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Monograph

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# ABSTRACT

The collective monograph focuses on the study of current trends in the transformation of Ukrainian society. The use of an interdisciplinary approach allows for a comprehensive analysis of various directions of social development and the formation of scientifically sound conclusions that have important social significance.

Konstantin Levchuk's research is aimed at studying the challenges faced by national educational organizations in Ukraine in the 1990s in the context of the transformation of the socio-economic space. The problems of financing, contradictions between individual creative unions and the role of public initiatives in strengthening the positions of the Ukrainian language and culture are considered. Special attention is paid to the relationship between the societies "Prosvita" and "Znannya" and their influence on the processes of consolidation of the intelligentsia during the period of the formation of independent Ukraine.

Svitlana Bogatchuk's study focuses on highlighting the process of reforming and developing an important branch of agriculture in the 19th century, such as sugar refining. Ukraine was the main region that supplied sugar refining products to the entire Russian Empire and other countries.

It is noted that the beginning of the development of sugar refining in the Podolsk province falls on the 1820s. These were small local enterprises with primitive equipment, based on the use of manual labor.

Igor Belkin's chapter characterizes the main directions and trends of the facets of utility and possible harm of such a relatively new direction of science as artificial intelligence. It is emphasized that modern trends in the ethics of artificial intelligence are focused on ensuring the responsible use of technologies. Attention is drawn to the transparency of algorithms, the protection of personal data, the fight against discrimination in AI systems, and the need for human control over critical decisions.

Zorislav Makarov's work provides a philosophical analysis of the substantive grounds for the epistemological distinction between classical and non-classical science, as far as possible given the cohesion of epistemological components with

methodological, axiological and worldview components in modern science. The main subject of comparison is the integral images of rationality and the style of thinking of the two mentioned generations of European science, which are manifested and remain relevant in two well-known ways of modern philosophical reflection on science -"postmetaphysical" and "postmodernist". Based on the material of epistemological features (anti-reductionism, non-corresponding truth, interdisciplinarity, "empirical vacuum", dynamic descriptions, constructivism, etc.) of modern science, starting from mathematics and ending with ecological studies, the reasons for the greater popularity of the postmodern view of science and the prospects of postmetaphysics are established.

The content of the collective monograph is consistent with the scientific direction of the Department of History of Ukraine and Philosophy of Vinnytsia National Agrarian University. The research was carried out within the framework of the initiative scientific theme "Research on the Trends of Socio-Economic Development and Consolidation of Ukrainian Society in the Modern History of Ukraine" (state registration number 0122U001425, scientific supervisor - Doctor of Historical Sciences, Professor Levchuk K. I.). In the process of preparing the monograph, interdisciplinary approaches were used, in particular, socio-philosophical, historical-genetic, as well as methods of statistical, sociological and economic analysis.

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# 1. National and cultural associations of Ukraine in the 1990s

# 1.1 Formation and development of public associations of the creative intelligentsia of Ukraine

The declaration of independence of Ukraine contributed to a change in the situation in national and cultural societies. Public attention to the problems of the development of the Ukrainian language, languages of national minorities, education, and culture increased. The absence in the post-Soviet Ukrainian society of traditions of patronage, charity aimed at supporting culture and art brought educational projects of public organizations to the brink of collapse. The socio-economic crisis worsened the financial situation of creative unions, national and cultural organizations, and foundations. In search of support, a number of organizations turned to state structures. In 1991, the Ukrainian Society for the Protection of Historical and Cultural Monuments developed an architectural and artistic concept for the creation of natural, historical and cultural reserves at the hillforts of Tomakivska, Kamianets-Podilskyi, and Chortomlytska Sich and proposed building a memorial complex at the burial site of the Kosh ataman I. Sirko. Despite the support of this initiative by the Verkhovna Rada Commission on Culture and Spirituality, the Ministry of Culture, the executive committees of the Dnipropetrovsk and Kherson regional councils during the first half of the 1990s did not fully fulfill the tasks and works specified in the construction plan [1, p. 89].

Executive Director of the Mykhailo Hrushevsky International Charitable Foundation L. Reshodko wrote a letter to the Verkhovna Rada of Ukraine with a request to financially support the publication of the eleven-volume history of Ukraine-Rus. By the Resolution of the Presidium of the Verkhovna Rada of September 16, 1993, the Cabinet of Ministers was instructed to consider the possibility of partial state financing of the publishing house of the fundamental work of the outstanding Ukrainian historian [2, pp. 7-18].

Selective state assistance provided to a number of educational projects of public associations could not improve the situation with the support of Ukrainian culture and

art in a market economy. The Volyn branch of the Ukrainian Fund for Culture sent an appeal to the Commission of the Verkhovna Rada of Ukraine with proposals for improving legislative support for patronage and charity. In particular, a proposal was made to provide tax benefits, which consisted in exemption from taxation of 15 percent of income to private individuals and commercial structures that allocate assistance to charitable organizations and foundations in the amount of 10 percent of annual income. Charitable organizations should be exempted from paying taxes, contributions to special funds, and from rent for premises; to provide benefits in the payment of utility services and in the use of the telephone; not to tax income from charity evening concerts and TV and radio marathons [3, p. 169-170]. The proposals made actually repeated the preferences granted by the state to organizations of veterans, disabled people and "Chernobyl survivors". Thus, the presence of "privileged" public organizations that actively used their status to implement statutory tasks caused a jealous attitude among other organizations that did not have the necessary leverage to influence legislative structures.

At the end of 1992, a joint plenum of creative unions of Ukraine was held on the state protection of the creative intelligentsia. In the speeches of representatives of creative unions, it was noted that the financial and economic situation of public associations in the field of culture was deteriorating. No legal basis for protecting the rights of these organizations had been created, and their interests were being squeezed. Creative unions were actually deprived of the right to own art workshops, which were once built at their expense and then transferred to the balance of the executive committees of local councils. There was a real threat of their sale to commercial structures [1, p. 1-2].

This determined the need to develop a Law "On Professional Creative Workers and Creative Unions". Chairman of the Verkhovna Rada of Ukraine Commission on Culture and Spirituality M. Kosiv in an address to the Presidium of the Verkhovna Rada noted that the Law "On Associations of Citizens" does not take into account all the specifics of the activities of creative unions, their status and special role in the development of culture and arts. No legislative act protected the rights of creative

workers. As a result of the unification of tax legislation, legislative uncertainty with the property ownership of creative unions, in particular, the succession of property of creative unions of the former Soviet Union, the unions found themselves in a difficult financial situation, they could not survive without state assistance. Under these conditions, the Cabinet of Ministers of Ukraine decided to assist a number of creative unions (All-Ukrainian Music Union, Union of Architects of Ukraine, Union of Designers of Ukraine, Union of Journalists of Ukraine, Union of Cinematographers of Ukraine, Union of Composers of Ukraine, Union of Masters of Folk Art of Ukraine, Union of Writers of Ukraine, Union of Theater Workers of Ukraine, Union of Artists of Ukraine). In 1996, they were allocated 361.2 billion rubles of state aid, which at best allowed them to maintain the administrative apparatus of the unions, but did not solve the issue of financing artistic and artistic projects [4, p. 212].

In 1994, a working group was created with the participation of representatives of creative unions, which was engaged in the preparation of a draft law. In January 1995, the project was submitted to the Commission on Culture and Spirituality [4, p. 31]. At the same time, on April 10, 1995, the Resolution of the Verkhovna Rada of Ukraine approved the cost estimate for the development of a new draft of the Law of Ukraine "On Creative Unions". The contractor for the order was the Innovation Center of the National Academy of Sciences of Ukraine [4. p. 21].

The preparation of the new bill caused concern among creative unions, since in early September 1995, the Commission on Culture and Spirituality, without any public consideration, proposed to submit the draft Law for discussion by the Verkhovna Rada.

A. Chepelyuk, Chairman of the Union of Artists of Ukraine, on behalf of the United Council of Creative Unions, appealed to the Verkhovna Rada with a request to suspend the adoption of the bill until it was discussed and amended by each creative union of Ukraine. On September 14, 1995, the draft Law was discussed at a meeting of the Commission on Culture and Spirituality with the participation of invited representatives of creative unions. By the decision of the Commission, the draft Law was generally supported and sent for further consideration by creative unions [4. p. 58-61].

It should be noted that among the leaders of the unions there was no unity of views regarding the legal status of creative unions. Creative unions that were created during the Soviet era sought to preserve permanent use of real estate, the right to state support in the conditions of economic crisis and were jealous of newly created artistic associations. Thus, Y. Mushketyk, on behalf of the Writers' Union of Ukraine, noted that "the same legal status of all previously created and newly created unions will lead to the disintegration of the creative intelligentsia, to the fragmentation of unions. The right to social protection, to subsidies from the state is only available to members of unions approved by the Cabinet of Ministers [4. c, 105]." Creative associations that emerged during the years of independence - the National League of Ukrainian Composers, the All-Ukrainian Union of Kobzars, the Union of Advertisers of Ukraine - received premises from the state and sought to secure ownership of them or to issue permanent use.

The Law of Ukraine "On Professional Creative Workers and Creative Unions" was adopted by the Verkhovna Rada in October 1997. It defined the legal status of professional creative workers, established the legal, social, economic and organizational principles of the activities of creative unions in the field of culture and art. However, the main problem that concerned artists during the preparation and adoption of the bill was the preservation of state support for their organizations, guarantees of ownership of property received by creative unions during the USSR.

The ideological conflict did not bypass the two largest all-Ukrainian cultural and educational organizations: the Ukrainian Language Society (TUM) named after Taras Shevchenko and the "Knowledge" society. In September 1991, the leadership of the TUM named after Taras Shevchenko was accused by the "Znannya" society, "which for several decades usurped all educational work in Ukraine with the support of party structures," of being "ideologically rigged for the purpose of mass disinformation of the population and specializing in what was called "communist education [5. p. 193]." In response, V. Shynkaruk, who headed the "Znannya" society, criticized in his speeches "the "educators" who were fed up with overseas food and who came here when Ukraine became independent, slandered our organization in every possible way,

accusing it of all sins [6. p. 6]." The "Znannya" society was not formally a communist structure. In addition, in November 1990, the XII Extraordinary Congress of the Republican Society "Knowledge" (a structural unit of the All-Union organization) adopted a resolution on its registration in Ukraine as an independent organization.

On October 12, 1991, the Third Extraordinary Conference adopted a resolution on the reorganization of the Ukrainian Language Society into the All-Ukrainian Society (VUT) "Prosvita" named after Taras Shevchenko. The statute approved at the conference differed significantly from the statute of 1989. It noted that the Society's activities were primarily aimed at disseminating knowledge among the population, at forming the national consciousness of Ukrainian citizens, and only after that at establishing the Ukrainian language as the state language in all spheres of public life. The statute defined the organization's right to submit proposals to the state bodies of Ukraine on issues of its activities, to participate in the development of resolutions of state authorities and administration through its deputies elected to the relevant councils [7. p.195].

Changes in the statute were associated with new socio-economic conditions that had developed in independent Ukraine, which in turn required changes in the forms and methods of work. "In the current situation in Ukraine, when economic hardships lead to environmental danger, when the authority of our state is being undermined with the decline in living standards and the wave of discontent is growing, when the most sacred concepts for us are being discredited, when there are practically no programs for Ukraine to emerge from the crisis, "Prosvita" needs to develop concepts and models for ensuring the well-being and spiritual development of Ukrainian citizens in the shortest possible time" [8. p. 203], – stated in May 1994 the head of the Taras Shevchenko VUT "Prosvita" P. Movchan at the scientific and practical conference "State Ideology in Modern Ukraine". In his opinion, the theoretical basis of the new economic and socio-political progress should be provided by the ideology of national values: "Now we demand freedom for the entire people, which is possible only with their complete spiritual emancipation. And above all in the linguistic sphere, which, in turn, requires a revision of the foundations of our educational system, office

management, and the introduction of the Ukrainian language into all scientific and industrial spheres" [8, p. 205]. V. Shynkaruk held different views, who from the beginning of the 90s opposed the development of a state ideology, emphasizing that "any ideology has no right to call itself dominant, to claim the role of a state, to rise above others, to take on the role of the ultimate exponent of truth [9, p. 4-5]."

In the conditions of socio-economic crisis, according to the representatives of "Prosvita", the Ukrainian language needed state support, since the Russian language continued to dominate on television, in the columns of periodicals and on the radio. Of the 2277 printed units of book production published in 1993 in Ukraine, 62 percent were in Russian, only 30 percent in Ukrainian. The total circulation of publications in Russian was 54.5 million, while in Ukrainian only 21 million [8, p. 204]. Therefore, the practical activities of the society were aimed at supporting the state status of the Ukrainian language. At the 5th Congress of "Prosvita", held in Kyiv in November 1996, the results of the activities during 1991-1996 were analyzed. The organizational work of the society was aimed at expanding the network of educational centers, creating cultural, library and publishing centers, publishing educational newspapers and magazines in each regional center. The number of periodicals of "Prosvita" was expanding: in 1996, the following newspapers were published: "Sivershchyna", "Prosvita", "Sicheslavskyi krai", "Krymskyi visnyk", "Dzvin Sevastopolya", "Slovo Prosvita", "Narodnyi likar Ukrainy"; magazines "Lyudina i svit", "Steppe", "Slobozhanskyi krai", "Shchedryk", "Pysanka".

The society paid considerable attention to holding all-Ukrainian scientific and practical conferences, during which issues related to the coverage of unknown pages of the history of "Prosvita" were considered; consideration of national security problems, the use of forms and methods aimed at protecting the state status of the Ukrainian language, discussion of the Ukrainian national idea in the context of the state-building process in modern Ukraine [10, p. 416].

The organizational strengthening of the educational organization was evidenced by the following indicators: in 1996, the Taras Shevchenko VUT "Prosvita" included 25 regional, All-Crimean and Sevastopol city organizations, which united 447 district and city, 14,364 primary centers. The total number of individual members was 650 thousand people, collective members - over 500 thousand. In each regional association and the city of Sevastopol, 2-3 full-time employees worked on a permanent basis [10, p. 414].

In November 1996, the board of the Taras Shevchenko VUT "Prosvita" approved a draft state target program "Ukrainian Language", which became the basis for the Resolution of the Cabinet of Ministers of September 8, 1997 "On Approval of Comprehensive Measures for the Comprehensive Development and Functioning of the Ukrainian Language." The purpose of the approved measures was to determine: the need to compensate for the losses suffered by the Ukrainian language in the sphere of social functioning as a result of prohibitions and persecutions in the past; cultural revival, preservation and renewal of the spiritual gene pool of the Ukrainian people; development, support and protection of the state language in Ukraine; establishment of the Ukrainian language as the main means of communication in Ukraine; expansion of the functions and scope of application of the Ukrainian language [11, p. 459].

The Government Resolution assigned the following tasks to "Prosvita" and the "Znannya" Society: to take measures to promote and clarify the legislation on languages; to make proposals for amendments and additions to the legislation of Ukraine and to develop regulatory legal acts in the field of language use; to launch seminars on legal issues of the functioning of the Ukrainian language as the state language; to develop testing programs in the Ukrainian language, including for immigrants wishing to obtain Ukrainian citizenship; to republish Ukrainian dictionaries of various types, primarily academic ones, etc. [11, p. 462-464]. Thus, the cooperation of the educational organization and state structures has shown the growth of its authority, the presence of the necessary intellectual and personnel potential, and has contributed to the improvement of relations with the "Knowledge" society in the field of protection and ensuring the development of the Ukrainian language as a state language.

There were changes in the activities of another educational organization of Ukraine - the "Knowledge" society. Most of the enterprises and organizations that

financially supported the lecture activities of the Society in Soviet times have reduced or stopped unproductive expenses. Under these difficult conditions, the "Knowledge" society began to use certain forms of commercial activity. A network of paid seminars, retraining courses for specialists was created, publishing activities were expanded, etc. During the first years of independence, the Society began to engage in professional training and retraining of certain segments of the population, to form legal awareness in Ukraine, to explain structural changes in the country's economy [12, p. 6]. The Society sought to use not only proven in practice effective and efficient forms of providing information and educational needs of the population, but also developed new technologies for the dissemination of knowledge - telecommunications and computer networks. Thus, thanks to the system of the Society "Knowledge" in the first half of the 90s, it became possible to acquire new professions, such as: a specialist in the field of securities, investment manager, auditor, broker, advertising agent, realtor, image maker, etc. Large-scale work was carried out by the organization in connection with the need to change accounting in accordance with international standards. During the 90s of the twentieth century. almost 700 thousand accountants underwent retraining on the basis of regional organizations of the Society [13, p. 9].

In its work, the Society "Knowledge" actively used new forms of scientific and educational activity, which are associated with participation in the implementation of the international program "Adult Education and Social Change". Having received a state license from the Ministry of Education and Science of Ukraine and financial support from the Coordinating Committee for Assistance to Ukraine (USA), the Society organized advanced training courses for national personnel in Ukrainian studies. Teachers of universities, technical schools and officer educators from different regions of the country improved their qualifications at the courses. The topics of the courses were devoted to current problems of Ukrainian history. Leading scientists were involved in the lectures, among them – I. Bilas, T. Hunchak, Ya. Kalakura, P. Kononenko, E. Sverstyuk, V. Serhiychuk, Yu. Shapoval and others [14, p. 14].

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At the end of the 90s of the 20th century. The Society united 540 full-time employees, 50 thousand public lecturers, remaining one of the largest scientific and

educational public organizations of Ukraine, with significant material and intellectual potential. As structural units, the organization included the Ukrainian House of Economic and Scientific and Technical Knowledge, the Ukrainian Center for Spiritual Culture, the Kyiv Republican, Donetsk and Kherson Planetariums. The scientific and educational centers "Kadry", "Ukrainian Studies", "International Politics", "Health" operated on the basis of the Society. Not receiving financial assistance from the state, the Society continued to publish the magazines "Tribuna", "Science and Society", the annual "Science and Culture". During the 90s of the 20th century. The publishing house "Knowledge" launched the series "Spiritual Treasures of Ukraine" (50 volumes), "Ukrainian Historical Novel" (30 volumes), "Ukrainian Sociological Thought" (15 volumes), "History of Religion in Ukraine" (10 volumes) [15].

# 1.2 Public organizations of national minorities of Ukraine

Harmonious interethnic relations in a multinational country, which is Ukraine, have always been a factor of national security. It is the relations between national minorities and the titular nation that determine internal stability, economic development, predictable and conflict-free social policy. Having embarked on the path of democratic development, Ukraine sought to improve the situation of national minorities, to involve them in active participation in state building. On November 1, 1991, the Verkhovna Rada of Ukraine adopted the Declaration of the Rights of Nationalities of Ukraine, which guaranteed representatives of all nationalities the right to create their own cultural centers, societies, and communities. It was emphasized that these associations can carry out activities aimed at the development of national culture, organize mass events in accordance with the procedure established by law, promote the creation of national newspapers, magazines, publishing houses, museums, art groups, theaters, film studios [16, p. 475]. The democratic nature of the Declaration contributed to the unanimous support of the Act of Proclamation of Independence of Ukraine by the delegates of the First All-Ukrainian Interethnic Congress, which was represented by delegates from 150 national and cultural societies [17, p. 476]. At the same time, in the final version of the congress resolution, the delegates included a

number of proposals, in particular, the right of representatives of national communities to participate in the activities of state authorities at all levels; to develop the principles of preferential taxation of economic activities of national minority organizations and preferential rental of premises for them; to prepare and adopt draft laws "On the Rehabilitation of Repressed Peoples" and "On National Minorities" [18, p. 153].

In April 1992, the Fund for the Development of Cultures of National Minorities of Ukraine was established under the Committee on Nationalities Affairs in order to provide financial assistance in the implementation of activities carried out by national cultural societies [19, p. 489]. In June 1992, the President of Ukraine signed the Law "On National Minorities in Ukraine", in which the state guaranteed all national minorities the right to national cultural autonomy: the use and study of their native language, the development of national cultural traditions, the use of national symbols, the satisfaction of needs in literature, art, the media, etc. National minority societies gained the right to nominate their candidates for deputies in elections to state authorities. An advisory body was established under the Ministry of Nationalities Affairs of Ukraine - the Council of Representatives of Public Associations of National Minorities of Ukraine [20, p. 620-621]. The rapid resolution of the problem of legislative regulation of the activities of national cultural societies contributed to their growth. At the beginning of 1995, 16 all-Ukrainian national cultural societies operated in Ukraine, including Assyrian, Turkish, Georgian, Hungarian, Czech, Russian, two Polish, three Jewish societies and 221 regional associations [20, p. 628].

Thus, during 1991-1995, a wide network of Jewish societies of various orientations was created in Ukraine, which were united into the Association of Jewish Organizations and Communities of Ukraine, the Society of Jewish Culture and the Jewish Council of Ukraine. In 1993, with the financial support of the Ministry of Nationalities and Migration of Ukraine, a conference was held entitled "Problems of Jewish Culture and History in Ukraine." In 1995, under the patronage of Jewish societies in Chernivtsi and Kyiv, the first All-Ukrainian Festival of Jewish Art "Hope" was held [21, p. 16-17].

In April 1995, the Mariupol Society of Greeks merged with the Union of Greeks of Ukraine into a single Federation with its center in Mariupol. The efforts of the newly created society were focused on satisfying the humanitarian and cultural needs of representatives of the Greek ethnic group. Since February 1996, the Donetsk and Zaporizhia regions have been regularly holding school Olympiads in Greek language knowledge. In 23 schools in the Azov region, about 2 thousand schoolchildren studied Greek language and literature [22, p. 17].

At the beginning of 1996, 23 public organizations represented the interests of Poles in Ukraine. Among them, the Polish Cultural and Educational Society named after A. Mickiewicz stood out, which, with state support in 1993, held festivals of Polish culture in Kyiv and Zhytomyr, and the all-Ukrainian organization "Union of Poles of Ukraine", which in 1995 held the festival "Rainbow of Polissya" in Zhytomyr and the Republican Youth Olympiad dedicated to the history of the Polish people in Khmelnytskyi [21, p. 29].

Of particular importance for the stable development of Ukraine are relations between representatives of the Ukrainian and Russian ethnic groups. During the first half of the 1990s, the network of Russian national and cultural societies gradually expanded.

The idea of a Russian association was voiced in 1998 at the international scientific and practical conference "Russians of Ukraine: Past, Present, Future". Particular attention was paid to finding the optimal organizational model for the socially active Russian population of Ukraine. The Russian Cultural Society "Rus" initiated the First Congress of Russians of Ukraine. The selection of delegates was carried out in a peculiar way - the main criterion was the nomination of candidates from the most active Russian associations. As a result, delegates from 60 national and cultural societies were elected [23, p. 11].

