"New Aryans" – who are they?
or
Theory of superraces knocked at the door

Alexandr N. Tetearing
Saint Petersburg State University, Russia
tetearing@mail.ru

Abstract

The equation of development of a biological population, describing the human population, has the two different solutions in the form of an exponential function.

This can be interpreted as the fact that our human population consists of the two separate groups of individuals. These two groups grow exponentially and can have identical biological parameters, but the one group grows slowly and the other group grows quickly.

An approximation of world's demographic data allows us to evaluate the time of appearance of these groups in the human population. The old slow group was born at the epoch of twenty six and a half thousands years BC. New fast group was born around 725 AD.

Very short mathematical introduction

The equation of life of a biological population, which lives under conditions of a full-fed existence of persons in the personal areas (with taking into account the mortality of persons in the population), is as follows:

$$\frac{dM(t)}{dt} = A\,M(t) - B\,M(t-T)\,, \tag{1}$$

where $M(t)$ is a total mass of the population; t is time; A and B are some parameters of the population (the constant coefficients); T is a life time of persons in the population.

The equation (1) has a main solution in the form of two-exponential function:

$$M(t) = c_1\,e^{a_1 t} + c_2\,e^{a_2 t}\,, \tag{2}$$

where c_1 and c_2 are the free coefficients, and parameters a_1 and a_2 are the roots of the equation:

$$B\;e^{-aT} = A - a \tag{3}$$

The equation (3) can have no solution, one or two solutions. In this article we consider the case, where the equation has two solutions. The equation (1) can also have the solutions in the

form of damped sinusoids, but in this work we don't consider these solutions (that are described in detail in the book [1]).

The solution of the equation of life (1) in the form of the sum of two exponential functions with positive degrees is shown in figure 1. Each of two increasing exponential functions is shown by dashed line, the sum of these two functions is shown by continuous thick line.

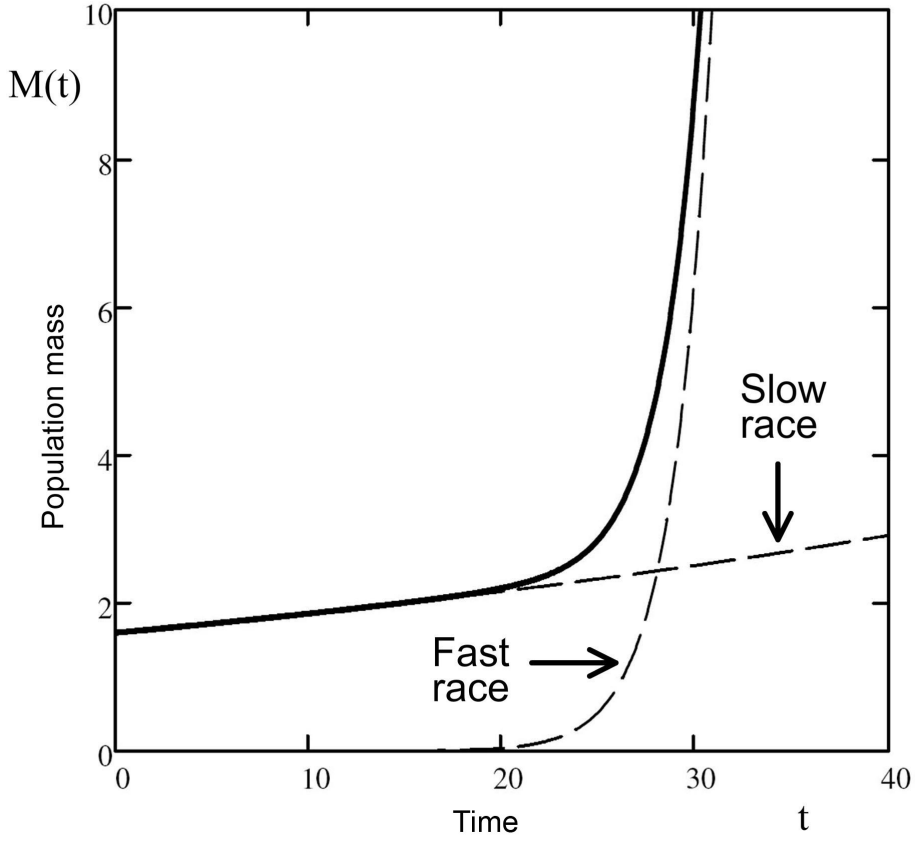

Figure 1: Solution of the equation of life (1) in the form of sum of two exponential functions with different positive degrees. Two increasing exponential functions are shown by dashed line, the sum of these two functions is shown by continuous thick line.

