Cave-shelters of the Phrygian Highland: underground complexes

Grotte-rifugio dell'altipiano frigio: complessi sotterranei

Tymur Bobrovskyy[1], Igor Grek[2]

Abstract

This work describes four underground complexes of artificial cave-shelters, examined by the authors in the provinces of Afyon-Karahisar and Eskisehir in Turkey. Plans and schemes of underground objects are published in the work. The study of traces from tools on the walls of cavities reveals the technology and shows the sequence of creating underground structures. The authors analyze the purpose of the premises and the defensive devices used for protection. In contrast to Cappadocia, where mainly millstone-doors were used as the defensive devices, the Phrygian highland is characterized by shafts and traps only. In the development of artificial cave-shelters several stages can be traced. Just as in Cappadocia, the underground shelters of the Phrygian highland developed from primitive forms to echeloned and labyrinthine structures. The same as in Cappadocia, here we can observe a period when devices designed for active defense were destroyed. In the work the questions of dating of the described objects are discussed.

Key words: Phrygian highland, artificial caves, underground shelters, shafts, traps.

Riassunto

Questo lavoro descrive quattro dei numerosi complessi sotterranei, costituiti da grotte-rifugio artificiali, esaminati dagli autori nelle località di Kemerkaya (nella provincia di Afyon-Karahisar) e di Han (nella provincia di Eskisehir), in Turchia. Si trovano sull'altopiano, un tempo sede del regno frigio, 200 km a sudovest di Ankara, nei pressi dell'antica Città di Mida (nelle immediate vicinanze dell'odierno villaggio di Yazilikaya). Nel presente lavoro sono forniti i relativi rilievi o le piante schematiche.
Le tracce degli strumenti di scavo identificate sulle pareti delle cavità rivelano le tecniche utilizzate (scavo a fronti contrapposti) e la sequenza di realizzazione dei diversi settori che costituiscono ognuna delle quattro strutture sotterranee. Per ciascuno degli ipogei considerati, gli autori analizzano la funzione delle diverse parti che li costituiscono e dei relativi apparati di sicurezza adottati per la difesa. Diversamente da quanto è stato ampiamente documentato in Cappadocia, dove le porte-macina venivano usate come principali dispositivi di difesa, a volte integrate da trappole, i rifugi ipogei dell'altopiano frigio risultano invece caratterizzati da un sistema definito "a pozzo e trappola", cioè costituito da pozzi abbinati a trappole verticali, qui di seguito descritto in dettaglio. In entrambe le aree troviamo, comunque, accorgimenti costruttivi per posizionare portelli di sbarramento e feritoie usate come spioncini e forse anche come fori di mira.
Nella realizzazione delle grotte-rifugio artificiali possono essere riconosciute diverse fasi. Come in Cappadocia, i rifugi sotterranei dell'altopiano frigio si sono sviluppati da forme elementari sino a strutture interconnesse e labirintiche. Inoltre, analogamente alla Cappadocia, anche qui possiamo ipotizzare che i dispositivi progettati per la difesa attiva siano stati, in un certo periodo storico, parzialmente distrutti.
Nell'articolo viene anche affrontata la questione relativa alla datazione delle strutture che, sebbene qualche indizio faccia pensare all'epoca medievale ed a relazioni con la cristianità, rimane ampiamente indefinita ed aperta ad ulteriori indagini.

Parole chiave: Altopiano frigio, grotte artificiali, rifugi sotterranei, pozzi, trappole.

Introduction

The Phrygian highland is located 200 km south-west of Ankara (Turkey). It is a mountainous area, overgrown with forest and cut through with picturesque valleys. Just like in some other regions of Anatolia, here – in rock outcrops (mostly tuffs) – there are numerous cave temples, sanctuaries, tombs, rock-cut

[1] Ukrainian National Committee of ICOMOS, Kiev (Ukraine)
[2] Speleoclub «Poisk», Odessa (Ukraine)
Reference author: Igor Gek, e-mail: grekigor@mail.ru

Fig. 1 – Map of Turkey: Location of sites (drawing R. Bixio).
Fig. 1 – Mappa della Turchia: Localizzazione dei siti (grafica R. Bixio).

shelters.[1] However, in this region there are complexes of artificial caves of another kind also, more hidden in the rock mass and usually called by the local people "underground cities" (*"yeraltı şehriler"* in Turkish).[2]

In 2016-2017 we inspected the some of these complexes which are opened to public (fig. 1). In this article, we will try to analyze the structure of these objects. In our opinion, a comparison of these cavities with the well-known analogous structures of Cappadocia can provide interesting information, both about the historical conditions for the formation of Anatolian underground complexes and about the spread of techniques of underground constructions in general.

"Underground City" of Kemerkaya

A group of rock-cut and underground complexes is located 3 km north of the village of Kemerkaya (Bolvadin District, Afyon-Karahisar Province – fig. 1), on the north-western slope of Kemerkaya mountain, just 40 km southest of Midas Şehri (the ancient town of the Phrygian king Midas). Research and organization of touristic attraction were conducted here in 1997-98 by the Afyon museum's staff. There is no detailed description of this complex in the specialized literature; however the information about the results of the research conducted in the past is presented in a number of electronic resources.

According to them the "underground city" Kemerkaya Yeraltı Şehri (also called "Sülünün Öreni Yeraltı Şehri") is situated at the foot of the mountain, 200 m to the north-west from the well-known rock-cut complex of "Yedikapylar" ("Seven Gates"), which was formed around a rocky courtyard on the mountain slope[3]. The researchers associate this group of cavities with the

[1] We prepared a separate article about the rock-cut shelters of the Phrygian highland, which will be published after a short time. Brief information on the other cave monuments of the region is contained in (Freely, 1999: 42-57).

[2] This term should not be understood literally. These underground cavities were not intended for permanent residence and did not have the size and organization of a real city. As a rule, they are complicated and time-varied complexes of artificial caves, which were made on the basis of shelters. More detailed this problem was considered by us in the article (Bobrovskyy, Grek, 2011).

[3] http://www.sehiralem.com/Afyonkarahisar/Bolvadin/Tarihi_Yerler/1039/Bolvadin-Kemerkaya-Yeralti-sehri; https://www.gezenbilir.com/konu/sueluenuen-oereni-yeralti-sehri.7313/.

