ON THE ORIGIN OF SPECIES BY MEANS OF CIVILIZATION OR THE PRESERVATION OF FAVOURED RACES IN THE COOPERATION FOR LIFE

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Özet

Doğal seçilim (Güçlünün hayatta kalması) ve medeniyet (Güçsüzün hayatta kalması) evren yaratıldığından beri var olmuştur. Dünya tarihinde medeni yaşam türlerinin baskın olması, vahşi türlerin kitlesel yok oluşuna sebep olmuştur. Medeniyetin bir seviyeden bir sonrakine geçiş süreci "fractal" olarak aynıdır. Medeni olmayan (Vahşi) türler kendi aralarında savaşırlar. Şiddet bunlardan zayıf olanları yok eder ve gelecek medeni olmayan türleri de birleştirir, medenileştirir ve yaratır. Benzer mantık hücrelerden oluşan insanoğlunda ve biyolojik olmayan yaşamda da geçerlidir. "Self-similarity" olarak isimlendirilen bu süreç, hücrelerden bugünkü insanı ve atomlardan galaksileri yaratmaktadır. Yaşam, ölüm, doğal seçilim ve medeniyet evrenin yaratılış sırasında ortaya çıkan süreçlerdir. Bu yazıda yaşam entropinin azalması, ölüm ise entropinin artması olarak tanımlanmıştır. İyi bilinen kavramlar, biyolojik ve termodinamik kurallar yeniden değerlendirilmeli ve insanlığın ilkellikten medeniyete geçiş sürecini açıklamak için "anthropocentric" sınırlandırılmalardan soyutlandırılmalıdır. Doğal seçilim, güçlünün hayatta kalabilmesidir (Darwin) ve medeniyet güçsüzün hayatta kalabilmesi olarak tanımlanmaktadır (Maritsas). Ve medeniyeti yaratanın insanoğlu olmadığını ama insanı yaratanın medeniyet olduğu vurgulanmıştır.

Anahtar Kelimeler: Evrim, Fractal, Doğal Seçilim, Medeniyet, Yaratılış, Jeolojij Zaman, Nesli Tükenme

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Abstract

Natural selection (the survival of the powerful) and civilization (the survival of the weak) have existed since the creation of the Universe. In Earth's history the domination of civilized species of life, caused the massive disappearance of the uncivilized species. The process of transition from one level of civilization to the next is the same, as a fractal. Uncivilized species fight among themselves; some weak ones eliminate violence among themselves, unite, civilize and create the next uncivilized species. The same logic applies from cells to man and to non-biological life. And this process, called self-similarity, created today's man from cells and galaxies from atoms. Life, death, natural selection and civilization are the processes that were created at the time of the creation of the Universe. In this paper life is defined as decrease of entropy, and death – as increase of entropy. The well-known concepts and laws of biology and thermodynamics are to be reconsidered and freed from the anthropocentric limitations for their using in explaining the transition of humanity from nature to civilization. Natural selection is defined as the survival of the powerful (Darwin) and civilization - as the survival of the weak (Maritsas). And it is stressed that it was not Man who created civilization but civilization that created Man.

Keywords: evolution, fractal, natural selection, civilization, creation, geologic time, mass extinctions

INTRODUCTION

It was not so long ago that instability as a fundamental characteristic of evolutionary processes took its place in the concepts of representatives of science, the humanities and philosophy. This was largely thanks to the work of I. Prigogine and his colleagues at the Brussels Free University, primarily G. Nicolis, I. Stengers and A. Babloyants (see Prigogine, I., & Stengers, 1.). The notion of instability is now released from the negative connotations, and it has been confirmed that instability may be a condition for a stable and dynamic development. In my opinion, this idea is particularly important for understanding the laws of co-existence of nature and humanity, their co-evolution, as well as the overcoming of the opposition of animate and inanimate, biological and social.

The well-known concepts and laws of biology and thermodynamics can play a new constructive role and demonstrate their universal character in explaining the transition of humanity from nature to civilization. But to do this, it is important to reconsider the very concept of civilization, freeing it from the anthropocentric limitations.

CIVILIZATION IS THE SURVIVAL OF THE WEAK

All definitions of civilization which we have are anthropocentric and they, as a rule, are considered as well confirmed stereotypes in different fields of science and humanities. So we have a vicious circle: civilization => man activities, man activities => civilization. In some previous works it have offered the non-anthropocentric definition which can help to answer some important questions concerning the universal phenomena of human being in the past and present: *Civilization is the survival of the weak* (See Maritsas, 2007: 161 and in internet:

http://openaccesslibrary.org/images/BGS113_Constantinos_Maritsas.pdf).

