

### Restoration and conservation works on architectural monuments (on the example of Bukhara)

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**Abstract:** *The subject of the article is "Restoration and conservation of architectural monuments (on the example of Bukhara)", the object of study is Bukhara architectural monuments. The conservation and restoration work carried out during the colonial period on the monuments was carried out in collaboration with a number of specialists, scientists, and, as a result of a number of experiments, useful results were achieved. The origins of the negative effects on monuments have been studied and repair methods have been developed based on this. Of course, the role of folk craftsmen in the success of the repairs was also invaluable. The problems of conservation and restoration of architectural monuments of Bukhara in the colonial period and the problems of conservation and restoration of architectural monuments in the pre-independence period were studied and analyzed by studying the experience of folk masters and their work experience.*

**Keywords:** *mausoleum, mosque, khanaqah, plaster, monument, conservation, restoration, piece, ganchkor, architect, monument, composition*

#### 1. INTRODUCTION

Our country has a long history and architectural structures have been built over the years and centuries. The buildings that have been erected have been damaged in the losses that have occurred in every period before us. Of course, there were attempts to restore the architectural monuments damaged as a result of the damage. Prior to the completion of these studies, the study will be scientifically reviewed and a review will be conducted.

The study of issues such as the construction, history, and repair work of architectural monuments was carried out by a number of experts (B.N. Zasyupkin, V.A. Shishkin, M.S. Bulatov, K.S. Kryukov, G.A. Pugachenkova, I.I. Umnyakov, M.E. Masson, I.I. Notkin, Yu.Z. Schwab) and other researchers can serve as examples. Restoration and preservation of architectural monuments of ancient Bukhara in 1937-39 B.N. Zasyupkin, together with Master Shirin Murodov, directs the restoration of this architectural masterpiece (at the Mogokki-Attor Mosque and the Samanid Mausoleum).

In the interior, the walls are cleaned of a much harder layer of plaster, the lower part of the wall is washed with boiling water from salt. He decides to use only ancient bricks from the Samanid period, which were found enough during the excavation of the side of the mausoleum to fill the wall decoration. The white color and quality of the new blend could have ruined the appearance and aesthetics of the building as the monument's plaster mix had darkened over 1,000 years. Therefore, the pieces of the old mixture and the fragments of the old mixture are restored by initial processing (heating and grinding).

It should be noted that the use of parts of the period in the repair not only extended the life of the monument, but also became a method of creating a quality and durable method of repair. This experience, enriched by the experience of folk builders, has given excellent results in the creation of quality repairs. Even today, the restored brick slabs are difficult to separate from the previous ones, and the monument is well preserved as untouched. This practice was highly valued at the time and is still recognized today as a worthy example of the study of repair and careful treatment of architectural monuments.

In those years, B.N. developed a method of chipping and recycling old bricks in the initial cleaning and repair of this cultural layer and the repair plaster layer. Zasyupkin and master Shirin Muradov use it in the restoration of the Magoki-Attori mosque, in particular its southern roof dating back to the 12th century. However, this method coincided with the beginning of the repair work, and was unique to architectural masterpieces with small size and tile-free carved terracotta. In Bukhara, as in a number of other historical cities of Uzbekistan, dozens of large structures, especially glazed and ornate buildings of the XV-XVII centuries, were on the verge of collapse.

#### 2. MAIN PART

These facilities did not use the repair method described above. There is a need for special research and production workshops to re-decorate the buildings, which need to fill the area where the fragments of majolica and mosaic decorations fell.

Finally, the pottery workshop established in Samarkand in 1925-1935 mastered the ancient methods and technologies of making glazed tiles and began to produce samples that do not differ from the old ones. Thus, by the end of the 1930s, if there was sufficient documentary basis to fill in the missing parts of the buildings, there would be an opportunity for a complete overhaul.

In 1940 (according to K. Kryukov as early as 1937) Uzkomstaris opened courses in Samarkand to train masters of

the art of construction of Uzbekistan. In this school, master Shirin Murodov and other masters laid the foundation of their school of practical restorers by training young talented masters.

