The Past and Future of the Architecture of the Silk-Weaving Factories of Pavlovsky Posad

E V Malaya¹

¹Candidate of architecture, associate Professor
Moscow architectural Institute
(state Academy), Moscow, Russia

E-mail: arxe_elena@mail.ru

Abstract. The article is devoted to the issues of renovation and architectural history of silk-weaving enterprises in Pavlovsky Posad, a thorny path of factory development. Formation and development of the architecture of industrial enterprises, from a peasant hut with a loom and a village manufactory to modern enterprises with highly developed production. The process of origin of the red-brick direction in the architecture of industrial enterprises is considered. The author emphasizes the city-forming role of old enterprises and ways to adapt to the modern conditions of urban life. It demonstrates the possibility of developing existing silk-weaving enterprises, which has a positive impact on the living standards of the population and the economic independence of historical cities. Proposals for the reconstruction of the architecture of weaving enterprises, improvement of territories and proposals for the renovation of adjacent territories are presented. Renovation of silk-weaving enterprises, monuments of industrial heritage, has a significant impact on the development of architecture, urban planning, the city and its infrastructure, cultural and educational activities. Possible examples of reconstruction of enterprises are given.

1. Introduction
Fascinating and mysterious stories of creating architectural fantasies in small cities of our country. It would seem that not the capital's Central streets and there is no large flow of pedestrians and cars, but pay attention to the interesting silhouette of the facade of a seemingly unremarkable, and not particularly valuable factory building. But when creating it, the architect was looking for unusual images in architecture, forming a new direction-industrial architecture. Thus, in the perfect harmony of the new industrial architecture and nature, small cities of Russia were created [7], where enterprises played an important city-forming role. Of course, when building an industrial enterprise, the most important role is played by production technology, but the architects of the XIX century were looking for new unusual forms and images of technical structures. This is how the red-brick buildings of factories appeared, striking us, after more than a hundred years, with their brevity, proportionality of parts, interesting details, scale to the person and the whole city. This was a breakthrough in the history of architecture, new trends in fashion and the search for optimal solutions in architecture appeared. This is how the high red-brick style of industrial architecture of the XIX century was born, which impresses us not only with the level of improvement of the production process and technology, but also with the beauty of buildings and structures, the unity and proportionality of different parts of the
complex [3]. Each element of the facade reminds of the utilitarianism of the building and emphasizes the special elegance and simplicity of lines.

In the modern world, there is a clear tendency to change the functional load of old enterprises, and this is justified by the transfer of production capacity outside the city limits, but such actions lead to the loss of the city-forming role and authenticity of buildings and structures of old factories. Until now, there is no clear answer to questions about the preservation of old factories in our country, there are still disputes and even the demolition of old factory buildings. They have long been monuments of industrial heritage in the Central part of the historical city and a serious scientific analysis is needed to determine the degree of transformation of buildings and structures. In our country, to preserve the identity of historical cities, educate generations and develop the economic independence of the country, it is necessary to revive the production of old factories, not to demolish and repurpose them. This is still possible and in many cases, it is simply necessary for our cities.

Many Russian cities created hundreds of years ago, despite wars, revolutions, and economic crises, managed to preserve the diverse "culture of the city", which did not disappear in the widespread globalization of technological progress. Even in a dilapidated state, factory buildings and structures, public buildings, and temple complexes demonstrate the greatness of the architect's creative plan in unity with a variety of images and harmony with the surrounding nature.

2. Relevance, scientific significance of the issue with a brief review of the literature

The relevance of the issue of preserving and developing production at enterprises of small cities in Russia is certainly relevant. Because of the lack of work, residents of small cities are forced to travel huge distances every day or work on a shift basis. This destroys the foundations of the family, traditions and upbringing of young generations, and negatively affects the results of labor and the economy.

At the United Nations conference on Housing and Sustainable Urban Development, HABITAT III Quito, it was stated that «Globalization and the unprecedented growth of cities over the past decades present new challenges that require cities to ensure equitable access to jobs and basic services – housing, sanitation, transport; to combat social discrimination and inequality. Urban planning models adopted over the past decades – especially based on the idea of zoning and encouraging private transport – have shown their limitations and have contributed to urban sprawl. Such failed development schemes not only revealed the city's weaknesses and environmental damage from its growth, but also led to the dehumanization of the urban environment, in terms of the scale of development and the uniqueness of various urban areas that contribute to a sense of belonging».

