric Civilization

Recommendations of the 4th World Congress of Global Civilization
Moscow, 3–5 December, 2013

The 4th World Forum of Global Civilization “On the Path to the Noospheric Civilization” dedicated to the 150th birth anniversary of the world-famous Russian scientist Vladimir Vernadsky was held on 3–5 December, 2013, Moscow.

The Forum organizers — Organization for Promoting Global Civilization, Pitirim Sorokin — Nikolai Kondratieff International Institute, RAS Institute for Far Eastern Studies, V.I. Vernadsky Non-Governmental Ecological Foundation in association with the Financial University under the Government of the Russian Federation, Institute for Economic Strategies and the Faculty of Global Processes at the Moscow State University named after M.V. Lomonosov.

The Forum sessions discussed the projects of the Centennial Plan for the integrated enhancement of the global ecological environment, establishment of the Organization within the United Nations to implement the plan and the Global System for Monitoring, Forecasting and Emergency Response. Moreover, the Forum participants discussed the significance of V.I. Vernadsky doctrine of noosphere as the basis of a strategy for global sustainable development and exchanged views on the socio-demographic and migration, technological, financial and economic

components of the sustainable development and integrated enhancement of the ecological environment, raising the role of science and education in handling the global problems. The first meeting of the International Academy of Global Studies was held within the Congress.

The Congress participants visited the memorial study of V.I. Vernadsky at the V.I. Vernadsky Institute of Geochemistry and Analytical Chemistry as well as the Moscow Kremlin.

As a result of fruitful discussions, the Congress participants have endorsed the following main conclusions and recommendations.

1. GLOBAL CIVILIZATION IN THE FACE OF NEW CHALLENGES

1.1. At the beginning of the 21st century the global civilization has found itself in a state of deep crisis due to the sunset of the industrial society, a reverse of tendencies of global development.

The contradictions between society and nature have aggravated: natural resources being depleted and increasing in prices, environmental pollution has reached the critical level; the scale of natural and man-made disasters increase resulting in loss of lives and financial losses. It worsens the use of human potential: the unemployment is rising, especially among the young people; hundreds of millions of families suffer from hunger and poverty, while on the other pole it increases the energy wastage, overconsumption, super-concentration of wealth, intensifying geopolitical tensions and conflicts as well as terrorist threats. The global civilization is in a state of growing instability that threatens the future of humanity.

1.2. The Congress participants believe that the global civilization is at a histori-

cal crossroads. If under the inertia-based scenario the today's prevailing trends persist, gray future is expected — the humanity — global catastrophes — environmental, socio-demographic, food, economic, geopolitical and spiritual and moral disaster as well as the prospects for the possible extinction of species Homo Sapiens as a result of a self-destructive clash of civilizations.

However, it is also quite realistic an optimistic, innovative breakthrough scenario, if the healthy forces of the planet are consolidated for an appropriate response to the challenges of the new century, take the path of partnership among civilizations and nations, social forces and generations to overcome the crisis and the formation of the humanistically noospheric integral civilization.

1.3. The global community is seeking the ways to respond to the challenges of the 21st century. At the UN Conference on Sustainable Development, RIO+20 (June 2012) it is determined a long-term strategy targeted at eradication of poverty in the world and building a "green" economy. A system of global sustainable development goals for the period after 2015 is underway. It is established the High-Level Political Group on Sustainable Development and the UN Secretary General's Scientific Advisory Board.

However, these measures are not radical, nor provide the reverse of the negative trends in the development of the global civilization, it is necessary to develop and implement a scientifically validated long-term strategy to overcome the crisis of civilization and take the path of global sustainable development on the basis of dialogue and partnership among civilizations, nations, social forces and generations.

2. A LONG-TERM STRATEGY FOR THE EMERGING NOOSPHERIC CIVILIZATION AND GLOBAL SUSTAINABLE DEVELOPMENT

2.1. The Congress participants welcome the proposals of the Organization for Promoting Global Civilization on the prospects for the development of global civilization and the establishment of the world government, international collective body of scientists set up by the Pitirim Sorokin — Nikolai Kondratieff International Institute on preparation and submission to the UN the Global Outlook “Future of Civilizations” for 2050, reports “The Foundations of a Long-term Strategy for Global Sustainable Development Based on Partnership of Civilizations”, “Scientific Basis for Strategy to Overcome the Crisis of Civilization and Take the Path of Global Sustainable Development”, as well as preparing projects of the Centennial Plan for the integrated enhancement of the global ecological environment, establishment of the Global System for Monitoring, Forecasting and Emergency Response and a long-term strategy for global sustainable development brought up for discussion at this Congress..

2.2. The Congress participants have given full treatment to the program document “Centennial Plan for the Integrated Enhancement of the Global Ecological Environment” worked out by the OPGC, noted its high scientific level, system nature and practical importance for the future of humanity and prevention of ecological disasters, recommend the originators of the plan to update it in the light of discussion, submit to the UN Secretary-General’s Scientific Advisory Board and to prepare a road map of the first implementation stages of this plan.

2.3. The Congress participants recognize that the successful implementation of the Centennial Plan for integrated enhancement of the global ecological environment it is necessary to establish an organization with sufficient authority and resources to implement the plan. The Congress participants endorsed and signed the Appeal to the UN and governments of the world on the integrated enhancement of the global ecological environment..

2.4. Supporting the need for the implementation of the Centennial Plan in a consistent manner, the Congress participants consider it necessary the concerted development of a long-term strategy, balanced and synchronized implementation of all the basic components for surmounting the crisis of civilization and taking the path of global sustainable development:

— Natural-ecological — the transition from the wasteful use of natural resources and increased environmental pollution to the noospheric energy-ecological mode of production and consumption, conservation of natural resources, taking into account the interests of future generations, reduction of harmful emissions into the environment, the complex processing of accumulated waste and beautification of the environment;

— Socio-demographic — the elaboration and discussion at the UN Conference on demographic development and migration the transition to a differentiated strategy for demographic development focused on overcoming depopulation in some countries and overpopulation in others, reducing the gap between wealth and poverty, eradication of poverty and hunger, radical improvement of public health service, development of global policy for optimization of migration flows and the

observance of rights and interests of migrants, framing an international treaty to regulate migration;

— Technological — to unite the efforts of the countries and global community to accelerate the development and dissemination of the scientific and technological revolution of the 21st century and the new technological order, improvement on this basis the growth rates of labor productivity, de-monopolization of the market of intellectual property and the opportunity to use it by all countries, definition in the UN system of an organization responsible for coordinating actions and development of innovation and technology partnership; the establishment of the Global Facility for Technological Development and enhancement of the role and responsibility of the UNDP in tackling these tasks;

— Economic — to overcome the economic crises and the “bubble economy”, accelerating the technological growth rates, development of the strategy for the evolving integral economic system — socially, environmentally and innovation — oriented; the implementation of progressive structural shifts in economy providing the priority development of consumer and innovation and investment sectors and overcoming the overgrowth of the market infrastructure;

— Socio-cultural — to ensure the faster development of science and enhancing its role in innovation and technology and socio-economic development and in the validation of political and strategic decisions, preservation, enrichment and transmission to future generations the world scientific and cultural heritage, strengthening the role of UNESCO in the coordination of partnership for the assimilation of the scientific revolution of the 21st century,

ry, raising the fundamentality, creativity and continuity of education through effective ICT, providing large-scale assistance in training human resources for laggard countries; encouraging the revival of high culture, preservation and enrichment of the world cultural heritage and cultural diversity;

— Geopolitical — ensuring dialogue and partnership among civilizations and nations in the implementation of the Centennial Plan and the transition to global sustainable development; increasing the role of the UN Security Council in the resolution of conflicts and in addressing international terrorism; expanding the powers and responsibilities of the United Nations in developing and implementing a long-term strategy for global sustainable development, integrated global environment enhancement and responding to emergencies. The Congress participants feel the need to develop a long-term program of transformation of the UN system to more effectively carry out its functions in the changed world with a long-term prospect of turning it into the world confederation of civilizations and nations acting on democratic principles.

2.5. The Congress participants endorse the proposals to form a Global System for monitoring, forecasting and emergency response (GSMFER), and the establishment of the International Aerospace global environmental monitoring system and recommend the originators to update and spell out in detail these proposals in the light of the discussion, submit to the UN Secretary-General together with the report of the collective body of scientists..

2.6. Summarizing the challenges of globalization and regionalization, economic and financial mechanism for sustainable

development, the participants came to the conclusion that only in conditions of the multi-polarity it can be formed the background and developed efficient financial and economic mechanism for sustainable development of the world community as well as integral regional organizations (EU, CIS, SCO, APEC, BRICS, EEC, etc.).

To develop a detailed "Roadmap" of forming a financial — economic mechanism for sustainable development within the global community it is reasonable:

— As the first stage to consider and detail the tools for the upward advancement of national economies of international organizations based on the identification of strategic points of mutual interest;

— to implement the efforts into foreign economic strategies of the country — members of these organizations and sustainable development strategies;

— to perform monitoring of manifestations of transformations in a changing globalized world that allow to make adjustments to the strategy of sustainable development for purposes of the gradual formation of a multipolar world economy of consolidated development;

— as the second stage of the "road map" elaboration to define the basic criteria approach to the financial and economic mechanism for sustainable development taking into account the diversity of integration forms of economic interaction and socio-ethical identity of nation-states, to form an international multi-disciplinary collective body and apply to the Governments concerned to ensure funding of its activities.

3. V.I. VERNADSKY DOCTRINE OF NOOSPHERE AS THE BASIS OF THE STRATEGY FOR GLOBAL SUSTAINABLE

DEVELOPMENT AND ENHANCING THE ROLE AND RESPONSIBILITY OF SCIENCE IN CIVILIZATIONAL TRANSFORMATIONS

3.1. Commemorating the 150th birth anniversary of the genius of world science, Vladimir I. Vernadsky, the Congress participants highly appreciate his doctrine about the transition of the biosphere into the noosphere as the fundamental basis of a long-term strategy for global sustainable development and the evolution of the humanistically noospheric civilization of the 21st century. The Congress participants feel the need to make better use of this doctrine expounded by N.N. Moisseyev and modern noospheric schools, in the evolution of humanistically noospheric, in researches and in education and support proposals for translation into the leading languages, publication and posting on the Internet of major works of V.I. Vernadsky, deeper inclusion of his academic heritage in the education system, creating a virtual multilingual museum of V.I. Vernadsky as a pilot project to form the World Museum of the History of Science under the aegis of.

3.2. The Congress participants endorse the initiative of the Pitirim Sorokin — Nikolai Kondratieff International Institute supported by the 5th and 6th Civilization Forums, the preparation of the UNESCO Universal Declaration on the long-term strategy of dialogue and partnership among civilizations in science, education and culture, and recommend the UNESCO governance to consider and support this initiative.

3.3. The Congress participants welcome the establishment of the UN Secretary General's Scientific Advisory Board, consider this an important step in enhancing the role of science in the validation of strategic decisions and activities of the UN

system, endorse the initiative to set up the International Academy of Global Studies to develop and coordinate researches on the problems and prospects of development of the global civilization, nodal areas of the strategy of long-term forecasts and strategic documents and recommend to the UN Economic and Social Council and UNESCO to support this initiative

3.4. Given that it is currently developing a process of generational change and that the responsibility for the adoption and implementation of strategic decisions passes to a new generation of leaders, the Congress participants consider it crucial the active participation of young people in the implementation of the global strategy for sustainable development and the plan for an integrated enhancement of the global ecological environment, welcome the initiative to establish the Open University for Dialogue among Civilizations, making a series of course-books for leaders of the new generation, publication

of the international science and education journal "The Partnership of Civilizations", setting up of a multilingual portal "New Paradigm", support the initiative of International Association "Znanie" on the integration of navigation and telecommunication and information resources of the planet in the interests of the enlightenment and solution of humanitarian issues of humanity, and recommend the UNESCO and the UN Alliance of Civilizations to support these initiatives.

3.5. The Congress participants express gratitude to the organizers for creating the conditions for fruitful discussions and contacts and recommend to publish and put on the internet the proceedings of the Congress in the Russian, English and Chinese languages, submit the documents adopted and these recommendations to the senior management of the UN, ECOSOC, UNESCO, the UN Alliance of Civilizations, and the governments of the countries worldwide.



The Greatest Contribution to the Human Beings in 21st Century: “The One Hundred Year Plan for Comprehensive Governance of the Global Environment and Ecological Systems”

“The One Hundred Year Plan for Comprehensive Governance of the Global Environment and Ecological Systems” (hereinafter referred to as “the Plan”), which was drafted by Zhang Shaohua, the permanent chairman of Organization for Promoting Global Civilization (OPGC), deeply analyzed the serious situation of global environment and ecological systems, emphasized the fundamental principles of comprehensive governance, elaborated the main issues of comprehensive governance, and proposed a one-hundred year plan from comprehensive angle. The Plan, whose realistic and historical significance has been revealed by its goals and purposes, is a landmark milestone in human civilization history and will be the greatest contribution to the human beings in 21st Century.

1. The Contemporaneity of the Plan

First of all, the Plan embodies the most advanced ideas, which has been mainly reflected in four aspects: the idea of philosophy of the Plan is “the Need-Creation Theory”, the idea of humanity is “the Naturality-Morality Theory”, the idea of faith is “the Uni-

verse Spirit Theory”, and the idea of civilization is “the Global Civilization Theory”. The four ideas all-together constitutes the spirit of the Plan. As one of the major programs of the 4th World Congress of Global Civilization (hereinafter referred to as “the Congress”) is “Appeal to establish a ‘Structure for Comprehensive Governance of the Global Environment and Ecological Systems’”, and such a structure should be a specific structure that is: (1) created for all human beings, especially for the future generations, (2) directed at the global and extraterrestrial environment, (3) a world organization, (4) with detailed plans, organizations, and capabilities, and (5) had full legal protection and authorization of all states of the world, considering the complicated context of contemporary international community, but for the advanced ideas of four aspects and broad feelings of the Earth, it will be inconceivable to put forward such a great goal to establish a supranational comprehensive governance structure.

Secondly, the theoretical basis of the Plan, extensive and profound, has inherited the past and will usher in the future. History shows that any great theory which is mature and accredited by the public should have three elements: origin, reason and purpose.

The Theory of Global Civilization is such a theory that inherits and develops great ideas and theories of great thinkers including sages, philosophers, scientists, religionists, statesmen, etc. The inheritance and development are embodied in four aspects of transformation, which are the essence of the Theory of Global Civilization, that the theory: (1) negated the unipolar and opposite logic of science-philosophy, and built the logic of determinacy-coun-

terdeterminacy; (2) abandoned the segmentary and evolutionary logic of human study-sociology, and established naturality-morality theory; (3) transformed the regional and anthropomorphized logic of theology-pistology into transcendence-ultimate logic of the Universe Spirit Theory; (4) stepped out the disciplinary and material logic of cosmology-biotics, and discovered the grand unified logic of universe-spirit. Most of issues and problems of the day will be solved smoothly if equipped with the Theory of Global Civilization, because the theory goes beyond those views of life based on individualism, crosses the chasm of different cultural views based on nationalism, surpasses the political views based on national boundaries, and abandons the religious views based on worship of their own gods. I believe that only such a theory could correctly interpret the ideological implications of sages of the past, and could be accepted by most the public.

In all ages, the emergence and development of any advanced theory should be based on certain political, economic and cultural background. In return, the theory should be used to guide social practice, or solving social problems. What are the problems today? Statistics show that until November 2011, world population already reached 7 billion, and by the end of 21st Century, the number will be 15 billion; nearly 0.9 billion population still drink raw water without purification treatment; the area of desertified land has taken up 61% of global land; coal reserves could only be exploited for 100 years; by the end of this century, the temperature of our earth will increase 0.3–4.8 degree Centigrade; biotechnology has been challenging the moral principles and destiny

of human beings; such threats as nuclear weapons, chemical weapons, biological weapons and artificial intelligence weapons are affecting the survival of mankind. Such are the problems today. To solve all these problems, to prevent human-made disasters, and to reduce the damages natural disasters, a competent international structure should be established no delay, which is also the urgent need for global civilization.

Global civilization could be divided into two stages: the primary stage and the advanced stage. The primary stage will take 100 years from the beginning of 21st Century and the main object of this stage is to complete comprehensive governance of global environment and ecological systems, raising the level of human civilization. The advanced stage is the stage of universe civilization and the main object of this stage will be effective protection the safety and the living environment of our Earth and co-exist and cooperate with other intellectual lives from other planets. Currently we are in the primary stage of global civilization, and the most important task we should fulfill is the comprehensive governance of global environment and ecological systems. As long as we grasp the key point, we will win precious time for the change of global environment.

Finally, the Plan will support our efforts to advance universal values by its thorough understanding of current global ecological situation and its comprehensive way of prevention the ecological environment deterioration. It could be easily imagined that as long as one of those hidden dangers mentioned above be triggered, the whole human race will confront catastrophic disasters and suffer irre-

reparable damages. Take nuclear weapons for example: nuclear warheads all over the world have piled up to more than 14 thousand, and once nuclear war broke out or those nuclear weapons are damaged by natural disasters, no single country can be immune to it. The people all over the world would never expect the outbreak of the third world war, never want to see the end of the world, never hope that our future generations will suffer disasters created by us! On the contrary, the pursuit of happiness, civilization, faith, and peace are common aspirations for most majority of the people.

2. The Feasibility of the Plan

The guiding ideology and the objects of the Congress are very clear and specific, which are, in the era of global civilization, improving “the ability of self-consciousness” of human beings including self-knowledge, self-control, self-plan, and self-upgrade, by the Congress and the follow-up work, transforming the modes of thinking, the ethics and values, the existence ideas and the norms of behavior of individuals, and also politics, economics and society into “Global Civilization”, and realizing the great goals that “all human beings living in harmony, the global environment and ecological systems being comprehensively managed, and our future generations living happy forever”.

The Plan is aimed at solving the problems concerned by most people, including: each country and each area does things in its own way; the agencies lack necessary authority; the individual interests override the overall interests of human beings;

the religious beliefs conflict unceasingly; sources of water and land are polluted seriously; the developments of biotechnology, military equipments and space technology have created more complicated problems, and so on. That is to say, the Plan is aimed at comprehensively improving the natural environment and the social environment where human beings are living, and preventing various “cancer cells” cause harm to “the healthy body” of humankind and the earth.

Since mankind entering the 21st Century, the conditions of comprehensive governance of global environment and ecological systems have already been possessed. On the political front, most politicians hold the idea of national prosperity, people's well-being, and world peace, which are consistent with the ideas of Global Civilization. On the economic front, people in most countries have already met basic living needs, and it will be enough and adequate if every country takes out fifty percent of its military spending, 1trillion US dollar in total to improve the environment. On the scientific and technologic front, we already have the ability to intervene and improve some local environment.

3. The Transcendence of the Plan

Reading through the Plan, we can find that the transcendence of the Plan is mainly embodies in four aspects: ideas, theory, content and measures. That is to say, the Plan has surpassed the traditional individualism, nationalism, statism, religious extremism and such “-ism”, and tried to change the traditional narrow structure of rights and powers. It is precisely because

this transcendence, misunderstanding, blame, obstruction and even attack from various groups of people are inevitable, which we can confront and overcome calmly and correctly, as long as we are altruistic and unselfish. *This career is just and honorable, and all careers which are just and honorable should not, and also could not be stopped!*

This groundbreaking career must be participated by most people on the earth, must be supported by all countries and organizations, and we should vigorously promote the ideas of Global Civilization and make the importance of the Plan widely known, so that humankind will learn how to make correct judgments and choices when facing the issues and conflicts about individual interest and interests of human beings, interests of nations and the interests of the earth, intermediate interests and long-term interests, interests of the earth and interests of the universe. Based on a series of new consensus, we can then build and achieve global civilization.

21st Century will frequently witness various disasters happen on the earth, and we all sincerely hope that human beings will prevent most of these disasters from striking. Every country and all people should have a sense of urgency and take global responsibility, seizing the time, establishing the structure, working hard, and taking at least one-hundred year to improve global environment and to make human beings live safer and happier.

Mr Chairman, Dear Guests:

We all live on this earth, so we should not fail it; we give birth to our children, so we should keep them out of struggling for survival. Let us joint hands, for all humankind, work together and strive for a brilliant future!



Making the World a Better Place

I am originally from Los Angeles, California, USA, but I have been a New Zealand citizen now, for the last 30 years. New Zealand is meant to be the model country to the world of a Clean, Green, Environment. It has no nuclear power plants and no major industries causing great amounts of pollution. Its Carbon Footprint is minimal in comparison to major industrial countries. However, someone in the New Zealand government, thought it would be a good idea to tax farmers for the amount of methane gas their cows and sheep were producing, but that idea was dropped- due to the question of- how to police such transgressions? — Ha!

New Zealand does have its pollution problems though, mostly from emissions from automobiles and trucks. Fertilizers from farms are also causing trouble in some areas as runoff into rivers and streams. But if New Zealand is to be a model country to the world, how would it endeavor to eradicate even these pollutants from its environment? Here is where I come to the crux of what I believe will help to make the world a better place. I would like to quote the author James Hilton, from his novel: "Lost Horizon!" This novel was written in 1937 and yet the following quote is even more appropriate for today in 2013!

"Look at the world today, is there anything more pitiful? What madness there is! What blindness! What unintelligent leadership! A furiously racing mass of bewildered humanity, crashing headlong into each other, strengthening not in love, but in vulgar passions! When brutality and the lust for power, perish by it's

Michael Murphy
(New Zealand) —
professor, University
of British Columbia

own sword. — When that day comes, the world must begin to look for a new life. And it is our hope that they will find it here in Shangri-La. When the strong have devoured each other, the Christian ethic may at last be fulfilled; The Meek shall inherit the earth”.

Well, I certainly do not believe that New Zealand is Shangri-La—Well, pretty close. But I do feel that if each one of us, each person on this planet were to put forth the effort of helping others as much as we help ourselves, we would have a better world. To have the spirit of Shangri-La in our hearts is where change begins! As Jesus said,” That if we only keep two Commandments—To love God and to love your neighbor as yourself, you will keep all of God’s commandments.” And our neighbors- are anyone who needs our help, not just the person who lives next door to you!