The characteristic feature of this scenario of populational development is the relatively low velocity of growth of population mass at initial stage and subsequent transition to the more rapid development at the second stage of population history.

It would be interesting to consider this two-exponential solution in the context of development of real natural populations. For example, it would be interesting to see, is this solution

suitable for approximation of the graph of growth of world's population?

But at first, there is a little prehistory...

A little prehistory

In distant 1798, studying the statistical data on the population size, Thomas-Robert Malthus [2] proposed the exponential law for population growth:

$$N(t) = c\,e^{kt}\,, \tag{4}$$

where N is the number of persons in the population, c and k are the certain coefficients.

In 1838 the Belgian mathematician Pierre Francois Verhulst [3] has defined, that growth of population of European countries is the function that is less than an exponential function. For his demographic data Verhulst picked up (of the several mathematical functions) the logistical function:

$$N(t) = \frac{c_1}{c_2 + e^{-at}}\,, \tag{5}$$

that describes the data with the least error.

Somewhere before 1960, many scientists considered that the growth of human population goes according to a hyperbolic law. That is to say, the time dependence of human population size is described by the hyperbole:

$$N(t) = \frac{N_0}{t_0 - t} \tag{6}$$

Here N is the world's population size, N_0 is a constant, t_0 is a certain time.
The graph of this hyperbolic function is shown in figure 2.

In 1960, in the article with pretentious title "Doomsday: Friday, 13 November, A.D. 2026" [4], that was published in the American "Science", authors have predicted the date of Doomsday (of course, on the basis of serious scientific data).
The authors of the work, studying the demographic data on size of human population, have pointed to the fact, that the population grows slightly faster than an exponential function, and it is more like hyperbole (6), but not exponential function (4).

The hyperbolic function (6) has the following feature – at certain time $t = t_0$ the value of the function becomes infinite.

The authors of the work [4] have suggested that if the population growth will follow the hyperbolic law, then in November 13, 2026 the size of world population will be equal to infinity, with all the consequences in the form of global worldwide catastrophe caused by overpopulation of our planet.

The recent research in field of world population growth – conducted over several decades after 1960 – have shown that the function of human population growth is deviated from hyperbole

(the growth is smaller than the hyperbole, that tends to infinity), and it is possible, that the Doomsday, scheduled for 2026, will not happen.

