

Development of the Architecture of the City-forming Enterprises of Fryanovo

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ABSTRACT

The article presents one of the amazing stories of the development of the architecture of weaving enterprises in Russia, in particular, the factories of the Fryanovo settlement of Bogorodsky Uyezd. Gradually, in a very short time, thanks to the sharpness of the mind and resourcefulness of manufacturers, industrialists and ordinary peasants, amazing works of silk-weaving masters are created, housing for employees, hospitals, schools and powerful factory buildings are built. At the beginning of the development of silk-weaving manufactories, production in Fryanovo looked like large wooden huts, sometimes two-storeyed. At the end of the XIX century, new buildings appear and a separate direction in urban planning and architecture is already being formed, which years later will be called "red brick style" and at the end of the XX century, enterprise complexes become monuments of the country's industrial heritage. Here, the history of the formation of the architecture of the enterprises of one village is indicative for many cities.

Keywords: *Architectural history of weaving enterprises, Factories of Fryanovo settlement, Red-brick style, Monuments of industrial heritage.*

1. INTRODUCTION

Studying the amazing stories of the appearance of silk-weaving factories in Russia, you are amazed not only by the sharpness of mind and resourcefulness of manufacturers, industrialists and ordinary peasants, but also by the amazing works of silk-weaving masters; you are imbued with pride for your country and people.

Since the end of the XIX century, in harmony with nature and the surrounding buildings, new industrial complexes were created - the city-forming enterprises of small cities of Russia [1], communications developed. Production technologies have always been a decisive factor in the layout of the complex, but the image of factory buildings sometimes acquired the most unusual and mysterious outlines. So the red-brick architecture was formed, striking us, after more than a hundred years, with its proportionality of parts, conciseness, complex details, harmonious combinations of details and the whole to the human scale. This was a real rapid breakthrough in the history of

architecture; industrial buildings appeared that had not existed until now. This is a completely new idea of urban planning and architectural solutions [2]. Each element of the facade recalls the utilitarianism of the building, while emphasizing the special elegance and simplicity of the lines.

In many countries, for more than three decades, the functional load on old industrial enterprises has been changing, which is being replaced by cultural, commercial, educational and residential spaces. The old enterprises have long lost their importance; many have ceased to exist due to the lack of raw materials and the possibility of development. The suburbs, which were equipped with industrial enterprises and workers' shacks, have long been the centers of historical cities. The high cost of land and the need to move production out of the central part is fully justified by modern living conditions. But there is another important justification for the preservation of old enterprises – the need to preserve buildings that have long acquired the status of the country's industrial heritage. They

have retained a city-forming role and still retain the authenticity of cities.

Many Russian cities were created more than one hundred and fifty years ago due to the formation of industrial enterprises. To this day, even in a semi-abandoned state, the buildings and structures of the old factories with spiritual, public and residential buildings are a model of the harmony of production and the urban environment, harmony with the surrounding nature.¹

The relevance of the issue of preserving and developing production at enterprises of small cities in Russia is certainly relevant. The destruction of enterprises has led to the loss of jobs and urban residents are forced to travel great distances to find work. This destroys the economy of each individual family, the comfort and, as a result, the economic and social problems in the country.

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 pose new challenges that require cities to ensure equitable access to jobs and basic services – housing, sanitation, transport; to combat social discrimination and inequality..."²

The solution of many important issues for the life of the city and each person individually requires the revitalization of industrial enterprises, and the issues of preserving the historical significance and authenticity of cities must be addressed in order to preserve the national and cultural integrity. By preserving the history of cities, preserve their future and present, preserve the traditions and culture of the country.

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

The same attitude to the issues of preserving industrial heritage objects is demonstrated in the works of many architects: Bocharov Yu. P., Shtiglits M. S., Geraskin A. N., Kudryavtseva T. P., Geraskin N. S., Schenkov A. S., Cherkasov G. N.,

Kulish V. O., Snitko A.V., Novikov V. A., Chaiko D. S. and many others.

Raising issues related to the preservation of industrial heritage and the development of ancient enterprises in historical cities of Russia is one of the most important issues of modern urban planning and architecture.

