

HISTORY OF SCIENCE

DOI:10.32703/2415-7422-2020-10-2-266-280

UDC 378.6:62 (477.54):94(477.54)

Ihor Dvorkin

National Technical University “Kharkiv Polytechnic Institute”,
2, Kyrpychova Street, Kharkiv, Ukraine, 61002

e-mail: igor_dvorkin@ukr.net

<https://orcid.org/0000-0001-9190-8265>

Artem Kharchenko

National Technical University “Kharkiv Polytechnic Institute”,
2, Kyrpychova Street, Kharkiv, Ukraine, 61002

e-mail: 81archi19@gmail.com

<https://orcid.org/0000-0002-3314-5084>

Svitlana Telukha

National Technical University “Kharkiv Polytechnic Institute”,
2, Kyrpychova Street, Kharkiv, Ukraine, 61002

e-mail: teluha.ss@gmail.com

<https://orcid.org/0000-0002-8712-4270>

The establishment of the Kharkiv Practical Technological Institute in the context of modernization

***Abstract.** The article examines the history of establishment of the Kharkiv Practical Technological Institute in the broad context of modernization processes. The history of the Practical Technological Institute in Kharkiv is considered in the context of socio-economic changes in the South of the Russian Empire, primarily in the "Ukrainian provinces", in the last third of XIX – early XX centuries. The methodological basis of the article is the modernization approach. Changes that took place in the Russian Empire in the last third of the XIX – early XX century are considered as a modernization movement. Modernization is understood as a complex number of transformations that society is undergoing on the path of development from traditional agricultural to urban and industrial. We proceed from the fact that modern society of that time was aware of the speed of industrial production, the need for qualified engineering personnel. The training of such personnel required the opening of local higher education institutions. The processes of industrialization, migration and*



urbanization, due to the modernization theory, were the main components of social development in the XIX century. The approach chosen by the authors allowed to analyze the formation of higher technical institutions in the Russian Empire, on the example of the Kharkiv Practical Institute of Technology, within these changes. The approach within the new imperial history enabled us to take into account the socio-political subtext of the situation and the decisions that contributed to the establishment of technical universities in the south of the empire. An important aspect of our article is the European context. We investigated the general tendencies of opening similar to Kharkiv educational institutions. We can see certain commonalities, which allows us to explore the problem more deeply. We came to the conclusion that, the emergence of a higher technical educational institution – Kharkiv Practical Technological Institute, in Kharkiv was due to the demand of local elites, which was met by the highest bureaucracy of St. Petersburg, as well as the situation in the city itself. This compromise did not cancel the rivalry, both at the highest bureaucratic level – the Ministry of Finance and the Ministry of National Education, and at the regional level, in particular Kharkiv university elite and the inspirers of the idea of a separate technical institution.

Keywords: Kharkiv Practical Technological Institute; Russian Empire modernization; Polytechnics; education in Europe; higher technical educational institution

Introduction.

The last third of the XIX century in the history of the Russian Empire was marked by radical changes in the socio-economic situation. The period was characterized by mechanization processes, the emergence of large enterprises, the development of powerful mineral deposits, the rapid development of the transport network. Technological changes were combined with social shifts. The urban space had undergone significant transformations. Cities such as Odessa, Kyiv, and Kharkiv morphed into densely populated modern centers, with inherent lifestyles, economies, and social structures. They became magnets for migrants, providing opportunities for them. We believe that the opening of the Kharkiv Practical Technological Institute (KhPTI) during this period was due to the processes that took place in the Ukrainian lands of the Russian Empire.

We argue that the study of the history of the opening of a technological educational institution in Kharkiv should also be considered in the context of the processes taking place in European countries during the "long nineteenth century".

The theoretical basis of the study was the theory of modernization, which gained popularity in the academic environment in the 1950-1960s. Attention to the transformations in the Russian Empire through this focus was a later scientific achievement. Historiography of the period of the Russian Empire gave its own assessment of the changes that had taken place. Thus, a historian and public figure Dmytro Bahaliy assessed the impact of the emergence of a technical institution of

higher education in Kharkiv on the cultural space of the city (Bahaliy, 1993). Soviet historiography, and later Ukrainian historiography, in the first decades of independence, increasingly focused on the importance of the reforms of the 1860s and 1870s, which, according to many, created a whole new context, particularly in the field of higher education. For some time, this idea was supported by Western scholars who were involved in Russian Studies, making the paradigm of the Great Reforms almost inviolable (Payps, 1993).