In the speeches of the delegates of the congress, considerable attention was paid to the situation of the Russian language and culture in Ukraine. It was claimed that in Ukraine there is a process of gradual assimilation of the Russian minority under the pressure of Ukrainization. The speakers' arguments were based on a biased

interpretation of certain statistical data. Thus, in the speech of the deputy chairman of the board of the "Rus" society V. Yakovlev, the following data were given: out of 21,245 general education schools in Ukraine, only 2,561 are schools with Russian as the language of instruction, and 2.5 thousand are schools with several languages of instruction [23, p. 14]. At the same time, the speaker did not emphasize the fact that more than 2/3 of schools in Ukraine are located in rural areas, where the number of students is decreasing every year. It is there that the majority of schools with Ukrainian as the language of instruction are located [24, p. 620-621]. While in 1999 more than 34 percent of students in Ukraine were studying in Russian, training specialists in Russian language and culture was carried out in 11 universities and 20 teacher training colleges in the country [23. p.52].

The head of the Russian community of Crimea, V. Terekhov, called on those present to protect Russian culture from the pressure of the official policy of the Ukrainian authorities, which set as its goal "the displacement of the autochthonous, originating from Kievan Rus, Russian culture and its replacement with the Ukrainian culture created by it" [23, p.36]. The next threat to Russians in Ukraine, in particular in Crimea, was briefly mentioned as the Crimean Tatar national movement, the main goal of which, according to the speaker, is the creation of a national Tatar state and the annexation of Crimea to Turkey.

The public assessed the speech of the People's Deputy of Ukraine, a member of the Communist Party of Ukraine faction, P. Baulin, as a call to violate the territorial integrity of Ukraine, who advised to record in the documents of the congress the demand to recognize the status of the Russian language as the state language throughout the territory of Ukraine and called for support for canonical Orthodoxy in contrast to the expansion of the Catholic Church in Western Ukraine. The deputy proposed a new format of cultural and national autonomy for the Russian community, which consists in obtaining special powers for the regions of the East and South of Ukraine at local referendums, namely: all state property should be transformed into communal property, which in turn should be at the disposal of local self-government bodies. All units of the Ministry of Internal Affairs system should be subordinated to and on the balance sheet of local self-government bodies, and parts of the National Guard, internal and border troops should be withdrawn from the territory of the newly created autonomy. In addition, local self-government bodies will gain the unlimited right to nationalize privatized objects. All state institutions, according to the deputy, should conduct their work in Russian or Ukrainian [23, p. 46-48].

The speeches of the majority of the congress delegates were more moderate. The resolution adopted by the Congress of Russians of Ukraine emphasized the need to increase the civic activity of Russians and Russian-speaking citizens, to implement their social self-organization, and to transform their activities into an independent factor in the public life of Ukraine. For this purpose, it was decided to establish the Russian Council of Ukraine - an association of citizens, which should perform the functions of a representative body of Russians in Ukraine [23, p. 99].

The Manifesto of the Russian Council of Ukraine noted that the Council will seek broad participation in all spheres of public life, including influencing the adoption and implementation of state decisions, strengthening positions in the field of economics, science, technology, information, culture, and active representation in local government bodies. The Council's activities should be aimed at protecting and developing Russian culture, language, traditions, and historical memory in Ukraine - their broad presence in the education system and mass communications. The need to fight for the national and cultural rights of Russians, the construction of a civil multiethnic society in Ukraine, the main principles of which should be the implementation of the individual, their recognition as natural and inalienable rights that the state must ensure for its citizens [23, p. 85-86].

The return of the Crimean Tatar people from exile to their historical homeland became an additional factor in interethnic tension in Ukraine. Public organizations contributed to the solution of social and national and cultural problems facing the Crimean Tatars. Thus, in 1992, the charitable foundation "Merhamet Evi" (House of Kindness) was founded in Simferopol, which aimed to provide social, humanitarian, medical assistance and legal protection to lonely elderly people of Crimean Tatar nationality [25, p. 77-78]. At the initiative of the Crimean Tatar pedagogical community, the Association of Crimean Tatar Educators "Maarifchi" (which means "educator", "pedagogue") was established in 1995. It was registered by the Main Department of Justice in Crimea on June 11, 1996. The Association united teachers, workers of preschool and extracurricular educational institutions, university lecturers, scientists, cultural and artistic figures, persons engaged in educational activities, as well as collectives and public organizations, individuals and legal entities wishing to actively participate in educational, scientific and cultural activities aimed at the revival and development of the education and culture system of the Crimean Tatar people. The Maarifchi Association set itself the task of assisting state structures in implementing the "Concept of Education in Native Languages in the Autonomous Republic of Crimea", providing the necessary assistance in training the scientific, technical and creative intelligentsia of the Crimean Tatar people, promoting the mastery of the basics of national traditional and general culture by young people, cooperating with other national and cultural organizations, and promoting the social protection of education workers and students.

The main goal of the Association was to organize the public and direct it to practical activities in the field of science and culture, to coordinate efforts to revive the national school. In the late 90s of the twentieth century. the Association included 212 group and individual members [26, p. 15]. In December 1997, the Association developed and submitted to the Ministry of Education of the Autonomous Republic of Crimea a plan to promote the opening of schools with Crimean Tatar language of instruction in the city of Bakhchysarai, the village of Zelenohirske of the Bilogirsky district, the village of Mironivka of the Dzhankoysky district, and the villages of Partizani, Rodnikovo, and Teplovka of the Simferopol district. But in 1998, the aforementioned schools acquired the status of bilingual, which made it impossible to teach in the Crimean Tatar language in full [27, p. 62]. In the educational field, the public organization "Teachers' Council" (Bakhchisarai) worked. Thanks to the assistance of international donor organizations, the "Teachers' Council" conducted a series of methodological seminars for teachers of the district on the topics: "School

Self-Government", "Methods of Teaching Democracy in Schools", "Activating Methods of Teaching" and for students: "Leadership", "School Self-Government" [28, p. 38].

The public association "Evlyad" created mutual aid groups for parents of seriously ill children in different districts of the peninsula. By the beginning of 1999, 10 mutual aid groups had been created in Krasnoperekopsk, Pershotravnevsk, Bakhchisarai, Nizhnyohirsk, Dzhankoysk districts, Stary Krym, Yevpatoria, Sudak, Sevastopol, Simferopol. Seven out of ten groups acquired the status of public organizations, having been registered with local authorities. The groups collect statistical data on the incidence of diseases among Crimean Tatars returning to Crimea, provide feasible financial and material assistance [28, p. 40].

Crimean Tatar organizations cooperate with associations of other nationalities living in Crimea. Since 1995, the national and cultural societies of Crimea have been united in the Association. Since 1999, the Association has coordinated the work of 22 organizations, which numbered 200 regional branches. The Association unites the "Teachers' Council", "Evlyad", "Rivnist", "Crimean Tatar Initiative", the All-Crimean Society "Prosvita", two German societies: "Widergeburt" and "Zemlyatstvo deported Germans of Crimea", the Council of National Minorities of the Southern Coast of Crimea, etc. [29, p. 34]. Thanks to personal contacts between the leaders of two public organizations from the city of Bakhchysarai – the Center for Public Initiatives "Aydin" and the Ukrainian House, mutual understanding between Crimean Tatars and Ukrainians living in the city improved. In 1998, the "Evlyad" association organized professional training seminars for hematologists from Crimea. Doctors from Lviv were invited as trainers and consultants. Among the Crimean participants in the seminar, only a few were ethnically Crimean Tatars [30, p. 8].

Despite the promising examples of the activities of Crimean Tatar organizations, there were problems that hindered the development of the civil initiative of the Crimean Tatars. The most significant of them is funding. According to M. Dzhemilev, public organizations of the Crimean Tatar people do not have the necessary leverage to contribute to the successful resolution of socio-cultural problems. The obstacle is the

lack of funds [31, p. 36]. Therefore, as in Ukraine in general, public organizations are mostly cared for by international non-governmental organizations and foundations. Under the auspices of the Office of the United Nations High Commissioner for Refugees and the Danish Refugee Council, a resource center for public organizations that provide assistance to displaced persons has been opened in Simferopol. The center helps find donor organizations, provides technical, informational and legal assistance. At the opening of the center, the director of the European Office of the United Nations High Commissioner for Refugees, Anna-Willem Bylaveld, noted that 80 percent of the office's cases are resolved with the help of non-governmental organizations [32, p. 36]. At the end of 1996, at the initiative of the leadership of the Renaissance Foundation, a working group of experts in the field of international, migration, social policy and problems of repatriates was created. In accordance with the recommendations of the experts, the Foundation's specialists prepared the Program "Integration into Ukrainian society of the Crimean Tatar people, Bulgarians, Armenians, Greeks, Germans who have been deported". The program included four main areas: education, support for the media, popularization of the national cultures of Crimea, support for the development of the infrastructure of non-governmental organizations. During 1997, public organizations were formed in Crimea, which gained some experience in project implementation, management, finding funds for their projects, etc. According to the terms of the competition, projects in all areas of the Program could not be submitted by individuals and religious organizations. Therefore, the projects were prepared by public organizations, and subsequently implemented by them. Thus, the initiatives of more than 100 non-governmental associations were supported, of which 29 projects worth more than 136 thousand USD were aimed at supporting the development of the infrastructure of the organizations themselves [33, p. 27-28]. In the process of the Program's activities, a broad and multifaceted

mechanism for public participation in the process of adaptation and integration of deportees into Ukrainian society began to form. Nine donor organizations combined their funds and efforts in the Consortium of Donor Organizations and directed them to the development of public organizations of the Crimean Peninsula. The Eurasia

Foundation, the Renaissance Foundation, the Counterpart Creative Center, the C. S. Motta Foundation, etc. In March 1997, the program "Development of the Third Sector in Crimea" was launched, which aimed to stimulate the emergence of non-governmental organizations and associations, encourage the formation of organizations of deported national and ethnic minorities, promote partnership relations among public organizations and their cooperation with state structures, business and international organizations. Representatives of 150 organizations took part in the competition for starting grants (the total grant amount for one organization is 5,000 US dollars). The Consortium experts selected 30 projects. Among the winners, 13 were national organizations, two were media projects, and one was from the field of entrepreneurship and social assistance to the disabled [34, p. 37]. The implementation of the program was aimed at increasing their activity, which in turn was supposed to contribute to a greater impact on the social development of the region.

# Conclusions

So, during the first half of the 90s of the twentieth century. national educational organizations sought to find their place in the new socio-economic conditions, tried to ensure a sufficient level of financial and material support from the state to preserve the personnel potential of their societies. The attempts of a number of creative unions to limit state support for newly created artistic associations did not contribute to the consolidation of artists and cultural figures, and undermined the authority of the creative intelligentsia.

Thanks to the active position of public organizations, the establishment of the status of the Ukrainian language, which became a consolidating factor in state formation, gained state importance, and attention was increased to the preservation of the cultural heritage of the Ukrainian people. The confrontation between "Prosvita" and the "Znannya" society, which took place in the first years of independent Ukraine, complicated the fulfillment of their statutory tasks, created obstacles to effective cooperation between the largest educational organizations of Ukraine. The gradual

establishment of cooperation between the "Prosvita" VUT named after Taras Shevchenko with the "Knowledge" society during the second half of the 1990s. contributed to the consolidation of the efforts of educators in ensuring the functioning of the Ukrainian language in all spheres of public life.

The unhindered and progressive development of the network of national and cultural societies of ethnic minorities of Ukraine has become a significant sign of the democratic progress of our state. Since the time of perestroika, interethnic peace and harmony, tolerance and cooperation with activists of national movements have been an important achievement of the national and democratic forces of Ukraine. That is why the proclamation of Ukraine's independence did not meet with opposition from any national group living in Ukraine.

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# 2. The development of the sugar industry in Podilskyi province in the nineteenth century

# Abstract

Many scientific works are devoted to the study of the topic of the creation of sugar mills and the development of sugar mills in Ukraine. Ukraine was the main area that supplied sugar products all the Russian Empire and other countries.

The publication focuses on the coverage of the process of reforming and development of the main agricultural industry during this period, such as sugar.

It should be noted that the beginning of the development of sugar in Podolsk province occurs in the 1920s. These were small local enterprises with primitive equipment, based on the use of manual labor, the driving force was animals.

In the 1830s and 1840s, merchants began to build sugar factories. It should be noted that the technical restructuring of sugar cooking (plants) ended in the late 1870s with an increase in the concentration of production, the reduction of the duration of annual seasons of sugar production, and improving the use of raw materials.

The growth rates of sugar brown production and labor productivity have accelerated. The high profitability of the sugar cooking caused in the middle of the nineteenth century. The rapid spread of the sugar industry. The protectionist customs policy of the tsarist government, which contributed to the increase in the price of sugar, and therefore the increase in the amount of sugar cooking, should also be added to significant profits.

Podilsky sugar was exported to Belarus, Moldova, to Bukovina, Galicia and other regions of Austria-Hungary through the merchants of Kamianets-Podilsky, Starokostiantynov, Berdichev. Since the 70-80's of the nineteenth century, thanks to the spread of railway connections, Kiev and Podilsky merchants signed contracts for sugar delivery to London, Hamburg, Marcel.

The scientific research focuses on the fact that peasants from different counties went on the sugar mill (it was called, "walking on sugar"), as well as from other

provinces, even from abroad. Working at sugar factories was in demand. Workers were hired on sugar mills, usually in the spring, before agricultural work. Wages were usually hourly.

It is noted that at the sugar plants of Podolsk province, workers worked mostly in unsatisfactory working conditions, which led to injury or fatal.

Podilskyi province played an important role in both domestic and foreign sugar trade.

# Introduction

An important role in the economic growth of the country, in particular, Podilsky province in the nineteenth century was played by the sugar industry and the emergence of sugar mills, which was included in the most developed group of food industries related to the processing of agricultural products. It is the production of sugar that made a significant step forward in the economic development of society. Appeal to the source base allows you to establish a significant contribution of the activities of Podillya sugar plants to increase the production and sale of sugar in the Russian Empire.

The source base of the problem is primarily given by an array of works of pre revolutionary history of Ukraine, in particular collections of statistics.

An important role in the historical study of Ukrainian lands was played by the activity of the General Staff of the Tsarist Army to study the provinces of the Russian Empire. The tenth volume of the "Statistical Observation of the Russian Empire" contains data on the economic development of Podolsk province in the middle of the nineteenth century. [1].

Volumetric characteristics, including the development of the sugar industry in Podillya, presented in the work of Guldman V.K. "Podolsk address-calendar" [2].

This problem of the development of the sugar industry was touched in their writings by K. Vobny [3], O. Nesterenko [4] and others.

Scientific interest in studying the issue of industrial revolution in the Dnieper Ukraine in the 60-90s of the nineteenth century. The works of LG Melnik were made [5] and IO Gurzhia [6] in the early 1970s.

The monograph of Lazan T. explores the industrial development of Ukraine and the related process of formation of the trade and industrial bourgeoisie, which in the post-reform era has become an active subject of modernization of all public life. Forms of state intervention in the economy, social and national sources of replenishment of the bourgeoisie, economic activity of the trade industry and individual outstanding representatives of Ukrainian entrepreneurship are analyzed [7].

In his scientific work, the scientist M. Moskalyuk has focused on the maintenance of and the presentation of the same manner in the UKPAI Ya Dpygius of the XIX - on the Pocatky XX Century. The concertation of the consciousness of the data and the characteristics of the identity of the Soviet Ukraine [8].

Fartushniak Y. explores the sale of sugar made at the sugar plants of Podolsk province at the end of the 19th - early 20th centuries. at the bazaars and fairs [9].

But there is no separate scientific research on the emergence and operation of the sugar plants of Podillya.

The purpose of the study is to analyze the process of the emergence and operation of sugar plants, to show their location, the development of the sugar industry in Ukraine and the Podilsky province, to determine the importance of this industry for the economic development of the region.

# 2.1 Ukrainian sugar factories in the nineteenth century.

The sugar industry is one of the leading sectors of the food industry that has multifaceted links with other sectors of the economy and many sectors of the food industry. It is closely related to agriculture, affects and can affect its development. Growing sugar beet prompts the introduction of correct crop rotations, mechanization of soil cultivation and increases the overall agrotechnical level of agriculture. In the production of raw materials for the sugar industry, the end result is an important result - to obtain the highest amount of sugar from 1 ha of sowing of sugar beet by increasing its sugar content and improving other qualitative indicators that would prompt purity of diffusion juice - within 89-90%.

The sugar industry of Ukraine has its history. Industrial sugar beet sugar began in the Russian Empire only in the early nineteenth century [10, p. 24].

The first sugar factories in Ukraine began to work in the early 20's of the XIX century. in Podilsky, Chernihiv and Kyiv provinces. In 1827, a sugar mill was founded in the town of Bershad Podilskyi province by Count Mashkovsky. It should be noted that the graph, in order to successfully develop the industry in his homeland, studied it very carefully in France [8, p. 76].

In 1825-1828, the Subanovsky Sugar in Podilskyi began in Podilskyi province in the village. Pyatrovtsi of Olgopolsky district [11, p. 66].

In the 1930s, there were only 6 sugar plants in Ukraine. Then their construction is increased, and in the 1940s there are already 2/3 of all sugar plants.

Sugar factories in Ukraine were one of the first, if not the first form of capitalist production that arose within the serfdom. Initially, sugar production in Ukraine was in the hands of landowners and foreign merchants. After the reform of 1861, it gains a capitalist nature and concentrates in the hands of large entrepreneurs. The sugar factories were in this period in the hands of Jews.

In the early years after the reform of 1861, production in the sugar industry decreased. The sugar industry entered the crisis lane, especially in the first two years. Bedules-tubing landowners had a lack of free capital. The raw material was enough (since the peasants almost did not sow the beets immediately after the emancipation), labor (peasants who previously served at the serfdom factories, did not want to go on the sugar mill). The number of plants began to decrease rapidly, and the size of annual sugar production in the early 60's decreased significantly. The peasant reform "violated the structure of the landlord, founded not so much on capital but on forced labor." In general, the sugar industry in Ukraine as a whole has quickly got back on its feet. First of all, the market of free labor has grown rapidly. When the peasants began to collect arrears, forced to pay ransom payments, it prompted them to go to the sugar mill again to make money. The sugar season began in the fall, after the end of the field work, and this, in particular, provided sugar -making labor from local peasants, "especially those who have acquired certain skills from constant work at factories."

In 1860-1861, 229 sugar plants operated in Ukraine, or 59% of their total number in the Posius. They produced more than 3 million poods of sugar, accounting for 80% of its all-Russian production. In addition, there were 21 (from 38 in the Posius) refined plant. In 1860-1861 they produced 1.4 million poods of sugar (54%). In the following years, the number of sugar plants decreased, and sugar production increased due to the production concentration. According to KT VOBLE, in 1861–1862, 243 new sugar mills were founded in Ukraine and 175 old ones were closed.

In 1861-1863, sugar production was somewhat declined, which was caused by general economic conditions, financial difficulties, and reducing the production of raw materials. In 1862-1863, 13 sugar plants closed, resulting in 1.6 million poods. Sugar, and a total of 1.9 million poods in the country. She was collapsed, for example, by Yakhnenkov, whose capital was almost 4 million rubles. However, since the second half of the 60's, the sugar industry began. Homing enterprises were created mainly on a unit basis.

Already in the second half of the 60's, the production of sugar exceeded the reform level and began to increase at a rapid rate.

A characteristic feature of the post -reform sugar industry was its capitalist nature. In 1872, the cost of a separate sugar mill in Ukraine was not less than 100 thousand. On October 1, 1883, 90 sugar plants worth 32.6 million rubles were insured at the Kiev Insurance Society.

If you follow the development of sugar on Right -Bank Ukraine, it should be said that sugar production developed in all three provinces of the Right Bank. In particular, in 1877, there were 650 factories in Volyn province, among which sugar factories played a dominant role. Four Tereshchenko brothers (Andrushevsky, Chervinsky, Korovinetsky and Ivankivsky) in 1883 produced 560 thousand poods of sugar in 1883. In 1912, there were 16 sugar plants in the province, which processed 2905865.2 Berkivtsi sugar, and in 1914 - 15 plants.

After the reform, industry in the Kyiv region, mainly on the processing of agricultural products, developed. The sugar industry has increased specially. Already in 1865 there were 72 sugar plants. A characteristic feature of the industry of that time

is the high concentration of production. In 1898 there were 63 sugar plants, 1905 - 7523, 1907 - 7424 and in 1908 also 74 plants.

In 1878, the processing of sugar beet reached here 5800 thousand Berkivtsi, in Volyn in 1875 7 sugar mills were processed only 243 thousand Berkivtsi. In 1880, the total cost of sugar produced in the Kyiv region ranged from 6 to 8 million rubles, and in Volyn - 2.9 million one of the largest sugar farms was the Smilyansky estate of the Counts of Bobrynsky, which was located in Cherkasy and Chyhyryn counties in the Kyiv region. Himi was harvested in the Kaniv County. Almost all of the beets were processed at local plants, only from a few plantations of Berdychiv district he was delivered to the factories of neighboring Podilsky and Volyn provinces.

Already in the mid-80s of the XIX century. Sugar beets were sown in Kaniv and Vasylkiv district in all estates, in Cherkasy, Tarashchansky and Lipovetsky - in 3/4 estates, in Svenigorod, Chyhyryn, Berdychiv and Uman counties - almost half of the estates. In total, in all these counties, beet plantations occupied 12.3% of the treated areas.

In the industrial production of Podolsk province, the food industry occupied the most important place. Its share accounted for 85% of all industrial production. In Podilskyi province in 1862 there were 39 sugar mills, 1863–1864 - 32, 1886–1887 - 46, 1890 - 43, 1891 - 44, 1892 - 44, 1893 - 43, 1895, 1895 - 49, 1895, 1895, 1893, 1893, 1893, 1893, 1899 - 47, 1901 - 52, 1903 - 52, of which three plants were dominant in the Litinsky district, 1905 - 53 and in 1909 - 51.

In 1866, 16605 beetroots were produced at the Litinsky Sugar Plant of Podilskyi province, of which 8960 poods of sand were made, in 1867 11906 poods were made and in 1869-16,000 poods of sugar.

Having withstanding competition, in 1885-1886 the Sagnikovsky Sugar Factory of Podilskyi province suffered losses and went bankrupt, as stated in the governor's report.