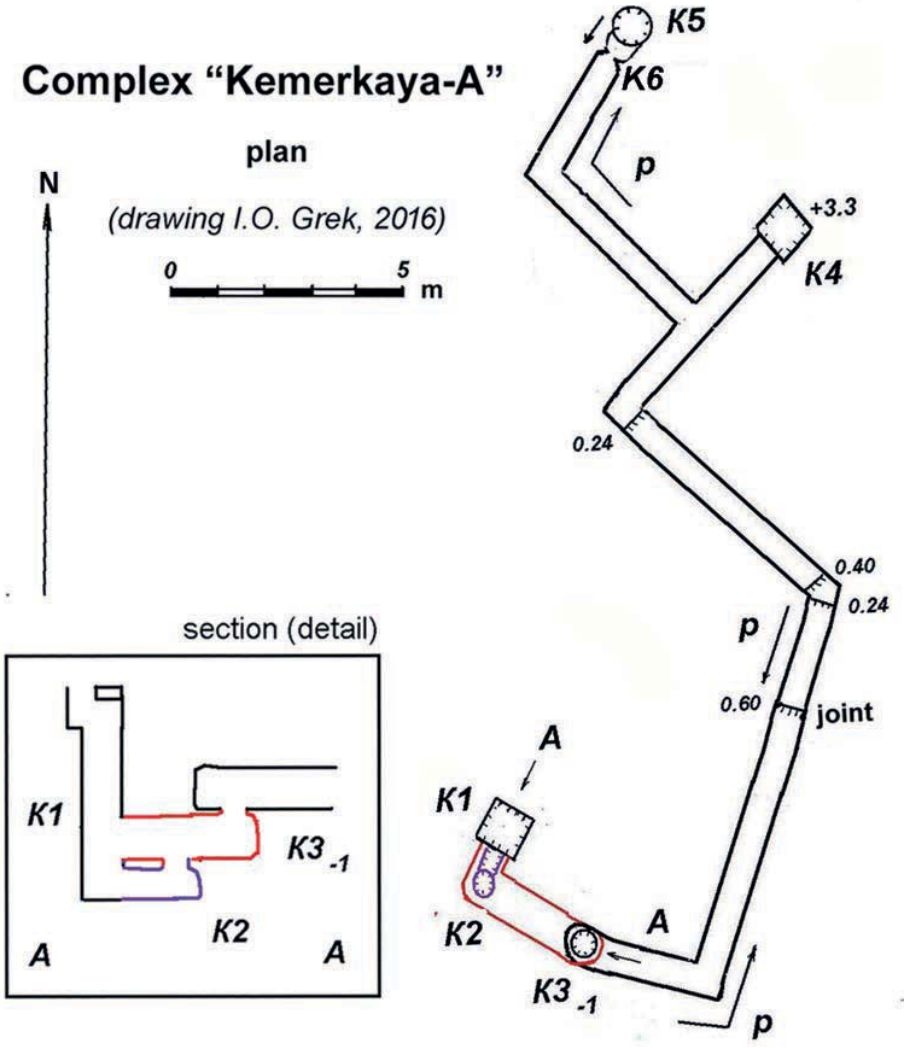

Fig. 2 – Plan of complex Kermerkaya-A (drawing I. O. Grek).
Fig. 2 – Pianta del complesso Kemerkaya-A (grafica I. O. Grek).

historical toponym "Şırahan" and believe that the upper section – "Yedikapylar" – served as a caravanserai (*han*) with a church of the 9th-10th centuries, and the lower part served as a three-level underground shelter, which was integrated into a non-preserved surface settlement. In this case, the appearance of this shelter dates, according to researchers, from the early-christian times.[4] On this (lower) site we examined two separate underground complexes, "Kemerkaya-A" and "Kemerkaya-B", whose plans, sections and extended profiles are shown in figures 2 and 3.

The entrance to the underground complex "Kemerkaya-A" is represented by a vertical shaft K1, located near the wall of a partially destroyed rock-cut room, which obviously had a household purpose (fig. 2). The shaft is square in plan; it has a ledge at a depth of 1 m, and its deeper part is covered with a stone slab from above. At a depth of 2 m in the side wall of the shaft there is a two-meter horizontal passage, in the ceiling of which the hole of the trap K3 was made[5]. In addition in the floor of this passage the trap K2 is opened into the narrowed chamber, connected with shaft K1 at the lowest level. Thus the upper shelter's gallery was protected by a defensive device in the form of the three successively located vertical connections, as shown in figure 2: A-A. We believe that a small hole for observation to the shaft K1 was made in the wall of middle level of this construction, now completely destroyed[6].

[4] http://www.hanilcesi.somee.com/default.asp?aktar=yeralti

[5] The term "trap" (as meaning "hatchway") for describing such devices was introduced by Roberto Bixio. For example both vertical and horizontal traps were described in (Bixio, De Pascale, 2015).

[6] This hole is not preserved in this place, but we can assume it by the analogy with other places in these complexes (for example see figure 2: E-E, G-G). Such holes could be used not only for observation, but for attacking intruders as well.