My conception is largely influenced by Darwin's principle of natural selection, which is to be reconsidered and rethought and its criteria and scope are to be determined according to the present-day worldview. I also use some present-day achievements of semiotics, phenomenology and hermeneutics as methodological principles for the reconstruction of the human cultural and social identity, including its gender aspect.

According to Darwin, "struggle for life is most severe between individuals and varieties of the same species" (Darwin, 1997: 99). Man (male) was doomed to extinction (as other 99% of living beings) for two reasons: first, he was an easy prey for other animals, and, second, due to intraspecific competition for reproduction of new generations. Since his appearance, man is the weakest and most helpless living creature on our planet, but he has the largest brain. There are also many animals that are "biologically weak" too. Yet none of them has created a civilization. And man has survived, creating one.

Only man himself, as is common regarded, thanks to his brain, has abolished the coercive intraspecific competition and consciously terminated the process of natural selection. Having abolished the coercive struggle, man has created a society of similar organism — human society. But man has to find a substitute for the coercive intraspecific competition, in which male individuals have been selected by women.

These two steps on the way toward civilization are important in a great degree: (1) replacement of the coercive intraspecific competition with non-violent fights; and (2) replacement of the coercive struggle for survival with a non-violent one.

One of the most important problems, posed in this paper, is the concept of entropy. Entropy, as one of the main thermodynamic functions and fundamental properties of the world, was first identified by Rudolf Clausius (1865), who stressed that in an adiabatically isolated system, entropy cannot

decrease - it either increases or remains constant. From this wording of the second law of thermodynamics there follows the fundamental irreversibility of physical processes, as well as the inevitable degradation of any closed system (ultimately all the different forms of energy turn to heat, after which there can be no processes). Extending this principle to the entire universe, Clausius formulated the hypothesis of the thermal death of the universe.

However, the irreversibility of the processes was in obvious contradiction with the reversible nature of mechanical motion. Using this paradox as a starting point in his studies, Ludwig Boltzmann eventually revealed a completely new meaning of entropy. Using statistical methods, Boltzmann showed that entropy is directly proportional to the logarithm of thermodynamic probability. Thus, according to Boltzmann, nature tends to move from a less probable to a more probable state, from order - to chaos.

As K. Lorenz wrote: "Organic life is built like a strange lake in the flow of diffusing energy in the Universe; it absorbs negative entropy, captures energy and expands at its expense; this growth allows it to capture more and more energy and the more it captures, the faster it is." (Lorenz, 2008: 17) Lorenz's words are also usable to non-organic life, if life is defined as decrease in entropy. As a consequence of the increase of entropy, life and death as thermodynamic processes were created at the same time as the Universe.

The same logic applies to natural selection and civilization. They are two processes that affect life and coexist. We can say that natural selection (the survival of the powerful – see Darwin, 1997) and civilization (survival of the weak – see Maritsas, 2007) have existed since the creation of life, i.e. since the creation of the Universe. And, in my opinion, the common in certain contexts contradictions such as nature and society, nature and culture, biological and social, are nothing else but a form of language-game. And, as Wittgenstein rightly observed, the linguistic reality comprises an abyss of human problems. The life and death of someone or something are above all physical processes that can be explained by general laws, one of which is the second law of thermodynamics.

At the end it will turn out that civilization haven't been created by man, but man is the result of civilization. Also, we will propose an answer to the mystery, why Neanderthals disappeared.

The same logic applies to non-biological life. For this I will quote an excerpt from an interview with Mr. Christos Touramanis, an internationally recognized experimental physicist of elementary particles: "We know that the parent Universe contained equal amounts of matter and antimatter. It was too early that the antimatter disappeared entirely. If this had not happened, the Universe would be so aggressive that there would not exist the very large intervals of stability necessary for the formation of galax-

ies and subsequently for the creation of life and human evolution. In any case, the final victory of matter in the Universe cannot be explained by the familiar laws of physics!"[1]

Is life the opposite of entropy increase, like civilization is the opposite of natural selection? I find the next definition quite satisfying, no matter if it's about living or non-living nature (as far, of course, as this division is meaningful):

Death is Increase of entropy.

Life is Decrease of entropy (See Schrödinger, 2001).

