From Xenophon houses to Armenian rock-cut dwellings and sacristies

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Abstract

Historically, two types of dwellings stand out in the diversity of underground and cave dwellings in the territory of the Armenian Highland Abich H. V., 1878: the author of the name was the German geologist Otto von Abich and he meant the Mountainous Armenia sector of the Armenian biotope Mountainous geomorphological landscapes are characterized by rock cut houses built mainly in volcanic rocks (Abich, 1843). As a rule, this kind of dwellings consist of one room, with relatively fewer dwellings consisting of two and more room Bixio R., 2012. Niches cut in the walls are one of the characteristic features of these dwellings that are multifunctional or designed for particular functions. In the Middle Ages, or possibly earlier, this type of cave dwellings had outbuildings with characteristic features of the Armenian architecture, arched entrances and ornaments: Typical examples are Ani in Turkey, Khndzoresk in Syunik marz, Armenia and a few "*melik*" houses in Artsakh. The other type of residential houses was the earthen and rock-cut (soil, ground and bedrock) cube-shaped excavations, with unique covers over them, which are known by the name *Hazarashen* in the medieval manuscripts and in the works by T. Toromanyan (Toromanyan, 1942; 1947), (Tab. 1) as well as (Archbishop Sargis Jalalyan, 2014). In common parlance, the names *kondatsatsk, soghomatsatsk, soghomashen*, more often - *gharnavooch* are known (Bdoyan, 1947; Papukhyan, 1972): all these are types of the same form of roof. Xenophon's Anabasis describes a traditional Armenian dugout, where the remnants of the Greek mercenary troop rested while retreating. Based on the scarce data from Xenophon's book and the many studies by Armenian ethnographers, we have attempted to restore the appearance of the ancestral dugout house, taking into account functional details. This kind of houses were common in the entire mountainous plains and valleys of the Armenian biotope (Turkey), Ararat and Shirak valleys (Republic of Armenia), Akhalkalaki and Ninotsminda (Georgia), and Gyanja (Azerbaijan) (Bdoyan, 1947; Papukhyan, 1972; Vardanyan, 1959; Lalayan, 1896; 1897) (Tab. 1, 4, 5, 6).

Keywords: Dugouts in ancient Armenia, Hazarashen-kondatsatsk, soghomatsatsk, soghomashen, more often – gharnavooch sacristies, Xenophon.

Research methods

Cyrus the Younger, Satrap of Lydia, Phrygia and Cappadocia, the brother of the Persian king Artaxerxes Mnemon, came out of Sardis with a large, multinational and mercenary army in BC. 401 determined to take the crown from Persia in the spring. Xenophon of Athens was also in that army. After the defeat of Cyrus, the Greek mercenaries had to return to their homeland through a different route, passing through Armenia.

We are interested only in the sections 25-27 of the fourth book of Xenophon's Anabasis. Xenophon writes: *"/25/ The houses here were underground, the entrance was like the mouth of a well, and the lower part was spacious. While the entrance for the cattle was dug in the ground, people were using the stairs to go down. There were goats, sheep, oxen, chickens and their offspring. All animals were fed grass inside. /26/There was also wheat and barley and chaff, and wine made from barley in vats, on the surface of which barley grains were floating, and in the vats there were reeds, large and small. /27/ When thirsty, a person could put the end of that reed in his mouth and thus drink. And it was very strong if not mixed with water, but it was a very appetizing drink for an accustomed person.*" (Xenophon, 1970) (Tab. 2, 3).