The removal of industrial enterprises outside of cities forces a large number of people to travel long distances when traveling to work, this has a negative impact on human health and the results of their work. Due to the continuous traffic flows, the ecology is disrupted, the green belt of the city disappears, and the shelves of shopping centers are filled with imported light industry goods, mainly from China, not always of good quality. At the same time, many of our domestic enterprises are closed or work intermittently due to the lack of raw materials. These issues require intensive care in production capacity, while maintaining the identity of cities and monuments of cultural heritage, must be addressed to maintain national and economic independence of the country. By preserving the architecture of cities, we preserve their future and present, and preserve the country's traditions and culture.

These important issues were widely discussed at international conferences and their attitude was reflected in international documents; in the Venice Charter of 1964, the Nara document of 1994, the Nizhny Tagil Charter of 2003, etc.

Their attitude to the issues of preservation of cultural and industrial heritage objects is formulated in the works of many famous architects: Bocharova Yu. P., Shtiglits M. S., Geraskina A. N., Geraskin N. S., Kudryavtseva T. P., Schenkova A. S., Cherkasova G. N., Kulisha V. O., Novikova V. A., Snitko A.V., Chaiko D. S. and many others.
3. Problem statement
Raising issues related to the preservation of industrial heritage and the development of production of old enterprises in Russian cities is one of the most important. In the XIX century, production buildings were built in many cities, production developed, trade relations expanded, and cities grew. This happened even after devastating wars. What is happening now, at the beginning of the XXI century, when many businesses look like after the bombing? Architects are required to develop a methodology for preserving and developing production in the old factory buildings. This is possible and necessary right now, when specialists are still alive and will be able to pass their knowledge to new generations of masters of the weaving art.

Thanks to the construction of factory buildings in the XIX century, the development of production and trade, cities grew, new trends in architecture were formed, and the search for an image of an industrial city took place. Now that the old factories are located in the center of the historical part of cities and have become monuments of industrial heritage, it is very important to make rational use of the opportunities for renovation of industrial territories. It is important to preserve the industrial heritage and develop production for further urban growth and a comfortable life for the population. The new living conditions of the technized world and the scientific and technical progress of the XXI century make special demands on the conditions of existence of industrial enterprises. We need scientifically based methods of reconstruction of enterprises to solve the problems of historical cities, preserve cultural and national traditions, the image and environment of the Russian city.

«The protection and rational use of all living organisms and natural resources should be based on prudence in accordance with the postulates of sustainable development. Only in this way can we preserve for our descendants the great riches that nature has given us. The current unsustainable patterns of production and consumption must be changed in the interests of our future well being and the well being of our descendants»

The objects of this research are the historical silk-weaving factories of Pavlovsky Posad, which managed to preserve their production and architecture of buildings and structures of the industrial complex.

4. Theoretical part
«In the middle of the XIX century, Emperor Nicholas I on the site of the villages of Pavlovo (aka Vokhna), Zakharovo, Usovo, Dubrovo and Melenki, Gorodok, Kornevo, Prokunino, Filimonovo, Stepurino establishes the city of Pavlovsky Posad». At this time, more than 70 small businesses around Pavlovo produced silk handkerchiefs, and only a few were known for good quality [11]. Pavlovsky Posad, one of the most beautiful cities in Russia, was famous for its weaving factories and was part of the Bogorodsky district, which in the XIX century was called the French Lyon for the excellent quality of silk fabrics. Filimonovo, now the district of Pavlovsky Posad, and a hundred years ago was a village, and even what. In it, almost every house was engaged in unwinding silk and weaving at the beginning of the XIX century, and there were already masters who were able to create their own enterprise. But few people had enough money to start working. Among the strong, grasping masters was one of the Sokolikov family, who had a small business of his own in the village, and in Moscow, too.

And it all started a hundred years earlier, when Catherine II secularized Church lands and at this time there was already home work due to the lack of arable land and infertile soil. Farmers were looking for income in various industries, unable to provide for their families due to small plots of infertile land. Then, almost every hut had a loom, produced fabrics for the family and sale, and many began to spin yarn at home, which was a great help for the family budget. Gradually, small factories appeared in large peasant huts (Fig. 1). At this time, small factories and manufactories are rapidly developing in Moscow and the Moscow region, increasing trade, transport links and settlement.
Figure 1. a) farmers wove in almost every house. They made clothes for themselves and for sale. b) a large peasant hut.

During the war with the French and the retreat of troops from the capital, many factories in Moscow had to transport equipment and create warehouses in the far suburbs. Many went bankrupt, some successfully restored production in a new place.