It should be noted that in 1895 the Proskur Sugar Factory of Podilsky Province began to operate48, 1899 - Gaisinsky, 1900 - Barsky Mogilev district. In 1913, 6 sugar plants were founded in the Vinnytsia County of the province. The 19th century. Three provinces of the Right Bank produced 69% of sugar of the entire empire. The products exceeded 100,000 poods a year in each of the counties of the strip, which stretched from north to south through Zhytomyr, Berdychiv, Haisin and Uman.

The southwestern region was generally the main sugar area of the empire. How much was the growth of the sugar industry in this region was visible from the following data: during 1865–1866, 1700,000 poods of sugar were produced here, in 1881–1882-9803298 poods, in 1889–1890-1336989 Pudd.

In 1880–1885, there were 130 sand and refinery plants in the southwestern provinces of 70,000 tenths of beet factory and 98,000 tenths of peasant and planter (small-business) crops, with 12.5 million pounds of sugar. In 1898–1899 there were 127 factories of 61 thousand tithes of factory crops and 173 thousand acres of peasant and plantatorial, with production of 23.9 million poods of sugar, and in 1910 there were 200 plants from 152 thousand tithes of factory crops and 27.3 thousand tens of factory crops in Ukrainian provinces. Sugar poods (430.7 thousand tenths and 108.8 million poods of sugar). In other words, Ukraine had 60% of all -imperial sugar plants, up to 98% of beet crops and up to 75% of sugar production [8, p. 76].

The first sugar mills were small local enterprises with primitive equipment. Everything was done manually, the driving force was cattle.

The founders of the first sugar factories were landowners who sought to find new sources of raising the profits of their landlord. Sugar beets were processed from landlords, which worked with serfs, evaporating sugar juice in open boilers on "bare" fire. The landowners received solid profits. Each tenth of sugar beet gave a profit 6-8 times more than a tithe grain [10, p. 24].

In 1848-1849, 295 sugar plants were operating in the Russian Empire, of which in Ukraine -183, or 62%. Now we compare with the data of 1845. In three years the number of sugar cooking in the empire increased: from 216 to 295; In Ukraine - from 116 to 183, that is, we have an increase in the number of sugar mills in the Russian Empire by 36.6%, in Ukraine - by 54.3%. The share of Ukraine increased significantly from 53.4 to 62%. As for the sowing area, in 1848, 36.5 thousand des., Including 27.7
thousand des., Or 75.8% in Ukraine, as a whole. Only 54.7% of the Ukrainian Square had under beets; Its beet wedge almost twice exceeded the area under the beets of the other part of the state (15.1 thousand des. Against 8.8 thousand des.). In the period under consideration, the yield of beets on the Russian Empire did not exaggerate 69.8 Berkivtsi; Ukraine was more yielding - 71.5 Berkivtsi against 63.7 Berkivtsi in Russia. In Right -Bank Ukraine, this average was even higher - 74.9 Berkivtsi. And here the first place belonged to the Kyiv region - 77.5 Berkivtsi. It should be noted that sugar enterprises were different in terms of production. Thus, sugar products with products up to 3 thousand poods were considered small, from 3 to 10 thousand - medium and more than 10 thousand poods - large. In 1848-1850, in the Russian Empire, most were small enterprises - 69.5%, the share of the average accounted for 23.4%, large - 7.1%. The corresponding values for Ukraine were as follows: 51.7, 37.4 and 10.9%. Among the Ukrainian sugar mills, the share of medium and large ones is noticeably higher. If there were no sugar mills in Russia with more than 15,000 poods, there were 5 such enterprises in Ukraine; There were only one sugar mill with 10 to 15 thousand poods in Russia, 15 in Ukraine. Large enterprises concentrated mainly in the Kyiv region, where there were 15 of the total 21 in the province. From 1848 to 1850 the excise duty of sugar was 30 kopecks, from 1850 to 1852 - 45 kopecks, from 1852 to 1854 - 60 kopecks. Of the small plants that produced no more than 500 poods of sugar per year, the excise duty was respectively charged in the following sizes: 15, 30 and 45 kopecks. From Pud. In 1848/49, the excise duty was received from sugar 46.2 thousand rubles, in 1850/51 -138.2 thousand rubles, in 1854/55 - 434.7 thousand rubles. Increasing excise duty, respectively, influenced the rise in prices, production and sale of products, which caused dissatisfaction with sugar mills. This is evidenced, for example, the request of the owners of the sugar plants of the Kiev province, sent by the Governor-General in 1853 "On the unvividated excitement of excise duty on the Salaklovich Sahara". In 1850, the sub -Russian Ukraine produced 1697 thousand poods of sugar worth 10205.9 thousand rubles, which was 80.5 and 79.3% respectively. Thus, Ukraine, with 58% of the total number of sugar mills (376 sugar mills operated in the state in 1856-1857, of which 218 accounted for Ukraine), gave 4/5 of all sugar products of the Russian Empire. As for the

number of workers of sugar plants, we will give the following figures in 1856-1857. Together on the Russian Empire, 72 thousand people worked in the sugar mills, of which 48.4 thousand in Ukraine, or 67.2%. On average, there were 196 workers in one enterprise, in Ukraine 232. Increasing productivity was also noticeable: in 1848-1849, one worker accounted for 21.5 puddles of sugar, in 1856-1857. Here are the main general processes that characterized the development of sugar production throughout the Russian Empire. As for Ukraine, it, as we have seen, was the main area of sugar beet production. The real flowering of sugar cooking in Ukraine began in the 1940s, when sugar plants began to switch to steam equipment. n 1843, the merchants K. Yakhnenko and P. Simirenko built the first in the country steam sugar and refinery factories near the village. Malva of Cherkasy County of Kyiv province. Here is a whole industrial town. In addition to the majestic seven -storey building, a 260 -tenth of the Vorontsov land rented from Prince, - the contemporary wrote, - up to 150 houses for employees were built, each with a separate estate, a garden and a garden. In the town there was a large building of the main office. The town had its own theater, a steam mill, a machine building plant. There were gas lighting on the sugar factory and the town, which at that time used only two or three cities in Russia. The cost of the sugar factory was determined in 1 million rubles, it was designed for processing of 200 thousand Berkivtsi sugar beet and production of 400 thousand poods of refinement. The industrial revolution in the sugar mill was extensively spreading. In 1856-1857, steam sugar mills made up 40% of the sugar plants of Ukraine. Machine technology quickly raised the productivity of sugar and stimulated its development. In 1848, as noted above, 62% (to the total number of the Russian Empire) of the sugar mill operated in Ukraine. The placement of sugar mills in the Dnieper Ukraine was uneven. Of the 183 enterprises operating here in 1848, 116 existed on the Right Bank. In the provinces they were located as follows: in the Kyiv region - 70 sugar mills, Podillya - 36, Chernihiv region - 25, Kharkiv region - 24, Poltava region - 17, Volyn - 10 and Kherson region - 1. Thus, 63.4% of Ukrainian sugar mills were placed on the Right Bank, of which only 38.3% in the Kyiv region.

As for Volyn, although there were little sugar mills, but at that time they were considered large enterprises, so that Volyn for the production of gross sugar went after

Kharkiv region, but before the Poltava region [18, p. 102]. In 1848, sugar was produced in Ukraine 746.8 thousand poods, or, approximately 80% of total production in the empire. The largest share of the sugar produced in sub -Russian Ukraine was given by Kyiv region. Kyiv province in the middle of the nineteenth century. She became the center of sugar beet production of the Russian Empire. It was here that the largest amount of sugar cooking was concentrated, and it was here that the process of transition from the manufactory stage of sugar production to the factory and factory was quickly taken place. Already in 1846-1847 there were 49 sugar mills in the province (12 of them were steam and 37 firing). Particularly distinguished by the enterprises of Count O.O. Bobrynsky (1800-1868), located in Smila Cherkasy County. The first sugar mill, built in 1838, processed 300 Berkiv beets a day. In 1844-1845 he received 21.4 pounds of sugar from Berkivtsi beetroot at the Smilyansky Sugar. In 1848, new facilities were built. Soon the firing method of evaporation here was replaced by steam. All technical or technological innovations, which at that time appeared in sugar production, were immediately used on the manufactories of O.O. Bobrynsky, which were four: Bakaleevskaya, Yablunovskaya, Kapitanovskaya and Hrushevskaya. Alexei paid special attention to growing beets on his plantations. He improved the means of land cultivation, used the most advanced tools. The cultivation of land here was considered exemplary for the whole region. In 1859, there were 75 sugar cooking in the province, where about 32,000 people worked. During the year, these enterprises produced sugar for 9923.7 thousand rubles. Podillya took the second place in the production of sugar after Kyiv region. In 1848-1849 there were 36 sugar mills, where almost 4 thousand people worked. Annual production was 103.3 thousand poods. In 1860-1861, 32 sugar mills were operated in Podilskyi province with an annual productivity of 530.6 thousand poods of sugar. In Volyn in 1848 10 sugar enterprises worked. The total sugar production in value was 421.9 thousand rubles. In 1859 there were 8 sugar cooking in the province, which employed 907 people. The annual production on all manufactories was 876.4 thousand rubles. The spread of sugar production in the southwestern provinces (Kyiv, Podolsk and Volyn) contributed to the considerable development of capitalist relations, the

corresponding climate and soil, high population density, as well as large forest reserves [18, p. 100-102].

# 2.2 Development of the sugar industry in Podillya

In 1848-1849, among the provinces of Right-Bank Ukraine, the first place was occupied by Kyiv, which during this time produced 382400 poods of sugar. In Podilskyi province during this time 91750 poods of sugar were produced, which gave it second place [11, p. 67].

From Table 1 we can trace the creation of sugar mills in Podilskyi province in the nineteenth century [2, p. 223-230].

Sugar	plants	of	Podolsk	province	in	the	nineteenth	century
	<b>I</b> = = = = = = = = = = = = = = = = = = =			<b>r</b>				· · · · - · · · · · · · · · · · · · · ·

Table 1.

<u>No</u> D∕∞	Sugar factories of Podolsk	The county	The year of
P/n	province		foundation
1	Vyshnevchikovsky	Kamianets-Podilskyi district	1845
2	Gorodotsky	Kamianets-Podilskyi district	1839
3	Levadsky	Kamianets-Podilskyi district	1849
4	Proskurovsky	Proskur district	1891
5	Satanovsky	Proskur district	1899
6	Buntsevsky	Letychiv County	1852
7	Shchedrinsky	Letychiv County	1873
8	Levashovo-Voytovetsky	Litin County	1852
9	Loznyansky	Litin County	1876
10	Severinovsky	Litin County	1842
11	Staro-Sinyavsky	Litin County	1875
12	Brailivsky	Vinnytsia County	1845
13	Hnivans	Vinnytsia County	1874
14	Zalivanshchynsky	Vinnytsia County	1883
15	Kalinovsky	Vinnytsia County	1873
16	Cordel	Vinnytsia County	1845
17	Noskovetsko-Alexandrovsky	Vinnytsia County	1860
18	Vladivsky	Vinnytsia County	1860
19	Voronovitsky	Bratslav district	1873

# Continuation of table 1

	1		
20	Cabbage	Bratslav district	1853
21	Kovalevsky-Stroganovsky	Bratslav district	1872
22	Kirnassovsky	Bratslav district	-
23	Trostyanetsky	Bratslav district	1861
24	Shpikovsky	Bratslav district	1875
25	Krasnosilkivsky	Gaysin County	1844
26	Mogilensky	Gaysin County	1859
27	Sobolivsky	Gaysin County	1868
28	Osipivsky	Gaysin County	-
29	Gaysinsky	Gaysin County	1899
30	Bershad	Olgopol district	1873
31	Obodovsky	Olgopol district	1884
32	Sokolivsky	Olgopol district	1874
33	Ustyansky	Olgopol district	1866
34	Chernominsky	Olgopol district	1859
35	Chechelnytskyi	Olgopol district	1875
36	Hrushkovsky	Baltic County	1872
37	Piscicultural	Baltic County	-
38	Borovsky	Yampil County	1866
39	Gonorovsky	Yampil County	1873
40	Derebchinsky	Yampil County	1877
41	Dzhurinsky	Yampil County	1874
42	Myvsky	Yampil County	1849
43	Tomashpilsky	Yampil County	1873
44	Wendichansky	Mogilev-Podilsky County	1894
45	Exposure-Olchevsky	Mogilev-Podilsky County	1860
46	Shestakivsky	Mogilev-Podilsky County	1857
47	Khrenovsky	Mogilev-Podilsky County	1873
48	Yaltushkivsky	Mogilev-Podilsky County	1860
49	Murovanokurilovetsky	Novo-Ushitsky county	1842
50	Tarasivsky	Novo-Ushitsky county	1872

Source: Guldman VK Podilsky address-calendar. Kamianets-Podilskyi, Typography of Podilsky Provincial Board, 1900. P.223-230.

Since the mid-1940s. The question of technical modernization of sugar plants, which, accordingly, required a lot of money. The introduction of a steam machine in production has reduced the cost of processing raw materials and at the same time increase the yield of sugar from Berkovts from 8 to 14-17. Such technical processes influenced personnel changes in the factories, caused the number of workers, and accordingly increased productivity.

Simultaneously with the technical re -equipment of the plants increased the area of sowing of sugar beet. At the end of the 1940s. In Podilskyi province it was sown on an area of 4332 des., And in Kiev - 15142 des. [11, p. 68].

In 1853, 31 sugar mills worked in the region, producing 184800 poods of sugar [12, p. 44]. The large plants of the province were included in Vyshnivchytsky, Gorodetsky, Trostyanets and others. With the increase in sugar production and the improvement of sugar plants increased the area of sugar beet sowing to 4232 acres of land in 1848-1849 [13, p. 117]. Sugar produced at factories was sold in the local market and exported to Moscow, St. Petersburg, Simferopol and other cities of the Russian Empire [14, p. 26].

According to Esyunin SM, the dominant place in the factory production of Podolsk province in the second half of the nineteenth century. The food industries, primarily sugar production, flour production and dormitories were occupied [15, p. 115].

Since the mid-1860s, unit companies have emerged in the sugar industry. The creation of associations of enterprises - unit societies is explained by the fact that for the development of capacity (construction, technical equipment), considerable funds were needed, which is not always under the power of the individual owner. In addition, such associations were more stable in competition. Significant profits were received by entrepreneurs who managed to create powerful mechanized establishments, introducing a progressive production technology at that time. The Zalivanshchyna Sugar Factory of Podilskyi province was leased to the Alexander Society of Sugar Factories.

The societies of Khrenovetsky, Vendichansky, Trostyanets and Mogilev sugar plants owned two enterprises. Big capital received the societies of Yaltushkivsky, Hnivansky. Gorodotsky, Kordlovsky, Krasnosilkovsky sugar factories.

The largest among them was the Yaltushiv plant, which worked 1000 workers, and a year produced 500 thousand poods of sugar and 1 million poods. Rafinad [16, p. 123-125].

One of the first in Podillya was founded in the 1940s. Cordelovsky Sugar Factory. In the 1990s. There was a Society of Sugar Machines "Kordelivka", which was actually full dependent on foreigners. A third of the shares were owned by the German V. Row. The increase in profits of the enterprise was facilitated by the increase in sugar beet plantations and the improvement of the production process [17, p. 4-5].

Podilskyi province had the main source of its wealth agriculture in a great sense. The second place among the factories and factories of Podillya is occupied by sugar factories, which is explained by the high harvest of beet [1, p. 88].

The Podilskyi region specialized in beet, like all Right -Bank Ukraine. As stated in the researcher Guldman VK, the best farms that had their own sugar factories developed. Only large landowners who had significant working capital could afford to have a plant [2, p. 125].

Podilsky province ranked second in sugar production. In 1865, 35 sugar enterprises produced products worth 7888.5 thousand rubles, and in 1895 44 enterprises - in the amount of 17121.6 thousand rubles) [18, p. 119].

The sugar industry gives its owners huge benefits: they sell their worst quality sugar for 10 rubles. silver for pud. Sugar plants of the province produce sugar for the year for the amount of 308,908 rubles. silver. The first place among the sugar companies of the province is the plant in the town of Hruda (Kamyanets district), Adjutant General Gaismar, where sugar is produced annually for 60,000 rubles. Silver, about 200 people worked at the plant [1, p. 121-122].

## The price of annual production in the sugar plants of Podolsk province

N⁰	Divisions of Podolsk	Number	The price of annual
P/n	province		production, rubles.
1	Kamyanetsky	3	90.350
2	Proskurovsky	-	-
3	Letychivsky	2	6.650
4	Litinsky	4	65.783
5	Vinnytsia	4	44.125
6	Bratslavsky	3	31.000
7	Gaysinsky	1	39.900
8	Ushitsky	2	16.700
9	Mogilevsky	3	15.900
10	Yampil	-	-
11	Olgopolsky	1	14.400
12	Baltic	2	4.100

Table 2

Source: War-statistical output of the Russian imperia / IZD. On the highway, the general department of the Department of Department. Headquarters. St. Petersburg: Type. Department of the General. Staff, 1848 - 1858. Vol. 10: Podolskaya province / [Soust. Cap. Trritinov]. 1849. 277.

Table 2 defines the most productive sugar production plants in Podolsk province. The most powerful of these is the Kamyanets Sugar Factory, which produced products for 90.350 rubles. [1, p. 277].

According to Moskalyuk M., the food industry, namely, sugar, occupied the main place in the industrial production of Podolsk province in the scientific research. It accounted for 85 % of all industrial production [8, p. 77].

It should be emphasized that in the 1930s. Beetroot began (in 1848 there were already 4232 tenths under sugar beets, and in 1860 - 5786 tenths or 6.4 thousand hectares) and rapid development of the sugar industry. In 1861 there were already 32 sugar mills in Podillya (within the modern Vinnytsia region 19), which produced 530644 powders of sugar (about 8.5 thousand tons) [19].

In 1862, 39 sugar mills were operating in Podilskyi province, 1886–1887 - 46, 1892 - 44, 1896 - 46, 1897 - 47, 1901 - 52 and 1905 - 53. 8960 sand poods, in 1867,

11906 poods were made and in 1869-16,000 poods of sugar [8, p. 77]. So, it can be noted that the production amount of sugar has increased every year [20, p. 60].

It should be noted that in 1895 the Proskur Sugar Factory of Podilsky Province began to work, in 1899 - Gaisinsky, 1900 - Barsky Mogilev district. In 1913, 6 sugar plants were founded in the Vinnytsia district of the province [8, p. 77].

The history of the Proskur Sugar Factory begins with the Chernoostrovsky Sugar Factory, which was built in 1849 by Count Konstantin Pszodetsky - the owner of the Black Island.

The Pszezdetsky Sugar was not an industrial giant, but producing up to 80 thousand poods of sugar a year, she brought a significant profit to the Count's family. From Konstantin, the Black Island reached his son Karol, who was little interested in economic activity. In 1879 he gave the land to the estate and the sugar mill for 12 years of Proskur Merchant Solomon Marantz. On the leased land, the merchant grew beets, processed them at the factory and in a short time became the main sugar magnet of Proskurivshchyna.

In 1889, Solomon Marantz bought a sugar mill from the Pszdetsky family, dismantled it and transported it to Proskurov. At the same time, the merchant purchased Proskurov on the outskirts, not far from the railway station, a plot of land. During the year in this territory, he built a new sugar factory, spending 346 thousand rubles.

The main building of the enterprise with a steam machine and a four -storey production premises, a three -storey barracks with a dining room for workers, a bath and a hospital with a pharmacy were built. The railway track was laid to the plant - for beet carriage and finished products.

In 1891, a new modern enterprise, which until now was not in Proskurov, gave the first products. In 1895, in order to expand production, Solomon founded the Joint-Stock Company "Proskursky Sand Drinal Sugar Factory SG. Management ». This step allowed the merchant to attract funds not only to improve production in Proskurov, but also to build another sugar mill in the city of Bar.

At the part of the twentieth century, the Proskurov plant gave annually net profit up to 80 thousand rubles, Barsky - up to 35 thousand rubles. The funds at that time are quite significant, because, for example, the land with a brick house could be purchased for 2.5-3.5 thousand.

More than 500 people worked at the sugar mill and for a long time it was the largest company Proskurov [25].

From 1867 the Stepaniv beetroot began operations. The General Meeting of its opening took place in Kiev on February 6, 1867. The head of the plant was appointed A. Dyugetier [20, p. 1]. Thus, accordingly the archival data of sugar production gradually settled, gaining pace. Sugar was sold from 10,000 to 20000 poods to Kiev and local markets. During the reporting period of 1869-1870. [21, p. 8-14].

At the end of the nineteenth century. The sugar industry in Podillya was still concentrated in the countryside. In 1891, the first sugar mill was built in Proskurov. He belonged to the merchant S. Maanets, was a well -equipped and powerful enterprise, processed 1200 Berkivtsi (Berkovets - a measure of weight, which is equal to 10 poods) for a day and had more than 500 workers.

On March 18, 1898, a sugar mill began operating in the bar Bar. The Bar City Council sold to the Proskur merchant of Maranza village 56 des. 1892 square meters. Sag. city land for 19 thousand 876 rubles. Under the construction of a new sugar mill, which has become one of the largest enterprises in the city. Almost simultaneously, in 1899, a sugar mill in Haisin began to operate [15, p. 120-121].

The largest scale of the process of formation of joint -stock and unit societies acquired in Kyiv and Podillya - the main areas of the sugar industry of Ukraine [5, p. 70].

The creation of sugar syndicate immediately worsened the situation of peasants growing sugar beet. Now they could not maneuver their products and sell it to the factory that paid more. After the foundation of the syndicate, the peasants, according to the syndicate, could only sell beets to certain plants on a pre -established, usually reduced, price [4, p. 46]. High prices for syndicate set by the syndicate caused the appearance of so -called "wild" enterprises, which in a few years began to compete seriously with the enterprises united in the syndicate. In 1894/95, the term of the transaction of sugar mills ended, which has decreased significantly. In these

circumstances, the Bureau of Sugar Facilities, having enlisted the support of the ministry and finances, decided to take a number of new measures, in particular, even more to expand and strengthen the syndicate. On November 10, 1893, the Bureau of Representatives of Sugar Facilities was sent by Count VO Bobrynsky's letter to the largest, sugar mills. The main purpose of the letters was to continue to maintain monopoly sugar prices by combining sugar factories under the patronage of the Ministry of Finance. Having united, sugar mills meant to regulate the production of sugar, export its residues abroad and the formation of internal stocks in the event of a crop failure to prevent foreign competitors from Russian markets. The Minister of Finance himself was hoped that the sugar mills would continue the existing agreement, and the factories that did not participate in it before, would join the factories that joined the syndicate [4, p. 47].