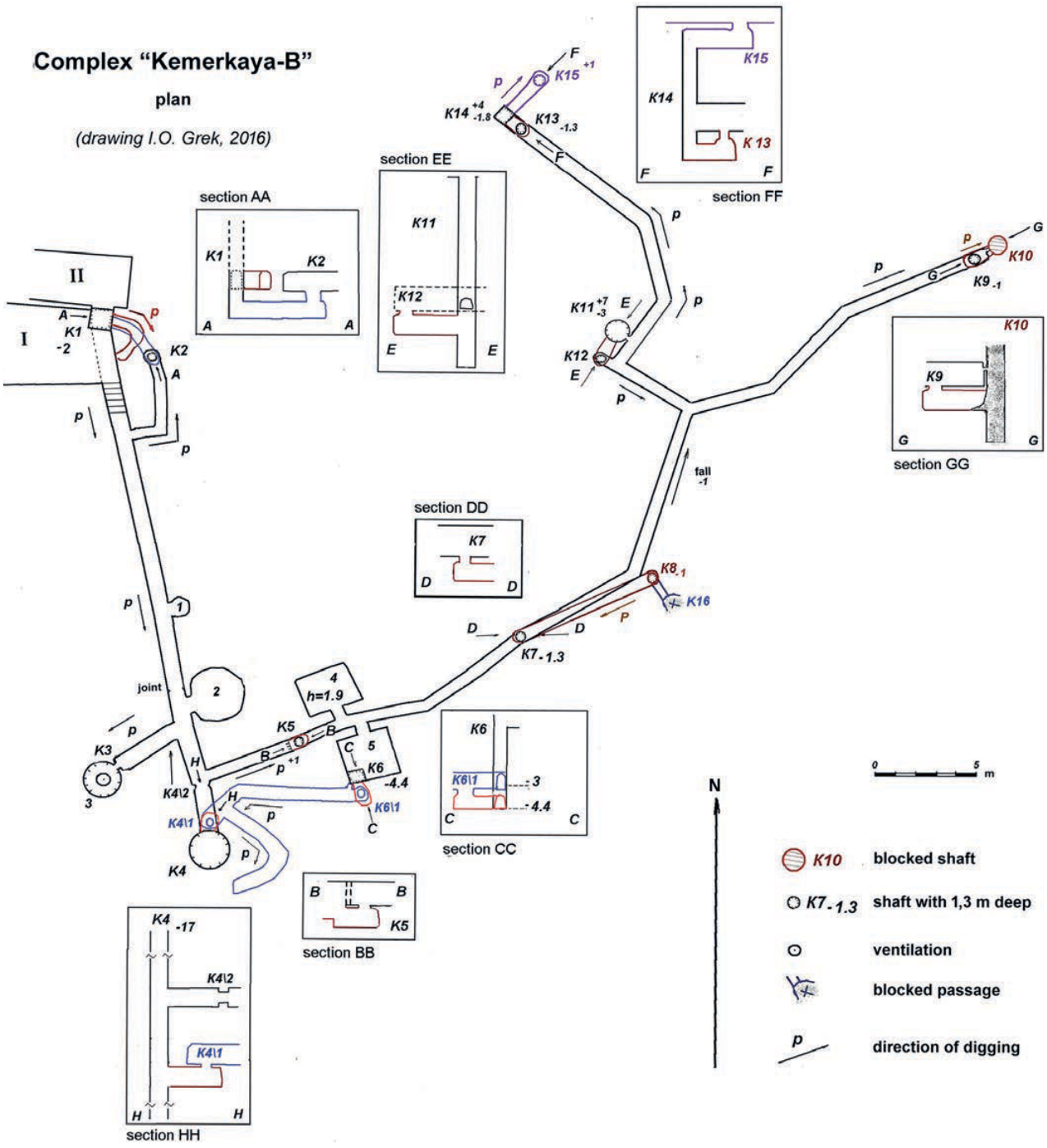

Fig. 3 – Plan of complex Kermerkaya-B (drawing I. O. Grek).
Fig. 3 – Pianta del complesso Kemerkaya-B (grafica I. O. Grek).

The curved section of the upper-level gallery (from the trap K3 to the junction point "joint") was designed to hide from enemies. Later at the point "joint" this gallery was connected to another passage, which was cut from the shaft K4 at 3,3 m depth. Originally this passage at the distance of 2 m from beginning made a turn to the north and was directed to a shaft K5, also excavated from the surface. This gallery is connected to the shaft K5 by an inclined trap K6 in the ceiling of the small lower chamber, made in the wall of the shaft. Later another section of this gallery was excavated from the side of the shaft K4 in the direction of the point "joint". It has four steps and successively deepens by 1.5 m. Thus the complex "Kemerkaya-A" was formed from the two underground shelters, which were originally isolated.

Fig. 4 – Trap K5 in the complex Kemerkaya-B in Fig. 3 (photo T. Bobrovskyy).
Fig. 4 – Trappola K5 nel complesso Kemerkaya-B in Fig. 3 (foto T. Bobrovskyy).

The underground complex "Kemerkaya-B" is located 30 m to the east of the previously described one. Here the destroyed rock-cut room I revealed the shaft K1 and several carved passages associated with it (fig. 3). Probably, the shaft K1 was originally cut down from the niche of another rock-cut room II, located next door. We think the said rooms had household purposes and separate entrances from the surface.

At a depth of 2 m from the mouth of the shaft K1, in the southern direction, there is a passage about 4 m

Fig. 5 – Trap K9 and loophole in the wall in the complex Kemerkaya-B in Fig. 3 (photo T. Bobrovskyy).
Fig. 5 – Trappola K9 e feritoia nella parete del complesso Kermerkaya-B in Fig. 3 (foto T. Bobrovskyy).

long, which used to be blind (the traces of the original planning of this passage are visible in the floor of room I). Later this tunnel was extended in the form of a low straight passage for another 14 m. In its wall there is a storage niche-room 1 and a curved passage, which was cut in the north direction to the trap K2 in the floor. Trap K2 connects with a small narrow room which was cut from the shaft K1 at a depth of about 4 m. In addition, there is a curved passage of about 3 m in the eastern wall of the shaft K1, just below the level of the southern tunnel. The passage was initially blind and now opens into the room I (fig. 3: A-A).

The said southern gallery from the shaft K1 is connected to another part of the complex, which was developed from the shaft K4. The shaft K4 is round in section and 17 m deep. It was cut down from the surface and, probably, served as a water well. In its wall at the depth of 7 m a camouflaged passage was made in the form of a chamber with an inclined trap K4/2 at the end (fig. 3: H-H). From the trap K4/2 the gallery is directed to the north up to the point of connection with the said passage from the shaft K1.

In the eastern wall of this gallery there is a round chamber 2, the ceiling of which was destroyed and is currently covered with a concrete slab. A 3.5 m long passage was cut opposite to the chamber 2 in the western wall of the gallery. It ended with an inclined trap K3 with a groove for the hatch. Behind the trap K3 there is another round chamber 3 with a ventilation shaft in the ceiling. Apparently, both chambers (2 and 3) were used as storage facilities.

In addition, another gallery begins from the trap K4/2 in the northeasterly direction. At a distance of 5 m from its beginning there was a defensive device K5, depicted in fig. 3: B-B. The trap K5 leads to the upper gallery, which was initially separated from said gallery with a wall, which is now destroyed. Now we can see a ledge in this place (fig. 4).

