History of Medicine. 2015. Vol. 2. № 4.
DOI: 10.17720/2409-5834.v2.4.2015.40e

"Physiological collectivism": the origins of the Institute of Blood Transfusion's ideas and their practical realization

Mariya S. Sergeeva

I.M. Sechenov First Moscow State Medical University, the Ministry of Health of the Russian Federation
8 Trubetskaya St., building 2, Moscow 119991, Russia

Abstract. "Physiological collectivism", a method for the creation of the "new man", was developed in Russia in 1910–1920s, and served as a pretext for organizing the first Institute of Blood Transfusion in the USSR, the first director of which was its author, the physician, philosopher, and political activist A.A. Bogdanov (1873–1928). Bogdanov's idea of "physiological collectivism" emerged as part of a dream for a socialist society based on universal unity and equality. Drawing on his own theory of "universal organized science", Bogdanov argued that the key to sustained and stable development of society was "collectivization". However, the revolutionary experience showed that the unification of various class representatives was impossible without the formation of a single organizational way of thinking and a profound change and unification of citizens' consciousness. A unique opportunity to unify the people at a biological level was stipulated in the "exchange blood transfusion" method developed by Bogdanov. It was based on philosophical concepts of E. Mach, W. Ostwald, R. Steiner, and N.F. Fedorov, as well as biologists' and geneticists' data. The phenomenon of conjugation in the simplest form affirmed loyalty to philosophical constructs and allowed Bogdanov to offer his own mechanism for the transfer of experience between generations. The announcements of Soviet geneticists, who claimed the possibility of acquired characteristics being inherited, justified his theory. Thus, "physical collectivism", or exchange of blood between the people, "reinforcing each body along the lines of weakness," was developed by Bogdanov as the most effective way of building socialism. The creation of the Institute of Blood Transfusion was the result of an interdisciplinary synthesis of philosophy, natural science and social ideas of the late 19th and early 20th centuries.

Keywords: A.A. Bogdanov, collectivism, general organized science, "Superman", "physiological collectivism", blood transfusion, fighting with old age, Institute of Blood Transfusion

For quotation: *Sergeeva M.S. "Physiological collectivism": the origins of the Institute of Blood Transfusion's ideas and their practical realization. History of Medicine. 2015. Vol. 2. № 4. P. 420–430.*

About the author
Mariya S. Sergeeva – Candidate of Historical Sciences, Associate Professor at the Department of the History of Medicine, National History and Culturology, I.M. Sechenov First Moscow State Medical University (Moscow). E-mail: serma@list.ru

Alexander Alexandrovich Bogdanov (born Malinovsky, 1873–1928) was a member of the Central Committee (CC), and the main "cashier"[1] of the Bolshevik Party (1904–1909), head of the Forward group (1910–1911), psychiatrist (1913–1917), Proletkult ideologist (1918–1921), professor of political economy at Moscow State University and member of the Socialist Academy (1918–1926), the organizer and director of the world's first Institute of Blood Transfusion (1926–1928). Bogdanov's meaning and purpose in life was collectivism in society, science, culture, and life. Bogdanov considered "physiological collectivism" or the biological unity of all citizens the highest degree of development for a classless society [1]. Attempts to describe "physiological collectivism" and achievements in advancing blood transfusion in the first half of the 20th century were undertaken in a number of publications [2-6], however the development of the idea of collectivism (organizational, intellectual, biological) was not considered in them. Given that there is a detailed description of the professional interests of surgeons and their achievements in blood transfusion, these works do not justify why the creation of a strategically important institution was tasked to a psychiatrist. The formation of the theory of physiological collectivism, which Bogdanov understood to mean "blood exchange between people, strengthening each body along the lines of its weakness" [7, p. 38] and the reasons for which he was entrusted with the creation of an institute of blood transfusion, is the subject of study in this article.

The origins of Bogdanov's philosophy of collectivism is connected with the metamorphosis of the idea of Slavophile unity

[1]Bogdanov, together with V.I. Ulyanov (Lenin) (1870–1924) and L.B. Krasin (1870–1926) was a member of the financial-organizational group of the Central Committee (CC) in charge of expropriation and the purchase of arms and ammunition for the revolutionaries.

Received: 27.07.15

and the shift of collectivism from the peasantry to the proletariat. The working class, as the only collectivist class, was supposed to be not only the main revolutionary-destructive force, as much as it was the creator of a new perfect society [8, p. 63; 4, p. 81]. However, Bogdanov's frustration with the proletariat, who were not ready to solve the "organizational tasks of building socialism" during the 1905 revolution [1], resulted in the idea of the necessity of a focused creation of the new man. It was based on an idea of Friedrich Nietzsche (1844–1900) that was popular at the beginning of the 20th century – the "superman" – "an individual, in whose will to power, to increase vitality, creativity, has reached the highest stage of its development" [9, p. 941]. However, Bogdanov's "superman" was an aggregative character – "a man of science, the working man, the ideal man", he should combine, in addition to the best features of the proletariat (flexibility, teamwork, partnership), also the merits of the intelligentsia – spiritual culture [10, p. 46-47; 11, p. 8].

The record of the work of the propagandistic and agitational school, created by Bogdanov in 1909 in Capri, showed that the preparation of workers for socialism through organizational changes in their environment was impossible without a mass change in consciousness. Bogdanov saw the reasons for this in the low level of cultural, political, scientific, technical and moral development of the proletariat, as well as the erosion of its social composition [4, p. 61]. Bogdanov not only gave an unflattering characterization of most of the Capri school students[2] but also talked about the substitution of the proletarian revolution with "soldiery" [13, p. 242]. On this basis, he argued that the creation of a collectivist society, the highest form of development of which he considered socialism, would only be possible if the people's consciousness was formed into "a single organizational way of thinking" [14, p. 72; 15, p. 235; 16]. The ideal society in which people achieved unity "not only ideologically but also in normal existence", was described by Bogdanov in the utopian novel "Red Star" (1908) [17, p. 82].

[2] "Of these five, two were completely undeveloped... two – much less developed than the others, and the "Old Believer" ...in terms of development is not lower than most of the others, but, of course, is still a far cry from [what was needed]" [11, p. 187].

