

Social Reproduction as an Object in the Universe

Isaak B. Zagaytov

Professor, Department of Economics, Voronezh State Agricultural University, Michurin street 1, Voronezh, Russia

*Corresponding Author

Isaak B. Zagaytov

Email: vitofilonov@gmail.com

Abstract: An attempt was made to explain an objective nature of laws of social and economic development in terms of evolution: from limitless interactions of energies of the Universe to natural selection of the species and later on to social and economic progress. Formalized representation of universal laws of social and economic progress and of economic, ecological and demographic development are proposed in this study.

Keywords: Universe, humanity, objects of material world, laws of development of animate and inanimate nature, axioms, hypotheses, reproduction, resources

INTRODUCTION

The humanity is merely one of the many material objects in the Universe, thus making its development possess universal patterns common to all the objects of material world. However, in addition, the dynamics of human progress is regulated by specific laws of social life, acting under common laws of animated and inanimate nature evolution[1].

In this context, to begin with, we want to present several points, considered as axioms.

Axiom 1

The Universe is infinite in time, space and reserve of energy it has. Unequal distribution of this reserve across the universe is a factor allowing limitless *interactions* in a form of *mechanical* energy exchange in space and time. That being said, a limited part of these interactions, being followed by considerably *stable* rates of energy exchange long-term, shapes parts of the Universe into distinct clusters: *material objects of micro and mega levels*. The existence of these objects manifests itself not only in exchange of energy but matter as well: specific processes of physical and chemical interactions.

Axiom 2

Specific character of every material object of the Universe is defined by *variety range of energy reserves*, needed to ensure its existence as a distinct entity.

$$R_{max} > E_j > R_{min} \quad (1)$$

Where

E_j is an energy reserve in object j

R_{max} is an upper limit of the energy reserve while reproducing object j

R_{min} is a lower limit of the energy reserve while reproducing object j

Axiom 3:

The infinite nature of spatiotemporal interactions of material objects of the Universe causes their *stochastic movement* and can manifest itself in *diverse periodical variability of their initial state* such as size, material structure, relative position, and influence on the dynamic of other objects and so on. In a simple case these changes can be presented as an equation:

$$E_j = B_j + \sum A_{j-c} \times E_{j-c} \quad (2)$$

While $R_{max} > E_j > R_{min}$, $j = (1, 2, 3, \dots, c, \dots, n)$

Where

A_j is the force of the influence of an external object on the dynamic of E_j

And

B_j is the force of the influence of internal factors of the E_j state change.

This can lead to several conclusions

CONCLUSION 1

In a specific time span, every interacting material object of the universe keeps its energy reserve, ensuring *the preservation of its general as well as specific essence*. For inanimate nature this is, in particular, the energy of mechanical, physical and chemical movement, for animated nature - the energy of biological ways of *reproduction* of the species as well.

For example, the Star keeps being the Star in a form of a "yellow dwarf" as well as a "red giant" or a "white dwarf". At the same time, depending on the energy reserve of thermonuclear fusion, there turn out to be different conditions for maintaining the existence of the Star in a given specific form. In the same way, depending on the energy range of molecular movement, forms of existence of water and metals vary essentially as well. (Gas, liquid, solid body)

When it comes to capabilities of reproduction of living organisms, they lie within the energy range, needed to maintain metabolism, which allows keeping species diversity by means of *natural selection*.

CONCLUSION 2

The amount of energy reserves, needed to keep the specific essence of every object of the universe, is defined by the level of changes accumulated by the structures composing given object. These changes accumulate in the process of interaction of the structures between themselves as well as with other objects.

For example, the process of turning the Star into the Black Hole requires the burning out of internal thermonuclear energy reserves of the Star itself on one hand and the increasing of the density of the matter composing the Star to the values, exceeding the density of water by billions of times, on the other hand.

The extinction of dinosaurs required the accumulation of external factors of their reproduction to the scale absolutely incompatible with limited reserves of living environment of these creatures.

In all similar cases there is a universal law according to which a drastic transformation of objects takes place in case of a violation of energy reserve limits in each of them. The coefficient of transformation (U) is derived from formulas 1 and 2.

$$R_{min}: \left(1 - \frac{B_j + \sum A_{j-c} \times E_{j-c}}{B_j + \sum A_{j-c} \times E_{j-c}}\right) < U < R_{max}: \left(1 - \frac{B_j + \sum A_{j-c} \times E_{j-c}}{B_j + \sum A_{j-c} \times E_{j-c}}\right) \quad (3)$$

CONCLUSION 3

Depending on the specific character of interaction of different objects, their transformation takes place in a specific sequence and due to infinite nature of the universe this sequence can be observed. Moreover, there is a possibility to distinguish a fair number of *approximately* similar objects remaining any given moment on different stages of their existence dynamic. In a number of cases these conditions are

sufficient to discover in the process of researches some *tendencies (patterns)*, specific to some groups of objects. These patterns are the consequences of interactions of given objects.