The above definitions make the living – non-living nature division meaningless, because "life" has organized the planets in solar systems, as well as the cells into organs.

A FEW WORDS ON FRACTAL

The very concept of fractal was introduced by Benoit Mandelbrot in the seventies of the 20th century. In its most general form a fractal is seen as a set made by parts similar to the whole. The term 'fractal' in mathematics, physics and many other sciences, is used to describe a geometric figure that is repeated in an endless count of increases, so that it is often referred to as "infinitely complex." A fractal is presented as a "magic picture" in which no matter how many times any part thereof is increased, it will continue to represent the same complex whole with a partial or complete repetition of the initial. Fractals are characterized by self-similarity in some of their structures, which appear at different levels of magnification.

Probably, Johann Wolfgang von Goethe (1749-1832) was the first to notice self-similarity in nature (See Fig. 1).

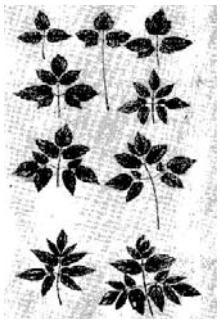


Fig.1. "Transition from a trefoil to a multiple leaf plant (Drawing by Goethe)" (Lunkevich, 1947: 88).

1 *Newspaper Eleftherotypia, Athens, July, 9, 2011.*

An attempt to explain the metamorphosis of plants, is the title of the botanical treatise written by Goethe (1790), which refers to the idea that "Everything is a leaf": the leaf, as a main organ which defines a plant organism, Proteus and archetypal unit behind all the varieties and variations.

FROM CELLS TO MAN

The principles of origin and development explanation can be applied to every life phenomenon. The real entropy of an expanding living being is constantly rising over time but the maximum possible entropy increases faster with the conquest of new items (for example: territories for empire or words for language) (See Fig. 2).

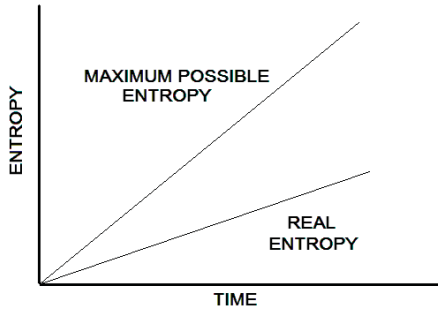


Fig. 2. Diagramm Time-Entropy.

Over time, the living being or phenomena are moving away from death. At some point they will reach the minimum relative entropy and thereafter the entropy will increase until it passes an ultimate value, after which there occur death or disintegration. At the time of minimum entropy, the living being or phenomena will collapse and new ones will be formed, so the circle goes on. Any living phenomenon plunges into entropy, reducing its own entropy (See Fig. 3).

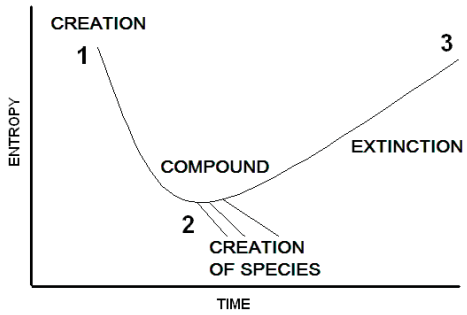


Fig. 3. The curve "Creation - Extinction" in the field Time – Entropy.

Let's see the analytical development of a living being, from the language to the empire, from the atoms to the galaxies, from the cells to the man. (See Fig. 3).

Therefore, over time, a living being are moving away from death. Language or empire, atom or galaxy, cell or man, may not increase forever "reduced entropy". At some point they will reach the minimum relative entropy and thereafter the entropy will increase until it passes an ultimate value, after which the death or disintegration come. At the time of minimum entropy, the empire will collapse and new countries will be formed, the language will disappear and new languages will be created, the star will collapse and new stars will be created, so the circle goes on. The same applies to any living phenomenon. Any living phenomenon plunges into the entropy, reducing its own entropy. *These dives represent the evolution*.

Item 1: Genesis of the living being.

Line 1–2: Life of the living being.

The entropy of the living being is reduced, the complexity and organization become more complex.

Item 2: Birth of another living being.

At this point the living being has reached the lowest possible entropy. The birth of another living being is described as follows.

Line 2–3: Ageing of the living being.

During the ageing process, the entropy of the living being increases, which reduces its complexity and organization. The living being is simplified.

Item 3: Death of the living being.

The living being reaches the point of the greatest entropy (i.e. the complete disorganization) and it inevitably disappears.