The development and varieties of urban planning and architecture of country houses were formed under the influence of a number of factors. We distinguish 3 types of approaches for agrarian settlements throughout the entire territory of historical Armenia and throughout the Middle Ages until the middle of the 20th century; settlements and cities located on plateaus and mountain valleys, the main component of which are earthen houses with *"Hazarashen"* (Tab.5)

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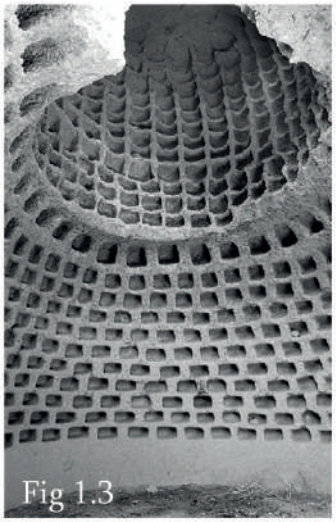

Tab. 1 – Three variation of social-architecture construction
Fig. 1 – The camion near Ani and anthropogenic caves
Fig. 1.2 – Interior (Ani)
Fig. 1.3 – Aghvanatun (dovecote)
Fig. 2 – Fig. 2.1 – The Village Hin Khot, Syunic Region
Fig. 3 – Shulukh Mush, 1909
Fig. 3.1 – Arinj, Mush, 1914
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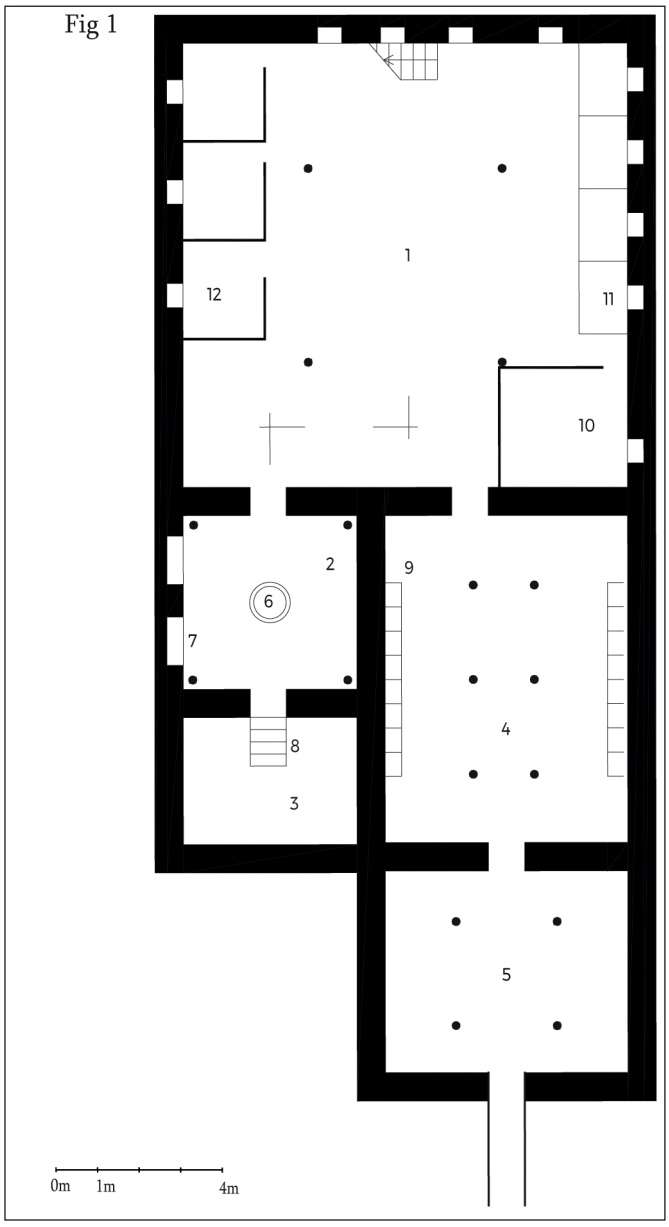
type of roof , above-ground tribal houses with mostly flat roofs (Toramanian, 1947; Vardanyan 1959; Papukhyan, 1972; Bdoyan, 1947), (Tab. 6) and the underground cities, which were mainly dug in layers of volcanic rocks and were located on plains and slopes with a slight slope of the landscape (Ghipshidze, 1972; Bixio, 2012; Shahinyan, 2005) (Tab.1, figs. 1, 2, 3).
This classification is not complete because the residential houses created in humid climatic conditions are not represented here, the plan structure of which also includes the barn, and the roof is not flat, but is tiled with a significant slope (Lori, Tavush regions) and also the settlements formed near the fortresses are not described. We also do not discuss here the architecture of non-agricultural cities and fortress cities formed in the Middle Ages. A typical example is Mardin, Ani, Kars (Turkey), Bakhaberd, Kouash, Kakavaberd, Loryberd (RA), Tigranakert (Artsakh).