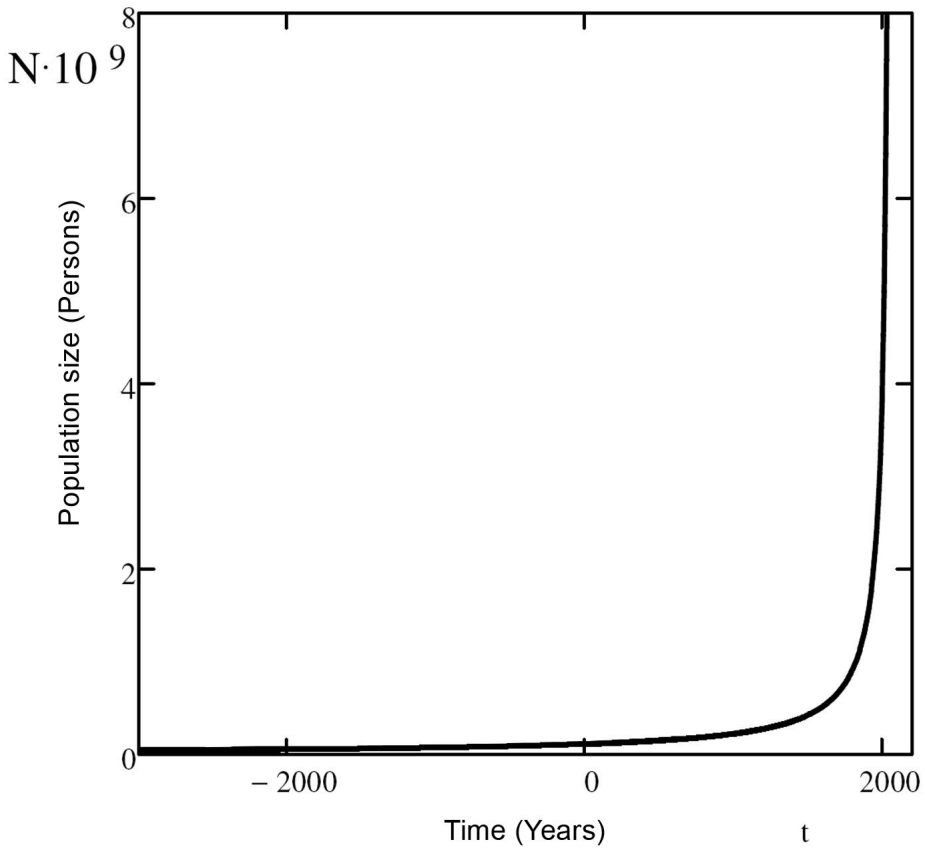

Figure 2: Hyperbolic function (6).

Modern data approximation

We have on hands the data on the size of world population, covering the period from 2000 BC until today.

Joel Cohen systematized the various data on estimates of size of world population in his book "How many people can the Earth support?" [5].

We use the average values, provided in this book, for the time period from 2000 BC to 1950.

Table 1: World population (in millions of persons), from J. Cohen [5] and U.S. Census Bureau [6].

Year	$N, (\cdot 10^6)$
-2000	47
0	100-230
1000	275-345
1500	440-540
1650	465-550
1750	735-805
1800	835-907
1850	1090-1170
1900	1608-1710
1920	1811
1930	2020
1940	2295
1950	2416-2515
1955	2781
1960	3042
1962	3139
1965	3349
1966	3139

Year	$N, (\cdot 10^6)$
1973	3942
1975	4089
1980	4453
1985	4852
1990	5284
1995	5697
1998	5932
1999	6008
2000	6084
2001	6159
2002	6234
2005	6456
2006	6531
2007	6606
2008	6681
2009	6756
2010	6800
2012	7022

The scatter of values, presented by various researchers, shows the error for these estimations. For example, in zero AD, this error is nearly 80% of the average value. And, obviously, this error increases with the approach to the beginning of time.

And this error of magnitude is, probably, greater than the magnitude itself already for 2000 BC.

After 1950, we use, as more accurate data, the latest data from U.S. Census Bureau [6].

All data are summarized in table (1). If the table cell contains the range of values (instead of a single number), we use the arithmetic mean of two borders of this interval.

All tabular data are shown in figure 3 by dark points. The size of world population N is measured in millions of persons, the unit of time is year. Negative values of time are the years before Christian Era.