These dives represent evolution (See Fig. 4). It can be seen that evolution consists of consecutive "dives" into entropy and time. The same process also occurs in space; the conquest of new lands leads to reduction of the conquerors entropy. These "dives" can be seen as the stages of a fractal starting from the cells and coming to Man – homo sapiens sapiens in present times.

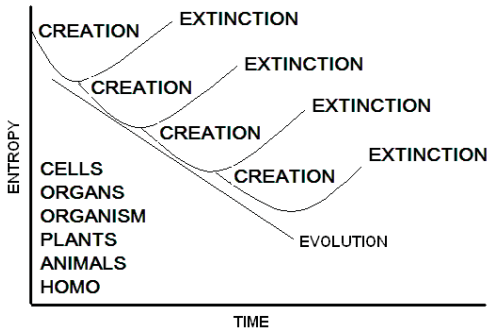


Fig. 4. The curve "Evolution" in the field Time – Entropy.

The fractal following the evolution from Cell to Man will be analytically described below (See Fig. 4) and this undoubtedly important aspect I'll stress continually at the beginning of every item:

Cell

When Cells discovered Civilization, the Civilized Cells conquered the Earth and created the Organs.

The first cells existed for 2.5 billion years *without development*. The predominant forms of life were almost unchanged. 1.5 billion years ago, different cells joined together in order to survive. In subsequent years the civilized cells continued their fast-pace development, creating the first multi-cellular bodies; a society of cells.

Organs

When Organs discovered Civilization, the Civilized Organs conquered The Earth and created Organisms.

The first organs existed for billions of years *without development*. The predominant forms of life were almost unchanged. 580 million years ago various organs joined together in order to survive. Over the next 70-80 million years, development accelerated and the diversity of life began to resemble the one of today. This was a union of organs, from which all benefited. In subsequent years the civilized organs continued their fast-pace development, creating the first multi-organic organisms; a society of bodies. (Cambrian explosion).

For example: *Family: Physaliidae, Order: Siphonophora, Class: Hydrozoa, (See Fig. 5). Phylum: Cnidaria, Portuguese Man-of-War (Bluebottle - Physalia spp. - Hydroid)*

Fig. 5. Physalia.

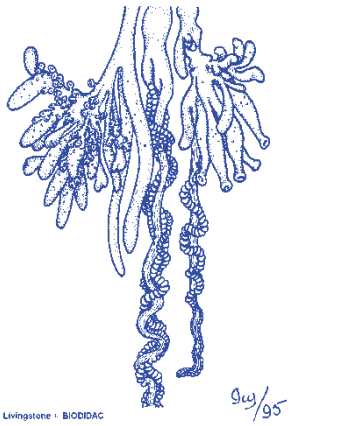


Fig. 6. Physalia as a colony.

Physalia physalis is the only widely distributed species. P. utriculus, commonly known as the bluebottle, frequently occurs in Hawai`i, in the Pacific and Indian oceans.

The Australian Museum notes on its luminous web page, that the portuguese man-of-war: "... is not a single animal, but a colony of four kinds of highly modified individuals [polyps]. The polyps are dependent on one another for survival." (See Fig. 6).

From: http://www.aloha.com/~lifeguards/portugue.html

Organism

When Organisms discovered Civilization, the Civilized Organisms conquered the Earth and created Higher Animals

