ORIGINAL ARTICLE

INTERNATIONAL JOURNAL OF ARTIFICIAL INTELLIGENCE

ISSN: 2692-5206, Impact Factor: 12,23
American Academic publishers, volume 05, issue 10,2025

Journal: https://www.academicpublishers.org/journals/index.php/ijai

PROBLEMS OF PRESERVATION AND RESTORATION OF ARCHITECTURAL MONUMENTS AND CULTURAL HERITAGE SITES

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Abstract: In Uzbekistan, the problem of preservation and restoration of architectural monuments remains relevant, despite the active state policy and regulatory measures of recent years. Many facilities are in poor condition, which requires a comprehensive scientific approach, the involvement of qualified specialists and modern technologies. The study is based on an analysis of restoration projects in historical cities and identifies key barriers to the effective protection of cultural heritage.
Key words: cultural and historical heritage, architectural monuments, restoration, reconstruction, conservation, restorer.

Introduction. The issue of preserving and restoring architectural monuments and cultural heritage sites holds great importance for every nation, as it is directly linked to the preservation of historical memory and identity. In recent decades, the Republic of Uzbekistan has undertaken significant efforts to protect, restore, and promote tangible cultural heritage sites. This includes both legislative initiatives and practical measures aimed at the restoration, conservation, and adaptation of historical sites for future generations.

Particular attention is paid not only to individual buildings but also to entire historical ensembles, districts, and adjacent areas, which are also integral parts of the cultural heritage. In this context, restoration becomes not only a technical task but also an essential component of the state's cultural policy. Within the framework of these efforts, numerous organizational, financial, and scientific challenges must be addressed, requiring a comprehensive approach and interdisciplinary cooperation.

The purpose of this study is to analyze the existing problems of restoring cultural heritage monuments in Uzbekistan and to develop proposals for improving restoration processes, as well as optimizing the use of modern technologies and materials to ensure the effective preservation and rehabilitation of historical sites.

Research Methods. Using both quantitative and qualitative methods, an analysis was conducted of archival data, scientific literature, and reports from restoration projects. Specific examples of reconstruction in Samarkand, Bukhara, Khiva, and Shakhrisabz were examined. A comparative analysis made it possible to contrast the experience of completed restoration and renovation projects with the condition of monuments that have not undergone reconstruction.

Through on-site observation and investigation, data and descriptions of the current state of monuments were collected, along with photographic documentation. In addition, surveys were conducted among restorers, architects, UNESCO experts, and other specialists involved in restoration, museification, and heritage preservation processes.

Relevance of the Issue of Preserving and Restoring Architectural Monuments and Cultural Heritage Sites. The problems of preserving and restoring architectural monuments

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remain among the most pressing and significant in contemporary cultural policy. Despite numerous measures being implemented at both the national and international levels to protect and restore tangible cultural heritage sites, many issues still remain unresolved.

In recent years, the Republic of Uzbekistan has adopted several important Presidential Decrees (PP-4068 of December 19, 2018; PP-5150 of June 19, 2021; PP-261 of May 27, 2022; and others) aimed at improving the mechanisms of protection, restoration, cataloguing, and museification of more than 8,000 cultural heritage sites.

Based on the Presidential Decree of the Republic of Uzbekistan dated June 1, 2023, "On Measures for the Effective Organization of Public Administration in the Field of Cultural Heritage within the Framework of Administrative Reforms," unified minimum requirements have been established jointly with the Ministry of Construction and local khokimiyats for creating inclusive conditions at real estate sites of tangible cultural heritage.

These requirements define tasks related to the restoration, repair, and conservation of real estate and tangible cultural heritage sites visited by tourists, as well as the conservation of archaeological heritage sites and their adaptation for modern use without causing damage to cultural heritage properties. Starting from 2025, they also include the creation of minimum conditions to ensure barrier-free access and movement for persons with disabilities.

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Example of the reconstruction and restoration of an architectural monument — the Bibi-Khanym Mausoleum in Samarkand. Photographic documentation from 2000 / 2024.