Meanwhile, while the sugar mills were traded on the conditions of the new agreement, competition in the sugar market increased, sugar prices began to decrease. Sugar factories again sought help from the government. This time, the tsarist government, to the expense of the interests of the people, the benefit of sugar factories and treasury, has become a criminal path of legislative restriction of production and sale of sugar. According to the law of November 20, 1895, the government assumed the functions of determining the total amount of sugar required to be supplied to the domestic market and to set production volume for each plant. The amount of sugar produced above this rate, when released on the domestic market, was additionally taxed in the amount of 1 rubles. 75 kopecks. From Pud. The factories were obliged to form a special indestructible fund from which the sugar could only enter the domestic market when prices increased above. In this case, the sugar that was additionally produced on the market was not taxed. Government measures immediately caused rising sugar prices, despite the decrease in the cost of sugar as a result of improving the technology of its production [4, p. 48]. At the time of the syndicate, the price of sugar is reduced, but after the tsarist government comes to the help of sugar mills, they begin to grow. Government measures and speculative activity of capitalists have condemned the working population to lack sugar. Instead of sugar sugar, it was forced to consume all

sorts of surrogens. Sugar factories were afraid of the domestic market and exported sugar at brown prices abroad, and the smart German capitalists produced various surrogens and exported them to Russia, making money in Russian folk poverty [4, p. 50].

The first joint-stock companies in Podillya were founded in the 1980s. in the sugar industry. The emergence of joint -stock companies was associated with most of the financial and technical reorganization of the old ones.

In 1894, the owner of the Proskurov Sugar Plant initiated the establishment of a joint-stock company "Proskurovsky Sand Drinal and Sucper Plant". The amount of its fixed capital increased. In 1895 it amounted to 500 thousand rubles, and in 1900 - already 750 thousand rubles. [15, p. 126].

The development of entrepreneurial initiative is evidenced by many facts related to the rapid development of sugar production, which gave great profits. Thus, the board of the Society of the Trostyanets Sugar Plant of Podilskyi province purchased from the landowner F.L. Saboshinsky on the "Mill", which was carried out on January 8, 1870, 752 des. 2012 Sag. land [16, p. 218].

According to the scientist Kutsik, at the end of the nineteenth century. The provinces of the Right Bank, which also belonged to Podillya, produced 69% of sugar of the entire empire. Thus, they were the main areas of sugar production both in Ukraine and in the Russian Empire in general. The southwestern region was generally the main sugar area of the empire. How large the growth of the sugar industry in this region was visible from the following data: during 1865/66, 1,700,000 poods of sugar were produced here, in 1881/82-9803 298 poods, in 1889/90-13369 895 and 1890. According to 1905/906, 6151 craftsmen and 53551 laborers were employed in the southwestern region in the sugar factories, which arrived from other provinces [20, p. 60].

It should be noted that in the late 1870s, the technical restructuring of the sugar mills was completed due to the increase in the concentration of production, the reduction of the duration of annual seasons of sugar production, improving the use of

raw materials. The growth rates of sugar brown production and labor productivity have accelerated.

The report for 1886 on the state of Podilskyi province noted that 47 sugar plants of the province were made sugar and refined sugar in the amount of 20816329 rubles. Compared to the last 1885, the sugar plants of the province increased productivity by 4.13%, respectively, increasing the plantation plantations of beet by 13 thousand tithes [22, p. 34-35].

In 1888, 43 plants were already produced in the province. Reduction of enterprises influenced the decrease in sugar production by 17.9% and refined by 45.9% [23, p. 11-12].

# The development of sugar production in Podillya in the second half of the nineteenth and early twentieth centuries.

Table 3.

Pads	The current sugar mills	They remained until 1915.
1841	14	5
1851–1852	29	5
1859–1860	31	6
1871–1872	32	9
1881–1882	50	18
1891–1892	44	7
1901–1902	51	1
1911–1912	52	1

Source: M. Moskalyuk from the history of the development of the sugar industry in Ukraine in the second floor. XIX - at the beginning. XX century. / M.M. Moskalyuk // Ukrainian Historical Journal. 2008. № 2. P. 78.

Podillya, with its sugar products, took the second place (after Kyiv region) among all European provinces of the pre -revolutionary position, producing more than 20% of all Russian sugar.

The two largest sugar mills (Trostyanetsk - 68 thousand poods. Daily processing and Anewnsk - 64.5 thousand poods) took the 3rd and 4th places in terms of daily processing among the sugar refineries of the entire Russian Empire after Tetkinskaya (81 thousand pounds of daily processing) in Kursk region, Virinskaya (77 thousand pounds) in Kharkiv region and Sabino-Snamenskaya (70 thousand pounds) in Kherson region.

Sugar and beet products in Podillia accounted for 85% of the value of agricultural production, while other industries accounted for only 15%, with the remaining percentage divided almost half between the value of milling products (7%) and vodka and brewing products (8%).

In the second half of the nineteenth century, companies were founded in Podillia that were directly related to the development of the sugar industry in the region. In particular, in 1866, the Borivtsi Sugar Factory Partnership in the village of Borivtsi, Yampil district, with a capital of 350 thousand rubles, in 1868, the Sobolivka Sugar, Sand and Refinery Partnership in the town of Sobolivka, Haisyn district, with a capital of 800 thousand rubles, in 1873, the Levashovo-Voytovetsky Sugar Factory Partnership in the village of Voytovtsy, Lityn district, with a capital of 350 thousand rubles, In 1874, the "Partnership of the Hnivan Sugar and Refinery" in Vinnytsia district with a capital of 1 million 300 thousand rubles each, in 1875, the "Partnership of Podilsko-Pakhiansky factories" in Lopatyntsi village, Yampil district, with a capital of 250 thousand rubles each, and in the same year, the "Partnership of Honorivsky sugar and refinery" in Trostianets village. Trostyanets village, Yampol district, with a capital of 300 thousand rubles each, in 1880 the "Partnership of the Vysheolchedayevsky Sugar Factory" in the village of Vysheolchedayevsk, Mohyliv district, with a capital of 400 thousand rubles, and in 1886 the "Partnership of the Vyshnevchikovsky Sugar Factory" in the village of Vyshnevchik, Kamyanets district, with a capital of 200 thousand rubles. [8, p. 78-79].

According to the report and balance sheet of the Starosyniavsky Sugar Factory Company, the production of white sugar in 1895/96 amounted to 182305 poods worth 694860 rubles, and black molasses - 64,000 poods worth 5440 rubles. The Kyiv refinery sold 60054 pounds of sugar for 270236.05 rubles. Black molasses was sold to the Uladiv company for 28375 rubles. The management of the factory gave sugar to employees and craftsmen for holidays [24, p. 1-16].

In the 1890s, an intensive process of establishing joint-stock companies began, in particular, for the production of sugar. The following companies were founded during this period: Sokolivka Sugar Beet and Refinery Plant in Podillia province; Staro-Zhyvotkiv Sugar Beet Plant in Tarashchanskyi district of Kyiv province; Yanushpil Sugar Beet and Refinery Plant in Volyn province; Yablunivka and Yarmolynets Sugar Beet Plants in Kyiv province; Yagotynske Sugar Beet and Refinery Plant in Poltava province, etc. [18, p. 122].

According to statistical studies, the total number of sugar factories in the Ukrainian provinces by the end of the nineteenth century had decreased (in 1865 there were 181, and in 1895 - 153), while sugar production had increased. Thus, in 1865, sugar was produced for 16987.6 thousand rubles, and in 1895 - for 126134 thousand rubles. The number of employed workers in the sugar industry of Ukraine in 1875 was 63 thousand, and in 1895 - 64.6 thousand people. It should be noted that with the development of the sugar industry in the post-reform period, the excise tax on sugar grew, which brought high revenues to the state budget. From 1872 to 1881, the excise tax on one pood of sugar was 32 kopecks, in 1881-1884 - 50 kopecks, in 1884-1887 - 65 kopecks, in 1887-1890 - 85 kopecks, in 1890-1893 - 1 ruble, and from 1894 - 1.75 rubles. The following figures show the treasury's income from the sugar excise: in 1885, the treasury received 15859.2 thousand rubles, in 1892 - 27709.5 thousand rubles, and in 1893 the amount of excise was 32698.6 thousand rubles.

In the mid-1980s, the sugar industry experienced a new economic crisis. Growth in sugar production while sugar prices remained high, low purchasing power of the population, and the formation of large surpluses led to the crisis. For example, in 1885/86, Kyiv, Volyn and Podillia provinces produced 16639 thousand poods of sugar, and 3662.3 thousand poods of this amount remained unsold by 1 February 1886. As the crisis deepened, sugar prices began to fall. While in Kyiv in 1883/84 a pood of sugar cost 5.92 rubles, in 1884/85 it was already 5.33 rubles. A sharp struggle for markets within the Russian Empire began. Ukraine and the empire as a whole were in a difficult economic situation. Therefore, sugar producers asked the government for help in exporting sugar abroad on favourable terms in order to maintain the appropriate

price level in the country and reduce costs, given the low sugar prices abroad. The government of the Russian Empire agreed to export sugar at favourable prices with a premium for each pood exported, exempting it from excise duty. According to statistical data, the total volume of sugar exported from the country was: in 1885 - 4.2 million poods, in 1885 - 5.6 million poods, and in 1891 - over 7 million poods. [18, p. 120].

Between 1881 and 1895, sugar production doubled: compared to the pre-reform period, it increased tenfold. Thanks to technical reconstruction, the sugar beet industry produced much more sugar with fewer workers. The energy efficiency of the sugar industry improved significantly during the study period, and the sugar content of beet increased, which was the main reason for the increase in production. In Ukraine, average production was slightly higher than in all of former Russia and before the peasant reform. Ukrainian sugar factories were enterprises with superior technology, and naturally, average production in Ukraine was slightly higher. In 1894-1895, production decreased due to the low sugar content of beet during the last campaign of the period under study [3, p. 12].

For example, in the sugar industry, where the capital of landlords and government officials was mainly used, a preferential excise duty of 1848 was in effect alongside an excessively high import duty, which favoured entrepreneurs but harmed the state treasury. Thus, the average annual excise tax revenue in 1857-1867 did not exceed 500 thousand rubles, while customs duties in the early 1950s brought in 6 to 7 million rubles. As a result of the development of local sugar production under protective and preferential conditions, the volume of imported sugar was steadily decreasing. The treasury suffered significant losses. In the early 1960s, it received only 2.8 million krb of customs duties. To somehow compensate for the losses, in 1863 the government took the unpopular step of raising the excise duty to 60 kopecks per pood. This significantly increased the tax burden of the sugar industry. The excise tax primarily hit the new, not yet economically strong enterprises, whose founders in the post-reform years were a younger generation of entrepreneurs, mostly not of the nobility origin. Simultaneously with the introduction of the new excise tax, the

government completely abolished tax privileges for newly established factories. These measures prevented small capitalists from entering the sugar industry. Thus, with the introduction of the new excise tax, the government was able to increase the state's revenues and protect the monopoly position of the landlord clan in this industry. Moreover, despite the increase in the excise tax, which, by the way, was later reduced and then increased again, it did not exceed 35 kopecks per pood on average, or even 20 kopecks, because sugar production always exceeded the norm The government's second step towards strengthening the position of sugar producers was the introduction in 1871 of a refundable excise duty on exported sugar as a temporary measure. At that time, industrialists received 27 kopecks of excise from each pound of sugar exported abroad. In 1873, in order to discourage sugar exports, the refundable excise tax was increased depending on the quality of sugar and differentiated. From 1875 to 1878, the refundable excise tax was increased again and amounted to 45 kopecks for white sugar, 25 kopecks for yellow sugar, and 47 kopecks for refined sugar per pood. This period in the history of the sugar industry was marked by a significant event. For the first time, sugar producers of the Russian Empire entered the world market with a large consignment of sugar to Hamburg, London, Cologne, Strasbourg, Marseille and Tsargrad. This circumstance, according to K.G. Vobly, saved the sugar industry from a threatening crisis. At that time, 3.5 million poods of sugar were exported from the domestic market. Due to the poor cane harvest, sugar prices in Western countries jumped by 60%. At the same time, there was a large drop in the Russian currency, which is known to stimulate export operations. Taking advantage of the favourable situation, sugar producers increased their exports. At the same time, in 1876, the government, in response to their demands, introduced a refundable excise tax of 80 kopecks per pood of refined sugar and white sand. In fact, the introduction of the refundable excise contained a poorly concealed bonus to the breeders. It was a deliberate step on the part of the state. In order to prevent the destruction of many sugar factories, and at the same time to eliminate the losses of a large number of people who had a source of income in the sugar business, the government was forced to cover most of the sugar producers' expenses for selling sugar on foreign markets at the expense of

the state treasury, issuing considerable bonuses for the export of sugar in the form of refunds in a much larger amount than the actual amount of excise duty per pood. In 1877, the treasury paid sugar producers 3.3 million rubles in refunded excise taxes. However, under the pressure of economic circumstances, the government was forced to increase excise rates in 1895 to 1 ruble 75 kopecks per pood of sugar. At that time, Ukrainian sugar producers paid to the treasury more than 60% of the total imperial excise duty in the industry. In 1877, the introduction by the treasury of a duty on goods brought to the Russian Empire in ringing coins led to an increase in customs duties by 30-40%. In 1881, the duty on sugar increased due to a general 10% surcharge imposed on the entire customs tariff.

This measure almost stopped the importation of sugar to the Russian Empire and strengthened the dictatorship of local industrialists in setting prices on the domestic market, which were steadily creeping upwards. Under the fundamentally new excise system of 1881, which provided for the taxation of the finished product, the tax almost doubled. However, this did not prevent the industry from gaining momentum. By the mid-1980s, there was already an overproduction of sugar. Prices for the product were falling rapidly. To prevent their further decline and losses for industrialists, the government introduced a special export premium of 1 ruble per pood for 8 million poods of sugar exported to Asian markets on 1 July 1886. At the same time, it was allowed to issue large loans secured by sugar. In 1886, 854 thousand rubles were issued against sugar, and in 1887, 732 thousand rubles. These measures did not have the desired effect, although the practice of granting export bonuses continued until 1891. During 1886-1891, sugar producers, according to their own estimates, received more than 6 million in excess profits [7, p. 18-20].

It is important to study the issue of sales of products from sugar factories in Podillia province in the nineteenth century, which by the end of the century produced 20% of sugar in Ukraine.

Thus, at the beginning of the nineteenth century, the price of a pood of sugar was on average 31.50 rubles. In the 1920s, when the sugar industry began to develop, it fell

to 7.37 rubles. With the saturation of the market with domestic sugar, the price gradually stabilised [9, p. 38].

The price of sugar imported from abroad to the Russian Empire was falling every year due to the growth of local sugar production.

The products of the first sugar factories in Podillia province were mainly used for household consumption, and later began to be sold on local markets. According to statistics, in 1852, three consignments of sugar worth 10347 rubles were shipped from the Brailiv factory to Kordelivka. As the number of sugar factories increased, and sugar production increased accordingly, its sale gradually fell into the hands of merchants who used fairs and bazaars for this purpose. One of the main centres of fair trade in the first half of the nineteenth century in Podillia province was concentrated in the town of Yarmolynets, Proskuriv district (two weeks in June and a week in December). The creation and development of the Yarmolynets fairs was facilitated not only by traditional trade routes and the postal route and the later railway, but also by the fact that there were stone buildings on the fairgrounds. They were built by Mr Orlovsky. Almost 500 merchants, including those from abroad, came to the Peter and Paul Fair every year.

It sold various goods: cattle, footwear, fabrics, metal and other industrial products, agricultural machinery, agricultural products, including sugar [9, p. 39].

It should be noted that Podillia sugar was sold not only within the province. It became a commodity for sale outside the province. In the 50s of the nineteenth century, more than 100 thousand poods of sugar out of 206 thousand poods produced in the province were sold outside the province. Important cities of fair trade were Vinnytsia, Bar, Lityn, and Mohyliv [18, p. 71].

Since the 60s of the nineteenth century, wholesale sugar was traded at the Holy Trinity Fair in the town of Balta, which was then part of the Podillia province.

The price of sugar on the domestic market was high compared to European prices. The main reason for this was that merchants and buyers resold sugar for profit, creating a shortage on the consumer market.

Thus, in the early seventies, intermediary traders and speculators began to play a major role in the sugar market, and various trade customs developed, including purely speculative sugar trading. Traders quickly started selling sugar because they needed credit. The output of individual sugar factories was growing, and production had to be technically reconstructed, all of which required huge amounts of money at the time. The banks that had emerged at that time were unable to meet the demand for capital from sugar factory owners. The private capital market and especially the capital accumulated in trade were widely used. Logically, lending led to the fact that trade was also linked to lending. Merchant capitalists, by lending to sugar factory owners, gradually took over the sugar trade. As sugar prices fluctuated greatly during the period under study, sugar became a favourite object of speculation. Alongside the efficient sugar trade, there was also a purely speculative trade. It involved capitalists, both large and small, far removed from sugar production. Speculation in sugar became especially large during periods of good fortune. The rise in sugar prices caused by both circumstances attracted the attention of speculators. They joined this upward movement, supported and forced it. Speculators bought sugar at higher prices, confident that there would be other buyers who would pay even higher prices. The wave of such optimism was sweeping through all circles connected in one way or another with the sugar business; it often went far beyond them, involving wide circles of the then-citizenship in a speculative fever. A prominent official in the Ministry of Finance, Bazilskyi, reported from Kyiv in late October 1872 that"speculation on sugar in recent months has had a strong influence on the rise in prices. According to my calculation of the sugar trade according to the bulletins of the Kiev exchange alone, it appears that from the second half of June to the 20th of September of this year, up to 7.3 million p. But speculation is expressed even more sharply by the fact that last year breeders bought 7 per cent of all sugar traded on the exchange in the mentioned months, and speculators 30 per cent, whereas in the present year it is the opposite: out of 7.3 million poods of sugar, breeders accounted for only 32 per cent. But even these figures do not fully express the activity of speculators, because in reality the breeders bought less than 32 per cent for their needs, because I know positively that some of the breeders

also speculate in sugar on a large scale, although they are not mentioned among speculators in the stock exchange bulletins". Some sugar factory owners did indeed trade in other people's sugar. They would buy it for a certain period of time from other sugar producers, giving them advances, and then sell it in small batches to wholesalers in those cities. During the period we are interested in, granulated sugar prices fluctuated greatly throughout the year, rising in the summer, especially when the prospects for the beet harvest were poor. Speculators and banks that held sugar until the summer made a lot of money then. Some owners of sugar factories, happily speculating on the sugar trade, managed to amass huge fortunes. Speculative sugar trade existed in other countries at that time as well. Sugar is a product of world trade [3, p. 127].

Sugar was retailed directly at or near the factories. Most sugar factories had their own shops. The Trostyanets factory had three shops, the Shpykivka factory had two, and the Haisyn factory had one [9, p. 503-526].

At the end of the nineteenth century. Podilskyi province fairs have ceased to play an important role in the economic processes of the region [2, p. 189]. Constant trade is increasingly spreading, respectively, sugar selling occurs through shops, benches, ham, tractors, food, establishments that prepare different dishes [9, p. 41].

In 1889, according to statistics, 16,86577 poods of sugar were sold 1686577, the local population was able to buy only 23824 pounds. The rest of the sugar was sold to refined factories, to other provinces, abroad.

In the 60's of the nineteenth century. Podilsky sugar began to be taken to Bukovina, Galicia and other Austria-Hungary regions through the merchants of Kamianets-Podilsky, Starokostiantynov, Berdichev.

Podilsky sugar was mostly exported to Belarus, Moldova. Due to the spread of railway connection, in the 70-80s of the nineteenth century. Kiev and Podilsky merchants managed to sign contracts for the supply of sugar to London, Hamburg, Marseille [3, p. 87].

Basically, through the European borders of the Russian Empire, Ukrainian sugar was delivered to Austria-Hungary, Bulgaria, the Netherlands, Greece, Egypt, Germany, Romania, Turkey, Sweden, etc. But the main market for sugar was England, which in 1895 - 1896 accounted for about 32% of its exports. The following were Persia (24.3%), Italy (24.1%) and Germany (9.7%). Domestic sugar in London was sold 3 times cheaper than in Russia. It was a dumping policy by raising the prices in the domestic market, which has a serious reflection on the position of the working population [20, p. 62].

Thus, Podolsk province played an important role in both domestic and foreign sugar trade.

### 2.3 The position of workers in Ukrainian sugar mills

The number of workers who worked on the sugar mills decreased dramatically during the crisis of the eighties; When the crisis was overcome, the quantitative composition of workers began to rise, reaching the seventy thousand people in the early nineties. From the total composition of workers for soldering of Ukraine, 1881/82 - 84, 39 %, 1894/95 - 83, 09 % [3, p. 7].

During the period under study, there is information that workers were hired from Austria. In 1873, more than a hundred men and women from Austria, who worked at the Derazhnyansky Sugar Factory, left work despite the contract for six months. Police tried to find out the cause of their behavior, to which they said that they did not like the traditions of the region, wish to return to their home. In the evening of July 26, they went unauthorized, crossing the river Zbruch near the town of Husyatin, which was proved by the Podilsky Governor. The cases where foreign workers were hired on the sugar mill were exception. Foreigners could not be treated as with their workers. Therefore, in the future they changed their mind to write workers from abroad on the sugar mill, located even in the border strip [3, p. 13].

At the sugar mill of Kyiv region and Podillya (it was named, "walking on sugar") went from different corners, most from Chernihiv region. Working at sugar factories was popular. Sugar workers were usually hired in the spring, sometimes in February, even in January, when the peasants received a deadline for paying taxes, just when the village was the greatest poverty, attorneys and agents from the sugar mills of Kyiv and Podillya began to appear. Having collected the previous certificates, the agent traveled

the selected area, reporting the peasants. Everyone who wanted, the group came to the district administration. Here they wrote an agreement, writing it into a special book of contracts. The peasants were supposed to arrive at the place of work on September 1, and if the sugar mill was still working, then the office had the right to put them on other work outside the sugar mill. The agreements assumed that in the absence of jobs at this plant, the peasants could be transferred to another sugar mill. Workers lived in barracks with artillery 100 people each. On the artel They were divided either in the villages from where they came from, or in the provinces, from where they came from, or simply in parties. For each hundred, three people were chosen - artillery, baker and kashovar, or cook, sometimes the fourth one is a guard. These elected were paid at the level with others, but did not go to work. The artilleryman played the role of old age, was alerted purity, order that workers would go to work in a timely manner [3, p. 18-19].

