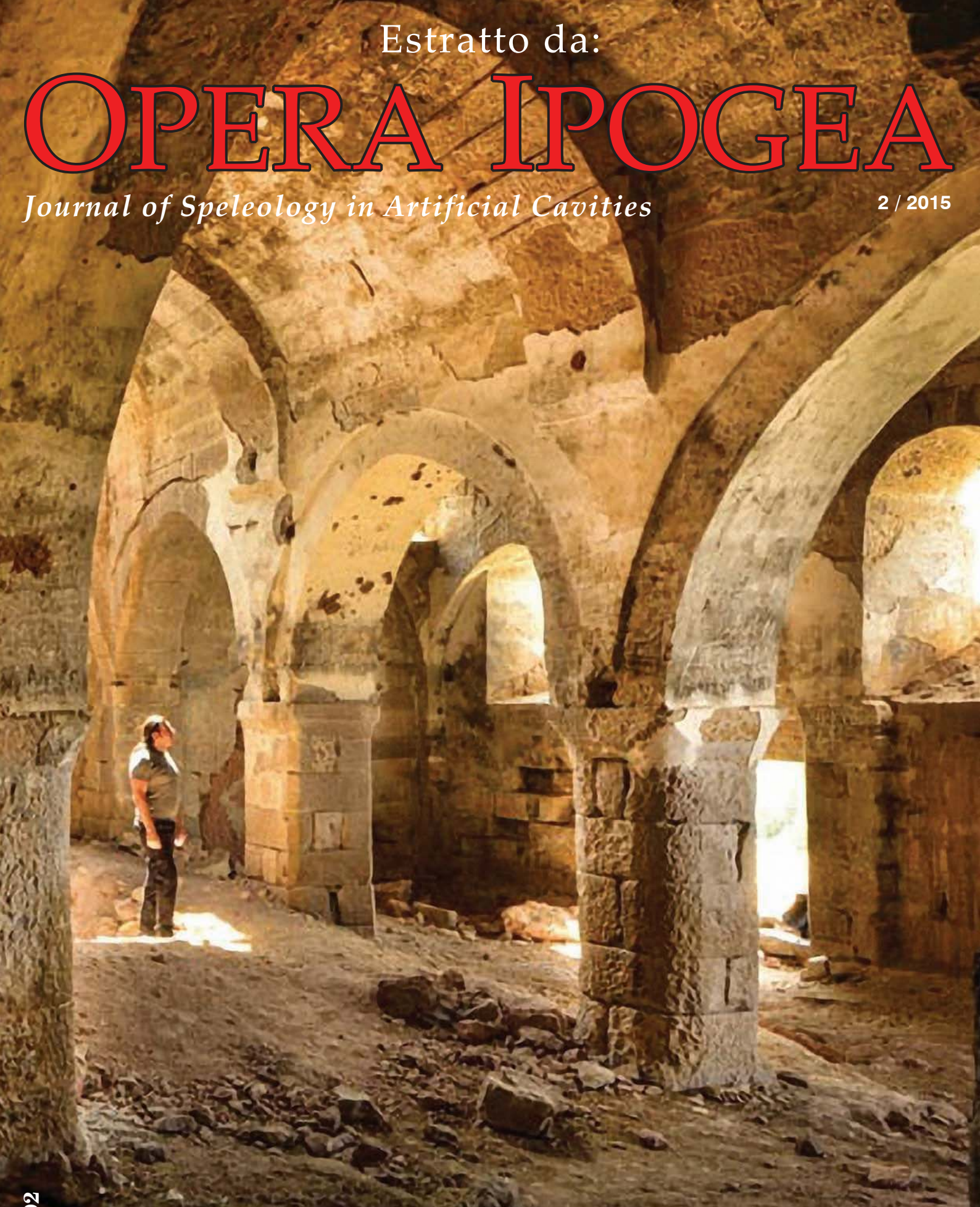
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Cave dwellings and underground cities of Belagasi village and Otedere valley (Kayseri - Turkey)

Ali Yamaç[1], Ezgi Tok[1,2]

