

THE CULTURE OF ANTHROPOGENIC CAVES WITH STONE DOORS IN ANCIENT ARMENIA

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There are lot of underground constructions in the Armenian Highland which are without natural tunnel gates, having only stone made doors. Those anthropogenic caves are called the caves with stone doors.¹ Almost 100 of them could be found at the foot of Mt. Aragats.² Those caves are considered to be of the medieval period, but as show researches it is possible to consider them to be much earlier than previously thought constructions.

1. Introduction

Based on the large amount of collected scientific material about rock-carved dwellings and anthropogenic caves in the Armenian Highland and Asia Minor, we can speak about the “cave culture”: architectural and engineering specificities, the daily life and relationship of the cave dwellers with a unique thinking and culture.

The surroundings of Mount Aragats have been repeatedly investigated by archaeologists, architects and naturalists, and since 1982 – also by speleologists. The speleological expedition of the Geographic Society of the Armenian SSR Academy of Sciences in 1982-85, 1989-90 and the expedition of the Armenian Speleological Center since 2002 have implemented voluminous works in this site discovering, studying and classifying rock-cut and cave monuments. Simultaneously, local geological surveys were carried out to provide the geological assessment of the location of the cave structure. Overall, more than 160 rock-cut structures and improved and used-by-man caves were discovered in the area from Talin to Ashtarak and then from Mt. Ara to Mt. Aragats area³. The caves with stone doors are rare rock-cut structures. This type of cave structures have compactly survived only in this area.

2. Stone doors and tunnels

The maximum size of the stone doors of caves in Aragatsotn region is 160cm x 130cm x 42cm, weighing more than 3 metric tons; the minimum size is 60cm x 40cm x 16cm. The stone doors are placed both lengthwise and crosswise, depending on the composition and structure of the rocks in the installation place. Stone doors are placed

¹ There are from 500 to 3000 liter capacity pitchers for grain and some vine and oil products in just rock-cut and cave monuments.

² Շահինյան Ս. Մ., Հայաստանի քարանձավները, հ. 1, Երևան, 2005, էջ 60-103:

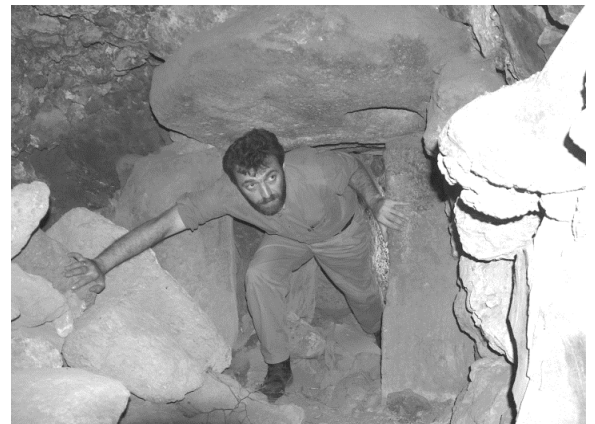
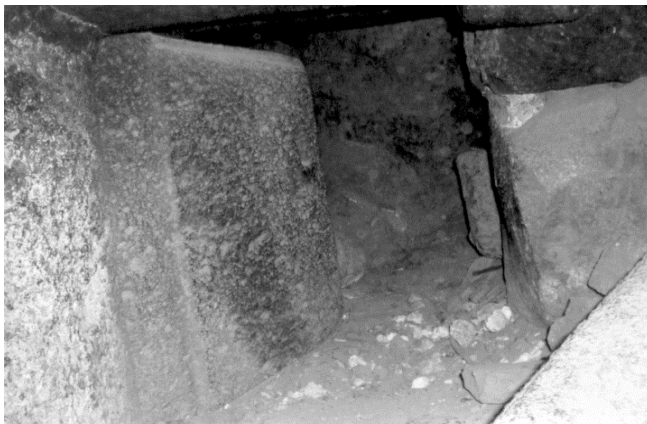
³ Շահինյան Ս. Մ., Հայաստանի քարանձավները, էջ 60:

in frames and work like regular doors.

The frame is a plate with comparatively large cutting and made of a partially polished basalt, andesite and in rare cases hard tuff. In one corner of the plate, usually near the already installed stone doors, in the left side (where the entrance is located), a funnel-shaped pit was dug up to 50cm deep and up to 50cm diameter of edges. In both sides of the stone door there are hewed lugs adjusted to the funnels carved in the stone frame and firmly but still suitably enough to keep the mobility of the well settled door.



The technology of installation of stone doors prompts that these anthropogenic caves were built based on a plan of general architectural setting. This is evidenced by the sequence of construction process.



3. Methods

First, the tunnel was dug, and then the stone doors and separate polished pieces constituting the frame were taken in. Inside the cave, while in horizontal state, the plates with funnel-shaped pits were fitted on the lower and upper sections of the door and then placed vertically in the tunnel. Then the side plates of the door frame box were installed, one from each side. Then the door was reinforced with rock pieces, in rare cases using also mortar. In the last phase, the tunnel was laid, and small and large pieces of volcanic-fragmented rocks were disorderly filled over the surface section, thus covering up the structure.