Here is a quote from an article called:
“A Biblical Perspective On Environmental Stewardship”

“On the basis of a biblical worldview and ethics, as well as of sound science, economics, and public policy principles, we believe sound environmental stewardship celebrates and promotes human life, freedom, and economic development as compatible with, even essential for, the good of the whole environment. While we understand that passions may energize in the pursuit of sound environmental policy, we also believe that reason, coupled with a commitment to «do justly, to love mercy, and to walk humbly with ... God» (Mic. 6:8), must ultimately guide environmental policy.”

I would like to end up now with a true story that happened in the early 20th century. It shows what just one person can do to change their part of the world. It takes place in an area of France called Provance.

At the time it was quite barren and had little or no trees. It did have one old shepherd though who had a flock of sheep. One day a visitor to the area met up with the old shepherd and walked with him while he was tending his flocks. The visitor watched the old shepherd poke a hole in the ground with his staff and then took a nut from his bag and put it in the hole, and then covered the nut with his foot. He repeated this process for the whole time they walked together. Finally the young visitor asked, «What are you doing?» To which the shepherd replied, «Well, It’s obvious, isn’t it? I am planting — trees!» The young man said, «But you are an old man and it will take many years for these trees to grow and you may never seem.» The old shepherd said,» Yes that’s true, but someday — somebody, will see them and it will do good for them!» The young man was amazed by the old man’s foresight and care for others. After about 20 years, the young man now about 40 years old, thought he might go and see if the old shepherd was still around. To his amazement he was. He was about 80 years old! Also the whole area was a beautiful forest. People had moved back into the area and birds and animals too. The government of France saw what this one shepherd had done singlehandedly and awarded him a special commendation and a pension for his effort to change that part of France into a thriving community. So the lesson from this story is about:

The Power Of One! You may not be able to change the whole world-- but you can day by day and heart by heart change your part of the world, to- Make The World A Better Place!

Thank you for listening I hope you enjoyed my talk.



ESTABLISHMENT OF THE ORGANIZATION FOR THE INTEGRATED
ENHANCEMENT OF GLOBAL ECOLOGICAL ENVIRONMENT
AND ENHANCEMENT OF THE UN ROLE IN THE IMPLEMENTATION
OF THE STRATEGY FOR GLOBAL SUSTAINABLE DEVELOPMENT

No Time to Delay: Establish the Structure for Comprehensive Governance of the Global Environment and Ecological Systems

1. The situation of global environment and the insufficient of international environmental law.

The state of the environment continues to decline, as Global Environmental Outlook Five issued by UNEP pointed out,

“The currently observed changes to the Earth System are unprecedented in human history. Efforts to slow the rate or extent of change— including enhanced resource efficiency and mitigation measures — have resulted in moderate successes but have not succeeded in reversing adverse environmental changes. Neither the scope of these nor their speed has abated in the past five years.”

Rome was not built in one day. Marine pollution, decline of biological resources, ozone depletion, decreasing of biodiversity, global warming, deforestation and desertification of land, all of which were not generated within a day, but were concerned by humankind as problems one by one as world population growing rapidly and industrialization gradually dominating the world. Environmental pollution and ecological deterioration have already become “dark clouds” hanging over every person on the earth. And the only way to dispel the clouds is to make international cooperation in worldwide, regardless of the size and wealth of countries. Obviously, such cooperation needs the protection of

Dang Ying —
Beijing University, Master

international legal rules and competent international organizations making rules and supervising the implementation of the rules.

June 1972, United Nations Conference on the Human Environment was held in Stockholm and “Declaration on the Human Environment” was adopted. Forty years have passed since then, the international community has made great efforts to address the environmental issues. However, in sharp contrast with the efforts we have made, global environment continuously deteriorates. Why?

We should have been able to see clearly that the current state of environment is neither “trans-boundary pollution”, nor “international environmental problems”, but “global environmental challenges”; and we should have been able to fully understand that the challenges are not just that natural ecological environment is on the brink of collapse, but social ecological environment and humanistic ecological environment are also extremely deteriorated. Such harsh reality calls for worldwide comprehensive governance without any delay, otherwise we will lose the last chance of saving our earth before the ecological systems collapse.

Nevertheless, the work of international environmental governance so far, which based on international environmental rules, promoted by some international environmental organizations and groups, and participated by several sovereign states, could not meet the urgent need of saving the entire human environment and ecological systems. What's worse, there are three major problems: First, fragmentation of international environmental governance; Second, lack of economic and technological resources; Third, most

of current international environmental rules could not be well implemented, owing to the characteristic of “soft law” and the obscurity of state environmental responsibility and liability. Such a tanglesome governance system and weak measures not only could not save the planet but even will push all humankind into the abyss of completely losing our living home.

The only way to solve the above problems and turn the tide is to establish a “Structure for Comprehensive Governance of the Global Environment and Ecological Systems” (hereinafter referred to as “the Structure”), which should be: (1) created for all human beings, especially for the future generations, (2) directed at the global and extraterrestrial environment, (3) a world organization, (4) with detailed plans, organizations, and capabilities, and (5) had full legal protection and authorization of all states of the world.

2. The inevitable choice of establishing the Structure and appropriate legal protection of international law

Mission determines the way to complete the task. In order to solve the problems and to fulfill the mission, the Structure has to be established as: an inter-governmental organization with supernational characters, a universal membership organization, and a general international organization with legislative and enforcement function, but not non-governmental organization, not regional or closed organization, not just specialized or consultative organization.

Therefore, the Structure should be mandated necessary and sufficient powers

from states according to the legal instrument establishing it. And only then, the Structure could carry out work competently in the guide of “targeting at global ecology management, respecting natural ecology law, developing scientific management of ecology and highlighting future ecology”. Besides, in order to guarantee the enforcement and compliance of comprehensive governance, a series of institutional innovations should be stipulated in the legal instrument.

The Structure should have a complete and perfect international personality, independent will and decision-making power. The scope of the Structure’s function should be defined in four perspectives including the range of affairs, the scope of space, the time span, and the levels of governance.

The Structure should be mandated legislative and enforcement function, certain judicial function, and a fair degree of coordination function, so that the problems of fragmentation and weakness of international environmental governance will be solved.

The Structure should make decisions and take necessary actions according to its mandate without the intervention of any states, groups or people. Therefore, its organization structure and the decision-making process which is efficient should be designed to minimize influence of irrelevant factors.

The Structure should be supported by adequate and sufficient resources. Thus, it should be stipulated in the legal instrument that the scale of the financial contribution of each member state shall be calculated in accordance with the level of its economic development and average gross domestic product (GDP) per capita, and

each member state shall pay its dues on time, or it shall bear legal consequences. Besides, the Global Environment Facility (GEF) which was established by World Bank in 1991 should continue support the work of global environmental governance; and the existing numerous fund pools set up by Multilateral Environmental Agreements (MEAs) should be integrated appropriately. Finally, the capital invested in the Structure and how it is used should be audited strictly and open to the states and public for inspection.

3. The contribution of the establishment of the Structure to international law

If and only if all states could start from the current situation of global eco-environment, establish the Structure as it should be, and strictly implement the “One Hundred Year Plan for Comprehensive Governance of the Global Environment and Ecological Systems”, most of problems will be solved and the global environment will finally take a favorable turn. Besides, the Structure could effectively assist in the build-up of environmental capabilities in developing countries, and make great contributions to the development of international environmental law.

First of all, the establishment of the Structure will declare that different states can be united by international law in some and more fields, where the sovereign states will not distinguish between each other, but become a coalition to fulfill the same mission and common tasks. It will be the most important and meaningful choice made by governments of states and all humankind since the United Nations was established in 1945 for perpetual peace.

Secondly, the innovative mechanism of enforcement will facilitate the implementation of international environmental rules. The “Joint Implementation” and “Clean Development Mechanism” invented by the United Nations Framework Convention on Climate Change (UNFCCC) and its Kyoto Protocol have been considered as innovative measures to promote the implementation of international environmental law, whereas such measures of enforcement as joint enforcement, direct enforcement by the Structure, and fulfill state obligations by the Structure on certain conditions, which should be stipulated in the legal instruments establishing the Structure, will be practically bold and effective ways to implement the international environmental rules.

Finally, international law will thus transform from law mainly serving sovereign states into primarily serving all humankind.

It's well known that the current deterioration of the global environment comes as a result of the states' escaping environmental responsibility on the excuse of state interests. The system of international law, though has been developed a lot since the international environmental law emerged, “sovereign state” and “state sovereignty” are still unshakable “minefield” to a large extent.

However, created for less than four hundred years, the concept of “sovereignty” has led the whole system of international law and thus shaped the international law into a law mainly serving sovereign states. We should always bear in mind that sovereignty must be subordinate to and serve human right and race right, and sovereign states must serve individuals and all humankind. Here, we shall reaffirm what

has been solemnly sworn in the “Declaration of Civilization”,

“Human Right and Race Right are the two interconnected poles of the humanity right system. Between these two poles are sovereignty rights, government rights, and civil rights including the Right of Territory, the Right of Air Space, the Right of Ocean Space, the Right of Property, the Right of Military Commanding, etc. All these rights are supplementary to and serve Human Right and Race Right. Therefore, all other rights must be subordinate to and serve Human Right and Race Right. This is the First and Foremost Order for those decision-makers of all kinds of rights in human society in the twenty-first century.”

If all states could really understand and recognize the relations between sovereignty rights, human right and race right, and co-establish such a structure as it should be, then the international law including the legal instruments establishing the Structure will finally become good law serving all humankind, preserving the common living ecosystem, and protecting every living human as well as the future generations of human beings on the earth.

What's more, if the Structure is finally established following closely the “One Hundred Year Plan for Comprehensive Governance of the Global Environment and Ecological Systems” is adopted, then the “First and Foremost Principles for the Interests of Humankind” will become a fundamental principle not only for comprehensive governance of the global environment and ecological systems, but also of international law. Thus, when other principles conflict with this fundamental principle, it will be inevitable to develop and modify the connotations and meanings of those principles in a practical and instructive way.

4. Conclusion

The only way to save our earth and keep all humankind living on this blue and beautiful planet is to establish the Structure and implement comprehensive governance according to the One Hundred Plan. And any choices but not this one, would imply that we give up the future of human beings and the planet as well.

Whenever I see pictures of the Earth taken from outer space: no borders, no flames of wars, no conflicts of interests. Without any noises, it's only tranquil, sacred and blue.

I will always be filled with tears:

Such is our Earth; such is the place where generations of human beings are born and living!

It's exactly this planet where we humankind, after millions of years of evolution, from the oceans on to land, from single-celled organisms to advanced intelligent creatures. Our Mother Earth has been watching the growth of humankind.

Now we can think, we can smile, and we have even obtained the ability of love and gratitude. We indulge in the pleasure bestowed by the universe and the earth.

But, we are destroying our Mother Earth and all her grants!

Every time when I think of it, my heart will be torn with anxiety: for the powerlessness of myself alone, for the indifference of common people; for the countries only look after their own interests, for the international community is always weak and impotent.

I cannot understand why, the science, which should have been used to identify problems more accurately, turned out to be excuses of taking no actions at all.

I cannot understand why, the technology, which should have been used to solve the problems more efficiently and effectively, ended up to be overbidding commodities.

I cannot understand why, the experts, who should have respected and disclosed the truth, become tools of countries covering up the facts.

I cannot understand why, the states, which should have protected their people, turned into machines of power only pursuing so-called state interests.

I cannot understand why, the earth, which should have been loved and cared by all human beings as Mother, turned out to be such a dirty and unlivable garbage dump!

For love and care, I decided to dedicate myself to environmental protection several years ago, studied environmental law in Peking University for three years and did an internship in UNESCO for six months. But as time goes by, these questions are still waiting for answers. My mind is full of worry and confusion about the future of the earth and human beings: what the humankind, especially we young people should do? What the earth will be like tomorrow and in the far future?

Distinguished professors and dear guests:

We younger generations need you lit up a light in the darkness, and offer even a rare glimmer of hope in despair.

We do expect a brand new international structure to be established and to lead all states and humankind towards a hopeful and brilliant future.

For this moment to come, we are waiting!



Social Barriers to Renewable Energy

To most of us, electricity is tantamount to an addiction. It is indispensable to almost everything we need and like. Those of us with access see its continuous supply as essential to a lifestyle we would like to maintain. Those with little or no access see its greater availability as a way out of a lifestyle we would like to improve. But there is a problem. As demand increases, so too do the varied penalties the environment has to absorb in order to produce it. As these costs have expanded, our first instinct has been to try to shrink them using technical fixes. We are hoping, even betting, that such potential innovations can rescue the status quo and avoid cuts to the use of electricity that has become such an important component of modern well-being. The question is whether this is a wise wager; there is growing suspicion that it is not.

We may, however, be able to identify another approach. One option is for us to recast the long-running play of modern-day electricity supply. We could do this if we were to replace the current resources with renewables, such as geothermal, wind, and solar. These substitute forms of energy have many advantages: They are all locally available, sustainable, have low to zero emissions, and — in the case of solar and wind — they do not need to be cooled with water. With these advantages, one may wonder: Why have we been so slow to develop them more robustly? What has been holding us back?

**Prof.Dr. Martin J.
Pasqualetti —**

*School of Geographical
Sciences and Urban Planning
Arizona State University
Tempe, Arizona USA*

One possible explanation for this sluggish pace is that these new players are still in training, that they need more work, that they are — to use less metaphorical terms — encumbered by technical issues. This premise, however, is open to question. The other possible reason for the holdup tugs us in a completely different direction: Social barriers are blocking our way. That is to say, people are creating the problems, not technology.

This is not an entirely new observation, but what has been heard more recently is a rising chorus of opposition to the very energy resources we have been hoping will help take their place. The first thought might be that barriers erected to renewables are politically motivated, and no doubt that factor is important in the introduction of anything as fundamental as a change in the source of our electricity. However, politics are such an encompassing element in every decision that as an explanation for delay it evens out across all the resources.

Another presumed barrier might be economics, specifically the purported higher economic cost for renewables. Although this argument might be valid in some cases and in some places, it is equally not valid in other circumstances, such as in Japan and many other places where the costs of conventional electricity are at least as high.

Thus, if we discount economics and politics as causes, what else might be further inhibiting development of renewable energy resources? My approach has been to examine three resources and move chronologically over a period of about two decades. I start with the early developments of geothermal energy in California; shift to burgeoning wind energy

industry in the United States, Scotland, and Mexico; and end with the emerging controversies over solar energy development in the southwestern United States. Throughout, I consider the idea that opposition to landscape changes and the associated impacts on the way of life such changes might bring to local residents are generating the impediments to a renewable energy future.

In each case study, I found resistance because of a series of land use conflicts. It was recreation vs. industrial development at the geothermal plants in northern California, agriculture vs geothermal development in southern California. As for wind power, the conflict arose between the presence of turbines near the retirement community of Palm Springs, and the worry that wind power would destroy a coveted and isolated way of life in a remote location in the Outer Hebrides. Southern Mexico, on the other hand, witnessed strident opposition to wind development because of the conflict not only with well-established lifestyles but a threat to the entire agricultural economy of the area. In the Mojave Desert of California, opposition to solar power was based on their large land signature and the threat they posed to endangered species and cultural artifacts.

We are presently knocking on the door of a renewable energy future, and we are making some progress. If we can consolidate our gains, we may be able to pass through the portal with some real chance of developing a genuine measure of sustainability. Barriers, however, still block our way. Some of the remaining barriers are technical, but most of them are social, and they are accumulating.

This is not surprising because each new step forward prompts more people to be-

gin considering what a renewable energy future will mean to their lives. Their most common reaction is to try to slow things down until their questions and reservations are addressed. The discomfort that some people feel about renewable energy may be explained as start-up pains that are common when any new technology is suggested. However, such a diagnosis cannot reasonably explain all the symptoms of resistance we are seeing.

Left unattended, social barriers can inhibit, redirect, discourage, or even halt projects. We need to rebalance the attention we pay to these challenges. Such rebalancing will require acknowledging that social issues can be as important as — and in many cases more important than — technical issues. We must realize that conditions for development differ from group to group, time to time, and especially landscape to landscape. This means that neither acceptance of nor opposition to a technology in one location will necessarily transfer to another location. Likewise, support or opposition to renewables will depend less on the type of resource than on how one location differs from another in terms of physical environment, cultural underpinnings, and social structures.

The problem that champions of renewable energy development face is that they have often assumed — and have expected to receive— unquestioning public support for their projects. What they have not anticipated is that love of existing landscapes can rout any benefits that renewable energy development may promise. We are finding that commercial development of renewable energy resources, now upon us, is repeatedly bumping up against this hard reality.

The mistake commonly made in the name of a renewable energy future is to consider the technical and economic challenges of commercialization as the only obstacles that must be overcome in order to make the leap from dream to reality. Although these are legitimate concerns, equal attention should be directed toward public attitudes, perceptions of risk, interference with established lifestyles, altered landscapes, and even the infringement of new projects on the local sense of property and justice, all topics that contribute much more directly to public attitudes. Although cooperation between developers and the public is already evident in some places, no generic protocols yet exist to manage the inherent disagreements that sometimes arise between the two groups. As great a contribution as renewable energy sources may make to attain a more sustainable future, their collective advantages will not be enough to convince everyone in every place that they are a good idea. For this reason, conflicts will continue to appear.

Recognizing this reality, we may wish to consider adopting at least three new steps. First, it would seem appropriate to reweight project-evaluation processes by reducing overemphasis on technical solutions and then attend to social considerations more thoroughly. In many circumstances this change in perspective alone will produce significant improvements and a smoother path to consummating development plans because it would recognize the importance of social engagement in the process of energy development.

Second, social embeddedness should be a priority for renewable energy planning and implementation. Developers should strive for earlier and more complete un-

derstanding of the human landscape at the location of each proposed project. Such evaluation should include belief systems, land tenure, perceived personal costs and benefits, and local history, all of which rarely receive more than glancing notice.

Third, impacted people need to perceive and receive meaningful and acceptable benefit from families and to society at large. To circumvent this step is to lose time and money for the benefit of initial savings. We should think of these three steps as part of a new order of renewable energy development, one that looks beyond the technical to the social, one that extends the usual temporal perspective past grid connection to the point when these projects become an accepted, integrated, part of the local community.

Once social and technical considerations of renewable energy are paired, contentious issues will be identified ear-

lier, approval will be quicker, and success will be more likely. Achieving such parity will require that developers consult not just with their engineers and accountants but also with anthropologists, sociologists, historians, economists, geographers, and other social scientists. Without doubt, an early, inclusive analysis of this sort would have aided geothermal developers at The Geysers, wind developers in Palm Springs, Cape Cod, Scotland, and Oaxaca, and solar developers vying for land rights in the Mojave Desert.

In the end, if we are to soften public resistance to renewable energy and simultaneously give proper voice to public love for the land, it will be better to consider the challenges of development to be predominantly social matters with a technical component, rather than the other way around. Making this adjustment is the master key to unlocking the future contribution of renewable energy.



Types of Multiculturality in Contemporary World

In the modern world there are clearly visible two opposing trends. One is the program of “sustainable development”. It looks far ahead and calls for accommodating the “needs of present and future generations”. Another trend, which faces the contemporary time and is associated with aggravating of political and socio-cultural conflicts in various parts of the globe. Both of these trends are related to the modern phase of globalization. This paper is devoted to problems of multiculturality which belong to the second trend.

Multiculturality can be of different types and levels. I distinguish five levels, which has the hierarchy: 1) global, 2) local-civilizational, 3) sub-civilizational, 4) national and 5) ethnic. The lower level units are included in the upper-level unit. According to my hypothesis, the mature cultures of one level influence each other but cannot mix (the same situation is with languages, where e.g. national language is created at the basis of one of dialects, not as a mixture of all the dialects), but the common culture can be created at the higher level. There is therefore a global layer but along with it there exist regional local civilization and other units as well.

In my system of notions *local civilizations* differ depending on systems of *meanings, ideals, higher values and principles* associated with the meaning of an individual's life (only part of them is set by religion). They build a *spiritual core* of any local civilization.

A.I.Lipkin—
*Professor of the department of
philosophy at Moscow Institute
of Physics and Technology,
Doctor of Philosophy*

These cores have high degree of persistence and are different in the Western, Indian, Middle Eastern, Far Eastern, and in other local civilizations. Within each of them there are subcivilizations with close but different senses, such as West Europe and North America (the difference between “American dream” and “European dream” has been widely debated within last decades). The religious differences usually belong to these two levels.

There is another distinction of civilization or sub-civilizational level which determines a difference between Western countries and most of the non-Western. There are basic principles of *relations in a society* and of the organization of its institutions (political, etc.), which we'll call *political core*. It sets for centuries the archetype manifesting itself in various forms. For example, for the ancient Greek civilization, this is polis life organization of the city-states. For big states (compared to a city-state) which are of great interest to us we distinguish two types of principles — the *command based* (“mandatory”) and the *contractual*¹ [Lipkin 2012 a].

The essence of the *contractual* principle is that all the parties considered the signatories to the contract, have their rights. This type of relations is characteristic of European (Western) civilization. The Non-Western *command based* principle is older and more widespread. It entails a rigid hierarchy where a lower party has no rights, and the order is unidirectional top-down (the “vertical of power”), so the laws fix not rights here but competences and punishments for a failure to meet such order (as it was in China). Two subsystems may be identified here: 1) the *base* consisting of the *masses* and the *ruler* and 2) *accompanying* consisting of the *ruler* (including its in-

ner circle — *court*, it is the environment of maturing court intrigues and overthrows), and “servants” in the service of the ruler (directly or indirectly). In the *second subsystem* it is cultivated *high culture* (usually secular) which is designed to the individual and related to education.

There is another important difference on the *second level*, the difference between 1) the *collectivist* (non-, pre- or de-individualized) and three *individualist* types of senses, communities and individuals: 2) *individual-pragmatic*, 3) *individual-idealistic*, 4) *communitarian*. The *first* is complemented with *ideologies* that can be religious, nationalistic, fascist, communist, or represent another political doctrine. It has collectivistic *meanings and values*, and an individual life, is not high. The *second* reflects the selfish individualism (often hedonistic) in which the individuals' attitude to the society is determined by pragmatic interests (a society where this type dominates is unstable). The *third* reflects the individual being oriented in his life by ideals guiding the individual development (ideals are a late product of culture — a product of the *axial time* by Karl Jaspers — and in contrast to the ideology are not intended to the collective but to an individual). The *fourth* reflects a small group (“friends”) inside an individualized society united by a subculture [Kymlicka 2002, ch. 5, 7].

