



## **Peculiarities of the Armenian Earthen Residential Houses**

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## SUMMARY

### *Context of the research or the activity*

Traditional Armenian houses can be divided into three main groups: a) rural traditional houses, b) town residential buildings and c) palatial houses.

This differentiation has a significant role in the aesthetics of these structures through their shapes and the materials they were constructed with. The lodging are found in ancient caves (Vardanyan 1959) as in Khndsoresk, the most widespread stone, the clay underground and other housing, which is exacerbated by the IV-III millennia date as in Shengavit.

### *Main issues or objectives*

The research aims to analyze Armenian national earthen residential buildings' morphological, structural, functional and other characteristics in order to make comparative research of those houses and to classify them by groups. The main factors which determine the differences and the similarities between various buildings will be researched. The research will also stress several construction materials such as: wood, stone and ground.

### *Results obtained*

The study results will be used not only to preserve, but to further encourage the use of the earthen houses. Certain features of traditional earthen structures will be introduced in forming the modern principles of sustainable development in settlements today.

## INTRODUCTION

The master plan of contemporary Yerevan – capital of the Republic of Armenia, represents the city's center. The city was designed by the academic Alexander Tamanian, with borders stipulated for 150 thousand inhabitants (Fig.1). It was combined with surrounding areas with a regular lay-out which was generated mainly after 1925. The master plan of the Yerevan of 1924 was made to take into account opportunities for expansion due to the increasing numbers of inhabitants.



Fig. 1 Master Plan of Yerevan (1924) by A. Tamanian

Simultaneously, the issue acknowledged the construction of new settlements for the Armenians who spread all over the world after the Armenian Genocide of 1915 and would potentially want to visit and stay in Soviet Armenia (Fig.2). Therefore new settlements appeared for those who repatriated to Armenia, some of which further were a part of Yerevan, and left significant town-planning and architectural influence on the city. Repatriated Armenians brought with them the traditions of millennial architecture and construction typical to the different regions of Historical Armenia.

Consequently due to the chosen Urban Developing policy, the above mentioned areas began to lose their unique characteristics and special architectural environment. Unfortunately, if it is not documented soon, even those structures that have been studied, investigated and appreciated will soon be distant memories. Because of this, professional research of town-planning, architecture and construction techniques of traditional residential houses, are absolutely necessary.



*Fig. 2 Master Plan of Yerevan (1936)*

The distinctive features of the above mentioned repatriates` houses are displayed in architectural and layout solutions as well as in traditional building materials including the use of raw brick. They are relatively kept in Nor Arabkir district of Yerevan well representing these mentioned peculiarities (Fig. 3 / Fig.4).



*Fig. 3 Traditional residential house in New Arabkir (Armenia)*



*Fig. 4 Traditional residential house in Old Arabkir (Turkey)*

## **1. PECULIARITIES OF BUILDING TECHNIQS OF TRADITIONAL RESIDENTIAL EARTHEN HOUSES.**

### **1.1 Foundations**

The peculiarities mentioned above are currently being preserved in the New Arabkir district of Yerevan. The foundations of these residential houses are mainly from basalt and rag stone. The walls are from mud brick which was also utilized in Old Arabkir. The walls are seismically secured and special wooden beams and flanges are present which served as ties (Fig.5).



*Fig. 5 The foundations are mainly from basalt and mud brick*

## **1.2 Walls**

Special blocks have been made which could simply move horizontally in case of seismic activity. They were called <<Aragha>> and in the traditional houses of Ararat valley they were called <<khatil>> (Fig.6).



*Fig. 6 Special blocks have been made, which could simply move horizontally in case of seismic activity.*

## **1.3 Roofs**

The roofs of dwelling houses were plain. There was a mineral known as <<blue ground>> in Old Arabkir which was clay loamed. This mineral became soft when it was wet but became rough once it dried. The first thing they would do when constructing dwelling houses was to fill this clay on the wooden roof and mix it until they achieved the desirable thickness, then they filled the “blue land.” <<Loghel>> means to thicken with a special, heavy, about 40cm diameters cylindrical stone called <<logh>>. This stone had thorough pores, in which they would place a wooden pole and possibly slide it taking the ends (Fig.7). In New Arabkir the same method was used, local ground and after every torrential rain the roofs were rammed. In the traditional houses of Ararat valley they were called <<gloran>>.