The development of the economy in Russia in the second half of the XIX century led to the development of production and trade, new industrial cities appeared, directions in urban planning and architecture were formed. Now that the old factories have become monuments of industrial heritage, it is important to make rational use of the opportunities for the renovation of industrial areas and the revitalization of enterprises. New living conditions of the modern world, and innovative progressive implementations of the XXI century impose special requirements on the conditions of existence, spatial and architectural solutions of industrial enterprises. Scientific methods of reconstruction of old enterprises are needed.

2. CREATION AND DEVELOPMENT OF CITY-FORMING ENTERPRISES

Interestingly, the name of the settlement Fryanovo is rooted in the deep history of the formation of the Russian state. In the XIV century, the highest merchant class "was in charge of the international trade and political relations of the country with the Italian ("fryazhsky") settlements in the Crimea-Surozh (Sudak) and Cafe (Feodosia). In the late XV - early XVI century . Ivan III moved Fryazin from the Moscow region to Veliky Novgorod, conquered in 1478, and to the vicinity of Vologda"[3].

The settlement was conveniently located on both sides of the Shirinka River, "Figure 1" shows a plan of the surrounding area. It is known that the estate passed from one owner to another for more than two hundred years. The land with the peasants was bought or donated for good service to the sovereign people. And many owners were engaged in the development of existing crafts, cultivated land, built temples, schools, hospitals, planted gardens, encouraging the development of crafts.

1. Urban planning strategies to counteract the degradation of the historical fabric of the city. II International Scientific Symposium "Monuments of the World Cultural Heritage in Russia-problems and prospects" from 19 to 21 September. Abstracts., Veliky Novgorod, 2018., p. 62.

2. United Nations Millennium Declaration



Figure 1 Location of Fryanovo and other silk-weaving factories.

After the trip of Peter I to Europe, visiting silk-spinning factories, his associates on their return to their homeland, created factories and manufactories, with the support of the tsar and the treasury. In 1717-19, the vicinity of the Zlatoust Monastery was created to meet the monastic needs and a few years later, in the village of Fryanovo. Whether it was so or not does not matter much now, the main thing is that the entire village in 1722 passed into the hands of I. F. Sherman, a native of Persia. – It was the first Russian textile company, created with the light hand of Peter I, "Damask and other silk brocades manufactory" [4]. And here the silk-weaving manufactory was created, which has been glorifying Russia at international exhibitions for more than 250 years, winning glory for the fatherland. It is here that a simple peasant works – the future founder of the silk-weaving factory in Shchelkovo, which is still successfully operating. Under I. F. Sheriman, stone factory buildings were built in Fryanov, and a cozy estate with a regular French park was created.

The manufactory at that time, despite its young age, already had 180 mills and more than 700 workers, there were two water mills, with the help of which the silk-spinning mechanisms were used to make the threading (joining) and twisting of silk threads, machines for weaving ribbons" [5].



Figure 2 One of the preserved buildings of the factory.

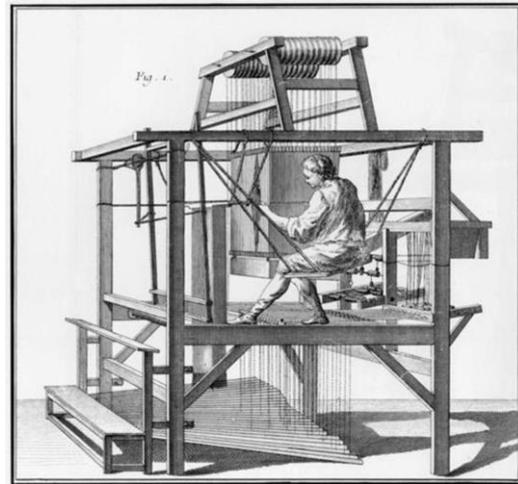


Figure 3 The jacquard loom was already used in the Fryanovo factory in the XIX century.

It was in Fryanovo that one of the first and most famous silk-weaving industries in Russia grew up on the basis of the largest Russian enterprise "Manufacture of Damask and other Silk Brocade", created by decree of Peter the Great"[6]. Even then, the company was the largest silk-weaving factory in Russia. In 1760, the factory was inspected by the official of the manufacturing board, the Frenchman Michel Godard, and was recognized by him as the "best" [7].