The lower and the upper sections of the frame of the stone door is polished,

smoothed in the size of the segment of the door's movement and ends by a low lug crossing the stone plate in its entire length and limiting that surface, which restricts the door's movement and does not allow to open outwards. The rotation axis is put under slope to the direction of the stone door lugs, which makes the work of the door easier. Even a child can easily shut the door weighing hundreds of kilograms: My son Aren was only 8 when he could open and shut average size stone doors.

Inside, the stone doors are locked either by the entering edge under the door or by a lock. All doors we have come across or studied are opened only towards the cave so it is impossible to lock from outside.

There is a unique example of engineering solution of a lock in Seven-Door Cave, to the north of the Kosh village, in the vicinity of medieval St. Stapanos Church. Right on the left section of the frame of the entrance door (looking from inside the cave), three 12cm-13cm deep, 4.5cm-5cm wide and 36cm long parallel furrows are carved on the basalt plate in 5cm distance from each other. From the flank of the frame, in the middle of the plate's cutting, a vertical penetrating hole is opened that crosses these furrows through the entire width of the plate. There is a 6cm-8cm deep, 5cm-7cm wide and 13cm long pit carved towards the hole. After locking the door from inside the cave, a pole made of a hard material (metal, stone, at least hard wood) is inserted into the penetrating hole so that it thrusts into the door pit. The parallel carved furrows play a role of windows, whence the watcher can see and make sure the shutter is well placed. This was how the doors were locked in past times.



On most of the stone doors, special pits were made on one or both sides to fix the door handle.

The funnel-shaped pits carved on the upper and lower plates towards the rotation axis are not necessarily carved only on the plates. We have come across several "foundation stones" that look square, similar to the stone for chopping up grains, which are still used in mountainous villages. Such mortar-like component of the frame with pits intended for the stone door lugs was used only for the lower section of the door; the surface of the upper section plate is smooth. In rare cases one can encounter doors with lugs smoothed only in the lower part. Stone doors processed this way have, as a rule, smaller than average size.

These carefully smoothed square or rectangular 18cm-20cm thick basalt doors are disseminated mainly on the slopes and at the foot of Mt. Aragats, as well as in quaternary lavas erupted from the volcanic mountains in the Lake Sevan basin or in the area of caves located in the contact of consecutive layers⁴.

⁴ Shahinyan M. S., The Xenophon dwellings and their analogues in the basin of Lake Sevan. UIS 10 congress 1989 Budapest, pp.446-448.



A large number of caves with stone door, about 60, have survived in the areas of Kosh-Avan and Sasunik-Ujan; there are another two, still used caves with large doors in Talin region and a few doors and ten door frames on the volcanic mountain slopes in the south and south-east of Gegharqunik marz. All these have been processed by the same principle and mainly for the same purpose - to lock the tunnel and cave entrances.

We came across the remains of the only ignimbrite tuff-made smoothed door in the vicinity of Karmrashen; however, I don't think this can be a pattern. The caves with stone doors are built in a way that the doors can be locked only from inside, i.e. when there is nobody inside the cave, it is easy to enter the cave in case when the main stocks of food for the survival of a large group of people were stored there. On the other hand, the possibility of locking the stone doors only from inside directly points out that a person or a large group of people had the opportunity to get isolate themselves from the world for some ritual reasons. And there is not a single structure for defense or any construction detail that would indicate the necessity of confronting the enemy; hence the hypothesis that theft



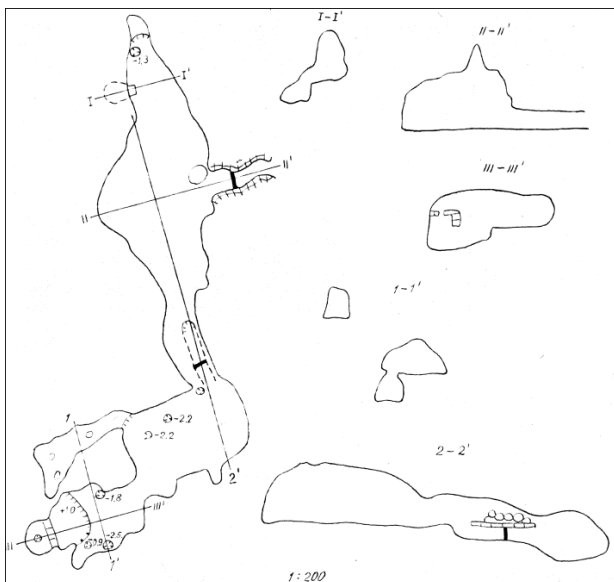
was alien to the times of the origin of stone-door caves. It is possible to suggest that the native Armenians started to use this kind of cave constructions in the Armenian Highland since the 3rd-2nd millennia B.C..⁵

Here are descriptions of a few caves.