A little further on the sides of the upper gallery two rectangular chambers (4 and 5) were cut, each 2.5x2.5 m in size. The grooves at the entrances of these chambers testify that there used to be doors with locks from the inside. In the floor of the chamber 5 the shaft K6 with depth 4,4 m is opened. Two passages open from this shaft: the upper one at depth 3,3 m is located in south-eastern corner and the lower one at depth 4 m is in the eastern wall (fig. 3: C-C). The lower passage leads to a small chamber with a ceiling trap K6/1 to the overlying gallery. This gallery at the level of the upper passage into the shaft K6, probably, was initially a small hole, widened later. This curved gallery of about 8 m long ends with the trap K4/1 in the floor. The trap connects to the small chamber, cut in the wall of the said shaft K4 at the depth of 11 m from the surface (fig. 3: H-H). There is a curved blind passage, 6 m long, from the same gallery in the southern direction.

The main upper gallery from the trap K5 continues with several bends in the northeasterly direction for a distance over 20 m. At 10 m from the said chambers 4 and 5 in the floor this passage has a trap K7 into the underlying gallery, which was excavated from the opposite direction (fig. 3: D-D). This gallery ends with a trap K8 in the floor: from here a perpendicular passage leads to a buried shaft K16, cut from the surface.

At a distance of 5 m to the northeast of the trap K7 a rectangular pit of 40 cm in depth is placed in the floor of the upper gallery. Possibly it is a trace of a trap that was not completed. Further the upper gallery has a connection to the gallery of the next underground section, which was developed from the shaft K11. Apparently the shaft K11 also served as a water well. It was excavated from the surface to the depth not less than 10 m. In the south-western wall of this shaft at a depth of 8.5 m there is a chamber with a trap K12 in the ceiling, which opened into the upper level. From here the gallery 16 m long, curving to the north, leads to the system of shaft and traps K13-K15. Along this way a hole into the shaft K11 (at depth of 7 m) is located (fig. 3: E-E).

The system K13-K15 was developed from the inside. Trap K13 in the floor of the said gallery is opened into a short lower passage with a 6 m vertical shaft K14. It rises to the horizontal passage with a hole K15 in the ceiling leading to the surface (fig. 3: F-F). Now there is another opening from the middle gallery to the shaft K14. Probably it is a later breach, which was made on the site of a partially preserved round hole with a diameter up to 12-15 cm.

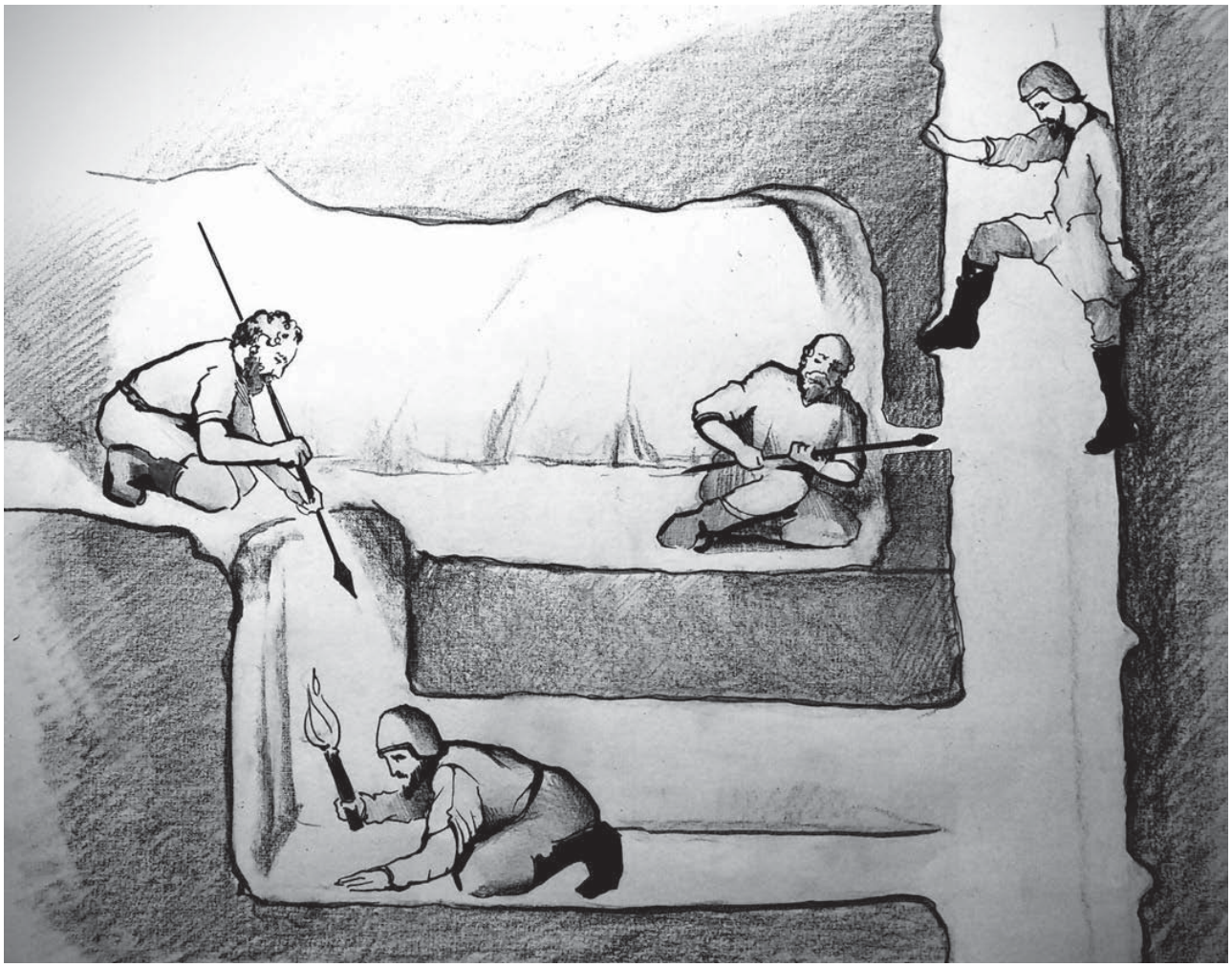

Fig. 6 – Simulation of an enemy raid blocked by a vertical trap (drawing O. Sukhetska).
Fig. 6 – Simulazione di una incursione nemica bloccata per mezzo di una trappola verticale (grafica O. Sukhetska).

