

DEMOGRAPHICAL ISSUES IN THE PHILOSOPHY OF THE NEW AGE
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Abstract: *the article focuses on the one of the most important issues of the New Age, affecting the range of large-scale demographic problems that have arisen because of the growth of global industrial potential. It presents various approaches to the study of demographic indicators of socio-economic development and their relationship with contemporary food and environmental threats. It offers a comparative analysis of the views of Johann Peter Süßmilch, Thomas Malthus, Pierre-François Verhulst and Herbert Spencer, who studied the phenomenon of European overpopulation.*

Keywords: *population, demography, overpopulation, fertility, mortality, resource intensity, demographic optimum, demographic revolution.*

ВОПРОСЫ НАРОДОНАСЕЛЕНИЯ В ФИЛОСОФИИ НОВОГО ВРЕМЕНИ
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Аннотация: *в представленной статье анализируются актуальные вопросы философии Нового Времени, затрагивающие спектр масштабных демографических проблем, возникших в результате нарастания мирового промышленного потенциала. Освещены различные подходы к исследованию демографических индикаторов социально-экономического развития и их взаимосвязи с современными продовольственными и экологическими угрозами. Осуществляется сравнительный анализ взглядов Петера Зюсмилха, Томаса Мальтуса, Пьера Франсуа Ферхюльста и Герберта Спенсера, исследующих феномен европейского перенаселения.*

Ключевые слова: *народонаселение, демография, перенаселение, рождаемость, смертность, ресурсоемкость, демографический оптимум, демографическая революция.*

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The population issues, whose main driving component was the scientific revolution, which radically changed the entire content base of the system of scientific cognition, began to draw attention of the philosophers at the beginning of the 17th century. A completely new stage in the development of science, accompanied by qualitative transformations of the methodology used in science, as well as the strengthening of the role of the reassessment of values, transformed and totally reconstructed all spheres of social life: economy, politics, science, culture and art. The transition to manufacturing and commodity production, which was gaining momentum in Italy, the Netherlands, England, France and Venice, contributed to the total expansion of trade relations and the growth of cities, which led to the strengthening of the role of the world market. The need for the implementation of scientific discoveries and research grows at an accelerated pace, which has not only theoretical, but also applied character. Comprehension of the results of great geographical discoveries by European travelers in the 15th - 17th centuries, made it possible to assess the higher scale of consolidation of civilizations that were previously isolated from each other, the strengthening of the bourgeois class, the opening of new routes, the emergence of new colonial empires, the establishment of a dialogue of different cultures, as well as the spread of different views and ideas.

Owing to the scientific revolution, first championed by Nicolas Copernicus, who challenged the traditional Ptolemaic geocentric system, a completely new model of the Universe came to be - the heliocentric system with the Sun in the center, which had a colossal effect on the further development of all spheres of science. The invention of the telescope by the Italian physicist and astronomer Galileo Galilei in 1609 made it possible to investigate the structure of the Milky Way, study in detail the structure of the lunar surface, discover the moons of Jupiter, the changes of the phases of Venus, and observe spots on the Sun previously unknown to scientists. The achievements of the Danish astronomer Tycho Brahe made it possible to maximally improve and systematize the practice of astronomical research, improve the methodology used in the study of the celestial spheres, thereby giving astronomy the status of an experimental science. Thanks to the results of the scientific activity of the German mathematician and astronomer Johannes Kepler, who was the discoverer of the three laws of motion of the planets of the solar system, it was possible to explain the paradoxes of the apparent curve in motion, found in the observation process. The discovery of the law of universal gravitation, as well as the discovery of the three laws of mechanics by the

English physicist, Sir Isaac Newton served as the foundation not only for classical mechanics, but also for the foundations of modern physics. Thus, the New Age directly associated with large-scale changes in science, economics and politics, led to irreversible consequences for humanity. The notable examples are the secularization of mass consciousness, the establishment of bourgeois relations in Western Europe, the formation of industrial civilization, the strengthening of the process of urbanization - the growth of cities, industrial revolution, democratization of social structures and their modernization, strengthening the capitalist formation, increasing revolutionary ideals and the emergence of serious environmental losses. Particular attention to the population science begins to increase with the development of capitalism, which requires the formation of appropriate calculations and modeling of demographic processes. The interrelation of the demographic situation with the system of economic regulation of social relations has caused the need to study mortality as one of the most important category of demographic indicators, revealing the total life expectancy, the knowledge of which was necessary when calculating the proper amount of payments for life insurance. Thus, the strengthening of the practical need to identify the average number of years in the remaining life of a person required the implementation of the goals and objectives of determining the patterns of dynamics of demographic processes, through the analysis of fertility, mortality, marriage and migration processes. The first attempts to study these demographic indicators were undertaken in the 17th century. The English scientist, the founder of demography John Graunt made these attempts, in the framework of which there was an economic interest in observing the number of deaths in London, recorded in 1662 work: "Observations of mortality in London" - J. Graunt, "Natural and political observations mentioned in a following index and made upon the bills of mortality ...". The emergence of the term "demography" itself dates back to 1885, formulated by the French scientist Jean-Claude Achille Guillard. Before the introduction of the term, the concept of "populationism" was used to mean a science that studies the "population".