At that time, the silk production in Fryanovo looked like two-story buildings. As a rule, the first floor was a warehouse and a bedroom for workers, while the second floor housed machine tools and the production process. "Figure 2" shows an image of the preserved factory building. "Figure 3" shows the machine that was used in factories at that time.

For the development of silk manufactories, Peter the Great legally sent to factories as punishment for misconduct, although free peasants

also went to work if there were no weather conditions and a good harvest was not expected.

3. FORMATION OF THE CITY STRUCTURE AND DEVELOPMENT OF WEAVING FACTORIES

"In 1774, the eldest son of L. Lazarev – a well-known nobleman at the court, a major factory owner, a real state councilor, Ivan Lazarevich Lazarev (1735-1801), whose name is associated with the history of the acquisition of the largest precious stone in Russia-the Orlov diamond, which adorns the Imperial scepter of Catherine II, entered into the ownership of the estate and the factory.

In 1776, Lazar Nazarovich Lazarev, along with his children, was promoted by Catherine II to the hereditary Russian nobility for "settling here [he] started a noble manufactory and always provided us with many services with his children" [8].

It is interesting that in 1792, in the Ostankino estate, Count Sheremetyev began construction of a summer cottage - a palace-theater designed by architects Francesco Camporesi, Ivan Starov and Vincenzo Brenna. The interior decoration of the palace was completed by 1798, and the architects of the noble estate, I must say, brilliantly coped with the task of creating a magnificent palace. The names of the architects of the estate: Pavel Argunov, Grigory Dikushin and Alexey Mironov [9]. The estate in Kuskovo was not inferior in luxury and splendor to Ostankino. "Figure 4" shows the crimson living room of the Kuskovo estate. "Figure 5" shows a blue living room for family tea parties and reception of guests. "Figure 6" shows the picture gallery of the estate and silk fabrics on the walls are perfectly visible.



Figure 4 The crimson living room of Kuskovo.



Figure 5 The blue living room.



Figure 6 The Picture Gallery of Kuskovo.

They managed to create an image of a marble palace with silk rooms in a wooden summer residence, where classicism and Baroque perfectly coexisted. It is known that silk from Fryanovo fell into the palaces of Catherine II, so we can assume

that many then working domestic silk-weaving factories supplied silk for wall upholstery and creating beautiful interiors ("Figure 7"). "Figure 8" shows a red living room with a silk chop.

Under I. L. Lazarev, in 1797, the Church of St. John the Baptist was erected in Fryanov, a

luxurious wooden manor with a regular park was built, which was visited by His Serene Highness Prince Grigory Alexandrovich Potemkin-Tavrishesky, and a complex system of flowing ponds was laid out ("Figure 9"). "Figure 10" shows a general view of the estate of the Lazarev family



Figure 7 9 The Church of St. John the Baptist.



Figure 8 The Lazarev estate.

Soon the work of the manufactory was brought to such perfection that "on it, by order of His Serene Highness Prince Grigory Alexandrovich Potemkin and Prince Zubov, the most excellent silk products and wallpaper were made for the St.

Petersburg palaces, like the French ones, with which many halls in St. Petersburg palaces are upholstered: the Winter Palace Other expensive and beautiful silk fabrics were also made, which were sent by the empress to foreign courts as a gift" [10].

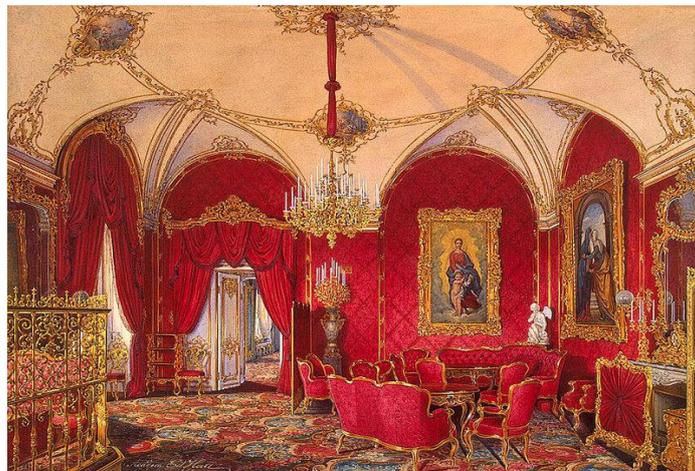


Figure 9 Corner hall of the Winter Palace. Watercolour by Eduard Gau.