The next level is the *country-state (national)* level, where *socio-cultural unity* is set by 1) feelings of country-state unity and belonging to it and 2) types of persons (e.g. nobles, peasants, city men) and types of relations. *Nation-state* is its special case, which was born in Europe. Its central concepts are national history which sets the first, and the national literature which sets the second. National concepts are secular, individual-

ized, and not based on belonging to an estate. The nation-state's *socio-political unity* is formed by states borders and citizenship (if there is the socio-cultural unity only we have a case of diaspora) [Lipkin 2012 b].

We can distinguish between three types of nation by the way of their creation in processes of interaction of state and cultural formation. The *first type*, which creates the standard, begins with the formation of a "king-state", whose unity is defined through the person of the king, then it transforms into a country-state with a socio-political and religious unity, where the centre of unity is moved from the royal person to the people of the country. The latter is often interrupted by a religious split and war bringing about a secular sociocultural unity that leads to the emergence of a nation-state. Such was the scenario of Great Britain and France.

The *second type* begins with the emergence of a culture, from socio-cultural unity. The state can appear as result a) of integration (as in Germany) or b) of separation (as in many states which appeared after World wars I, II, and the Cold). The three step scheme of M. Hroch (as it is done in [Kappeler 2001]) describes the process of their formation very well. In phase A an interest to language, history, literature is arouses in sufficiently small group of educated peoples. After this cultural phase (where "cultural core" is created. — A. L.) the phase of national agitation (phase B) is going. Then the time has come to mass movement (phase C). The last steps often go through the phase of nationalism by which we mean deindividualization state with national history in the role of collective myth.

The *third type* was determined from outside by colonialism. These non-Western states emerged as a result of the de-

colonization processes and many of them are nation-states only by name.

The ethnical level is very important in demography processes but in culture it usually manifests itself in a variety of forms of cuisines and etc.

Using these terms, one can single out different types of multiculturality.

The Western *multiculturality I* of 1960-s — 1980-s has emerged in the developed countries of the West at the time of their significant growth of wealth and leisure (It is after-national phenomenon.). 'Since the end of the 1960s, M. Wiewiora writes, The production of cultural difference in our societies has increased'. 'The more modern, or hypermodern, our societies are, the greater the tendency to invent differences...., using cultural materials borrowed from the present, the past, customs and old artistic forms, history, etc.' [Wiewiora 2004].

It is of crucial importance for the "multiculturality I" that all its groups do not oppose themselves to the system of liberal-democratic European values, but are embedded in it. It is mono-civilizational intra-Western multiculturality. All the disagreements (including sharp disputes between liberals and communitarians) occur in the *individualized society inside the Western civilization*. All of them share the ideals of rights and freedoms of the individual, democratic and secular nature of the state.

Multiculturalism is a type of politics that was developed for the Western Multiculturality I. Its inadequacy for new situation of *multiculturality II* is articulated in the Western leaders' exclamations: "Multiculturalism has failed!"

A new *multiculturality II* emerges in Europe by the end of 1990s. It leads to entirely different situation and problems of an-

other level. The source of these problems was the mass immigration from the Islamic world caused by the new phase of globalization. In fact, the matter in question is a process of “*global urbanization*” where the developed countries play the role of the city and the underdeveloped, that of the village. As a result of these factors, the compact clusters of poor other civilization (by origin) masses with a high reproductive potential appeared inside the Western societies, especially in the megacities. In the *second — third generation* it gives rise to acute problems [Lipkin 2012 c].

The principal difference between this and the previous phase of multiculturalism is that earlier minorities did not purport either to become the majority, or dictate to others their own orders and now do. We have here very complex crossing of political, social, economic, demographic, and international processes and problems, which nobody knows now how to solve.

In the process of contemporary globalization, neither the developed West can stop the flow of immigrants (apparently it is already late to undertake such efforts even if it were possible at all), nor the Islamic world can isolate itself from the “pernicious” cultural influence of the West. Old means of isolation do not work now. It is the modern mass media, transport accessibility, and democratic laws that represent a key-factor at work in this case: polycivilizationality makes this problem global.

Thus we have a structure like:

$$M (Ma+Mb) <:::> W \{ (M_{wb} + M_{wa}) + Wa \}, \quad (1)$$

were W is population of the Western countries, M is external to them Muslim world, where there are a layer of individualized educated persons with ideals of Is-

lamic high culture (Ma) and a collectivistic layer with Islamic ideology (Mb). And inside Western countries there are a layer of individualized educated persons with ideals of Islamic high culture (M_{wa}) and a collectivistic layer with Islamic ideology (M_{wb}). There are connections as between Ma and Mb , M_{wa} and M_{wb} , so between Ma and M_{wa} , Mb and M_{wb} . And inside Western countries there are much smaller problems of integration in Western society for M_{wa} (like in *multiculturality I*) than problems of integration in Western society for M_{wb} (but problems of the latter increase problems of the first because Western society hardly makes a distinction between M_{wa} and M_{wb}).

In *multiculturality II*, there is a possibility of incompatibility of collectivist groups of nonwestern civilizations with western ideals and principles. The conflict of civilizational level between collectivistic unities cannot be solved at the rational level and is very dangerous (it often leads to wars). The known way of solving the problem is the same that was the way of ending religion wars in Europe of 16th c. Putting senses to private level and putting in the centre of public level common to all law and secular national unity. But it is possible only for *individualized community*. Besides for Muslims with there connection of Law and Religion some type of Reformation is necessary.

The simpler alternative is a war of annihilation (or forcible submission). The situation with al-Qaeda, Afghanistan, Iraq, the Palestinian-Israeli conflict and others tend to such military alternative. This is the option that is adhered by fundamentalists (and cultural neo-racists) of all the parties.

The *non-Western multiculturality III* resembles nationalism in Europe in the early 20th century. The main difference is that

the unity of collectivistic type is based on religion and not on a nationalist ideology. There can be a process of creating country-states, not nation-states, which is similar to the process of nation building of the second type (see basic concepts) but goes under religion or other flag. I suppose that it is a typical case in non-Western World. There are different separatist movements intended to create independent states in its center.

The polycivilizational *non-Western multiculturality IV* is a result of contemporary process of globalization with inevitable information and communication impact of the West on the *command based* systems. It induces Western ideals inside non-Western countries by forming a layer of bicultural persons in “accompanying” subsystem who share Western culture and democratic ideals along with individualized Islamic high culture. It gives multiculturality inside non-Western society and creates a conflict between this part of “accompanying” subsystem and of “basic” subsystem.

The processes in *command based* systems are very complex. One of the most important phenomenon here is the “*riot of the masses*”. It takes place from time to time. In the case of victory, the riot sweeps the second subsystem, but then *re-creates the same structure* (often with other people and possibly with other high culture). The restoration of the old structure points out that the *command based system is not being formed from the top* — from the “ruler” but from “down” — from the “*masses*”, which, unlike the citizens of “the people — nation” *convey (delegate)* to the “ruler” the right (and responsibility!) for taking of external macrodecisions and solutions of disputes arising inside, thus the place for “ruler” is being created.

In contemporary international policy of western states it is not considered the

possibility of the *command based* principle rootedness in the “*masses*” in many states. As a result the West (the best of intentions) begins to help to *democratically oriented often sufficiently thin layer* to overthrow the authoritarian power. But since the *command based* system is established not from the top but from “down”, then in the case of “immaturity” of the system it occurs not a revolution, but the “victorious riot”, which results in the restoration of the old *command based* system, often of a poorer quality [Lipkin 2012 a] (I think that in many Arab countries it is exactly what happens.). In this case it seems to be a demand for the West not only for the religious and cultural but for *political tolerance* too. The *command based* systems lose to “democratic” in many respects (it shows transformations from *command based to contractual political core* in Japan and South Korea), but democracy is a very tender plant, and the infection process of the ideas of democracy can be difficult and long. It is a very hard problem for all sides.

Global multiculturality V is a multiculturality of a thin layer but this layer is valuable in many areas including culture. This layer globalizes international and extraterritorial individuals with high culture. Here we have the attitude close to *multiculturality I*. But the place of conflict between liberalism and communitarianism takes the conflict between adherents of globalization and antiglobalists which are be attracted to liberalism and new left.

Thus we singled out five types of multiculturality, which give problems of different type and profundity. However usually they are not distinguished and are looked through the lenses of multiculturalism, which is a type of politics developed for the Western *multiculturality I* of 1960-s —

1980-s. It is inadequate politics for contemporary multiculturalities of other types.

The most difficult are problems for polycivilizational multiculturality, which include clash of individualized and collectivist senses of life, of Consumerism and Spirituality, of principles of *command based and contractual systems* (the European — Islamic multiculturality is of such type). It is hard to solve them at rational level. That's why there are large troubles with the idea of "dialogue among civilizations" emerged as an alternative to the war. The dialog works, first of all, at the level of individuals and individualized societies.

Therefore the West is to be the first to show initiative. But for being successive the West should look at the situation and problems through the correct "lenses" (system of notions). May be the way to solving, or at least of softening these conflicts goes through some changes within the West: through more tolerance to *command based* countries and through going from "consumer society" that has undergone a sharp criticism within Western civilization itself. It is hard to do but some of multicultural living problems become extremely sharp and they call noble global principles like program of "sustainable development program" into question.

Bibliography

1. Kappeler, Andreas, (2001) *The Russian Empire. A multiethnic History*. London, 2001
2. Kymlicka, Will, (2002) *Contemporary Political Philosophy. An Introduction*. Oxford: Oxford University Press, 2002.
3. Lipkin, A. (2012 a) 'The Spiritual and Political Cores of Local Civilization and

Their Clash in the Course of Russian History'. Working Paper WP17/2012/01. Moscow: Publishing House of the Higher School of Economics, 2012, Viewed 24 Oktober 2013. http://www.hse.ru/data/2012/04/10/1251631302/WP17_2012_01_f.pdf.

4. Lipkin, A. (2012 b) 'To a question of concepts of national community and national cultural kernel' *Vestnik of Russian Nation*, N 4–5 (2012 b): 155–176.
 5. Lipkin, A. I. (2012 c) *Socio-Cultural Aspects of Globalization and the Issue of Polycivilizational Multiculturality // Partnership of Civilizations №4/2012*, p. 25–36.
 6. Wiewiora, Michel, (2004) 'Making of Difference' *International Sociology*, 19.3 (2004): 281–297.
-

Endnotes

1. Their senses are very similar to H. Spencer's "compulsory" and "voluntary" "systems of co-operation", or "regime of status" and "regime of contract" in his "The Man versus the State".



ENHANCEMENT OF THE ROLE OF SCIENCE IN THE VALIDATION AND IMPLEMENTATION OF THE STRATEGY FOR GLOBAL SUSTAINABLE DEVELOPMENT. THE FIRST GENERAL MEETING OF THE INTERNATIONAL ACADEMY FOR GLOBAL RESEARCHES

Ilyin I.V., Ursul A.D. Global Studies and the Evolutionary Approach

M.: Moscow University Press. 2013. — 568 p.
(*Basics of Globalistics. Evolutionary Dimension*).

The monograph considers the issues of globalisation of science and new development fields of global studies and globalistics, encouraged by applying the evolutionary approach. Evolutionary globalistics places emphasis on investigating the development and coevolution of global processes and systems and their systemic synergetic phenomenon — global development. The concept of evolutionary globalistics is discussed in the context of universal (global) evolutionism and the transition to new safer forms of development of the civilisation and its interaction with the nature of the Earth and Outer Space. The future global processes — transition to sustainable development and the establishment of the sphere of mind (noosphere) — are predicted to unfold.

Special attention is given to the methods and approaches utilised in globalistics and to spatiotemporal extension of global studies. The evolution of globalistics itself is investigated, including the development of such fields as political and legal globalistics, and information globalistics. Temporal sections, such as paleoglobalistics, neoglobalistics, futuroglobalistics and nooglobalistics as well as cosmoglobalistics in special dimensions are singled out.

Intended for specialists, teachers, postgraduate students and general reader interested in the problems of evolutionary globalistics.

Contents

Introduction

CHAPTER 1. FROM GLOBAL WORLD VIEW TO RESEARCH OF GLOBAL PROCESSES

- 1.1. Globalism as a form of global world view and thinking
- 1.2. Global processes and their studies
- 1.3. Global natural processes and classification of global phenomena

CHAPTER 2. GLOBALISTICS, GLOBAL STUDIES AND GLOBALISATION OF SCIENCE: METHODOLOGICAL ISSUES

- 2.1. V.I. Vernadskiy and genesis of global direction of science
- 2.2. From globalistics to global studies: inevitability of extension of the subject domain of scientific inquiry
- 2.3. Status of globalistics and global studies in contemporary science
- 2.4. Science globalisation trends

CHAPTER 3. ESTABLISHMENT OF EVOLUTIONARY GLOBALISTICS

- 3.1. Evolutionary globalistics and global evolutionary processes
- 3.2. Global (universal) evolutionism and evolutionary globalistics
- 3.3. Evolutionary direction of global processes
- 3.4. Temporal evolutionary aspect of global studies

CHAPTER 4. GLOBAL PROBLEMS AND GLOBALISATION IN THE EVOLUTIONARY ASPECT

- 4.1. Global evolutionary process of world exploration: an information innovative concept
- 4.2. Global Problems: temporal extension of the research field

4.3. Socio-natural interaction methods and genesis of global problems

- 4.4. Globalisation: spatial temporal extension of the scientific inquiry area
- 4.5. Globalisation prospects and transition to sustainable development
- 4.6. Society-nature interaction methods as a global development form

CHAPTER 5. GLOBAL POLITICAL PROCESSES AND THE GLOBAL GOVERNANCE PROBLEM: ESTABLISHMENT OF THE EVOLUTIONARY APPROACH

- 5.1. Evolution of political processes: a global aspect
- 5.2. On the way to political globalistics
- 5.3. The problem of establishment of global governance

CHAPTER 6. GLOBAL LAW DIMENSION: ON THE WAY TO LEGAL GLOBALISTICS

- 6.1. Global governance in the sustainable development aspect: legal aspect
- 6.2. Legal globalistics or global legal studies?
- 6.3. Search for global law principles

CHAPTER 7. INTERRELATION OF INFORMATION AND GLOBAL PROCESSES: ESTABLISHMENT OF INFORMATION GLOBALISTICS

- 7.1. On the nature of information
- 7.2. Matter, motion, information
- 7.3. Information concept, information science and formation of information sciences
- 7.4. Information approach in global studies
- 7.5. Establishment of information globalistics

**CHAPTER 8. COSMOGLOBALISTICS:
INTERRELATION OF GLOBAL
AND COSMIC PROCESSES**

- 8.1. Anthropocosmism and cosmoglobalism of K.E. Tsiolkovsky
- 8.2. Evolution of the anthropocosmic worldview
- 8.3. Cosmic problems in the emerging globalistics
- 8.4. Global disasters and geocosmic security
- 8.5. Prospects for cosmic extension of global search
- 8.6. Global methodology for search for extraterrestrial intelligence
- 8.7. Possible cosmological continuation of global cosmic studies

**CHAPTER 9. PROBLEM OF SECURITY
IN THE GLOBAL WORLD: THE
EVOLUTIONARY ASPECT**

- 9.1. Interdisciplinary evolutionary approach to the security problem
- 9.2. Interrelation of the principles of preservation and change in evolution
- 9.3. Evolutionary processes and security
- 9.4. Global processes and open societies
- 9.5. Global evolution principles and the need to assure global security
- 9.6. Establishment of the global world and the security problem
- 9.7. Assurance of global security through sustainable development

**CHAPTER 10. EVOLUTION OF
EDUCATION OF THE THIRD
CENTURY: GLOBAL CONTEXT**

- 10.1. Evolutionary vision of world education prospects
- 10.2. Inevitability of global transformations in education
- 10.3. Futurisation process: global education — advanced education
- 10.4. Environmental education for sustainable development
- 10.5. Education in the global evolutionary perspective

**CHAPTER 11. FUTUROGLOBALISTICS:
OUTLINES OF THE GLOBAL WORLD
OF THE 21ST CENTURY**

- 11.1. On the way to futuroglobalistics
- 11.2. Contradictory nature of transition to global sustainability

**CHAPTER 12. NOOSPHEROGENESIS
AS A GLOBAL DEVELOPMENT PROCESS**

- 12.1. From the teaching of noosphere to noospheric studies
- 12.2. Noospherogenesis and the biosphere preservation problem
- 12.3. Evolution of the global information society into the noosphere

[Conclusion](#)

[Synopsis](#)

[Contents](#)



V.I. VERNADSKY DOCTRINE OF NOOSPHERE AS A FOUNDATION
OF THE STRATEGY FOR GLOBAL SUSTAINABLE DEVELOPMENT
ON THE BASIS OF PARTNERSHIP OF CIVILIZATIONS

To the Noosphere civilization through Sustainable Development

We believe that among the concepts of the future of civilization, organically compatible with the idea of the survival and the constructive solution of global problems, the most promising so far is the Noosphere concept, which has evolved from a variety of philosophical and worldview notions (E. Le Roy, P. Teilhard de Chardin, V.I. Vernadsky etc.).

In our opinion, the Noosphere which is a shell of our planet (a sphere of reason) doesn't exist yet and appears to be a hypothetical future state of society and its way of interaction with nature, where the collective human mind prevails and guides the evolution of the social and natural. In an official document — the "Concept for the Transition of the Russian Federation to Sustainable development" — the Noosphere is characterized as a society, where the spiritual values and knowledge of a human being living in a harmony with the environment, will become the measure of the national and individual wealth¹.

V.I. Vernadsky admitted the primacy of his colleagues in inventing the concept of the Noosphere. Thus, in his work "A few words about the Noosphere" Vernadsky says: "Having taken my notion of the biogeochemical basis of the biosphere, a French mathematician and Bergsonian philosopher E. Le Roy in his lectures at the College de France in Paris introduced in 1927 the Noosphere concept as a modern stage, geologically experienced by the

A.D. Ursul —
Director of the Center
for Global Researches of
M.V. Lomonosov Moscow
State University, Professor

A.I. Ursul —
Deputy specialized
department of social
sciences and technologies
of MISiS' National Research
University of Technology

biosphere. Herewith he emphasized that he came to this view with his friend, the biggest geologist and paleontologist Teilhard de Cardin, now working in China”².

In our country V.I. Vernadsky not only largely developed conceptual ideas of the Noosphere, but also put forward the idea of forming the sphere of reason as the main direction of the further development of mankind. Note that the scientist himself was, as he wrote, “ideologically alien to both the capitalist and socialist systems. I am alien to the nation-state as well, my ideal is different, it concerns the future that I certainly won’t experience. My life is science... What’s now happening within the scientific thought is in fact deeper and more powerful and important for the mankind than any social transformation taking place right now, whatever scope it has”³. Another reason why V.I. Vernadsky invented the Noosphere concept was his dissatisfaction with the existing social structures. What was very specific for the V.I. Vernadsky’s idea of the Noosphere was insight into the role of reason not only in the individual and social being but also in the evolution of the biosphere (particularly geological evolution). In principle, the idea of noospherogenesis as the formation of the sphere of reason differs from the concept of noogenesis (the latter was proposed by P. Teilhard de Chardin): in the first case the process of noogenesis is considered together with its environment, in a co-evolutionary perspective. This is similar to the idea of the biosphere (the theory created by V.I. Vernadsky, which he believed to be his main merit)⁴, according to which the biota is included into the scope of the inert matter interacting with it. And this very idea seems to be more appropriate in the evolutionary perspective, since the

progressive development, according to Synergetics, should be regarded as the co-evolution of the system and the environment providing this development, so as to say — the evolution of the ecosystem.

In the works by V.I. Vernadsky the Noosphere theory from the very beginning has been formed in the planetary perspective. That manifests itself, as we see it, within the form of the noospheric globalism ideology (nooglobalism), where the ideas of globalism and noospherogenesis turned up to be connected to form a coherent worldview. The followers of the scientist in the Soviet Union, and particularly in Russia and some former Soviet countries in recent years, have substantially developed his ideas and demonstrated that the epoch of the Noosphere formation is the future of humans on the pathway to their survival. The crisis-free and secure development of civilization as the co-evolution (co-development, mutual adaptation) of the mankind and the biosphere means at once the advancement of humanity towards a sphere of reason — a noosphere civilization, which will ensure the global rational management of the interaction between Society and Nature. V.I. Vernadsky believed that the formation of a Noosphere was a naturally historical and, at the same time, inevitable evolutionary process. It is being formed spontaneously like all the preceding socio-economic, socio-technological and other formations and stages of the evolution of mankind. And it is correct to consider the Noosphere as a sphere of proliferation of the beings possessing mind.

The specific notion of the Noosphere depends primarily on the time terms of its appearance (and vice versa). The situation is similar to the perception of global-

ization, where the start of this global process directly depends on the definition of its concepts. In the modern literature the Noosphere concept is presented in two main temporal versions: as some already existing area of human habitation and as a hypothetical future state (as well as an unfolding global process) of all the mankind and its interaction with Nature. These are two ways of seeing the Noosphere not only by P. Le Roy and Teilhard de Chardin, but also by Vernadsky, who often preferred to base his reasoning upon the assumption of its current existence. He believed that the formation of the Noosphere is a natural, historical, inevitable evolutionary geological process, which starts spontaneously, just like the preceding formations and phases of the evolution of mankind.

The last decade of the XX century brought significant adjustments to the perception of the process of the Noosphere formation. The thing is that the Noosphere is not just the scope of the spread of Homo sapiens (this term has recently become subject to serious debate)⁵. V.I. Vernadsky considered the Noosphere as a “new geological phenomenon on our planet. In it for the first time man becomes a large-scale geological force. He can and must rebuild the province of his life by his work and thought, rebuild it radically in comparison with the past. Wider and wider creative capabilities open before him”.⁶ The scientist, thus, sees the noospherogenesis as a continuation of the geological evolution where the humanity acts as a major geological force.

However, it makes little sense to call the preceding or modern biosphere a Noosphere, where the most perfect type of mind belongs to a single normal individual. That would be just a simple re-

naming of a biosphere to a Noosphere and wouldn't mean altering the degree of rationality of all the mankind, which will carry on provoking its environmental or another form of collective and spontaneous suicide (that could be even global in scale). It is important to create a completely new form of intelligence, capable to bail out a civilization and to prevent an impending planetary catastrophe. Threats to humanity force the human intelligence to develop and to take on global forms of existence and operation.