But as early as in the 1990s, researchers were looking for alternatives to the old theoretical baggage. Daniel R. Brower studied the history of cities, emphasizing the transformation of urban life in the late Imperial period. In the changes that took place in the Russian Empire between the reforms of Alexander II and the revolution of 1905, he granted a privileged place to the role of urban society. Standards of change were spread among educated citizens, which prompted them to certain intentions, formed requests for educational projects (Brower, 1990). The American scientist Elise Wirtschafter, a researcher of social processes in the Russian Empire, focused on “raznochintsy”; who were considered to be outsiders and whose role in the social hierarchy was marginalized. Wirtschafter demonstrated the importance of this social category in imperial society, outlined its impact on society (Wirtschafter, 1994).

In the Ukrainian historiography of the 2010s, the authors pay attention to the history of the city from the standpoint of economic, social and cultural development, especially in the era of modernization, when the city was a space that attracted the latest trends and was a certain civilizational measure (Portnova, 2012). Researcher Victoria Konstantinova, describing the role of urban settlements in the development of educational and health care facilities, emphasizes that cities in the south of the empire maintained a monopoly position as the location of higher and the vast majority of secondary schools (Konstantinova, 2010, p. 23). In some works, attention is paid to technical education and its role in the formation of the cultural layer (Koshman, 2008).

Of particular interest for the study is the paradigm of the “new imperial history” which was actively formed in relation to the research of the Russian Empire in 2000-2010. It defines the “imperial situation”, which was an important factor in the decision-making process. The universal order from the capital was reflected in the mirror of such a situation and was implemented with unpredictable consequences (Glebov, Mogil'ner, & Semenov, 2015). In such important regions as the “Ukrainian provinces”, the control of the empire depended on the imperial authorities taking into account local trends and finding a form to support the interests of influential groups (Imperskaya, 2015). The emergence of a higher technical institution in Kharkiv can be considered to be an episode of such an “imperial situation”. The conservative education system required the interaction of imperial power and local elites. In the formation of a new technical elite for the empire, it is important to mention social engineering as the foundation of imperial public policy (Glebov, Mogil'ner, & Semenov, 2015). The very principle of reformism in the Russian Empire was the foundation of state policy and the justification of its legitimacy (Imperskaya, 2015). The meaning of the general

program was “Europeanization”, which in the empire became a framework phenomenon. The creation of a new industry and a new technical elite fully corresponded to this framework.

Thus, the current historiographical situation provides an opportunity to consider the formation of a system of higher technical education in the Russian Empire through the prism of modernization processes, taking into account the imperial situation inherent in the period.

The purpose of this publication is a case study of the opening of the Kharkiv Practical Institute through the prism of modernization processes in the south of the Russian Empire, primarily in the “Ukrainian provinces”, in the last third of XIX – early XX centuries. The concept of modernization is the main focus of this publication, and the history of the Institute of Technology in Kharkiv is considered in the context of socio-economic changes in the region.

The methodological basis of the article is the modernization approach. Changes that took place in the Russian Empire in the last third of the XIX – first decades of XX century are considered as a modernization movement. Under modernization we understand a complex number of transformations that society is undergoing on the path of development from traditional agricultural to urban and industrial (Davies, 1997, p. 764). Proponents of the modernization approach explained the problem of the development of the society with the help of analyzing components of modernization, studied the transition between traditional and modern society. Ukrainian historian Tetyana Portnova notes that the foundations of the theory of modernization are the understanding of development as an evolutionary, stage, one-sided process of social change, the result of which is modern society (Portnova, 2012). Such a modern society is aware of the speed of industrial production, the need for qualified engineering personnel. The training of such personnel requires the opening of local higher education institutions.

Social changes in the Ukrainian society of the specified period were traced through the modernization perspective. The processes of industrialization, migration and urbanization since the advent of modernization theory were the main components of social development in the XIX century. The approach chosen by the authors allowed to analyze the formation of higher technical institutions in the Russian Empire, on the example of the Kharkiv Practical Institute of Technology, within these changes. The approach within the new imperial history enabled us to take into account the socio-political subtext of the situation and the decisions that contributed to the establishment of technical universities in the south of the empire.

Results and Discussions.

