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The Tradition of Residential Buildings, Restoration of Houses Made of Clay, in Khorezm Architecture

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A B S T R A C T
The article cites the types of historical residential buildings restored from adobe in Ichan fortress and Dishan fortress in Khiva city. Including the preferred styles of Khiva residential buildings, as well as the styles of residential buildings in the oasis of ancient Khorazm were also shown.

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Introduction

Humanity used natural shelters for housing in the past. They lived in these shelters, building houses made from clay and other natural materials. Wood and stone were used as building materials, and animal skins were used for insulation. After that, people lived in these homes for their entire lives, creating the first examples of dwellings that were in harmony with the soil, rocks, and trees. The characteristic climate of Khorezm, with its proximity to the Sahara, had a positive impact on the development of cities and the architecture of dwellings in the region. In ancient times, inhabitants lived in close proximity to irrigation systems. Urban migration due to changes in riverbeds is a common occurrence in the history of Khorezm. Today, the study of the history of traditional housing construction in Khorezm architecture and the analysis of their transformation processes is one of the urgent tasks on the agenda while preserving the values of urban culture. The Gilkhamesh dwelling in the Ancient Khorezm oasis has been shaped for centuries and is very different in its strength and splendor from other regions of our country. In this section, an attempt was made to highlight the development of Khorezm traditional dwellings, their raw materials, construction styles based on data obtained from scientific literature and specific approaches studied in kind in practice.

The ancient source "Avesta" provides a number of information related to housing construction. " Videvdot ” in the book, " kvadrat VAR " by Yim in the third notebook - information about the construction of fortifications and the size of structures, about building materials. Abu Nasr Farabi's “city of virtuous people” also provides the following considerations about the structure of the city and the people living in it, namely: “property is the most important thing that needs to be taken into account and properly distributed, first of all, the amount of land and land, the amount of food, acreage, palaces and private houses.” Abu Nasr Farabi - ”it is necessary to compare both the city and the house with the human body," - stated his point of view, which has a great philosophy regarding architecture.The oldest and most prevalent type of housing in the area is the freestanding pen. Kurgans, which are different from villages, were built to accommodate the needs of the local population. Due to continuous internecine conflicts on

the Khorezm territory, the walls of citadels were constructed to be strong and rooms were made spacious. Within these citadels, families kept all their belongings, livestock, food, and water.



Fig 1. General view of the adobe monument in the courtyard of Ulli Howli Urgench district.

Judging by the pedigree of Abulgazi Bahadur Khan, the homeland of the Turkmen people in Khorezm was around 1690-1700. They began the construction of a large building with 100 rooms in the Khojamberdi Bojimon Olaujlik area. This building was completed in a few years and was called Ulli (big) yard. 15 families lived in it.

The historical architectural monument "Ulli - Hovli" has overall dimensions of 107.58 x 64.06 meters (southeastern side) and 110.09 x 65.71 meters (western northern side). The courtyard was restored to a shape close to a trapezoid. The main facade of the courtyard is 6.8 - 7.0 meters high, counting the "kungurs" on either side of the gate.In addition to numerous fortified forts built on the territory of ancient Khorezm, villages started to appear around them in the 6th - 9th centuries. These villages benefited from the Kokchetav fortresses of wealthy landowners.However, in the city, houses were mostly simple buildings constructed in the Baroque style (see Fig. 2). At that time, these buildings were easy to repair and demolish. Due to space constraints in cities, it was advantageous to construct compact multi-story buildings. Later, stable structures became the typical main structures of the city.



Fig 2. General view of the "sinchkori-nigirik" house wall in Ichan-kala.

The unique structure of Khiva's houses is notable, with the basic structure of the building being a one-story stone wall between which clay bricks are placed. The arrangement of summer and winter rooms here differs from that in Bukhara, Samarkand, and Ferghana. For centuries, these buildings have been an essential part of the historical style in Central Asian architecture, influenced greatly by the climate of the region. Summers here are very hot, and winters are cold, so the appearance of Khiva dwellings is remarkable. In every house facing north, there is a porch, where people escape from the heat in the "month of cancer" in the summer.High porches are a common feature of the basic design of Khorezm

houses (Fig. 3), providing ventilation and heat dissipation. In addition, Khiva houses do not have earthquake-resistant walls, but instead have internal niches built into wooden frames 60-70 centimeters thick, similar to those found in Ferghana homes [1]. Under low seismic conditions, Khorezm builders could construct single-story wooden frame houses (nigiriks) with walls 15-20 centimeters thick. Shelves were only found in palaces, and their number corresponded to the size of the courtyard and the type of decoration, distinguishing them from ordinary residences [2].