Abstract

Although the region known as "Cappadocia" is located in the Nevşehir-Ürgüp-Göreme triangle of Anatolia (Turkey), the capital of that region in ancient times was the antique Caesarea city which is known as Kayseri today. As the same in Nevşehir-Ürgüp-Göreme triangle, in antique Caesarea the volcanic tuff which was piled up by the active volcanoes around was dug by the local people. Houses, churches, protective underground settlements were built into those rocks and a troglodyte civilization had been established.
Different from the known touristic places of Cappadocia, the rock dwellings and underground settlements of Kayseri region have not been investigated. Nevertheless, underground structures of that region have such an architectural quality to compete with the dwellings in other parts of Cappadocia. After the 3rd century Kayseri was the cradle of Christianity in Anatolia and there are several underground cities around this city carved in order to protect Christians from the invasions and raids beginning from the 7th century.
We find new and unexplored underground cities on every spot around Kayseri. Apart from several rock settlements, several underground cities on the walls of deep valleys around the city, which were unknown and not recorded before, had been explored and surveyed. Those underground cities are rather different than the ones around the touristic Cappadocia. Apart from the architectural differences, at least some of them were not used again after the first construction period, whilst in other cases even the excavation of the underground city is uncompleted. When appreciated in this context, the underground cities of Kayseri have features to shed light on the beginning of this type of architecture, which is different from Goreme, where most examples were continuously enlarged and new passages added during the history.
In this article, Belagasi cave dwellings of Kayseri and four different underground cities in the area will be explained in detail.

Key words: Kayseri, cave dwelling, underground city.

Riassunto

Insediamenti rupestri e città sotterranee del villaggio di Belagasi e della valle dell'Otedere (Kayseri - Turchia)

Sebbene la regione conosciuta come "Cappadocia" sia localizzata nel triangolo compreso tra le regioni di Nevşehir, Ürgüp e Göreme nell'Anatolia centrale, la capitale di questo territorio, nei tempi antichi, era Cesarea, conosciuta oggi come Kayseri.
In maniera simile a quanto accaduto per le altre città della regione, i tufi vulcanici che ne caratterizzano la geologia sono stati scavati dalle popolazioni locali allo scopo di ricavarne singole abitazioni, chiese e città sotterranee, generando numerosi emblematici esempi di insediamenti sotterranei e rupestri.
Contrariamente a quanto accaduto per le altre province, studiate abbondantemente, e diventate nel corso del tempo importanti luoghi turistici, gli insediamenti sotterranei di Kayseri meritano ulteriori approfondimenti scientifici per la loro ricchezza e per le qualità architettoniche che le caratterizzano.
Nei dintorni della città, che è stata la culla della Cristianità in Anatolia a partire dal III secolo, sopravvivono diversi esempi di realtà urbane ed insediamenti rupestri, dal VII secolo in poi, realizzati con lo scopo di proteggere le comunità dalle invasioni provenienti dalle altre parti della regione.
Nel corso delle nostre attività di ricerca siamo riusciti a scoprire e rilevare diverse città sotterranee sconosciute o studiate solo superficialmente. L'insieme di questi fenomeni urbani presenta diversi caratteri pecu-

[1] OBRUK Cave Research Group; Acikhava Apt. 16/7, Nisantasi, Istanbul, Turkey, email: ayamac@gmail.com.
[2] ITU, Istanbul Technical University, EURASIA Institute of Earth Sciences.

liari e differenze rispetto agli altri esempi presenti in Anatolia ed in particolare a Göreme. L'aspetto forse più importante riguarda i loro caratteri di originalità e la mancanza di una continuità nelle opere di scavo che caratterizza gli altri siti storici della regione.
In questo saggio, cercheremo di analizzare alcuni esempi di abitazioni e quattro esempi di città sotterranee presenti nella provincia di Belagasi con lo scopo di descriverne i caratteri architettonici e formali.

Parole chiave: Kayseri, abitazioni rupestri, città sotterranee.

Introduction

The area (fig. 1) lies in Mid Anatolian Volcanic Provence and it's one of the most important volcanic areas of Turkey. Volcanic activity around this area continued through the converging of Arabian and Eurasian plates during the Middle Miocene period, 16-11.6 million years ago and developed the post clash regimes after the Upper Miocene period. Kayseri, located 75 km east of the present Cappadocia, has also been affected by those intensive volcanic activities (Alici Sen et al., 2004). Some volcanoes of the area were only small vents, but a total number of 68 volcanoes around Kayseri had been active till Pliocene-Pleistocene times. That eruption phase piled up more than 100 m of thick ignimbrite and tuff around Kayseri.