The establishment of technical higher education institutions. According to researchers of higher education, the institutions of “the Long nineteenth century” were

influenced by the following factors: the Industrial Revolution, the French revolution, the new Imperialism and so on. All these aspects had an impact on higher education at the time. Obviously, this also affected technical education. The needs of industrial society made it necessary to open technical schools, many of which eventually became universities, and mechanical engineering became a standard part of higher education (Moore, 2019, p. 61). Modernization and industrialization required more engineers and technicians to work in the public sector. They were needed for the construction of railways, canals, roads, urban development and more. Such engineers and technicians were needed to manage the industry, to guide skilled workers. In turn, new modern methods of production required highly skilled workers who were educated in technical schools (Pombo Vejarano & Ramírez, 2002, p. 20).

Understanding the importance of science for industry significantly increased during the XIX-th century. The combination of science with practical experience in technology became increasingly important. At the same time, technical education in England, the leading industrialization country, was based on the principle of "learning by doing" with the domination of empiricism. With the growing role of science, this approach no longer met the requirements of the time (Ahlström, 1978).

Traditionally, there are two models of university education that emerged at this time. The first of them arose in France after revolution. Higher education here was under strict state control. Under the influence of the revolution, higher education was perceived as one that should work for the public utility (Capecchi & Ruta, 2014). The second, Berlin (German or Prussian) model was also the creation of the state, but in contrast to French one, this model was not controlled by the state and was to emphasize the free pursuit of knowledge (Moore, 2019, p. 67). Both models significantly influenced higher education in other European countries in the nineteen century. This also applied to technical education at that time. If we take the "polytechnic" model, researchers traditionally pay attention to the first such institutions in France and Germany (École Polytechnique (The Polytechnic school) in Paris and the technical universities of Karlsruhe and Berlin in Germany).

Thus, in the XIX century in France, higher education was treated as public. In fact, since the French Revolution, the central government promoted and supported technical institutions. The state was interested in training engineers and technicians not only for the civil service, but also for private industry. In Germany, local governments played a leading role in the opening of educational institutions due to disunity. Each region had its own technical education. Local entrepreneurs also understood their need due to the rapid industrial development. (Pombo Vejarano & Ramírez, 2002, p.19). In the second half of the 19th century, the reorganization of higher technical educational institutions took place in Germany. Previously established technical schools were transformed into technical universities, which had the same academic autonomy as universities. They were transferred from the Ministry of Commerce to the Ministry of Education. During this process, workshop training lost its original significance. More attention was paid to the study of scientific disciplines

as in universities. Qualified teachers who had the opportunity to teach original courses were invited (Rüegg (Ed.), 2004, p. 611).

The formation of higher technical education in Italy took place in the first half of the nineteenth century. In the largest cities, such as Naples, Rome, Turin and Milan, where there was a need for engineers, such educational institutions were established. For example, in Naples, a similar school was built on the French model. After the unification of Italy, the understanding of the need for higher technical institutions grew even more. Engineering schools and courses for engineers were separated from the faculties of mathematics in universities (Capecchi & Ruta, 2014)

As in Europe, polytechnic education developed during the nineteenth century in the United States. The oldest technological university in the USA was Rensselaer Polytechnic Institute (founded as a technical school in 1824). Education at the Polytechnic Institute was primarily aimed at science and civil engineering for national and international needs. Rose Polytechnic Institute was founded in 1874. According to the charter, this Institute focused on the “mechanical arts and sciences” as well as “useful and practical knowledge of some art trade or occupation” that would enable its students “to earn a competent living” (Mercer & Ponticell, 2012).

Thus, the industrial revolution and modernization prompted the world's leading countries to organize higher technical education. It happened in different ways. The role of the state, central and local government, and industrial owners was different. At the same time, the understanding of the development of technical education was common in the leading countries. Let us turn to the processes that took place in the Russian Empire's Ukrainian lands and Kharkiv firstly.

The Russian Empire context.

The last third of the XIX century was a period of a new wave of industrial revolution in the Russian Empire. The south of the empire, in particular the “Ukrainian provinces”, became the epicenter of the technological revolution. New industrial enterprises were established, associated with the intensive development of the iron ore industry, coal mining, metallurgy, and mechanical engineering. The new enterprises actively used the achievements of science and technology, which were to increase productivity (Dovzhuk, 2009, p. 3). The arrival of the railway significantly intensified the processes of industrial development. The implementation of these processes required a significant increase in the number of professional engineers.

Socio-economic conditions prevailing in the south of the Russian Empire (we are primarily interested in Kharkiv, Ekaterinoslav, Kherson, Tavriya, Kyiv) contributed to the expansion of the network of higher technical institutions. Their establishment was a demand of industrial circles, which needed a large number of cheaper personnel, especially since this need only intensified in the following decades. The analysis of the functioning of such a network broadens the view of the general situation in the empire, through the active collaboration of the southern technical institutions with the northern ones, both at the level of ideas and through the exchange of teaching and student staff.