CONCLUSION 4

As far as *all the objects* of the Universe are being subject to partial transformations *asynchronously*, the studying of these transformations can pinpoint *general* patterns, common for the whole Universe. Further, it is possible to trace patterns *common* for certain forms of existence of mega scale such as certain apparent and yet hidden space systems. And after that it becomes possible to find patterns *specific* for different planet systems and objects of inanimate and animated nature as parts of these systems.

Thus, the studying of the changes of ocean level on Earth let us know that the level depends not only on common patterns of movement of our solar system as a part of the galaxy but also on specific processes of energy and matter exchange that take place on Earth such as epeirogenetic movement (vertical terrain motion), volcano eruptions, ice-melting rate at the poles.

In the same way it is discovered that the reproduction of certain species of plants and animals depends not only on external physical and chemical factors of their living (life activities), and that the distinct essence of biological objects' nature reveals itself in their specific ability to *struggle for own survival*, both while changing interaction energy with inanimate nature and at the level of interspecific and intraspecific competition, according to patterns of heredity, variability and natural selection of the fittest species.

CONCLUSION 5

Human society is at the same time an object of the universe, material world, and an object of the animal world. That's why the tendencies of human society development are influenced not only by patterns common for the whole universe such as, for example, the exchange of energy and matter between different objects within the certain range, but also by patterns common for the animal world, in particular, the ones defining specific *biological needs*, which are realized in the course of struggle for survival between different species.

And finally the development of human society should be accompanied by those patterns of interaction with environment that enable reproduction for only this given species of animated nature.

In the process of natural selection human kind got the ability to transform part of its biological energy into consciousness which allowed us to gain, as we all know, two major advantages in the struggle for survival over other species of the animal world.

The first advantage gained through consciousness is the ability to fulfill its needs not only by using already existing objects of Nature. Consciousness grants people the ability to *create* instruments and technologies, which allow to perform an *expanded* reproduction of material, intellectual and ecological amenities and even to improve the physical nature of the Human, which essentially facilitates adaptation to dynamic environment.

The second advantage is associated with the system of interspecies relations which are able to easily adapt to technical and technological changes in the process of reproduction thus improving abilities of human society in the struggle for survival.

These two advantages significantly strengthen the position of the Human in the world around. As a result, while keeping the mechanism of natural selection common for animated nature, human society has its own unique features.

While the success of natural selection is solely based on spontaneously successful variations of combinations of both interspecific and intraspecific cooperation and competition, human society, due to acquired consciousness, have by far broader possibilities of changing the form and scale of its interaction with outer world [2]. The main factor enriching the methods of natural selection in human society is the development of such a *viable activity* as socially useful work. This can be supported with the statement that the development of intersectorial division of labor, the detachment of specialized intellectual activities as well as the development of such forms of cooperation as intergeneric and intertribal associations and later on state formations and even their alliances led to the increase in stability of expanded reproduction of human kind. This readiness of social relations to adapt to changing conditions of reproduction can also be traced in consequences of transition from primitive communal system to clan system, from matriarchy to patriarchy, from family slave ownership to state slave owner ship and so on.

Therefore the development of consciousness increases the efficiency of the humanity not only by means of gradually advancing technical and

technological potential but also by means of transforming biologically motivated interspecies relations into more complex and more flexible social and economic relations thus *transforming the struggle for survival in the form of natural selection into social and economic progress*.

So, while at the level of natural selection interspecific and intraspecific competition, heredity and variability are realized to the extent of satisfaction of biological needs only, the social and economic progress foremost *extends the horizon* of biological needs beyond the borders of existing time and space, forcing the humanity *to expand the reproduction* of material, intellectual, ecological and demographic amenities.

In the second place, the social and economic progress, unlike natural selection in the world of animated nature, *expands* conditions and methods of interspecies competition, generating specific *collective needs* of different social groups which take their own distinct place in the process of the reproduction of social wealth. This *increases the variety* of choices for the Humanity of preferable tendencies (from positions of energy consumption) of social and economic progress.

Clans and tribes can be considered the first social groups to form. They were developing on the basis of collectivist nature of acquisition of the conditions and results of economic activity. Then, with the establishment of private property, their role as special social groups was taken by patriarchal families and, later on, by confessional, class, national, state, interstate and other formations.

In the third place, while under the conditions of natural selection the interspecies competition was of reflexive nature, the social and economic progress under the influence of consciousness *significantly diversify the forms of interspecies competition*. This includes not only the cooperation of production activities of different social groups but also the possibility of alienation of some groups from acquisition of the conditions and results of production.

It is worth noticing, that at the level of interspecies relations, cooperation and alienation can stimulate the social and economic progress on the basis of *competitiveness* on one hand which is supposed to secure the leading positions of particular social groups on one hand, and through the *conquest* aimed to supersede or subdue the rivals. That being said, the conquest quite frequently is able to reach such an extreme level of adversary relations, that it is

conventional to call it *wars*, where the aim not only to subdue but also to destroy the rivals.

All the new factors, which are the consequences of the transformation of natural selection into social economic progress, on the whole increase the vitality of the Humanity, adding a fast-growing intellectual potential to its physical efficiency. They also complexify the internal structure of the society as an aggregate of social groups easily adapting to changing reproduction conditions thus giving the Humanity additional advantages in interspecific competition.

