

Basic Determinants of Diversification of Mankind in Contemporary World

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1 Introduction

Energy is the basic condition of existence of all natural and social systems.¹ No energy, no evolution. *Energy is of central importance; it is a basic driving force and crucial condition of evolution of all living systems* (human beings and mankind, too). Logical to suggest that *search for energy* is one of the most essential and most important activities of all living systems. Ability of living systems to *diversify* is a crucial condition of searching, drawing and consumption of energy. If the system is not able to adapt its structures to new internal and external conditions both structurally and functionally, then it is also not able to diversify and to find new sources of energy. And if the system is not able to diversify, to penetrate and to discover its surroundings, then it will not be able to find new energy needed for its own existence and adaptation to further development. Adaptation itself depends on new arrangement of the system and arrangement depends on energy. Systems draw endogeneous energy from internal resources. But exogenous energy must be drawn from system's surroundings. In fact, diversification helps systems to find and to draw energy. *If any living system wants to survive, it has to draw energy, it has to diversify and self-organize.* Diversification, adaptation and self-organization are basic conditions of existence and evolution of all living systems (including human being, mankind and state). They are mutually interconnected and they

cannot be separated. Considering the previously mentioned the paper outlines basic determinants of mankind in modern world. It is a result of synthesis, induction and extrapolation of various theories, paradigms and knowledge, e.g. thermodynamic paradigm, holistic paradigm (network theory, system as network), system thinking and the second law of thermodynamics as well as the fourth law of thermodynamics.

2 Experimental details

Information is one of the key and crucial conditions of the arrangement process of systems. No information, no system change, no new organization and no evolution. Information represents all changes, processes, things, relations, elements, energy, norms, knowledge etc.; it is a *base* of organization (self-organization) of the system. It influences formation, evolution, existence and extinction of every natural and social system. New organization of social system depends on the following attributes: various types of energy, money, human labour, technologies, new institutions, new norms, new management, new relations etc. There will be no new system organization without them.² Of course, system has to be able to detect, to obtain, to use and to transform them to physical world or to organizational or another spiritual or

¹ It is very difficult to give a comprehensive definition of the term "energy". Energy may take many forms; energy means all spiritual and material processes and phenomena that support evolutionary processes of all systems (from atom to cosmos).

² STONIER, T. (2002): *Informace a vnitřní struktura vesmíru. Průzkum v informační fyzice.* Praha: BEN, s. 29, 32, 36)

material form. If system does not have those attributes, then it will lose its driving force and base for new self-organization. If organization of social system is one of the crucial conditions of further development and diversification, then development and diversification are not possible without information. Information is of great importance.

It is also necessary to emphasize that information has to be carried and processed by somebody (or something), or it will not survive, it will become defunct. The Sun is a direct source of solar information and solar activities, i.e. material elements, radiation and particles are carriers of information. Living system, i.e. cell or DNA is a source of genetic information. Human being and human society are sources of socioinformation. Human being is also a source of scientific information. If humans put in danger nature and whole mankind, then they also expose to danger sources and carriers of natural and social information. Therefore it will be necessary to survey those fundamental and initial information. There exist four types of information in nature and society, which can also be considered fundamentals of existence and organization of *four main subsystems of nature and society*:

1. **Cosmic information** (CI), formation and structure of the Universe;
2. **Genetic information** (GI), creation and existence of living systems and biosphere, including humans;
3. **Social information** (socioinformation) (SI), establishment and structure of contemporary human society (anatomically modern humans);
4. **Scientific and technological information** (STI), establishment and structure of contemporary scientific and technological system of mankind (picture no. 1).

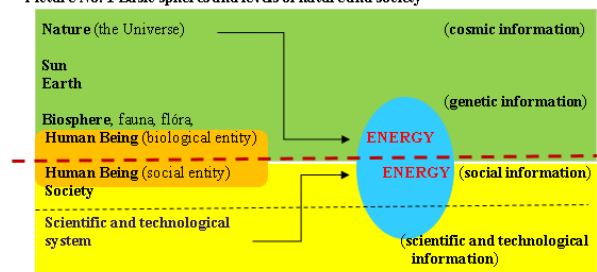
If we made a distinction between the world of nature and the world of humans, then it is logical to suppose that cosmic and genetic information (the term “natural information”) is

responsible for formation of nature, and **socio-information** and **scientific** and **technological information** is responsible for establishment of human society.