The family of the founder of the dynasty of filimonovsky manufacturers, who owns a small cotton production in Moscow, also moved in 1812 away from the capital and stopped in the village of Filimonovo. The convenient location of the village near the Vladimir road, as well as the availability of water resources, water and land transport, and unemployed peasants who know the art of silk weaving, helped Sokolikov create a small factory here [9].

After the end of hostilities and the beginning of peaceful life, the Sokolikovs organized a distribution office for the promotion of silk thread, and at home the whole family was engaged in creating silk scarves, ribbons and fabrics. The heyday of the factory, in which of course all members of the family participated, falls at the end of the XIX and beginning of the XX century, when one family member modernizes production, buys a steam engine and new mechanical machines. At the factory there were warping, winding, bobbin and weaving shops, and the number of workers during this period reached three hundred people[15].

Vedomosti about manufactories in Russia report that at the beginning of 1812 in the village of Filimonovo there are six silk factories with the number of workers about 89 and about 75 hand-loom mills [1, P. 21.], [2.P.39-47]. The product was sold on the Russian market and in Central Asia. At the end of the XIX century, the Sokolikov factory already employs about a hundred workers and the same number unwound cocoons at home. It is interesting that in 1890 in the village of Filimonov there are already three factories of the same family, one semi-silk and two paper-weaving[8].

At the invitation of The sokolikov family of manufacturers, the architect Desyatov comes to the village to build a temple and creates a plan for the reorganization of the enterprise, which impresses with the scope of the plan, a clear planning structure and the scale of all parts (Fig.2).

Figure 2. Partially implemented plan of buildings of the factory, con. XIX century. In the background of the factory (to the left of us), you can see three factory buildings and a building with a chimney, which were never built.

Figure 3. Pokrovsky Cathedral, arch. Desyatov.
The architect also creates the Pokrovsky Cathedral in the village of Filimonovo (Fig. 3); a chapel in memory of 1812 in Pavlovsky Posad (1909); the refectory of the Nikolskaya Church in the village of Novo-Zagarye near Pavlovsky Posad (1911), the Church of the ascension on the town (1906); in the city of Pavlovsky Posad) [12].

In the late XIX - early XX centuries, next to the factory there is an elegant wooden mansion of Alexander Sokolikov, miraculously preserved to this day. Its ornate carvings are more like a fairy-tale Palace than the home of manufacturers who followed the strict rules of life of old believers. The house is still a true decoration of the city street.

![Figure 4. Wooden residential house of the Sokolikov family](image)

In 1896, at the all-Russian industrial and art exhibition in Nizhny Novgorod, the products of the Sokolikov brothers factories were awarded silver medals for the high quality of silk shawls. A year later, the company's products are exhibited in Stockholm and receive a silver medal, in 1900 the gold medal of the Paris exhibition, in 1904 the gold medal of the Vienna exhibition, and in 1906 - the London world's fair. It is interesting that despite the reconstruction of the enterprise, the purchase of expensive equipment abroad, manufacturers are engaged in patronage, they invest in rural schools, fire brigades, barracks and churches.

Presumably on the project and with the participation of the architect V. p. Desyatov in 1910-1911, a new majestic red-brick building of the factory in pseudo-Gothic style was erected (Fig. 5). It housed the factory's branches, and housing for employees is being built separately from the workshops, allowing employees to have more comfortable conditions. Interesting decorative elements of the factory building and its power still amaze the audience.
At the expense of the same family, to celebrate the 300th anniversary of the reign of the house of Romanov, the construction of a stone village school with a house Church consecrated in the name of St. Nicholas the Wonderworker of Myra(Fig.6) is timed. It is interesting that the project was created by a local resident and factory worker, mechanic Anatoly Shestakov[15].

During the first world war, the factory of A. E. Sokolikov produced powder bags used for firing large-caliber artillery guns and turning the shells of grenades. The company employed more than 1,100 people and produced silk scarves, scarves and fabrics. It is interesting that even at that time, before the revolution, the factory was fully electrified.

During the revolution of 1917, factories lost their supplies of raw materials and only in the early 30s resumed the production of silk and semi-silk fabrics.

During the second world war, the factory supplies parachute silk to the front, cotton and paper fabrics for clothing to the troops, and galloons for officers ' shoulder straps[12].

Years of reconstruction of the country after the military devastation, the factory works at full capacity and is engaged not only in the production of simple fabrics, but also creates unique fabrics for interior decoration of reviving palaces, museums, theaters. The fabric factory graced the halls of the Kremlin Palace of congresses, the Bolshoi and Maly theatres in Moscow, the Cabinet of Lenin in Gorki, the Hermitage, the Mariinsky theater and Peterhof in St. Petersburg, the interiors of the Ministry of Defence and the Ministry of foreign Affairs.