In 1943, Uzkomstaris was replaced by a four-member department for the protection of monuments under the Committee for Architectural Affairs. After the war years, in accordance with the order of URMIQ (All-Russian Central Executive Committee - VTsIK - All-Russian Central Executive Committee) on "Combating architectural redundancies" for about 10 years, little money was allocated for the protection and restoration of monuments. More attention was paid to building faster houses for the people [10].

In the 1950s and 1960s, chalasavod master histories on construction in historic cities were developed. According to him, new buildings are planned to replace the historic sites.

Fortunately, most of them didn't fully materialize. However, in Bukhara in those years, a significant part of the gates of the ancient city, the Yor-Muhammad Father's House, Ernazar Elchi Madrasah and other monuments were demolished.

In the 1950s, many religious buildings - mosques, khanaqas, and madrasas - were used for economic purposes. In place of the destroyed monuments, uncultivated barren lands were created, including the Poi-Kalon ensemble in Bukhara.

In those years, along with a number of architectural masterpieces, the old facade of the Mir-Arab madrasah in Bukhara was preserved, and the fallen majolica tiles were replaced with polished terracotta bricks. This allowed the ornaments to be preserved, but at the same time the "terracotta patches" led to a distortion of its drawing and color gamut.

By the early 1960s, the situation was improving. In 1957, under the pressure of the scientific community and intellectuals of Uzbekistan, the Committee for the Protection of Material and Cultural Monuments of Uzbekistan was established. In historical cities, including Bukhara, special research and repair workshops will be established, where workshops for processing wood, ceramic tiles and ancient brick samples will start working.

In 1957-1961, a new residential building was built in Bukhara to relocate the population of the Kokaldosh madrasah, and in 1960-1961, a similar production workshop was opened in Samarkand under the leadership of an experienced potter Usmon Umarov. It produces special coatings for Mir-Arab, Abdullakhan, Ulugbek, Kokaldosh madrasas, Kalon mosque and other monuments. In 1960-1970, the ancient technology of ceramics and brick making was significantly mastered, the quality and volume of their production increased.

However, the above was only related to the decoration, and now it was time to fully restore the monuments along with their supporting structures, following the rules of seismicity. At the same time, it was time to correct the mistakes, such as filling in the previously missing parts with old brick samples. For example, in Bukhara, the largest and most beautiful Mir-Arab madrasah in Uzbekistan, for many years it was still violated.

This is because the perennial and numerous old brick slabs of this building formed a special patch - "fragments" on the body of the old building. At the same time, it was not possible to radically change its structural condition, and over the years, the rest of the building began to fall into disrepair.

Experience has shown that the structure needed to be reinforced with brick slabs and cladding using modern materials. K.S. Based on his personal experience and research, Kryukov concludes: "For Central Asian architectural monuments, conservation is not appropriate in general terms, given the structure, the properties of the building materials, and the impact of the earthquake. For the preservation of architectural monuments, it is necessary to restore the structure of the building and the roof (dome), which will ensure the reliable preservation of monuments.

It should be noted that at least the reinforcement of the structure with metal was carried out in Bukhara in the middle of the XX century. Here Nadir Devonbegi was pierced as a result of artillery shells from his room, and in 1929 V.S. The dome, which was renovated under the leadership of Gugel, was reinforced in 1955 with a metal flange made of sliced iron at the base of the dome.

The method of strengthening the old structures was developed separately for each object. In the 1970s, almost every architectural masterpiece of Bukhara was to some extent reinforced with a metal corset or studs or the same reinforced concrete structures. Designer Yu, at the suggestion of Goldenstein, the Mir-Arab madrasah was reinforced with a metal frame inserted between the walls and the southern roof, as well as its drum and main dome with metal "styajka" hidden between the decorative coverings.