At present, restoration and repair works have begun on 141 cultural heritage sites and state museums. During the year, seven museums will undergo major renovations, and restoration work will be carried out in one museum.

Throughout 2024–2025, restoration and repair activities will continue at 86 tangible cultural heritage sites and state museums located across the country.

This information was reported during a briefing by Mohinur Imomova, Press Secretary of the Cultural Heritage Agency, regarding the progress made in further improving research activities aimed at protecting and promoting cultural heritage (June 6, 2024) [1].

However, despite significant progress in this field, a large portion of architectural monuments still remains in an unsatisfactory condition. Many of them are damaged, located in hard-to-reach areas, or perceived as having little cultural value, and therefore are not included in restoration programs.

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Example of the detrimental effects of precipitation and humidity on the condition of an architectural monument — the Bibi-Khanym Mosque in Samarkand. Documentation, 2022.

Meanwhile, each such structure—regardless of its degree of preservation, artistic expressiveness, or period of creation—represents an integral part of the nation's historical memory and requires careful preservation.

It is especially important to develop scientifically grounded criteria for assessing the condition of heritage sites and determining the priority of restoration efforts, which would allow for more efficient allocation of resources and the preservation of the most vulnerable monuments.

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"Thus, the need for a comprehensive approach to cultural heritage preservation, the expansion of the scientific and practical basis of restoration work, and the involvement of the public in the protection of historical sites make this issue exceptionally relevant in the modern context."

Challenges in the Restoration of Cultural Heritage Monuments. Restoration is a complex and multifaceted process aimed at recovering the historical appearance of a monument while preserving as many of its original elements as possible. This requires high precision, a scientific approach, and the use of traditional materials and techniques. The primary goal of restoration is to preserve the authenticity and historical value of the site.

However, in practice, the implementation of this goal is associated with a number of serious challenges. First and foremost, restoration rarely involves a single building — more often, it entails comprehensive work with entire historical ensembles, districts (mahallas), and adjacent infrastructure, which are equally important components of the cultural heritage.

The key challenges include the need for an interdisciplinary approach and the involvement of a large number of highly qualified specialists — architects, engineers, historians, archaeologists, art historians, ethnographers, craftsmen, and other experts.

A particularly pressing issue is the shortage of professionals who possess not only modern restoration skills but also knowledge of traditional techniques that were used centuries ago. Without such professional collaboration and a high level of expertise among participants, there is a significant risk of causing irreparable damage to vulnerable monuments.

Moreover, high-quality restoration is impossible without the use of modern technologies — such as 3D modeling, digital analysis, and materials research — as well as appropriate technical equipment. This requires significant financial resources, including the establishment of temporary research laboratories and the production of unique materials tailored to specific sites.

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Example of the superimposition of a reconstructed silhouette of an architectural monument using a transparent panel — Khonako Mosque in Bukhara, Ark. Photographic documentation, 2024.

The lack of funding thus becomes one of the main obstacles to the full implementation of restoration projects, especially in the case of lesser-known or remote sites, which often receive insufficient attention.

Table 1. Stages of Cultural Heritage Monument Restoration

Restoration Stage	**Description of Work Responsible Specialists**	**Description of Work Responsible Specialists**
Assessment of the Monument's Condition	Analysis of the physical state and historical value of the site	Architects, engineers, historians
Documentation Preparation	Development of project documentation and a restoration plan	Architects, restorers
Restoration Works	Reconstruction and strengthening of structures, replacement of lost elements	Restorers, builders

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Conservation and Protection	Surface treatment and protection against external factors	Materials specialists
Final Inspection and Approval	Quality control of completed work and verification of compliance with historical data	Expert commission, architects

It is also important to emphasize that there is often a challenge in finding the optimal balance between preserving the historical value of monuments and adapting them to modern requirements. In some cases, attempts at modernization may lead to the loss of the unique architectural techniques and styles characteristic of certain historical periods. This poses a threat to the disappearance of traditional methods and practices inherent to specific schools of architecture.

Therefore, it is crucial that restoration and renovation projects involve specialists who are well-versed in the features of historical architecture and who understand the importance of preserving unique building traditions.