Bogdanov outlined the philosophical justification of this theory in the works *Empiriomonism* (1906) and *Tectology* (1913–1917). He considered the universal concept of cognition, formulated on the basis of the teachings of E. Mach (1838–1916), R. Avenarius (1843–1896) and W. Ostwald (1853–1932), as applicable to any and all sciences, social and mental phenomena, and all activities [18, p. 354; 19, p. 65; 20, p. 224-225; 21, p. 3]. Comparison of Mach's "mental" and "physical" experience based on Ostwald's principle of expediency allowed Bogdanov to draw a conclusion about the "individual-organized" nature of the first and "socially organized" nature of the second [18, p. 352; 22, p. 332]. Consequently, they are in different stages of a single organizational process in which "direct experience" of each person is reflected in the social experience of all mankind [21, p. 32]. In "the law of the least" he explained the relationship between stable society and its weakest link – the individual [7]. For Bogdanov, these considerations became weighty arguments for considering collective life ideal – where the entire community is organized as "one team".

In accordance with the ideas of Karl Marx (1818–1883) and Friedrich Engels (1820–1895) on the social nature of human activity, Bogdanov believed that all the interests of humanity were organizational. If the "organization of the external forces of nature, human power... experience," is the goal of mankind, "there should not be a different perspective on life and the world, besides the organizational" [18, p. 349; 23; 24, p.71]. Thus, he regarded any human activity ("technical, social, cognitive, artistic") as an "institutional exercise" [25, p. 157]. Bogdanov considered the proletariat as the only "universal organizing class": only it was close to technical progress and is able to abandon individualism and authoritarianism, to combine organizational and executive functions, and to use a single organizational approach for any task [1]. Thus, Bogdanov considered the goal of mankind was to "merge personal lives into one big whole, harmonious in relation to its parts, neatly grouping all the elements for a common struggle – the struggle ...with the infinite spontaneity of nature" [25, p. 163]. He saw his own mission as the education of citizens, justifying the feasibility of

building a society in which there is no distinction between mental and physical labor [8, p. 54].

Information about the forces that could in Bogdanov's theory rally class society were derived from the teachings of R. Steiner (1861–1925) on the forces that influence the physical and spiritual evolution of man [26, p. 264; 27, p. 86]. In Bogdanov's theory, their actions successfully combined with J.B. Lamarck's hypothesis (1744–1829) of the internal "pursuit of excellence" and N.F. Fedorov's (1829–1903) idea of active evolution, according to which humanity can transform not only the external world, but also its own nature. The phenomenon of conjugation in protozoa in which the exchange of cytoplasm led to unicellular "rejuvenation" prompted him to think about the possibility of a similar way to share experiences between people. Fedorov's philosophical ideas of uniting the living for the sake of the physical "resurrection of the dead", and Steiner's idea of blood as the guardian spirit of ancestors in human beings [28], supported by the achievements protozoology, led Bogdanov to the idea of "physiological collectivism". Based on Fedorov's presentation about cognition as a combined experience of "all, always and everywhere" [29, p. 250-251], Bogdanov formulated the theory of exchange of experience between generations through mutual blood transfusions. It followed from its provisions, that the exchange of blood, representing the "internal conjugated environment of the body", provides not only for the transmission of individual abilities to the whole of society but also is able to "help the aging body in its fight" [16].

Thus, in the philosophical and natural scientific concepts of the late 19th and early 20th centuries, collectivist ideas were widely disseminated in the spiritual realm, as well as on the biological level. Based on his theory of "universal organized science", Bogdanov not only claimed the rationality of collective existence but also demonstrated the necessity of the "collectivization of consciousness" as a guarantee of the sustained and stable development of socialist society. Moreover, he formulated the idea of "physiological collectivism" as the most promising method of "collectivization of consciousness" and prolonging of youth. However, a number of vital issues needed to be solved for its implementation. Bogdanov described them as follows: "the technical side of things ...has not been developed... *[blood transfusions – M. Sergeeva]* with its difficulties and dangers," "will not affect the most important material on matters relating to the doctrine of hormones," there are no clear "links and relations with different theories and attempts to "rejuvenate" the body," the probability of "inheritance of acquired characteristics in higher organisms" has not been studied.[3] These questions can be grouped into three categories: the study of properties of blood and transfusion techniques, research on methods and mechanisms of rejuvenation, the determination of the possibilities for genetics and eugenics.

The use of therapeutic blood transfusions increased significantly after the discoveries of K. Landsteiner (1868–1943) and J. Jansky (1873–1921) in 1901–1907 of isohemagglutinin blood groups in humans [30, p. 93-94; 5, p. 279]. As early as 1907, the US surgeon G.W. Crile (1864–1943) conducted a series of group-compatible blood transfusions. In Russia, this operation was first conducted in 1919 by V.N. Shamov (1882–1962). In 1910, an experimental study of the preservative properties of sodium citrate[4], its use in stabilization, the preservation[5] and storage of blood, not only made the technology for transfusions simpler and more effective (indirect transfusion), but also allowed for the

[3] Bogdanov's letter was addressed to an unidentified recipient in Saint Petersburg concerning a meeting to talk about blood transfusion. Russian State Archive of Socio-Political History (RGASPI) f. 259 o. 1 d. 84 pp. 1-6. The addressees of this letter could be V.N. Shamov and N.N. Elansky, whose "versatile scientific competence" and "wide, detailed technical expertise" in blood transfusion matters were important for Bogdanov. From the letter it follows that the theory of "exchange transfusion" was subjected to sharp criticism from the addressee. Subsequently, Bogdanov pointed out that the medical world as a whole "was hostile to the new institution (Institute of Blood Transfusion – M. Sergeeva). The conservatism of the medical department was something that was widely-known. And here is not only a new, unusual thing, but also a new man, a stranger, previously almost not connected to this world" [31, p. 137].

[4] These experiments were conducted first in Russia in 1910 by students of the Military Medical Academy, V.A. Yurevich (1872–1963) and N. K. Rosenberg (1876–1933), and in Belgium in 1914–1915 by A. Hustin (1882–1967), in Argentina by L. Agote (1868–1954) and in the US by R. Lewisohn (1875–1961).