The English astronomer and demographer Edmond Halley, who lived in the first half of the 18th century, exploring the invaluable experience of his predecessors, introduces the concept of "probable life expectancy", into the content of which he puts the probabilistic predicted life span of a particular person, starting from sex and age characteristics. Continuing the tradition of his predecessor, the French mathematician Antoine Deparcieux, began researching mortality as the most important category for assessing demographic facts. Having collected personal data on four thousand Parisian children, the scientist was able to develop the so-called "mortality tables", the average life expectancy of which was 23 years.

Italian astronomer Giovanni Battista Riccioli, whom we know by one of the first serious attempts to provide the most accurate estimate of the population of Europe in the middle of the 17th century. According to the data obtained in calculations, the population of the European continent for the period of 1661 was 99 million people, and that estimate, according to modern estimates, exceeded the actual value by only 9 million [1].

The outstanding demographer of the 18th century, the German scientist and theologian Johann Peter Süßmilch, whose name occupies an honorable place in the history of world statistics and demography, received immense recognition due to the implementation of an approximate calculation of the world population and an accurate forecast of the nearest prospects for growth in the 19th-20th centuries. Despite the exponential complexity of mathematical calculations, Süßmilch promoted the idea of population regulation by God, who, in his opinion, cares about maintaining a balance between mortality and fertility and provides a sufficient life span for the implementation of the function of procreation. The problem of life support, equal sex ratio and equal distribution of the population is similarly carried out thanks to the will of an external and independent arbiter who is able to solve all emerging problems in accordance with the laws of the world order.

The ratio of the economic and demographic components in the dynamics of historical development was closely examined in the framework of classical Marxism, where the problem of life support, which was growing more urgent with an increase in the population, was studied in detail. Karl Marx and Friedrich Engels describe this pattern using the example of a small social group – the family: "This family, which at first was the only social relationship, later, when the multiplied needs give rise to new social relations, and the multiplying population new needs, the family becomes (...) a subordinate relationship" [2]. Thus, the increase in the number of needs, due to the rapid increase in the number of potential consumers, leads to an urgent consumption of food resources, attraction of more productive forces necessary for proper provision.

Before the New Age, the study of population issues was carried out within the framework of philosophical, ethical, political and economic doctrines, however, the study of the total number of people was not considered as a separate autonomous and specialized field of science. One of the brightest thinkers of the New Age, extrapolating the threat of overpopulation into one of the most acute and pressing problems, was the English cleric, scholar and influential economist Thomas Malthus, who anticipated the danger of an impending catastrophic prospect for the future of humankind. In his fundamental work "An Essay on the Principle of Population, as It Affects the Future Improvement of Society, with Remarks on the Speculations of Mr. Godwin, M. Condorcet, and Other Writers, (1798)" he formulated a "law" in which the problem of the disproportion between the population and the total resource intensity of the planet is especially acute. He remarks, "Population, when unchecked, increases in a geometrical ratio. Subsistence increases only in an arithmetical ratio. A slight acquaintance with numbers will shew the immensity of the first power in comparison of the second" [3]. Thus, according to the economic and demographic theory of Thomas Malthus, the wars and disasters arising in history serve as a deterrent mechanism for the impending demographic catastrophe, while pushing back the threat of the disappearance of the human species without a trace. The philosopher sees the reason for the increased demographic growth in the tendency of "unbridled

reproduction", in which the lower strata of the population are accused, who are unable to provide their offspring with favorable conditions for life: education, social status and a solid material foundation. That is why the main requirement of Malthusianism as a demographic paradigm is the imperative state intervention in the regulation of the population, which consists in limiting the birth rate in order to maintain a moderate number of people for a particular territory. Despite the many omissions in taking into account a number of the most important factors affecting the dynamics of population growth, Thomas Malthus was one of the very first scientists who dared to oppose not only the position of the dominant religious axiom, but also the general capitalist attitude, whose interests directly depend on the increase in the size of population.