Large-scale restoration and reconstruction work is a multifaceted process that involves both scientific research and the detailed development of individual preservation methods in order to avoid the distortion of architectural techniques and styles characteristic of different historical periods.

Thus, the restoration of cultural heritage is not merely the reconstruction of an architectural object but a complex, costly, and system-dependent process, in which the key challenges remain the shortage of skilled personnel, advanced technologies, and sufficient funding.

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Emergency condition of an architectural monument — the Bibi-Khanym Mosque in Samarkand. Photographic documentation, 2022.

Table 2. Problems of Restoration and Possible Solutions

Problem	Possible Solutions
Lack of qualified specialists	Development of educational programs and involvement of international experts
Lack of funding	Attraction of private local and international investors, increase in government funding
Lack of modern technologies	
Inability to restore certain sites	Application of conservation methods and

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	creation of virtual models of the sites

Possible Solutions:

Creation of a national digital register of monuments containing up-to-date information on the condition of sites and restoration works. This will help ensure transparency and a systematic approach to cultural heritage preservation.

Development of international cooperation through exchange programs, internships, and joint projects with foreign restoration centers. This will enhance specialists' qualifications and promote the exchange of experience in the field of heritage conservation.

Development of an ethical code for restorers focused on preserving historical authenticity and adhering to international standards such as the Venice Charter. This will establish clear moral and professional guidelines for restoration specialists.

Involvement of local communities in the renovation process through a participatory heritage approach. This will ensure public support, preservation of local traditions, and the creation of sustainable restoration models.

Development of educational programs and involvement of international experts to train new specialists, especially in regional areas.
This will help overcome the shortage of qualified personnel and raise the overall level of knowledge in the field of restoration.

Attraction of private investors and an increase in government funding for large-scale restoration projects**.** This will provide the necessary financial resources for the preservation of monuments, especially in remote regions.

Introduction of new technologies in restoration, such as 3D modeling, laser scanning, and other innovative methods,
which make it possible to accurately recreate lost architectural elements and ensure higher-quality restoration work.

Creation of virtual models of sites for the conservation of monuments that cannot be physically restored.
This will help preserve information about these monuments for future generations.

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View of the surviving pylons of the former portal of the Ak-Saray Palace in Shakhrisabz. Photographic documentation, 2024.

Unfortunately, in some cases, the restoration of sites becomes impossible due to their extensive destruction, and the only remaining evidence of their former grandeur are isolated fragments. A vivid example of such a situation is the Ak-Saray Palace in Shakhrisabz, the residence of Amir Timur, whose construction lasted from 1380 to 1404.

To date, only about 2% of the original structure has been preserved. The entrance arch of the Ak-Saray portal, which collapsed around 300 years ago, was the largest in Central Asia. At present, only two isolated pylons remain of this once magnificent structure.

The palace occupied a vast area: the main inner courtyard alone measured 120–125 meters in width and 240–250 meters in length. Calculations based on the proportions of the surviving architectural elements indicate that the height of the main portal reached 70 meters. [2]

In 2014, it was reported that the restoration of the Ak-Saray palace square had been completed. Specialists from France, led by archaeologist Céline Allainé, worked on the restoration of glazed ceramic tiles from the Timurid era. The restored tiles were protected by a special structure designed to prevent damage while maintaining accessibility for visitors.