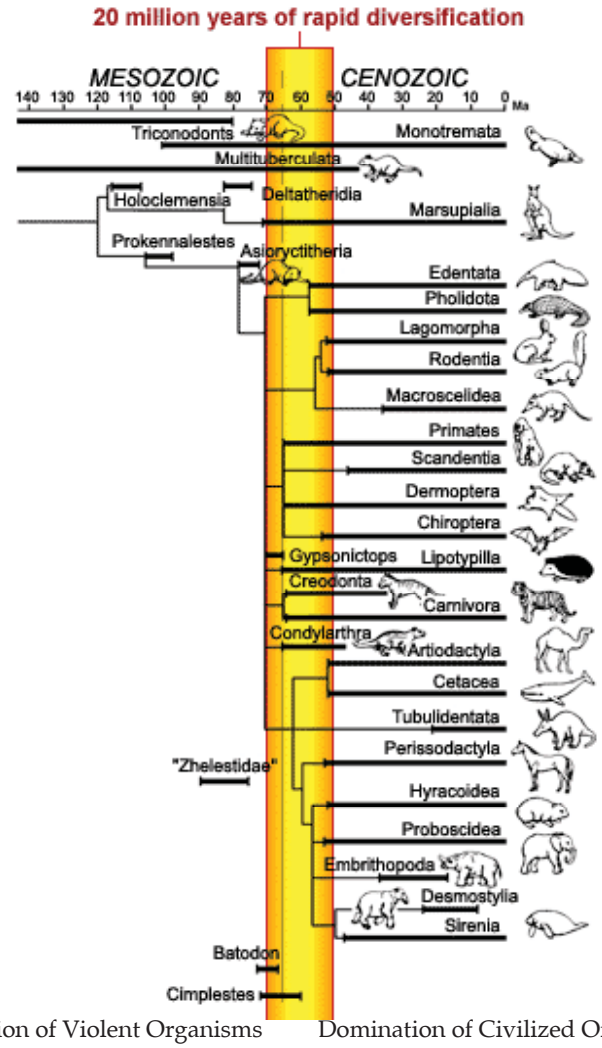
The first organisms existed for millions of years *without development*. The predominant forms of life were almost unchanged. 225 million years ago, different organisms joined together in order to survive. This was a group of organisms, from which all benefited. In subsequent years the civilized organs continued their fast-pace development, creating the first higher animals; a community of organisms.

(Extinction: Approximately 225 million years ago, over 90% of living species disappeared for less than 10 million years.)

Higher Animals

When Higher Animals discovered Civilization, the Civilized Higher Animals conquered the Earth and created the Hominids.

Higher Animals existed for millions of years *without development*. The predominant forms of life were almost unchanged. 70 million years ago, various higher animals joined together in order to survive. This was the unification of higher animals, from which all benefited. Over the next 20 million years the civilized higher animals continued their fast-pace development, creating hominids; a society of higher animals (See Fig. 7).



Domination of Violent Organisms — Domination of Civilized Organisms – Create uncivilized Higher Animal

Fig. 7. Evolution between Mesozoic and Genozoic
(From: http://evolution.berkeley.edu/evolibrary/search/imagedetail.php?id=350&topic_id=&keywords=)

Hominids

When hominids discovered Civilization, the Civilized Hominids conquered the Earth and created Man.

Hominids existed for millions of years *without development*. The predominant forms of life were almost unchanged. 5 million years ago hominids joined together in order to survive. This was a group of hominids, from which all benefited. In subsequent years the civilized hominids continued their fast-pace development, creating Man 2 million years ago; a society of hominids.

Man

When People discovered Civilization, the Civilized People conquered the Earth and created Human Society.

Man existed for millions of years *without development*. The predominant forms of life were almost unchanged. 2 million years ago different people joined together in order to survive. This was a group of people, from which all benefited. In subsequent years the civilized people continued their fast-pace development, creating modern man 1 million years ago.

In short, civilization is an organization of the weak organisms, as was initially stated. This organization decreases entropy and creates the conditions for the next level of the fractal, the next dive into entropy.

After Man has conquered the Earth it is easier to predict the future levels of the fractal:

- White men get together and defeat the other races.
- The rich white men get together and defeat the poor ones.
- The good-looking rich white men get together and defeat the ugly ones.
- …

Why? Because only the homo sapiens managed through the civilization to went out from nature and create an artificial world. In this artificial world homo sapiens survived until today. The Neanderthals, although they were civilized, remained in the wild nature. And they disappeared, like all other species; no mystery.

At the same time, the levels of the fractal spread over territories too. They started from the sea – cells, then to the land – animals and plants parallel to fish in the sea, and next to the air – birds. Nowadays it is spreading to other planets – the Moon.

ORIGIN AND EXTICTION OF SPECIES

The domination of civilized species of life caused the disappearance of the corresponding types of uncivilized life. In Earth's history there has occurred the following massive creation and disappearance of living species (See Fig. 8a, 8b):