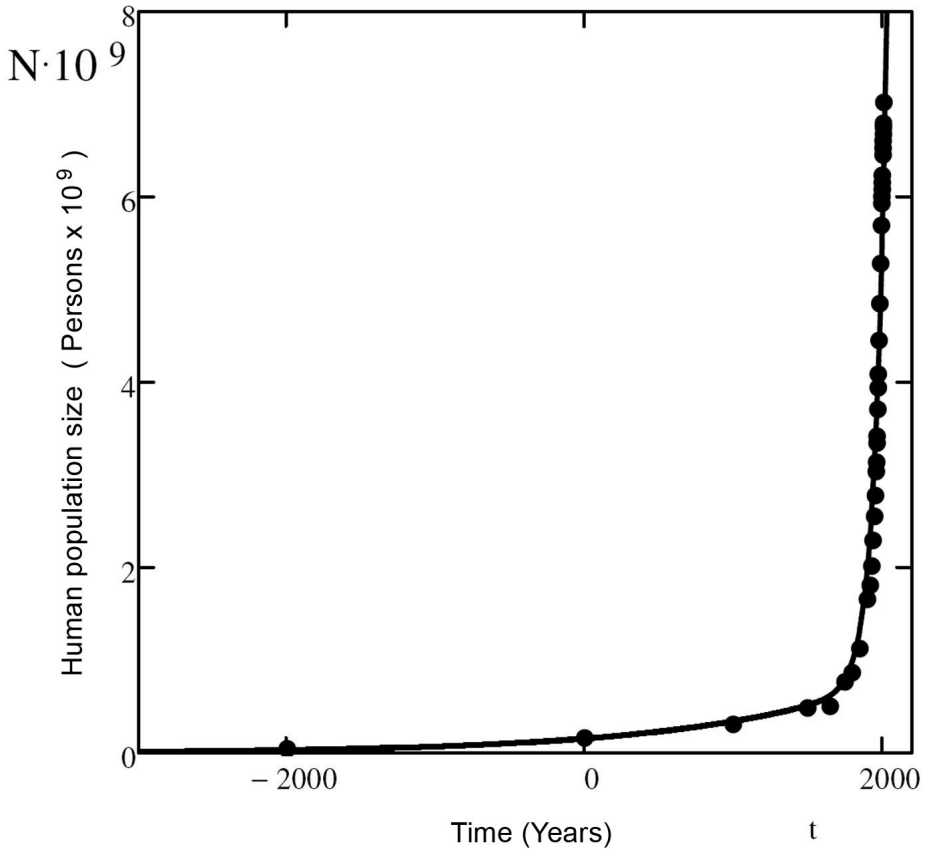

Figure 3: World population size N versus time t according to data by Cohen [5] and U.S. Census Bureau [6]. The data approximated by two-exponent function (7).

When plotting the graph of population growth, we use as approximating function for data, which is shown in figure 3, the two-exponent solution (2) of equation (1):

$$M(t) = c_1\ e^{a_1\ t} + c_2\ e^{a_2\ t}\,, \tag{7}$$

Taking into account the expression: $N = M/m$, where m is mass of one person, we go from population mass M to the number of persons N; and thus, instead of (7), we get:

$$N(t) = c_3\ e^{a_1\ t} + c_4\ e^{a_2\ t} \tag{8}$$

This function is shown in figure 3 by continued thick curve with the following coefficients: $c_3 = 1.6 \cdot 10^8$; $a_1 = 6.9 \cdot 10^{-4}$; $c_4 = 9.1 \cdot 10^{-6}$; $a_2 = 1.7 \cdot 10^{-2}$.

This approximating two-exponential function visually is not very different from hyperbole (6), that is shown in figure 2. But, when we use the two-exponential function (7), we can more accurately choose the shape of the approximating curve, because, in this case, we use the four independent coefficients, instead of the two free coefficients for the hyperbole.

The coefficients c_3, a_1, c_4, and a_2 of approximating function are selected using the method of least squares; that is to say, when choosing these factors, we minimise the value:

$$\sum_n (N_n - D_n)^2 \tag{9}$$

Here n is the number of points of the graph (the raw data); D_n is a value of raw data in the point with number n; N_n is a value of approximating function $N(t)$ in this point.

The average relative error of approximation ΔN, that is calculated by the formula:

$$\Delta N = \frac{1}{n} \sum_n \frac{|N_n - D_n|}{|N_n|} = 0.054, \tag{10}$$

does not exceed five and half percent of the value. For comparison: the average relative error of approximation of this data by the hyperbolic curve in the form (6) is, approximately, ten percent.

This slight (double) increase in accuracy of approximation does not allow us to declare optimistically that this two-exponential approximation is much better than hyperbolic approximation – because, it is obviously, when we use more parameters for the approximation, the accuracy of approximation is higher, and the approximation function is closer to the experimental curve.

This two-exponential approximation does not give better accuracy, possibly, due to the fact that the graph of initial function contains the damped sinusoidal oscillations, caused by quasi-periodic solutions of life equation (1). In this case, the inaccuracy of approximation is determined by the amplitude of these sinusoidal oscillations.

Moreover, the human population consists of many different peoples, dwelling under different climatic conditions. That is why, for more precise plotting the approximating function, we need to have the separate demographic data for all countries (regions), and approximate all these data separately, with taking into account the individual parameters of population development of the separate countries, and then only totalize this data in the one function.

Graph (3) shows that the transition of the function of changes in population size from the exponential function with a small degree (left side of graph) to the exponential function with a

large degree (right side of graph), has occurred between the late 19-th century and early 20-th century, approximately in 1900. The demographers came up with a term "demographic transition" for the description this jump (a sharp change) in the world population size.

Some scientists have expressed the view that this transition (that is sufficiently fast in the historical scale) was due to such causes as the scientific and technological revolution in human society, or the changes in historical and social conditions: the rapid development of public health or education.