[5] The method of glucose-citrate blood preservation was developed by F. Rous and J. R. Turner in 1916 in the UK.

creation of mobile blood transfusion stations for the treatment of the wounded during World War I (O. H. Robertson). [13, p. 249; 30, p. 94] The first isohemagglutinin transfusions performed both in Europe and in Russia were carried out without finding out the blood groups of the participants; the mass determination of blood groups was made possible only after the isolation of the first standardized serum[6], obtained simultaneously in 1921, in Saint Petersburg (V.N. Shamov, N.N. Elansky), Moscow (M. Avdeyev and A. Gritsevich[7]) and Odessa (L.A. Barinshteyn, E.Yu. Kramarenko) [32, p. 36].

From 1910, Bogdanov closely followed developments in the field of blood transfusion, as evidenced by the study of publications on this topic in the weekly medical newspaper Russian Doctor – an article "La greffe du Sang. Méthode d`échange" ("Blood transfusion. Exchange method"), produced roughly in the 1910s, but never published[8] [33], his traineeship in the clinic of a recognized British expert in the field of blood transfusion, D. L. Keynes (1887–1982), during a trip to England in 1921–1922, as well as materials imported from England[9] [34, p. 250].

From the mid-1920s, blood transfusions became a subject of scientific research for outstanding Soviet scientists, especially students of the Saint Petersburg Military Medical Academy. The first monographs devoted to blood transfusion were published (E.R. Hesse, 1925; N.N. Elansky, 1926; Ya.M. Bruskin, 1927; L.A. Barinshteyn, 1928), the problem of donation, preservation and storage of blood were the subject of regular discussion by surgeons at congresses and conferences [32, p. 36]. Hesse (1883–1938) declared the need to create a special blood transfusion service at the 18th Congress of Russian Surgeons in 1926. Elansky (1894–1964) insisted on the introduction of a university medical education course on blood transfusion at a Leningrad Regional Department of Health meeting [3; 35, p. 86]. Thus, by the mid-1920s, new blood transfusion technology was being adequately developed – its medical significance was realized. The possibilities of its application remained to be determined and organizational matters of its practice on a national scale were yet to be resolved. Further study the physiological mechanisms of the action of blood transfusion and the technical means and methods for ensuring its safety were needed, and, in addition, it was necessary to train personnel in transfusion technology. A special institute of blood transfusion needed to be created in order to systematically address these issues.

The first medical theories of rejuvenation, prolongation of life and the struggle with old age had been proposed in the late 19th century. I.I. Mechnikov (1845–1916) considered old age a result of organ deterioration in the body, poisoning by microbe toxins in the colon, but it turned out that a hormonal based theory for aging was the most successful. C.E. Brown-Séquard (1817–1894) offered one of the first ideas for the rejuvenation of the human body using extracts from the testes of animals. Subsequently, E. Stein (1861–1944) substituted his injection method with ligation operation or transection of the vas deferens of the aging body, and S.A. Voronov (1866–1951) – with a gonad transplant [36].

E. Steinach had proven that physical and mental maturity are dependent on the state of endocrine testicular glands and rejuvenation processes are associated with the activity of glandular tissue, ie, with an increase in the production and maintenance of hormones in the blood [37, p. 14]. He noted that any "operation on seminal glands (transplantation, ligation, regeneration)" was accompanied by an increase in hormone production, which in turn contributed to the rejuvenation of "individuals with premature or timely (partial or general) aging" [37, p. 31]. Voronov found that in transplanting testicles from younger to older animals, it was quite feasible for animals to recover potency and performance [38, p. 7]. Transplants of monkeys testes to men showed that rejuvenation comes only when

[6] In Moscow in 1922, doctors M. Avdeeva and A. Gritsevich determined the blood groups of 1,600 people.

[7] It has not been possible to determine the full names and dates of birth and death of all scientists.

[8] Perhaps, namely this work from 1920-1921 was passed on by A.M. Ignatiev (a companion and disciple of Bogdanov) to an unknown recipient in Saint Petersburg, but its author received an "unfavorable" review.

[9] According to S.L. Maloletkov, Bogdanov's colleague at the institute, he brought the manuscript of his own report "On blood transfusion development in England," an apparatus for blood transfusions made from his special drawings, the standard Keynes apparatus, and the standard serum for the determination of blood groups, needles, rubber tubes, a solution of paraffin in ether and other tools from England.

senility depended on “endocrine function of the testes” and not from the destruction of vital organs [39, p. 110]. Hence, by the mid-1920s it became apparent that the effect of rejuvenation was a result of increasing the amount of hormones in the blood. The main question remaining was the unexplored mechanism of their effects on the “weakened activity of other endocrine glands and tissues” [39, p. 111].

Bogdanov associated the rejuvenating effect to the unique properties of the blood, which was not only a carrier of hormones but a “universal mediator” between tissues and organs in the “life exchange” [3; 35, p. 97, 102]. Blood was the only “universal fabric, which has something from all other tissues”, so Bogdanov considered its transfusion an alternative to costly and time-consuming transplant of glands [35, p. 136]. In 1927, the article “Zur Theorie des Alterns” (“The theory of aging”), about the aging and rejuvenation theory, was published in the Russian-German magazine, in which he linked the success of “exchange transfusion” to the easing of the renewal of biocolloids upon the interaction of their aging elements with antibodies contained in the blood. At the same time the author attributed great importance to the stimulating action of the antibodies on the endocrine organs, as well as the production of cytotoxic serums, small doses of which he proposed to use to stimulate endocrine secretion and regeneration. Bogdanov’s theory is fully consistent with the experimental provisions of E. Steinach and Voronov [34, p. 255], as well as experiments by E. Yavorsky, who practiced “rejuvenation” through injection of young blood into a vein, which, acting like a vaccine, modified its environment “biologically” [35, p. 141].

Thus, as a result of blood exchanges between people, Bogdanov planned firstly, to rejuvenate the body by “liberation... from the specific internal poisons harmful to it”; secondly, to increase immunity “against various diseases”; and thirdly, to achieve an increase in the "amounts of developmental elements” [3; 35, p. 86]. The latter had special significance for Bogdanov because it was a mechanism to achieve mass expansion of "a single organizational way of thinking."