The founders of Marxism, the German philosopher Karl Marx and the German political scientist Friedrich Engels, in their works tried to discredit the basic ideas of Malthusianism, presenting them as reactionary misanthropic forms of struggle against the imaginary threat of overpopulation or "... the most outspoken proclamation of war by the bourgeoisie against the proletariat ..." [4]. The justification of the destructive phenomena of epidemics, hunger and wars in the history of humankind, the circulation of which is being raised to some kind of mouthpiece forced for regulation, meets a flurry of criticism not only in philosophical, but also in political circles. Many researchers accuse Malthus of perpetrating an ideological provocation of an aggressive policy among imperialist circles, as well as the growth of nationalist and racist tensions, which at the beginning of the 20th century transformed into the emergence of fascist movements. Rebukes towards the progressive increase in the population in the countries of Asia and Africa, where the inevitable result of increasing impoverishment is a cultural tendency towards "unbridled reproduction", was perceived as a manifestation of militaristic nationalism, in which the criterion of a highly developed nation is its small size. The mention of Malthus about the "law of diminishing soil fertility" formulated by the French economist Anne Robert Jacques Turgot, and his worldwide supporters, including L. Brentano, M. Sering, Bulgakov, Tugan-Baranovsky, P. B. Struwe, P. P. Maslow, as well as A. Marshall, J. M. Keynes and J. B. Clark, were subsequently criticized for the absolute inconsistency of the law proposed by Turgot. Within the framework of Marxist science, the idea of "eternal natural laws of population", promoted by Malthus, was also particularly radically challenged, designed to maintain a certain level of demographic values by restraining the increase in the number of factors of disasters, wars, genocides and hunger. Karl Marx insists on the relational nature of certain patterns that differ and are coordinated depending on specific social systems. Within the framework of the socialist system, as Karl Marx notes, "... the associated producers rationally regulate their metabolism with nature, put it under their general control, instead of being dominated over them like a blind force; do it with the least expenditure of energy and under conditions most worthy of their human nature and adequate to it" [4]. Thus, within the framework of the capitalist formation, the problem of overpopulation is of no small importance, but the tendency of universalization of the identified local laws should be excluded, since "the conditions for human reproduction directly depend various social organisms" [5]. In addition, analyzing the specifics of the feudal and capitalist system through the prism of dialectical materialism, Marx concludes that the only obstacle hindering the potential ownership of land property in the era of feudalism is population growth.

The reactionary nature of the ideas of Thomas Malthus, which state the tendency of outstripping population growth in relation to the produced amount of livelihoods, in addition to the ideologists of Marxism, were also criticized by such scientists as Julian Huxley, Frank W. Notestein, William Peterson, Frank Lorimer and others, however, revealing a lot of obvious advantages in the process, such as an interpretation of the fundamental provisions of demographic science. One of the obvious advantages of Malthusianism is an extremely responsible approach to the establishment of matrimonial relationships, the well-being of which is associated with the possession of a certain level of material income that can provide subsequent offspring, avoiding the growth of pauperism. Shattering criticism touched the so-called "right of the poor to be maintained at the public expense", which in modern conditions is identical to the social policy of providing benefits to vulnerable groups of the population. As the practice of many states, guided by this humanistic impulse, shows, the social security policy of certain social groups only increases the total number of ignorance, unemployment and crime.

The vitality of the demographic paradigm of Thomas Malthus is expressed in the practice of further development of his ideas in the works of Francis Place, Jorb Bentham, John Stuart Mill, Richard Owen, Arthur Peacock, Kenneth Boulding, William Vogt, Henry Osborne and Gaston Boutulya. They represent the Neo-Malthusianism as the most rejuvenated teaching Malthus, who develops ideas about limiting childbearing, propaganda of the struggle against the pronatalist policy of many states. The rise of neo-Malthusianism as a reconstructed form of classical Malthusianism, characterized by the desire to establish total birth control, dates back to 1820, when in Great Britain supporters of utilitarianism, neo-colonialism and the school of classical political economy united in a narrow circle of the Malthusian League. The famous Belgian mathematician Pierre François Verhulst, inspired by the provisions of the Malthusian theory, develops his own population model based on a logistic equation to study demographic changes. When calculating the Verhulst logistic equation, it was possible to demonstrate a tendency for population decline in conditions of limited livelihoods through such stabilizing mechanisms as epidemics and wars [6].