Xenophonian houses

In Xenophon's description of the dwelling house, he is impressed about the comfort and functionality of the house, and these are the two main components of architecture from Vertruvius to the Palladians famous Greek and Italian architects whose professional books have not lost their value to this day. The third characteristic of architecture is durability. and up to the present day. This can be considered very important assessment, because Xenophon was not only an aristocrat, a soldier and a commander, but also a multifaceted intellectual.
There is lots of data about underground houses in the materials of Armenian historians, literary experts, and in the memories of travelers. Hovh Mamikonyan wrote "I poured the money into the ditch in my house". Tovma Artsruni mentions, "There were many treasures hidden in a jar in the dugout house." Zakaria the Deacon tells in his testimony that when someone was leaving Etchmiadzin for Yerevan with his mule, he was confused "when the mule got out of the house, the house was ruined, and he and the mule fell into the house." This means that in the 17th century there were still underground or semi-underground houses in Armenia. Parpetsi and Cretacimentioned also such men-dwellings in their writings. Thus, we are convinced that this type of rural residential house has been in continuous use in the Armenian Highlands for more than two millennia.
Another example of this fact. Language and linguistic thinking are essential parameters for those scientists who study the history of the origin and development and/or evolution of culture and the people who speak that language. Many dialects of Armenian language have preserved a number of names related to the functional division of rural houses: head house, bakery, *tonratun*, *oda, gom*, etc. It is also noteworthy that many names have been preserved for the construction and interior appearance of the hemispherical ceiling. For example: wood dome, *guppa,, kubbe, khup, khub, ghup, ochork, sogomakagh, sogomashen, kondatsatsk,*

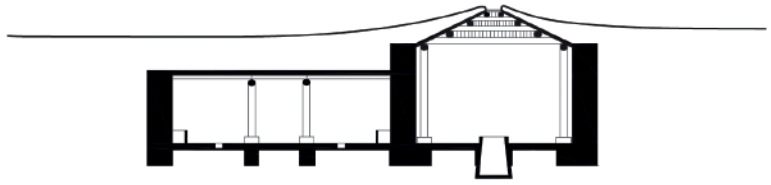


Tab. 2 – Plan of the house described by Xenophon:
1) living room (glkhatun), 2) bakery (hatsatun), 3) food storage (maran), 4) barn (gom), 5) sheep pen (parakh), 6) oven (tonir), 7) nishes as selves, 8) stairs, 9) stream, 10) bedroom of head of family, 11) weat and barley granary (ambar) and bed for babies, 12) bedroom for adults.

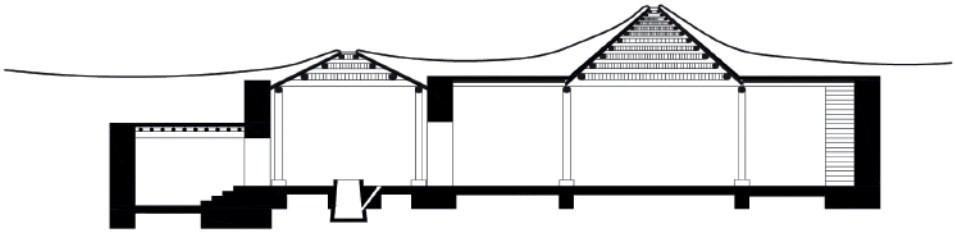
darnavush, ghanpun and many other names (Toramanian, 1947; Vardanyan, 1959). Most likely, the dome cover had different and many constructive solutions in different provinces. Among the words used for the roof there are also words of Persian and Turkish origin. This fact highlights once again that such houses are ancient (Tab. 1, 2, 3, 4).