The demographers are prone to consider, that this transition is qualitatively revolutionary. On the contrary, we see that this transition is not conditioned by revolutionary or qualitative changes in the population, but it is only the smooth (permanent and very long) growth of one exponential function in comparison with the other exponential function.

It can be noted that, in accordance with equation (1), we can observe this "demographic transition" (with determined parameters of development of the population) not only in human society, but also in the populations of another biological organisms, animals or plants (the biological species, that have the mortality of individuals in the population). These are, for example, the populations of mammals, insects, fish or birds, and even the populations of the kitchen-garden plants.

For animal populations we can sometimes assume (with a great deal of imagination) the presence of some social revolution in hierarchically organized society (the sociologists are laughing), but no one would ever think about social revolution or scientific and technological progress in the society of garden trees or kitchen-garden plants.

The another demographers for explanation of the "demographic transition" phenomenon attract the theories, based on the changes in the birth rate.

In our case, the changes in the birth rate is not necessarily. With the same birth rate the two various exponential solutions can coexist in the population (with different degrees of exponential functions), and sum of these two solutions can form this transition in the graph of population growth.

We see, that, according to our discourses, this demographic transition is not caused by any qualitative changes in our human population, but, on the contrary, it was predestined initially, literally – at a very early stage of the development of mankind. And to explain this transition (the jump in the rate of growth of human population) we do not need to invent reasons (these are, for example, the reasons such as scientific and technical progress or social changes) other than the usual rules of elementary mathematics.

When describing the demographic transition, the researchers draw a conclusion, that the demographic transition is completed in the final stage that is characterized by a reduction in population size and stabilization of population size at a constant level. Our equation does not give these conclusions. After stage of the demographic transition, the exponential growth of the population can continue for a long time.

We note again, that for the description of the development of human population we used exactly the same equation, that describes, for example, the life of laboratory population of drosophila flies, development of the population of tree squirrels or growth of population of horseradish in the kitchen-garden.

May be, in course of time, we will have to replace the term "a demographic transition" by more

generalized concept, such as, for example – "a populational transition". Because the applying of the demographic concept to the populations of drosophila flies or population of kitchen-garden plant is inappropriate.

Though, probably, from the height of the human intelligence, it will be a shame for a some highly educated human persons to perceive the fact that, with standpoint of the elementary mathematics, the development of human society does not differ from development of a population of usual vegetable in the kitchen-garden.

"New Aryans" – who are they?

So, perhaps, it is the most intriguing moment of our article that describes the development of the population, where the mortal persons, dwelling under conditions of a full-fed existence, do not fight each other for food resource.

As we know it from the previous sections, the equation of life (1), describing the development of population (with taking into account the mortality of persons in the population) has the solution (2) that is the sum of two exponential functions with different degrees. These two exponential functions and their sum are shown, for example, in figure 1.

For the two-exponential scenario of development of the human population (submitted in figure 1), we can assume (at least, when we see it from the side – from our present-day viewpoint of the whole previous history of mankind – it looks like true), that in the human population there are two separate groups of people, each of which has its rate of population development. Herewith, one group develops in accordance with the formula: $M_1(t) = c_1\, e^{a_1 t}$, and second group is develops in accordance with the formula: $M_2(t) = c_2\, e^{a_2 t}$ (see equation 2).

As we assume, these groups, perhaps, do not differ very much in their appearance from one another and have the same parameters A and B in the equation of life (1) and the same life time of persons T. Presumably, these populations have only the different velocities of increase in the population mass. In other words, the more progressive group develops and grows faster, and, for the same time, it is gaining more mass.

The population consists of separate persons. The persons, from birth (or, more accurately, from conceiving an embryo), are divided in its functional behavior into two groups: fast or slow group.

It would be assumed, that nature decides randomly, who of the newborn persons will belong to the new fast group, and who will belong to the old slow group. But, in this case – if this suggestion is correct – the ratio of the number of persons in the both groups would remain approximately constant for a sufficiently long time interval (that is comparable to the time, for which a human species can be changed evolutionarily).

We see the opposite – the size of one group (at least, over the last two hundred years) is changed sufficiently intensively in contrast with another group.

