

The Importance of Preserving Traditional Castles in the Center of Historic Cities (On the example of Khiva, Deshon Kala Fortress)

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Abstract:

The preservation of traditional castles in historic cities remains a critical yet underexplored area in heritage conservation, with limited research focusing on the structural resilience and cultural significance of fortifications like Deshon Kala in Khiva. This study employs a qualitative and historical analysis method to assess the architectural and engineering strategies that have contributed to the fortress's longevity despite natural and human-induced deterioration. Findings reveal that the use of local building materials, such as adobe bricks and alabaster mortar, has enhanced earthquake resistance, while community-led restoration efforts are gradually mitigating the impacts of decay. The results underscore the fortress's role not only as a historical landmark but also as a testament to ancient urban planning and construction techniques. The implications of this research highlight the need for integrated conservation strategies that balance authenticity with modern preservation techniques, ensuring that historic fortifications continue to serve as cultural and educational assets for future generations.

Keywords: Cultural heritage preservation, traditional castles, historic urban planning, fortress architecture, structural integrity, seismic resilience, material durability.

Introduction

The preservation of traditional castles within historic city centers represents a crucial yet underexplored aspect of cultural heritage conservation, with significant gaps in understanding the impact of urbanization and environmental factors on these structures. This study employs a qualitative historical and architectural analysis method to examine the case of Deshon Kala Fortress in Khiva, focusing on its architectural resilience, socio-economic significance, and conservation

challenges. Findings reveal that while the fortress has withstood centuries of natural and human-induced changes, modern restoration efforts are essential to maintain its integrity. Results indicate that integrating traditional construction techniques with modern conservation strategies can enhance the sustainability of historical sites. The implications of this research highlight the necessity for interdisciplinary approaches involving historians, architects, and policymakers to ensure the long-term preservation of these monuments, reinforcing their cultural and economic value for future generations.

Methods

This study addresses a critical knowledge gap in the preservation of traditional castles within historic city centers, particularly focusing on the Deshon Kala Fortress in Khiva. A qualitative research approach was employed, incorporating historical document analysis, field observations, and structural assessments to evaluate the current state of the fortress and its architectural resilience. Data collection included archival research of historical texts, expert consultations, and on-site inspections of the fortress walls. Findings indicate that the fortress, despite enduring centuries of environmental and human-induced wear, retains remarkable structural integrity due to its unique construction techniques, including adobe bricks and seismic-resistant features. The results highlight the need for continued conservation efforts, integrating traditional materials with modern preservation methods to ensure long-term sustainability. This research has significant implications for cultural heritage management, advocating for policies that prioritize the restoration and protection of historic fortifications as essential elements of national identity and tourism development.

Results and Discussion

Many of the ancient cities in our country have gone through a number of cultural historical periods, have retained their urban planning heritage to this day, have repeatedly changed their structure. Individual cities and their individual centers, corresponding to each era, were formed in series. The sequence in the transformation of the architectural structure of the city was determined by the progress of society; the periods of its rise were alternated with periods of crisis, but in any case, the connection between socio economic factors and urban architecture remained unchanged. In this regard, it is worth saying that Ichan Fortress and DeShon fortress in Khiva are a clear example of this.

About 100 castles, dating back to the ancient history of Khwarezm in the South Islet, are state protection. Academician Yahya Ghulomov has one priceless quote about Ancient Khorezm while Herodotus, the father of World History, considered all Egypt a gift of the Nile, Istahri – Khorezm is a mamalakat who was able to get the whole benefit of Jaikhun". The people of these two ancient countries were able to live between the Sahara and occupy a special position in the world economy, as well as lay the foundation for the principles of statehood. In the development of any statehood, of course, the construction of castles, fortifications was of great importance. It is known that the state appears not where people live in chays, basements, but where there are a huge number of architectural structures, namely castles, palaces .

It is noteworthy that these pakhadevor architectural monuments on the territory of ancient Khorezm have withstood the warm-cold, snow-rain, earthquake-heavy floods of nature since 1500-2000. At the same time, the ancient generation-our ancestors built thick paksadevor enclosures, houses from clay-soil, which sluggishly spends the heat of summer and the cold of winter. Mil. in the 1st century BC. In the late 7th-6th centuries, the construction of buildings and structures of ancient Khwarezm used raw brick and cotton made of ordinary clay, although they were built in very complex engineering building styles.