Figure 10 8 Petrovsky Hall.

In 1785, the Fryanovo manufactory produced 22 types of expensive fabrics with patterns for the decoration of the Catherine Palace [11] in Moscow, the reconstruction of which was supervised by Giacomo Quarenghi. Now the silk upholstery of the walls with the fabric "Pheasants and Peacocks" of

the Fryanov factory of I. L. Lazarev still adorns the walls of the Pre-Choir Room of the Catherine Palace of the State Museum-Reserve "Tsarskoe Selo" ("Figure 11"). Image "Figure 12" shows a detail of the silk upholstery of the walls. [12]



Figure 11 Fabric with peacocks on the walls of the Prechorny room of the Catherine Palace in Tsarskoye Selo (Pushkin).



Figure 12 Taffeta with the brand F. D. E. L. L. V. S. F-the factory of the Nobleman Ekim Lazarevich Lazarev In the Village of Fryanovo (broche technology).

The factory created precious fabrics for the decoration of palaces and could not compete with those enterprises that produced consumer goods. Rebuilding the factory to produce new orders was difficult for the owners, but they are still starting to reconstruct the old buildings to produce a wide range of fabrics.

According to the decree of Lazarev, the new buildings of the factory are built of stone with warehouses and sleeping rooms on the first floor. During the construction of the new buildings, an important task was to provide the permanent workers with good living conditions. ("Figure 13") He tries to create favorable conditions for the life of workers, to the best of his understanding, but a 14-hour working day kills even the strongest quite quickly. In addition, there is no ventilation or heating in the buildings, and working on the machines required incredible effort. I must say that this work was so difficult that only men mastered it, and the female population was directed to unwinding and coloring cocoons. "Figure 14" and "Figure 15" show the factory building with high windows and excellent indoor lighting, strong walls and facade.



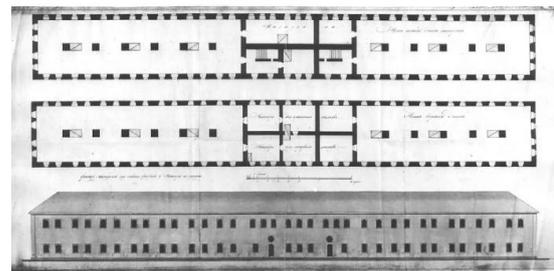
Figure 13 Factory buildings of the manufactory in the village of Fryanovo (From the archive of the Engels family).



Figure 14 The main building of the Fryanovskaya International factory. Photo circa 1950.



Figure 15 Plans and facade of the barracks for factory workers.



Центральный каменный корпус фряновской фабрики.
РГАДА. Ф. 1252. Оп. 2. ЕХ. 192. л. 2

Figure 16 The central stone building of the factory.

"Figure 16" shows the facade and the plan of the factory workshop. The distance between the outer walls and the columns allowed the use of the most modern equipment from England.

The large farm consisted of many buildings, structures, trout ponds, cascading ponds and waterfalls, as well as "four stone factory buildings, three of which had two floors, several stone and wooden houses for the residence of invited foreign craftsmen."

The layout of the factory uses the same technique and four rows of machines installed in the end part of the shop, continued for seven, ten or more rows, thus increasing the space, creating the impression that the shop is endless. The shop's perspective gave the appearance of a limitless industrial machine.

I must say that the farmstead of the factory owners was the decoration of the settlement. It was built from good oak and pine logs and is still preserved, it now houses a museum. It is interesting that the architecture of mature classicism with a regular layout, modest and restrained elegance of external decorative details, perfectly fits the panorama of factory buildings. Massive stone workshops successfully contrast the elegance of the

estate. The master plan of the entire estate is strikingly clearly constructed in such a way that the changing panoramas strike with beauty when moving around the territory.