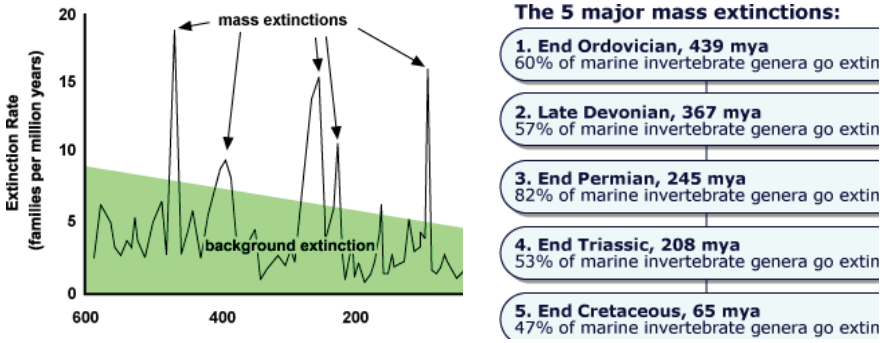


Fig. 8a, 8b. Creation and extiction of species.
(from: http://evolution.berkeley.edu/evolibrary/search/imagedetail.php?id=351&topic_id=&keywords=)

1 million years ago – Domination of civilized people.

5 million years ago – Domination of civilized humanoids and creation of man.

50 million years ago – Domination of civilized higher animals and creation of hominids.

65.5 million years ago – Nuclear winter.

More than 90% of plankton disappeared in the oceans, which inevitably led to the collapse of the oceanic food chain. The disappearance was connected with the huge basalt appearance of Deccan Traps in India and the well defined layer of iridium in the geological K-T boundary. 60-75% of all species disappeared.

70 million years ago – Domination of civilized organisms and creation of higher animals.

201 million years ago – Disappearance at the end of the Triassic.

The disappearance at the Triassic – Jurassic boundary prepared the way for the evolution of dinosaurs. 80% of all species disappeared.

251 million years ago – The biggest mass extinction of life.

The mass extinction at Permian – Triassic boundary 251 million years ago is called "Great Dying" as 96% of life on our planet disappeared.

Prolonged extinction in the Devonian.

Due to the length of this crisis, some date it 359 million years ago, others – 364 or 374 million years ago. The disappearance at the end of the Devonian killed 60% of marine life. 80% of species disappeared.

440 million years ago – Lack of oxygen.

The disappearance took place at the end of the Ordovician around 440 million years ago. 85% of species disappeared.

580 million years ago – Civilized organs dominated and organisms were created.

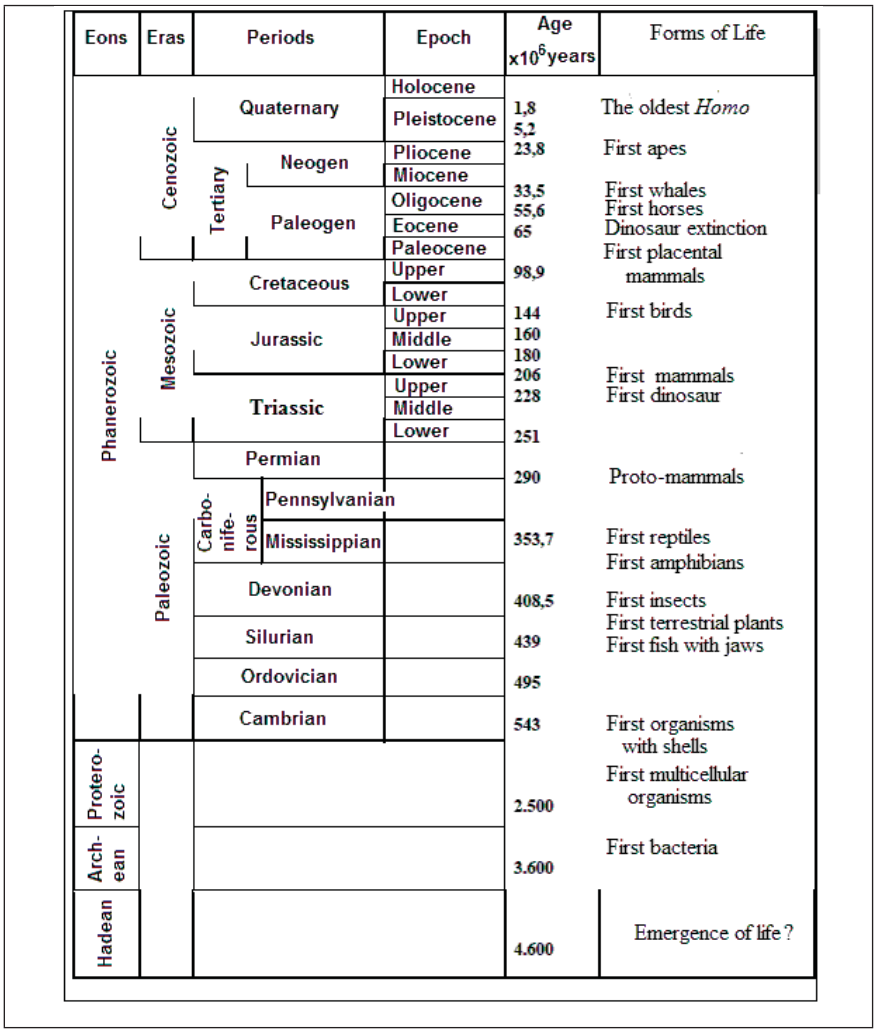
1.5 billion years ago – Civilized cells dominated and organs were created.