The English philosopher and sociologist Herbert Spencer was accused of the failure of his demographic ideas as well. He considers human society as a large unified organism, the growth of which reaches a critical extreme as conditions suitable for reproduction are found. A person, being a creature of a biological nature, from the moment of his appearance, according to the philosopher, instinctively strives for reproduction, which multiplies and becomes more active in the presence of a sufficient amount of food. According to the philosopher, the level of development of civilization directly depends on the internal development of an individual person, which is a link in the system of

a single social organism. Spencer finds that as a person's intellectual level of development increases, requiring certain personal efforts due to cognitive and temporal costs, there is a strong delay in puberty and a tendency to decrease in reproductive abilities. Thus, the fundamental source influencing fertility, according to Spencer, is the level of cultural perfection of the people, which "should produce a decline in reproductive capacity" [7]. Spencer's conclusions regarding the establishment of a conscious universal regulation of the birth rate, without the involvement of external state control, are not at all comforting. Because, the restoration of the demographic balance is possible only if the ratio of the birth rate and mortality rate is equal. He states "while the birth rate of a species is more than sufficient to balance its decline as a result of mortality, the population will continue to increase ... Changes cannot stop until the rate of reproduction is equal to the rate of extinction; in other words, they will never stop until each couple has, on average, only two children to maturity" [8]. It is important to note that fertility is the regulating demographic indicator for Malthus and for Spencer, anticipated by his ideas, in contrast to the position of the outstanding statistician and demographer Johann Peter Süßmilch, who designated mortality as the most important indicator.

Since the period of the New Age witnessed sharp demographic leaps caused by serious socio-economic perturbations of the second half of the 18th – 19th centuries, a phenomenon called the "demographic revolution" appears in history, albeit inferior in its primacy to the "demographic revolution of the Neolithic era", which arose due to the rapid growth forces. If during the first demographic revolution the transition to a new economic stage with highly productive methods of extracting life support resources played a potential role, then the second stage, the stage of industrial capitalism was accompanied by the industrial revolution. In his works, the Soviet political leader Vladimir Ilyich Lenin draws a parallel between the results of capitalist relations and the resulting demographic consequences, demonstrating the "aggravation and expansion of all the dark sides of capitalism". [9] The decrease in the number of deaths due to the discovery of smallpox vaccination by the English physician Edward Jenner at the end of the 18th century marked the advent of a completely new historical era in the development of medicine, called the "bacteriological era". The progressive development of medicine had a significant impact on the increase in life expectancy and the overall decrease in the number of deaths in Western Europe, eliminating the deaths from infection with plague, smallpox, cholera, typhoid and diphtheria. Thus, the expansion of the productive forces had a positive effect on all spheres of social life, increasing the conditions and quality of life of the average European.

The outstanding Russian scientist Mikhail Vasilyevich Lomonosov, referred to today as the founder of Russian demography in his work "On the Preservation and Reproduction of the Russian People", raises the question of the need to take decisive measures to increase population growth. It is, in his opinion, one of the leading factors development, which contains "the majesty, power and wealth of the entire state, which is not vain in vastness without sufficient population". [10] Lomonosov refers to the practice of monasticism as an incredible human atrocity that slows down the growth of the birth rate, proposing to prohibit the tonsure of men and women of fertile age.

Special attention of modern philosophers and demographers is attracted by the demographic model of Sergei Petrovich Kapitsa, who studies the issues of population size through mathematical modeling. Displaying the total population as a certain summarized result of the economic, social and cultural components of human activity, the thinker introduces a single variable - the number of the world's population, which is subordinate to such demographic indicators as ethnic composition, urbanization and population density. Thus, the basis of the model of world demographic development is the law of hyperbolic growth of the Earth's population. According to Kapitsa, the analysis of the two-thousand-year period of human history demonstrates a revolutionary demographic transition - an abrupt increase in the population, as we approach the year 2000. This phenomenon, observed over the past two centuries, is a revolutionary process that triggered an escalation of the population, and its explosion. Austrian physicist and mathematician Heinz von Foerster, the discoverer of the law of hyperbolic growth of the Earth's population, the author of the famous work "Doomsday: Friday, 13 November, A.D. 2026", found that the number of humanity $N(t)$ with a sufficiently high accuracy increases according to the hyperbolic law, asymptotically aspiring to infinity [11].

The systematic and scientific nature of the study of demographic issues arises with the advent of the New Age, when the process of industrialization of society and the establishment of capitalism becomes the driving force in the regulation of the socio-economic sphere. The advancement of commodity-money relations as the ultimate goal of the confrontation between the proletariat and the bourgeoisie contributed to the active strengthening of the productive forces, which in turn required the rapid involvement of additional resources into circulation, and, consequently, the rapid growth of cities. Despite the high efficiency of labor, the problem of life support rests on the main principle of capitalist production – making a profit, but the domination of the bourgeoisie, interested in establishing low solvency, provokes the activation of many economic problems. Hence, there is a keen interest in the study of population and the problems arising from the lack of its regulation, the solution of which is feasible within the framework of large-scale scientific research.

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