Bogdanov substantiated the possibility to transfer individual characteristics of one person to another as follows: “We assume that if we were able to change the composition and structure of blood, by virtue of the relationship between it and the blood-forming organs, within certain limits, there should occur such changes in them, which would lead to, if not to the full, then... a partial support for a transformed structure in the future”. As a result, with new blood a person received "some of the properties and abilities of the organism from which it was taken” [5, p. 140]. In a letter to an unknown correspondent in Saint Petersburg, Bogdanov wrote: “Basically, now a positive solution to the issue of inheritance of acquired characteristics in higher organisms is becoming rightly entrenched; this inheritance can be recorded in animals obviously only through the liquid environment of the body.”[10] Thus, theorizing about the possibility of transmission of individual experience and skills accumulated throughout life in the process of mutual blood transfusions, he confirmed the findings of geneticists and eugenicists acquired at the beginning of the 1920s. Speaking about the possibilities of cultivation of a "new breed or species of human," one of the founders of Soviet genetics, N.K. Koltsov (1872-1940) stated in 1921 that “breeding selection was the only method that could serve to achieve this”. The laws of heredity, and “by no means educating people under various conditions or certain social reforms or revolutions,” in his view, would determine the quality of the future man [40]. Thus, the genetic scientist confirmed Bogdanov’s findings that neither organizational (party school) nor educational work (Proletkult) could produce the desired result for a mass change in people's consciousness.

It became apparent at the same time in 1925 that carrying out “directed social change” and managing genetic variability is not possible because of the rarity, randomness and unpredictability of mutations of genes and chromosomes. In connection with this method of “physiological collectivism”, the transfer of desirable traits based on the exchange of blood seemed more efficient and controlled to Bogdanov. He derived a special perspective as a result of the announcement by the founder of medical genetics S.G. Levitt (1894–1938) on the “inheritance of acquired characteristics”

[10] Bogdanov’s letter was addressed to an unidentified recipient in Saint Petersburg concerning a meeting to talk about blood transfusion. RGASPI. f. 259 o. 1 d. 84. pp. 1–6.

[41]. As a result, by the mid-1920s the Utopian idea of "physiological collectivism" had enough material for the time for theoretical and practical study: Bogdanov mastered the technique of blood transfusion and described the impact that it has on the body, and Soviet geneticists confirmed the possibility of transmission of knowledge and skills during the "exchange transfusion".

Bogdanov insisted on the creation of a special research institution for the study of this method and its introduction into practice at medical institutions of all levels. In 1920, he appealed to Lenin for support and in 1925 – to Stalin [5, p. 32, 35; 42, p. 90]. In 1926, N.A. Semashko signed a decree on the establishment of the Institute of Blood Transfusion and the appointment of Bogdanov as its head. Why was the creation of the institute entrusted to a man of "general concepts" – an economist and philosopher, although by education he was a physician and even "natural scientist", he practiced a little in psychiatry, but then stepped back from it – and in general did he have "too little laboratory practice?"[11]

From our point of view, Bogdanov's personality and his contribution to the building of a new society played a key role in this decision. Firstly, Bogdanov was the best theoretician of Marxism, and his support could be useful to Stalin (1878–1953) [33]. Secondly, the future leader was interested in the ideological construction of Bogdanov. The formulated ideas about ideology as an "instrument of organization for society, production, classes and all sorts of social forces and elements" was the basis for further public policy [43, p. 34]. Thirdly, from 1924 to 1925, Stalin received backing in his power struggle from Bogdanov's supporters, who held high party posts (N.I. Bukharin [1888–1938] – a member of the Politburo, L.B. Krasin and I.I. Skvortsov-Stepanov [1870–1928] – members of the Central Committee, A.S. Yenukidze [1877–1937] – a member of the Central Control Commission, P.G. Smidovich [1874–1935] – a member of the Central Election Commission of the USSR). As a result, the Institute of Blood Transfusion project, presented by Bogdanov to the People's Commissariat of Health of the USSR in 1925, was approved by members of the Central Committee of the CPSU (b), and the author received a personal offer from Stalin to organize the institute as well as a promise that he would "be provided with all necessary conditions for systematic scientific work" [30, p. 98; 5, p. 33]. The fact that the project was supported by the positive results from ten "exchange transfusions" conducted by Bogdanov, together with S.L. Maloletkov (1863-1942), D.A. Gudim-Levkovich (1886-1944) and I.I. Sobolev in 1924–1925 played an import role [5, p. 34; 33]. Thus, Bogdanov had not only developed a theory and substantiated a method for the mass change of citizens' consciousness, but also purchased the necessary equipment for the research and selected a group of associates having sufficient knowledge and skills for the scientific and experimental study of blood transfusion. In this context, Bogdanov's research and development and his experimental justification for "physiological collectivism" as a way of achieving socialism were of more significance than his medical expertise.

The second circumstance was the dying off of the "old-guard Bolsheviks", which became evident after the death of Lenin from the "sclerosis wear."[12] Bolsheviks' faith in the limitless possibilities of Soviet science and technology formed the basis for the idea of resurrection, or the regeneration or extension of youth for the best Bolsheviks. Krasin announced at the funeral of the head of the Soviet chemical industry, L.Y. Karpov (1879–1921), that the task of science was not only healing but the physical "restoration of humans" via "elements of life". It was namely Krasin who organized Bogdanov's trip to England in 1921–1922. One of the reasons for secondment was the "exchange transfusion" theory that Krasin considered the first step on the way to the resurrection of the "great leaders, fighters for the liberation of mankind." [44, p. 481–482]. N. K. Koltsov stressed the need for the reproduction of party members: "If the average number of children per member of the CPSU (b) is calculated, it is likely this figure would not reach that which Huber concludes is needed for groups to retain their number among the masses of the population" [45, p. 15]. A.S. Serebrovsky (1892–1948) spoke on the improvement of the

[11] Bogdanov's letter was addressed to an unidentified recipient in S Petersburg concerning a meeting to talk about blood transfusion. RGASPI. f. o. 259. 1 g. 84 l. 16.