Also from the trap K12 another 22 m long gallery leads to the system of shaft and traps K9-K10. This passage has a short offshoot to the junction point with the above described main area of the shelter (K1-K7). Shaft and trap K9-K10 were made also from the inside: trap K9 in the floor of the gallery opens into the lower room, from which the shaft K10 was cut. The said shaft is now buried (fig. 3: G-G). It is important to note that the hole of the trap K9 is provided with a groove for the hatch from the gallery's side, and the shaft K-10 was carved from the bottom up to the surface, which was not easy to made. In addition, the gallery is connected with the shaft K10 by a narrow round hole in its wall with a diameter of 10-15 cm (fig. 5).

Thus, the traces of the tools, preserved on the walls of the Kemerkaya's complexes, allow to trace the direction of cutting of the underground structures and, consequently, to identify the changes and development of these cavities. In both complexes we detected the development of the shelters from the shafts, which were not only the entrances to the underground space, but also served for water supply and ventilation. The underground complex "Kemerkaya-A" was developed with the three separate parts from the three shafts (K1, K4, K5), later connected in a single system. The complex "Kemerkaya-B" was formed from the four isolated sections which developed from the shafts K1, K4, K11 and K16. The peculiarity of these shelters is the presence of the specific defensive devices, which were made similarly in both complexes (fig. 6). The said devices consist of a chamber, disguised in the wall of the entrance shaft and connected with the overlying gallery with the help of a trap in the ceiling. The upper gallery of this shelter also has a small hole into the entrance shaft.[7] The shafts K-10 and K14 of the complex B were excavated from inside, probably, as emergency

[7] Probably, such holes, preserved intact or fragmentary in the shafts K10 and K14, also existed in other places, where the walls between the galleries and the shafts later were destroyed. These holes are similar to the observation windows (spyholes) or loopholes in the millstone-doors, or in the side walls, of the Cappadocian underground shelters (Bixio, De Pascale, 2015).

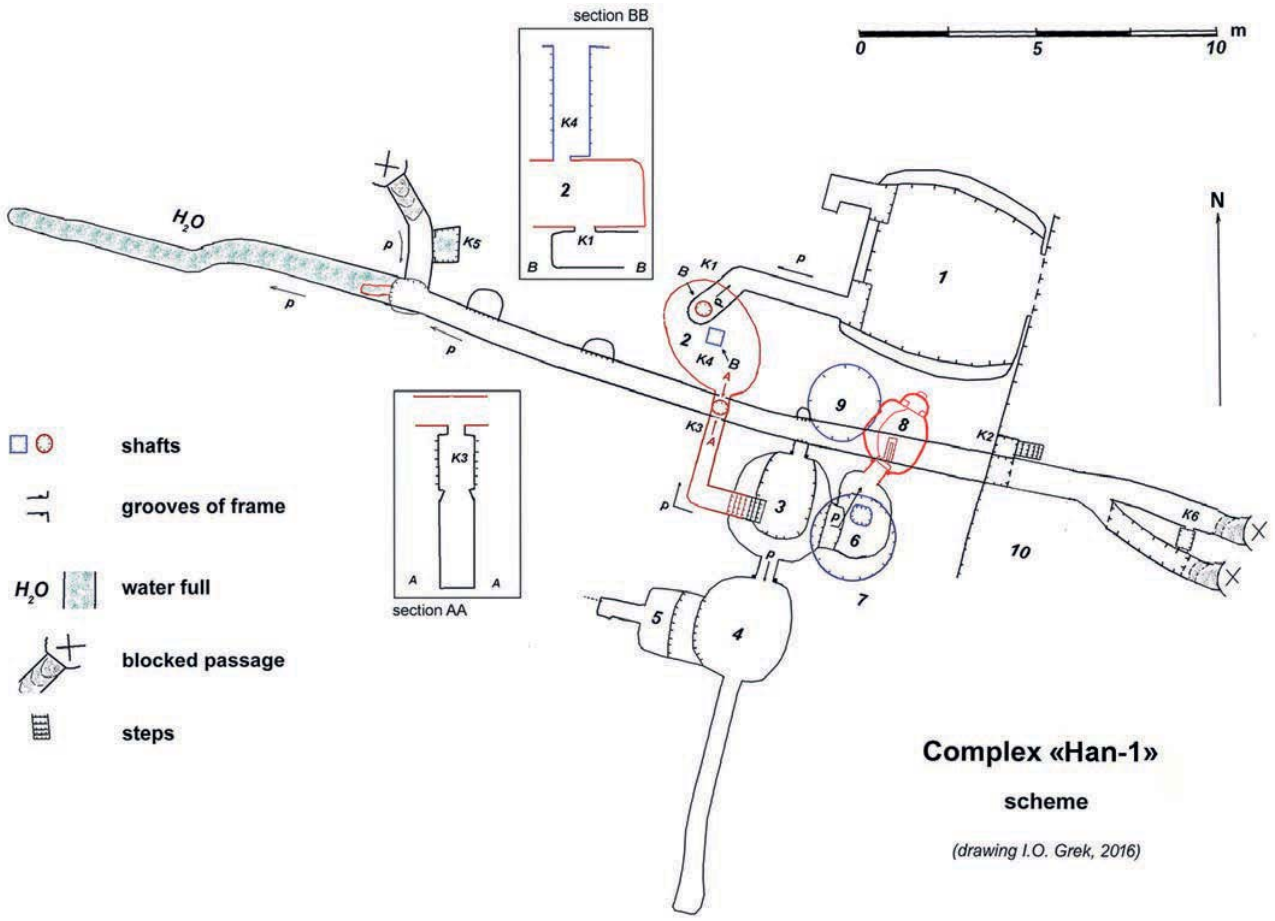

Fig. 7 – Plan (scheme) of complex Han-1 (drawing I. O. Grek).
Fig. 7 – Pianta schematica del complesso Han-1 (grafica I. O. Grek).

(evacuation) exits, but here also the similar defensive devices were made.