The conclusion arises, that the difference in the human persons is predetermined initially. Throughout the history of mankind, in the human population there were two different breeds (races) of people. One of them – these are "the new Aryans" – in spite of small initial size of its population, finally, was more progressive than the other; and, today, this new fast group is

ahead of old slow group in its population size.

If it is true, we can try to find the genetic differences between these groups. There is a wide field where our biologists and anthropologists can conduct their future researches. Until now, scientists have not yet engaged in this issue of finding these genetic differences[1].

The equation of life of the population (1) contains the factors A and B:

$$A = \frac{k_1 - k_2}{k_3} \qquad B = \frac{k_4}{k_3}\, b\,,$$

that, in turn, consist of the constant factors k_0, k_1, k_2, k_3, k_4, k_5, and b:

k_0 – is amount of energy, that one unit of population mass need to provide its life necessities per unit time;
k_1 – is amount of energy, that one unit of population mass receives from the environment per unit time under conditions of a full-fed existence of persons;
$k_2 = k_0 + \frac{k_1 k_5}{R}$
k_3 – is amount of energy, that the population spends on creation of unit of mass;
k_4 – is amount of energy, that is contained in one unit of population mass (the caloric contents of body of an individual);
k_5 – is amount of energy, that one unit of population mass spends on search for one energy unit of food resource;
b – is parameter of birthrate;
R – is amount of food resource, that the environment provides per unit time per unit of area;

and here are two possibilities.

In the first case, these two population groups have the same coefficients k_i, and (or) b, and we cannot distinguish representative of one group from representative of another group by physical parameters of interaction of the person with the environment (but there is a probability of some genetic differences).

In the second case, the fast and slow groups have the various coefficients k_i and (or) b (but the same coefficients A and B). Then we can distinguish between these two groups, measuring the physical parameters of interaction of the person with the environment (the factors k_i and b). In this case, generally speaking, it is mathematically possible the existence of two or more these super-racial groups.

At present, the identification of "new Aryans" in world human population is possible only on the basis of their accelerated development (rapid growth) of organism or on the basis of increased consumption of energy (food). That is to say, theoretically, we can today detect these over-racial differences in infants or even in embryos, developing in the womb.

Planters and livestock breeders, perhaps, are first, who would be able to evaluate this future discovery, which can be useful for the breeding of new varieties of livestock or agricultural plants, because the representatives of the new breed will develop more quickly.

The new breed of people would be useful, for example, for the colonization of other planets. The population of these "new colonists" will rapidly produce offspring and increase the size of

[1]The detection of these two-race populations in any animal species can soon become a serious discovery in biology, because it is easier to explore the populations of animals, than the human populations.

the planetary settlements. It is possible, in the future, for space settlements on the Moon or Mars, the scientists will choose members of space expeditions among those who belong to the new fast super-race.

This discovery can have also the negative consequences. The appearing problem of world's overpopulation can force the governments of economically developed countries (dominant countries) to take measures for establishment of race segregation based on the criterion of belonging of persons to the new or old population group.

The reproduction (the childbearing) of "new Aryans" can be legislatively prohibited or limited (the precedents on restriction of birth rate in China are well-known), while the representatives of "old" population group will continue reproduction (because the old population grows slowly, and, in the absence of "new Aryans", the old population will need more time to deplete the Earth's natural resources).

This selective ban can work more effectively, than restriction of birth rate for randomly selected persons. Because the parameter of increase in number of new Aryans (the degree of exponential function in the equation of life) is almost two times higher, than this parameter of old breed people.

If the differences between new and old races are due to mathematical differences in the coefficients k_i and (or) b in the equation of life (1), and these differences in coefficients will be observed experimentally, the researchers can make some assumptions about possible outward manifestations of these differences between groups.

Here we can face the danger of emergence of new inhuman racial theories that will "on basis of objective scientific data" declaim the superiority of one super-race over other.

For example, if the fast new race has a lower (genetically fixed) coefficient k_3, then, in this case, it is possible that, due to the best energy parameters of their organisms, the new Aryans can be better adapted to survive under conditions of work concentration camps.

With the same food ration – with the same portion of food calories – it is quite possible, they will live longer, or they will do more work, in contrast with the representatives of old breed of people; or, it is also possible, for the breeding of new sort of people (for an increase in size of "herd" of new "slaves") "master" will spend less fodder.

This follows from the fact that, under this suggestion, the new Aryans can spend fewer calories on maintenance of vital activity of organism.