4. Results / Results and discussion

Seven-Door Zagha

Located to the north of Kosh village, 0.1 km north of St. Stepanos Church, in the right cliff wall of Vanadzor, approximately 30m high from the bottom of the ravine. The narrow corridor covered with basalt pieces leads to the hall. You can pass through the tunnel-corridor only if you bent or creep. The tunnel is laid with whole rectangular basalt plates with removed sharp lugs on the surface. Along both sides of the corridor, the vertical 10cm-12cm thick basalt plates laid without mortar are arched by similar plates that provide the ceiling of the tunnel. The engineering concept of the tunnel resembles a megalithic structure.⁶ Although the local people call this cave a Seven-Door Zagha, it has only two doors, one directly at the entrance and the other at the hall entrance. The dust, soil and sand accumulated during many years covered the door's foundation with a 20cm-25cm layer thus making the door nonoperational. The door was still working at least in 1987 when we were studying and measuring the cave. The frame of the stone door of the hall has three lengthwise hollows with another transverse hollow crossing these three. The transverse hollow is made on the surface that longwise fits in the door frame. Most likely, transverse hollow has been made to run the shutter, while the longwise crack-hollows played the role of “windows” to see how the shutter moved. The doors, like in all other caves, open inward.



On the north-east wall of the cave, a clay canal opens 2.5m-3m above the ground. The diameter of the mouth of the pipe is 23cm. How the canal conveyed water to the cave through the thick basalt layer with 15m cutting – is something still to be found out. The assumption could be that the pipe way was a natural hydrodynamic tunnel, and the ancient builders, after laying the clay pipe through the tunnel, have skillfully veiled the tunnel with some constructional trick still unknown to us.

The walls of the cave are laid with large pieces of basalt reinforced by lime mortar. In the southern and south-western part of the cave, under the wall, there are

⁵ Շահինյան Ս. Մ., Հայաստանի քարանձավները, էջ 67:

⁶ Թորամանյան Թ., Հայկական ճարտարապետություն, Երևան, 1942: cf. Միքայելյան Գ. Հ., Սևանի ավազանի կիկլոպյան ամրոցները, Հայաստանի հնագիտական հուշարձանները, Հ. 1, Ա. հ., Երևան, 1968:

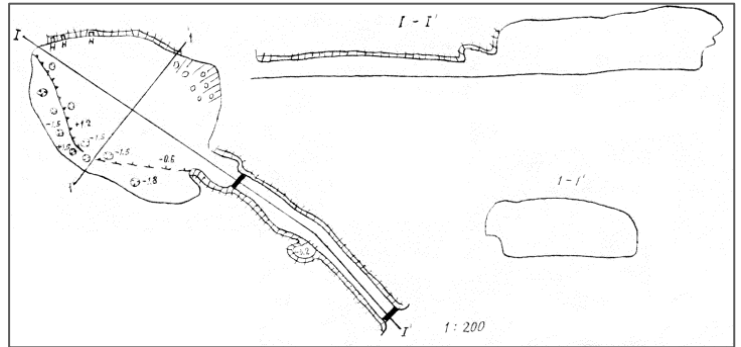
casks on two platforms for keeping fluid (probably vegetable oil or wine) and for dry food (grains). The first platform is 15cm-20cm above the bottom of the cave; and 4 cask mouths open here, while in the second platform, 120cm higher than the first one, 6 cask mouths open. The small cavity located at 6m depth from the tunnel entrance was perhaps another storage place.

The cave is one of the favorite places for the village children; they are frequent guests here. They often make fire, however the smoke immediately flows out through the cracks in the basalt cover.

Bk'oyi Gegh Seven-Door Cave. This cave is located in the right cliff wall of the Bk'oi Dzor ravine, 20 meters above the ravine's bed, 1km to the north-west of the Ujan village, 100 meters to the north of the cave.

It is possible that the cave has received its name due to the number of its doors in the past.

The tunnel-passage leading to the cave is hardly passable; two nearly equal size doors are placed here, both can be easily opened and shut. Here, like in all caves with stone doors, the doors are locked from inside. The artificially laid part of the tunnel is totally collapsed, and most likely the remaining 5 doors were left under the landfall, as the local folklore says. The entrance of the tunnel is narrow and hardly passable. The narrow passage leads to the first door; opening this door you move on to the second door either creeping or half-sitting. Opening the second door, you appear in the cave hall. The distance from the entrance to the 1st door is 3 meters, and from the 1st door to the 2nd door - 2.5 meters. The hall is misshapen, the bottom is flat, and the ceiling is 2.4 meters high. There are cask-like pits in the corners of the cave, which are intended only for storage of grain food. There are no fired clay casks. There is an opinion that the cave was of ritual importance⁷.



⁷ Շահինյան Ս. Մ., Քարանձավները հայ ժողովրդի մտավոր և մշակութային զարգացման գործընթացում», Էջմիածին, 5, 2003, էջ 55-75:

The stone-door caves are rare architectural, engineering and cultural monuments of the past that are now exposed to the danger of demolition. These caves are part of not only Armenian culture but also part of the culture of the Indo-European peoples in general. With the loss of these caves we will lose yet another possibility of seeing the past alive. Saving these caves must be the point of concern for all of us.