In this regard, although the architectural monument of Deshon Fortress paksadevor has come to the level of disappearance (Figure 1) as a result of man-made negative effects associated with natural and human activities for centuries, but when our scientists, taking a sample from the existing part, have studied, it is noteworthy that the strength of the wall was determined to be sufficient.



1-Fig. Ichan kala fortress in the vicinity of quarter and Deshon kala fortress wall

The Deshon kala fortress wall, restored for defense around the Ichan kala fortress wall, was built in 1842 by the Khan of Khiva, Ollaqulikhan. The length of the fortress wall is 6250 meters. The poet and translator Ogahi wrote that Ollogulikhan had a three – year period for the construction of this wall (the state was obliged to provide free work to each citizen 12 days a year), that is, it was completed in 36 days, and more than 200 thousand people took part in the construction of the fortress wall .



2-Fig. Deshon kala south-western parts of the fortress wall

Khiva is a city-museum of architecture. It consists of two parts: the inner city of Ichan-Kala and the outer city of Dishan-Kala. They are separated from each other by protective circles. Unfortunately, Dishan-Kala has survived to this day much less than Ichan-Kala. From what was once a massive fortress wall, only the gates of Kosh-Darvaza, Gandimyan-Darvaza and Khazarasp-Darvaza remain.

The Dishan-Kala fortress wall was built at the instigation of Allakuli Khan in the middle of the 19th century to protect the city from attacks by Turkmen tribes. The khan issued a decree according to which each of his subjects had to work on the construction of the wall 12 days a year - of course, for free. Since the Khan had more than 200,000 people, the wall was built fairly quickly - in 3 years. It was 6,000 meters long, 8 meters high, and 6 meters thick. It was built of adobe bricks. Turrets were located at regular intervals along the wall. The top of the wall was jagged; It had narrow arrow slots, providing effective defense. A moat was built around the perimeter of the wall as another protection, and all gates were locked at night. The gate was also part of the fortification. Each of them had a turret on both sides, and above them was an observation gallery.

There were 10 gates in Dishan-Kala:

1. Khazarasp in the northeast, facing the roads to Khazarasp, Khanka and Yangiaryk;
2. Pishkanik in the east, named after the nearby village, or Kумыaska, named after the quarter located in it.
3. Angarik in the west, named after the nearby village facing the road to the summer residence of Allakuli Khan Bogishamol;
4. Shihlar in the south, named after the nearby quarter, all proceeds from which go to the mausoleum of Pahlavan Mahmud.
5. Tozabog in the southwest, facing the road leading to the summer residence of Muhammad Rahim Khan.
6. Shakhimardan in the west, named after the nearby cemetery.
7. Dashyak in the northwest, named after a nearby village.
8. Kosh Darwaza in the north, so named because of the design of the double gates, and also called Urgench.
9. Gadailar in the north, also named after the nearby mahalla residential area.
10. Gandimian in the north, also named after a nearby village.

The main building materials of the fortress are clay, brick, earth and rubble. The wall part of the castle is full of raw clay, restored from the Pax, and the lower parts of the wall are plucked out of large rubble. In the restoration of the castle, special Kum descent - platforms were worked over the foundation on the maksadi to reduce the earthquake-bearing nature of the wall and the impact of groundwater. A perimeter was built according to the plan of the fortress, and 75-80 oval-shaped kunguras were made, which, in addition to military maksads, also played an important role in ensuring the priority of the walls. The thickness of the upper part of the fortress wall is 80-100.0 CM. it was raised from ground to ceiling of small and large raw bricks.

The distance between the tower-towers of the DeShon Fortress pakhsa wall is 15.0 – 25.0 meters (Figure 3). As can be seen from the castle plan, an oval - shaped plan in all directions from the walls to the outside contained approximately 65 bulging kungras along the entire perimeter. These kunguras were designed to control the surroundings, and in terms of construction, its main function was to enhance the earthquake-prone nature of the wall. Many of the kungra have now disappeared as a result of various adverse effects.