In 1976, in order to strengthen the outer north-western dome of the monument, 24 metal joints in the shape of a dome and supported by a metal ring were installed. The dome of the Gavkushan madrasah was strengthened in a slightly different way, where the dome was supported by a reinforced concrete ring. At the Kalon Mosque, the largest and most prestigious mosque in Bukhara, the large blue dome of the target was reinforced with a metal frame. In this case, the weight of the dome was to be transferred and evenly distributed on the vertical metal vertical supports mounted on the walls of the target hall.

In the Gavkushan tower, the foundation was reinforced with metal reinforcement. The sloping roof of the Abdullah Madrasah in the 1960s was strengthened and corrected by the installation of hidden pillars on his body. In this case, the load of the roof is transferred to the vertical columns. Also, a security zone was established around the monument, and the movement of vehicles was moved away from the monument.

Checking the durability and correctness of such reinforced structures in the restoration of buildings did not go very

far. In 1984, a strong earthquake shook the Bukhara oasis. A commission formed at the time, consisting of architects-restorers and designers, found that the central dome of the Bokhouddin room had been demolished, radial cracks had appeared in the Toki-Zargaron and Taki-Telpak Furushan trade domes, the Bahauddin and Peshku ensembles, the Gavkushan and Gaza mines of the Gavkushan and Gaza mines. The porches of the Khoja Zayniddin, Volidai-Abdulazizkhan and Oybinok mosques, as well as the upper roofs of many buildings, were damaged.

Surprisingly, the losses were observed exactly in the restored objects without reinforcement with metal structures or reinforced concrete. For example, in the Kokaldosh madrasa, parts that were repaired in the 1960s without reinforcement are in a state of disrepair. At the same time, since the 1970s, buildings that have been delicately incorporated into their bodies with reinforced concrete sinks or separate thin-walled details have been well-preserved against earthquakes and have not seen any visible damage.

For example, the main roofs of the Nadir Devonbegi room and madrasa, the roof of the Kalon mosque, the southern palace roofs of the Ulugbek and Mir-Arab madrasas, the domes of the Gavkushan and Mir-Arab madrasas, as well as the Chor-Bakr mosque in the early 1970s. a thin-walled (12 cm) reinforced concrete raised dome can be inserted. Thus, the analysis of losses showed that in the restoration of buildings it is necessary to pay equal attention and special attention, as well as to strengthen the strength of the structure and the use of modern building materials (quick-setting cement, high quality steel).

Soon a new catastrophe occurred, that is, in 1986-1987, due to the failure of the city's water supply network, the foundations of a number of architectural masterpieces in Bukhara fell into disrepair. Immediate work was done to prevent this catastrophe. At the Samanid mausoleum, master Rakhimov worked to increase the strength of the yuino's foundation and to remove the earth's crust, which was re-laid after the foundation of the northeastern corner of the Mir-Arab madrasah had been pre-strengthened. In Nadir Devonbegi Madrasa, due to deformation, dampness and cracks of the foundation, the walls were rebuilt and the north-eastern corner of the building and the northern facade were strengthened [4].

A number of decrees and measures issued since the 1970s have made it possible. As a result of the state decree of May 14, 1968 "On the preservation of architectural monuments of Bukhara ..." additional funds were allocated for the repair, the master plan was developed taking into account the architectural monuments. In 1976, a competition was announced for the project of a detailed history of the Bukhara Historical Center.

Much work was done, especially in the early 1970s. During this time, the methodological framework for the reconstruction of historically formed cities was developed. The complex restoration of the centers of historical cities, including Bukhara, has begun. In 1979, a single governing body - the General Directorate for Research and Production of Preservation and Use of Cultural Heritage (GlavNPU) and many affiliated institutions was established under the Ministry of Culture of Uzbekistan.

Founded in 1979, it included the Uzbek Research and Design Institute for Conservation and Restoration of Uzbek Cultural Monuments (UzNIPIR). Scientific projects of individual buildings, including the project of protection and reserve area of Bukhara, have been professionally developed here.