We present a Noosphere (from the Greek Νόος — “mind” and σφαρά — “sphere”) as a hypothetical future state (and at the same time an unfolding global process) of Society and its interaction with Nature, where the collective human mind will occupy the leading position and will be named a noospheric intelligence, guiding the socio-natural evolution in a progressive forward direction.

Today it is commonly thought that the sphere of reason can not appear spontaneously, in contrast with the considerations about the unguided transformation of biosphere to Noosphere. The sphere of reason will be the subject of the outrun modeling and will be primarily constructed theoretically through science, and then — appropriately implemented in the social and socio-natural areas. It is not a mere denial of the spontaneity, but the anticipatory planning and designing and the realization of global governance in its more developed noospheric version.

The transition of the international community to the path of sustainable development (SD) requires a rather quick rejection of the ancient model (form) of the civilizational development, which inexorably leads to a global catastrophe and the

formation, first in theory and then In practice) of the new noospheric development model. This kind of development should be rationally ruled in a planetary scale. By saying that we don't actually mean the suppression or elimination of all the spontaneous natural processes, but only those leading to the destruction of the mankind and the surrounding nature.

As far as the Noospheric approach is oriented at the future, it has to deal with some models, principles and possible ways and means of global development, "immersed" into the virtual hypothetical future noospheric environment. This very model of the noospherogenesis through the SD will serve as the "strange attractor" which will attract a current model of development on the transition way to SD. It apparently concerns the conceptual modeling of global processes based on these two concepts — the modern model of unsustainable development (USD) and the future global noospheric model of SD.

The formation of the Noosphere can be regarded as an objective tendency to solve all global problems, and not just some of them, say, an informational or environmental one. Therefore, the creation of the Noosphere is a general strategy to address global problems and eliminate the negative aspects of global processes. This strategy should be based on the patterns of the noospherogenesis, which are not identified yet and closely related to the creation of the information society and the transition to sustainable development.

We agree to pay no attention to the ideological and historical background mentioned above and assume that the Noosphere theory originates in the XX century. It would be correct to notice that the beginning of the XXI century is

remarkable for a new turn in the development of this concept due to the integration of the information society (IS) and SD theories and that of the Noosphere. If we take it for granted that any well-known version of the Noosphere theory (in the modern sense — Noosphere studies) can be applied for the conceptual advancement of the SD and IS, it's possible to set up the question that follows logically from the awareness of the connection between these formerly autonomous conceptual systems. It is perfectly clear that the shift of the theoretical knowledge can not proceed in one direction from the Noosphere studies the emerging theories of SD and IS. A reverse process also takes place, and this has a significant impact upon the Noosphere studies and world science as a whole (social studies in particular). It makes sense to name this new phase the Noosphere studies, whereas the previous one was related to the Noosphere theory.

It is quite natural that the main feature of this new form of knowledge about the Noosphere (let's call this phase non-classical) is its mutual connection with the concepts of sustainable development and information society, which are now being intensively developed on a global scale. This relation influences the scientific research on the issues of the SD and IS so far rather weakly, although in the Russian literature the situation is already a little bit different. The scientific potential of the Noosphere theory through the conception of SD is not yet realized even in Russia, let alone the IS theories.

The integration of the SD and IS ideas into the subject area of the Noosphere studies has had a significant impact on the latter. It is appropriate to highlight some of the differences between the new

vision of the noospherogenesis as a global evolutionary process, unfolding through the SD and IS, and the preceding interpretation of the same phenomenon when it wasn't associated with these two other global processes. We call the first phase of the emergence and development of the Noosphere theory a classic one, whereas its second phase is considered to be a non-classical stage of the Noosphere theory, or the Noosphere studies, taking into account the interrelations between the noospherogenesis and the trends of SD and IS. It can be said that this non-classical phase of the development of the Noosphere theory differs from the classic one in showing the noospherogenesis as a process that starts with the global transition to SD and IS in their global dimension, and then unfolds, bringing the noospheric trajectory closer to the superline of the global evolution⁷. As we can observe, the modern notion of the future Noosphere has been formed under the considerable influence of the SD and IS concepts mentioned above. Thus we believe that it is now important to work theoretically and practically in the field of the Noosphere studies in order to get the image of the future noospheric civilization, as the sphere of reason doesn't exist yet (even on its early stages), and there are just some trends of its formation.

The connection between the sustainable development and the formation of the Noosphere is obvious. In effect, the concept of the "noospheric development", or "noospherogenesis", and that of the "sustainable development" are closely related, though the latter notion presents perhaps only the beginning and a certain step on the noospheric progressive way. The Noosphere is a mature and final stage of the transition to sustainable development;

it is the desired future state of the socio-natural co-evolution, which will make it possible to provide the continuous progress of the civilization (above all — in the intellectual and spiritual dimension), including the formation of the global IS.

Let's now focus our attention on the formation of the sphere of reason through the SD. Integration of the SD notions and those of the noospherogenesis into the whole conception allows to use a number of the noospheric ideas for the transition to a global "sustainable society". Thereby it is relevant to notice that the survival of the civilization and the preservation of the biosphere are the necessary conditions for the formation of the Noosphere, and these processes are included into the noospherogenesis as its integral part and one of the major goals of the SD.

The purpose of the transition to the SD, at least in the Russian vision of this process, will be the formation of the sphere of reason. In an official document — the "Concept for the Transition of the Russian Federation to Sustainable development", adopted in 1996, the Noosphere is characterized as a society, where the spiritual values and knowledge of a human being living in a harmony with the environment, will become the measure of the national and individual wealth⁸.

It is also known that all the government's drafts of the Concept for the Transition of the Russian Federation to Sustainable development were based on the fact that the "ultimate goal" of this transition would be the formation of the Noosphere, or something of this kind in a planetary scale. The concerns of some authors about willingness of Russia to create the Noosphere while other countries choose another way, are unjustified.

If the world community embarks on the path of sustainable development, it will have to construct and to adopt a common model of its desired future; its prototype is well described in the documents of the UN Forums on Sustainable Development. And this kind of a “final model” could be called a Noosphere, although it is not about a name, but about a set of principles, criteria and goals of the future development, recognized by the world community and characterized by the noospheric nature.

The notion of the Noosphere is still rather obscure, and thus it's hard to strictly separate it from the ultimate goal of the transition to sustainable development. On the contrary, if we manage to connect the well-elaborated conceptual material on the noospheric issues with the idea of sustainable development, we will multiply the general concepts and get a more meaningful methodology, contributing to the survival of the mankind and using the rational tools to meet this purpose.

By putting accent on the noospheric orientation of the sustainable development we stress the priority of reason, particularly the moral scientific mind, in the creation of the ideal model of the “sustainable civilization”, as well as in mobilizing of all the rational and intellectual mechanisms of the transition to this model. Both for the transition to SD and for the further move towards the sphere of reason it's necessary to develop the global forms and methods of human activity on the basis of the more sophisticated forms of intelligence, and especially the creation of its holistic planetary version, which will later take form of the noospheric intelligence.

The transformation of the sociosphere into the Noosphere will result in the ap-

pearance of the noospheric intelligence as a fundamentally new form of “social consciousness”, bringing together the intellectual resources of the humanity and the IT facilities. This new form will be capable of the outrun reflection and anticipation of the natural and social life, and will use the outrun mechanisms for the implementation of the desired (prescriptive) versions of the socio-natural development. Obviously, one of the most important fetes of this informational and intellectual core of the Noosphere will be its temporal characteristics. Social consciousness in the biosphere (within the model of the USD) lags behind the social and socio-natural being, and thus allows it to evolve spontaneously. In the Noosphere case the integral planetary intelligence is able to foresee this being, to forecast and optimally design the desired future.

In the future global sphere of reason the consciousness in the form of the universal noospheric intelligence should substantially outpace the being, putting it onto the path of survival. Here is one of the major differences between the sphere of reason and a current biosphere, where the consciousness with a delay of many decades fixes the phenomenon of the civilizational rush towards omnicide and other global anthropogenic disasters.

It is clear that the survival of civilization and the preservation of the biosphere (what makes the key subject of the SD concept) is a necessary condition for the further formation of the Noosphere, and it is included in this process as an integral part. The process of the noospherogenesis itself is seen more widely and drives attention to the rational management of the transition to the sphere of reason by means of the intellectual information technologies.

The research in the field of sustainable development has been conducted aside from this aspect. Its inclusion in the discussed field allows us to represent the formation of the information society as a movement towards sustainable development and to focus the diverse aspects of the Noosphere formation on solving the problems of survival of the civilization and the preservation of the biosphere.

The transition to SD disclosed some of the restrictions on these creative human abilities: sustainable development implies not only the transformative opportunities but the adaptive limitations as well. These days it's getting more and more clear that for the transition to SD as the planetary (space in prospect) process it's necessary not only to transform, but rather to preserve the biosphere and ensure as much as possible its natural evolution. It is the biosphere that serves as a basis of existence for all life forms on the planet and for the further development of the reason provided that the humanity creates the tools of the substantial reduction of the anthropogenic pressure on the environment for the transition to SD.

This supposition was firstly made before the adoption of the SD strategy: it's not the biosphere that must be converted into the Noosphere, but rather the sociosphere, and on a global scale⁹. The biosphere in its turn should be preserved as far as possible and necessary for the existence and the sustainable development of the humanity. And it's not just because V.I. Vernadsky pointed out that "humans exist in the biosphere and are inseparable from it"¹⁰. It is certainly true, but this inseparability is the key to the further recovery of the co-evolution of the biosphere and humanity. In the very long perspective the latter may continue to ex-

ist and to develop beyond the limits of the planet. The biosphere is vital in the strictest sense of the word, it is indispensable not only for human life but for all life forms on the planet. To some extent, the transformation of the biosphere can't be escaped, but most likely it will be converted into the sociosphere, mostly within the model of USD. Creation of the Noosphere requires the integration of development into the carrying capacity of the biosphere, because this is the only possible way to manage the transition to the noospheric SD.

Here is a number of considerations demonstrating the futility of seeing noospherogenesis solely as a conversion of the biosphere into the Nosphere. Discussing this kind of transformation means seeing the Noosphere as something that already exists and that appeared spontaneously (though still in the making) as a result of co-evolution of the geological and biological processes. However, the perception of the Noosphere as an existing form of social and socio-natural development identifies it with the sociosphere within the model of USD. Still this is the evolution of the sociosphere in the model of the USD that leads to the global environmental and other disasters; that's why it should be basically converted into the sphere of reason. When the Noosphere is thought to be the future state of civilization, and the preservation of the biosphere is assumed as the maintenance of the pre-condition of life, the formation of the sphere of reason definitely requires to shift the focus towards transforming the sociosphere (anthroposphere). Further global development will be also carried out through the transformation of the biosphere, but mostly through the social and socio-natural noospheric transformations.

If we accept this assumption in the Noosphere theory (Noosphere studies), it will logically lead us to the establishment of close links between the Noosphere theory and the global sustainable development concept, but at first on the “terms” of the latter one. The transition to SD represents the initial stage of the movement from the sociosphere towards the Noosphere. The Noosphere should be formed not at the expense of the conversion of the biosphere into it, but mostly as a result of the establishment of the co-evolutionary relationship between the sociosphere and the biosphere, which has to be preserved to some extent in its natural form. It will then evolve according to its natural laws, if the social progress unfolds within the carrying capacity of the biosphere and its ecosystems.

The transition of the international community to SD will require the ultimate abandonment of the old model (form) of development, which leads inexorably to the global anthropogenic catastrophe and the formation (first in theory and then in practice) of a new development model (noospheric in the perspective), rationally managed on a global scale. By saying that we don't mean the suppression or the elimination of all the spontaneous natural processes, but only those that lead to the death of the mankind and the surrounding nature. The global governance will gradually take the noospheric shape and will also get involved into the formation of the new traits of the future noospheric civilization, that is the creation of the new type of rationality, which is demanded by a global model of the Noosphere and can be cultivated by the means of the civilization of the XXI century.

The preservation of the biosphere through the transition to SD means at the same time the realization of the principle

of co-evolution of society and nature, their mutual preservation and development, when theoretically the humanity can exist indefinitely long on the planet, whereas the biosphere, due to the significant reduction of the anthropogenic pressure, will maintain its stability and continue to evolve according to its natural laws. The co-evolutionary principle will be implemented when the human activity enters the evolutionary corridor, which is settled on the basis of the carrying capacity of ecosystems and conservation of the biosphere as a whole.

It seems to be a logical conclusion from all the aspects mentioned above, but in particular — the ecological speculations, which affect most considerably the integrity and stability of the biosphere. The biosphere is a shell of the Earth whose all components are interconnected through various types of interaction — strong and weak; there are also the circulations and cycles occurring on a planetary scale. The process of global transition to SD in the ecological perspective is the goal of reducing anthropogenic pressure on the biosphere to a level so that the “sustainable civilization” could fit into the stable biosphere by adapting to its cycles, circulations and other natural processes. That means using only the hundredths of its bio-products and mostly renewable resources, escaping the irreversible loss of biodiversity. It's a kind of an anthropogeological evolutionary process, directed at the creation of the global socio-natural noospheric system of the SD.

It is clear that the proponents of the biosphere -Noosphere transition will have to admit that it is only a part of the biosphere that is to be converted into the Noosphere. In our opinion, this part is

a sociosphere itself. But then it must be admitted that the way of expressing the idea of noospherogenesis through the linguistic construction “transition of the biosphere into the Noosphere” is at least inaccurate. It makes sense to work on the direct and most active transformation of the sociosphere into the sphere of reason, considering this very process to be the noospherogenesis itself.

The future Noosphere will be characterized by its global scope even if the noospheric transformations are to cover just a small part of the biosphere. Thus it would be appropriate to point out a principle of nooglobalism as an expression of the planetary scope of the formation and advancement of the sphere of reason. This idea can be fully realized in the nooglobalistics, which is already on its way to conceptualization. Integration of the ideas of the SD as an unfolding global process gives us reasons to assert that the formation of Noosphere is possible only in a planetary scale.

The global character of the Noosphere formation (the principle of nooglobalism) is defined not only by the globalization and the ecological assumptions, but in fact by the whole range of elements of the global activity system as a global development. It is important to guide the globalization processes which are now unfolding mostly as a spontaneous movement of the civilization towards a postindustrial society and a unified mankind in order to bring them all under the priorities of the noospheric SD. To the global environmental imperatives should be added the economic, social and other imperatives in accordance with the planetary goals of the SD, in contrast with the spontaneous tendencies of the USD model. These SD imperatives in the future perspective will include the specif-

ic noospheric goals and principles. It is impossible to realize the transition to SD, let alone the more sophisticated and secure form of global development — noospherogenesis, in one single country whereas the other states and nations create something completely different. These conditions, principles and goals will be represented within the framework of the emerging nooglobalistics as an integral part of the general globalistics and global studies.

Along with a question of transition to the global sustainability the formation of the Noosphere concerns the emergence of the information society. The latter will have to transform into the information society for the SD and actually become the very first step to establishing the global Noosphere — the Infonoosphere. From the standpoint of the modern science it is getting more and more obvious that at least two global processes (the transition to SD and the information society formation) must be integrated into one system. This will lead to creating the planetary noospheric civilization.

The very term of the “Noosphere” (the sphere of reason) put emphasis upon the intangible components of the intelligence, like the spiritual and informational factors. It goes without saying that the ideal can't exist without matter, and the Noosphere is a complex phenomenon. But a dominant active factor is presented by the reason in its various forms, first of all — in its global dimension and perspective. The ideas naturally come up on the certain phase of the material development, but again — on the higher stage of this development it is human intelligence in its collective global form that must come out on the priority position. This very stage of the social phase of evolution, where the future state of the

matter in the Universe is defined by the planetary collective intelligence, produced by this matter, should be associated with the Noosphere. From this perspective, the Noosphere will have the form of the socio-natural system, where the global outrun management will be realized by the moral and just human reason and global collective intelligence, constructed by means of computer and telecommunication technologies (including the systems of artificial intelligence and global network of the information communication).

Transformation of the humanity into the noospheric civilization assumes that the culture as an informational phenomenon will become a decisive factor on the social stage of evolution. Information (which allows to save material and energy resources) will serve as the major resource for the further social evolution. The outrun development of the informational and intellectual processes and the spiritual culture (first of all, science, education, management) will be conducted. The main criterion to assess the level of development and the quality of life will come from the humanistic moral values and the knowledge of a human being, living in a harmony with his social and natural environment, maintained by the global security provision.

In our country the ultimate goal of the sustainable development is expressed in the official document mentioned above — the “Concept for the Transition of the Russian Federation to Sustainable development”, adopted in 1996¹¹. Thereby started to come true the prevision of V.I. Vernadsky, who once wrote, that the creation of Noosphere would sooner or later “become the objective of the public policy”¹². But this goal should be integrat-

ed not only into the national strategy, but into the agendas of the world and global politics and strategy; it must become the main purpose of the global activity of all the mankind that took a course towards the survival and further ongoing sustainable noospheric evolution on the planet and probably outside it.

Endnotes

1. См.: Российская газета. 1996. 9 апр.
2. Вернадский В.И. Научная мысль как планетное явление. М., 1991. С.241.
3. Вернадский В.И. PRO et CONTRA. СПб. 2000. С. 146–147.
4. См.: Вернадский В.И. Биосфера и ноосфера. М., 2004.
5. См.: Прозоров Л.Л. Было ли учение Вернадского о ноосфере? // Пространство и время. 2012. №4. Универсальная и глобальная история (эволюция Вселенной, Земли, жизни, общества). Волгоград, 2012. С. 677.
6. Вернадский В.И. Научная мысль как планетное явление. М., 1991. С.241.
7. См.: Ильин И.В., Урсул А.Д., Урсул Т.А. Глобальный эволюционизм: идеи, проблемы, гипотезы. М., 2012.
8. См.: Концепция перехода Российской Федерации к устойчивому развитию // Российская газета. 1996. 9 апр.
9. См.: Урсул А.Д. Перспективы экоразвития. М., 1990. С. 12–48, 251–258.
10. Вернадский В.И. Научная мысль как планетное явление. М., 1991. С.122.
11. См.: Концепция перехода Российской Федерации к устойчивому развитию // Российская газета. 1996. 9 апр.
12. Вернадский В.И. Научная мысль как планетное явление. М., 1991. С.86.



V.I. VERNADSKY DOCTRINE OF NOOSPHERE AS A FOUNDATION OF THE STRATEGY FOR GLOBAL SUSTAINABLE DEVELOPMENT ON THE BASIS OF PARTNERSHIP OF CIVILIZATIONS

Man and the Cosmos According to Vernadsky and Chardin

We live in a time of dramatic, global unrest, which, here in the Middle East, is especially and painfully palpable. Long-standing institutions, thought structures, economic systems and moral values are not only losing their validity here, but worldwide. We find ourselves in times of turmoil and crisis.

Changes and transitions have always been a part of history. Nevertheless, today, we stand before a transition, an axial change, a paradigm shift, that poses entirely new challenges to individuals and society as a whole.

The intention of this lecture, “Man and the Cosmos According to Chardin and Vernadsky,” is to shed some light on this radical transformation and paradigm shift with the help of a few examples. For these two intellectuals were true pioneers, innovators, and initiators of a new world view. In order to solve old problems, one needs new paradigms, or, as Albert Einstein once famously said, “You can’t solve a problem with the same mind that created it.” You must rise above it.

Chardin and Vernadsky are both important pioneers of a new world view, the effect of which can, meanwhile, be felt beyond the scientific realm, far into social and political spheres as well. They belong to the circle of those who established the new paradigm of the future in the 20th century, and in doing so, played a major role in creating a new human consciousness. They are

**Dr. Caroline H.
Ebertshaeuser —**
*Founder and President
DISEGNO, Society for
Intercultural Studies*

bound together by their shared passion for the natural sciences and their efforts in the fields of geology, paleontology, anthropology and geochemistry. Chardin, in particular, followed his scientific methodology, even in situations in which he came up against spiritual-religious matters.

Both believe that the world is determined by interacting spheres, dependent upon each other: the geosphere — inanimate nature, the biosphere — in which all living things find their niche, and the sphere reserved for man, namely the *noosphere* (“nous” Greek for “mind”), which is born of and determined by mankind’s intellectual activity and manifests in man’s intervention in the biosphere.

As a point of departure, I will begin by briefly providing a few dates and facts from Chardin’s and Vernadsky’s biographies:

Marie-Joseph Pierre Teilhard de Chardin (* May 1, 1881, château of Sarcenat near Clermont-Ferrand; † April 10, 1955 in New York) Chardin’s life is characterized by travel to distant lands and cultures. He taught physics in Cairo (1905–08) and travelled to, among other places, Burma, Ethiopia and India. Because of his unorthodox theological beliefs, he came into conflict with the Congregation for the Doctrine of Faith, which resulted in him being sent to China for 20 years. Furthermore, the majority of his works were not published during his lifetime. He spent his final years as a research associate at the Wenner-Gren Foundation in New York, where he died in 1955. During his lifetime, he was highly valued by colleagues and the leading intellectuals of his time, and the works that were published after his death became enormous successes. The second half of the 20th century was also influenced by

groups that studied and carried on Chardin’s intellectual world.

Vladimir Ivanovich Vernadsky (1863, Saint Petersburg; † January 6, 1945 in Moscow) was a Russian geologist, geochemist and mineralogist, and a founder of geochemistry, radiology and biogeochimistry. Vernadsky studied natural sciences at the University of St. Petersburg from 1881 to 1885. In 1890, he began teaching mineralogy as an associate professor there. From 1898 to 1911, he served as a professor of mineralogy at Lomonosov Moscow State University. In 1912 he became a member of the Russian Academy of Sciences (RAS). He was named director of the RAS Museum of Mineralogy and Geology in 1914. From 1922 to 1926, he lived in Paris, where he held lectures on geochemistry at the Sorbonne. He then returned to the Soviet Union and, beginning in 1929, served as director of the biochemical Laboratory of the RAS of the USSR, and, in 1939, also as director of the State Radium Institute in Petrograd, which he himself founded.

The two men, Chardin and Vernadsky were bound together by their scientific research in the fields of geology and geochemistry and, above all, by the widespread term they originally coined, namely the *noosphere*.