The following *basic cosmic information* (CI) is responsible for formation, evolution, organization and structure of the Universe:

- light;
- particles;
- matter, dark matter;
- energy, dark energy;
- radiation (corpuscular radiation, particle and wave radiation);
- electromagnetic processes (electric and magnetic field components);
- plasma (ionization of an atom and a molecule);
- gravity (interpreted as attraction of physical bodies as well as spacetime continuum);
- reactions between atoms (electromagnetic, strong and weak);
- speed;
- pressure;
- temperature.

Picture No. 1 Basic spheres and levels of nature and society



Cosmic information is the crucial factor of diversification of the Universe, started by the Big Bang (or cosmic inflation processes). The Universe appears to be expanding (the accelerating Universe), according to many theoreticians. Structure of the Universe, as well as formation of the Milky Way (Galaxy) and our Solar System, is a direct result of cosmic information activity. The existence of the Sun is considered a key factor influencing the existence of the Earth (and a life on the Earth as well). *Solar information*, as a result of interactions of information, phenomena and processes between the Universe and the Sun, is the most

important of all cosmic information. Basic solar information is as follows: plasma, electromagnetic radiation, corpuscular radiation, magnetic fields, heliospheric processes, heat, light, gravity etc. Considering the formation, evolution and life phases of the Sun (and Solar System as well) we claim that the Sun is about halfway through the most stable part of its life. But the Sun is growing old. This information will deeply influence size, composition and structure of the Solar System. It will influence the life on Earth, too. This is the reason why it is necessary to survey the Sun and to collect information from the Sun. Today, permanent survey of the Sun and its behavior is very important for further survey of Earth and existence and diversification of mankind.

The formation and existence of *the Earth* is a result of both cosmic information activity and new structure of the Universe, particularly structure of the Sun and the Solar System. The physical properties of the Earth, as well as its orbit, size, structure and rotation, have created two systems: inorganic system³ (geological structure, lithosphere, outer and inner core, magnetosphere, magnetic poles, electricity, atmosphere, hydrosphere) and organic system (referred to as biosphere). The existence and persistence of life on the planet Earth is a unique phenomenon within the known Universe. Cosmic information (CI), particularly solar information, formed genetic information (GI), which became essential for creation of life and whole biosphere. There were formed two new natural genetic information within biosphere – *genetic information of plants* (GIP) and *genetic information of animals* (GIA). Further development and coevolution of both new natural genetic information may be responsible for evolution of new unique natural information – *genetic information of human being* (GIHB). Evolution of human beings (anatomically modern humans) is closely related to establishment of *human society* and creation of new type of information

called social information, or *socioinformation*. Establishment of human society brought new system – social system. But social information is not a direct base and continuation of natural, i.e. genetic information. It is relatively autonomous information. Evolution of human cognition and establishment of human society brought on *asymmetry* and *conflict* to relations between nature and human society (human being, mankind), between evolution of natural and social information. Since the very beginning of social information, the evolution and diversification of mankind have been connected with oppression of natural information. Here we have information, genetic and system causes of *conflict between nature and society*, i.e. diversification of nature and diversification of mankind. *Diversification of mankind*, permanently competing with diversification and existing order of nature and planet, is a decisive point.⁴ There are several key moments in the evolution of relations between *nature* and *society* (between natural and social information):

- it is one of *the biggest global conflicts* of mankind;
- there is no evident winner of this conflict; humans will never defeat nature, humans can bring human society to an end, humans can destroy biosphere and deform life on planet Earth (total nuclear war) but will never be able to conquer and rule the nature;
- humans and socio-scientific and technological information will never dominate the nature, although they can influence, replenish and change the nature (genetic manipulation, genetically modified foods, „artificial“ life, fission and fusion of atoms, nanorobots etc.);
- conflict between nature (natural information) and society (social information) showed up *human limits*, going beyond

³ LOVELOK, J. E. (2001): Gaia. Nový pohled na život na Zemi, Bratislava: Abies

⁴ VOLNER, Š. (2012): Bezpečnosť ľudstva. Planéta. Vesmír-technický systém. Vesmír.Mikrosvet. Bratislava: IRIS,s. 167-170

critical limits means self-destruction of mankind;