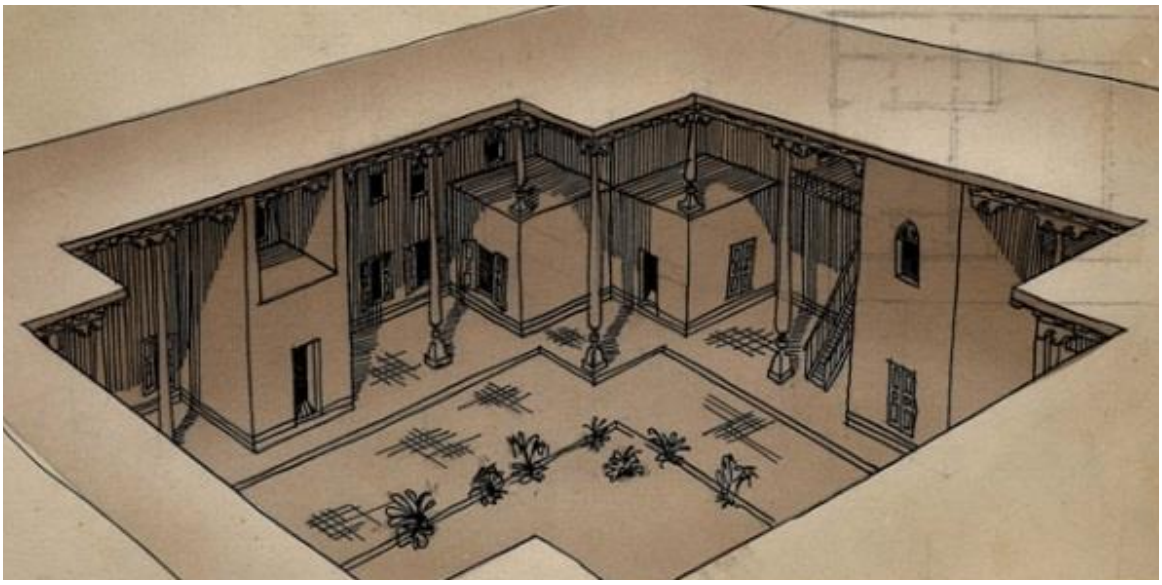


Fig 3. High column porch view.

In the inner castle of Khiva, due to limited space, most of the courtyard facades are very narrow. The porch nearly completely blocks the courtyard from above, while the courtyard itself also serves as a porch to some extent. The architects designed the porch to be high in order to allow for better airflow through the yard. The alternating wind flow from bottom to top, combined with bright lighting from within, helps to achieve this. The high porch keeps the room from becoming too cold in winter or too hot in summer, thus the architects paid close attention to maintaining the room's proximity to the courtyard's climate and its connection to the colorful landscape. The porch serves as a bridge between the room and the external environment, facilitating these activities.

The use of porches in residential architecture depends on the climate and the layout of rooms. In Khiva, for example, porches are used to keep the air cool in the house and courtyard during hot summer months. Because of the hot climate, many houses do not have large courtyards, so the porch covers most of the area. This reduces the amount of sunlight that enters the house, keeping it cooler.

Result and discussion

Porches also serve as a decorative element in the architecture of Khiva's buildings. Figure 4 shows a "large terrace" with wood-carved columns that add an artistic touch to the overall design. The columns are decorated with intricate patterns, giving the courtyard a unique look.



Fig 4. A view of the wooden carved columns on the Khiva terraces.

A common characteristic of Khiva houses is that both their structure and decoration are very simple. The walls and porch of the rooms are made of clay plaster without any straw trim, and the ceiling is made of vine (vassa, patik). There are also carved ornaments, as well as carved doors, railings, and several raised porches that decorate the apartments.

Some of the best examples of Khorezm architecture have been preserved in Khiva. By taking into account the techniques of Khorezm folk architecture and traditions, it is possible to revive the architecture of traditional houses, which means that by promoting them, a foundation can be laid for important issues such as encouraging people to build houses in wider areas.

The architectural monuments of Ancient Khorezm, such as their construction structures, building materials, and styles, are still used today. Especially buildings made of raw bricks and brickwork are widely used. It is known that in urban areas, about 30-40% of residential buildings were constructed using local materials, while in rural areas it was 60-70%.

Today, people construct one- and two-story houses using unfired bricks reinforced with reinforced concrete cores, baked bricks covered with a clay mixture, monolithic clay walls, and baked or unfired bricks. Some houses have wooden frames that are coated with straw-clay, while the foundations are made of stone.



Fig 5. Built from environmentally friendly, locally sourced materials

Conclusion

The technologies used in ancient monuments, restored from clay raw materials and preserved to the present day, are being improved.

To sum up, we can say that just as the family forms the basis of any state, residential areas form the basis of huge majestic cities. The unique typological solutions and techniques of artistic decoration of Khiva dwellings are amazing. It should be especially noted that even now these simple houses made of hewn stone are very popular. Preserving them in their original form is the basis for ensuring the sustainability of

ancient neighborhoods, tourism is developing, and traditions are preserved.

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