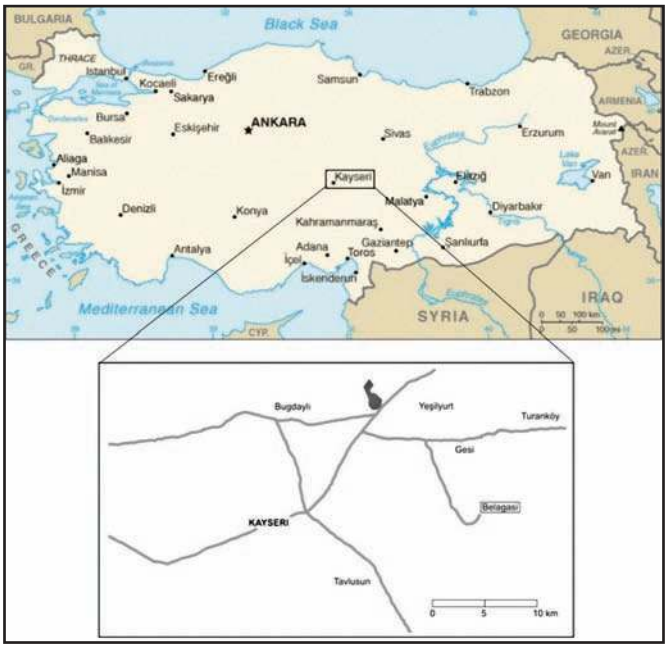


Fig. 1 - Location map showing Belagasi region near Kayseri city (A. Yamaç).
Fig. 1 - Posizione della regione di Belagasi vicino alla città di Kayseri (A. Yamaç).

In antique Caesarea this volcanic rock was dug by the local people. Houses, churches and underground shelters were built into those volcanic rocks and a troglodyte civilization had been established.
Almost all the underground shelters in Anatolia are very unique to antique Cappadocia region, which includes the provinces of Nevşehir, Aksaray and Kayseri of today. These defensive underground settlements dug into soft tuff rocks has long tunnels and living areas protected by mill stone doors to defend the local people in case of an attack. Approximately 180 underground cities and shelters have been found in Anatolia so far and 90% of them are in Cappadocia. The academic articles about these structures are very limited and only a few inventories had been done (Bixio et al., 2012; Ayhan, 2004).
In spite of conducted researches and archeological excavations, initial construction dates of these underground shelters which are commonly encountered in the region are unknown. Although there are not many historical resources regarding cave settlements in the region, it can be considered that such kind of a troglodyte mode of living exists in the territory since ancient ages. On the other hand, if we take into consideration that local people did not need any hiding place during the ages when the region was under the rule of Byzantine Empire, these underground shelters must have been dug after 7th century when Arab raids towards region started. Similarly, such kind of underground shelters were not necessary after 13th century when the region came under the rule of Seljuq. Thereby, it can be thought that these underground shelters in the region -at least the large part of them- were dug between 7th and 13th centuries.



Fig. 2 - Belagasi cave settlements from north to south (photo A. Yamaç).
Fig. 2 - Gli insediamenti rupestri di Belagasi da nord a sud (foto A. Yamaç).

Today, there is no housing other than few farmhouses in Belagasi Village of Kayseri. However, there are 28 different rock dwellings on a rocky slope in this small Armenian village where people had been living until approximately a hundred years ago (fig. 2).
Although a large majority of these dwellings are one or two roomed simple houses, there are also 2 storey and 6-7 roomed quite large cave dwellings (fig. 3).
Southern wall of "Holy Cross Church" which was constructed in 1842 had been built by carving the rocks and the northern façade of the church had been stone walled (fig. 4).
The church was exposed to devastation of time and illegal treasure hunters after 1915. Only a very small part of decoration and Armenian epigraphs within the building have reached the present day.
Two of cave dwellings existing in this village are connected to underground shelters. On the other hand, although there are no settlements in Otedere Valley extending towards south of the village but there are two more underground cities in this valley.
First establishment of both the village and all these four underground cities are uncertain.
Probably, we can think that the village is at least millennial.



Fig. 3 - Photo of a double storey, 8 rooms cave settlement at Belagasi Village (photo A. Yamaç).
Fig. 3 - Foto di un insediamento rupestre su due piani, con 8 camere, nel villaggio di Belagasi (foto A. Yamaç).