[12] Obituaries. RGASPI. f. 142, o, 1. d. 109, p. 54.

human race, suggesting that a sperm bank be set up offering the sperm of gifted and hereditary disease-free people, and that human selection be carried out in the course of large-scale artificial insemination. To quickly and comprehensively solve the problem of aging, mutual blood transfusion between the young and the elderly was proposed. On the one hand, the emphasis in these operations was on the rejuvenation of the old Bolsheviks, on the other the young would acquire via blood transfusions the valuable physiological and life experience of the elderly. In this context, a special category of patients was significant, consisting of "party veterans": M.I. Ulyanova (1878–1937), V.A. Bazarov (1874–1939), A.M. Stopani (1871–1932), N.I. Kuchmenko (1878–1939), I.V. Tsivtsivadze (1881–1941), V.F. Pletnev (1886–1942) [6; 31, p. 139; 35, p. 122]. Among the category of young people were mostly Komsomol students and worker-activists, one of whom was the son of Bogdanov – A.A. Malinovsky (1909–1996). It turned out that the "veterans of the party" passed their "blue blood" onto the younger generation, bonding youth with "blood ties" from proven fighters for true collectivism [6].

The third reason was the "degeneration" or degradation of the "quality of the population's composition". The reasons for "physical degeneration" was war, pestilence, and famine that claimed the lives of "the most highly skilled *[workers – M.S.]* both physically and mentally". [46, p. 113; 47, p. 4]. Bogdanov warned of the inevitable "squandering of the best people power" in 1917 [48, p. 90]. This was confirmed by professor of medicine V.V. Gorinevsky (1857–1937) in 1922: "The war took the best elements from the entire population: the strongest, the healthiest, the best workers from all types of labor aged between 18 and 50 died in the war", and the rest filled up the ranks of the disabled [46, p. 115; 47, p. 4]. Another scourge of the first half of the 1920s led to various social ills, which a special terminology was used to describe – infection by "poisonous NEP toxins", "NEParism", "bourgeois degeneration", "right-wing Yeseninism", "hooliganism", "Korenkovshchina", "Chubarovshchina", "Tyukovschina" and so on. They became a popular explanation for nervous disorders. Thus, A.B. Zalkind considered social factors to be the cause of nervosa in every second Komsomol student and recommended increased Party education as a treatment [36].

This implied the following reason – "Soviet deterioration". It affected "senior officials, overloaded organizers of life", and the most active part of the youth that "studied and conducted social work at the same time, often with the same overwhelming burden" [49, p. 22]. Based on Bogdanov's annual report on the institute's work (1927), and a memorandum addressed to Semashko (1928), it can be seen that the term "Soviet deterioration" was understood to mean neurological disorders – fatigue and weakness were the result of "the disparity between the individual strength of the body and the weight of life's problems". Soviet psychiatrist Zalkind (1888–1936) observed these symptoms in 90 percent of party workers [36]. To combat chronic fatigue, Bogdanov suggested using "exchange transfusion" that provided for moving "beyond the individual strength of the body" and to replenish their "live activities in other organisms" [30, p. 99, 101; 31, p. 139; 49, p. 25]. Thus, by the mid-1920s, the real "rising class" did not correspond to the ideal image of the proletarian "new man". Attempts to correct it meant a fundamental restructuring of thinking; changes in mental and spiritual baggage with the help of "revolutionizing of minds" [46, p. 30] led to a further spread of neuroses and "Soviet deterioration". The severity of the vital tasks that a person had to "solve in this social-economic situation" required disproportionately more strength than an individual body could muster. It required a person's deeper harmonization, in the course of which "life, even purely physiologically, would become collectively-experimental" [36].

The path to the collectivization of experience proposed by Bogdanov complemented the ideas of Nietzsche on individual development. From the viewpoint of L.D. Trotsky (1879–1940), "to raise oneself to a new level – to create a higher socio-biological type – a superman" was only possible through the acquisition of one's "own feelings" and to bring instincts to the peak of awareness. [36]. In the 1920s, the search for the "superman" opened up a wide field of cultural and social experiments in the Soviet Union – the state supported the project of I.I. Ivanov (1870–1932), – the crossing of a man with a monkey

[50]. Bogdanov proposed the rapid creation of a new population by blood transfusions from people who had reached “the highest degree of development” to other people. At the same time, the creation of the institution addressed the major strategic objective of saving people from “bleeding or gas poisoning”, “wasting injuries or illnesses” of soldiers in the event of war; health support for the “industrial army”, which had been depleted by devastation and “still too frequent injuries”; treatment “of different forms of anemia”, as well as overcoming the USSR’s lag behind the West, where “transfusion was quite a normal procedure” [49, p. 3-4]. Bogdanov understood that the institute's national importance should play a key role in the decision on its establishment. Bogdanov’s primary personal goal – the implementation and testing his own ideas of “physiological collectivism” – was not contrary to state interests. It, as well as the mass development of transfusion, demanded the deep development of issues in blood transfusion, the training of doctors, the preparation of standard serums and drugs [49, p. 2]. Even if the idea of “physiological collectivism” did not live up to the expectations of its author, the institution created would have a great defensive value.

As a result of an interdisciplinary synthesis of philosophical ideas, a unified natural-scientific method of cognition, practical advances in medicine and biology were formulated by Bogdanov’s doctrine and justified by the methodology of implementation “physiological collectivism”. He developed the concept for blood transfusion's possibilities into a broad natural scientific approach, allowing not only for the treatment of various diseases, but also for prolonging human life, influencing the minds of people and their level of development.

Bogdanov’s unique encyclopedic knowledge and analytical skills allowed him to easily identify universal processes and patterns in a variety of physical, psychological, physiological, social, cultural and human phenomena. Relying on common organizational principles, he formulated the idea of universal collectivism, as the key to the creation and sustainable development of a socialist society. He considered "physiological collectivism" or “exchange transfusion” as an effective way to achieve universal collectivism, in the course of which experience, knowledge and talent between individuals would be shared. Viewing blood transfusions as a “partial conjugation method that is used by nature for the continuation of living protozoa cells”, [51, p. 222], Bogdanov argued for the improved viability of organisms involved in blood transfusions: increased immunity, treatment of blood diseases, the overall rejuvenation of the body. The creation of a blood service demanded the nation's top practicing surgeons, but the ideological significance of the "physiological collectivism" idea was the reason why the creation of the Institute for Blood Transfusion was assigned to Bogdanov with the personal support of the USSR’s party leadership.