In 1983, by the decision of UNESCO, Bukhara was declared a historical and architectural museum-reserve. The increase and acceleration of the volume of restoration work has made it possible for the world community to celebrate the anniversaries of cities here under the auspices of UNESCO. In particular, in 1980, more than 40 monuments of Bukhara were restored on the occasion of the 1000th anniversary of the birth of Abu Ali ibn Sino (Avicenna).

The Society for the Protection of Historical and Cultural Monuments of Uzbekistan, founded in 1968, plays a significant role in strengthening the protection and repair of cultural monuments of the republic. In 1976, the Republican Scientific-Restoration Production Association "Architect" was formed and trained qualified personnel (director K.A. Abdullaev) and since the early 1970s at the Department of "History and Theory of Architecture" at the Tashkent Polytechnic Institute, professors (V.A. Nielsen and At the initiative of Associate Professor Yu.Z. Schwab) begins the training of architects-restorers.

In 1982, by the decision of the government of the former USSR, in 1983, the State Historical and Architectural Museum-Reserve was established in Bukhara. A great deal of experience has been accumulated in the repair and study of architectural monuments. In the 70 years since the establishment of the state structure for the protection of the first historical monuments called Turkomistaris, the organization has made significant progress despite many positive and negative changes. Extensive experience has been accumulated in the repair and study of architectural monuments. And finally the Central Asian School of Restoration was formed, based on the in-depth knowledge of the ancient masters on the processes of construction and design of buildings.

In short, when talking about the conservation and restoration work carried out on the monuments during the colonial period, it should be noted that the success of the repair work during this period is the result of a number of experiences and the necessary specialists in collaboration with legal documents.

At the same time, great emphasis is placed on the raw materials used during the colonial period. A number of studies have been carried out in the pre-repair scientific research work rather than in a hasty manner in the repair work. The consequences of the negative effects on monuments have been studied and based on this, repair methods have been developed.

Of course, it should be noted that suddenly such good results were not achieved. There was a lot of scientific and practical research on this ground, but it was also a big responsibility. Of course, the role of folk masters in the success of the repair is invaluable. Because it is impossible to achieve good results in this responsible work without a thorough study and knowledge of our national architecture. It should be noted that as a result of joint work of folk masters, architects, designers, builders, installers, quality repairs have been achieved.

Examples of this are the Samanid Mausoleum, the Mogokki-Attar Mosque, and several other monuments. During the years of independence, a large-scale work has been carried out to repair the monuments of Bukhara. The main focus of the repair work was on structural reinforcement. Unfortunately, there were many shortcomings in the repair work. Because we are witnessing that this work was caused by a hasty, blind approach to ground repairs.

At the same time, it should be noted that due to the fact that the repair work was carried out in a short period of time on the occasion of anniversaries and other holidays, we are witnessing poor quality repairs. Another major factor in the resulting poor quality repairs is the neglect of the raw materials used in these repairs. In other words, the restoration of not only the architectural monuments of Bukhara, but also many architectural monuments of our country does not meet the requirements.

Positive repair work was achieved during the colonial period, but through these poor quality works during the independence period, the positive aspects of quality repair work and many architectural monuments were lost. From the problems that remain unresolved today, it is necessary to strengthen measures to carry out quality repairs through the creation of science-based methods of restoration of architectural monuments.

As we have mentioned above, it would be expedient to study and interpret the repair work carried out during the colonial period in more depth and apply it in today's repair work. The main purpose of this is to further improve the quality of repair projects in the country with the involvement of specialists in this field. To do this, a high level of experience in the repair work requires deep knowledge, high skill and of course qualification from the professionals.

### 3. CONCLUSION

It should also be noted that another reason for the problems encountered in repair work today is the loss of restoration schools. Restoration of lost restoration schools in our country will allow to create projects of quality repair methods, attracting the experience of folk masters in the field of restoration, retraining of qualified specialists, architects, builders, painters, engineers, designers and others.

It is the duty not only of the specialists, but also of each of us to pass on the unique cultural heritage of the past to the next generation by carefully and responsibly repairing the priceless architectural monuments of our country and repairing them in accordance with the law.

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