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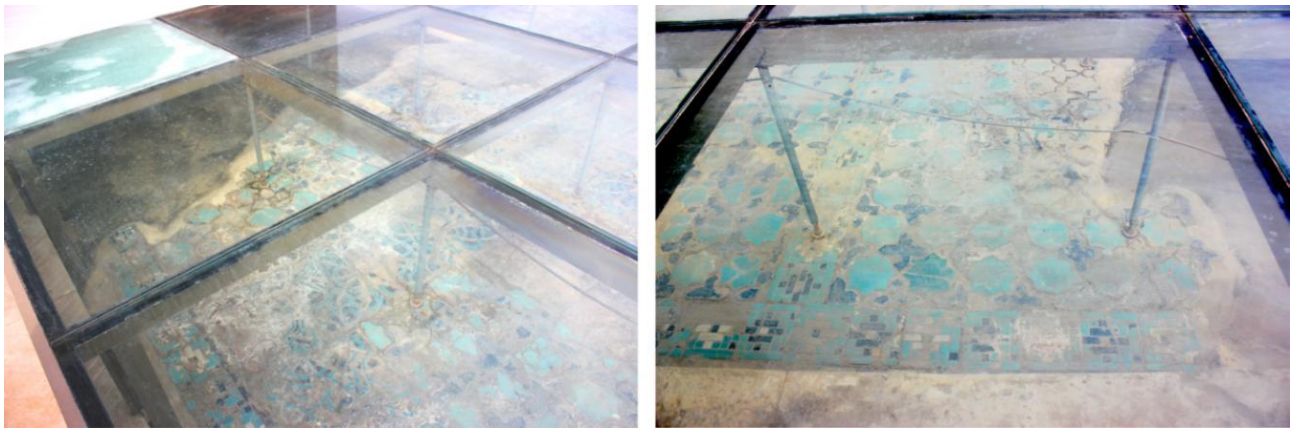
The restoration project was carried out with the support of the UNESCO Office in Tashkent as part of a comprehensive program for the development and reconstruction of Shakhrisabz. [3]



Surviving fragment of the floor with ornamental decor, protected by a glass canopy from environmental exposure. Ak-Saray Palace in Shakhrisabz. Photographic documentation, 2024.

In 2016, the UNESCO World Heritage Committee included the historic center of Shakhrisabz in the List of World Heritage in Danger due to large-scale destruction and alterations in the historic part of the city.

From a scientific standpoint, in cases where the physical restoration of a historical monument is impossible because of its extreme degree of destruction, the optimal strategy becomes the conservation of surviving fragments aimed at slowing down decay and preserving authentic elements. This practice is based on the principles of the Venice Charter, which emphasize maintaining original parts without distorting their historical context.

Additionally, an important direction in modern restoration practice is the creation of virtual reconstructions—digital models that accurately reproduce the lost appearance of objects using scientific data, archival materials, and analogs. This approach not only preserves visual and architectural information for future generations but also opens new opportunities for the popularization of cultural heritage on the international stage, including in educational, museum, and tourism projects.

A vivid example of such an approach is the work of restorer Aziz Akhmedov from Shakhrisabz, who dedicated years to studying the nearly lost Ak-Saray Palace. Based on the remaining fragments, archival data, scientific publications, and historical photographs, he recreated the architectural appearance of the palace as a detailed project and physical model. Later, in collaboration with visualizers, he developed a comprehensive 3D digital model that not only allows one to visualize the lost monument in its presumed original form but also provides tools for comparative analysis with the surviving on-site elements.

The results of this research and restoration work can be explored directly in Shakhrisabz, making it an important example of integrating traditional restoration methods with digital technologies in the field of cultural heritage preservation.

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Restorer working on the reconstruction project of the architectural monument — Ak-Saray Palace. Shakhrisabz. Photo by Aziz Akhmedov, 2021–2025.

Conclusion. The preservation of architectural monuments and cultural heritage sites is one of the most important priorities of Uzbekistan's cultural policy. In recent years, significant progress has been made in establishing an effective system for the protection of monuments; however, issues related to restoration still require further improvement in approaches, as well as increased financial and human resources.

The main challenges faced by restorers include not only organizational and financial difficulties but also a shortage of qualified specialists skilled in traditional methods and materials. One of the key aspects of successful restoration is a comprehensive approach that involves not only work on the monuments themselves but also on the surrounding infrastructure, requiring the participation of a wide range of professionals.

The application of advanced technologies and materials — such as 3D modeling, laser scanning, and the establishment of research laboratories for material development — can significantly enhance the efficiency and quality of restoration work. It is also essential that restoration efforts extend beyond major historical landmarks to include smaller structures, which are equally important components of cultural identity.

To address these challenges, it is necessary to continue training qualified specialists, improving the legal framework, and increasing financial investment in the field of restoration. A systematic and integrated approach will ensure the long-term preservation and accessibility of the nation's cultural heritage for future generations.

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