Naturally, the layout of the manor in Fryanovo was created in accordance with the tastes and traditions of the Russian and European noble understanding of the manor architecture of the second half of the XVIII century. The enfilade arrangement of the rooms created an endless perspective, enlarging the rooms many times.



Figure 17 The main facade of the Lazarev estate.

"Figure 17" shows the Fryanovo-Lazarev estate, which for decades passed to different owners, each of whom tried to preserve in this amazing ensemble the flavor of the Russian noble nest, echoes of music and cultural life, the potential of vital energy, which still sounds like a symphony in its empty halls and corridors.

Later, the factory is in the hands of the Rogozhin family and at this time the workers file a complaint to the Moscow Governor-General Prince Golitsyn, where they complain about the inhumane working conditions and low wages.

Interestingly, the Rogozhins were forced to reorganize their factory in 1826 and install modern equipment, including new unique "jacquard machines" due to the excitement of the workers and the inspection of the enterprise. But this allowed us to increase production volumes by 10 times and deliver products to stores in a different volume. At the exhibitions in St. Petersburg (1829) and Moscow (1825), the Fryanovo Rogozhin factory was awarded by the Manufactory Board and the report indicates that the factory has a school and a museum. It's just amazing. At that time, they were already creating museums of weaving and their native land, a kind of local history museums.

After a while, the factory passes into the hands of the famous manufacturer Zalogin and after a fire in just over two years, the buildings and structures were restored again, new progressive machines were brought from England and France, and the factory started working again, bringing great profits.

In the second half of the XIX century, the production of silk was slowed down by many events and economic crises, the Crimean War and other sad events. In such a situation in the country's economy, many enterprises are forced to switch their production to more affordable and more purchased goods, i.e. the Zologins' factory in Fryanovo first partially, then completely, partially switches to the production of cloth.

The factory did not manage to switch quickly and efficiently to other raw materials, because there were difficulties with the supply of wool. However, the factory continues to work and in 1861 presents its silks at an exhibition in St. Petersburg. During this period, the factory employs about 200 jacquard looms.

Interestingly, the production of wool did not really take root at the enterprise and Zalogin and his companions organized the production of cotton fabrics in different cities. One of them existed in the Tver region until 2000 under the name of the weaving production of the Kalinin Cotton Mill. They created factories and manufactories in the hope of supporting some unprofitable enterprises at the expense of more successful ones. This created the stability of the economic condition of enterprises and the country as a whole. Architecture then was of little interest to the owners of enterprises, although famous craftsmen were invited to build buildings and structures.

In 1871, one of the Zalogin brothers began the construction of new factory buildings on the bank of the Kikenka River with the involvement of the famous architect Traugot Yakovlevich Bardt, while houses for employees were being built nearby. These were already 3-4-storey buildings with dormitories, warehouses, and administrative buildings.



Figure 18 Fryanovo wool spinning manufactory. Postcard con XIX-beginning. XX century.

"Figure 18" shows the essence of the planning system of the factory ensemble, where new buildings are built in accordance with the established urban axes of the village, factory and estate, as a harmonious urban complex of structures.

I must say that the architect T. J. Bardt, began his education at the German School at the Church of St. Anna in St. Petersburg, and then successfully completed training in the class of Professor Alexander Nikanorovich Pomerantsev at the Imperial Academy of Arts [13].

He plans to build a factory with the expansion of the factory territory, where housing for workers and a school for children are being built, which later becomes a 4-class factory school, a hospital, a library, and a bathhouse are being opened. It is interesting that already at this time, electricity is being provided at the factory and in the adjacent residential area, at a time when almost the entire country lived and worked under the "luchin".



Figure 19 The current state of the buildings of the former factory.

The life of active manufacturers is interesting: one of the children of the Zalogins, Anna Mikhailovna, marries, and later becomes the widow of a Moscow merchant, buys the Fryazinsky silk-weaving factory of the Kondrashevs [14] and in three years builds a three-story stone building, housing for workers, creates a developed infrastructure of a residential area, conducts electricity and achieves significant development of production. "Figure 19" shows the factory of A.M. Zalogina, which has a powerful vitality.