Floor plan and structural details

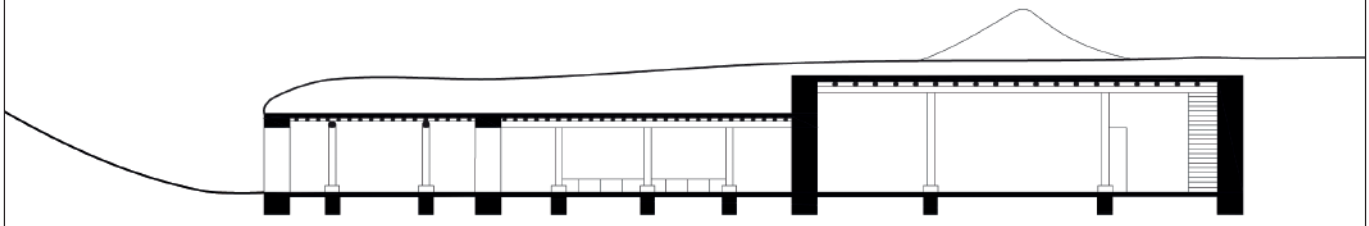
With Xenophon's brief description and many features of the architecture of Armenian folk houses, let's try



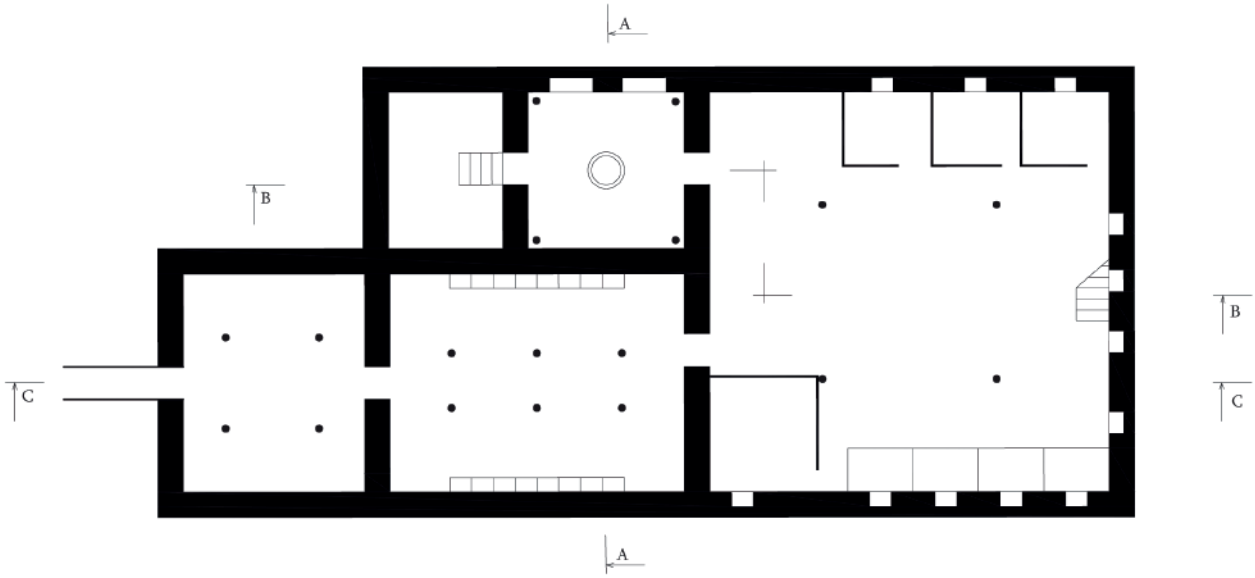
A-A Profile Fig 1



B-B Profile Fig 2



C-C Profile Fig 3



Plan Fig 4

Tab. 3 – Plan of Cuts of Xenophon's house:
1) A-A profile, 2) B-B profile, 3) C-C profile, 4) plan.