Special mention should be made of the arrangement of the shaft K1 of the complex B, where the disguised entrance to the southern gallery initially had no additional protection, but later, apparently, was blocked by masonry. Since that time a passage with a defensive device K2 was used instead of this entrance. The lack of additional protection is also observed in the shaft K4 of the complex A. We think this entrance was used only at the early stage. Probably later it was blocked too, and access to the underground shelter was made through the shaft K5, additionally protected by a trap. The existence in the entrance shafts of chambers or tunnels, not additionally protected by the defensive devices, suggests that originally the individual shelters were camouflaged in the walls of these shafts. In our opinion this indicates the various stages of the formation of this system: from the simplest shelters, isolated from each other, initially, to those well protected and echeloned[8], after, until their interconnection to the final stage.

We also recognize in this system the stage of destruction of the defensive devices, that is typical for many underground complexes, e.g. in Cappadocia (Bobrovskyy, Grek, 2016). For example in this stage the walls with the loopholes between the passages and shafts K1, K2 of the complex A and K5, K6, K11, K14 of the complex B were destroyed.

We have to add that the total length of the Kemerkaya's underground complexes is 258 meters. The complex "Kemerkaya-A" is 44 meters (31 meters horizontally and 13 meters vertically) and the complex "Kemerkaya-B" is 214 meters (166 meters horizontally and 48 m vertically).

"Underground City" of Han

Underground complexes in the village of Han (or Hanköy) – one of the district centers of the province of Eskişehir, – just 12 km south-east of Midas Şehri, are known thanks to archaeological excavations, held here

[8] From the "echelon" as a "part of a military force differentiated by position in battle" (Oxford English Dictionary (3rd ed). Oxford University Press. September 2005).

in 1992-1993 by specialists of the Eskişehir Museum (fig.1: Han).[9] As a result of this exploration, within the village several parts of settlements and cemeteries of late antiquity and medieval period were opened. Almost all of these excavated areas contain underground structures: rock tombs, granaries, household rooms and shelters. In 2016-2017 we examined two cave-complexes located at different parts of this village.

The complex "Han-1", called by locals "Yeraltı Şehri" (Underground City) or "Büyük Galeri" (Great Tunnel) and opened for visitors, is situated on the western outskirts of the village at a gentle slope of the hill, composed of dense light tuffs. As a result of the excavations on the surface of the slope numerous large and deep grain pits or water tanks were found. At the foot of this slope, two rocky courtyards were cut, one of which (southern) is surrounded by the remains of several rock-cut tombs of the late antiquity or early medieval time. The other (northern) rocky courtyard also might have appeared in connection with the existence of such tombs, however, later it was considerably expanded. In the boundaries of this courtyard, judging by the traces in the floor, there were several masonry buildings, now almost erased, and openings of the cave-structures are visible in the surrounding rocky walls. These are the entrances to the big underground complex "Han-1" (fig.7).[10]

One of the entrances is the cave-room 1, which contains niches-mangers along the walls. Judging by the traces in the ceiling, originally in this place there were two separate chambers with the barrel vaults and ledges along the walls. The two narrow galleries were cut from the room 1 in the northwestern direction. The northern gallery at the distance of 2 m has a turn to the south and finishes with a dead-end. The southern gallery, with a length of about 4 m, also turns southward and ends with an ascending trap K1, which leads to the upper room 2.

To the south of the room 1, at the base of the rocky face of the courtyard, there is a rectangular shaft K2, 1.5 m deep. It is opened into the horizontal gallery, which leads into two directions – to the north-west and southeast.

The north-western section of the gallery has a height of up to 4 m, which is unusual for shelters. The ledge on the wall of this gallery at a height of more than 2 m from the level of the modern floor allows to assert that the original floor was deepened at a later time (fig. 8). The said gallery continues in the northwestern direction at a distance of about 22 m from the shaft K2 and then its floor is covered by water. The lower (watered) blind part of the gallery from this place continues westward for another 12 m (maximal depth of water in this area is about 50-60 cm).

From the shaft K2 to south-east the said gallery contains only lower level and at the distance of 5 m it is bifurcated. Both branches of the gallery, collapsed at the end, are low and partially overlapped by stone slabs.[11] Thus, the lower part of the said gallery can be interpreted as a water collector.

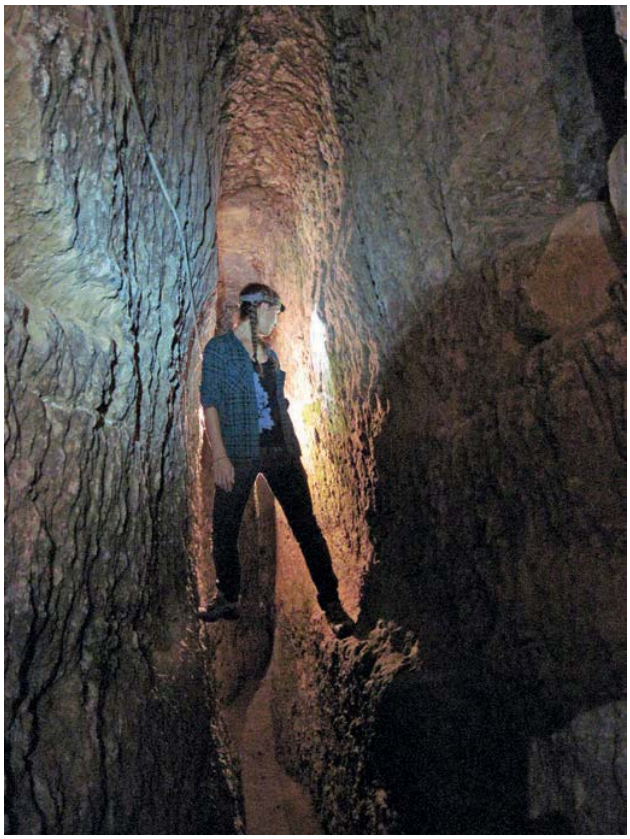

Fig. 8 – The ledge in the wall of the main gallery shows different stages of development of the underground complex Han-1 (photo I. O. Grek).

Fig. 8 – La risega nella parete della galleria principale attesta i differenti stadi di evoluzione del complesso sotterraneo Han-1 (foto I. O. Grek).

The said upper part of the north-western gallery was also developed to a distance of more than 20 m from the shaft K2 to the small chamber, from which a 2 m long blind western branch begins. From the north an inclined passage, now filled with soil, was cut into this chamber from the surface. In the eastern wall of this passage a rectangular wide hole was cut into the shaft K5, which probably served as a water well. In addition in the side walls of the main gallery numerous niches for lamps are observed, and in the north-eastern wall there are two side chambers of small dimensions, that possibly served as storages.