Powerful industrialization created a large number of new jobs and affected changes in the social structure of the population. As a result, the number of industrial entrepreneurs and employees, both men and women, increased in number. The growing sphere encouraged foreign entrepreneurs to both invest and do business in the field. The Donbass adjacent to Kharkiv province developed most intensively. The influx of foreign workers and engineers and capital was so intense that the region was called the “tenth province of Belgium”; The arrival of foreign entrepreneurs and financiers, their investments and direct participation in the development of industry took place under the protection of the imperial government (Kulikov, 2014, p. 154). Intensive industrial development also encouraged internal migration. The migration wave of the last quarter of the XIX century is associated with the active spread of market relations (Nikitin, 2018). In the region called “Ukrainian America”, the role of Kharkiv was crucial, playing the role of a transit center between the “inner provinces”; of Russia and the capital cities and the south of the empire, primarily Odessa and Ekaterinoslav. The role of Kharkiv as the financial and intellectual center of the region gradually increased.

In the last third of the XIX century the urban environment was changing significantly. Housing construction was launched, post and telegraph offices, telegraph stations were opened, and banks were established. An intra-city transport network was created - horse and electric tram lines, etc. (Vodotyka, 2018). Kharkiv became one of the main platforms for these changes. After the opening of the railway in 1869, the industrial development of the city intensified. Kharkiv received fast communication with many regions. In the 1870s and 1890s, such industrial enterprises as the Melgoze and Gelferich-Sade agricultural machinery plants, the N. F. von Dietmar locksmith and mechanical workshop (machine-building plant), the rope and machine-building plants, and the confectionery factory appeared here. There were several sugar and porcelain and earthenware factories near the city (Gutnyk, 2016, p. 3). These changes required increasing involvement of qualified personnel.

The polytechnic establishment – the case of Kharkiv

The emergence of a higher technical educational institution – Kharkiv Practical Technological Institute, in Kharkiv was due to the demand of local elites, which was met by the highest bureaucracy of St. Petersburg, as well as the situation in the city itself. Another secondary school reform prepared generations of those who were ready to enter a new technical college. The 1870s were the boundary between the ignorance of society and the explosion in primary education that changed society (Wirtschafter, 1994, p. 143). The long period of the 1820s and 1860s laid the foundations for change and created a generation of their inspirers (Lincoln, 1982, p. 41). Indeed, it was precisely the flexibility and inconsistency of these formulas that permitted their voluntaristic interpretation by both officialdom and society. Finally, the new technical “intelligentsia” appeared at a time when the staticity of formal definitions of laws relevant to administrative and social provisions resonated with complex socio-cultural

identities, when new cultural concepts were formed - society, "intelligentsia" (Wirtschafter, 1994, p. 118).

The first wave of opening of technical institutions in the Russian Empire fell on in the 1860s. At that time, the Riga Polytechnic School and the Commissar Technical School in Moscow began to function. At first glance, purely economic reasons for the creation of technical institutions had hidden motives outside the "inner Russian provinces". Thus, Russian was the language of instruction at the University of Riga, which led to the loss of part of the teaching staff (RHYA, f. 1293, op. 97, spr. 155, ark. 9.). On the other hand, graduates were not subject to conscription and received the rights of honorary citizenship.

In the 1880s, at a new stage in the formation of the system of higher polytechnic institutions in the empire, Kharkiv became one of the main contenders. As well as Kyiv and Odessa, the city had a department at the university that produced technological engineers. The idea of establishing a separate higher technical institution was actively discussed by local elites in these cities. In Kyiv, in 1880, large entrepreneurs collected more than 1 million rubles "to establish a technical institution" (RHYA, f. 1276, op. 20, spr. 85, ark. 45).

But, organizationally, Kharkiv elite took the lead in this competition. Back in January-May 1871, local authorities of Kharkiv allocated 50 thousand rubles from the profits of the "public bank", part of which went to buy land for the future institution. Dmytro Bahaliy noted that the agreement was extremely successful, and a well-located large plot of land was purchased at the lowest price (Bahaliy, 1993, p. 606). The project received support from the Ministry of Finance and the Minister himself - Michael Reiter, which gave the opportunity to immediately begin construction of buildings, designed by architect Roman Heinrichsen. Decision-making was accompanied by appeals to the Ministry of Finance and the Ministry of National Education, which took care of this issue. The arguments in the appeals reflected the general position of the regional elite, which insisted on the opening of a technological institute, arguing for the importance of Kharkiv as the center of "southern Russia", the request of the local mining industry, the need to educate its own technical elite (DAKhO, f. 45, op. 1, t. 2, spr. 18). In this situation, the interests of the central bureaucracies and the regional elite coincided. The view of the special role of Kharkiv was characteristic of imperial officials as early as in the middle of XIX century, when in his economic report Ivan Aksakov predicted the city's great future of an important transit center (Aksakov, 1858, p. 57).