The factory administration gave weight to the artillery person. He was elected, of course, in the place of hiring in the presence of the district authorities. The Sugar Army looked to choose a person beautiful and certain. The agreement was often involved in the point that the artilleryman cannot be discounted without consent from the parish (until this work is over), or the factory (as they arrive at the Sugar Factory). The artillery received from the parcel should have ensured that the lawdrated workers came in a timely manner. To do this, workers selected passports and issued a general passport.

The agreements have a number of penalties and a lot: for each overdue day from 50 k. To 1 rubles; When the worker did not appear to work, he was charged with a double -sized deposit or a penalty of 20 rubles. You can see that the sugar mills are trying to introduce circular responsibility for the failure of workers. In the agreement, which on January 26, 1875 was made by the peasants of the village. New Bobovich (19 people) with a trusted person Sugar Zaitsev, was a point that set a penalty of 20 rubles. According to the "self -esteem" and the failure, with the following application: "For that we (peasants) for a tidy, we have a pineapple, we will be fined with your own, without any judicial system, and also roll our way for a friend of a circular bait." Such

a reservation was the exception, and of course, the penalty was collected from the property of "Storochyk", or from his relatives.

When the sugar mills needed extra labor, the sugar mill caused those who wanted to work more changes for the increased reward (1 rubles up to 1 rubles. 50 kopecks per day). Workers, tempted on increased earnings, became unnecessary changes, of course at the expense of their health.

# Information about the sugar factories of Podolsk province of the late nineteenth and early twentieth centuries.

Table 4

N⁰ P⁄n	Sugar factories	Number of workers	Number of foreign	Number of family	Number of family	Average earnings
	<b>a · a ·</b>		workers	workers	workers	(rubles.)
	Gaysin County		400		1.70	
1.	Gaysinsky	444	400	15	150	14
2.	Sobolivsky	583	41	300	29	10.50
3	Krasnovsky	288	70	20	-	1.20
4.	Mohyla	710	500	15	75	15.50
5.	Osipovsky	686	349	9	16	13.60
	Proskur district					
6.	Proskurovsky	444	-	32	-	13.50
7.	Satanovsky	320	51	211	26	12.50
	Letychiv County					
8.	Butnevsky	279	84	50	34	40
						kopecks.
						during the
						day
9.	Sugar Factory of	367	93	-	13	40
	the Shchedrovsky					kopecks.
	Society					during the
						day
10.	Gorodotsky	570	6	132	5	10
11.	Levadsky	713	17	135	3	10
	Litin County					
12.	Loznyan-Litinsky	149	117	15	85	12
	Severinovsky	348	8	30	5	12
14.	Levashevo-	426	12	173	7	40
	Voytovytsky					kopecks.
						during the
						day
15.	Staro-Sinyavsky	255	90	63	51	8.50
	Vinnytsia County					
16	Bratovsky	547	240	192	38	13
17	Noskovetsky	576	256	120	-	10

# Continuation of table 4

18	Hnivans	2440	965	1095	690	40 kopecks.
						during the
						day
19	Vladivsky	747	-	670	-	1.80 a day
20	Kalinovsky	455	-	400	-	12-15
21	Cordel	289	59	200	50	12-15
22	Zalivshchyna	481	311	150	290	12-15
	Baltic County					
23	Hrushkivsky	400	170	120	80	15
24	Piscicultural	424	225	40	20	50 kopecks.
						during the
						day
	Yampil County					
25	Derebchinsky	645	26	426	18	14.50
26	Dzhurinsky	474	18	258	16	13
27	Tomashpilsky	310	116	162	89	9
28	Borovsky	400	120	264	103	12
29	Myvsky	404	231	87	208	12
	Olgopol district					
30	Bershad	514	336	118	239	7-25
31	Chechelnitsky	674	-	48	-	15
32	Sokolovsky	418	-	318	_	15
33	Black	414	-	32	_	15
34	Obodovsky	292	48	159	31	15
35	Ustyansky	468	245	100	245	15
	Bratslav district					
36	Kirnassovsky	365	37	15	27	20
37	Shpikovsky	399	65	129	24	15-25
38	Trostyanetsky	915	51	104	36	15
39	Cabbage	594	145	80	70	15
40	Kovalevsky	639	25	440	5	7-50
41	Voronovitsky	265	26	7	10	80 kopecks.
	2					during the
						day
42	Stepanivsky	400	62	41	10	80 kopecks.
						during the
						day
	Ushitsky county					
43	Sigismunda and	40	18	16	10	60 kopecks.
	Vladislav Hllins					during the
						day
44	Admiral Mykola	383	189	149	135	30-85
	Chikhachev					kopecks.
						during the
						day

Source: State Archives of Khmelnitsky region. 228, op.1, cf. 1210, p. 12-82.

So, in Table 4 about the sugar plants of Podolsk province of the late nineteenth - early twentieth centuries. Statistics on the number of workers, local and foreign, as well as information on remuneration at factories are displayed.

The sugar mills used mainly hourly wages, because the work of an individual worker with the consequences of his work cannot be associated in the production process. Some differences in the work could be taken from the Berkivtsi - for example, the transportation of beetroots from kagate to the sugar mill, the removal of mud, etc. The hourly fee, depending on the unit of time, was daily, monthly and term. The most common monthly wage. The salary of the laborer consisted of such parts - cash, food and housing [3, p. 50].

"Sakhar" went to adult men, there were women and teenage boys, known under the general name of "semi-man".

Workers worked 12 hours for shift with payment per month 5 rubles. 50 kopecks. In the event of the disease, the sick worker was treated at the expense of the plant. Twice a month was driven for free in the bath.

For absenteeism, unauthorized weaning and smoking tobacco in improper places, they raised a penalty of 50 kopecks. up to 1 rubles, these fines were in favor of the office or in favor of the artel.

At the Shepetivsky Sugar Barracks where the workers lived, they were in poor condition, dirty, without ventilation. Workers slept on naked boards or dirty mats. The plant did not worry at all the sanitary condition of the barracks.

It is interesting to note that the Lipovetsky County Officer writes. "The miserable was reported to the work by the parents and the wicked on the work, the although their guards fee was received not by them, but by their relatives." The teenagers were mostly local residents and returned to their parents after their work. These data are quite detailed in detail the state of teenagers in sugar mills in the late 60's. The work of teenagers was operating to a great deal of sugar, before it happened when the situation of adolescents was no different from the position of adult workers. Ever since the laws that restricted the work of teenagers in the early 1980s, this led to the fact that they were much reduced in sugar mills. And the reports of factory inspectors note it.

In order to characterize the conditions of hiring, one should give an example of the content of one agreement that was the Arent Sugar and District Administrations in the late 1970s. These agreements, written in different provinces, for sugar -brewed sugar buns, like twins, are dropped on top of each other.

This is essentially a stencil, which hired tens of thousands of workers on the sugar mill.

So on March 1, 1877 the peasants of the village. Rubizhny, (Novozibkivsky) made a treaty with the bourgeois Berk Polonsky: 1) We hired to work in a beetroach factory, which is in the Kamenets-Podolsk province., Vinnitsa district at s. Kalinovka, for the entire time of production of work by the voluntary of work, all the employment of each worker per month (counting 30 developed days) for 5 p. 50 kopecks., And a half -worker from 3-4 rubles, as it means in the list attached to this list, of which each month is entitled to one day of rest, for which there is no deduction. "

2) for work we must act from the place of residence on August 23 and arrive at the sugar factory no further, as on September 1 of this year. If, after our arrival, the plant for some reason does not begin its actions, then we should work as the factory power will be indicated, and continue to uninhabitedly and without abetrectively until the end of the beet beet, at all times, both inside the factory, excluding only those days in which the plants are spent in general, and we should always replenish the working days and should always be in complete session and obedience of the factory power. They should work in shifts, 12 hours a day, and outside the factory from morning to evening.

Everyone who received money in a deposit has no right to send another worker for himself. Otherwise, the office ... has the right to consider him an incomplete salary. For disobedience, rudeness and neglect, the perpetrator is subjected to a monetary fine of 50 kopecks. for each time; For the abduction of factory property, the perpetrator is responsible by the law. ".

"3) If any of us, workers who have received a set of money will not come to work (altogether), or will arbitrarily leave one without completing the agreed deadline, then he is subjected to a fine, except for the return of money received against those. If

anyone does not appear in the defined period (on September 1) or for unauthorized reasons, he will make the missing days, then he must pay the guilty person. office ... a fine for each day for 50 kopecks. "

"4) In the event of an illness, the office of the plant should treat the patient in the hospital at his own expense at the plant: during the patient's stay in the hospital, the fees should not require. The bathhouse must be heated for us for free twice a month".

"5) The office should let us go to each worker and a half -worker for 29.

Millet 25 f., Buckwheat 15 p., Sala Pork C F., Lenten oil 2 p., Beef 10 p., Slide fish 5 p., Salt 4 f., Cabbage in the evening and in the morning for an artel (100 people), and a half buckets and for the Kvass venue 2 f. rye flour per person per month."

"6) In the case of the grunts we have received, we workers have every right to sell, but to anyone else, as a office ... at the prices existing in these places; as well as for the redemption of grunts, we also have to pay the office at the prices existing in those places."

"7) The payment of money to us, workers, should be as follows: when this condition is concluded, we workers received from the attorney ... 296 p. 70k. According to the attached at this list. And for the development of the deposit, the office is obliged to issue forward in two months, and the rest, how much will be due to us, at the end of the work."

"8) When our residence is released, we, workers, are obliged to make a way to Kyiv to our capital, and from the city of Kyiv, the attorney ... is obliged to deliver us to the Kalinovsky Sugar plant by machine, not at our salary. We must receive a passport to our account, which to be awarded to the attorney."

"9) In the case of a crop failure (Buryak) in the Kalinovsky sugar plant, a loyal one ... has every right to prescribe another sugar factory for us, and we are not entitled to refuse."

"10) We, workers, must choose one reliable person from our environment to receive and distribute the provisions. He must be considered both the elder and is obliged to observe the serviceability and generally at the execution of the contract, at this we vouch for each other in a circle, as for the resulting money, and generally for the execution of all the clauses of this agreement, if, God, someone, either before entering the plant, is ill or the factory is ill or gets sick or gets sick or gets ill or It will die, then the resulting money should be recovered from the property;

If there are no one, nor relatives who could return the deposit, then they are not subject to recovery. The semi -workers are hired with the consent of their parents and trustees, women with the consent of their husbands, on which there is the obligation of this contract. As well as smoking tobacco in the factory is strictly prohibited. For cooking food per 100 souls, 3 employees of a person are relied on to the office."

11) if there was any misunderstanding between the office and us in something under this agreement, then, leaving the work, they must choose two people from the artel, to file a complaint to the proceedings to the local authorities, and otherwise, if we left the work, we will answer the plant with a circularity by their property with our property "for all the losses that can arise from our part, and it is limited to it, that each of us should receive from us, that each of us should receive from Office of the plant by receipt in good performance of this agreement."

"12) The real agreement to us, the worker, was read aloud with two extraneous witnesses ... we understand it completely. By ignorance and misunderstanding, we workers have no right to dissuade" [3, p. 21].

The contractor had to hire local people who knew production, who could be for drivers.

An hour before the change, the workers had to be ready in the barracks, they had to be accompanied by a sacrifice designed from the contractor. For each employee who was late for work, the contractor paid a penalty of 15 kopecks. When several people did not appear to work and because of that the sugar mill stopped work, then for each lacking worker, the contractor paid one ruble, when the sugar mill stopped, then every half an hour of delay in the production of 15 rubles, and for each next hour 30 rubles. Penny to compensate for the losses suffered by the sugar mill.

The contractor had to make sure that the work was carefully taken and that the workers did not throw their work assigned to them, otherwise the contractor was

imposed on the loss. He was also fined for the bad behavior of workers. The contractor had to look that the workers did not steal sugar and other things.

For 30 made changes, the contractor received 14 rubles for a full worker. 60 kopecks, and for a half worker 9 rubles. 90 kopecks. on his food. The agreement with the contractor accurately defined the nutrition of workers. If it happened that the workers complained about bad food, the sugar mill ate the workers at the expense of the contractor. When it was necessary (for eg, for example), the sugar mill was entitled to release hot tea to the workers, with the contractor to take half of the expenditures. The contractor had to have a writer in the barracks in the barracks.

The sick sugar mill was treated at their own expense, but the contractor had to feed them.

Thus, the contractor had extremely wide authorization: he not only put workers on the sugar mill, but had to care for work, was responsible for working discipline at the sugar mill, monitored the morality of the workers. In general, the contractor controlled all the work processes on the sugar mill.

His product was determined by the difference between the price paid by the sugar mill for the head, and the cost of wages and food to the same head.

Interestingly, the agreement specifies the age according to which they were taken to work.

The highest limit was the forty -year -old age. Therefore, the factory administration believed that the older people are not able to work the desired intensity. On the Yanushpil sugar mill, the contractor not only looked after all the work on the sugar mill, but even kept the hospital (1887).

Another type of contractor's relationship to the sugar mill was that the contractor only put workers. Sometimes this recruitment was carried out by factory servants, or, as they were called on the Right Bank, officials.

From a number of conditions it is evident that some contractors served several sugars, 5 - 6, such a contractor was settled by proxies to recruit workers. Obviously, such contractors had to have a widely branched agency. The same contractors have

come around this for many years and had time to enslave workers, who often became their non -paying debtors.

Sometimes the contractor took over to supply all workers, with the exception of skilled craftsmen, caretakers who hired them directly. Such division was explained by the fact that the laborers were hired in distant provinces, while qualified workers mainly belonged to local people. It also weighed that the laborers were hired for the season, while some categories of skilled workers worked all year long.

The factory translated into contractors responsibility for the failure of the workers, collaborating with them a fine for late or incomplete appearance of the working artel. The contractor seemed to be reinsured by the risk of working or leaving the workers. This was, from the point of view of the owners of sugar, the meaning of the existence of this kind of institute.

Both contractors and facilities, in order to provide themselves with labor, observed the following two rules: 1) hired workers as far as the villages distant from the sugar factory, to make it difficult to escape workers who did not want to stay until the end of production; 2) Tried to do everything to make it between the workers at least one village.

Lipovetsky County Officer, who conducted an investigation from the Kiev governor in this case, tried to emphasize in his report, in his report, in his report, in his report, "That the director of the Kalnik sugar factory Enny enjoys a good reputation in society and that there was no complaints about it from the workers at the factory or other persons, and that the priest Vasily Voinarovsky has been with the administrator of the plant in the most found, but from last September, these good relations were violated by the priest, on the occasion of non -enforcement of him at the factory The director of Enny part of the beetroot, completely unbearable in his bad quality, as a result of which the priest Voinarovsky became hostile to the extreme limits." The investigator confirmed the fact of violence against workers.

The above facts quite vividly depict the competition between sugar factories for workers, which sometimes took the form of fighting and catching workers.

In terms of qualifications, there were two groups of workers in sugar factories: the larger group consisted of workers who worked in shifts inside and outside the sugar factory and had no specialisation of labour, they could be called labourers. The second group, smaller, consisted of various craftsmen and workers who had specialised training and performed a particular type of labour. The first group consisted mostly of guest workers.

These workers were hired under letter contracts by artels, and only some of this group of workers were hired under oral contracts. Workers in the second group were recruited from the local population.

Labourers at the sugar factories were essentially peasants who worked in agriculture for most of the year and only in autumn, when the field work was over and the sugar factories were starting to work, did they go to work at the sugar factories.

When the sugaring was over, they returned to their regular agricultural work. In essence, this was a job that coincided with the dead season in agriculture. The workers of this group, without any special labour skills, worked in jobs that did not require special knowledge. These included yard work (hauling beetroot, firewood, straw, mud, guarding, washing and sweeping floors, cleaning and cleaning cauldrons, loading and unloading chambers, working in beetroot sheds, washing, bone-cutting, packing, etc.). The second group included apparatchiks, machine operators, foremen, steamers, senior workers, caretakers and others. The following professions were usually represented in the sugar factory workshop: turners, locksmiths (the largest group), coppersmiths, blacksmiths, foundry workers, carpenters, shinglers, limestone workers, and bricklayers. Skilled workers were called factory workers (machine operators, machinists, locksmiths, etc.) in the terminology used at the sugar factory.

These two main groups of workers did not have the same position at the sugar factory, they received different wages and lived in different conditions.

Among the labourers, in some sugar factories, there was also a group of freelancers, or, as they were simply called, the boss team. This was a declassified element that contractors recruited at Kyiv markets. Many of them worked only for half

a month, a month, two months at most, and then left. Quite often, there were drunks among them who would drink for days on end every time they received money.

In terms of age and gender, sugar workers were divided into workers and semiworkers; the second category included women and teenagers under the age of 20. The weak were also included in this group.

Work at sugar factories was divided into seasonal work during production and work at other times of the year. Production at most sugar factories began in September and ended in December. In some cases, it lasted until February and into March.

During production, all sugar factories worked in two shifts; from 12 noon to 12 midnight and, vice versa, from 12 midnight to 12 noon. The Tarashchany district clerk wrote about this, That 'All workers are divided into two shifts and each of them works 12 hours a day, i.e. workers of one shift work from 12 noon to 12 midnight and the others from midnight to noon; each shift is given half an hour to rest and receive wine and food rations'. Midnight, and the others from midnight to noon; in each half of the working time the shift is given half an hour to rest and receive wine and food rations". There has been very little female labour in the sugar industry since the introduction of diffusers: in the early 1980s, the percentage of women in the workforce did not exceed 13.5%, and in Ukraine it was 13.69%. At the end of the nineteenth century, women's labour was used slightly less (11%). In the pre-reform period, adolescents made up about 1% of the workforce, women up to 27%, in all of former Russia, and up to 30% in Ukraine. Women's labour was used less due to the technical reconstruction of the sugar beet industry: wick sugar mills were replaced by steam mills and diffusers were introduced. Women's labour was widely used in the processing of beetroot [3, p. 11].

The working conditions of workers at sugar factories should also be noted. The working conditions in sugar factories during the study period were extremely difficult. The general working environment was unfavourable. On the one hand, due to the high temperature in the working rooms and repeated drafts of cold outdoor air, and on the other hand, due to inhalation of harmful gases, dust (lime, sugar, coal) and contact with

liquid substances (beet mud, molasses), which, covering clothes and skin, caused certain occupational diseases.

During the period we are interested in, the hardest jobs at sugar factories were the following: work around the fermentation caddies, where workers, usually naked, unloaded bones from caddies up to three arcs deep. Standing for 12 hours in the stinking fermentation caddies, they threw the cereal above their heads. According to doctors, work in the leaven pits was dangerous during the first period of opening and unloading. A naked labourer would climb into the pit with a shovel and throw the grist up onto the floor. During this work, workers often fainted. In the molasses factory, where workers had to stand barefoot in molasses for 12 hours, the corrosive effect of the molasses caused pustules to form on their feet. "The workers would climb into the sticky, hot molasses naked, and use a shovel or a bucket to pick up the water that was lowered into the tray for them by other workers. Working in molasses caused frequent diseases of the skin and subcutaneous tissue. A slight scratch, due to the resulting inflammation of the skin, rendered the worker unable to work."

The hardest work was in the drying room, where the finished granulated sugar was dried; in this department, the air temperature reached 30-40°. "The general view of the worker who ran out of drying is the way that Likar is like that: the skin is red, a drop of large sweat on the face, back, stomach, especially the chest are directly covered with streams of sweat. Sweat rolls in the form of drops rolling over the surface of the body. The body is trembling, the nostrils in motion, the tongue is dry, the pupils are expanded. An expression of fatigue and despair in the eye. "

The most common diseases on the dryer include rheumatic and traumatic.

There were very dangerous injuries on the dryer of the refinement when the sugar head fell on the body. With such a fall, the foot seemed to split.

However, these works were not as difficult as the work in the steamic, on the grater of Kostopal and the circle of oppression of Lipchinsky. In the steam or nodemark, the worker was unchanged for 12 hours, the fuel had to throw fuel once and then. Only occasionally was arranged to protect the workers, some sections against cold wind and frost, usually the breasts of the worker were turned to the ignited doors

of the steamboats, and the back suffered the action of the wind and the drafts of cold outflowing air, which was struck into the steam. It should be added that the steam trainee worked for the most part, or in the shirt itself, it is clear that such working conditions formed favorable conditions for rheumatic and flu diseases.

In Kostopal workers, scattered on a hot stove of damp, bone cereals, loaded and unloaded cartridges with bone cereals, which were heated in furnaces. The workers during the whole shift stood on cast iron stoves, which their temperature reached 60 - 70  $^{\circ}$  or more. And that the boots did not withstand such heat, they had to wear wooden boots, or special posts with rough lining, but all this had little weakened the effect of the hot slab on the worker's feet.

Harm powder (as bone bones), which was in the bone, had a detrimental effect. With this gunpowder, the workers were breathing when they unloaded the crown from the cartridges, transferred it to the cold, squeezed it in the sieves and others.

As noted by doctors, working conditions in the cosparal department were the best of health as possible, recognizing the kostopal for one more acquistent and most difficult departments for workers. It was necessary to work without clothing in the damp, hot and stinking atmosphere. When the wet glove was deployed, many steam and gases, ammonium and hydrogen sulfide were released. A couple mixed with gases, eats eyes, worker sneezes, difficult to breathe. As a dry cereal was swollen, a small carbon powder was lifted on the stove, which reached deep into the lung cloth.

Usually on the sugar mills, the Kostopal room was located in the worst room. Coal powder and dirt with a rough layer were covered with walls, ceilings and windows, preventing sunlight. The plant did not take any measures to eliminate or at least weaken adverse conditions that adversely affected the health of workers.

Coal gunpowder, mixed with the sweat of the worker and water vapor around, suffered on the skin of the body of various noise processes. The worker's skin was covered with black, stinking, sticky dirt, and his linen was saturated with stinking grease.

In Kostopal, there was usually a large cadib filled with warm ammonia water, where workers, as the change ended, was washed. The water was rarely changed, everyone was in a hurry to wash and go to dine or dinner.

Coming out of such a vat, the worker was wiped with his dirty linen, which he put on.