[9] http://www.eskisehirkulturenvanteri.gov.tr/detay.aspx?ID=21

[10] The scheme of this complex, published by Turkish researchers (http://www.hanilcesi.somee.com/default.asp?aktar=yeralti), needed clarification and addition, which was done by us.

[11] The trench of this gallery, made in the floor of the rocky courtyard, passes along the bottom of the basement of a non-preserved masonry building. Between the two branches of this gallery traces of another shaft K6, now destroyed, are visible.

Fig. 9 – Trap K3 and footholds in the walls of the upper part of the main gallery of the complex Han-1 in Fig. 7 *(photo I. O. Grek).*
Fig. 9 – Trappola K3 e pedarole nella parete della zona superiore della galleria principale del complesso Han-1 in Fig. 7 (foto I. O. Grek).

Fig. 10 – Altar part of the church in the complex Han-1, room 8 in Fig. 7 *(photo T. Bobrovskyy).*
Fig. 10 – Zona dell'altare della chiesa nel complesso Han-1, vano 8 in Fig. 7 (foto T. Bobrovskyy).

At 16 m from the entrance shaft K2, in the ceiling of the gallery, there is an ascending trap K3, leading to room 2 with the already mentioned trap K1 in the floor. In the upper part of the walls of the main gallery there are footholds for lifting to the trap K3 (fig. 9). Trap K3, round in plan, is located at the entrance to chamber 2. In the ceiling of this chamber there is a breach that enters the rectangular shaft K4, excavated from the surface.
Also the upper part of the main tunnel contains an opening, which leads to chamber 3. This junction was protected with a wooden door from the side of the chamber 3. Opposite this way in the northern wall of the main gallery a niche with the same dimensions as the opening and with a depth of about 50 cm is situated.
The chamber 3 is a round room about 4 m in diameter. It has a high (about 1 m) ledge along the eastern, southern and western walls. In the descriptions of the complex the researchers indicate that during the clearing of this room many human bones were found.[12]

[12] http://www.hanilcesi.somee.com/default.asp?aktar=yeralti

From the chamber 3 in the north-west direction with a subsequent turn to the north a steep uprising passage with stairs was cut. At distance of 6 m it connects to the upper hole of the trap K3. In the south a short passage from the chamber 3 leads to a round chamber 4 with a diameter of about 4 m with traces of a wooden door at the entrance. The chamber 5, located higher, is separated from the chamber 4 with two ledges. A short blind passage from the chamber 5 has a narrow drilled hole, clogged with ground. In the southern direction from the chamber 4 there is an 8 m long blind narrow passage. Finally, the round chamber 6 is separated from the chamber 3 with high ledges. In its ceiling there is a large rounded hole, which opens to the floor of the one of the said storage pits (room 7), dug from the surface. The said hole, judging by the traces of the tools, was cut from above. In addition there is a square opening in the north wall of the chamber 6 connected with the chamber 8. A wooden door used to be there. It closed from the chamber 8.
The chamber 8 is a room that imitates a cave-church in miniature. It has a rectangular naos, an arched bema and a vaulted elevated altar part (apse) with two ledges on the sides, imitating the seats of the priests (fig. 10). In the naos floor there is a deepening of a child's grave. The bottom of this grave was later connected by a hole with the said main gallery. The walls of the chamber are marked with several crosses of simple configuration. A small breach connects the chamber 8 with one of the upper storage pits (room 9).
Thus the basis of the underground complex «Han-1» is a large gallery, cut from the shaft K2 in a rocky courtyard. Its deepening at later stage led to the emergence of an active water collection tunnel at that time. It is possible that this gallery at its upper level, as well as a small passages from the room 1, originally also had a function related to water collection.[13] At the same time the presence of the storage chambers in the wall of the gallery's upper level has analogies among the underground structures of such Cappadocian shelters as Derinkuyu, Özlüce and others (Gülyaz, Yenipınar, 2007). If the said gallery in the Han's complex was used as a shelter too, then it had the extremely simple structure, since its entrance was protected only by the shallow trap (K2).
However, we observe more complicated methods of protection for the premises which have been developed from this gallery. For example, the typical structure of the Cappadocian underground shelter can be traced in the part of the complex, which consists of the ascent trap K3 (the defensive device at the entrance to the shelter), the chamber 2 (the actually shelter) and the descending trap K1 with the passage to the chamber 1 (the protected emergency exit).[14]

[13] From this point of view the north branch of this gallery can be explained with the presence of the adjacent shaft K5, which may have originally served as a technological outlet, intended for excavation of the rock during the creation of the water collection tunnel.
[14] We think the breach in the ceiling of the chamber 2 was formed later by accident as a result of digging of the shaft K4 from the surface.