*Fig. 7 Cylindrical stone for ramming called <<logh>>*

## **2. PECULIARITIES ARCHITECTURE OF TRADITIONAL RESIDENTIAL EARTHEN HOUSES WITH <<BAY WINDOWS>>**

### **2.1 <<Bay windows>>**


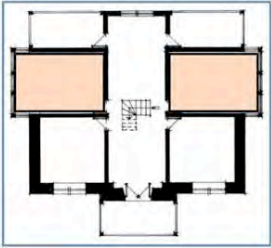




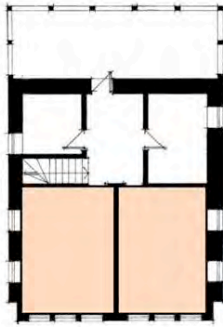


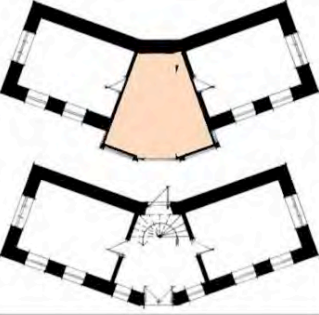

Some of the first dwelling houses are still kept in this district with their original appearance since 1925. They have special architectural and historical values. There are many parallels in architectural, planning and interior solutions of the dwelling houses with the ones of Old Arabkir. Deserve special attention in two-story houses with <<bay windows>> made by stone and mud brick (Fig.8). As we know <<bay window>> is a balcony on the second floor of a building that was included in the mass of the room. It makes the room seem larger and brighter, freshens the air and enriches the architectural appearance. These kinds of houses can be found in many towns of the Middle East and Europe. The appearance of such kinds of houses was conditioned on necessity of having wider residential areas.

### **2.2 Construction of the <<bay window>>**

The construction of <<bay window>> had a wooden framework. They were covered with glass. They expanded no more than 80 cm, and if the altitude of thick wall of the first floor is also included, the length of the second floor room would prolong about 140-450cm.

### **2.3 Peculiarities of interiors**

The interiors of these houses were reached using the stairs in the center of the building. It is interesting that the inner side staircases of two-stores houses had wooden covers, similar to the ones in Old Arabkir, called <<gabanq>> (Fig.9). <<Gabanq>> is a wooden board the size of the staircase pore and it would be closed at nights and under special circumstances (Harutyunyan 2009).

FOTO	PLAN	FASADE
 <p data-bbox="339 443 563 465">Baltayans house (1928)</p>		
 <p data-bbox="339 734 632 757">Jaghatspanyan's house (1929)</p>		
<p data-bbox="339 824 544 846">Chanchikyan's house</p>		
 <p data-bbox="339 1137 536 1160">Chirkinyan's house</p>		

*Fig. 8 Classification of houses with bay windows*

### 3. PECULIARITIES OF PLANS OF TRADITIONAL HOUSES

#### 3.1 Planning solutions

The planning solutions for dwelling houses in New Arabkir conform with the system of the dwelling houses of Old Arabkir. The most specific element is the large corridor with a 3 m latitude, which divides the house into 2 parts. If on the right side of Old Arabkir there was an apartment, the left side would have the sitting room. The kitchen was in front of the entrance. The entrances to the barn and silo would be from the yard, but they now serve as secondary rooms or toilets.

### 3.2 Kitchens

Kitchens also have special solution in these two-storey houses. The kitchens are somehow double storied as well. Some stairs from the entrance go to the upper stage, where the kitchen is. Yet, underneath is the room for food, where the <<teledolab>> was, serving the same function as a refrigerator. The <<teledolab>> was a wooden framed cabin with minor metal mesh. Arabkirians insisted that food was kept well in those <<teledolabs>>. Similar to the other homes, these houses also had arch fireplaces with chimneys but now these fireplaces have been replaced with gas plates (Fig.10).



Fig. 9 Staircases pore with the wooden cover <<gabanq>>



Fig. 10 <<Teledolab>> as a contemporary refrigerator and fireplace in the kitchen



## CONCLUSION

In the modern world it is difficult yet simultaneously necessary to appreciate and fight for the preservation and use of mud brick dwelling houses. After evaluating their unique architecture, construction techniques and ecological advantages, especially in the context of sustainable development, we can shed light on the fact that these two-storey houses do not meet modern necessities. Yet, if we unite our knowledge and efforts with one another; we can soon find a solution to this issue not just in Armenia but in all regions who's unique and noteworthy architecture is suffering due to the buildings' lack of modernization.

## BIBLIOGRAPHY:

- Vardanyan S. (1959). *Haykakan joghovrdakan bnakeli tneri chartarapetutyun*. Haypethrat, Yerevan, (in Armenian).
- Harutyunyan E.P. (2009). *Hay chartarapetutyun mnayun dzeragiry*. Moughni, Yerevan, 200 p. (in Armenian).

## BIOGRAPHY

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