REFERENCES

1. Gloveli G.D. *Bogdanov – uchenyy utopist*. Mezhdunarodnyy institut A.A. Bogdanova (*Bogdanov – utopian scientist*. A. A. Bogdanov International Institute.). http://www.bogdinst.ru/bogdanov/glovely2.htm. Last access date: 27.07.2015. [in Russian]
2. Mikhel D.V. *Perelivanie krovi v Rossii, 1900–1940 (Blood transfusion in Russia, 1900–1940)*. Voprosy istorii estestvoznaniya i tekhniki. 2006; 2: 99–113. [in Russian]
3. Mikhel D.V. *Perelivanie krovi: Sovetskaya Rossiya i Zapad (1918–1941) [Blood transfusion: Soviet Russia and the West (1918–1941)]*. Otechestvennye zapiski. 2006; 1 (28). Information resource: http://www.strana–oz.ru/2006/1/perelivanie–krovi–sovetskaya–rossiya–i–zapad–1918–1941. Last access date: 27.07.2015. [in Russian]
4. Yagodinsky V.N. *Aleksandr Aleksandrovich Bogdanov (Malinovskiy). 1873–1928 (Alexander Alexandrovich Bogdanov (Malinovsky)*. 1873–1928]. Moscow: Nauka, 2006. 268 p. [in Russian]
5. Donskov S.I., Yagodinskiy V.N. *Nasledie i posledovateli A.A. Bogdanova v sluzhbe krovi (The legacy and followers of A.A. Bogdanov in blood transfusion services)*. Moscow: Tipografiya «IP Skorokhodov», 2008; 312. [in Russian]
6. Odesskiy M.P. *Mif o vampire i russkaya sotsial-demokratiya (The myth of the vampire and Russian social-democracy)*. Literaturnoe obozrenie. 1995; 3. Information resource: http://alisavamp.narod.ru/biblio/articles/mifovamp.html. Last access date: 27.07.2015. [in Russian]

7. Dnevnikovye zapisi ob areste i prebyvanii vo vnutrenney tyur'me GPU s prilozheniem pisem na imya predsedatelya GPU F.E. Dzerzhinskogo 25 oktyabrya 1923 g. V knige: Neizvestnyy Bogdanov. V 3 knigakh. Pod. red. G.A. Bordyugova. Kn. 1. A.A. Bogdanov (Malinovskiy). Stat'i, doklady, pis'ma i vospominaniya. 1901–1928 gg. [Diary entries on the arrest and stint in the inner prison of the GPU with an enclosed letter addressed to the chairman of the GPU F. E. Dzerzhinsky, October 25, 1923. From the book: Unknown Bogdanov. In three volumes. Ed. G.A. Bordyugov. In three volumes. V. 1. A.A. Bogdanov (Malinovsky). Articles, reports, letters and memoirs. 1901–1928]. Moscow: ITs «AIRO–KhKh», 1995: 34–44. [in Russian]
8. Glebkin V.V. *Ritual v sovetskoy kul'ture (Ritual in Soviet culture)*. Moscow: Yanus–K, 1998; 167. [in Russian]
9. Znamenskiy S.P. *"Sverkhchelovek" Nitsshe. Nitsshe: pro et contra (The "superman" of Nietzsche. Nietzsche: pro et contra)*. St. Petersburg: Russkiy Khristianskiy gumanitarnyy institut, 2001: 924–965. [in Russian]
10. Bulgakov S.N. *Geroizm i podvizhnichestvo. V kn.:Vekhi. Sbornik statey ob russkoy intelligentsii (Heroism and selfless devotion. In: Milestones. A collection of articles on the Russian intelligentsia)*. 1909: 23–70. [in Russian]
11. Gloveli G.D., Figurovskaya N.K. *Tragediya kollektivista* // Bogdanov A.A. Voprosy sotsializma: Raboty raznykh let. Pod red. L.I.Abalkina (otv. red.) [*The collectivist tragedy*. From the publication: A.A. Bogdanov Questions of socialism: Works from different years. Ed. L.I. Abalkin (rep. ed.)] Moscow: Politizdat, 1990; 479. [in Russian]
12. Pis'mo S. Semkovskomu 5 noyabrya 1909 g. V knige: Neizvestnyy Bogdanov. V 3 knigakh. Pod. red. G.A. Bordyugova. Kn. 2. *A.A. Bogdanov i gruppa RSDRP "Vpered" (1908–1914)*. Predislovie Dzh. Biggarta. Sost. N.S. Antonova, N.V. Drozdova (Letter to S. Semkovsky, November 5, 1909. In: Unknown Bogdanov. In 3 volumes. V 2. *A.A. Bogdanov and the Russian social-democratic labor party group "Forward" (1908–1914)*. Preface by G. Biggart. Comp. N.S. Antonova, N.V. Drozdova). Moscow: ITs "AIRO–KhKh", 1995; 283. [in Russian]
13. Tyukin V.P., Churilov L.P., Fionik O.V. *Universant serebryanogo veka: A.A. Bogdanov – vrach, estestvoispytatel' i filosof. Soobshchenie I. Bogdanov-teoretik (Silver Age University: A.A. Bogdanov – doctor, naturalist and philosopher. Report I. Bogdanov-theoretician)*. Vestnik SPbGU (Bulletin of St. Petersburg State University). Ser. 11. Meditsina. 2010; 1: 236–249. [in Russian]
14. Bogdanov A.A. *Tseli i normy zhizni*. V kn.: O proletarskoy kul'ture 1904–1924 (*Goals and standards of living*. In: On proletarian culture). Leningrad–Moscow, 1924: 37–76. [in Russian]
15. Bogdanov A.A. *Ideal vospitaniya*. V kn.: O proletarskoy kul'ture 1904–1924 (*The ideal of education*. In: On proletarian culture). Leningrad–Moscow, 1924: 231–238. [in Russian]
16. Bogdanov A. *Ocherki organizatsionnoy nauki* (*Studies of organizational science*). Moscow, 1922. Information resource: http://www.magister.msk.ru/library/revolt/bogda001.htm. Last access date: 27.07.2015. [in Russian]
17. Bogdanov (Malinovsky) A.A., Lavrenev B.A. Krasnaya zvezda. Krushenie respubliki Itl' (Red star. The collapse of the republic Itl). Moscow: Pravda, 1990. [in Russian]
18. Sadovskiy V.N. *Istoriya sozdaniya, teoreticheskie osnovy i sud'ba empiriomonizma A.A. Bogdanova*. V kn.: Bogdanov A.A. Empiriomonizm: Stat'i po filosofii. Otv. red. V.N. Sadovskiy (*History of the theoretical foundations and the fate of empiriomonism, A.A. Bogdanov*. In: Empiriomonism: Articles on philosophy. Pub. ed. V.N. Sadovsky). Moscow: Respublika, 2003. P. 340–365. [in Russian]
19. Makh E. *Analiz oshchushcheniy i otnoshenie fizicheskogo k psikhicheskomu (Analysis of sensations and the relationship of physical to mental)*. Moscow: Territoriya budushchego, 2005; 304. [in Russian]
20. Ostwald V.F. *Filosofiya prirody (The philosophy of nature)*. St. Petersburg, 1903; 170. [in Russian]
21. Bogdanov A.A. *Desyatiletie otlucheniya ot marksizma*. V knige: Neizvestnyy Bogdanov. V 3 knigakh. Sost. N.S. Antonova. Kn.3. A.A. Bogdanov. Desyatiletie otlucheniya ot marksizma. Yubileynyy sbornik (1904–1914) [*A decade of excommunication from Marxism*. In: Unknown Bogdanov. In 3 volumes. Comp. N.S. Antonova. V 3. A.A. Bogdanov. A decade of excommunication from Marxism. Anniversary collection (1904–1914)]. Moscow: ITs «AIRO–KhKh», 1995; 244. [in Russian]
22. Bogdanov A.A. *Empiriomonizm: Stat'i po filosofii*. Otv. red. V.N. Sadovsky (*Empiriomonism: Articles on philosophy*. Pub. ed. V.N. Sadovsky). Moscow: Respublika, 2003. 400 p. [in Russian]
23. Bogdanov A.A. *Ot filosofii k organizatsionnoy nauke (From philosophy to organizational science)*. Voprosy filosofii. 2003; 1. Information resource: http://www.metodolog.ru/00341/00341.html. Last access date: 27.07.2015. [in Russian]
24. Bogdanov A.A. *Tektologiya. Vseobshchaya organizovannaya nauka*. Kn. 1 (*Tectology. Universal organized science*. Book 1). Moscow: Ekonomika, 1989; 304. [in Russian]
25. Leontieva O.B. *Marksizm v Rossii na rubezhe XIX–XX vekov. Problemy metodologii istorii i teorii istoricheskogo protsessa (Marxism in Russia at the turn of the 19th to 20th centuries. Problems of methodology in history and theory of the historical process)*. Samara: Samara University, 2004; 205. [in Russian]
26. Vanderkhill E. *Mistiki XX veka. Entsiklopediya (Mystics of the 20th century. Encyclopedia)*. Moscow: Mif, Lokid, 1996; 526. [in Russian]
27. Steiner R. *Estestvenno-nauchnye trudy Gete (GA 1), 1883–1897 [The natural-scientific works of Goethe (GA 1), 1883–1897]*. P. 86. [in Russian]