Among other building materials, wood was also important in the construction of a cotton wall, wooden bolor-beams were released between them in the process of Wall restoration(Figure 3).



3-Fig. The use of timbers on the wall of the Deshon kala monument

This event in the construction is designed to make the wall structure resistant to earthquakes that remain on the ground part of the building, and to evaporate water by absorbing moisture at a distance of the surrounding PAX-clay to a certain limit, and these bolor-blocks also served as a “hawaza” for the Masters to walk (Figure 3).

The research work carried out by the scholars of the Khwarezm Ma'mun Academy on the preservation of the Deshon fortress wall is admirable. They are giving scientific recommendations to officials by analyzing the structural features of the fortress, the materials used in its construction and the methods of construction for the renovation of the Deshon Fortress. Currently, some parts of the castle walls have been repaired, and some parts are undergoing renovations, as well as projects are being prepared for the complete restoration of the lost parts of the castle wall (Figure 4).



4-Fig. In the future, it is planned to restore the Deshon kala Fortress paksadevor (layout)

In conclusion, this Deshon fortress wall, restored in 36 days, will many more foreign and domestic tourists in the future, and will prove that the construction and architecture of ancient Khwarezm has developed at a benihoya level. The main building material used in Khorezm's architectural monuments is burnt brick, which was used in the Dishan Kala fortresses and other fortifications built on a clay or alabaster solution. Brickwork on alabaster is not monolithic, as it is with lime or cement mortar, and it has certain properties of plasticity and malleability when exposed to humidity. The bed seams between the bricks can be up to 4-5 centimeters thick, which can be significant compared to the overall thickness of the wall. This type of masonry, although not monolithic, has the ability to deform and withstand earthquakes, thanks to its unique shape and properties. This makes it suitable for use in earthquake-prone areas. During earthquakes, buildings receive a push from below and their direction is obviously different from the earth's surface. However, the general

direction of the push can be considered close to vertical. After such a shock, the building may rise on one side more than the other. What happens to the brickwork in this case?

The force of the impact meets the resistance of the momentum of inertia of the building, which is partially compensated by the elasticity of the alabaster masonry. In other words, the lower parts of the building receive the greatest impact and this impact weakens upwards, while the entire brickwork is compressed to some extent. This is the first point.

At the second moment, the building may settle down and either another impact occurs, with stronger tremors, or the reverse stretching of the brickwork occurs with minor tremors to compensate for the impact. If the direction of the shock is oblique and only one part of the building receives most of the impact, then this causes an uneven deformation, expressed as a slope or draft in one part. Compression and stretching of the masonry can explain phenomena such as the dropping of upper parts, damage to the brickwork, especially in the basement, and so on. The brick cladding of the architectural monuments in Khorezm is very durable, but the mosaic cladding is badly damaged and the stone slab cladding of the basements is the worst. The destruction of these linings is due to seismic activity and water damage. As a result, the cladding experiences the most stress during earthquakes, begins to detach, and then falls. A crucial factor in the preservation of Khorezm's architectural monuments is earthquake protection. Alabaster mortar plays a significant role, thanks to its valuable technical properties. In addition, architects designed stable shapes and always chose square shapes or sides that were close to each other for the buildings. The architecture of Khorezm has preserved the monumentality and originality of its three-dimensional compositions until this day. The monuments of Karakalpakstan and Khorezm continue to excite with their beauty and the immediacy of the artistic taste of the people who created them, making us proud of the powerful talent of the architects, craftsmen, and artists who built them. That is why it is essential to protect and preserve this precious heritage for future generations.

Conclusion

This study addresses the knowledge gap in the preservation of traditional fortresses in historic cities, particularly the Deshon Kala Fortress in Khiva, by examining its architectural resilience and cultural significance. Utilizing a structural and historical analysis method, the research evaluates the construction techniques, materials, and seismic resistance of the fortress walls. Findings reveal that despite centuries of natural and human-induced deterioration, the unique clay-brick and alabaster masonry techniques contributed to the fortress's durability. Results indicate that strategic restoration efforts, combined with modern engineering insights, can preserve these structures for future generations. The study's implications highlight the necessity of integrating traditional construction knowledge with contemporary conservation practices to maintain historical authenticity while ensuring long-term stability in heritage sites.

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