ORIGIN BY CIVILIZATION AS FRACTAL

It is clear from the above that the process of transition from one level of civilization to the next is the same. Uncivilized animal species fight among themselves; some weak ones eliminate violence among them, unite, civilize and create the next uncivilized animal species. Those who have not come together give in to the superiority of the newly created ones and disappear. The process is repeated with the newly created ones, which are uncivilized.

And this process, called self-similarity, created today's man from the cells.

The Summarizing Geological Time Table below shows the chronology of the creation of new species and the extinction of existing ones (See Table 1).



Eons	Eras	Periods	Epoch	Age x10^6 years	Forms of Life
Phanerozoic	Cenozoic	Quaternary	Holocene		
			Pleistocene	1,8	The oldest *Homo*
				5,2	
		Tertiary: Neogen	Pliocene	23,8	First apes
			Miocene		
		Tertiary: Paleogen	Oligocene	33,5	First whales
			Eocene	55,6	First horses
			Paleocene	65	Dinosaur extinction
	Mesozoic	Cretaceous	Upper	98,9	First placental mammals
			Lower		
		Jurassic	Upper	144	First birds
			Middle	160	
			Lower	180	
		Triassic	Upper	206	First mammals
			Middle	228	First dinosaur
			Lower	251	
		Permian		290	Proto-mammals
	Paleozoic	Carboniferous: Pennsylvanian			
		Carboniferous: Mississippian		353,7	First reptiles
					First amphibians
		Devonian		408,5	First insects
					First terrestrial plants
		Silurian		439	First fish with jaws
		Ordovician		495	
		Cambrian		543	First organisms with shells
Proterozoic				2.500	First multicellular organisms
Archean				3.600	First bacteria
Hadean				4.600	Emergence of life ?

Geologic Time

Table 1.

1.000.000 – Domination of the civilized homo. 5.000.000 – Domination of the civilized hominids and creation of homo.	
50.000.000 - Domination of the civilized higher animals and creation of hominids.	65.500.000
70.000.000 - Domination of the civilized organisms and creation of higher animals.	201.000.000
	251.000.000
	359-374.000.000
	440.000.000
580.000.000 - Domination of the civilized organs and creation of the organisms. 1.500.000.000 - Domination of the civilized cells and creation of organs.	(year before)
(years before)	
Domination of the civilized species	Mass extinctions

Table 1

HUMAN CIVILIZATION IN SPACE

The increase of population leads to the acquisition of new territories for the superfluous people to reside in as they no longer fit in the existing territory. This means that the superfluous people are called upon to fight with other people, animals and nature. Using war to conquer new territo-

ries, superfluous people reduce their entropy even more adding entropy to the defeated (defeated people, animals, nature) (See the New World, USA). Thus the entropy-time diagram is valid as an entropy-space diagram too. In this way, with more space, the rhythm of the development of civilization gets faster (See Fig. 9a, 9b).

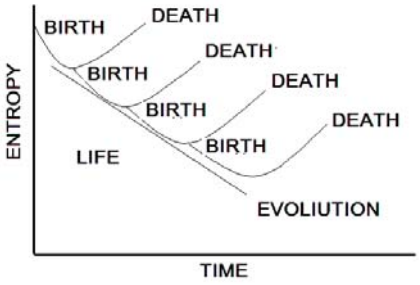


Fig 9a. Development in time

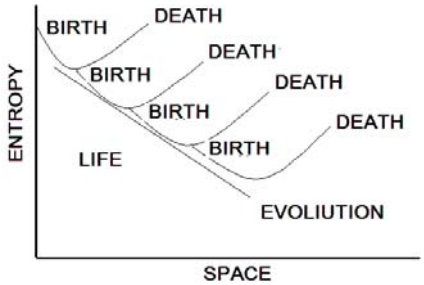


Fig. 9b. Development in space

The more space there exists, the greater the development of civilization can be. Civilization developed on the continents of Eurasia, North America, South America, Africa and Oceania. It is obvious that the conquest of new territories is facilitated on the path from E(ast) to W(est), because climatic conditions for man do not change considerably. The possible paths E – W are: Eurasia (1), North America (2), South America (3), Africa (4) and Oceania (5) (See Fig. 10).