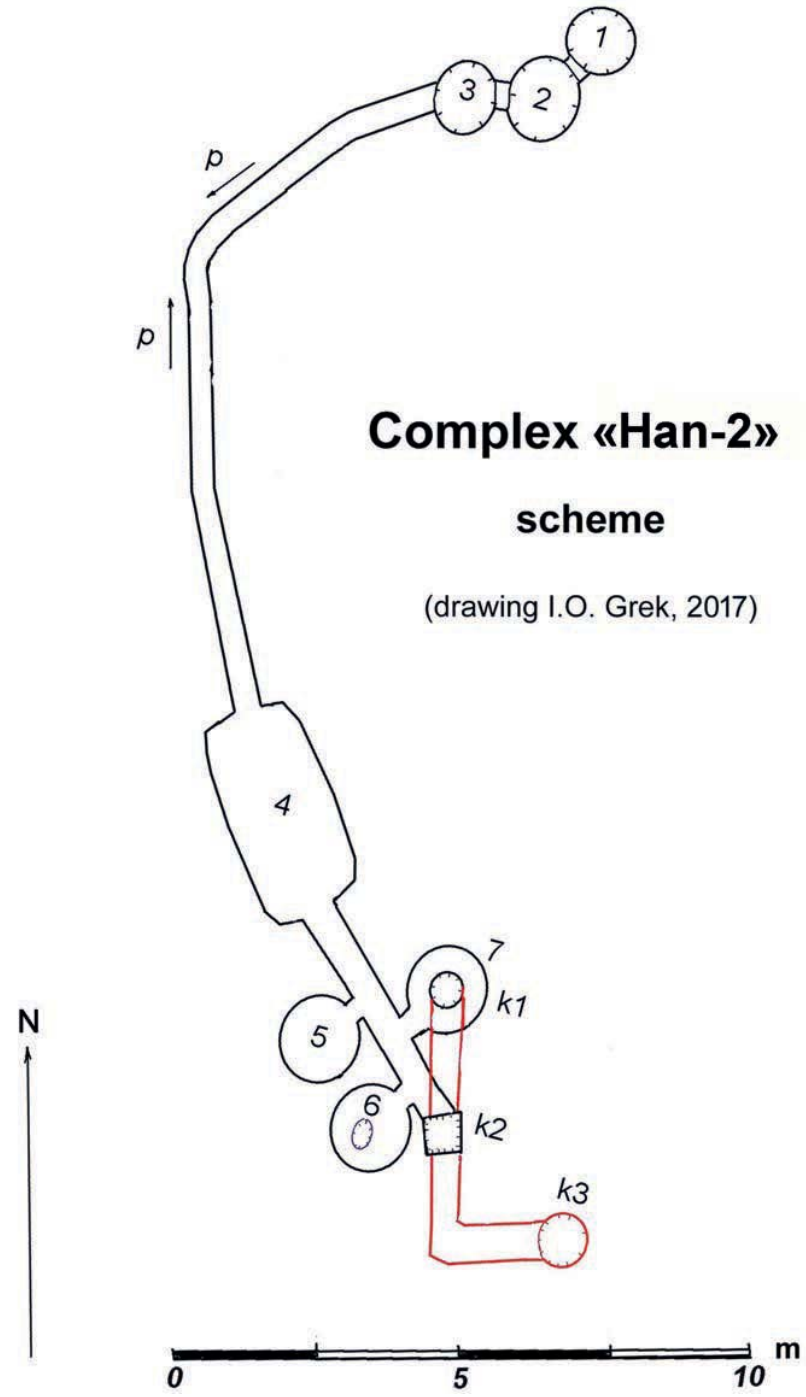

Fig. 11 – Plan (scheme) of complex Han-2 (drawing I. O. Grek).
Fig. 11 – Pianta schematica del complesso Han-2 (grafica I. O. Grek).

Another part of the shelter in this complex was also developed from the main gallery. The chamber 3 was protected by the narrow and low entrance with a wooden door. The additional defensive fronts in this shelter apparently were formed in two directions. In one of them (to the south) the chamber 4 was also protected by a wooden door. The blind two galleries were made from here, one of which (with the chamber 5) probably was an unfinished exit for evacuation. In the other direction (to the east) the shelter was developed through a high stepped passage between the chambers 3 and 6-8 (the last chamber was protected by a wooden door also).[15]

At the next stage both parts of this complex were con-

[15] The reproduction of the church in chamber 8 indicates that the shelter was excavated during the Christian period.

nected to each other by an unprotected passage between the chambers 2 and 3. That formed the single shelter with a possibility of maneuvering inside the underground complex. And finally, when the need for shelters disappeared, the main gallery of this complex was deepened and onwards used only as a water collecting tunnel.

Another underground complex in the village of Han – "Han-2" – is located on the excavated site of the ancient settlement, 100 m to the north of the said structure. Here also we observed two sections of separate shelters, later interconnected (fig. 11).

In the northeastern part of this complex several big storage pits 1, 2 and 3 (each being 3-4 m in diameter) were dug from the surface. Apparently, at a certain stage these pits were blocked from above by stone slabs and interconnected by short passages. As result they transformed into an underground shelter. The structure of this shelter resembles the part of one of the underground complexes of the village of Mazı, in Cappadocia, where storage pits were cut initially from the surface (or from the floors of the underground premises) and then they were interconnected by breaches forming the underground labyrinth (Bobrovskyy, Grek, 2016).

In the southern part of the complex "Han-2" the development of the underground shelter took place through the entrance shaft K2, from which the passage with the ceiling trap K1 leads into the chamber 7. The gallery with the side chambers 5 and 6 and the large chamber 4 at the end were made from the chamber 7. This structure is a good example of a local underground shelter. The protective device at the entrance (K2/K1) was made in the same way as in the Kemerkaya's "underground city" described above. At a certain stage both the shelters of this complex, different in structure and level of security, were interconnected by a low and narrow gallery.

Summary

The underground complexes of the Phrygian highland, examined by us, are very similar to Cappadocian cave-shelters. The analysis of the arrangement of these complexes allows to state that they were also developed step by step from the simplest forms to the echeloned and labyrinthine structures. However, unlike the underground shelters of Cappadocia, where the millstone-doors were the most common defensive element, sometimes combined with traps, here only the system we call "shafts and traps" was used.[16]

As we made sure, the said Phrygian complexes were not created at once, but had a fairly long development. Nevertheless the dating of these underground shelters is very problematic.

The presence of the chamber, imitating a Christian church in the complex "Han-1", obviously points to the Middle Ages, but it does not allow to identify a more exact date. The existence of the Kemerkaya's underground shelters in the immediate vicinity of the Yedikapylar complex with the cave-church of the 12th-13th centuries can indirectly testify the appearance only in the near-term of the cavities of the neighboring settlement.[17]

Whatever it was, we do not have any data about the creation of underground shelters on the Phrygian highland earlier than the medieval period. We hope that further archaeological studies on the underground structures of this region will allow not only to expand the range of the said monuments, but also to clarify the issues of their chronology.

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[16] In our opinion both "underground cities" – Kemerkaya and Han – cannot be an exceptional phenomenon in this region. We think a small number of known "underground cities" in the provinces of Afyon-Karahisar and Eskisehir are a consequence of the insufficient researches of these territories.

[17] The church, which the local researchers attributed to the 9th-10th centuries, is undoubtedly more recent. This is evidenced by the niche for the "prothesis" which is located in the altar part of the church at the designated space of its "bema". According to the liturgical research this arrangement of the "prothesis" is characteristic of the churches which were built after the 11th century. It is associated with a changes in the rules of the Orthodox church during the 12th-14th centuries (Vinogradov, Ghaidukov, Zheltov, 2005: 74-75).