28. Steiner R. *Okkul'tnye znaki i simvoly. Shtutgart, 16 Sentyabrya 1907 (GA 101) [Occult signs and symbols. Stuttgart, September 16]*. Information resource: http://www.lib.ru/URIKOVA/STEINER/lec_1907.txt. Last access date: 27.07.2015. [in Russian]
29. Berdyaev N. *Religiya voskresheniya*. V knige: Sobranie sochineniy. T. 3. Tipy religioznoy mysli v Rossii (*Religion of resurrection*. In: Collected works. Vol. 3. Types of religious thought in Russia). Paris: YMCA-Press, 1989. Information resource: http://www.litmir.co/br/?b=163659&p=54#section_28. Last access date: 27.07.2015. [in Russian]
30. Paramonov A. *Sotsializm v nastoyashchem. K istorii obmennoy gemotransfuzii Aleksandra Bogdanova (Socialism in the present. On the history of exchange hemotransfusion, Alexander Bogdanov)*. Siniy divan. 2010; 15: 93–106. [in Russian]
31. Dokladnaya zapiska A.A. Bogdanova na imya N.A. Semashko, N.I. Bukharina, I.V. Stalina o rabote Instituta perelivaniya krovi 19 yanvarya 1928 g. V knige: Neizvestnyy Bogdanov. V 3 knigakh. Pod. red. G.A. Bordyugova. Kn. 1. A.A. Bogdanov (Malinovskiy). Stat'i, doklady, pis'ma i vospominaniya. 1901–1928 gg. (Memorandum of A.A. Bogdanov in the name of N.A. Semashko, N. Bukharin, I.V. Stalin, on the work of the Institute of Blood Transfusion, January 19, 1928. In: Unknown Bogdanov. In three volumes. Ed. G.A. Bordyugov. In 3 volumes. Vol 1. A.A. Bogdanov (Malinovsky). Articles, reports, letters and memoirs). Moscow: ITs «AIRO–KhKh», 1995: 137–142. [in Russian]
32. Shamov V.N., Filatov A.N. *Rukovodstvo po perelivaniyu krovi (Guidelines for blood transfusion)*. Leningrad–Moscow, 1940; 600. [in Russian]
33. Klebaner V.S. P*odvig Aleksandra Bogdanova* (The feat of Alexander Bogdanov). Information resource: http://medznate.ru/docs/index–78905.html. Last access date: 27.07.2015. [in Russian]
34. Tyukin V.P., Churilov L.P., Fionik O.V. *Universant serebryanogo veka: A.A. Bogdanov – vrach, estestvoispytatel' i filosof. Soobshchenie II*. Bogdanov–praktik: sud'ba ego idey (Silver Age University: A.A. Bogdanov – doctor, naturalist and philosopher. Report II. Bogdanov-practician: the fate of his ideas). Vestnik SpbGU (Bulletin of St. Petersburg State University). Ser. 11. Meditsina. 2010; 2: 249–263. [in Russian]
35. Bogdanov A.A. *Bor'ba za zhiznesposobnost' (The struggle for viability)*. Moscow: Novaya Moskva, 1927; 160. [in Russian]
36. Malikova M. *NEP kak opyt sotsial'no-biologicheskoy gibridizatsii (NEP as an experiment in social and biological hybridization)*. Otechestvennye zapiski. 2006; 1 (28). Information resource: http://www.strana–oz.ru/2006/1/nep–kak–opyt–socialno–biologicheskoy–gibridizacii. Last access date: 27.07.2015. [in Russian]
37. Schmidt P. *Teoriya i praktika Shteynakhovskikh operatsiy.* Omolozhenie. Vtoroy sbornik statey pod red. N.K. Kol'tsova (*Theory and practice of Steinach operations. Rejuvenation*. A second collection of articles under the editorship of N.K. Koltsov). Moscow–Petrograd, 1924: 11–76. [in Russian]
38. Koltsov N.K. *Predislovie redaktora*. V kn.: Omolozhenie. Vtoroy sbornik statey pod red. N.K. Kol'tsova (Editor's preface. In: Rejuvenation. A second collection of articles under the editorship of N.K. Koltsov). Moscow–Petrograd, 1924: 5–10. [in Russian]
39. Voronov S. *O peresadke semennikov.* V knige: Omolozhenie. Vtoroy sbornik statey pod red. N.K. Kol'tsova (*On testes transplant*. In: Rejuvenation. A second collection of articles under the editorship of N.K. Koltsov). Moscow–Petrograd, 1924: 77–118. [in Russian]
40. Koltsov N.K. *Uluchshenie chelovecheskoy porody.* Rech' v godichnom zasedanii Russkogo Evgenicheskogo obshchestva 20 oktyabrya 1921 goda. Russkaya evgenika. Sbornik original'nykh rabot russkikh uchenykh (khrestomatiya) pod obshch. red. V.B. Avdeeva (*The improvement of the human species*. Speech from the annual meeting of Russian Eugenics Society October 20, 1921. Russian eugenics. The collection of original works by Russian scientists (anthology) under the general editorship of V.B. Avdeev). Moscow: Belye al'vy, 2012; 576. Information resource: http://www.xpomo.com/ruskolan/rasa/evgenika_07.htm. Last access date: 27.07.2015. [in Russian]
41. Konashev M.B. *Ot evgeniki k meditsinskoy genetike (From eugenics to medical genetics)*. Information resource: http://www.medline.ru/public/art/tom3/eumedgen.phtml Last access date: 27.07.2015. [in Russian]
42. Lazebnikov A.E. *Ikh znal Il'ich (They knew Ilyich)*. Moscow, 1967; 184. [in Russian]
43. Alekseev V.V. I.V. *Stalin i A.A. Bogdanov: materialy dlya issledovaniya problem (Stalin and A. A. Bogdanov: materials for studying the problem)*. Vestnik Kamskogo instituta gumanitarnykh i inzhenernykh tekhnologiy (Bulletin of the Kamsky Institute of Humanitarian and Engineering Technology). 2006; 1: 32–37. [in Russian]
44. Panchenko A.M. *Os'moe chudo sveta.* Russkaya istoriya i kul'tura: Raboty raznykh let (*Eighth Wonder of the World*. Russian history and culture: Works from different years). St. Petersburg: Yuna, 1999: 476–497. [in Russian]
45. Koltsov N.K. *Noveyshie popytki dokazat' nasledstvennost' blagopriobretennykh priznakov. Russkiy evgenicheskiy zhurnal (The latest attempts to prove the inheritance of acquired characteristics.* Russian eugenics magazine). Vol. II. Isse 2–3. Moscow: GIZ, 1924: 159–167. [in Russian]
46. Plaggenborg S. *Revolyutsiya i kul'tura: Kul'turnye orientiry v period mezhdu Oktyabr'skoy revolyutsiey i epokhoy stalinizma (Revolution and culture: Cultural*