From 1922 to 1926, Vernadsky worked and held lectures in Paris at the Sorbonne and came into contact with contemporary progressive thinkers in the fields of the natural sciences, theology and philosophy. Among them, were Henri Bergson and Teilhard de Chardin, who fleshed out the concept, inspired by Le Roy, of the *noosphere*. Both Vernadsky and Chardin saw the *noosphere* as a key concept in their respective cosmologies and philosophies, in which man gets an entirely

different role. It is impossible to express the extent to which Vernadsky influenced Russian thought. His interpretation of the noosphere would not only deeply benefit the coming generation in the field of science but also in the fields of anthropology and philosophy.

The Axial Age

Just like Chardin and Vernadsky initiated a shift in the history of mentalities (paradigms) in the first half of the 20th century, several other historical eras have seen similarly decisive periods of transformation. These were not only transformations in social, economic and cultural phenomena. What is most important here is the development of a new consciousness and world view that came along with these changes.

In his important work *The Origin and Goal of History* (1949), Karl Jaspers described this phenomenon and developed his own cognitive model, which had a considerable influence on Chardin's and Vernadsky's research and writings. What Jaspers connects with the Axial Age is, first and foremost, a change in the overall consciousness of humanity in their respective cultural spheres. It is not only about transformations or changes in social or cultural structures but, above all, about an actual change in human consciousness, from which, in a second stage, the other changes derive. In his work, Jaspers also speaks about an "Axial Age" and, particularly, about intercultural exchange on these levels.

The historical time frame that Jaspers describes through examples lies between 600 and 200 B. C.:

"Confucius and Lao-tse were living in China, all the schools of Chinese philosophy came into being. India produced the Upanishads and Buddha and, like China, ran the whole gamut of philosophical possibilities down to skepticism, to materialism, sophism and nihilism; in Iran Zarathustra taught a challenging view of the world as a struggle between good and evil; in Palestine the prophets made their appearance, from Elijah, by way of Isaiah and Jeremiah to Deutero-Isaiah; Greece witnessed the appearance of Homer, of the philosophers — Parmenides, Heraclitus and Plato — of the tragedians, Thucydides and Archimedes, as role models within the different cultural civilizations. What is new about this age, in all three areas of the world, is that man becomes conscious of Being as a whole, of himself and his limitations. He asks radical questions. He becomes uncertain of himself and thereby open to new and boundless possibilities. He can hear and understand what no one had hitherto asked or proclaimed. As a result of this process, hitherto unconsciously accepted ideas, customs, conditions were subjected to examination, questioned and liquidated. The *Mythical Age*, with its tranquility and self-evidence, was at an end. Rationality and rationally clarified experience launched a struggle against myth. What was later called reason and personality was revealed for the first time during the Axial Period."

Jaspers centered his thinking around the implied characterization of collectiveness, the space of a conceptual framework that goes beyond one single culture. This was because, in it, he saw the foundation and a kind of matrix for intercultural communication that had become inevitable in world history. In this context, Karl Jaspers'

“global philosophy” project should be mentioned, which describes a collective and unifying philosophy.

An important aspect in this conceptual approach of Jaspers’ and his Axial Age is that the jump in development in a culture not only concerns one culture or civilization, but already expresses an idea of unity, of an interlaced, superordinate togetherness of cultural development. With this, Jaspers already hints at the connecting concept of unity that comes up later in Chardin and Vernadsky’s noosphere, which has yet to be explained.

From the perspective of Jaspersian philosophy, the picture of the Axial Age seems to repeat itself in different centuries. The Renaissance in Europe around 1500 A. D. is also seen as important Axial Age. Its revival of the classical, philosophical, and rational intellectual approaches is referred to as the cradle of the modern age: the beginning of rationalities dominance and, at the same time, of new images of humanity, similar to those of Humanism and the Reformation in Northern Europe. A long path of religious wars, upheavals and forms of government led to the Age of Enlightenment.

Chardin und Vernadsky as Founders of a New Axial Age

Comparable to Jasper’s Axial Age mentioned at beginning, there was a new kind of Axial Age and paradigm shift in the first half of the 20th century, which arose out of the approaches of various leading scientists from a variety of cultural circles and fields. Particularly noteworthy here are Chardin, Vernadsky, Heisenberg and Sri Aurobindo.

It was in France that Chardin worked on his revolutionary world view, which, for the first time, described man and his intellectual life as being part of a cosmic evolution. As a result of Chardin’s Christian background, this development led to a worldwide noosphere of Christology. Meanwhile, in distant Russia, Vernadsky was working on the conceptual model of the noosphere, which, similar to Chardin’s view, reshaped, enclosed and deeply changed the world of the geosphere and the biosphere. In their works, Vernadsky and Chardin, as natural scientists, both try to connect and clarify natural scientific thought with intellectual, cosmic areas of the noosphere.

At the same time in Germany, Werner Heisenberg — within an entirely different, yet mentally closely related, context— developed a new world view of physics, namely quantum theory. With this, Heisenberg overcame the prevailing, static, Newtonian world view of classical mechanics. Quantum theory, specifically, would become a premise for a new kind of thought in intellectual-spiritual areas as well and in its aftermath fundamentally changed the idea of man.

What is astonishing is that, in India, Sri Aurobindo — the great Indian visionary, who wanted to form a new, social futuristic way of life in his newly founded ashram Auroville in Pondicherry (India) — came up with a comparable philosophy that is identical to Chardin’s in many ways. Sri Aurobindo was an incredibly modern phenomenon. In his works, he too overcame that which separates and arrived at a holistic world view, combining old Indian intellectual traditions with Western concepts he encountered while studying in Europe, particularly

the German philosophy of idealism combined with new scientific thought. Thus, Chardin in France, Vernadsky in Russia, Heisenberg in Germany and Aurobindo in India, make up an Axis of the new zeitgeist. Coming from different backgrounds, they all headed down a new path. And in their cosmos, the natural sciences play a central role.

What is radical here is the thought that connects Chardin and Aurobindo in their understanding of evolution, namely that evolution by no means ends with the breakthrough of consciousness that occurs in man. Rather, after it has reached the level of consciousness in man, evolution forces its way onto a higher, superhuman, supramental level, namely that of the noosphere. In the very description of this next level, toward which humanity strives, there is an astonishing convergence in Chardin's and Aurobindo's terminology: both describe this level as the level of the "supermind," the "superconscious," or, more specifically, the "supramental" level. Furthermore, both talk about reaching an ultrahuman, superhuman level. Aurobindo writes: conscious man still must first develop a complete being in himself, a divine human-being or a spiritual or supramental humanness, that is to be the next result of evolution.

In a similar way, Chardin explains the future evolution of humanity: the evolution of mankind thus has in no way reached its highest point, not to mention the fact that it could be reversible; rather, in our time, it is entirely on the upswing. A third even more surprising convergence of the two thinkers is the new assessment of material, corporeal reality, which appears in the works of Aurobindo, a Hindu,

as well as in those of Chardin, a Catholic. For in both cases, in order to facilitate the acceptance of this fact, namely consciousness' ascent out of the level of matter and the plant and animal sphere, it was necessary to overcome the traditional duality that served as the basis of traditional Hindu thought, the consequences of which can also be felt in Christian theology in a compelling way.

Chardin expresses his new assessment of reality with the term "Holy Earth." This term states that the earth is no longer characterized — in the sense of the old duality — as the vale of tears, but as a place of progressive self-manifestation of the "God of Evolution." Aurobindo thinks similar on this very topic.

Chardin's thoughts on the future are completely ruled by the thought of a progress of socialization in which present-day humanity is involved. In the fact that different cultures and civilizations, but also peoples and races, are increasingly integrating themselves into a unified humanity, he sees, the, for our era, characteristic process of the further development of the noosphere, the breakthrough into a new supramental level. Chardin's ideal is the thought of socialization and the Christian fellowship toward the bringing-together of humanity. Aurobindo does not see socialization, but instead individualization as the main objective.

For Chardin, the concept of the future evolution of humanity to a supramental level is contingent upon his Christology. Here, in particular, the special aspect of his understanding of Christ makes itself apparent: for him, the appearance of the historical figure of Christ was not the one-time, historical action in which the divine broke through into history. In this event,

he does not see a completed action, but the beginning of a process of transformation of humanity as a whole.

Pascal & Chardin

In order to illustrate the decisive change for the Christian image of humanity, Chardin will now be placed in comparison with Blaise Pascal, a scientist and a philosopher, who is still entirely endemic to the late-medieval/early modern world view.

Blaise Pascal (1623–1662) and Chardin were not only outstanding natural scientists within their respective fields but, at the same time, deeply devout Christians, who, in their writings, illuminate their images of the world and humanity, which were shaped by the times in which they lived, in an striking way.

What Galilee's shattering discovery was to Pascal, Darwin's discovery of evolution was to Chardin. At that time, man's very dignity seemed to be threatened and challenged by the idea that he descended from apes. However, the idea of evolution, of gradual transformation, was no longer a central topic just for Darwin but, once and for all, for philosophers as well, such as Henri Bergson, and had a profound influence on thinkers of the time.

What these two thinkers of French descent have in common is that they considered themselves, first and foremost, natural scientists. They are also joined, however, above all, by their theological backgrounds. Both tried to pose the question of the Christian God and man's purpose from a natural scientific perspective. In his writings, however, Pascal explicitly emphasizes the suffering, the weaknesses, and imperfection of human existence,

which not only manifest from his disjointedness resulting from the new cosmic order, but also from the Christian concept of original sin. Chardin, by contrast, approves of the world, as such, and through this optimism, calls for human action and the active advancement of humanity.

What then does the collapse of the Ptolemaic world view primarily mean to Pascal, as someone who experienced it first hand? On this matter, Guardini writes: "The medieval as well as the antique world views, were limited. This limitation, however, meant that they were clearly defined and complete. Thus an absolute emphasis was placed on finality. Yet, in the penetrating, modern consciousness, the world began to extend in all directions; it became "endless." With this, man ceased to be the center or at the pinnacle of the world."

What is a man in the infinite? With his mind and soul, man touches the angels; with his body he is on the level of the beast. His misfortune is that he is neither beast nor angel but something in between. This inevitable duality turns man into a prisoner. Pascal makes his shock felt in the presence of the upheaval of the modern era. Here, fright is a central concept. This is the point at which Chardin made a decisive turn, which will be discussed in further detail later, namely, the introduction of the idea of the evolution of humanity and, with it, the concept of freedom.

It is in order to escape from this paradoxical position of being torn apart, I propose today for your consideration a third abyss in the universe, in addition to those of infinite greatness and infinite smallness: that of infinite complexity. Through the discovery of complexity — as it was already postulated in Darwin's Theory of Evolution — science was given a new,

more appropriate scale with which to determine the ranking of the elements. Complexity is what ultimately opens up space to the dimension of time. Through the addition of this category, Chardin describes Pascal's static universe as a dynamic, progressive and still evolving cosmos. In other words, it is through complexity that an evolution with a connection to time and space is made possible. This is important, above all, for the positioning of humanity in this new system.

In his text, *Cosmic Life*, Chardin, without getting involved in metaphysical speculation, ebulliently declared his belief in the idea that this world is involved in a process of becoming: "What follows springs from an exuberance of life and a yearning to live: it is written to express an impassioned vision of the earth, and in an attempt to find a solution for the doubts that beset my action — because I love the universe, its energies, its secrets, and its hopes, and because at the same time I am dedicated to God, the only Origin, the only Issue, the only Term." By saying that Chardin describes a completely new idea of man.

Chardin was indeed aware of the fact that, with this first big text, he had already, if not completely departed from, at least blown a considerable hole in the foundation of classical theological beliefs. "If one tries to bring out the presuppositions and principles it is based on, one finds that it introduces a completely new orientation into Christian ascetical teaching."

Instead of the classical interpretation of the suffering, punishment and atonement that is understood in the context of sin, in *Cosmic Life*, Chardin understands suffering as the "consequence of work of development and the price that has to be

paid for it. Because physical and moral evil are produced by the process of Becoming. With this step, Chardin changed the Christian world view of a vengeful God as well as the idea of destiny and a life determined by fate. The image of humanity described here is characterized by the freedom of choice for one's own actions and the acceptance of evil as part of one's own development on the path toward Christogenesis.

Chardin's standpoint to this topic shows, as described in his book *Le cœur de la matière*, the dramatic development that had taken place in the meantime. In addition to the radical steps taken by mankind in its reflexion about its place in the world, it was also shocked by Darwin's discoveries. The realization that animate nature had been created through a process of evolution and that man himself is part of this process, was a radical departure from the church's idea that all creatures, in their present form, had been created by God. The idea that forces of development are at work in nature was not only of central interest to Darwin, a natural scientist. The topic of evolution and transformation was also addressed by philosophers such as Henri Bergson, to name just one of its important supporters.

Henri Bergson

Chardin was 24 years old when Bergson's most important work, *Creative Evolution: A New Theological Theory of Evolution*, was published. During his lifetime, Bergson's influence was grossly underappreciated. It evidently made quite an impression on Chardin's restless mind, because here, the young researcher saw the geological de-

velopment of life, the self-transmutation of organisms presented as a matter of fact, an irrefutable truth, whose powers of becoming, however, had yet to be explained. Bergson's *Évolution créatrice* was open to the mystery of creation. It acknowledged the workings of hidden forces that were not easily, or not at all, accessible to rational measurement. As such, it opposed Darwin's extremely mechanistic interpretation. Bergson's idea of a creative life force had a profound influence on Chardin. In this world of thought of one of the foremost living philosophers, the seeds with which Chardin was able to grow his own work found fertile ground. Bergson built Christians a bridge to their own theory of evolution, which he always experienced as a theory of upward progress.

For Bergson, Darwin's explanation of evolution falls short. In his opinion, there has to be an "élan vital," that converts inanimate matter into animate. According to Bergson, inorganic matter, due to entropy, is characterized by a constant loss of energy, while animate matter, by contrast, is revived by the élan vital.

It is in the idea — that time, as opposed to space, is an important factor in science as well — that the basis was created on which Chardin brings the theory of evolution from the natural sciences into the realm of spirituality.

In fact, the history of the evolution of the species, as a topic, is crucial for Chardin as a paleontologist. He was even one of the first to study the "Peking Man" findings. The idea of evolution offers humanity something reassuring: it means the overcoming of, what was described by Pascal as such a threatening element, namely, the "conditio humana" in a rigid, static world order.

For Chardin, it is not only the idea of evolution that characterizes the world as a whole, not only a "towards" throughout ancient history and evolution in the sense of a Christian history of salvation but rather, with the emergence of man, evolution too arrives at its own consciousness. Within Chardins idea of man this is the decisive step that represents an entirely new stage in the progression: rational man, who, himself, is not only a product of evolution, but, through his consciousness, can rise above himself and the world and gain insight into the processes in which he is embedded.

Chardin is convinced that humanity still finds itself in the midst of an evolution, that its development is not yet complete. In the opinion of many biologist, man, in achieving "homo sapiens" status, has reached his organic limit. In contrast to this conception, today, many believe that consciousness has by no means reached its apex but has entered a critical period of increasing intensity and growth. What Chardin means when he refers to the individual going beyond a highest possible degree of development is, above all, a supraindividual consciousness, a collective consciousness, which unites all of humanity.

What is new and disconcerting about this idea is that reflexion, as such, is viewed as a social phenomenon in which each specific individual is merely a fragment. In a consciousness that encompasses all of humanity, a complete level of reflexion can be achieved.

"Mankind, born on this planet and spread over its entire surface, coming gradually to form around its earthly matrix a single, major organic unity, enclosed upon itself; a single, hypercomplex, hyper-

centered, hyperconscious arch-module, coextensive with the heavenly body on which it was born." (Chardin). Mankind, as a collective, is subject to evolution and is involved in a constant process of further development. In addition to its biological evolution, mankind, and mankind only, undergoes a mental evolution (or at least manifest in matter — mind and matter are inseparable!).

The result of an increase in the number of people populating the world, is — as with any natural system — an increase in complexity, which raises mankind to a new level of collective intellect: the noosphere. This leads to the creation of a new kind of cognitive interconnectedness, to a trans-individual, trans-mental super brain.

In no way, however, does socialization mean the end of the age of the person; rather, its beginning. The whole problem lies in the fact that socialization and individuals becoming one does not occur through a forced, functional mechanization of human energy, but through a collaboration inspired by love. Here, Chardin speaks of a new forms of universal love, which is often imagined in vain, but which, from here on out, has finally left the sphere of the utopian and is becoming apparent as possible and necessary.

According to Chardin: "Love has always been carefully eliminated from realist and positivist concepts of the world; but sooner or later we shall have to acknowledge that it is the fundamental impulse of Life, or, if you prefer, the one natural medium in which the rising course of evolution can proceed."

"Love is the most universal, formidable and mysterious of the cosmic energies. Could it not be, in essence, quite simply that very attraction which is exercised

upon each conscious element by the Center of the Universe? The call towards the great Union, whose realization is the only business now afoot in Nature."

The answer's meaning does not lie within itself. It moves toward a goal that is outside of itself, thus a transcendental goal. Here, at the latest, Chardin the scientist becomes Chardin the metaphysician. At this point, his theory clearly breaks away from the Marxist world view.

While, according to Marxist thought, the meaning and the goal of history is thought to be immanent happiness on Earth for all of humanity, Chardin can only envision man's destiny in a transcendental reality. Chardin refers to this point of evolution as the "Omega Point."

*Cosmogenesis > Biogenesis >
Noogenesis > Christogenesis:*

It is in this order that Chardin draws the stages of evolution on the last pages of his diary. Christ as the last stage? How are we to understand this if Chardin talks about Him and the supra-evolved, in other words, the transcendental pol, at the same time? In his work *Le Phénomèn humain*, he writes: "At the end of evolution we see the Omega Point as the culminating peak of movement. However, at first, this evolutionary aspect only reveals half of itself to itself. As the final stage of evolution, it stands, at the same time, outside of evolution."

According to Chardin, the most important characteristics of the noogenic movement are: the convergence of cognitive elements; the synthesis of individuals and of nations and races; the necessity of a personal, autonomous and highest focal point, in order to connect individual per-

sonalities in an atmosphere of active sympathy, without infringing upon them.

And all of this — again — under the unified impact of two curvatures: the curve of the Earth and the cosmic convergence of minds — in agreement with the law of complexity and of consciousness.

Omega-Christ is thus both evolutionary and supra-evolutionary, immanent and transcendent. For Chardin, however, this means that, at the same time as the universe is completed, Christ will be, in turn, completed by the universe. In this bold thought, Chardin refreshes the vision of the mystical body of Christ.

Chardin denies the accusation that this unification of humanity represents a threat to our original individuality and freedom with the argument that day-to-day experience proves that unification—heart to heart, mind to mind — not only differentiates us but, connected by love, strengthens us internally. Man cannot be defined by his belonging to a body nor to the spiritual world, but only through the order of love, that is to say, by God. In other words: from the very beginning, mankind was created to become God and can only be understood from Gods perspective. Consequently its destiny lies in its image of God.

Vernadsky's Image of Humanity

For Chardin, mankind, in its bond with the world and the cosmos, is the central topic, particularly in its relationship in his religio-ethical, Christian world.

As a natural scientist, Vernadsky only touches the edge of mankind's ethical-religious evolution, but mentions his interest in Indian spiritual tradition and its

surprising similarities to the latest stand in the natural sciences. However, by understanding the noosphere as mankind's intellectual activity, in other words, the union of mankind as an entity next to Earth's biosphere, he bypassed, maybe even got rid of, the medieval Christian separation of matter and mind, of man and nature, in the most modern sense. It is impossible to think of the individual spheres between which Vernadsky differentiates (lithosphere, hydro-, geo-, bio- and noosphere) as being independent from one another or separable. This is because they influence each other and, what is more, they also find themselves, simultaneously, in a process of evolution and transformation as well. Here, for example, one can call upon the modern term of "ecological balance."

Vernadsky is moved by two, major philosophical streams, which, for their part, each have a history that goes back several hundreds of years: the ideological and the materialistic forms of philosophical thought. According to Vernadsky, due to political objectives in the first few decades of the 20th century, materialistic thought had become a priority in the Soviet Union. Vernadsky wanted to overcome this and advocated holism: "there are a series of philosophies — precursors of the future heyday of philosophy. A contemporary scientist cannot work without paying attention to them. Among them, biologists must now take into account the holistic philosophy. In my opinion, the philosophy of holism, with its new understanding of the living organism as a single whole in the biosphere seems to be the first philosophy that tries and gives a new shape to the cognition theory." Vernadsky attempts to grasp the relationship between "the living

and the dead.” Due to the state of science at the time, it was not possible to scientifically prove the existence of special life forces or a living energy (“élan vital,” etc.) intrinsic to organisms. Nevertheless, Vernadsky plead in favor of further research in this direction by referring to Indian thought, which already had a long tradition of dealing with this subject: “Intuition, inspiration — this is the foundation of the greatest scientific discoveries which begin from this stage and then proceed rationally and in a strictly logical way. However, intuition (inspiration) is not caused by a scientific or logical thought. We must strengthen our scientific attention to this area. The most deep and interesting attempt at studying it is the Hindu philosophy, both ancient and contemporary. I do not mean theosophic search essentially far from both modern science and modern philosophy. In the new Hindu thought, as well as in the ancient one, there are philosophical trends not in the least contradicting our modern science, or contradicting to smaller degree than many philosophical systems of the West. Such are, for example, religious-philosophical search of Aurobindo.”

Although Vernadsky’s thoughts are very different from Chardin’s religious ideas, both are connected not only through their studies of the natural sciences and their work, but by a model of the world and cosmos in which the human mind plays a central role. In Vernadsky’s image of the noosphere, the pursuit of human intellect is towards a worldwide sphere. This idea is not only an entirely new approach, but also places the social questions and the social structure on new premises. In contrast to Chardin, Vernadsky stays within the boundaries of the natural sciences, while Chardin inserts these concepts into

his religious cosmos. Still, what characterizes the time in which both worked is the shared image made up of different backgrounds and perspectives.

According to Vernadsky, the biosphere will also be overtaken by, or more specifically, superimposed by the noosphere. In the age of man, he shapes the Earth to such a great extent that all natural processes in nature, from this point forward, are under his influence and, as such, are, sometimes, sped up, sometimes, altered. In the final analysis, Vernadsky postulates a holism that, according to his statements, however, must extend beyond Western methods of scientific argumentation. In Hindu thought, such arguments had, in his view, already been conceived and further extrapolated upon, so that one could borrow from them in order to overcome both idealism and materialism. Under the action of scientific thought and human labor, the biosphere goes over to a new state — to the *nosphere*.