It is possible, that this improvement in total energy coefficient of efficiency of organism is conditioned by reduction of energy expenses for a certain physiological processes, such as mental power of brain. That is to say, intellectual and creative abilities of new Aryans can be reduced, in contrast with the intellect of old breed of people. For now we cannot say anything about intellectual abilities of new Aryans (such as level of intelligence or creativity) – the mathematical equations do not answer this question.

But, this may look quite different. May be, the new breed of people is (unfit for physical work) group of clever voracious mollycoddles with friable fat bodies, which consume and spend on energy needs of their organisms more calories, and, under conditions with the same food ration, they will grow more intense in relation to persons of old race.

So, who are they, these people of new breed? What is their population mission? Will they be the ruling world's super-race that wins in the evolutional struggle for existence and will control

the entire human civilization on the planet in the future?

Or is it a growing mass of working individuals, a labor force of future, the population of work concentration camps, the working slaves for future world civilization, that are supervised by the representatives of old breed of people?

Today, without a large-scale population researches, we can not answer even these, simple qualitative questions[1]...

According to our equations, approximately in 1870 the number of "new Aryans" has become equal to the number of people of old breed. Today, according to calculations, in human population there are ten representatives of new population per capita of old breed.

Formally (on the basis of our equations), we can define the initial time of emergence of the new race in our human population. These calculations show that approximately in 725 AD the number of new Aryans was equal to two persons. This is time, when new Adam and new Eva laid the foundation for a new human breed.

Similarly, we can formally attribute the time of forming the old human breed to the epoch of twenty six and a half thousands years BC, when the size of old mankind was equal to two persons.

Here, certainly, we need to understand that the error in our calculations increases with movement for a long distance along history timeline into the past. The life time of human person (which is assumed to be constant in our equations), the climate and environmental conditions for mankind are changed for centuries. That is why, we can not to consider this calculated time as sufficiently reliable.

More important is the fact, that these formal calculations demonstrate the order of magnitude for difference between time of existence of old mankind and time of existence of new breed of people on our planet.

Analyzing the development of the populations in the autonomous regions of planet, in the first approximation, we can say, that, apparently, the presence of "new Aryans" breed in the human population is not an exclusive feature of one and only one human race. The populations of Great Britain, China, Japan, India, Africa and Latin America develop in accordance with similar two-exponential scenario.

Consequently, the "new Aryans" breed is, of its kind, the human super-race, in the sense that the representatives of this populational super-group exist in all major human races: Europeoid, Negroid, and Mongoloid. Thus, with presence of the breed of new Aryans, the scientific ideas of anthropologists about hard race separation of humankind lose their relevance. Instead of discussion on local race theories, the scientists, first of all, should focus on the search for genetic differences between these two super-race groups.

Is there the "population transition" in the populations of animals or plants? The equations give the unambiguous answer – yes, the "population transition" exists. However, nobody has ever seen it in practical observations.

[2]The practical implementation of measurement of some coefficients k_i in equation (1) is physically quite difficult process. For example, to measure experimentally the factor k_4, characterizing the human population, it is necessary to burn the bodies of recently deceased people in a large calorimeter, or (that is easier) dissolve the dead bodies in bath with acid, installed in the hermetic camera of large calorimeter to calculate the amount of emitted energy by measuring the increase of temperature inside camera.

But, for religious reason, many scientists will hardly perform these experiments.

For a human population we have the demographic data for a long time historical period (the millenniums), but for the representatives of animal world we have no similar data. It is likely, many biological species have left this evolutional transition in the distant past, and our descendants or we will not watch it.

But it is possible, that for the populations with short period of life we can detect this transition under laboratory conditions. Here we have to carry out the special experiences that are still not realized.

So it turn out, that the demographers (in their debates about the scientific and technical progress and the changes in social conditions) missed the most grandiose event in the history of development of our human population. And this event took place before our eyes – the super race of "new Aryans" occupied a dominant position in the world (as, at one time, the Cro-Magnon has defeated Neanderthal man in the evolutional struggle for existence).

And may be we are witnesses of the epochal history event, when a new Neanderthal man comes to replace the modern Homo sapiens.

The uniqueness of this event lies in the fact that, in accordance to the equation of life, this event happens only once in the modern mankind history, that continues, at least, during the several thousands years.

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