In 1881, a new stage of discussion began around the creation of the KPTI, which was quickly transferred from the capital's State Council to the regional level, with the involvement of the public - the Kharkiv branch of the Technical Society. The project of the future institute was modelled on Riga Polytechnic.

In 1882 a two-year technical high school was opened in Kharkiv. The congress of miners, which took place in the city of the same year, once again stressed the need for training for regional enterprises (DAKhO, f. 45, op. 1, t. 2, spr. 18). In April 1885, with

the assistance of the Minister of Public Education Ivan Delyanov, the charter of the Kharkiv Practical Technological Institute was approved. Financing of the institution was approved for the first five years of operation, with an average allocation of 145 thousand rubles, the sources of subsequent revenues are provided and a state loan of 3 million rubles was opened for “extraordinary needs”. The support of the regional elite continued in providing additional scholarships to successful students of the institute, replenishment of the institute library, donations for the activities of the institution.

In September 1885, Kharkiv Practical Technological Institute was officially opened, which was accompanied by the consecration of the premises and a prayer service. The speech from the trustee of the educational district, the formal head of the institution, Nikolai Velyaminov-Vorontsov, once again outlined the hopes of the regional elite: “... realization of all hopes... for the revival, rise, development of industrial forces... so that the sons of the homeland and our land, and not people alien to it, can use its gifts... turned cosmopolitan science... into our property” (Bagaley, & Miller, 1993, p. 605). Bagaley noted that the existence of the Institute of Technology in Kharkiv undoubtedly “spread its influence as the cultural center of southeastern Russia” but his regional patriotism did not hide the motive for KhTI’s rivalry with the historian’s alma mater. In a short historical essay, two pages of a rough volume of a monograph on the technical institute, Bahaliy did not forget to point out the lower qualifications of the teaching staff, compared to the university, adding that the institute did not assign such tasks (Bagaley & Miller, 1993, p. 605).

As in the case of the Riga Technical Institution, the KPTI acted as an instrument of Russification and integration for the imperial bureaucracy - it had Russian as the language of instruction and granted honorary citizenship to university graduates. In 1898 the institution received a new name - Kharkiv Technological Institute of Emperor Alexander III. The autonomy of the institute gave it the right not to censor its own publications and imported literature. Choosing a job by profession promised the engineer for ten years the heredity of this privilege. KPTI was not without problems of its time. Thus, as early as 1886, a discriminatory percentage rate was established for Jewish students (Pozner, 1914, p. 781). Only in the XX century the issue of admission of women to the institution was considered (DAKhO, f. R 1682, t. 2, op. 1, spr. 10).

At the turn of the XIX-XX centuries, technological institutes were opened in Kyiv, St. Petersburg, and Warsaw. Their opening was supported by the Minister of Finance and later the Prime Minister of the Russian Empire Sergei Witte. At this time, the Russian Empire received a network of higher technical schools. As indicated, the links between institutions affected the level of ideas, in particular KhTI initially chose a rehearsal system for students, first introduced at the St. Petersburg Technical Institution by Ivan Vyshnegradsky, as well as at the staff level - the first director of KPTI Viktor Kirpichov continued his work as the rector of the Kyiv Polytechnic University, and another director of the Kyiv Polytechnic University Dmytro Zernov, and another director of the KhTI, later headed the institution in St. Petersburg (K 25-letiyu KhTI imperatora Aleksandra III, 1885–1910).

Conclusions.

The opening of higher education institutions in Europe and the United States in the “long nineteenth century” was due to the reality dictated by the era. The industrial revolution and industrial movements led to the evolution of technical education, which in every corner of the world had its own characteristics, conventions and trends. The appearance of a technical educational institution in Kharkiv shows that we have not lagged behind world trends and movements, while having its own characteristics and conditions. Thus, the modernization of the empire prepared the socio-economic background for the implementation of this idea. The modernization of the empire prepared the socio-economic background for the realization of the idea. In the last third of the XIX century, the industrial explosion constantly revived the personnel hunger for technical “intelligentsia”. The generation of young people who graduated from local schools and gymnasiums fulfilled the desire of business circles to receive domestic staff.