At the Yurkovsky Sugar Factory, the landowner of Satatytskyi on November 12, 1873, 3 people were killed from the explosion of the steamboat, and 4 received very heavy burns. Unfortunately, such cases were not uncommon.

Accordingly, there were a lot of information about the accidents on sugar mills. Thus, on July 27, 1874, at the Uladovsky Sugar Factory, during the cleaning of a steam shop, a Jewish boy Mordko Kerzhner, 14 years old, threw a lamp with hot kerosene and died of burns 6 hours after 6 hours.

In December 1874, working at the Yaltushkovsky Sugar Factory, the 18-yearold boy was injured, incompatible with life. He squeezed his wheel.

In March 1884, the right hand was torn off by the worker of the Trostyanets Sugar Factory [3, p. 45].

And there are many such examples that explains how irresponsibly related to the management of sugar mills to unsatisfactory working conditions that led to injury to workers or their death. A brief report of a typhoid fever on the sugar mill, which died 20 people. The Sugar Factory was sent to the Podilsky Medicine Inspector of Berg Doctor. He argued that the sugar factory was raging typhoid, which was caused by a tight room, lack of ventilation, wooden floors and more. This case prompted the Podilsky medical department to issue special rules for factories. The extract from these rules was submitted, considering how hospitals were arranged on sugar mills. These rules were of great interest as the first attempt from local authorities to intervene in the relationship of workers and entrepreneurs. This attempt had no imitation in other provinces, making exception in the 1970s; However, she testified that the view of local authorities on this issue was equal since the early 1960s. We will submit these rules in the extract: "Rules on the installation of premises and hospitals in factories and factories of the Podolsk province." 1) Factory factory premises where the work is
actually the work or the workers are constantly located should be well lit and spacious, so that each person has to at least 14 cubic meters or 11 cubic meters. The fathoms and apparatuses in these rooms should be arranged in such a way that they are allowed to allow free free The movement of the workers, both in the factory itself and in the buildings or factories, the ventilation should be arranged, through the fans in the windows and the arrangement of furnaces with good traction or special other devices at the discretion of manufacturers or breeders. "4) both in the factory or factory, and in the barracks, and in their own arranged movable boxes for cleansing and special holobes for urine. "5) The barracks should be arranged accordingly to the number of workers separately for women and men according to the calculation of 11 cubic meters. Sastric on a person, the floors should be wooden in the barracks and bunks are arranged, but not two floors. "6) For workers living constantly at a factory or a factory, and for family ones, separate premises should be arranged; when arranging them, they should also take into account the amount of air of 11 cubic meters. The flocks. The floors should be wooden or stone, and also special kitchens and corrals for livestock are arranged so that this latter would not be in housing. "7) Stairs in all buildings should be with the railing." 8) the kitchen and the dining room should be arranged separately from the barracks. "9) at each factory or factory, where more than 10 workers, the bathhouse should be arranged." 10) The administration of the factory or plant should strictly observe the cleaning buildings in all of the above buildings, and during the epidemic should take care dwellings. "11) The plants must be equipped in sufficiently water, a good for drinking." 12) food released by workers should certainly be fresh and benign. "13) Children of 12-14 years should not be used to work, starting more than an expert age, children can be used to work, but by no means about cars or at night".

The Provisional Commission in St. Petersburg made a project for factories and production in St. Petersburg and county. In December 1860, the Ministry of Internal Affairs sent this project to the Governor-General of Kyiv, because he consided the validity of these Rules, according to the Minister of Finance Minister, to distribute to all other provinces. The Governor-General instructed the heads of Kyiv region and Podillya to select from the most famous factors of thought about the extent to which

these rules can be adapted to local conditions. From the response of the Podilsky governor to know that the local Didichi-tserrows not only disasital the case about the introduction of these rules on sugar mills, "Ale simply expressed the opinion that the mentioned rules are useful and necessary in areas, where the factory industry is highly developed in the Podolsk province. They can adversely act and even delay the development of this industry, in which the region needs more and more."

It is interesting to note that these rules provided for only improving the living conditions of workers, measures to protect them from accidents and reward workers for injury. These rules were not concerning the rationing of wages and long -term working days, only for minors the commission was able to establish control over their work.

The Podilsky Governor was negative about the establishment of a government inspection for the care of factories and production, because "The introduction of supervision will only exalt the costs of the content of persons, as it seems, in the Podolsk lips. Excessive and the intervention of the bureaucracy in the barely arising about the meniors can increase apathy to enterprises of this kind, the subject for the entire region."

"Separating the opinion that with the weak development of the factory industry in the Podolsk province. All rules on the procedure for work in the factory, always more or less constraining the development of private activity, are currently not bringing any significant benefit, could impede the spread of industry", The Podilsky Governor did not consider it possible to apply the rules sent from the Ministry of Internal Affairs, in Podillya [3, p. 104].

## Conclusions

At the end of the nineteenth century. Three provinces of the Right Bank produced 69% of sugar of the entire empire. Thus, they were the main areas of sugar production both in Ukraine and in the Russian Empire in general. The southwestern region was the main sugar area of the empire.

The founders of the first sugar plants of Ukraine were landowners, whose purpose was to find new sources of increase of income of landlord. On sugar mills on

which sugar juice was evaporated in open boilers on "bare" lights, processed sugar beets from landlords treated with serfs. Their owners received solid income. Compared to the tithes of grain, every tenth of sugar beet gave income 6-8 times more. Sugar production began to develop rapidly. Since the start of the Makoshinsky Sugar Plant (1824), after 18 years, 52 enterprises have already operated in the territory of Ukraine, and from 1842 to 1848 the number of sugar plants increased to 192, that is, in 6 years their number increased almost 4 times. The majority of them were built in Vinnytsia region, Kyiv and Podillya. In 1848, 81.2% of sugar from its total production in the entire Russian Empire was produced at Ukrainian plants. Sugar beet crops in Ukraine have increased continuously. In 1913-1914 in Ukraine the total area of crops was 538 014 hectares, 201 sugar factory worked, their total daily capacity was 1 142 283 c (114 228.3 tons) of beet processing. On average, one plant processed 5 683 c (568.3 tons) of beets per day, in total 11 080 800 cc (1 108 080 tons) of sugar was produced.

At the end of the nineteenth - early twentieth centuries. In Ukraine, three districts of development of the sugar industry were recognized: Kharkiv, Poltava-Chernihiv and Right Bank District, which was characterized by powerful sugar mills of commercial type and broad participation in the management of foreigners, already developed beetrooting and the presence of large refinery. After the Kyiv region, which ranked first at the cost of production and the number of workers - thanks to the powerful development of the sugar industry, the next position was the next position of Podillya, where the sugar affairs also flourished.

The scientific study noted that the production of sugar occupied the main place in the industrial production of Podolsk province, which was 85 %.

Podilsky sugar was sold not only within the province. He became a commodity of the sale beyond. He was taken to Bukovina, Galicia and other Austria-Hungary, Belarus, Moldova. In the 1970s and 1980s, thanks to the spread of the railway network, Podolsk merchants managed to sign profitable contracts for sugar supply to London, Hamburg, Marseille.

To work in Podillya sugar mills, they were hired from different corners in the spring. In the second half of the nineteenth century. Working at sugar factories has

become popular. It was difficult to work in extremely difficult conditions in the absence of safety standards. Therefore, many sugar mills were often injured.

In the early eighties of the nineteenth century. Seven percent of teenagers worked on the sugar mills. With the adoption of factory laws on the protection of adolescents, their number has decreased.

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# **3.** Ethical dilemmas of artificial intelligence: balance between innovation and moral values

Nowadays, the sharpening of the relationship between ethics and artificial intelligence (AI) is becoming increasingly important in the context of the growing influence of technology on modern society. The question that arises, which the research process is tasked with answering, is: is it possible to clearly separate the moral principles that regulate human behavior from the principles that guide intelligent algorithms used in the latest technologies? This task is complicated by the fact that the rapid development of the technological sphere requires an updated approach to understanding and forming ethical norms. It is worth emphasizing that the line between ethics and artificial intelligence remains blurred, as modern technologies are increasingly penetrating various aspects of human life - from medicine and transport to communications and other industries. And although intelligent systems are able to help solve complex problems, increase convenience and efficiency, at the same time they can come into conflict with ethical norms and values that form the basis of human behavior.

Actually, the very idea of artificial intelligence is to create machines or programs capable of imitating human thinking, learning, decision-making and solving complex tasks, and today this is no secret to anyone. AI seeks to automate intellectual processes - from speech recognition to event prediction or even creativity. Its application already covers medicine, education, transport, business, security and other areas. The context of our research sets us the goal not only to identify the current challenges of artificial intelligence as such. And to consider this area of science in the context of ethics itself. Ethics, the main idea of which, in the context of AI, is to develop technologies that will be transparent, fair, safe and humane.

The main issue of our research focuses on the key contradiction between the rapid development of AI technologies and the insufficient level of normative and ethical regulation. In modern society, artificial intelligence is increasingly penetrating

various spheres of life - from medicine and education to military affairs and public administration. At the same time, the risk of ethical conflicts associated with decisionmaking by autonomous systems, the use of personal data, discrimination, manipulation and responsibility for the actions of AI is increasing. Despite technological progress, the ethical understanding of such challenges remains fragmented and does not always keep up with the pace of change. The problem is that the lack of clearly formulated ethical standards and international consensus on the development and use of AI can lead to human rights violations, increased inequality and even social destabilization.

Researchers in the field of our research emphasize the importance of transparency, fairness and responsibility in the development and use of AI. They also call for the creation of international standards and codes of ethics to ensure the safe and ethical use of AI. Among the famous scientists, we can highlight Peter Singer - a famous philosopher-ethicist, whose work on the ethics of AI contributed to the creation of a chatbot that stimulates ethical reflections using the Socratic method, Jason Gabriel - a political theorist at DeepMind, who developed ethical recommendations for autonomous AI agents, emphasizing the need for transparency and protection of user data. Kate Crawford - author of the book Atlas of AI, where she explores the impact of AI on society, including labor exploitation and environmental consequences, Demis Hassabis - CEO of DeepMind, who emphasizes the need for international cooperation for the safe development of AI, especially in the context of creating artificial general intelligence. Among the Ukrainian scientists, we can highlight Rimma Berdo, Volodymyr Rasyun, Vitaliy Velychko, who explore the ethical aspects of the use of AI in scientific research and education.

The aim of our research is to analyze how AI can interact with people and society in a responsible and ethical way, taking into account issues of security, transparency, privacy, fairness and lack of bias. This includes studying how AI can affect decisionmaking, interaction with users and its possible psychological and social consequences. In addition, the research focuses on the importance of adapting legal and ethical standards to rapidly evolving technologies to ensure their safe and correct use.

To begin the analysis of the direction of our research, we will begin by defining its key terms. Artificial intelligence is a concept that embodies the desire to create systems that can think, learn and make decisions like humans. Its essence lies in the ability to process large amounts of information, analyze it and act on the conclusions obtained. Thanks to this, AI can not only perform tasks that traditionally required human intelligence, but also develop in the process of learning.

The ethics of artificial intelligence emerges as a natural response to the impact of these technologies on society. It encompasses issues of moral responsibility, transparency, equality, and security. The goal of AI ethics is to ensure that technologies serve the benefit of humans without violating their dignity, rights, or freedoms. In this context, ethics is a bridge between technical progress and humanistic values [1].

One of the main aspects of the ethics of artificial intelligence is to determine the limits of its development, taking into account moral norms. This requires the development and establishment of ethical standards for the use of AI. For example, it is necessary to create principles that guarantee the absence of discrimination and the protection of people's privacy from inappropriate interference. Artificial intelligence can be used to achieve a variety of goals, from the automation of everyday tasks to the creation of new products and services. However, there are situations when the capabilities of AI exceed ethical norms. For example, its use to manipulate information or violate the privacy of individuals. Another key issue is balancing ethical norms with the possibilities of technological progress. For example, how to guarantee the safety and protection of people's privacy when applying AI in areas such as autonomous vehicles or medical systems. It is important to find a line between adhering to ethical principles and using technology to achieve useful results [2].

In the course of our study, we will once again emphasize that defining the boundaries between ethics and AI is an important step in ensuring sustainable and ethical development of technologies. This helps to avoid potentially negative consequences from the use of AI and guarantees the protection of people's rights and freedoms. Therefore, the distinction between moral principles and the possibilities of technological progress is a key aspect of the discussion of ethics and AI.

Here are some interesting facts. In 2024, the Ministry of Digital Transformation of Ukraine presented a "White Paper" and a roadmap for regulating AI. These documents provide for the gradual implementation of regulations harmonized with the European AI Act, with a focus on protecting human rights and supporting innovation. It is planned to introduce voluntary codes of ethics for business, create a "regulatory sandbox" for testing solutions, and launch a responsible AI portal. No less important and relevant is the fact that Ukraine is actively using AI in defense, in particular in drones and facial recognition systems. For example, the partnership with Clearview AI raises concerns about privacy and mass surveillance. Use of AI in drones: AI drones in Ukraine achieve 70–80% accuracy in targeting, which increases efficiency, but there may also be ethical questions about the autonomous use of force.

And what about public opinion regarding the ethics of AI? As statistics show, as of the end of 2024, the beginning of 2025, we have the following picture. According to the survey results, the majority of respondents - 73% - believe that artificial intelligence can make life easier. At the same time, 57% of participants express concerns about its progressive development, which indicates a certain level of concern among the population. 45% of respondents believe that the development of AI requires legislative regulation, which emphasizes the relevance of legal and ethical aspects in this area. It is noteworthy that 34% of respondents do not know what artificial intelligence is, and 27% could not decide on their opinion at all, which indicates an insufficient level of awareness and the need for broader public information.

Moral values and ethical principles have always played a key role in the life of society. However, with the development of modern technologies, new challenges have arisen that question traditional ideas about morality and ethics. In today's world of rapid technological progress, it is increasingly difficult to draw a clear line between ethical and unacceptable. This poses a threat to our established moral principles and rules of behavior. One of the main challenges is to determine where what is ethically permissible ends and what contradicts moral principles begins. A vivid example is the development of artificial intelligence, which raises questions about the ethics of its use in the military sphere or the possible impact on the confidentiality of personal data.

Moral dilemmas associated with technological progress are especially relevant in the field of genetics, where editing human DNA becomes possible. This raises serious doubts about the ethics of interfering with natural mechanisms and may carry potential risks for future generations. In order to correctly distinguish between moral aspects and technological achievements, it is necessary to take into account not only personal beliefs, but also the general social context. When making decisions about implementing new technologies, the principles of social justice and environmental protection should be taken into account.

Therefore, ethical issues that accompany technological development rarely have simple answers. Their solution requires constant public dialogue, in-depth analysis and a clear definition of the boundaries between morality and scientific and technological progress.

A vivid example of this is again the statistical data of a survey of Ukrainians regarding their attitude and interaction with AI. In our opinion, the obtained figures do not cease to be interesting.

Above, we have already provided statistical data on the perception of AI by respondents. At this stage, we want to continue the chosen direction and analyze the fact of trust in the texts offered by AI.

In 2024, 34% of respondents in Ukraine trusted texts created by artificial intelligence, while 25% expressed distrust; at the same time, 42% of those surveyed could not distinguish such texts from those written by humans, and only 20% believed that they were able to recognize them. Only 16% of Ukrainians believed that AI improves media content, while 35% believed that it worsens it. In total, 79% of Ukrainians knew about the existence of AI, but only 29% had experience using it, in particular, 33% used ChatGPT, mainly young people aged 18–29 (47%) and residents of Kyiv (46%). As we can see, according to the survey results, a quarter of respondents simply do not trust the information received. In our subjective opinion, this position can be explained by the fact that AI is currently a fairly new concept in the global information space.

In the process of developing artificial intelligence, various ethical challenges arise, in particular those related to privacy, security, fairness, autonomy and responsibility. Ethical principles play an important role in determining permissible actions, contributing to the protection of human rights and the harmonious implementation of AI. They provide the basis for interaction between people and AI, based on justice, efficiency and compliance with ethical norms [4]. With the development of artificial intelligence and modern technologies, there is a need to clearly delineate the boundaries between ethical principles and technological progress. This issue is especially relevant in the context of the impact of AI on the moral values of society. Moral values are formed on the basis of norms and principles that regulate the behavior of people in the social environment. AI, having the ability to process large amounts of information and make decisions based on them, can influence the transformation of these norms and principles. One of the key challenges is separating the decisions made by AI based on data analysis from those that are morally acceptable to society. Can AI, guided only by objective information, without taking into account the ethical context, cross the line of morality? This question requires deep reflection and the establishment of a clear ethical framework.

In our opinion, another important aspect is the impact of artificial intelligence on moral values, in particular on our ethical beliefs and attitudes towards other people. AI is able to analyze personal information and behavior patterns to form decisions or recommendations, which can create risks to privacy and give rise to serious ethical dilemmas. That is why it is necessary to introduce clear rules and principles regarding the collection and use of personal data by AI systems.

Of course, all these issues require serious attention and public dialogue in order to achieve harmony between technological progress and the preservation of moral guidelines. Establishing clear ethical norms is a key step to ensure the responsible and ethical use of AI, which will allow preserving values important to society. The issue of demarcation between technological progress and moral principles is becoming increasingly relevant in the context of the rapid development of artificial intelligence.

Today, it already has a significant impact on various areas of life - from healthcare to the economy and is increasingly integrated into our everyday lives every day.

We would like to emphasize that in the above context, ethics takes on special importance, as there is a need to form moral principles that should guide artificial intelligence systems. This becomes extremely important, since AI is able to influence the lives, freedoms and rights of people, as well as generate new moral challenges that society has not faced before.

One of the key ethical issues related to the development of AI is the establishment of a boundary between technological progress and moral principles. This task is particularly difficult, since technologies are constantly evolving, while moral principles are shaped by social norms and values, which can also change over time. We believe that to overcome the ethical challenges associated with the development of AI, it is necessary to create clear principles that would allow separating technological progress from moral principles. In this regard, it is important to take into account diverse points of view, involve experts from different fields, and actively involve the public in the discussion. In addition, ethical standards for AI developers should be developed, based on the principles of fairness, safety, transparency, and responsibility. This will help ensure that artificial intelligence works for the benefit of people and does not create threats or harm.

Artificial intelligence can perform a wide range of tasks, from decision-making and program development to data analysis and other functions. However, its use can pose risks of violating ethical norms and principles. That is why it is important to clearly define the boundaries of the use of AI in accordance with generally accepted ethical standards. One approach to such a demarcation is to formulate principles that should regulate the functioning of AI systems. These principles should be based on universal human values and ethical norms. For example, AI should operate in accordance with the principle of integrity, without causing harm to people or society. Another approach is to establish specific limitations and parameters within which AI should operate. These can include settings that prevent privacy or discrimination. It is also important to consider the context in which AI is used. Different situations require different levels of ethical control: in some cases, a more flexible approach is possible, while others require strict standards of safety and accuracy.

The ethics of artificial intelligence cover many important aspects that go far beyond simple technical implementation. One of the main issues is the responsibility for the actions of AI. If AI makes decisions that lead to errors or even harm, who is responsible? Should responsibility be distributed between developers, users, or the systems themselves? This question becomes especially important in areas such as medicine, where a mistake can be critical, or in transportation, where AI can operate on autopilot.

Transparency of decisions is also an important topic in AI ethics. Many algorithms operate as "black boxes," where the outcome is known, but the path to it is not always clear. This makes it difficult to understand why the system made a certain decision, which can have serious consequences, especially when it comes to affecting people's lives. Therefore, one of the main requirements for ethical AI is to ensure its transparency, that is, the ability to understand and explain how the system came to its conclusion.

Another important aspect is the issue of discrimination and bias. Algorithms can reproduce bias that was embedded in the data on which they are trained. This can lead to AI, even without intention, making decisions that discriminate against certain groups of people. Therefore, it is very important for AI developers to pay attention to ensuring that the data is representative and free of hidden biases.

No less important is the issue of privacy and data protection. AI often works with vast amounts of personal information, which increases privacy risks. AI ethics therefore involves creating norms and rules for how data is collected, processed, and stored to ensure that people's rights are protected. And, of course, there are issues of fairness and access. How can we ensure that AI technologies are accessible to everyone, not just a select few? How can we avoid digital inequality so that AI does not exacerbate social or economic disparities? These and many other issues require careful consideration and ongoing discussion to create an ethical framework for the

development of AI that will benefit society and ensure the fair and safe use of this powerful technology.

Another interesting fact in our opinion is that, formally, artificial intelligence is not prohibited in writing scientific articles, but its use raises a number of ethical and practical issues that require special attention. One of the main problems is the issue of authorship and responsibility. In scientific practice, it is important that authors are responsible for the content of publications, and if AI creates the text, the question arises as to who should be responsible for possible errors or inaccuracies.

Also, the use of AI to write articles can lead to the spread of misinformation. AI can generate texts that contain errors or do not take into account all the nuances of the study, since algorithms cannot always accurately understand complex scientific concepts or context. This creates the risk of publications that do not meet high standards of scientific accuracy.

Another problem is the risk of plagiarism or lack of originality. AI can create texts that are similar to already existing publications, which can violate academic standards and requirements for originality of research.

Finally, there are issues of ethics and integrity: scientific papers should reflect real research and the results of scientists' work. The use of AI, which creates the illusion of human work, may violate the principles of academic integrity and transparency.

Next, we would like to focus on the prospects for the development of artificial intelligence. The prospects of artificial intelligence for the future open up many opportunities for development, but at the same time pose many challenges. One of the main trends is the further automation of processes, which will lead to increased efficiency in production and the service sector. However, this also raises concerns about the reduction in the number of jobs, which will require society to adapt to new conditions. For example, AI promises significant changes in medicine, where it can become an important tool for improving diagnostics and developing individualized treatments. Personalized medicine based on AI will be able to predict diseases at an early stage and provide more accurate recommendations for treatment. In addition, AI

can change the approach to prevention, health monitoring, and even in the field of genetic research.

AI technologies are also actively penetrating the creative industries. Already today we can see its use in music, painting, literature and cinema. In the future, new forms of cooperation between people and AI will likely emerge, which will allow for the creation of unique works of art. However, this process raises questions about the nature of creativity and the role of humans in art.

On the other hand, the development of AI requires the resolution of serious ethical and legal issues. How to ensure that artificial intelligence does not violate people's privacy and does not pose a threat to their rights? How to properly regulate the use of AI in areas such as law enforcement, military technology and intelligence? The security, transparency and ethics of decisions made by AI will determine the direction of its development [5].