Fig 1

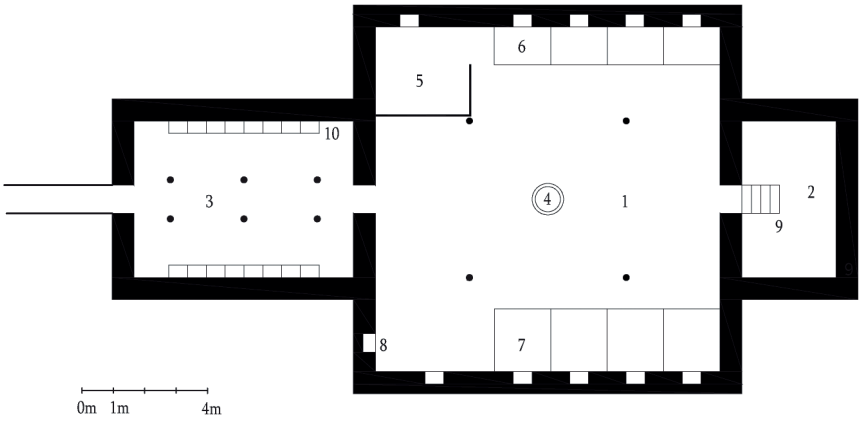


Fig 2

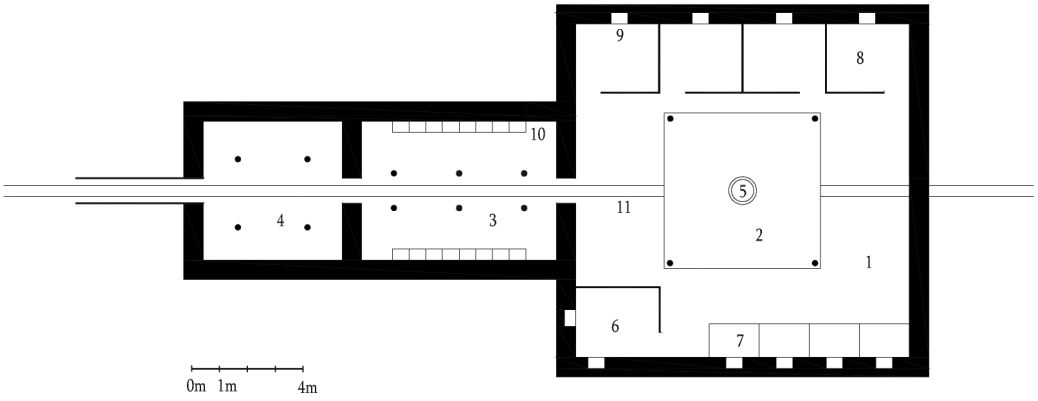
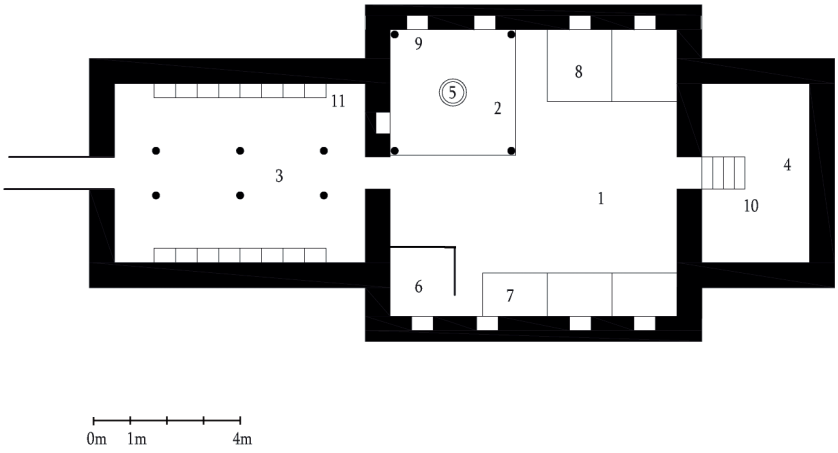