- the order of formation and activities of information and systems is as follows, according to genetic approach: cosmic information and the Universe, planetary systems (the Earth) and planetary information, biosphere and genetic information, social sphere and socio-scientific and technological information;
- there is an antagonistic evolution of nature and society, e.g. evolution of cosmic, genetic and socio-scientific and technological information; social information often violates natural information and influences formation of natural structures and evolutionary process;
- there is a difference between exponential evolution of society and organic evolution of nature; it causes asymmetry, non-equilibrium and conflict; diversification of mankind is more rapid than that of biosphere and the Earth;
- further diversification of mankind will increase energy consumption;
- there is a problem of unbalanced evolution; *rise of non-equilibrium* between nature and society;
- rise of entropy of both planet Earth and human society as a direct result of exponential diversification, exponential growth of consumption and chaotic development of mankind;
- outbreak of new global conflicts, e.g. conflicts with global impacts;
- establishment of new social systems (energetic, scientific and technological) as a direct result of growth of entropy, bifurcations and new organization of mankind.⁵

Movement is a crucial condition of existence and evolution of all systems (nature, biosphere, human beings and mankind). *Diversifi-*

cation of mankind is considered a basic global problem. It is also a biggest threat of mankind. It is a key to evolution of mankind; it helps us to understand the whole process of evolution. Main problem of diversification is the speed. As it was mentioned before, diversification of mankind is exponential and more rapid than that of nature. It violates the fourth law of evolution – the level of speed.⁶ One of the main reasons why information and systems have to spread and develop is that they reached information and energy *non-equilibrium*, that they needed sources of new information and new energy for further evolution and movement. Drawing of energy is not possible without *diversification of systems*. *Diversification is in fact basic condition of evolution of all living systems on the one hand and source of conflicts between human society and nature on the other.*⁷ Therefore diversification of mankind and collision of basic types of information in four previously mentioned systems are keys to understanding of inevitable but conflictual evolution of mankind. There are many questions that have to be answered: Why do humans have to diversify? What are the basic conditions and tools of diversification? What are consequences of diversification?

Humans have to diversify in order to draw new energy for existence and further evolution. Humans have to diversify in order to grow, to change, to self-organize, to struggle for survival, to satisfy interests and needs of individuals and human societies.

Basic and determining *conditions* of movement and diversification of mankind are as follows:

- *habitable natural environment* (e.g. climate, hydrosphere, atmosphere etc.);

⁶ KAUFFMAN, S. (2004): *Čtvrtý zákon. Cesty k obecné biologii*. Praha – Litomyšl: Paseka; VOLNER, Š. (2012): *Bezpečnost' v 21. století*. Bratislava: IRIS, s. 81-106.

⁷ KAUFFMAN, S. (2004): *Čtvrtý zákon. Cesty k obecné biologii*. Praha – Litomyšl: Paseka

LOVELOK, J. E. (2001): *Gaia. Nový pohled na život na Zemi*, Bratislava: Abies

PRIGOGINE, I. - STENGERSOVÁ, I. (2001): *Řád z chaosu. Nový dialog člověka s přírodou*. Praha: Mladá Fronta

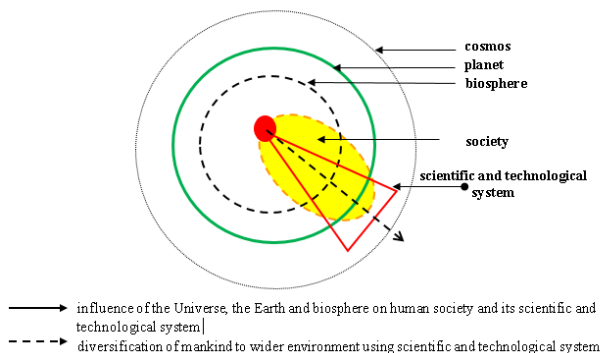
⁵ VOLNER, Š. (2012): *Bezpečnost' ľudstva. Planéta. Vesmír. Mikrosvet*. Bratislava: IRIS, s. 172-174