The driving force (motivation) of social and economic progress is the *productive labor* which is, unlike other types of energy consumption, directly aimed at saving and increasing the reserve of energy essential for the living of the Humanity. That's why only the types of activity that create *social wealth*, in the form of material, intellectual, ecological amenities or population, should be classified as productive labor.

Consequently, the activity (energy) of people spent on anything that does not increase, or even shorten the potential of productive labor, should be considered as nonproductive labor. Such types of activities can be found in some sectors serving special property relations (guards, police, army), also activities serving not common but specific relations of production, exchange, distribution and consumption, such as industrial espionage expenses, unemployed population maintenance, emission and accounting of money turnover, advertisement, most part of commercial operations and socially harmful consumption.

Noting the discrete role of productive labor in the process of social and economic development, we should take into account that the productive labor is not omnipotent as it can only be spread towards the objects of the Universe nearest to the area of human activity (within the bounds of Earth and closest cosmic space). That's why it can renew the energy reserves of human reproduction only in a limited range and cannot change not only the general patterns of the universe development but the common patterns of animated nature as well.

Considering that the evolvement of human kind begins with the production of social wealth, then in equation (3) as a lower limit of the energy reserve for the reproduction of the Humanity (R_{min}) we should take

$$R_{min} = SW > 0$$

In that case, in the process of interaction with Nature, we should take the following pattern as the highest long term criterion of the efficiency of human reproduction: *under limited resources (R), the tendency to achieve the highest rates of the steady growth of social wealth, possible for a given place and time, is realized as the sum of resources: material (M), intellectual (I), natural (N) and demographic (D).*

$$SW = M + I + N + D \rightarrow \max, \text{ while } R = \lim \quad (4)$$

This formalized tendency (4) can be considered as a *general fundamental social and economic law* regulating the process of the reproduction of human kind.

Under the realization of the requirements of this law we can examine general fundamental laws of social, ecological and economic progress.

So, as *the general fundamental law of social development* we acknowledge the growth tendency of the total production efficient lifetime of population.

$$\sum L_j \times \sum P_j \rightarrow \max, \text{ while } SW = \lim, \quad (5)$$

Where

L_j - an average lifetime of population

P_j - a size of production efficient population

The general fundamental law of ecological development can be defined as the tendency to improvement of the living environment of population in order to increase its total production efficient lifetime.

$$\sum N_i \rightarrow \max, \text{ while } SW = \lim, \quad (6)$$

Where

N_i are types of ecological amenities.

Accordingly, *the general fundamental economic law* should be defined as the tendency to boost in every possible way production rates of material and intellectual amenities, which are the main factors of the efficient realization of the requirements of general fundamental laws of social and ecological development.

$$\sum (M_i + I_i) \rightarrow \max, \text{ while } SW = \lim \quad (7)$$

Though our abilities to study the tendencies of economic dynamic are limited to historical materials of

written and archeological evidence, even these materials let us think that in the course of economic events can be found some relatively long-term patterns, which are not only common to the all objects of the Universe but occur specifically in the development of human efficiency.

It's worth noting that there is a specific tendency of *increasing rates of the economy growth* in the long run. (Table 1)

Table 1: Average annual rates of growth of national income and labor efficiency in the world [3, 4, 5]

Years	National Income	Labor Efficiency
7k B.C. - 1000 A.D.	0,03	0,006
1000-1820	0,20	0,03
1820-1913	2,10	0,60
1913-2012	3,00	1,40
1950-1980	4,10	2,40
1980-2012	3,10	1,60

We can also mention the specific tendency of spreading the economic activity beyond the surface of Earth, special dynamic of the development of technical and technological resources of human kind, tendencies of social and economic progress on the whole and the dynamic of varied forms of interaction of human society with the environment, through understanding a number of patterns of cyclical fluctuations of natural events.

For example, the society not only learned to adapt its living activities to day and night cycles (as our ancestors said: "an hour in the morning is worth two in the evening") but is able to regulate the length of light or darkness on separate areas of used surface as well.

Seasonal fluctuations of natural conditions of agriculture, fishery, forestry and community facilities management can also partially influence the application of productive labor. (Another saying: "repair your cart in December; in July your sledge remembers"). To a certain extent it applies to interannual fluctuations of meteo conditions, flood flows, forest fires and so on as well. It's harder with global geological and cosmic processes but the general tendency of social economic progress testifies that in future there is a possibility in principle to influence through productive labor on some events both at geological and cosmic levels.

The contemporary level of scientific knowledge let us foresee that the Humanity needs to

hurry to better adapt to possible adverse impacts. The ability to struggle for its survival with the help of labor propelled by science, and the perception of necessity to bring under control internal social conflicts and to minimize nonmanufacturing costs and parasitic consumption, should be favorable towards it.

But we shouldn't forget that the Humanity came into the world as an infant of the Creation and no matter how far the Human goes in his development, he will always stay its child. And if the child is not always obedient he will inevitably be liable to punishment for misbehaving.

But relying on advantages the Nature gave him, he can also prove his moving into adulthood by being successful in steadily expanding reproduction of amenities essential for improving his positions in the struggle for survival.

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