Fig 3



Tab. 4 – the three types of Xenophon's house (general planning):
Fig. 1 – 1) living room (glkhtun), 2) food-storage (maran), 3) barn (gom), 4) oven (tonir), 5) bedroom of head of family, 6) weat and barley granary (ambar) and bed for babies, 7) bedroom for adults, 8) niches as selves, 9) stairs, 10) manger (msurq).
Fig. 2 – 1) living room (glkhtun), 2) bakery, 3) barn (gom), 4) sheep pen (parakh), 5) oven (tonir), 6) bedroom of head of family, 7) weat and barley granary (ambar) and bed for babies, 8) bedroom for adults, 9) niches as selves, 10) manger (msurq), 11) stream.
Fig. 3 – 1) living room (glkhtun), 2) bakery, 3) barn (gom), 4) food-storage (maran), 5) oven (tonir), 6) bedroom of head of family, 7) weat and barley granary (ambar) and bed for babies, 8) bedroom for adults, 9) niches as selves, 10) stairs, 11) manger (msurq).

to restore the appearance of the traditional Armenian dugout house.

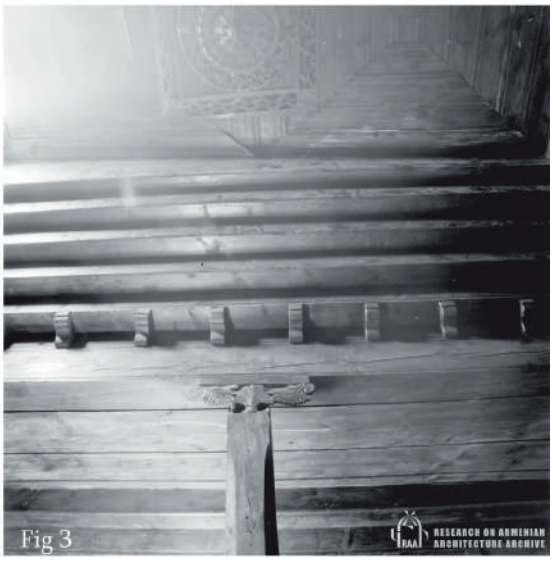
Based on the materials of the RA Museum of Architecture and other archives, it can be concluded that the Xenophon house was intended for a dynastic family, where the patriarch (nahapet) lived, his sons with families and possibly their grandchildren. This circumstance implied functional separation of resi-

Tab. 5 – The construction and form of dome:
Figs. 1, 3, 4, 5, 6, 9, 10, 11 – Balkho, Akhalkalaki.
Fig. 2 – Gandzak, Arjesh.
Fig. 7 – Gyulistan, Shahumyan province.
Fig. 8 – Mets Samsar (Great Samsar), Akhalkalaki (RAA archive).

dential and economic areas and these were the bedrooms, the dining room, the kitchen, which together made up the main house. Another important part was the barn. The house also had a pantry and warehouse, which were in functional connection with the main part of the house – the kitchen. Such "crowded" houses were not preserved from the 19th-20th centuries in Akhlkalak (Georgia), Sevan Lake basin, Kanaker (Republic of Armenia), Bayazet (Turkey) based on the results of the research of the author's group.

The problem here is the constructive evolution of dugout houses, based on two main principles, with the first one being the need for comfort & risk reduction, means for living and the second principle based on various forms of public administration of different periods: slavery, feudal, military-feudal, religious, industrial-technological, liberal-social systems, etc. The entire history of humanity is the history of risk reduction in all areas of life.

In Xenophon's time, the existence of much greater risks led to the emergence of large human social groups living together. Representatives of 4 generations lived in one dugout family house with great grandfather, sons, grandsons, great-grandsons. From the 17th century