It is obvious that AI is gradually becoming an important part of everyday life, including through integration into "smart" systems for home and work. Robots, personal assistants, automated vehicles and many other new technologies will change our understanding of convenience and efficiency in various areas. However, this will also require a review of many social, ethical and legal norms to ensure their safe and equitable development.

It is becoming a powerful tool for improving the quality of life, in particular in matters of access to information and knowledge. With the development of artificial intelligence systems, people will be able to find solutions to complex problems faster, receive personalized advice in real time and solve tasks that previously required significant human resources. This will apply not only to the field of education, but also to social services, where AI can help optimize service delivery or even in city planning, adapting infrastructure to the needs of each citizen.

However, as we have repeatedly emphasized, with all the advantages comes the question of control and oversight of the use of such powerful technologies. How to ensure a balance between innovation and security? How to ensure that AI is not used for destructive purposes or to manipulate people? This raises the question of creating

international standards for AI ethics, which will clearly define the rules of use, as well as mechanisms for controlling and influencing the technology. It is especially important to consider AI in the context of its impact on social structures. For example, questions arise about how the use of AI will affect poverty and inequality. If access to advanced technologies is limited to certain countries or social groups, this may exacerbate existing global inequalities. At the same time, AI has the potential to help solve many social problems, in particular in the fight against global challenges such as climate change or poverty. Equally important is the role of AI in the development of new forms of work and learning. With the development of automation, new professions and specializations are emerging that will require people to have new skills and abilities. On the one hand, this opens up opportunities for creating new jobs, and on the other hand, there is a problem of retraining and training people whose professions may become obsolete due to technological changes.

We would like to highlight that Ukraine ranks second in Central and Eastern Europe in terms of the number of companies working in the field of AI. The number of such companies has increased from 97 to 243 over the past ten years, and the number of specialists in the field of AI has increased fivefold, reaching 5,200 people as of January 2024. Ukraine has the potential to become a leader in the field of AI through the development of education, the creation of spaces for AI training, and liberal regulation of this industry.

Artificial intelligence in Ukraine is developing actively, and its implementation in various areas brings significant economic and social effects, where AI is one of the main tools. For example, the IT hub in Kyiv and other cities of the country helps startups, research laboratories and technology companies to develop, exchange ideas and implement innovative projects. The state government and private investors are increasingly focusing on investments in the development of AI technologies. In Ukraine, there are a number of startups that are engaged in the development of solutions in the fields of financial services, healthcare, transport and production. An example is startups that develop systems for automating business processes, improving logistics and optimizing production chains. Educational programs are being developed that allow training specialists in AI, preparing a new generation of experts capable of solving complex problems in this industry. Artificial intelligence is actively used in the media for news generation, automated translation, content creation and analysis of large data sets. Ukrainian media platforms are integrating it to better predict trends, track popular topics, and improve audience engagement [6].

In our opinion, one of the most promising areas is the development of autonomous transport systems that use AI for road safety. Experiments with autonomous vehicles are already underway in Ukraine, as well as programs to improve traffic management systems are being developed.

Ukraine is one of the largest agrarian countries in the world, and the use of AI in the agricultural sector helps to increase production efficiency and improve the environmental situation. There are already projects that use drones and sensors to monitor the condition of fields, predict yields and automate irrigation systems.

During our research, we have repeatedly emphasized that one of the main problems is the issue of ethics and regulation of AI in Ukraine. Today, the government is working to create a legislative framework that would ensure the safety of the use of AI and the protection of human rights, especially in the context of data privacy. Cooperation with international organizations and researchers allows us to avoid negative consequences from uncontrolled use of technologies.

The future of AI is not only about technology, but also about deep interaction with people, which opens up new horizons for joint development. How we will use these powerful tools depends on how we can solve all these challenges and ensure sustainable, ethical development of technologies.

The prospects for further research in the field of artificial intelligence look very large-scale and multifaceted. They encompass both technological advancements and a deeper understanding of how to make AI safer, more ethical, and more useful to society. One of the main directions is the development of so-called general artificial intelligence – systems that can think, learn, and act at a level similar to human intelligence, not just in highly specialized tasks. This is not only a technological

challenge, but also a philosophical one, as it forces us to reconsider our very understanding of consciousness, thought, and autonomy.

In parallel, research in the field of ethical AI will develop. This includes the creation of systems that will be able to take into account social, cultural and moral contexts when making decisions. The issues of algorithm transparency, nondiscrimination, data protection and liability for the actions of artificial intelligence remain particularly relevant. An equally important direction will be the integration of AI into new areas where it has not yet been fully used - for example, in ecology, climatology, psychology, jurisprudence. AI can help model climate change, predict natural disasters, create individual psychological support programs or analyze large volumes of legal information. Interest will also grow in the creation of explainable AI - such systems that can not only produce a result, but also logically explain how they got to it. This is very important for the use of AI in medicine, law and other areas where trust in the system is required. And, of course, one cannot fail to mention the cooperation of AI with humans. One of the promising areas will be the development of so-called hybrid intelligence - when artificial intelligence complements human abilities, helping to think, create, and solve complex tasks, but does not completely replace humans.

All this will require a multidisciplinary approach - a combination of knowledge from computer science, philosophy, psychology, sociology, law. After all, the future of AI is not only about technology, but also about what our lives will be like with it.

The prospects for the development of artificial intelligence in the context of ethics are focused on solving complex issues related to the impact of technology on society, human rights and justice. One of the main challenges is ensuring privacy and data protection. AI is able to collect huge amounts of personal information, which threatens the confidentiality and security of individuals. Therefore, the development of ethical standards to ensure transparency in data collection and processing is necessary [7].

Another important problem is the transparency of algorithms. In many cases, modern AI models work as "black boxes", and their solutions can be difficult to explain

or not understandable to end users. This creates the risk of abuse when important decisions that affect people's lives are made based on algorithms that are opaque or difficult to understand. It is therefore important that in the future, AI operates within ethical norms and is accountable, especially in critical areas such as medicine or justice. Another important ethical issue is algorithmic bias. AI can reproduce or reinforce social prejudices if models are trained on historical data that contains discriminatory patterns. This can lead to discrimination against certain groups of people, which calls into question the fairness of using AI in areas such as employment, lending, or even law enforcement.

As AI already has a major impact on various aspects of our lives, it is important not only to control the technology, but also to create an ethical framework for its development and use. This requires global cooperation, a legislative framework, and the development of new methods for assessing and monitoring the ethics of algorithms to minimize negative consequences for people and society as a whole.

Artificial intelligence opens up new opportunities, but also raises serious ethical questions that require attention at all stages of its development and application. One important aspect is the responsibility for the actions of AI. In situations where AI takes over decision-making (such as in medicine, law, or even military technology), the question arises of who is responsible for potential errors or negative consequences. This challenges the traditional concept of liability, as machines cannot be held legally liable like humans.

Other important food means an influx of food into the labor market. Automation and robots based on HI can replace the singing professions that promote social justice. How to provide people whose jobs can be automated with new opportunities for practice? This is due to the interaction between technology and social structures, which requires the creation of support mechanisms, redirecting and ensuring a good standard of living for everyone. Nowadays, it is important to recognize cultural and social differences in stagnant technologies. For example, those that are socially acceptable in one culture or region may be unpleasant in another. Therefore, it is necessary to elaborate on universal ethical principles, but also in relation to local particularities and context.

There is a growing need for international initiatives for ethical regulation of the world. This may include the creation of global standards, legislative initiatives, as well as platforms for the international exchange of evidence and best practices. The role of the large number of important parties, including government agencies, scientists, enterprises and large-scale organizations, is critically important for the development of ethical norms in the AI sphere [7].

In general, ethics in the world is not an additional aspect, but an invisible part of its development, in order to ensure a harmonious balance between technological achievements and human values.

Piece intelligence has great potential for improving the quality of life, but its development is not responsible for the protection of human rights and ethics. As technology continues to become increasingly disruptive, it is important to create ethical standards to ensure a balance between innovation and social values that avoid their harm and harm to people.

As a guide to our research, please note that topic AI is a fundamentally new development in science. We can confidently state the fact that the development of the upcoming tying industry is shoulder-to-shoulder with technology. However, it should be noted that without regulatory standards can cause a number of regressive consequences for marriage. Ethical calls, associated with the development of individual intelligence, require serious respect and an integrated approach to their achievement. The balance between technological progress and moral principles, as well as the creation of ethical standards for the culture of the world, is an important step in this direction. Only by maintaining ethical standards can we guarantee that we serve the good of the marriage and do not pose a threat. In general, Ukraine has great potential for the development of technology, and this sector will continue to grow as a friendly environment for innovation, highly qualified personnel and strong scientific bases.

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# 4. Epistemological images of modern science: postmodernism and postmetaphysics

## Introduction

In modern academic consciousness, the qualification of modern science as «nonclassical» (or even «post-non-classical») is already established. On the other hand, when rethinking in a new context the problems unsolved by the classics, it turns out that this categoricalness is based on only a few «cases» that cover specific scientific discoveries and their ideological interpretation. It is they who provide the basis for determining the characteristic ontological, epistemological and axiological tendencies of modern science, often taken up by philosophy with the prefixes «post-». This is primarily about anti-reductionism in relation to classical idealizations, the multi-level and complex objectivity of the reality studied by modern scientists, the strengthening and diversification of relevant disciplinary interactions up to the search for integrative theories, the revision of the criteria set of scientific rationality and the initial (or final) truth of knowledge.

From our point of view, a convenient way to organize them is to analyze them in the categories of non-classical thinking style, discourse, and values, which allow us to organize the impressive scattering of actual scientific research and their philosophical reflections and extrapolations into a model of the transition from classical to nonclassical science, the factors of formation and a kind of qualification of the latter. The methodological complexity that may lie in wait here is the devaluation of the privileged status of philosophical instruments in European culture, for which philosophical itself (postmodernist) criticism increasingly refuses to recognize unity, progressiveness, effectiveness, or at least rationality. Postmodernists proclaim any discourse as a «will to power» dressed in linguistic garb, which certain communities possess. However, they reproach philosophy for denying this «fact», which is expressed in the exclusion of philosophy from interpreting its own narratives for any negative (in moral, cognitive, ecological or political aspects) purpose. At the same time, another camp of philosophers, called «postmetaphysicians», considers rationality

as a condicio sine qua non of philosophical reflection with the only amendment that it is no longer based on final absolutes and the centers and hierarchies of significance derived from them.

## Refutation of the classics at the general scientific level of knowledge: main ideas

Throughout the 20th century, radical changes in science – from the proclamation of the revolutionary ideas of relativistic theory and quantum mechanics to the formation of new disciplines – so changed the style of general thinking of the era that, in the end, contributed to its paradoxical naming as the «postmodern state», that is, the era that has gone beyond the boundaries of modernity. The first fundamental principle, upheld in physics and cosmology as a result of the philosophical attitude of perceiving the real world exclusively as a «picture», was the relationship of objects of scientific study with the position, conditions and material means of their *observation*. Changing, for example, the observation, measurement or calculation device gives a completely different, even incompatible, «picture» of the scientific object. M. Planck and A. Einstein could still raise the question of the possibility of creating the entire observable world (its boundaries and singularities) to reproduce in a «unified theory» its pre-established harmony [1].

But the leading methodology has come to the necessity of «combining» partial and one-sided descriptions into a common one not through the relation of logical inclusion, but through the methodological relation of «complementarity». In the original version by N. Bohr, the principle of complementarity implies a combination of opposite, logically incompatible descriptions, but its derivative applications often move to another level of generalization: when, for example, they try to «sit on two chairs» of thinking styles, worldviews, referring to neurophysiological arguments of the functional asymmetry of the cortex of the human cerebral hemispheres.

Just as space and time in non-classical science begin to be considered as mutually conditioned parameters (attributes) of matter, in philosophy they are combined into a *chronotope* as an element of narrative. Unlike its art-historical analogue, it has a subjective character, which makes human activity possible as socio-anthropological

dimensions of space and time. Together with discourse, they constitute the scaffolding of a complementary speech agonistic (language game, mode of utterances), which is conducted by heterogeneous and multi-directional subjects. In other words, even scientific *content* that claims to be objective and universal is forced to be born and expressed in certain specific forms of knowledge – historically and practically conditioned. Therefore, its social role cannot prevail and subordinate the values of human life, in which it is always inscribed. On the contrary, it must provide a space for meaningful dialogue, in which free views and expressions mean not the beginning of a confrontation, but a mutual testing of one's own generalizations. Unlike utopian ideologies, always devoid of chronotope and therefore empirically invulnerable, free views are open to change [2].

Among the most general philosophical consequences of this shift is the rethinking of the category of *truth*: from an optimistically conceivable *singular* description of any complex object, which nevertheless turned out to be a model with too narrow macroparameters, to equally substantiated at the theoretical and experimental levels alternative truths that reflect different aspects, discursive and ontological modes of scientific reality. Because of this, the laws of nature sought by classical science as universal nomological statements that provide the fundamental possibility of accurate prediction of the course of events are limited in the range of predictive ability and the scale of coverage of the object system («local unpredictability», «global predictability», etc.). The ideal of «Laplacian determinism» of classical science not only implied a combination of rigid determinism and unlimited predictive power, but also subordinated all other functions of scientific and theoretical knowledge to the latter. So when it was threatened by «wayward» microscopic systems, non-classical physics experienced a general crisis, which was overcome only after mastering the selforganization processes common to micro- and macro-objects. Thus, scientific knowledge begins to be understood as a relative truth, expressed in a set of theories containing elements of objective knowledge, for the ordering of which methodological principles are actively used. Unlike the scientific method, such principles have a less rigid structure: they lack the operational and instrumental clarity inherent in the

scientific method, and the softened algorithmic nature. For example, the principle of correspondence orients the scientist to build a new theory in such a way that in the extreme case it could be reduced to the old theory.

According to the non-classical content of the category of truth, the real world is what mathematical theories tell us, representing it from the side of the integrity that has frozen in the substantial order or is evolving. If in classical science the ideas about physical reality were created at the empirical level, and the mathematical apparatus was already built on top of the ready-made ontological scheme, then in quantum mechanics the formation of mathematical formalism was completed before the ontological scheme and the categorical apparatus of the theory. This epistemological situation turned out to be close to the phenomenological interpretation of cognition by E. Husserl, according to which the question of the reality of the object disappears, since it does not «exist», but «is thought», «self-manifests», «is constituted»... Phenomenology is focused on the way of *revealing* something, investigates the question «how» reality is given, leaving open the question «what»... Similarly, the central idea of quantum mechanical theory, according to which the accuracy of measurement of paired units of an elementary particle, such as coordinates and momentum, is limited by an inversely proportional error, undermined the optimistically conceivable accuracy of the description. After all, the results of the experiment, according to the corresponding principle of W. Heisenberg, can now be predicted only with some probability [3].

Thus, non-classical objects of knowledge overturned scientific-rationalistic *objectivism* – the position of an external observer, whose cognitive apparatus had to maintain isomorphism to any modifications of the natural processes under study, and their course, in turn, – to maintain independence from the cognitive procedures used. In relation to one device, a microobject may have a coordinate and not have a momentum, in relation to another the situation may be the other way around. We can say that the specific certainty of the existence of a microobject as a certain fragment of reality is determined by the type of macrodevice, with the help of which the characteristics of the microobject are determined. In relation to different devices, a

microobject has different properties. In turn, the observer does not so much fix the properties of the object «in themselves», as he determines these properties in accordance with a certain situation. The opposite principle of subjectivity requires taking into account the activity of the subject of knowledge with his methodological and value preferences and shifting cognitive tasks to evaluative ones – in situations of methodological or financial planning of scientific research, selection of models derived from fundamental theory, etc.

However, even before material experiments, this idea emerged as a result of the search for a strict singular truth of mathematical knowledge. Initially, the semantic understanding of truth here completely gave way to the formal-logical one: the content of knowledge was subordinated to the apparatus of formal logic, because, for example, compliance with the law of non-contradiction is much easier to detect than the degree of subjective conditionality of a certain knowledge and its qualification as a prerequisite, consequence or contradiction in relation to other knowledge. According to the conventionalism of A. Poincaré, expressed at the II Paris International Congress of Mathematicians (1900), the absolute rigor of mathematical truth is that any knowledge is better to immediately accept as a conditional statement, which contradicts or does not contradict the fundamental. For Euclidean geometry, as D. Gilbert showed, such a foundation is the arithmetic structure of real numbers, the consistency of which makes possible the consistency of the structure of their spatial constructions [4].

However, the subsequent discovery of paradoxes in set theory, which goes deeper than arithmetic, raised doubts about the possibility of thinking about numbers themselves consistently. Therefore, the insurmountable uncertainties in conducting experiments (for example, whether neutrinos have mass or whether a black hole actually exists) showed that the essence of mathematical constructions is not reduced to reflecting physical reality: as creative works of human intelligence, they are only interpreted in quantum mechanical experiments in order to control them. According to the theorems of K. Gödel (1931), an axiomatization cannot be complete and consistent if its propositions are deduced deductively only from themselves by their own means. Therefore, for example, there are true arithmetical judgments that cannot be deduced

from some consistent axiomatic system that would include arithmetic [5].

Philosophical understanding of these conclusions as the collapse of the *absolutist* justification of D. Hilbert's mathematical program finds in their ontological premises the fundamental *uncertainty* of the world of non-classical objects of science, for which rational grounds, if not disappear altogether, then become purely conventional. The mathematical model of the organization of knowledge accustomed classical scientists to a clear hierarchy of basic axiomatic propositions and special and individual statements of deductive knowledge. After a protracted crisis of the logical connections of such a hierarchy in mathematics itself, natural science discovered that its theoretical propositions often achieve universal status only through association with metaphysical doctrines common to science and general culture. This is primarily about determining the attributes of matter – motion, time, space, law, etc., the slightest shifts in the content of which cause crises or advances in the entire corpus of disciplinary knowledge. Thus, it turned out that they can perform the function of axioms, being more flexible and alternative [6].

Having accepted this thesis, the leading philosophers of science of the 20th century (T. Kuhn, St. Toulmin, I. Lakatos, etc.) began to include in the models explaining its dynamics, non-rational terms and elements of spontaneity: the transition from classical to non-classical began to be imagined outside the patterns of logical-mathematical deduction. Thus, T. Kuhn's «paradigm» or I. Lakatos' «core of the scientific research program» normalize general provisions and reflexive procedures that are not subject to verification or falsification.

Accordingly, the definition of truth implies not only a certain compromise of arguments, but also a consensus on the *discourse* in which they are produced. At the same time, being guided by the «ideal» *criteria* of articulation of its rules, the effectiveness of its applications, inclusiveness of participants, freedom and truthfulness of speech, equality of initial chances for contributions, absence of coercion, etc. ensures the final truth not only with acceptability, but also with a high probability of choosing from alternatives when necessary. After all, whatever the statements that claim to be true descriptions in this way, their objects are pragmatically considered (Unterstellung)

as part of the objective world common to all [7].

Together with the «creative» understanding of truth in modern science, its methodological reflection comes to the conclusion of the rehabilitation of the role of the psychological characteristics of the subject of knowledge. Thus, according to R.A. Wilson, relativistic relativity and especially «Copenhagen» quantum mechanical uncertainty are a projection of the adaptive mechanisms of the higher nervous processes of the human brain: they constitute the creative potential and the limits of the interpretation of knowledge. Its recognition does not weaken the position of science, but relieves it of dogmatism and intolerance. Strengthening openness in this way transforms the methodological model of a direct and economical «tunnel» of scientific research into a «labyrinth» of constant alternatives. In general, transactional psychology argues that traditional ideas about the psyche's reflection of external reality should have long been replaced by a model of the creative work of consciousness in selecting and combining an excess of psychophysiological signals from this reality. Thus, expectations create a «tunnel» for the reflection of reality, which not only has a subjective-probabilistic nature, but also deprives the «Aristotelian-medieval» concept of a single objective reality of its working meaning. More precisely, the naive postulation of such a reality should acquire a pragmatic dimension of the consequences of its acceptance. Then it will turn out that it is not simply true or false, but gives grounds for greater or lesser chances of predicting the future. Thus, being vicious or virtuous, the neurophysiological features of human psychology cannot but determine the methodological principles of any science generated by it: «every painting always contains the autobiography of the artist» [8, p. 44].

An even more dynamic image of reality and the search for the corresponding truth is provided by the transdisciplinary direction of physical chemistry (in the terminology of the German physicist G. Haken – *synergetics*), which claims to expound the general natural ontology of self-organization, reproduction, maintenance and development of macrostructures ordered in space and time. In particular, a common model of such processes is the dynamics of an open non-equilibrium system that undergoes qualitatively heterogeneous stages: laminar motion, points of divergence of motion

trajectories, turbulent motion, etc. If at some stages the system remains inert to minor external influences, then at others (such as «bifurcation points») its behavior becomes unstable under the influence of the slightest objective (such as heating) or subjective (such as normative expectations) influence. Thus, under the condition of an increase in energy and matter, stable ordered structures are generated from chaotic «fluctuations» that occur in non-equilibrium processes.

Together with the dynamic ontology of «system objects», synergistic innovations also change the epistemological components of modern science, which are denoted by such concepts as nonlinearity, chaos, instability. This is primarily about the deabsolutization of the *substantial* foundations of classical scientific rationality, provided by the structural stability and reproducibility of objective forms of movement. In addition to the already customary discrediting of binary deterministic categories by the philosophy of life, such as «law – chance» or «trajectory - Brownian motion», by indeterministic ones (holistic bifurcation, regular fluctuation, ordered chaos), we are talking about a significant limitation of the principle of superposition, the structure of differential equations, linear predictions, and resonant parameters. Even scientific facts often become the result of the realization of the scientist's value preferences, which determine his selectivity in the perception and regulation of experimental parameters. On the other hand, all these features of scientific knowledge are formulated at the end of long chains of abstractions, which in mass culture can be formed into simplified images of bifurcation labyrinths, in which the predictive ability of synergists is lost.

At the level of philosophical criticism, the idea of synergy itself has found a place in anti-reductionist representations of complex systems, where interacting elements do not lose their own certainty and determination, including moral. In this way, A. Smith's semi-mystical idea of the «invisible hand» of the self-regulating market finally finds justification. After all, in the classical discourse, the general public good excluded the possibility of preserving the selfish, diverse interests of individual participants in market relations, so it remained unclear how persistence in realizing one's own interests could be combined with helping others or even rewarded [9].

The greatest success in their research was achieved by the «Brussels group» of I.