- *energy*⁸ (exogenous and endogenous, including food);
- *information*;
- *direction of energy and movement of mankind*;
- *arrangement (organization) of mankind, i.e. social system.*

Basic tools of diversification of mankind (globalization) can be identified as follows:

- *energy, energy flows, water, oxygen, food etc.;*
- *information, information system of mankind, knowledge;*
- *organization, network;*
- *scientific and technological system;*
- *power;*
- *other regulatory social tools: law, norms, ideas, values, relations and moral.*

Picture No. 2 Cosmos – Planet – Society – Scientific and Technological System



Scientific and technological system, including scientific and technological information, is a basic tool of diversification of mankind. (Picture no. 2) It helps humans to discover new territories, to create new structures and new energy. Main territories and spaces of discovery of new types of energy are *cosmos* and *nanoworld*. Main tools of globalization and penetration of the future are *science* and *technology* (networked to new organization and quality). Science and technology help humans to create new alternative energy resources, new robots and intelligent machines, new information systems and virtual world in order to observe nanoworld

⁸ The term “energy” means all inevitable internal and external resources (gravity, radiation, heat, light, water, oxygen, foods etc.) inevitable to formation, evolution, new organization and movement of social systems to new territories.

(abiological – atom, subatomic particles and quantum processes, and biological – genetic structures of living systems, including human being).⁹

3 Conclusion

Result of diversification of mankind is in its further development, occupation of the Universe and nanoworld; it is also in influencing of natural phenomena, information and systems. Besides many positives, diversification of mankind has brought on many problems. There are often referred to as *global problems of mankind*. Global problems affect the whole mankind; neither nation states nor human beings are able to solve them.

Main *global problems of mankind* can be identified as follows:

- *change of climate system and climate conditions on the planet;*
- *exponential consumption of natural resources of energy, exploitation of natural resources (particularly non-renewable ones) of the planet;*
- *conflict between existing resources of natural energies and demands of social development for energy and feedstock; limited natural (fossil – biological and abiological), renewable and non-renewable, artificial, alternative resources of energy, water, soil, etc.*
- *misuse of science, technology and knowledge; new dimension of conflict between human being, information system and intelligent machine;*
- *antagonism between the existence of biological limits of human being and its “unlimited” perspective and consequences of development of scientific and technological system (human and ecological aspect), genetic manipulation etc.;*
- *relative samostatnost’ of social activities of humans, “superior” and independent” from nature;*
- *crisis of “modern” state and political elites;*
- *crisis of “modern state” democracy;*

⁹ VOLNER, Š. (2012): Bezpečnosť ľudstva. Planéta. Ve-decko-technický systém. Vesmír.Mikrosvet. Bratislava: IRIS, s. 170-176.

- *moral hazard and institutionalization of moral hazard* on global level (moral hazard of global players);
- *power* of global players, global elites and the development of mankind;
- *crisis* of economic system;
- *way of movement and development of money*; money as a important tool of diversification (particularly economic and geopolitical globalization)of mankind;
- *creation and spread of virtual world* (information and financial), conflict between real and virtual world;
- *globalization and rule of the "market"*;
- *massive production and consumption*, which are in direct contradiction to state and evolution of nature;
- *property and income polarization* of mankind, which leads to asymmetry, non-equilibrium, crisis and conflicts in social development;
- *predominance of global infrastructure* (economic, financial, social, information etc.);
- *global social chaos*; global social chaos includes evolution of demographic structure of mankind, global migration, crime, fall of states, violence, conflicts, social and political resistance, asymmetric warfare, conflict state vs. citizen, conflict between global players and nation states or global players and citizens, etc.;
- *global control and mastery of mankind*;
- *rise and spread of Neo-Malthusianism* as a result of the following problems: human population growth, lack of food and energy, outbreak of pandemics and epidemics, genetic manipulation, rise of social crisis, climate catastrophes, clash of civilization, violence, terrorism, armed conflicts, ethnic and religious conflicts, globalization, geopolitical activities and blockades, export of revolutionary ideas etc.;
- *global food problem* (including problem of genetically modified plants, animals and food);
- *global geopolitical movements and geopolitical epicentres*, geopolitical pressure, "occupation" of the Universe and cyber space;

global media, intentional and sophisticated manipulation with human consciousness, moral, values and ideas of human beings

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