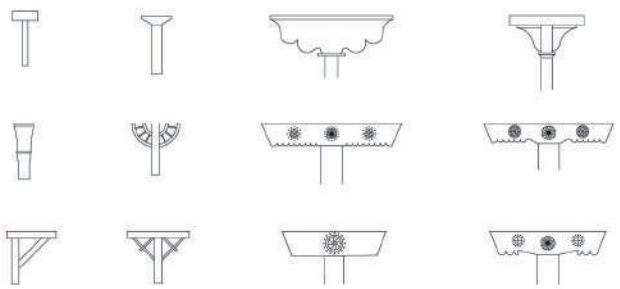
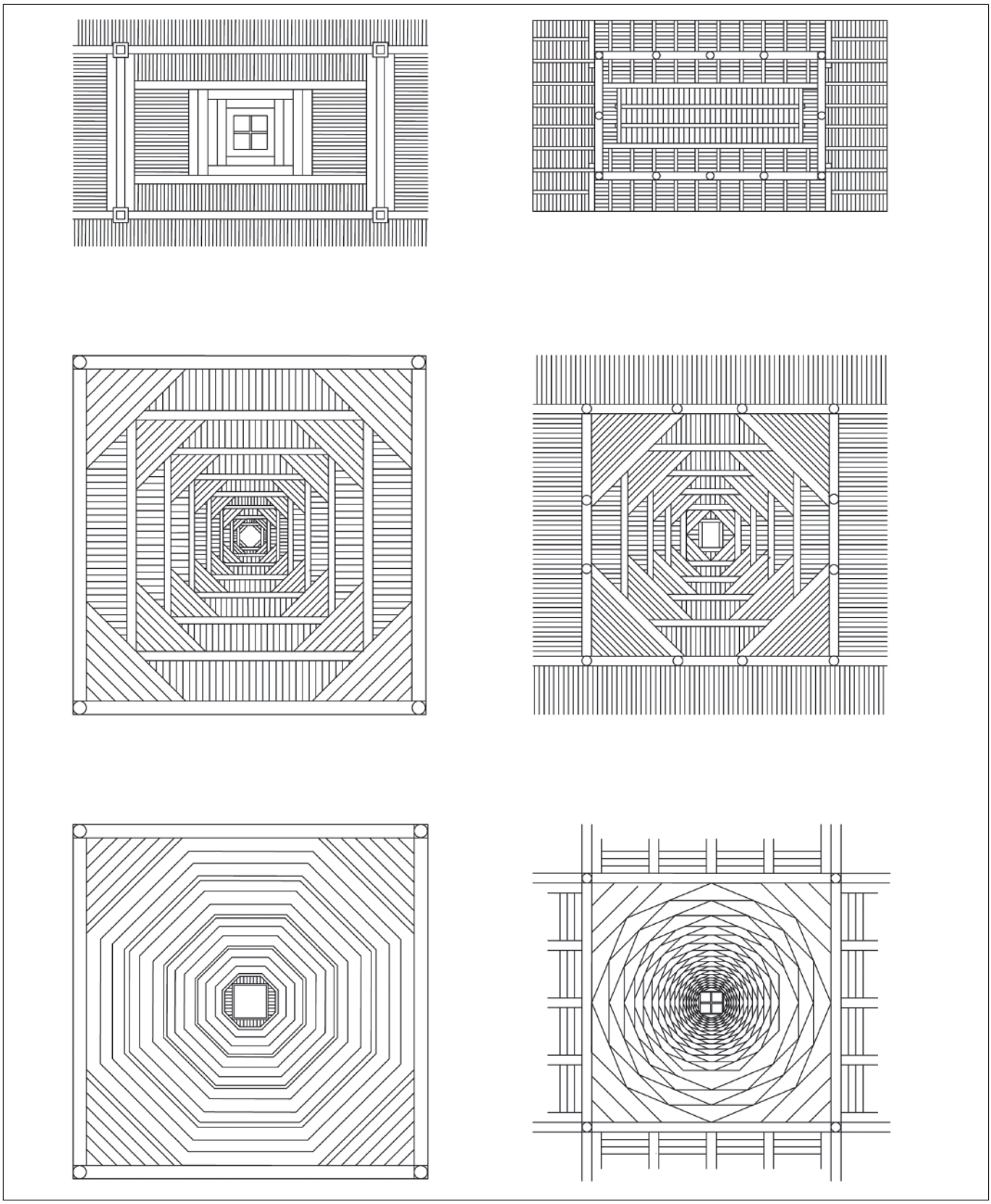


Fig 6

Tab. 6 – Capital, pillar and base of pillar:
Figs. 1, 2 – Karapnar, Kars region.
Fig. 3 – Kumurdo, Akhalkalaki.
Figs. 4, 5 – Balkho, Akhalkalaki.
Fig. 6 – Vardanyan (1959) and Papukhyan (1972).
Fig. 7 – Tsar, Karvajar.