The emergence of the Kharkiv Practical Institute of Technology was affected by the “imperial situation”, in which the capital’s center probed regional sentiment and adjusted its policy to the demands of local elites. This compromise did not cancel the rivalry, both at the highest bureaucratic level – the Ministry of Finance and the Ministry of National Education, and at the regional level, in particular Kharkiv university elite and the inspirers of the idea of a separate technical institution.

References

- Ahlström, G. (1978). Higher technical education and the engineering profession in France and Germany during the 19th century. *Economy and History*, 21(2), 51–88. <https://doi.org/10.1080/00708852.1978.10418955>
- Aksakov, I. S. (1858). Issledovaniye o torgovle na ukrainskikh yarmarkakh. [Study on trade at Ukrainian fairs]. Sankt-Peterburg : tip. Imp. Akad. nauk. [in Russian].
- Bagaley, D. I., & Miller, D. P. (1993) *Istoriya goroda Kharkova za 250 let ego sushchestvovaniya (1655 – 1905)*. [History of the city of Kharkov for 250 years of its existence (1655 – 1905)]. Vol. 2. Kharkov: Kharkovskaya knizhnaya fabrika im. M. V. Frunze. [in Russian].
- Brower, D. R. (1990). *The Russian City between Tradition and Modernity, 1850–1900*. Berkeley-Los Angeles Oxford: University of California Press. Retrieved from: https://publishing.cdlib.org/ucpressebooks/view?docId=ft4m3nb2mm;brand=uc_press
- Capecchi, D., & Ruta, G. (2014). European polytechnic schools in nineteenth century and Karlsruhe’s exemplary case, *Meccanica*, 49(1), 13–21. <https://doi.org/10.1007/s11012-013-9866-9>
- DAKhO, f. 45, op. 1, t. 2, *Pro vidkryttia KhTI*.
- DAKhO, f. R 1682, t. 2, op. 1, spr. 10, *Spravy ta inshi materialy KhTI*.
- Davies, Norman. (1997). *Europe: A History*. London: Pimlico.

- Dovzhuk, I. V. (2009). *Industrial'nyj Donbas v istoriyi rozv'ytku ekonomiky` Naddnipryans'koyi Ukrayiny` (druga polovy`na XIX–pochatok XX st.). [Industrial Donbass in the history of economic development of Russian-ruled Ukraine (second half of the XIX-beginning of the XX century)]*, Luhans`k: Vy`davny`cztvo SNU im. V. Dalya [in Ukrainian].
- Glebov, S., Mogil'ner, M., & Semenov, A. (2015). Novaya imperskaya istoriya Severnoy Evrazyy. Dolhy XVIII vek y stanovlenye modernyzatsyonnoy imperyy [The Long Eighteenth Century and the Rise of Modernizing Empire]. *Ab Imperio*, (1), 323–447. [in Russian].
- Gutnyk, M. V. (2016). Vplyv naukovykh rozrobok kharkivs'kykh uchenykh-tehnolohiv na formuvannya novoho urbanistichnoho prostoru na mezhi XIX–XX stolit' (na prykladi mista Kharkova) [The influence of scientific developments of Kharkiv scientists-technologists on the formation of a new urban space at the turn of the XIX-XX centuries (on the example of the city of Kharkiv)]. *Narodna tvorchist' ta etnolohiya – Folk art and ethnology*, 1. Retrieved from: http://repository.kpi.kharkov.ua/bitstream/KhPI-Press/38898/1/NTE_2016_1_Hutnyk_Vplyv_naukovykh.pdf [in Ukrainian].
- Imperskaya, N. (2015). Novaya imperskaya istoriya Severnoy Evrazii. Dilemma stabilnosti i progressa: imperiya i reformy. XIXts. [The Dilemma of Stability and Progress: Empire and Reforms in the Nineteenth Century]. *Ab Imperio*, (2), 167–253. <https://doi.org/10.1353/imp.2015.0068>
- Konstantinova, V. M. (2010). *Urbanizatsiya: pivdennoukrayins'kyy vymir (1861–1904 roky) [Urbanization: the South Ukrainian dimension (1861–1904)]*. Zaporizhzhya: AA Tandem [in Ukrainian].
- Koshman, L. V. (2008). *Gorod i gorodskaya zhizn v Rossii XIX stoletiya. Sotsialnyye i kulturnyye aspekty. [City and urban life in Russia in the 19th century. Social and cultural aspects]*. Moskva: ROSSPEN [in Russian].
- Kulikov, V. O. (2014). Inozemni pidpryyemtsi yak importery kapitalu, innovatsiy ta menedzhmentu v ukrayins'kykh guberniyakh Rosiys'koyi imperiyi naprykintsi XIX – na pochatku XX st. [Foreign entrepreneurs as importers of capital, innovation and management in the Ukrainian provinces of the Russian Empire in the late XIX – early XX centuries.]. *Ukrainian Historical Journal – Ukrayins'kyy istorychnyy zhurnal*, (3), 151–167 [in Ukrainian]. Retrieved from: https://history.vn.ua/journal/journal_2014_3/10.html
- Lincoln, W. B. (1982). *In the Vanguard of reform: Russia's Enlightened Bureaucrats, 1825–1861*. DeKalb: Northern Illinois University Press.
- Mercer, L. P., & Ponticell, J. A. (2012). Polytechnic Education: A key to regional economic development. *A Journal of Science, Technology, Ethics, and Policy* 3(1), 45–51. Retrieved from: http://www.synesisjournal.com/vol3/t/Mercer_2012_T45-51.pdf
- Moore, J. (2019). *A Brief History of Universities*. Springer. <https://doi.org/10.1007/978-3-030-01319-6>