landmarks in the period between the October Revolution and the Stalinist era). St. Petersburg.: Zhurnal «Neva», 2000. 416 p. [in Russian]
47. Gorinevskiy V.V. *Nauchnye osnovy trenirovki* (The scientific basic for training). Fizicheskaya kul'tura. 1922; 1: 4–7. [in Russian]
48. Shikman A.P. Deyateli otechestvennoy istorii *(National historical figures)*. Vol. 1. 1997; 446. [in Russian]
49. Bogdanov A.A. *Pervyy god raboty Instituta perelivaniya krovi*. Trudy Gosudarstvennogo nauchnogo instituta perelivaniya krovi im. A.A. Bogdanova (*Institute of Blood Transfusion's first year of work*. Proceedings of the A.A. Bogdanov National Research Institute of Blood Transfusion). Vol. 1. Moscow., 1928; 275. [in Russian]
50. Rossiyanov K.O. *Opasnye svyazi: I.I. Ivanov i opyty skreshchivaniya cheloveka s chelovekoobraznymi obez'yanami (Dangerous ties: I.I. Ivanov and crossbreeding experiments with apes)*. Voprosy istorii estestvoznaniya i tekhniki. 2006; 1: 3–51. [in Russian]
51. Sobolev I.I. *Tovarishch*. Trudy komissii po nauchnomu naslediyu A.A. Bogdanova (*Comrade*. Proceedings of the commission for the scientific heritage of A.A. Bogdanov). Moscow, 1992; 225. [in Russian]

About the author

Mariya Sergeevna Sergeeva – Candidate of Historical Sciences, Associate Professor at the Department of the History of Medicine, National History and Culturology, I.M. Sechenov First Moscow State Medical University, Moscow (Russia).