In the late 50s, the factory produced artificial silks, furniture fabrics, fabrics for finishing cars and planes, everyday and holiday clothing. Products are delivered to different cities of the Soviet Union, Mongolia and Cuba, and take part in international exhibitions and trade fairs in: England, Japan, Finland, Canada, Germany, Cuba, Brazil, Holland, GDR, Czechoslovakia, Poland, Syria, Sudan, Greece, and other countries[4]. Residential buildings, public buildings, schools and hospitals, health
resorts are being built for the factory's employees, and transport and pedestrian services to the surrounding areas are being expanded.

Now the factory is transformed into Pavlovo-Posadsky silk LLC and specializes in the production of jacquard, decorative, curtain, corset, lining fabrics made of artificial silk, as well as a wide range of technical fabrics: Excelsior, filter fabrics and fabrics for artificial leather[12]. Thus, the factory has been successfully operating for more than two hundred years, preserving and continuing its traditions. The old buildings of the factory not only successfully serve the production for more than a hundred years, but are a real decoration of the urban environment of the historical city.

There is another amazing factory in Pavlovsky Posad that has managed to preserve the traditions of Russian masters’ production to this day. Pavlovo-Posadskaya handkerchief manufactory, the former factory of I. D. Labzin, was founded at the end of the XVIII century in the village of Pavlovsky for the production of silk fabrics and worked on this for about fifty years [13].

![Image of labzina Factory in the early XIX century.](image)

Figure 7. labzina Factory in the early XIX century.

Already in the middle of the XIX century, the village of Pavlovo and its surrounding settlements were famous for silk weaving, the production of colored, very beautiful shawls and shawls made of silk, wool or cotton. In the village of Pavlovo, fairs were held where various types of fabrics were sold, including brocade and the finest silks. A factory was established at the end of the XVIII century by I. D. Labzin. The factory created high-quality fabrics and was at a higher level than many others. Quality and price they gradually won the market over the years.

"In 1853, the great-grandson of the founder of the factory, Yakov Labzin and his relative and partner Vasily Gryaznov combined their capital and founded the "Partnership of manufactures Ya. Labzin and V. Gryaznov" with its own Trading house" [14]. This is the period of the Crimean war and the subsequent economic crisis, when many silk-weaving factories switch to the production of wool and cotton fabrics. The lack of supplies of raw materials through the Crimea and the demand for expensive beautiful fabrics translate many factories to the production of cheaper fabrics for the mass consumer.
In the 1900s, the Labzin family again modernized production, building buildings, equipping workshops with new modern equipment. At this time, the factory still produces wool shawls and shawls with printed patterns. This tradition persists to this day, as well as surprisingly beautiful bright drawings in the form of bouquets of flowers, plant colorful ornaments.

The factory owners have not only modernized production. The architect A. N. Knabe was invited to design and build it. The factory building is still a fine example of pseudo-Russian style of industrial architecture. On the shore of lake Tukhlyanka, new buildings, a stone bridge and landscaping of the territory adjacent to the factory have appeared.

It is interesting that in 1902 the factory was equipped with the latest fire-fighting device. The innovation was as follows: as soon as the air temperature reached 36 degrees, the water pump automatically turned on. Installation of the equipment was carried out by a well-known English company "Grinel". The factory created a fire station [5] and always had a team of volunteer firefighters ready.

The factory's products receive awards and silver medals at all-Russian art and industrial exhibitions. At the Nizhny Novgorod fair in 1896, the products of the manufactory were awarded a Large state emblem. At the beginning of the XX century, the "Partnership of Y. Labzin and V. Gryaznov manufactory" was the largest enterprise for the production of wool shawls and shawls. After the October revolution, the company was nationalized and renamed the Staro-Pavlovskaya factory. JSC "Pavlovo-Posadskaya handkerchief manufactory", continues the traditions of the ancestors, produces shawls and shawls made of wool, cotton and silk. In 1903, the factory was fully electrified. "This task was performed by the well-known European firm "shukkert and K" [5]. The factory had a hospital, separate schools for boys and girls, a Zemstvo school, a city Telegraph office, and housing for employees. All this was contained by the founders of the factory. Roads with good surface and lighting were created in the city.

The factory survived the revolution and wars, preserving the buildings and production. In the 1960s, it was decided to expand the factory and build new buildings, but the project was implemented only in the early 80's of the XX century. Now it is a modern expanding production with ancient traditions.
Figure 9. a) the factory Buildings of 1901, b) the old factory buildings, C) one of the old buildings, d) one of the factory shops.