Prigogine, which focused on those chemical reactions where energy dissipation occurs. In non-equilibrium systems, it causes internal contradictions and becomes the most fundamental source of qualitative changes. Thus, a general unifying «principle of instability» was put forward, which governs evolutionary processes of the most diverse nature - from microquantum to socio-cultural processes. Its consistent coordination with other components of the methodology and scientific picture of the world completes the denial of such classical science as the isotropy of time and space, the reversibility of any changes, the priority of substance over accidental motion, stability, etc. [10].

In other words, when combining thermodynamic and evolutionary models of development, the phenomenon of self-organization receives a long-awaited ontological interpretation, in which the level conditioning of the dynamics of the quantities of a self-organized system coincides with the methodological approach of ecology - to consider systems in a cyclical and selective relationship with the environment, which aims to coevolutionarily harmonize the internal alternative adaptive dynamics of the system with the external homeostatic dynamics of nature. However, ecological studies themselves overcome non-classical relativism in a completely different way: they draw attention to the fact that the Cartesian «thinking being» also acts as a subject of ontological relations: successful interaction with nature expands his picture of the world, weakening the subject-object distinction. Thus, he is forced to expand his value orientations to the natural community, giving greater rights to heterogeneous theories and forms of understanding in its scientific knowledge [11].

Thus, synergetics and ecology demonstrate that in the second half of the 20th century the cognitive situation is characterized by the blurring of the line between natural science and humanitarian knowledge. Along with the disciplinary organization of knowledge, which is still preserved, there is an active formation of interdisciplinary knowledge, in which sciences are united in the process of solving a specific problem. In this synthesis, a new relationship between man and nature is established - a relationship of dialogue, characterized by the removal of subject-object dualism. As a result, the «Absolute observer» leaves the scene of science, the subject and the object

are accepted as equals. The humanization of knowledge does not mean the rejection of objectivity, nature, as it were, manifests itself through man. Modern science is characterized by a general ecologization of thinking, a transition from static, structurally oriented thinking to dynamic, process-oriented thinking.

In addition to embedding natural existence in spiritual practices and civilizational progress or separating human existence from the natural order, evolutionists imagine these two sides of existence as separate modes within some third, more general substance. In particular, in the well-known modern concepts of E. Leroy, P. Teilhard de Chardin and V.I. Vernadsky, it is asserted about the noosphere (and later about the anthroposphere and biotechnosphere), in which humanity carries out the mission of self-awareness of the natural evolution of the biosphere, in order to further not only adapt, but also, by the power of reason, curb their joint spontaneous development. The term noosphere was introduced a century ago to denote a special shell of the planet that formed at the end of the Tertiary period of the Earth's geological history in addition to the geographical (lithosphere, hydrosphere, biosphere, atmosphere) through the comparison of human scientific and technical thought with the scale of natural factors of the planet's development and reveals common (genetic, informational, cosmic) patterns of human and natural existence. In the interpretation of V.I. Vernadsky, the noosphere acts as a collective human mind, capable, despite the insignificant human biomass, of fulfilling a geological role and being responsible for the coevolution of planetary civilization and the biosphere in the direction of harmonizing their resources and spontaneous development from the standpoint of a planetary and cosmic scale [12]. In the models of the development of scientific knowledge, there is a shift in and methodological interest from historical and sociological philosophical reconstructions of the origin of generally significant scientific problems and the direction of the growth of scientific knowledge to the postmodern deconstruction of the linguistic dimension of research consciousness. Just as in ontology, here the classical analysis in binary categories is overcome as such, which limit the field of metascientific reflection. And semantic constructions are considered more justified, where the logical subject (S) is not identified with the logical predicate (p), but is

revealed in it. Another material for deconstruction has become narratives of scientific progress, the elimination of the secrets of nature and human delusions, academic traditions, etc. In such a «creative-destructive» way, the foundation of non-Euclidean geometries, non-Boolean algebras, non-Cantorian set theories is imagined... [13].

# Epistemological features of modern science: ways of rationalization

Of course, postmodernist deconstruction seems even more justified when applied to the analysis of socio-humanitarian knowledge, primarily historical-stylistic models of philology. It is here that the signs that J.-F. Lyotard so easily calls the «postmodern state (situation)» are most clearly manifested – the stylistic disintegration of works in favor of incessant cross-citations and allusions, transfer and counter-transfer of the author of the work and his characters, textual interpretation of any reality, etc. [14].

In epistemological terminology, this state is well described in terms of a style of thinking and ways of representing scientific objects, the novelty of which is due to a sharp decrease (up to «weightlessness») of the empirical component in modern definitions of scientific truth. On the one hand, this process is explained by the integrative impulse of classical scientific disciplines, which brings them closer to the formalization of their own empirical generalizations and the creation of fundamental theories. On the other hand, it is underpinned by the hypertrophy of transdisciplinary «grafting» of nonlinear mathematical tools, which develops on a relatively independent basis of computer modeling. In both cases, there is a predominance of the signsymbolic construction of «simulacra» that manifest or even replace a certain reality over conceptual-semantic modeling that should represent ontology. In the epistemological aspect, the «game» with signs prevails over the adequacy of meanings and, ultimately, truth, which indicates a certain crisis of the components of the corpus of rationality in the representation of scientific objects. Although, from the point of view of poststructuralism, this state of «absence of extratextual reality in the world», characteristic of modern art, should be normalized for science as well, for example, on the basis of the Sapir-Whorf hypothesis [15].

Just as the artistic traditions of the purpose and mode of functioning of artistic activity of the Modern era since the beginning of the 20th century do not give the desired aesthetic effect in culture (which R. Panwitz at that time qualified as a «postmodern crisis of European culture»), the strict absolutes of classical science regarding the fundamental justification, and therefore the truth, of new knowledge do not contribute to its growth. Especially since both the positivist program of the philosophy of science for the unification of mathematical justification, and the alternative to it, the neopositivist program of the empirical reinterpretation of all scientific knowledge, turned out to be unfeasible and unnecessary for science to fulfill its functions. As A. Einstein's position on this issue (as well as W. Heisenberg, S. Weinberg, etc.) shows, for the multi-stage abstractions of a scientific theory to be recognized within the scientific community, it must have not only external narrow pragmatic and phenomenological premises (empirical justification, predictive power), but also internal *perfection*, which is not reduced to some aesthetic appreciation of the found simplicity or harmony of fundamental equations, but corresponds to large-scale guidelines for research searches, such as, for example, extremely wide groups of symmetries or cosmological acceptability [16].

Thus, the correspondent concept of truth is deepened by the search for contextual *conditions of the possibility* of this true knowledge itself, which include the schemes of the subject-object relationship, material causation, coherence of general and specific knowledge, objectification of the meanings of sign structures through the generalization of their interpretations, etc. This work was also carried out by classical epistemology, which criticized or justified empirical (or «natural» in E. Husserl, or «meaningful» in analytical philosophy) scientific knowledge. By subordinating the sought-after objective «laws of nature» to the processes of meaning formation in the minds of scientists, it ultimately caused a «linguistic turn». However, it retained the Cartesian privileged status of the subject of knowledge, capable of defining or constructing all its objects from transcendental positions. In other words, all direct experience had to be invested in verbal-discursive thinking full of norms and rules.

epistemology revealed When non-classical the rational-communicative dimension of the dynamics of scientific cognition, the position of the External Observer began to differentiate: J. Deleuze drew general attention to the immanent characteristics of the subject of cognition, and J. Lacan, J.-F. Lyotard, M. Foucault, as well as naturalists (K. Lorenz, J. Piaget, U. Maturana, F. Varela) generalized them to the «principle of corporeality». Thus, M. Foucault develops it as an interaction of the ontology of the subject, power, and cognition: as a result of control by social institutions, both the formation and functioning of corporeality have long been subject to predominantly repressive regimes, such as calendar regimes. As is clearly evident from medieval literature or the works of J.O. Lamétrie, they have simultaneously received theoretical justification from the relevant scientific disciplines. Therefore, the restoration of personal corporeality as a primary source of experience and meanings requires a conscious critical attitude to power practices, up to resistance to them (medieval techniques of allegory, the poetry of troubadours and «minnesinger», etc.) [17].

Instead, J. Deleuze demonstrates the reverse influence of corporeality on social relations through its phenomena of desire, temptation and pleasure, which significantly determine cognitive structures, and therefore the content of subjectivity. Moreover, the ontology of the subject completely replaces the conscious Cartesian exercise of thought with the unconscious production of desire (libido), which is at the same time indistinguishable from its object, while the isolation of the subject means the secondary mastery of all phenomena of corporeality. In addition, libido goes beyond the personal subject and forms the «social field» not only of power relations, becoming a metalanguage for ideology, but also of cognitive and value relations, becoming the expression of cosmic Eros. At the same time, the generic person as the primary and natural producer of desire is able to influence socio-cultural and even historical reality. Thus, J. Deleuze, using his own terminology, which blurs the distinctions between human, social and natural, describes the production of the «matter of reality» that is different from industrial production. Carried out by nature, this production also determines social consumption and distribution, with the difference that their economic
analysis is not reduced to weighing the planned goals and the results obtained, but also includes the process itself. Moreover, it is considered as an all-encompassing reality in which nature, man and society carry out production through the mediation of each other [18].

Another thing is that the very necessity of such additional searches for nonclassical epistemology can be assessed by the public consciousness, accustomed to extreme scientism and rationalism, in a skeptical and even anti-intellectual spirit. Instead, all the prestige is taken over by pseudo-, quasi-, anti-scientific forms of knowledge, which are attractive because, unlike science, they do not so much raise problems as loudly remove them. At the same time, an interesting paradox noticed by R. Descartes is reproduced: the polemical mood of this extra-scientific knowledge regarding science and the absolute uncriticalness of one's own ideas and their grounds. Instead, a scientist, by definition, must impartially doubt any positive knowledge: any expedient exceptions deprive it of rationality. History teaches that the testing of axioms for consistency, conducted by B. Riemann, J. Boyai, M.I. Lobachevsky, was perceived by the public of that time in anti-scientific colors – as a conscious departure from reality and rationality. However, being, in fact, scientific, at least in terms of the methodology of dealing with axioms, they led to significant progress in geometry, and also added to the sphere of scientific reflection a new meta-level of distinction between objective and subjective, basic and deduced, real and symbolic. As evidenced, for example, by the correspondence of Z. Freud and A. Einstein, scientific theories can perform the psychological functions of myth (adaptation to the present, reassurance from exhaustive explanation, harmonization of relations, ordering of worldview). However, their reassurance or irrationality appears as such only in contrast to their own obsolete forms and components: scientific adaptation is anticipatory, reassurance is prospective, harmonization is structural, ordering is dynamic. In contrast, all kinds of myths under the surface of transformation and revolution are always based on ready-made analogies, therefore stable and final. Therefore, they do not contain a mechanism (criterion) for the growth and renewal of one's own knowledge, which at the level of postmodern reflection is expressed in the *denial* of progress. Due to the lack of

distinction between traditions and innovations and irony regarding canons and absolutes, everything «new» is viewed only as a recombination of the «old»: «modernity has exhausted itself» [19]. Moreover, this recombination is denied any (both scientific and practical) systematization, normalizing not only epistemological («anything goes»), but also ontological eclecticism as the result of the deconstruction of «forced» binary oppositions (such as both subject – object and subject - subject) in the conditions of the possibility of true knowledge.

It should be noted that the postmodern pathos of anti-scientism, antidemarcationism and de-absolutization, which grew out of the crisis of the methodological and epistemological canons of classical scientific knowledge, despite the well-known intra-scientific examples of resolving this crisis, focuses all attention on the practical and socio-cultural significance of modern science. In particular, paradoxical parallels are drawn between scientific rationality, legal humanism and the genocides of the 20th century, contrasting them with Eastern pessimism, mysticism or passive contemplation as a worldview that leads to more balanced and humane consequences in a non-rational way. In contrast, the consequences traced by postmodernism largely coincide with the post-industrial critique of society and culture: we are talking about the internal contradiction of the bourgeois guidelines of the Enlightenment, which theoretically call for progressive social-group «common sense», but in practice lead to arbitrary individualism. Therefore, if in the youth movements of the 1960s if the non-classical irrational will manifested itself as a collective subject in socially significant rebellion, then after decades it reached an individualistic scale, when the immediate thoughts and impulses of the individual are equalized and opposed to socio-cultural ones. Since in most guidelines, such as party or class, this means nonsense, it turns out that their content from the beginning excluded individual selfdetermination [20].

In postmodernist terms, this idea demonstrates disbelief in the values of Modernity through the emasculation of any original thought – from scientific truth to artistic beauty. When science cannot guarantee impeccable foundations for its own knowledge, then instead of waiting for their improvement, it is easier to declare this

state of affairs final and equate it in rights with any other knowledge that is «conditional», «indefinite» and «imperfect» in its foundations.

However, similar «kickbacks» have happened before: take at least the example of the popularity of quasi-scientific modernism and spiritualism of the late 19th and early 20th centuries as the antithesis of natural positivism. Therefore, *post-metaphysicians*, starting with J. Habermas, continue to search for grounds that would enable scientific and theoretical knowledge and the critical function of philosophy in relation to it. Of course, in this case, one cannot find the metaphysical place of the External Observer, who directly contemplates the substance and therefore can reflect it in an impartial form in the ideal language of theory... Postmetaphysics has received a certain immunity from the «grand narratives» of the Laplacian demon criticized by postmodernists, which, together with the comprehension of the only truth, frees humanity from dependence on nature. The corresponding subject of scientific knowledge is the learned society, which in many generations, creative inventions and linguistic discourses accumulates and reconstructs the knowledge that someone once expressed in a monological discourse. If it turns out to be deductively consistent and relevant to experience, the illusion of an empirical reflection by a single subject of all possible experience may arise. And only a failure in its effective application to pressing cognitive or practical problems forces the restoration of its entire genealogy, which cannot do without philosophical categorical distinctions [21].

K. Popper points out the compatibility of rationality and the collective scale of the subject of knowledge: an individual is prone to errors, but through joint efforts it is quite possible to approach the truth. This model of spirituality in science can be adopted by broad collective cooperation, which also requires objectivity [22].

If we approach the dispute between postmodernists and postpositivists historically and pragmatically, we will have to admit that it was classical science, which most changed both the external life of Western civilization and its cultural awareness, that was based on absolute mathematical foundations that equalize the cognitive capabilities of the immanent and transcendent mind. Behind it stands the human desire to master the eccentric diversity of things into a holistic picture of the world, to reduce

the chaotic vectors of their movement to linear changes that can be described by means of linear differential equations. When those from Newtonian physics were transferred to politics, economics, and social history, enlightened scientists, such as J. Condorcet, using the famous metaphor of K. Popper, turned «clouds into clocks» [23]. For example, in economics this meant the exclusion of socio-cultural factors of development in favor of exchange factors, in public policy it could manifest itself in the subordination of unique experience and conflicting interests to the general development program, etc.

It is possible to argue to what extent they abstract from all the complexity, alternativeity of the movement of a certain type of systems, however, the successes of classical science were based on rigid categorical oppositions that provided quantitative mathematical reductionism. In addition, the spiritual maturation of humanity, when its existence contributes to the mass awareness of an individual as a holistic personality, presupposes the affirmation of the value of scientific knowledge and a positive attitude towards it.

Thus, the successful liberation of a person from the pressure of external circumstances correlates with the growth of the socio-cultural status of scientific rationality. However, despite the «universal doubt» of this rationality instilled by R. Descartes in the 20th century, it has outlived its time and competence, especially outside the boundaries of scientific knowledge [24]. But has the idea of rational *grounds* that provide a discursive coverage of a certain sphere of knowledge, a mental toolbox of initiative activity, and a corresponding explicit, generally significant result, if we add to them the basis of self-criticism, actually exhausted itself?

If we assume that the renewal of foundations should be synchronous with the development of new types of scientific objects, the problem of refuting their absoluteness corresponds to the vicissitudes of a number of discoveries in quantum mechanics (which undermined the idea of the stability of matter at its microlevel), the theory of relativity and cosmology (which introduced the dimension of irreversibility into the ontology of the universe), non-classical thermodynamics (which established a mediator between order and chaos in the person of non-equilibrium structures), etc. In

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the latter case, for example, we are talking about the essential instability of the trajectories of motion, which makes their quantitative prediction limited in time and space, thereby denying the heuristic value of Laplace's demon and the category of the determined world itself. Therefore, the diversification of methods of scientific description up to the involvement of extra-scientific forms in them according to the skeptical (postmodernist) principle of *isonomy* is only the first reaction to this crisis. That is why, according to P. Feyerabend, the slightest preferences for science immediately turn into its usurpation of power through fusion with the state and dogmatization in absolutist criteria of rationality [25].

Instead, the epistemological contours of the new scientific rationality are viewed in a nonlinear style of thinking, which involves preserving the entire breadth, complexity and dynamics of connections and factors of influence in the objects of knowledge. By analyzing opposite alternatives of development directions and qualitative irreversible changes, they are qualified as unique, and their representation (construction) by means of nonlinear equations is based on the methodological *principles* of systematicity, historicism, invariance and complementarity. On the one hand, nonlinear thinking can expound unique systems that, due to openness, are capable of self-regulation and development, and on the other hand, its categorical apparatus is designed to reproduce any whole if it is presented as a hierarchy of orders. In a visual form, these two aspects of representation appear as a series of crossmovement, where straight sections correspond to one-sided order and local prediction, and intersections – to catastrophic consequences from minor deviations or errors.

Thus, the implementation of the explanation of the behavior of the system at a certain segment of its dynamics does not necessarily coincide with the function of prediction, which is inherent in any mathematized theory so far. Supporters of synergetics associate the adoption of this style of thinking with a new level of self-criticism, which requires the inclusion of historical, socio-cultural and communicative components in the internal foundations of rational reflection, simultaneously with the enrichment of scientific theory with these components [26].

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Given that synergetics is often considered as a combination of nonlinear mathematical methods of description with the ontology of non-classical thermodynamics and cybernetic structures of levels of self-organization, the external components of reflection look like expenses of interpretative models of nonlinear dynamics, which are compiled on socio-humanitarian material. However, synergetics themselves take an anti-physicalist methodological position and emphasize the universal status of the external, which appears when representing qualitative transitions (jumps) in the irreversible evolution of sufficiently complex systems. In cybernetics, the parameters of the complexity of the system were determined by the number of its elements and the ways of their combination, as well as the feedback mechanism, when some part of the energy (information) spent by the system returns to its input to correct errors and ensure the stability (internal self-organization) of the system. In synergetics, it is believed that these external factors diversify and significantly strengthen the feedback of the system.

The inclusion of these «subjective» components in the structure of scientific explanation changes the natural standard of theory, in which the role of axioms can be performed by socio-humanitarian provisions regarding order and activity in the most diverse spheres of culture. Being inextricably linked to personal understanding and practical embodiment, they complement the epistemological dimension of scientific knowledge with an existential dimension, which in turn raises the methodological resources of humanitarian discourse to paradigmatic status. Together with them, the cognitive model of the subject-object relationship drifts towards the communicative subject-subject as more complex and general, in which *nonlinearity* is determined by the subordination of the absolute subject to the relative; abstract scientific description to moral, artistic and practical prescriptions; binary categories to procedural; homogeneity to heterogeneity; additivity to emergentness; logical sequence to Gestalt switching; monodisciplinarity to the complexity of research. At the same time, the relativity of the subject of scientific knowledge carries within itself the contextual contations of the «agent», which is in the irreducible conditions of sensuality, corporeality, and imagery: «<...> incarnationality among them reveals the dependence

of the content and form of cognition on the structure of the agent, its functional features, and even its spatio-temporal location» [27].

# Conclusions

As a result of the assimilation of a new type of objects into the methodology and worldview, non-classical science has come to establish at the general scientific level the knowledge of such new *ideas* as complementarity, uncertainty, instability, which have entered the thesaurus of modern philosophy. Their ideological justification is developed by representatives of postmodernism in view of the disparity in modern science of empirical and theoretical knowledge and the inexhaustibility of methods for solving and selecting scientific problems by purely theoretical means, such as modeling in a computer experiment. In popular form, these conclusions have gained publicity as the «blurring» of correspondent truth by the contextual conditions of its sign-symbolic articulation.

Just as in the culture of the 20th century the diversification of symbolic and expressive forms ultimately led to the relativization of their content in the spirit of multiculturalism, in scientific activity the ultimate generalization of the principle of complementarity must tolerate the coexistence of properly scientific cognitive forms with non-scientific ones as additional sources and criteria of objective knowledge (P. Feyerabend's «principle of tolerance»). The signs of this anti-demarcationism phenomenologically coincide with cultural and political multiculturalism, as well as the dependence of science on its own technical equipment. Since technique and technology are always expedient, the fusion of science with them makes it less and less neutral. Modern technoscience is so intertwined with economic interests that it takes on the features of a kind of business project: instead of the principle «what is consumed must be produced». Thus, if classical science served as a model for the formation of industrial technologies, then modern technoscience itself imitates them: the technogenic environment of science ceases to be its application.

At the same time, the epistemological requirement of demarcation at all levels of knowledge and stages of research remains in force for technoscience, which is aimed at preventing and eliminating subjectivism in the production and application of knowledge. Even the proposal of a practically significant problem, in order to become the subject of attention from scientists, must undergo a special intra-scientific procedure of formulation and justification with a final assessment – «rational», «scientific», «relevant» or «current». From this moment on, all derivatives of this problem fit into the system of scientific knowledge and sooner or later receive a solution through the replenishment of experience despite possible further shifts in its content, meaning, context. Conversely, the absence of a scientific status in a problem indicates the absence of cognitive contradiction or rational certainty in knowledge.

In addition to blurring the boundaries of objective knowledge and the sequences of its acquisition, postmodern reflection sees in modern science such epistemological *features* as the rejection of a rigid hierarchical system of values (as the allocation of logical or historical absolutes) in favor of freedom (including academic freedom), the apology of pluralism and the methodological relativism associated with it, epistemological discreteness, and the playful eclecticism of allusions; rethinking the nature of scientific knowledge from «epresentation» to «construction» reality as a quasi-scientific product.

On the other hand, the crisis of scientific rationality, in which these features are summarized, can be regarded as a «growth disease» of its classical type, which is extrapolated to the entire culture and civilization in accordance with the recent social authority of science. Therefore, revolutionary shifts in the natural scientific picture of the world, associated with the discoveries of non-classical thermodynamics, ecology and field theory, have the prospect of normalizing the corresponding nonlinear methods of description and style of thinking as scaffolding for a new type of scientific rationality – positive, concentric and dynamic.

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