- Nikitin, Yu. O. (2018). Mis'ki spil'noty Livoberezhnoyi Ukrayiny u period modernizatsiyi druhoyi polovyny XIX st. [Urban communities of the Left Bank Ukraine during the modernization of the second half of the XIX century]. *Kyyiv's'ki istorychni studiyi – Kyiv historical studies*, 1, 80–84. Retrieved from: http://nbuv.gov.ua/UJRN/Khs_2018_1_12 [in Ukrainian].
- Payps, R. (1993). *Rossiya pri starom rezhime – [Russia under the old regime]*. Moskva: Nezavisimaya gazeta [in Russian].
- Pombo Vejarano, C., & Ramírez, M. T. (2002). *Technical education in England, Germany and France in the nineteenth century: a comparison*. Editorial Universidad del Rosario. Retrieved from: <https://ideas.repec.org/p/col/000091/003543.html>
- Portnova, T. (2012). *Ukrainski mista Rosiiskoi imperii seredyny KhIKh – pochatku KhKh stolit v svitli modernizatsiinoi teorii [Ukrainian cities of the Russian Empire in the mid-nineteenth – early twentieth centuries in the light of modernization theory]*. Retrieved from: <http://www.historians.in.ua/index.php/en/doslidzhennya/242-tetiana-portnova-ukrainski-mista-rosiiskoi-imperii-seredyny-khikh-pochatku-khkh-stolit-v-svitli-modernizatsiinoi-teorii>
- Pozner, S. V. (1914). *Evrei v obshchey shkole (K istorii zakonodatelstva i pravitelstvennoy politiki v oblasti evreyskogo voprosa)*. [Jews in the General School (Towards a History of Legislation and Government Policy in the Field of the Jewish Question)]. Sankt-Peterburg: Izdatelstvo «Razum» [in Russian].
- RHYA, f. 1276, op. 20, spr. 85, ark. 45, Osoblyvi zhurnaly zasidan Rady ministrov.
- RHYA, f. 1293, op. 97, spr. 155, ark. 9.
- Rüegg, W. (Ed.). (2004). *A history of the university in Europe: Volume 3, universities in the nineteenth and early twentieth centuries (1800–1945)* (Vol. 3). Cambridge University Press.
- K 25-letiyu KhTI imperatora Aleksandra III, 1885–1910. (1910). *Vedomosti yuzhno-russkogo obschestva tehnologov, September*, 9, 1910.
- Vodotyka, T. (2018). Urbanistichne seredovyshche ta pidpryiemnytstvo: paradyhy my spivisnuvannia ta vzaiemodii v pidrosiiskii Ukraini v dobu imperskykh modernizatsiinykh peretvoren [Urban environment and entrepreneurship: paradigms of coexistence and interaction in Dnieper Ukraine in the frame of imperial modernization]. *Regional history of Ukraine – Rehional'na istoriya Ukrayiny*, 12, 141–156. Retrieved from: http://resource.history.org.ua/publ/reisuk_2018_12_9 [in Ukrainian].
- Wirtschafter, E. K. (1994). *Structures of Society. Imperial Russia's "People of Various Ranks"*. DeKalb: Northern Illinois University Press.