“The noosphere is the last of many stages in the evolution of the biosphere in geological history. The course of this evolution only begins to become clear to us through a study of some of the aspects of the biosphere’s geological past. Now we live in the period of a new geological evolutionary change in the biosphere. We are entering the noosphere. This new elemental geological process is taking place at a stormy time, in the epoch of destructive world war. But the important fact is that our democratic ideals are in tune with the elemental geological process, with the laws of nature, and with the noosphere. Therefore we may face the future with confidence. It is in our hands. We will not let it go.”

Therefore, mankind has accrued an, up to then, unforeseen power over nature. If

one compares the earlier idea as the invariable creation of world and man, the oft-cited bible verse, “replenish the earth and subdue it,” seems here to be a vital requirement for man and his civilization.

Vernadsky’s idea of man’s influence on nature encompasses the necessity of survival as well as the freedom of choice over what man does and what he takes responsibility for. For this reason, Vernadsky’s image of humanity sees great potential in autonomy and personal responsibility that extends beyond pure necessity. Thus it is man, who, through his intellect, inevitably “subdues” the earth. In his freedom, however, it is ultimately up to him how he shapes it. Once again, in the words of Vernadsky: “It is in our hands. We will not let [the Earth] go!”

Vernadsky’s dedicated spirit revolutionized science. At the same time, however, he was involved in social and political areas as well, in particular, in youth education, universities and the encouragement of the freedom of thought.

Conclusion

With their revolutionary world views, both scientists not only influenced the image of humanity of their day, but laid a

foundation for the future. For Chardin, it was about freeing mankind from the dualistic conflict between good and evil, between sin and grace, which, through the moment of evolution of the entire human race but also of the individual, granted freedom to the aspect of individual choice. This evolution is carried to the noo- and Christospheres by the unifying power of love. Vernadsky also gave the noosphere a central place and positioned humanity, in its rationality and activity, as a global force that now shaped and influenced the biosphere. Vernadsky’s image of humanity is not as broad as Chardin’s, because he felt more connected to his scientific background and indulged less in speculative ideas.

Although Vernadsky’s and Chardin’s premises, as well as those of the other intellectuals, such as Bergson and Heisenberg, are different, their works still represent a breathtaking emergence into a new age. If one looks back at this from the standpoint of today, one can see the basis of our modern world view in this phase of scientific development. Together with the Internet and new technological possibilities, this world view allows for a stronger intercultural dialogue for all of mankind.

Translator: Hayley Haupt



V.I. VERNADSKY DOCTRINE OF NOOSPHERE AS A FOUNDATION
OF THE STRATEGY FOR GLOBAL SUSTAINABLE DEVELOPMENT
ON THE BASIS OF PARTNERSHIP OF CIVILIZATIONS

***Atlas of Temporal Variations
in Natural, Anthropogenic and
Social Processes. Volume 5. Three
Environments Issue and Person***

All volumes of Atlases cover factual data on dynamics of natural and social processes and give results on unified processing, analysis and interpretation of time series. The Atlases pursue two main goals. The first of them is scientific and consists in discovering the unknown behavior pattern of natural and social processes. The second, practical, aim is to ensure the preservation of mankind and the biosphere. This volume is dedicated to a problem of effects on people from the natural, social and anthropogenic environments and human response to them. Collaboration of specialists in different directions allows them to use advances of each other and include in disposal new approaches.

The Atlas is a unique piece of fundamental interdisciplinary research, which contains some laws underlying evolution in the natural and social spheres. It can be used as a reference book and valuable source of information for research in different directions. In additional point to emphasize that the Atlas is «food for thought and research», the reader is given an excellent chance to see in the results more than the authors have done.. At last the results obtained provide the base for promoting the system ecological monitoring in practice and educational process.

The Atlas is intended for researchers, practitioners, lectures and students of natural and humanitarian specialities, and all those interested in the effect of the three spheres on people health and life quality as well as on the biosphere's health.

Contents

The Foreword (*Gliko A.O., Chereshnev V.A.*)

Introduction (*Gamburtsev A.G.*)

PART 1. THREE ENVIRONMENTS, THEIR
INTERACTION, COOPERATION
AND BIOSPHERE EFFECT.

Gamburtsev A.G., Tarko A.M. Generalities
and peculiarities of processes'
dynamics in nature and society.

Klige R.K. Global changes in
natural conditions and
heliocosmic factors' effect.

Sidorenkov N.S., Gamburtsev A.G.

Planetary atmospheric processes,
solar and heliomagnetic activity.

Klimenko V.V., Mikushina O.V. Abnormal
dynamics of global temperature
in the beginning of the XXIth
century, namely natural factors
against anthropogenic ones.

Tarko A.M., Glazkova A.A., Zvyagintsev A.M.
Dynamics of carbon dioxide and
methane in the atmosphere.

Lyubushin A.A., Kliashtorin L.B. Cyclic
climatic variations. Cold snap
forecast from 2008 to 2030.

*Gorbarenko E.V., Eremina I.D., Isaev A.A.,
Gamburtsev A.G.* Dynamics of some
ecological and climatic features of the
atmosphere in Moscow on data from
MSU meteorological observatory.

Aptikaeva O.I., Shitov A.V. Features
of meteorological parameter
variations for Gorny Altai.

*Sidorenkov N.S., Sumerova M.V.,
Ponomarev M.V.* Astronomical reasons
for abnormal hot summer in 2010
on European part of Russia.

*Zvyagintsev A.M., Kruchenitskiy G.M.,
Gamburtsev A.G., Ananjev L.B.,
Artamonova A.A.* Total ozone
in the atmosphere.

Zvyagintsev A.M., Glazkova A.A.

Small gas components in
atmospheric surface layer.

*Belokrinitskaya L.M., Zakharov V.M.,
Kruchenitskiy G.M., Marichev V.N.,
Skorobogatij T.V.* Seasonal and long-
term variability of aerosol content
in off-polar stratosphere and its
connection with total ozone content.

Klok S.I., Kruchenitskiy G.M., Variability
of atmospheric thermodynamic
parameters on data of Antarctic
station «Michael Faraday —
Academic Vinogradsky».

Kotelnikov S.N. New ecological threat for
Russia is ground ozone, its effect on
human health, animals and plants.

Aptikaeva O.I., Gorbarenko E.V. Analysis
of solar radiation dynamics in
Moscow (on data from MSU
meteorological observatory.)

Lyubushin A.A. Forecast of
seismic catastrophe in Japan
on March 11, 2011.

*Gamburtseva N.G., Gamburtsev A.G.,
Usoltseva. O. A., Sidorenkov N.S.*
Modern geodynamic processes in
collision zones on data of seismic
sounding of the lithosphere.

Aptikaeva O.I. Seismicity of Garm region
on the background of the Earth
rotation velocity variations.

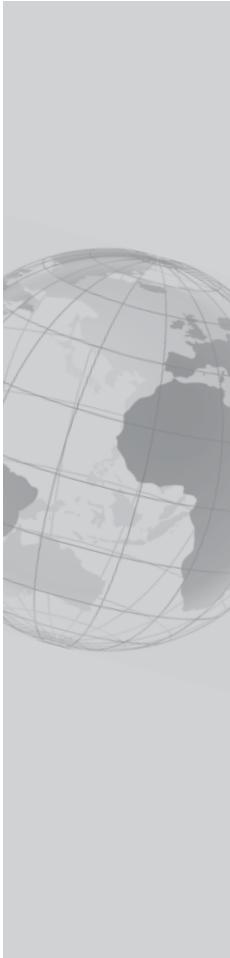
*Belov S.V., Shestopalov I.P., Kharin E.P.,
Barkin Yu.V., Solovjov A.A.* Volcanic and
seismic activity of the Earth: space-

- temporal patterns and connection with solar and geomagnetic activity.
- Zotov O.D., Guglielmi A. V* Results of anthropogenic effects on the magnetosphere and lithosphere.
- Rabinovich G.Ja., Aptikaeva O.I., Gamburtsev A.G.* Reflection of temporal geodynamic processes in velocity profile of Kola ultra deep well.
- Rabinovich G.Ja., Aptikaeva O.I.* Harmonic analysis of seismic acoustic model of Pucheg-Katun impact structure.
- Tsetlin V.V., Aptikaeva O.I.* Spectral analysis of monitoring data of electric current in interelectrode space on the background of variations of geophysical and cosmophysical factors.
- Aptikaeva O.I., Kostenko K.A., Seljukov T.I., Stigneleva L.T., Cherepanov O.A.* Rhythmic structure features of time series of radon volumetric activity under recording in megalopolis.
- PART 2. HUMAN AND BIOSPHERIC RESPONSE ON EXTERNAL EFFECTS — MEDICAL AND OTHER HUMANITARIAN ASPECTS**
- Galichii V.A., Stepanova S.I.* Biological rhythms in medicine.
- Aptikaeva O.I., Gamburtsev A.G., Galichii V.A., Stepanova S.I.* Biorhythmic approach to state estimate of geodynamic objects.
- Kuklin S.G., Mikhalevitch I.M., Rozhkova N.Yu., Titov Yu.M., Temnikov A.A., Dzizinsky O.* Certain temporal variations of sick and healthy persons.
- Gamburtsev A.G., Andreev E.M., Aptikaeva O.I., Galichii V.A., Gorbarenko E.V., Zaslavskaya R.M., Zaslavskaya R.M., Martyushov A.N., Nemtsov A.V., Sigachev A.V., Sidorenkov N.S., Stepanova S.I., Streletskiy L.U., Tarko A.M., Chibisov S.M., Shcherban E.A.* Influence of three environmental spheres on medical indexes. Experience of comparative analysis.
- Chereshnev V. A., Gamburtsev A.G., Sigachev A.V.* Dynamics of emergency calls in Moscow during recent five years.
- Gamburtsev A.G., Sigachev A.V., Gamburtseva N.G.* Features of week histograms of Moscow emergency calls.
- Martyushov A.N., Aptikaeva O.I., Gamburtsev A.G.* Structure of time series of the number of urgent hospitalization in mental hospitals of Moscow and Kazan (general trends and differences).
- Nemtsov A.V., Gamburtsev A.G.* Dynamics of time series of hospitalization of patients of alcoholic psychosis in Moscow.
- Aksel E.M.* Dynamics of cancer morbidity in Russia.
- Shitov A.V.* Changes in influence of geological factors on population health under geodynamic activation.
- Zadonina N.V., Aptikaeva O.I.* Rhythmicity of epidemic emergence and epizooty in Siberia and Mongolia.
- Tereshchenko V.G., Tereshchenko L.I., Mostryukov. A.O.* Long-term dynamics of fish population variety in major reservoirs of Russia and CIS countries.
- Klyuchevskii A.V., Klyuchevskaya A.A.* Synchronization and desynchronization phenomena in geological (lithosphere of Lake Baikal rift) and biological systems under stress.

- Maksimova L.A., Enikeev A.G.*
Desynchronization of hybrid tomato flowering.
- Andreev E.M., Gamburtsev A.G.* Dynamics of demographic indexes in Russia, France, Germany and Finland in the second part of XX century.
- Tarko A.M.* Investigation of dynamics of Russian demographic, social and technological parameters and development prospects.
- Tarko A.M.* Experience of analysis of long time series of demographic parameters of word countries and Russia.
- Elakhovskij V.S.* Features of macroeconomic dynamics in Russia.
- Gamburtsev A.G.* Attempt of economic index analysis in Russia.
- Shostak O.I., Gamburtsev A.G.* Stages and cycles of Siberian economic,
- historic and demographic development of pre-Soviet period.
- Benevolsky B.I., Krivtsov A.I.* Long-term tendency of world balanced supply of gold — retrospection and forecast.
- Kharuto A.V., Kovalenko T.V., Kulichkin P.A., Mazhul L.A., Petrov V.M.* The Intensity of Artistic Life: an Analysis of the Periodic Components
- Kuklin A.A.* Intensity of artistic life — periodic components analysis.

APPENDIX

- Kuklin A.A., Mikhalevitch I.M., Rozhkova N.Yu., Titov Yu.M., Temnikov A.A., Dzizinsky*
The news about oscillation processes and cardiac rhythms (continuous wavelet analysis).



ON THE ESTABLISHMENT OF THE GLOBAL SYSTEM FOR MONITORING, FORECASTING AND EMERGENCY RESPONSE (GSMFER)

Project of International Aerospace System For Global Monitoring

Nature and human activity on the Earth are in non-compliance, for which humanity is paying with the natural and man-made disaster that threaten not only the compartmentalized world economies and small-town mentalities of internecine states and governments, but also sustainable development of life on Earth.

Statistics of natural disasters confirms the need to return the debt to restructure human nature. It is a tragic list of increasingly frequent disasters reminiscent of irrational human activities on the earth; it looks depressing.

According to scientists, in 2000's of natural disasters are somehow affected 2.7 billion people on the planet. It is easy to calculate, it's more than every third inhabitant of the earth.

Only from earthquakes in the world every year die more than 30,000 people. The economic costs of these seismic upheavals in the hundreds of billions of dollars that small countries can reach almost half of their national wealth. Subsequently, these countries for decades bear the burden of rebuilding its economy and standard of living of the people behind the development of human civilization.

Well, all the natural and man-made disasters, taken together, the average cost to humanity more than one trillion dollars a year.

According to the organization of the International Strategy for Disaster Damage Reduction (ISDR), in the last thirty years, from the largest contingency of natural phenomena were killed 1.8 million people, and the direct economic loss of more than half a trillion dollars.

In the coming years, according to experts, the cost of natural disasters and man-made disasters in the world commensurate with the growth of the gross domestic product of the world.

A diversified multi-component of our business requires new approaches, additional infusions of leadership, perhaps even reformatting process management and structuring, with absolute dominance of the wisdom of elders and professional partnership on the basis of the primary tasks.

As a result, instead of international cooperation, we are engaged in an unreasonable and bustle "in the race for leader," and politics, creating a monopoly and a unipolar world.

Capturing resources, we are trying in vain to proclaim the dictatorship of the force of a single state. But nature does not divide us on border posts and earthquakes do not care about our borders and customs unions.

Such frivolity often makes us fall behind by decades of neighbors whom nature spared its wrath.

Only a synergistic effect of cooperation can give people the chance to stay on the planet. The total potential, knowledge and statistics of centuries of observation of nature and vigilant monitoring of the near-Earth space are up to the task. Of course, the key role it must play in the exploration of outer space.

Conquest of Space by man is, definitely, one of the most important turns in

the history of the development of human society. This turn has expanded the scope of the mind, the scope of the interaction between nature and society.

Exit of the man to space changed worldview ideas about the relationship of nature and society, made the hypothesis of practical human activity in space a reality, has opened a new direction in the development of civilization, and that is his lasting scientific value.

Space has become a common, everyday attribute of human life and directly impacts on the affairs of the earth and thereby helping people in their work.

Today, unfortunately, the space industry in the world much lost ground. The main space stations are outdated, not only morally, but also physically, continuity of generations working in the space industry, is broken for demographic reasons.

Today, unfortunately, the space industry in the world much lost ground. The main space stations are outdated, not only morally, but also physically, continuity of generations working in the space industry, is broken for demographic reasons.

Meanwhile, there is a huge resource of unused space capabilities. Today, space travel is to play an invaluable role in the field of education and dissemination of knowledge. At a time when the whole world is filled with information technology is the most advanced method of disseminating knowledge in the use of space systems in which a person can get the necessary amount of information of interest to him in virtually every corner of the planet.

One of the possibilities of such cooperation is the project IGMASS.

IGMASS project, providing for the establishment of the International Global

Monitoring Aerospace System — is actively promoted in recent years, the initiative of the Russian scientific and public organizations to build effective international mechanism that would effectively prevent individual countries and the international community as a whole of impending natural and man-made disasters, including due to threats of cosmic origin

In the framework of this project, carried out in close co-operation of the International Association "Znanie", the Russian Academy of Cosmonautics after Tsiolkovsky and the International Academy of Astronautics, is the concept of the identification using special equipment space, aviation and land-based so-called "precursors" of future disasters.

On IGMASS invited to lay a complex problem solving operational and short-term forecasting of destructive natural phenomena and man-made disasters, it can become a backbone of the idea, which in the case of its practical implementation will mark the beginning of a new, unified strategy for space exploration — aimed at ensuring environmentally sound and socially sustainable development the international community based on common, enduring values of preserving life on the planet.

International Global Monitoring Aerospace System (IGMASS) is established to provide timely warnings to the international community of impending disaster and emergency situations of natural and man-made disasters on a global and operational monitoring and forecasting using scientific and technological potential of land, air, space monitoring of all countries of the world, further development and the gradual integration of navigation and communication and information re-

sources of the planet in order to address the humanitarian problems of Humanity.

The purpose of IGMASS is a global and efficient prediction of occurrence on Earth and in space potentially dangerous situations of natural and man-made disasters through an integrated use of global aerospace monitoring capacity.

On the basis of the earmarking IGMASS, the priorities of the system should be to identify earthquake-prone areas, the discovery and documentation of the precursors of geological hazards for future early warning of their approach, the evolution in time and space, as well as subsequent continuous monitoring of hazardous effects of the environment (seismic activity, aggressiveness, variability, etc.) to man-made systems and their elements.

In this case, using ground-based, aircraft and space vehicles of the system will address the following objectives:

- constant and continuous satellite monitoring of the lithosphere, atmosphere and ionosphere of the Earth, near-Earth space to detect early signs of hazard of natural and man-made processes;
- collection, initial processing on board the spacecraft and the transmission of monitoring data to ground stations receiving space data;
- synthesis and processing complex in national, regional and international crisis global monitoring data centers, derived from space, air and ground vehicles, its interpretation, storage and display;
- prompt delivery of information on identified threats of natural and man-made disasters to the organizations at risk of, as well as UN specialized agencies;
- guaranteed navigation and telecommunication support customers around the world (telematics) for the benefit of

emergency response, disaster medicine, humanitarian operations, to optimize the movement of people and goods, literacy, development of distance learning preservation of cultural values,

- warning about global threats in and from space: asteroid and meteoroid risk, as well as the abnormal phenomena of different origin,

- the gradual formation of a single planetary “informational security space” in the interests of reducing global risks and parry emerging threats.

Given the need to optimize the timing of the creation IGMASS, others assigned to the system will be achieved in two stages.

The first stage is telecommunication and navigation support activities for disaster relief, humanitarian operations, the development of distance education and training in various fields.

The second stage is the long-term objectives warnings about global threats in and from space, as well as the gradual formation of a single “informational security space.”

An important element of IGMASS subsystem can become an international distance learning in the field of monitoring and forecasting of natural and man-made disasters, that would greatly expand the possibilities of development as specialized educational training programs and operational training of professionals and improving the quality of education in educational institutions located away from the administrative, industrial, and cultural centers.

Using integrated into a future system of navigation, communication and information resources of the international community will help with IGMASS effectively address current humanitarian

problems of mankind, which, along with the already familiar distance learning and telemedicine unequipped in terms of information areas include the preservation of cultural values of natural and historical heritage, maintaining ecology, assessment and conservation of the biosphere-noosphere identity in the national and regional scales.

IGMASS project is a single set of organizational, methodological, research, design, production, training and extension and other measures to ensure the achievement of the original objectives.

In order to provide organizational, scientific, technical, financial and economic support activities related to the creation of the International Global Monitoring Aerospace System created by NGO “International Committee for the implementation of the Project of the International Global Monitoring Aerospace System” (the Committee).

The main objective of the Committee — to draw public attention to the project at the national and international levels, the consolidation of specialized scientists and engineers, as well as the potential of enterprises and organizations to realize the vision of the system, the search for new ideas and solutions, administrative and financial resources to build it.

Committee is a non-governmental, social structure, composed of representatives of 36 countries and international organizations. The Committee has already signed about a hundred memoranda of co-operation with relevant national, regional and international organizations around the world.

Participants of the IGMASS Project are:

- Space agencies and related government agencies on the status;

- International organizations and private companies;
- Non-governmental organizations;
- Enterprises of space industry;
- Academy of Sciences;
- Research institutions and universities.

The creation and implementation of the Project IGMASS in broad international cooperation and under the auspices of the UN, as well as the subsequent operation of this system will be characterized by a pronounced effect of the socio-political, humanitarian and economic nature.

Social and political importance of the project will be to IGMASS awareness by the international community the need to peaceful use of outer space and on this basis, combining efforts to address the global problems of the XXI century, the strengthening of the foreign policy positions of the participants in the prevention of scientific, technical and political unexpected occurrences related to parry threats and risks of modern multi-polar world.

Practical implementation of the humanitarian impact of this international project is to preserve the life and health of hundreds of thousands of people at the expense of the operational forecasting of natural hazards and man-made situations, early warnings of natural disasters and global catastrophes, providing timely medical assistance in case of their occurrence and the adverse development, and ultimately, the ability to develop and implement effective action by the international community on parrying of natural and man-made threats to the entire spectrum of possible approaches.

The economic aspect of the project IGMASS is directly or indirectly manifested through the preservation and enhance-

ment of scientific, technological, scientific and technical capacity of project participants (the possibility of the formation of thousands of new jobs in space industry), an annual savings of financial and other material resources in the amount of many millions of dollars by reducing the negative effects of natural and man-made disasters. The direct economic effect of the use IGMASS will also consist of the profits from the sale of the monitoring information and services to consumers and commercial use of distance education and tele-medicine.

Given the challenges, threats and risks, with a cargo of which humanity is a post-industrial phase of development of a civilization, it is impossible to overestimate the importance of international projects, including the Project IGMASS oriented to receive and disseminate information that is turning into an economic and political category that defines all species, both domestic and planetary resources.

That is why in the space program today involved nearly 50 states that have overcome bureaucratic obstacles and has created its own space agency, not having space centers and space industry.

At the same time, the disposal of mankind has the experience, the measurement and predictive technology to allow for joint political will of States and their leaders negate the loss of life and minimize the destruction of property.

Not all the discussed projects destined to be realized, but science does not develop otherwise. Only due to inconsistencies and errors progress is being made. But the gains could quickly be impaired if they are not developed new methods of work promptly meet the challenges of the time.