After the revolution and nationalization in 1918, the factory was named the Fryanovo International Wool Spinning Factory of the Worsted Trust and throughout the twentieth century was one of the largest worsted spinning enterprises in the USSR [15]

In Fryanovo, the church is gradually being restored, and a museum is being created.

There is still time and energy left for the restoration of the Fryanovo factory, the revival of production and the renewal of urban areas.

The buildings and structures of the factory have been successfully operating in full operation for more than a hundred years and have the potential for long-term operation. In the buildings and structures of the factory, repairs are periodically carried out, which do not affect the main structure of the structures. The structural elements of the buildings are in excellent condition, despite their age.

To create project proposals for the restoration of buildings and renovation of the existing territory, research works were 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 the use of the administrative structures of the factory and the training center.

Using the example of factories in Pavlovsky Posad and Shchelkovo, the authors managed to demonstrate the possibilities of activating the activities of enterprises, with the organization of additional jobs, project proposals for the reconstruction of industrial zones. «Figure 20» shows the total number of workshops after reconstruction in the Pavlovo-Posad shawl factory.

Thanks to the study of some old factories, the authors were able to determine that the supporting structures of buildings and structures are in normal condition and can still serve for many years. "Figure 21" shows the landscaping and the attic floor on the old factory building. The project showed that thanks to the restoration and reconstruction, it is possible to increase the working area by creating attic floors. "Figure 22" shows part of the renovated facade after restoration and landscaping.

"Figure 23" shows the facade, which will enrich the image of the city for tourists. According to the project proposal, the territory of the plant is maximally landscaped with the creation of recreation areas. It is supposed to plant trees that purify the air as much as possible. eco-friendly paving tiles of pedestrian paths, laid with the possibility of sprouting greenery. The territories thus become points of attraction of the population for work and tourists for recreation [16]. "Figure 24" shows proposals for the restoration of factory buildings. Attic floors and a water tower have been created as an important element of the ensemble.



Figure 20 Project proposals for the renovation of industrial areas. Pavlovo Posad shawl Factory: Project proposal for the Pavlovo Posad shawl manufactory.



Figure 21 Landscaping and an attic office floor above the workshop.



Figure 22 Project proposal for the restoration of factory buildings and environmental improvement.



Figure 23 Project proposals for the renovation of industrial areas: Shchelkovo silk-weaving factory. Project proposals for the restoration of the factory.



Figure 24 Proposals for the restoration of the factory buildings. The main workshops.



Figure 25 A panorama of factory buildings from the river after restoration.

The authors managed to create a project in which modern high-tech equipment is placed in old premises, and exhibition halls and artists' workshops are located on the newly created attic floors. New spaces are being created, including winter gardens for workers' recreation. The restoration of old buildings and structures is emphasized by the inclusion of new elements, open spaces for fashion demonstrations are appearing, and former warehouses are being converted into retail areas. "Figure 25" shows an updated image of the factory, which will make positive changes in the life of the city.

In industrial architecture, as in other fields of art, a special place is paid to the emotional impact on a person. The presented project combines buildings of different eras, creates a harmonious combination of architectural details of different generations in one architectural ensemble. The preservation of the historical urban environment will have a favorable impact on the development of architecture and urban planning, the economy and tourism.

4. CONCLUSION

1. The powerful potential of the old factory in the process of reconstruction, using the latest equipment and modern achievements of science and technology, can be transformed into a competitive enterprise that replaces imported goods in the domestic market.

2. When restoring the old buildings of the enterprise and building new workshops with the most advanced technologies, it is necessary to form panoramas along the river and individual streets, observing the requirements of compositional unity and a large-scale urban environment.

AUTHORS' CONTRIBUTIONS

The author's group of developers of the industrial zone reconstruction project consists of architects Malaya E.V., Dembich N.D. each author has contributed to the work on the project .Malaya E.V. responsible for the creation and development of the project, writing text, editing, Dembich N. D. conducted data analysis, photo fixation of monuments, participation in editing was carried out.

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