Ігор Дворкін

Національний технічний університет «Харківський політехнічний інститут»,
Україна

Артем Харченко

Національний технічний університет «Харківський політехнічний інститут»,
Україна

Світлана Телуха

Національний технічний університет «Харківський політехнічний інститут»,
Україна

Заснування Харківського практичного технологічного інституту в контексті модернізації

Анотація. У статті розглядається історія створення Харківського практичного технологічного інституту в широкому контексті процесів модернізації. Історія відкриття технологічного інституту у Харкові розглядається в контексті соціально-економічних змін на Півдні Російської імперії, насамперед в «українських губерніях», в останній третині XIX – на початку XX століть. Методологічною основою статті є модернізаційний підхід. Зміни, що відбулися в Російській імперії в останній третині XIX – на початку XX століття, розглядаються як модернізаційний рух. Під модернізацією ми розуміємо перетворення, що суспільство переживає на шляху розвитку від традиційного сільського господарства до урбанізованого та індустриального. Ми виходимо з того, що модерне суспільство того часу усвідомлювало швидкість промислового виробництва, потребу в кваліфікованих інженерних кадрах. Навчання таких кадрів вимагало відкриття вищих навчальних закладів на місцях. Процеси індустриалізації, міграції та урбанізації, відповідно до теорії модернізації, були головними складовими соціального розвитку в XIX столітті. Обраний авторами підхід дозволив проаналізувати формування вищих технічних закладів Російської імперії на прикладі Харківського практичного технологічного інституту в рамках модернізаційних змін. Підхід в рамках нової імперської історії дозволив врахувати соціально-політичний підтекст ситуації та рішення, які сприяли створенню технічних університетів на півдні імперії. Ми дійшли висновку, що поява у Харкові вищого технологічного навчального закладу – Харківського практичного технологічного інституту, була обумовлена попитом місцевих еліт, якому відповідала найвища бюрократія Санкт-Петербурга, а також ситуацією в самому місті. Цей компроміс не відміняв певного суперництва як на найвищому бюрократичному рівні – Міністерства фінансів та Міністерства народної освіти, так і на регіональному рівні, зокрема між харківською університетською елітою та натхненниками ідеї окремого технічного закладу.

Ключові слова: Харківський практичний технологічний інститут; модернізація Російської імперії; Політехніка; освіта в Європі; вищий технічний навчальний заклад

Ігорь Дворкин

Національний технічний університет «Харківський політехнічний інститут», Україна

Артем Харченко

Національний технічний університет «Харківський політехнічний інститут», Україна

Светлана Телуха

Національний технічний університет «Харківський політехнічний інститут», Україна

Основание Харьковского практического технологического института в контексте модернизации

Аннотация. В статье рассматривается история создания Харьковского практического технологического института в широком контексте процессов модернизации. История открытия технологического института в Харькове рассматривается в контексте социально-экономических изменений на Юге Российской империи, прежде всего в «украинской губерниях», в последней трети XIX – начале XX веков. Методологической основой статьи является модернизионный подход. Изменения, произошедшие в Российской империи в последней трети XIX – начале XX века, рассматриваются как модернизионный движение. Под модернизацией мы понимаем преобразования, которые общество переживает на пути развития от традиционного аграрного к урбанизированному и индустриальному. Мы исходим из того, что модерное общество того времени осознавало скорость промышленного производства, потребность в квалифицированных инженерных кадрах. Обучение таких кадров требовало открытия высших учебных заведений на местах. Процессы индустриализации, миграции и урбанизации, согласно теории модернизации, были главными составляющими социального развития в XIX веке. Выбранный авторами подход позволил проанализировать создание высших технических учебных заведений Российской империи на примере Харьковского практического технологического института в рамках модернизионных изменений. Подход в рамках новой имперской истории позволил учесть социально-политический подтекст ситуации и решения, которые способствовали созданию технических университетов на юге империи. Мы пришли к выводу, что появление в Харькове высшего технического учебного

заведения – Харьковского практического технологического института, была обусловлена спросом местных элит, которому способствовала высшая бюрократия Санкт-Петербурга, а также ситуация в самом городе. Этот компромисс не отменял определенного соперничества как на высшем бюрократическом уровне – Министерства финансов и Министерства народного просвещения, так и на региональном уровне, в частности между харьковской университетской элитой и вдохновителями идеи отдельного технического заведения.

Ключевые слова: Харьковский практический технологический институт; модернизация Российской империи; Политехника; образование в Европе; высшее техническое учебное заведение

Received 20.07.2020

Received in revised form 22.10.2020

Accepted 06.11.2020