Scientific Heritage of V.I. Vernadsky as a Fundamental Basis of Scientific and Education Revolutions of the 21st Century



On Comparison of Evolution Theories for Vernadsky, Kondratieff, Kuznets, and Schumpeter Cycles

S.Yu. Romyantseva —
Economic Theory Department
of the Saint Petersburg State
University, Assistant Professor,
Candidate of Economic Sciences

Ideas on the cyclical nature of life processes and activities of people in the world are known to have a deep history, rooting back in the ancient philosophies. These ideas, later replaced by the future theories of linear progress, gradually began to find confirmation in the facts detected by supporters of economic theory. Thus, even Adam Smith concerned the mechanism of economic cycles, describing the practice of tracing the bills in chapter II of part II of his “*Inquiry into the Nature and Causes of the Wealth of Nations*”¹ and virtually every representative of classical political economy has not been able to avoid the mechanisms of cycling. However, the scientists paid very little attention to the issues of cyclicity as a specific field of study until the end of the 19th century.

The end of 19th up to the early 20th century in the global economic scientific thought was the time that started the formation of economic dynamics and economic cycle theory as an independent scientific field, not just supplementing the existent static laws of economics with a function of time, but representing a fundamental dynamic methodological approach. Development of the theory of crises and cycles in the world economics, early formation of the theory of business cycles, a heyday of historical, sociological, and philosophical theories to explain the long-

term patterns of society development, the revival of the historical cycles theory and substantial criticism of the linear progress theory in this period were a powerful layer in the knowledge of social development.

Anticipated by *The Philosophy of History* by G.W. F. Hegel and Friedrich Nietzsche's concept of *eternal return*, perceptions of the cyclic form of social development were gaining momentum, led to the revival of half-forgotten ancient and medieval theories of historical cycles. The strong influence on shaping the worldview of scientists who worked at the junction of 19th and 20th century had Marx with his theory on the formational patterns of social and economic development, his substantiation for the coming crisis of capitalism, and his investment theory of the business cycle. The most subtle thinkers such as Spengler Anticipating anticipated the decline of progress in European culture. The latter, in his work *The Decline of the West* of 1918, restored the grand history of successive cycles in the development of world civilizations.

On the other hand, at that time a number of countries, notably Russia and some European ones (Germany, Sweden, Switzerland) experienced replacement of the agrarian civilization with industrialism that left its imprint on the development of the international scientific thought. The scientists in England, the USA, and France, that were the first to face the comprehensive nature of the market, paid attention primarily to its function as automatic regulation of economic processes that predetermined their interest in the development of models of market equilibrium that make up the basis of the mainstream. Unlike them, the scientists of those countries that were involved in the industrial

market environment influenced by the expansion of international economic relations, were naturally enchanted by another property of the market — namely, the ability of its dynamics to synchronize upswings and downswings that occur in time development of different industries and areas of national and world economy as a chain of causes and consequences processes. This established the theory of cycles and business cycles as a set of ideas that explained the laws of economic dynamics. The formation of this theory after 1904, when W. Sombart designated the priority of research on rhythmic patterns of the economic development process in time over the study of causes of recurrent crises and depression in the economy², along with the ideological background of the century, has had an impressive impact on the further development of both world and Russian economic theories.

1. Philosophic background of cyclical evolution of the society: V.I. Vernadsky, A.A. Bogdanov, and N.D. Kondratieff

In this constellation of ideas a serious place belongs to the Russian philosophy and natural science of the early twentieth century. At that time, Russian socio-economic and philosophical thought was on the cutting edge of worldwide research. At the level of formation of a scientific worldview it was evident because of the emergence of two related ideological phenomena — the Russian *cosmism* and a set of concepts known as the school of *Russian cyclism*³, as it was aptly named by Yu.V. Yakovets. The "personnel" of these schools often included the same thinkers. Presentiment of the coming crisis of European civilization, the

fate of which was directly connected with Russia as well, resulted in two principal approaches to the social dynamics research that share a common focus on anticipating and actively shaping of the future, formation of the criteria for the development that would be able to withstand the trends of decay. While the representatives of the Russian school of cosmism (N.F. Fedorov, V.S. Soloviev, S.N. Bulgakov, K.E. Tsiolkovsky, V.I. Vernadsky, and others) attempted to justify the moral standards of life and economy, aimed at maintaining harmony between the spiritual world of people, their material existence, and the outworld (sophianism, the study of Noosphere, moral ideal), cyclism supporters — N.A. Berdyaev, N.Ya. Danilevsky, K. Leontyev, A.L. Chizhevsky, later L.N. Gumilev were moving in the same direction as the Western thinkers like Spengler, Toynbee, and later F. Braudel, trying to identify, first of all, the general laws of social matter for adaptation and prognosis. As a result of their research, in spite of all the differences of explanatory concepts applied, it became increasingly obvious that society does not develop linearly, but in accordance with a wave model. In this sense, of great importance is the generalization made by A.L. Chizhevsky, who drew the conclusion of the cyclic rhythms of the society out of its relationship with the rhythms of solar activity, “The great variety of mass phenomena at various times makes it increasingly clear for us that there is a spontaneous rhythm of their lives, simultaneity in their heartbeat rate, the synchronic change of powerful ups and deep downs”⁴.

The universal, cosmically meaningful sense of cyclic processes on the planet and the active role of human mind in this process at the stage of those times was

established by V.I. Vernadsky, thus laying both the natural and the moral basis for acceptance of the cycle paradigm and awareness of the dangers arising from arrogance of the human mind, overwhelmed with progress and oblivious to the disastrous consequences of human urge to enrich clashing with nature and the features of its natural cycles. In his book *Biosphere* (first edition of 1926)⁵ the scientist introduces the concept of living and inert matter, showing a cyclic process of reviving interaction between them, which provides the evolution of species and constant resumption of geological processes on the planet. Developing the theory of biogeochemical cycles, the scientist reveals that all the activities of nature, both living and nonliving, appear as a circular flow, a sustainable cycle.

Anticipating the synergistic research, Vernadsky finds that the evolution of life and of living matter on the planet does not appear as the occurrence of individual elements, but of whole sets of life elements, linked by mutual connections. Thus, the evolution of planetary processes appears as a multifactorial, complex mechanism, as the today's supporters of synergy would say, or rather an organism. In addition, Vernadsky pointed out the necessity of matter exchange with the environment as the source of evolutionary change and generation of new turns in the cyclical development. In fact, for us, the cycle concept of Vernadsky defines philosophical ideas about the cyclical nature of evolution of planetary processes.

Meanwhile, Vernadsky warned “Even now historians, scholars of humanities in general, and also biologists — to a certain extent, do not consciously consider the natural laws of the biosphere — that shell

of the Earth where life can exist”⁶, emphasizing that in the twentieth century the human is becoming a powerful geological force. The humanity is thus facing a “question of restructuring of the biosphere as a whole in the interests of a free-thinking human being”⁷, in accordance with the principle of equality of all people as a law of nature. In fact, the concept of noosphere was defined this way — the term introduced by E. Le Roy based on Vernadsky’s lectures that he gave in 1922–23 at the Sorbonne. Vernadsky’s description of achievements and dreams of the humanity to transform the matter of nature contains a warning for a person, as a new geological force, to be cautious dealing with the natural cycles of the biosphere, so as not to upset their balance. The noosphere is thus seen as a perspective of the evolution of the mankind in its interaction with the living and non-living nature as a result of the evolution and escalation of the mind to overcome its desire for momentary selfishness that would allow human civilization to continue its existence in harmony with the basic cycles of nature.

A very special place among the number of Russian cycle theory supporters belongs to A.A. Bogdanov, who formed the doctrine of tectology — or an universal organizational science. Bogdanov justified the laws of social dynamics based on the study of patterns in the formation of its micro-level, characterizing and drawing a typology of structures arising in the course of evolution of the society elements and the relationships between them. Thus, Bogdanov’s concept reveals the bases of systematic approach, the beginning of synergy, the elements of institutionalism, and deep systemic rationale of inherent patterns in the development of society

through ups and downs. Bogdanov developed the idea of dynamic equilibrium⁸ within the theory of highly organized systems — that is, those “that are able to overcome the many and varied activities — the resistance of their normal environment”⁹. Speaking about the universality of the law of Le Chatelie¹⁰ on the applicability of the methods of tectological science to the study of social and biological processes, he lays the foundations for an evolutionary approach to the analysis of economic systems, anticipating in this respect the ideas generated by the Schumpeterian school of evolutionary economics.

Shaping the concept of dynamic equilibrium as a condition to maintain a system undergoing the specific influences of other systems, he uses, in fact, the evolutionary concept of selection — a conservative one (leaving the system in constant conditions with the same qualities) and a progressive one (determining the direction and possibility of change within the system). The inner law of development is negative and positive selection. With the positive selection the system of activity of a complex increases, and assimilation dominates over disassimilation, with the negative one — on the contrary, disassimilation processes dominate, and the system of activity of the complex reduces. As a result, Bogdanov comes to the philosophical and naturalistic determination of causes of prosperity and crises in the development of living and social systems. In this perspective we find out not only evolutionary and synergistic elements of Bogdanov’s dynamics theory, but also the similarity of his findings with the later theory of Challenge and Response by A. Toynbee.

A little bit later than Bogdanov’s, in the mid 30’s, a largely similar concept

was developed by N.D. Kondratieff who was taken into a Stalinist political prison, where, being cut off from the possibility to have a real impact on the course of economic events in Russia, he focused the last efforts of his life on the development of the theory of economic dynamics patterns¹¹. The development of an approach to the social dynamics research that only gained its universally recognized name as a system, or synergistic, in the second half of the twentieth century, at the time was conducted by separate scientists like Spengler, Bogdanov, Kondratieff. The latter's view of the economy as a complex system of interconnected elements, developed by him within nomographic theory, special attention to the distinction between the concepts of causal and functional relationships in the economy¹², reconstruction of the history of the genesis of the economic dynamics theory¹³ and its development in the delineation of different kinds of dynamic processes in the economy formed a radically new vision of society and economy movement pattern, which was intended by the scientist to be developed within the theory of economic genetics. The principle of economic dynamics types being divided into the cumulative and streaming processes playing different roles in shaping the final trend of economic development, proposed by N.D. Kondratieff, became a fundamentally new approach to the study of economic dynamics patterns¹⁴.

Thus, the theory of cyclical development of nature and society and the responsibility of mind for the results of this development had deep natural and scientific, philosophical, and empirical roots at the beginning of the twentieth century in Russia, contributing to the further re-

search of cyclism. In fact, it was research by the school of Russian cyclism which formed the basis for civilized approach to the study of social development processes; and there were expressed some ideas that anticipated the modern concept of sustainable development, which is particularly important in the context of modern civilization crisis, when it is necessary to address issues of social, economic and biological survival of the mankind.

2. J. Schumpeter and the theory of innovation as the basis of cyclic processes

In the modern theory of cycles one can not avoid the innovation category. It is innovation —technological, social, organizational, financial — that can overcome consequences of the present civilization crisis and develop a new model of economic and social structure of the future society. It should be noted that the role of innovation in overcoming the systemic failures of the economy has been noticed for a long time. Within the economic theory, the question of how to overcome the lower turning point of the economic cycle, was previously discussed by Adam Smith¹⁵, the economic effect of technical improvements was described by J.S. Mill¹⁶, and Marx distinguished between "intervals, during which the technical revolutions are less sensitive..." and periods "when gradually accumulated detailed improvements... are embodied in the technical changes that are revolutionizing the structure of capital around the large production industries circumferentially"¹⁷.

However, the process of innovation as a key mechanism for the economic cycle formation was established by J. Shum-

peter in his work of 1911. Nevertheless, it is important to note that the concept of Schumpeter's theory, formulated as the slogan "innovations overcome depression" does not represent his views on the mechanism of the economic cycle as fully as can be. Schumpeter understood a no less significant role of financial factors in the development of the economy and determined the recovery and growth of the economic system in the recovery phase of the economic cycle as the credit boom that lasts until the new capital starts to yield diminishing returns. At this point, the demand for credit starts to decline, and the economy tends to revert loan resources in the financial system, thus triggering deflation, a further drop in revenues due to deflation, and depression itself. Thus, due to the depression the loan resources become relatively cheap for those market participants who remain "afloat" or have the means to start a new business. Therefore, an innovative entrepreneur does not appear in Schumpeter's theory "by accident", but the implementation of his entrepreneurial spirit is largely triggered by the financial situation of the economy. According to Schumpeter, in a period of economic depression there is a period of equilibrium when the prices of all major products and resources are stabilized at a low level. The introduction of innovations overcomes and takes this equilibrium, characterized by the complete absence of profit, down¹⁸.

Schumpeter understood innovation more broadly than just technical improvements and equated them with the concept of "carrying out of new combinations". Activities for the implementation of new combinations are taken on by the creative, active people — businessmen, and there-

fore, the composition of a new combination of economic resources is a function of their private business activity.

New combinations of economic resources, such as the introduction of a new method of production, a new technical invention, a new way of using existing commercial products, the creation of new goods or a new quality of goods, the development of a new market, finding a new source of raw material and organizational innovations¹⁹, are the ones that express the concept of Schumpeterian innovation, and this approach should be developed in the search for new ways of organizing economic systems in terms of civilizational crisis.

In Schumpeter's theory, innovations create temporary non-equilibrium conditions, partly identified by the scientist as the emergence of a temporary monopoly, which is the source of profits. As the innovation is "ageing", the emergence of the rival followers restores the equilibrium, and the profit disappears. Considering the Schumpeterian approach, it should be borne in mind that, in his concept, the equilibrium state of the economy is stagnation, when there is zero economic profit. The processes of rapid growth occurring after the introduction of innovation are associated with the state of the imbalance, instability. Stagnation (saturation of markets) precedes the crisis, which forms based on financial and credit-related factors. The crisis brings a "creative destruction", reflected in the bankruptcy of inefficient enterprises, which clears the way for innovators who blow the balance and bring the economy to a higher growth trajectory.

Subsequently, in his book *Business Cycles* (1939), J. Schumpeter joined together

his early development and the theory of N.D. Kondratieff and proposed a typology of innovation, dividing them into basic and improving²⁰. In the further development of the theory, primarily as a result of the powerful influence of ideas by J. Van Duijn, G. Mensch, G. Dosi and other scientists, innovation in the economy became associated primarily with the development of technology, although other areas of innovation activity were also studied by the scientists. For example, J. Clark, C. Freeman and L. Soete were focused mainly on the role of organizational innovation, reorganization of models of relationship between capital and wage-workers, analyzed market structures and their transformation, which led to the creation of the concept of national innovation systems²¹. However, today the technological image of innovation remains the dominant one as well.

In the above-cited study of 1939, Schumpeter developed his understanding of the mechanism of economic cycles, taking into account the knowledge of the newly discovered Kitchin and Kondratieff cycles. He attempted to create a three-cycle model in which each Kondratieff cycle consisted of six Juglar ones, and each Juglar cycle contained three Kitchin ones. Note, however, that his scheme was simplified, assuming constant wave amplitude and requiring coincidence of three cyclic lows at the initial point of the model, which can only happen by accident. Schumpeter believed that all types of cycles are to be explained through a single mechanism — the introduction of breakthrough innovations.

The interaction of waves in Schumpeter's model was shown only in the fact that their periods were the multiples. Such

simplification gave him a reason to deny the very existence of long waves²².

However, the variety of cycles in the economic system suggests the possibility of their interaction and mutual influence in the formation of the final trend conditions, so Schumpeter's attempt to create model of blending cycles is the pioneer in this area and continues to provoke further research in this area.

3. Evolution of Kondratieff's Theory of Long Waves

The formation of Kondratieff's long cycles theory occurred at a time when Russia had worked out a deep natural-scientific and philosophical understanding of the formation of cyclic processes. Besides, the existence of 60-year cycles in the economy dynamics was already known, in particular from the work by W.S. Jevons of 1884²³, empirically confirmed assumptions by M.I. Tugan-Baranovsky on the existence of long periods of decline and prosperity of the capitalist economy²⁴, and a number of other works by foreign and domestic Kondratieff's contemporaries. As a result, N.D. Kondratieff not only managed to create an empirically well-thought pattern of sequence for two and a half large cycles in the period from 1780 to 1920 in a number of natural, industrial, commercial, and financial indices, as well as in the price index, but also to give these cycles a deep scientific explanation.

Thus, in N.D. Kondratieff's theory there can be distinguished at least five causal layers:

1. Relationship between the long waves and the frequency of the investment process in production facilities with a lifetime

of more than 50 years, i.e. in infrastructure constructions.

2. Relationship between the long waves and the frequency of capital accumulation in the financial sector, which mediates investments in infrastructure.

3. Dependence of existence of economic cycles with varying lengths on equilibrium levels in the economic system that are specific to each type of economic fluctuation.

4. An integrated approach to the phenomena of economic life as *aggregates*, the nature of which is determined by the law of averages, which include the totality of the material world of lower orders (atomic-molecular, organic, psychic world) and are themselves part of a set of higher order (world of social and human phenomena). This approach, called by N.D. Kondratieff nomographic²⁵, gives the reason to consider long waves not just as a phenomenon of *economy*, but also as an object of interaction between the natural world, the market, and the social and human world events (communications), relationship, in which any change in one of the interrelated aggregates leads to a change in the very model of interaction. In this respect, there seems a certain philosophical closeness of single paradigm of understanding the universality and interdependence of life phenomena, supported by N.D. Kondratieff and V.I. Vernadsky.

5. Manifestations of long waves in the dynamics of technological progress, social and political activity, agriculture, and duration of recovery and recession phases of the business cycle, called by N.D. Kondratieff "empirical validities".

N.D. Kondratieff, in fact creating a multi-factor theory of long waves, noted the empirical pattern for accumulation

of a critically large number of technical improvements in the upward phase of the great cycle, which allowed to talk about the existence of relationship between long waves and recurrent technical revolutions, which has revealed his solidarity with Schumpeter's point of view.

Later, a lot of research of long-term aspects of economic dynamics, centered on the analysis of mostly technical and economic dynamics was devoted to this type of economic fluctuations. This line of research was revived in Russia (USSR) in the early 80's of the twentieth century; at that time the global economic thought experienced the rise of interest in the concept of Kondratieff's long waves as well, mainly in its Schumpeterian interpretation. The publication of G. Mensch's book *Stalemate in Technology* in 1975²⁶ revived global interest in the legacy of Kondratieff. By 1981 a global school of researching long waves in the economy was already developed, which was evidenced by the publication of thematic issue of the *Futures* journal²⁷, which published the research results of its leading members, who were developing, first of all, the technical and economic aspects of Kondratieff's theory. In 1984, Italian scientist G. Dosi formulated the basic ideas of the theory of technological paradigms²⁸. At the same time, the Soviet Union also experienced a development of the theory of long-term economic dynamics initially in the form of a very cautious publications in the mid-80s²⁹. The basic concepts were focused on its technical and economic interpretation. A.I. Anchishkin's research where the successive stages in the development of scientific and technical progress were highlighted³⁰, the concept of successive generations of technology change³¹ in connection with

the patterns of economic development by Yu.V. Yakovets, corresponded to the Western theories of techno-economic paradigms and defined the conditions for the formation of technological structures theory in Russia, was already openly associated with the name of Kondratieff after his political rehabilitation in 1989. Thus, there was given a key perspective for long-term economic dynamics research as for fluctuations in economic activity associated with the development of science and technology³². This approach currently continues to evolve, also being included in a field of study of long-term patterns and prospects for the development of the information sector of economy³³.

Currently, there are several explanations for the mechanism of the long cycle associated with innovation and technology, finance and credit, resource and energy, price, military, and other influences on the economy. Specific attention of scientists is attracted by the innovative explanation of long waves; and on the basis of this interpretation there was formed a number of separate concepts that represent the main research interest of the author, that being the concept of technological stalemate by G. Mensch, of national innovation systems by C. Freeman, of techno-economic paradigms by G. Dosi and C. Perez-Perez, and that of technological structures by S.Yu. Glazyev.

In accordance with the technical and innovative approach, each long wave is based on the life cycle of a cluster of basic technological, organizational, and institutional innovation, forming the techno-economic paradigm. In practice, as a rule, it is a question of technological innovation. In this case it is appropriate to speak not so much about the techno-economic

paradigm, but of a technological style (mainly technological interpretation of G. Mensch), or technological structures (reproductive-technological interpretation by S.Yu. Glazyev).

The question of the relationship between long wave and techno-economic paradigm (TEP) was discussed in the 80's — early 90's of the 20th century. It is important to note that J. van Duijn, back in 1981, expressed the idea that the life cycle of technology and the long wave were not the same things.

In fact, for today there remains an urgent problem for the long innovation cycles, that is, the reason for resumption of economic growth after the passage of the lower turning point. The absence of a clear answer to this question leaves open the possibility of a solely voluntary solution for the problem of "innovation breakthrough" at the expense of state financing. But the "imposition" of technology may give no effect if applied during the phase of cyclic unreadiness of economy to innovation; on the other hand, if we have no answer to this question, an automatic mechanism for the management of depression remains unclear as well.

It is important to note that there is a lot of potential for justifying the lower turning point of the long cycle in its financial and credit-related explanation, associated with the study of the process of capital formation at the level of corporation (industry). The willingness of the economy to innovate obviously occurs after the collapse of the economic bubble, when the opportunities for economic agents to gain profit from investing in virtual assets are running out. With the fall of the accumulation rate, lowering of corporate profits, and the occurrence of

risks for investing in virtual assets, the attention of entrepreneurs switches over to the real economy.

The issue of endogenous explanations for lower turning point within the logic of the economic cycle, particularly a long one, remains open, especially to countries that are not qualified as locomotives in the global economic process. There is a reason to believe that if the Schumpeterian automatic mechanism to overcome depression through the activity of entrepreneurs or Mensch's concept of depression as a trigger for a cluster of basic innovations has had place in history, only at the early stages of industrial evolution, when only a few Protestant countries — the United States, Great Britain, the Netherlands, and Germany — were the locomotives of global growth. In the industrial era, the entrepreneurial spirit as an element of national identity cultural motivations played a key role in securing a country as a world's innovation leader³⁴.