Figure 10. a) factory Buildings created in the early 80's, b) the current state of the workshop of the weaving factory.
5. The practical significance of the proposals and results of experimental studies

The buildings and structures of the factory have been successfully operating in full mode for more than a hundred years and have the potential for long-term operation. The buildings and structures of the factory are periodically repaired, without affecting the main structure of the structures. Structural elements of buildings are in excellent condition, despite their age.

To create project proposals for the restoration of buildings and renovation of the existing territory, research work was carried out, a number of sketches and drawings were created for discussion with specialists. It is proposed to load the strong walls of the workshops with lightweight structures and to erect an attic floor for use by the administrative structures of the factory and the training center. On the shore of lake Tukhlyanka, it is proposed to create an amphitheater for fashion demonstrations and folk concerts that preserve the fashion for ancient Russian shawls and ancient folk music. Various cultural events of urban significance can be held there. The territory of the factory is being greened as much as possible with the creation of recreation areas. Tree species that purify the air as much as possible are planted. Laid environmentally friendly tiles with the possibility of sprouting greenery.

On the territory adjacent to the factory, on the site of old residential buildings for workers, it is proposed to build new 3-4-storey residential buildings. All project proposals are aimed at creating a favorable environment for life and work, attracting young people to the factory and developing production, so that life in Russian cities is comfortable and the population does not leave their native places in search of a better life [10].

Figure 11. C) old cast-iron staircase, d) column capital.

Figure 12. a) Project proposal for the renovation of the territory of the Pavlovoposadsky handkerchief manufactory, b) Landscaping and completed attic office floor above the shop, C) Project proposal for the restoration of factory buildings and environmental improvement.
In the case of such reconstructions, the factory can return to the younger generation, and good specialists for interesting, creative and well-paid work. In terms of urban planning, such events contribute to creating a comfortable urban environment while preserving the scale, historical value and uniqueness of the city, and preserving nature. This will serve to attract tourists to the city and create cultural and educational centers in the buildings of factories that still create amazing beautiful fabrics.

6. Conclusions
Light industry enterprises employ a large number of people, because this industry partly uses manual labor, creativity, the search for new solutions and the ability to work with any equipment. Reconstruction of such enterprises requires the lowest costs compared to other industries, and light industry products are bought much more often. The revival of such enterprises faster than other industries will have a significant impact on the development of the economy and the stabilization of our country's economic independence. The revival and development of silk-weaving enterprises will have a positive impact on the development of architecture and urban planning, since the development of production involves the construction of new industrial, residential and public buildings. "And a developed economy combined with a high level of culture will allow the development of all areas of art and architecture" [4].

The creation of projects for the development of enterprises and renovation of industrial territories will allow you to use the project opportunities within reasonable limits, even if not immediately, but gradually, when there is a financial opportunity for enterprises to reconstruct their territories.

7. References
[1] Vedomost o manufakturakh v Rossii za 1812 (SPb.) 1814
[2] Vedomost o manufakturakh v Rossii za 1813 i 1814 gody. (SPb.) 1816
[3] Gutnov A E 1985 'Mir arkhitektury' (Moskva: Molodaya gvardiya) 352
[4] Malaya E V 2020 Vozrozhdenie predpriyatiy legkoy promyshlennosti (na primere shelkotkatskikh fabrik Shchelkovo) Architecture and Modern Information Technologies 2(51) pp 57–68 URL: https://marhi.ru/AMIT/2020/2kvart20/PDF/04_malaya.pdf
[5] Barovskiy A 2013 (Moskva : Pavloposadskaya platochnaya manufaktura) 398
[6] Russkoye gradostroitelnuye iskusstvo» V 4-kh tomakh Pod obschh. redaktsiyey Gulyanitskogo N.F. (M.: Stroyizdat)
[7] Shramchenko A P 1890 Spravochnaya kniga Moskovskoy gubernii (M)
[8] Folomeyeva N V 2004 Zemlya Pavlovo-Posadskaya: Ocherki krayeveda (M.: Imidzh-Press) 495 p
[9] Folomeyeva N V Zemlya Pavlovo-Posadskaya: Ocherki krayeveda. 2004 (M.: Imidzh-Press) 495
[10] URL: https://platki.ru/about/history/roots2now/
[11] URL: https://trojza.blogspot.com/2012/09/200.html
[12] URL: https://trojza.blogspot.com/2011/12/blog-post_6764.html
[13] URL: https://trojza.blogspot.com/2011/12/blog-post_6764.html
[14] URL: https://trojza.blogspot.com/2012/09/200.html