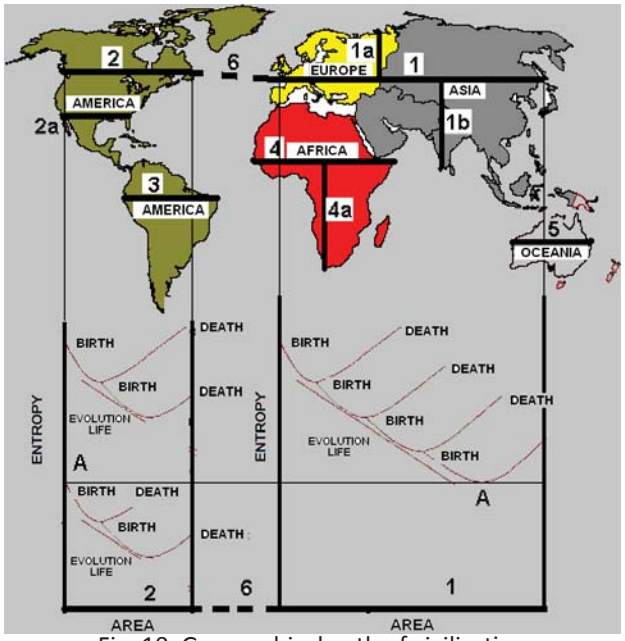


Fig. 10. Geographical path of civilization

From all these the path in Eurasia is the longest (1). For this reason civilization developed most rapidly there. Paths on the other continents are much shorter, the result being less development for civilization. The same is valid for the vertical N(orth) – S(outh) paths 1a, 1b, 4a, etc.

The development of navigation gave the opportunity to the inhabitants of Eurasia to continue line (1) across the Atlantic Ocean (6) into North America (2). In fact, path (2) is the continuation of path (1). For this reason USA is the most developed country on Earth today. Its entropy can be seen in the bottom left corner of the diagram.

The following statements are also true for North America and are evidence of the correctness of the thesis:

A) War between natives and Eurasians

Natives had developed along line (2), which is much shorter than line (1). It is logical that the natives lost the war to the Eurasians – the people with less entropy than theirs.

B) Civil war between northerners and southerners

The Eurasian conquerors continued the path of civilization in North America along line (2) for the northerners and (2a) for the southerners. As line (2) is longer than line (2a), the northerners decreased their entropy more and naturally won the war with the southerners who had more entropy.

CONCLUSIONS

Perhaps after reading this article, some will accuse me of reductionism. But I would like to note that Prigogine was absolutely right in rejecting the strict physicalism or mecanicism, the direct reduction of the variety of social and cultural phenomena to the laws of simplest formation of nature, but at the same time justifying the dialectically treated reductionism. According to the latter, we must reconsider the well-known achievements of natural science, including Darwin's evolutionary theory, the laws of thermodynamics, etc., in the context of a new, modern image of the world. Furthermore, we should reconsider a number of well-known concepts and definitions (civilization included), freeing them from the anthropocentric layers.

My statement, that there is no fundamental difference between human and animal, is narrow to ones of D. Morris, K. Lorenz and A. Gelen. Man, due to the peculiarities of his brain, was the first who moved from nature to civilization, replacing the criteria of natural selection by civilizational

criteria. And are dolphins, bonobos and some other animals not close to it in many forms of their behavior?

Life, death, natural selection and *civilization* are natural processes that were created at the time of the creation of the Universe. In this paper *life* is defined as decrease of entropy, and *death* – as increase of entropy. *Natural selection* is defined as the survival of the poewrful (Darwin) and *civilization* - as the survival of the weak (Maritsas). These definitions are valid for biological and non-biological processes in nature.

It has been demonstrated that natural selection and civilization are two processes which have existed side by side since the creation of the Universe. The evolution of life is fractal consisting of consecutive extinction of uncivilized species and creation of the next civilized ones. By organizing the weak, civilization is the exact process of entropy decrease. In order to meet the 2nd law of Thermodynamics the new civilized species are much fewer that the extinct ones. The same applies to the non-biological world.

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