In modern conditions the mechanism of winning the economic leadership has changed. Over the past decades, there was a tendency to strengthen the role of the state in the economy, in particular, to encourage scientific and technological progress. A number of countries have formed the basis of national innovation systems. Due to the increasing role of the state in the economy, some cycle-making trends of world economic development has been severely disrupted. In particular it was evident back in the twentieth century, when developed countries were conducting counter-cyclical fiscal and monetary policies on the national level, which eliminated the deflationary trends in the phases of the business cycle downturns. Due to the conversion of deflation

trends into disinflation ones, i.e. a simple slowdown in the inflation process in the phase of decline of the economic cycle, the basis for the mass collapse of inefficient industries disappears, and there emerge trends of excessive proliferation of fictitious capital.

The aforementioned trend of formation of economic bubbles and their collapse prior to the upward trend of the economic cycle has acquired an exaggerated form, but even after the collapse of the bubble, the inflation trend is not replaced by deflationary crisis; in these conditions the force of entrepreneurial spirit alone is not enough to form the upward phase of the long cycle. Competing in the global economy in the 21st century is provided by the actions of individual governments, and innovative development model is available for different countries, including the ones that have had historically weak manifestations of the national entrepreneurial spirit in its classic Schumpeterian sense.

Thus, the process of innovation needed to overcome the lower turning point of the cycle in today's economy is institutionally justified, depending on the maturity of government innovation policy of the country and its ability to create an effective innovation system to transform the scientific potential of technical creativity to the real product made by economic agents of the national economy.

Under these conditions, Schumpeter's broad interpretation of innovation, not only considering the technological aspects and understanding of contemporary society as a noosphere with the appropriate level of responsibility for the development of biological and social matter, should serve as a basis for the development of

geopolitical and social innovation, as economic and technological methods alone are not enough to overcome modern civilization crisis, falling at the beginning of the decline phase of the long wave.

However, considering the technological tools of cyclic development within the theory of long waves, it is important to point out that the process of technology introduction involves launching of an economic growth mechanism through investments in fixed assets, and this mechanism is described in terms of the evolution of ideas on the economic cycle mechanism by S. Kuznets.

4. Investments in fixed assets and economic cycle mechanism by S. Kuznets

S. Kuznets's contribution to the formation of the evolution theory of economic cycles was associated with the detected 20–30 year fluctuations of economic matter, which are sometimes called the “cycle of economic growth”³⁵ or cycle (swing) of S.M. Kuznets. Strictly speaking, the theory of *Long Swings* by Kuznets was originally a theory of economic growth, as Kuznets examined the relationship of economic growth rate with the change of the leading sectors of the economy. Kuznets associated this dynamics with demographic trends, in particular, immigration inflows and outflows from the country and related construction pace³⁶. It seems, however, that demographic factors are not the root cause of these swings. Research by B. Berry and S. Solomou shows that the dynamics of economic growth corresponds to the frequency of Kuznets's swings³⁷. It is important to note that understanding the logic of this cycle, taken in isolation from

other types of cycles, particularly long waves, would be difficult.

To explain this type of cycles, one can use the ideas of K. Marx on the timing of consumption of fixed capital, lasting 7–10 and 20–50 years³⁸. It is possible because investments in fixed capital as a source of economic growth in the sector has been thoroughly analyzed by S. Kuznets in a *theory of leading sector* back in the 30's. The concept of leading sector dates back to the ideas of Van Gelder and Tugan-Baranovsky³⁹ that the cyclical recovery is provided by the rapid expansion of one or more key sectors as well as to the idea of Schumpeter's breakthrough innovations. From this point the economic growth is achieved by the rapid development of some new production, which revives the economy as a factor of business demand at an early stage of its existence, and when the innovation was introduced and a new round of industrial growth has begun based on it, it serves as a factor supporting the supply side of the economy, which creates a sector of consumer demand for itself.

The Kuznets's concept of leading sector has two aspects. On the one hand, the sectoral structure of the economy can be divided into two sectors: the manufacturing sector and the sector of agricultural and raw materials industries. On the other hand, the term of sector can be understood as a group of technologically and organizationally related industries. The life cycle of any such group of industries is a reflection of the life cycle of certain technological innovations and technological mode of production based on them. Trends in production and prices in the concept of leading sector of the life cycle of this technological innovation⁴⁰ that de-

velops in accordance with the logistic law and the law of diminishing returns.

The stability of economic growth, which is demonstrated by the national accounts statistics, is achieved when during the period of slower growth in the old leading sector there is a rapidly expanding new one, in which the labour productivity has risen sharply due to the use of cost-saving technologies⁴¹.

In terms of the division of the economic structure into the sector of raw materials production, agricultural products, and industrial production, as noted by Kuznets, there are periods, when the ratio of the prices for the products of these sectors is more favourable for the industry, and the periods when the ratio is more favourable to the development of rural agriculture and raw materials industries. He studied the question of the relationship between the growth of prices for the products of the sector and the growth of output and wages in this sector. Kuznets believed that the rise in prices for the products leads to a drop in consumer income, which leads to reduction in savings, but it contributes to the growth of employment due to the expansion of production and the redistribution of income between wages and profit in favour of profit, which promotes the growth of the sector⁴².

Frequency of changes in the trends of economic growth at the level of the factor of its formation — investments in fixed capital — has been later confirmed⁴³.

In the aspect of studying Kuznets's swings it is very important to note that understanding of their mechanism is needed to form a clear picture of the processes taking place during the long Kondratieff cycles. Schumpeter's attempt to create a multi-cycle model was subse-

quently repeated several times by different researchers (models by J. Forrester and B. Berry)⁴⁴, and, in particular, it was found that at the level of the basic mechanism of economic growth formation — investment in fixed capital — Kuznets's swings are functionally integrated into the long Kondratieff waves. In particular, in the first period (the upward phase of the long wave) there is implemented the swing of Kuznets based primarily on investments in the production of fixed capital aimed at the production of technology and equipment for the new technological order; besides, overproduction in the sector by the end of the 30-year period initiates the processes of system crisis of the mid-wavelength (analogue of the twentieth century — the energy crisis of 1973–74, that quickly acquired a systemic character). The downward phase of the long wave is formed on the basis of the built-in Kuznets swing based on investment of fixed assets by from the industries producing equipment for the production of final consumption goods. This is a shorter cycle (20–25 years) and its amplitude during the decreasing phase of the long wave is lower. But the realization of this cycle of investment in fixed assets can maintain a relatively stable level of economic growth for quite a long time, preventing the long wave from instantaneous “collapse”.

If we assume the probability of hypothesis that within one Kondratieff cycle there are two related Kuznets cycles, proposed by B. Berry⁴⁵, then the Kuznets cycle and the Kondratieff cycle on their rise have qualitatively different bundles of basic innovations. During the rise of the Kondratieff cycle, coinciding with the rise of the Kuznets cycle, technologi-

cal innovation is implemented and new product industries requiring the creation of the new capital and new infrastructure in the economy are introduced; and during the rise of the Kuznets cycle coinciding in the second half with the rise of the Kondratieff cycle is ensured wide spreading of dominant products in the economy, and transport and distribution networks creation is needed, as well as a flurry of improving innovations that contribute to adaptation of the new product to the market requirements.

Development of understanding in the logic of Kuznets swings in the relationship with the Kondratieff long waves is of great practical importance, implemented in the construction of multicyclic models. In particular, our experience of such construction⁴⁶ allowed to show contrast to the wave of transition between IV and V Kondratieff waves to the transition between III and IV Kondratieff waves arriving respectively at 1990s and 1930s. Thus, during the 30's of the twentieth century there has been a downward trend in three types of cycles including Kuznets and Kondratieff cycles, which determined the nature of depression having rich innovations of the 30's. Set in the fifties, the pace of the U. S. economy, fueled by matching of the growth phases of cycles is likely to have laid the basis for the phenomenon of a scientific and technological revolution. Since the end of the twentieth century, the synchronization of the declining phase of all the strongest economic cycles is absent; since the 90's of the twentieth century there has been seen an upward phase of the fifth Kondratieff cycle, very weakly expressed in the global economy and politics because of suppressive effects of the recession phase

of the Modelski cycle; and since 2001 the decline phase of Kuznets cycle and the business cycle were also detected. Therefore, the growth in 1990–2000 stemmed from a joint upward trend of Kuznets and Kondratieff cycles, and later, after the crisis at the market of information technologies of 2001 implemented as a crisis of the business cycle in 1997–2001, and simultaneously as the crisis of the upper turning point of the first cycle of economic growth in a couple of cycles of the fifth Kondratieff wave, and started a downward trend in economic activity in the economy as a whole, which ended with a structural crisis of 2007–2010 years, after which the long wave subsided.

* * *

The current state of the world economy and the global public consciousness is a systemic crisis that can only be overcome by understanding the laws of civilized development, adaptation of noospheric thought to practical decision-making in management. It can be assumed that understanding of evolution in planetary processes — biological, social, and economic — as cyclical is a vital methodological approach in this way. The economic cycle, based on Schumpeter's innovation process has a "layered" nature, when the cycles of longer duration incorporate other ones, less and less short, but no less important for the evolution, those that ensure the technological process, the frequency of fixed capital formation, and variation of market equilibrium conditions. The new paradigm for understanding the evolution of social matter should be based on a thorough analysis of the relationships between different types of cycles.

Endnotes

1. Smith A. An Inquiry into the Nature and Causes of the Wealth of Nations: // <http://www2.hn.psu.edu/faculty/jmanis/adam-smith/wealth-nations.pdf>
2. Sombart W. Sovremennyi capitalism (The Modern Capitalism) M-L., 1930. V. III-2, P. 49.
3. Yakovets Yu.V. Vozniknovenie I etapy razvitiya sovremennoi scholy russkogo cyclisma (The Rise and Development Stages of the Scientific School of Russian Cyclism) // Philosophia khozyaistva (Philosophy of Economy) 1999, N 1. Yu.V. Yakovets even suggests that at the beginning of the twentieth century, as well as at its end, the Russian scientific thought was in the midst of forming a new paradigm of social science (Yu.V. Yakovets. Istoki I perspektivy formirovaniya postindustrialnoi paradigm obschestvovedeniya (Origins and Prospects of the Post-Industrial Paradigm of Social Science) // Formirovanie novoi paradigm obschestvovedeniya (Formation of the New Paradigm of Social Science). Ed. by Yu.V. Yakovets, R.G. Yanovsky, M., 1996. P. 15.
4. Chizhevsky A.L. Kolybel jizni I pulsy vselennoi (Cradle of Life and Pulse of the Universe) // Russky cosmism/Antologiya filiosofskoi mysli (Russian Cosmism. Anthology of Philosophical Thought). Compiled by S.G. Semenova, A.G. Gacheva. M., 1993. P. 326.
5. Vernadsky V.I. Biosfera (Biosphere). M., 1967.
6. Vernadsky V.I. Biosfera I Noosfera (Biosphere and Noosphere). M., 1989, P.144
7. Ibid. P.148.
8. Bogdanov A.A. Tektoligiya. Vseobschaya organizatsionnaya nauka (Tectology. Universal Organizational Science). M., 1989. V.1. P. 122
9. Ibid. P. 126.
10. According to Bogdanov, the development of the system and formation of its equilibrium (Ibid. P. 197) occurs in the course of its interaction with the environment, which is carried out in accordance with the law of Le Chatelier, "if the system is exposed to some influence, changing any provision of equilibrium, there occur processes designed in such a way to counteract this change"— Ibid. P. 248.
11. Kondratieff N.D. Osnovnye problemy ekonomicheskoi statiki I dinamiki (Fundamental Issues of Economic Statics and Dynamics). M., 1991.
12. Kondratieff believed that "to explain the socio-economic phenomenon means to include it in the required causal clear relationships, which is the knowledge we have of socio-economic reality" — Ibid. P.149. In this regard, he specifically raised the issue and the difference between the concepts of causation and functional communication, warning about the danger of neutralizing the sense of science in its orientation to the knowledge of predominantly functional dependencies (Ibid. P. 161–162).
13. Ibid. P. 273–301.
14. Kondratieff N.D. 1) K voprosu o ponyatiyah ekonomicheskoi statiki, dinamiki I konjunktury (On the Issues of Economic Statics, Dynamics, and Konjunkture // Problemy ekonomicheskoi dinamiki (Issues of Economic Dynamics). M., 1989. P. 59; 2) Model ekonomicheskoi dinamiki kapitalisticheskogo khozyaistva. Tesisy neizdannoi raboty.

- (A Model of Economic Dynamics of Capitalist Commerce. Brief outline of the unpublished work) // Ibid. P. 413.
15. Smith A. Inquiry into the Nature and Causes of the Wealth of Nations // <http://www2.hn.psu.edu/faculty/jmanis/adam-smith/wealth-nations.pdf> — P. 2, Ch.2
 16. J.S. Mill. Osnovy politicheskoi ekonomii (Principles of Political Economy). V. III. P. 3; P. 62
 17. Marx K. Engels F. Collected Works. M, 1975–1981. V. 49. P. 220
 18. Schumpeter J.A. Theorie der wirtschaftlichen Entwicklung, Berlin, 1911. (The Theory of Economic Development). Harvard, 1934.
 19. Quoted on; Schumpeter J. Teoria ekonomicheskogo razvitiya (The Theory of Economic Development), M, 1982. P. 158.
 20. More detailed description see:
S.Yu. Rumyantseva. Dinamika innovatsyi I faza dlinnoi volny (Dynamics of Innovation and Phase of the Long Wave) // Vestnik Sankt-Peterburgskogo Gosudarstvennogo Universiteta. Seriya 5. Ekonomika (Bulletin of the Saint Petersburg State University. Ser. 5. Economics). 2001. Ed. 1. No. 5. P. 33–48.
 21. Clark J., Freeman C., Soete L. Long Wave, Invention and Innovations // Futures, 1981. Vol. 13. №4.; Freeman C., Clark J., Soete L. Unemployment and Technical Innovation. A Study of Long Waves and Economic Development. London, 1982.
 22. Kuznets S. Shumpeter's Business Cycles // American Economic Review, Vol 30, June 1940, 157ff. P. 257.
 23. Jewons W. S Investigation in Currency and Finance. London, 1884. P.132.
 24. Tugan-Baranovsky M. Promyshlennye krizisy v sovremennoi Anglii. Ih prichiny I vliyanie na narodnuyu zizz (Industrial Crises in Modern England. Their Reasons and Influence on Peoples' Life). St.-P., 1894. P. 510; Tugan-Baranovsky M. Periodic Industrial Crises. St.-P., 1914. P.160
 25. Nomographic theory was developed by N.D. Kondratieff in the unfinished work: Osnovnye Problemy ekonomicheskoi statiki I dinamiki (The Main Problem of Economic Statics and Dynamics)/(N.D. Kondratieff. Izbrannye sochineniya (Selected Works). M., 1993. P. 166–304.)
 26. Mensch G. Stalemate in Technology. N. Y., 1979.
 27. Futures. 1981. N 13 (4).
 28. Dosi G. Technical Change and Industrial Transformation. N. Y., 1984.
 29. Yakovets Yu.V. Zakonomernosti NTP I ih planomernoyue ispolzovanie (Patterns of scientific and technical progress (STP) and Their Planned Use). M, 1984; Osipov Yu.M. Krizisnye javleniya v ekonomike sovremennoogo kapitalizma: politico-economiceskyi analiz (The Economic Crisis of Contemporary Capitalism: the Political-Economic Analysis) // Vestnik Moskovskogo Gosudarstvennogo Universiteta/Seriya 6. Ekonomika (Bulletin of Moscow State University. Ser. 6. Economics. 1984 N 4; Entov R.M., Aukutsionek S.P., Belyanova E.V., etc. Ekonomicheskyyi tsikl v USA. 70-e — nachalo 80-h godov (The Economic Cycle in the United States. 70's — early 80's years). Moscow, 1985; Rostow W. Mirovaya ekonomika: istoriya I perspektivy (The World Economy: History and Perspectives) // Dolgovremennye tendentsii v kapitalisticheskem proizvodstve) Long-term trends in capitalist production // INION RAS USSR, Moscow, 1985; Shishkov Yu.V. O nekotoryh kontseptsiyah ekonomicheskogo razvitiya ("Dlinnyye

- volny": poiski objasnenija) — (Some Concepts of Economic Development. ("Long Waves": the search for an explanation)) // Rabochyi klass i sovremennoyi mir (The working class and the modern world). 1986 N 1; Nikitin S. Teorii dlinnyh voln I NTP (Theories of Long Waves and STP) // MEiMO, 1986 N 8; Poletaev A., Savelieva I. Dlinnye volny v razvitiu kapitalizma (Long Waves in the Development of Capitalism) // MEiMO 1986 N 5; Poletaev A.1) Dolgosrochnye tendencii izmeneniya normy pribhyli (Long-term Trends in the Rate of Profit) // MEiMO 1986 N 8, and 2) USA: norma pribyli i ekonomika (U.S. Rate of Profit and the Economy). M., 1988, 3) Teorii dlinnyh tsiklov konjunktury. Kriticheskiy analiz (Theory of Long Cycle of Konjuncture. Critical analysis) // Izvestiya AV SSSR. Seriya ekonomicheskaya. (Proceedings of the Academy of Sciences of the USSR, a series on economics). 1988 N 2, Grigoriev L.M. 1) Tsiklicheskoye nakoplenie kapitala (Cyclic Accumulation of Capital). M., 1988, 2) Grigoriev L.M. Osobennosti tsiklicheskogo podjema 80-h (Features of the Cyclical Recovery in the 80's.) // MEiMO 1989 N 8; 3) Informatsionnye aspekty teorii tsiklov i krizisov (Informational Aspects of the Theory of Cycles and Crises) // MEiMO 1990 N 4; Zubchaninov V., Solovyev I. Izobreteniya i dlinnye volny (Inventions and Long Waves) // MEiMO 1989 N 6.
30. Anchishkin A.I. Nauka. Tekhnika. Economika. (Science. Technique. Economy). M., 1989. P. 167–216.
31. Yakovets Yu.V. Uskoreniye NTP (Acceleration of STP). M., 1988. P. 216
32. Menshikov S.M. Klimenko L.A. Dlinnye volny v ekonomike: kogda obschestvo me- nyaet kozu (Long Waves in the Economy: When Society Changes its Skin). M, 1989; Glazyev S.Yu. Ekonomicheskaya teoriya technicheskogo razvitiya (The Economic Theory of Technological Development). Moscow, 1990; Glazyev S.Yu., Mikerin G.I., Teslya P.N. etc. Dlinnye volny, nauchno-tehnicheskiy progress i sotsialno-ekonomicheskoye razvitiye (Long Waves, Scientific and Technological Progress and Social and Economic Development). Novosibirsk, 1991, Glazyev S.Yu., Lvov D.S., Fetisov G.G. Evolyutsiya tekhniko-ekonomiceskikh system: vozmozhnosti i predely tzentralizovannogo regulirovaniya (Evolution of Techno-Economic Systems: Possibilities and Limits of Centralized Regulation). Moscow, 1992; Glazyev S.Yu. Teoriya dolgosrochnogo tekhnikoekonomiceskogo razvitiya (The Theory of Long-term Technical and Economic Development). M., 1993, Lukashevich I.V. Teorii dlinnyh voln i problem nauchno-technicheskogo progressa (Long-Wave Theory and Problems of Scientific and Technological Progress). St.-P., 1993; Majevsky V.I. Kondratievskie tsikly i ekonomicheskaya evolyutsiya i ekonomicheskaya genetika (Kondratieff Cycles, Economic Development and Economic Genetics). IERAN, the International Kondratieff Fund, M., 1994
33. Tekhniko-ekonomiceskaya dinamika Rossii (Technical and Economic Dynamics of Russia). Ed. by R.M. Nizhegorodtsev. Moscow, 2000; Nizhegorodtsev R.M. Informatsionnaya ekonomika (The Information Economy). In III volumes. M-Kostroma, 2002; Informatsionnaya ekonomika i dinamika transformatsionnyh protsessov (Information Economy and Dynamics of Transient Processes). Ed by E.Yu. Ivanov,

- R.M. Nizhegorodtsev. M-Baranul 2002; Informatsionnaya ekonomika I upravlenie dinamikoi sloznyh system (Information Economy and Management of Dynamics of Complex Systems). Edited by E.Yu. Ivanov, R.M. Nizhegorodtsev. M-Baranul, 2002; Education of the Market. Ed. By S.Yu. Glazyev. M, 2004.
34. For more details about the role of cultural and religious motivation in the formation of the type of economic system, refer to Rumyantsev M.A. Religioznye osnovy hozyaistvovaniya (Religious Foundations of Economic Behaviour). St.P., 2005.
35. Berry B.J.L. Long-wave Rhythms in Economic Development and Political Behaviour. Baltimore & London. 1991, P. 79; Solomou S. Phases of Economic Growth 1850–1973. Cambridge, 1990, P. 151.
36. Kuznets S. Long Swings in the Growth of Population and in Related Economic Variables // Proceeding of the American Philosophical Society CII: 1, 1958, P. 33.
37. Berry B.J.L. Long-wave Rhythms in Economic Development and Political Behaviour. Baltimore & London. 1991. P. 77.
38. Marx K., Engels F. Ibid. P. 220.
39. Tugan-Baranovsky M. Periodical Industrial Crises. P. 298.
40. Kuznets S. Secular Movement in Production and Prices. Boston, 1930. P.3–5.
41. Kuznets S Economic Growth of Nations. Total Output and Production Structure. Cambridge, 1971. P. 305–306.
42. Kuznets S. Secular Movement in Production and Prices. P. 206–259.
43. Stier W, Merz R. Modelling Long Wave Phenomena // Regularities of Scientific_Technical Progress and Long-Term Tendencies of Economic Development // Paper for International Conference. Novosibirsk 1988; Fontvielle L Innovations, Development of Labour Force and Productivity // Regularities of Scientific_Technical Progress and Long-Term Tendencies of Economic Development // Paper for International Conference. Novosibirsk 1988.
44. Forrester J. New Perspectives on Economic Growth // Alternatives to Growth -I: A Search for Sustainable Future. Ed. By D.L. Meadows Cambridge, Massachusetts.1977 P. 114; Berry B. Long-Wave Rhythms in Economic Development and Political Behaviour. P. 105–127.
45. This hypothesis has been analyzed in detail in our paper: Rumyantseva S.Yu. Long Waves in the Economy: a Multivariate Analysis. St.P., 2003. P.35
46. Akaev A.A. Rumyantseva S.Yu., Sarygulov A.I., Sokolov V.N. Ekonomicheskie tsikly I ekonomicheskiy rost (Economic Cycles and Economic Growth). St.-P., 2011. P. 39–47