Tab. 7 – Different constructions of Hazarashen (Vardanyan, 1959).

onwards we see patriarchal houses - large families with a minimum of 3 generations. Until the 60s of the 20th century, families with 6 to 8 children were quite common in USSR, especially in rural areas. This was another way of coping with risks and preserving the genes for a nation that had seen constant massacres, 3 wars, famines and epidemics in the last 50 years. Consequently, considering the aforementioned and based on the plans and construction structures of dug-out houses, a number of conclusions can be drawn.

The houses described by Xenophon (he also described houses & their customs occupied by the commander of the Greek army, Cheirospos) were essentially not only a sufficient environment to meet the needs of a large family, but also Xenophon had not described any inconvenient feature present in such houses.
In addition, in the Anabasis there is no mention about the center of the house called *ojakh*, which is traditionally placed (built) under the oath hole so that the smoke escapes quickly. Based on this we can assume that the bakery is an adjacent structure with a milled (*hazarashen)* roof. So we're making an attempt here to visually restore the houses described by Xenophon based on the calculations, economic system, the necessary functional environment and the comfort of life of its inhabitants.
Until the 50's of the last century, wheat was being stored in granaries and not in the pantry. The barns on 20-25 cm. foundation were being constructed at a height of a maximum of 100 cm in height, 120 cm in width and 160 to 200 cm in length. A small door on the barn deck was adapted for storing and removing grain. One or more such barns were lined up side by side under the wall, with a carpet or rug spread over them on the deck, which served as bed for younger children. The necessary tools, such as aghorick, sand and khank were stored in the bakery, when it was a separate structure. Other tools such as the chaff, kal & khop were being kept in the barn, not in the shed, and the small agricultural tools were kept in the pantry, along with wine, oil, beer, cheese, oil, honey, and agricultural products and fruits. The pantry was usually dug next to the bakery. Bedding and linens, as in cave dwellings in alcoves were being stored into the wall.
The main house and the oven used various constructions of spherical dome or millstone, and for the pantry & barn, the ceiling was constructed flat. For the strength and stability of the *hazarashen* construction, pillars were used - logs with a diameter of 20 to 40 cm, the number of which depended on the number of the family members. With the square drawing of *hazarashen*, the beam was placed at 4, or 8, in some rare cases, 10 columns. A slab was placed under the pillars, and at the head of the log was a cap, in some cases with a beautiful carving (Tab. 5, 6, 7).

Conclusions

According to Xenophon, the architecture, structure and comfort of dugout houses was already perfect for those times (5th century, BC), which probably also contained guarantees of durability for this type of construction. However, in order to reach such an evolutionary level and obtain the necessary qualities, even by our minimal calculations, at least 5-6 hundred years were required. (Tab. 2, 3).
The very existence of such houses shows the perfect harmony of human-nature relationship. Firstly, heat resistance in such houses was relatively high, temperature fluctuations were small – it was cooler in summer and there was a moderate heating requirement during winters. Moreover, since such houses were widespread in pre-alpine and alpine mountain zones, or in dry semi-desert steppes, for example in the Ararat valley, there were no forests surrounding these houses. Dung mixed with slag was used as heating material for houses and the ashes from burning were transported to the fields to fertilize the soil.
According to T. Toramanyan, until the 15th century the roofs of churches were assembled based at the *hazarashen* principle. There are very rare cases described throughout the history of architecture, when the design of sacred structures, details and even complete construction forms are borrowed from the architecture of folk houses (Tab. 5, fig. 7).

Summary

Armenian folk houses were formed and got their final shape for almost a millennium and then continuously maintained both the style and the form for over 2,500 years. There were deviations from the classics in the cases of changes in social formations and the need for operating areas based on the number of family members, or the lack of need for these areas.

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