TRANSFORMING THE MIZDAXKAN HISTORICAL COMPLEX INTO A VIRTUAL MUSEUM – A PRESSING ISSUE IN THE HISTORY OF KHOJAYLI

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ABSTRACT

The article analyzes the issue of transforming the Mizdaxkan historical complex, located in the Khojayli district of the Republic of Karakalpakstan, into a virtual museum with the help of modern digital technologies. It also studies international experiences in preserving historical monuments, their use in scientific research and education, as well as increasing tourism potential. According to the author, establishing the Mizdaxkan complex as a digital museum is a pressing issue in the history of Khojayli, carrying great scientific, social, and economic significance.

Introduction. The city of Khojayli in the Republic of Karakalpakstan holds a special place in the history of Central Asia. This region is closely connected with the political, cultural, and religious life of ancient Khorezm. In particular, the Mizdaxkan (Mizdarkhan) complex — a collection of archaeological and religious monuments — occupies an important place in the historical memory of the peoples of Uzbekistan, Turkmenistan, and Karakalpakstan.[1]

Today, the Mizdaxkan territory faces serious preservation problems. Natural erosion, climate change, tourism pressure, and human activity are causing the monuments to deteriorate rapidly. Therefore, documenting the complex in digital form and turning it into an open-air virtual museum is one of the most pressing issues in the context of Khojayli's history.

Main Part

1. The historical significance of the Mizdaxkan complex.

Mizdaxkan is an ancient necropolis, preserving mausoleums, religious structures, and monuments associated with folk legends from different eras. This territory serves as an invaluable source for studying the socio-economic and cultural life of Khojayli. Through Mizdaxkan monuments, it is possible to research not only local history but also broader historical processes of Central Asia.

2. The concept of a virtual museum.

In recent years, global science has taken a new step in digitizing historical heritage and delivering it to the wider public. A virtual museum is a system of digital preservation and presentation based on 3D technologies, photogrammetry, LiDAR scanning, and VR/AR platforms.[2]

The advantages of such museums include:

- protecting original monuments from damage;
- creating a digital database;
- expanding research opportunities for scholars;
- offering tourists interactive online and offline tours;
- introducing new pedagogical methods into the educational process.

3. International experience.

Worldwide projects such as CyArk (USA)[3] and Open Heritage (Google Arts & Culture)[4] have achieved significant results in digitally preserving and virtually presenting historical monuments. For example, the 3D models created by CyArk made UNESCO heritage sites accessible for both the scientific community and the general public. Turning Mizdaxkan into a virtual museum, inspired by such global practices, would make Khojayli's history known to the international scientific community.

4. Three aspects of relevance.

- **Scientific relevance:** creating 3D models of the complex allows for deeper study of Khojayli's history and the discovery of new archaeological data.
- **Social relevance:** a virtual museum fosters respect for historical heritage among the younger generation and strengthens national identity.
- **Economic relevance:** virtual tourism can attract new visitor flows, as well as develop grants and international partnerships.

Discussion.

The presentation of the Mizdaxkan complex as a virtual museum can be carried out step by step:

1. **Inventory and documentation:** collecting orthophoto maps and photogrammetric images using drones.
2. **3D scanning:** digitizing main objects with LiDAR and high-precision photogrammetry.
3. **Data processing:** creating point clouds and mesh models, applying textures, and optimizing.
4. **Web portal and mobile application:** providing users with interactive tours, scientific commentary, and historical narratives.
5. **VR/AR applications:** developing special virtual exhibitions and immersive educational modules.

Involving the local community in the process is crucial. Public participation increases the sustainability of the project and creates new job opportunities and research prospects for young people.

Conclusion.

Transforming the Mizdaxkan complex into a virtual museum is a pressing issue in the history of Khojayli, which carries great significance not only for scientific research but also for social, spiritual, and economic development. Through the virtual museum project, it is possible to:

- preserve historical heritage for future generations,
- present Khojayli to the international scientific community,
- develop tourism and support the local economy.

According to the author, it is advisable to start the project in the form of a small prototype and later expand it with the help of international grants (for example, ALIPH).

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