Fig. 4 - Holy Cross Church of Belagasi Village which was constructed in 1842 (photo A.E. Keskin).
Fig. 4 - Chiesa della Santa Croce nel villaggio di Belagasi costruita nel 1842 (foto A.E. Keskin).

On the other hand, it can be supposed that there may had been another settlement that used two other underground shelters in Otedere Valley extending in the south of the village and none remains of which has not reached the present day.

Belagasi Underground City No 1

The first underground city, which is located 10 m eastward of the channel bringing water to the village from the valley and, the entrance was enlarged by a large treasure hunter hollow is entered via an *in situ* mill stone door.
The tunnel, with 70-80 cm width and 90 cm height, starting from this point continues 42 m without any change. This structure, which was named as "Belagasi Underground City No 1" by us, shows a significant structural change after this long tunnel and opens out onto a quite large chamber.
After that large structure there are two other large rooms with windows viewing Otedere Valley and connected with each other by a staircase. It is strongly possible that those two chambers were the remnants of a collapse on the wall and, after having an opening to Otedere Valley they were used as settlements afterwards.
The following structure behind these rooms is highly striking: There are 24 small rooms in total concatenated in equal spaces on the right and left of a 34 m length passageway.
The tunnel situated at the end-point of the structure with 60° slope leaning towards below is engorged. There exists a small peep hole at this last part of the underground city and this point corresponds to 32 m above of cistern and water channels located in Otedere Valley, explained below.
Although any connection from below has not been detected, it is probable that this last tunnel may have been excavated in order to reach water sources from the underground city (fig. 5).

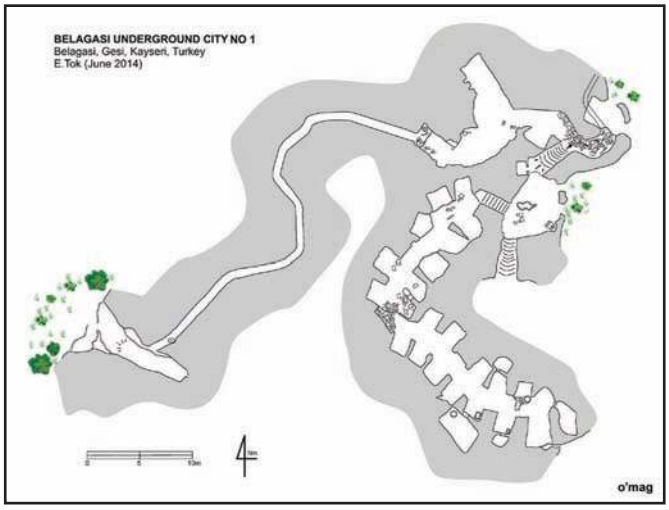


Fig. 5 - Plan of Belagasi Underground City No 1 (drawing E. Tok).
Fig. 5 - Pianta della Città Sotterranea n. 1 di Belagasi (disegno E. Tok).

Belagasi Underground City No 2

The other structure which is named as "Belagasi Underground City No 2" by us is entered through the rear wall of another cave dwelling house situated on slope 80 m southwestward of the first underground city mentioned above.

The entrance tunnel of this second underground city is after a 12x9 m house full of rubble. Although there is not a mill stone door in the tunnel today, the shaft of the door on the wall still exists. Suddenly after that short entrance tunnel, structure of that underground city became completely different from the first one. In this structure, rooms have been excavated on the right and left of the main tunnel and almost in an upside-downside manner.

There are a total of 52 rooms in "Belagasi Underground City No 2", most of them are smaller than 10 m^2 and that underground shelter has a maze appearance which is a real abnormal architectural phenomenon. As a contrast to its moderate dimensions, it has one of the largest number of rooms that has been encountered in an underground city in Anatolia, including the impressive Derinkuyu and Kaymaklı underground cities.

Although some of the rooms can be storage areas, it is still unexplainable to have an underground city with so many rooms in a village which has only 28 cave houses and also having another underground shelter within the same area. Just like Belagasi Underground City No 1, which reaches to Otedere Valley, this second shelter also has an opening to the same valley by a collapsed wall (figs. 6, 7, 8, 9 and 10).



Fig. 7 - First section of the main gallery of Belagasi Underground City No 2 (photo A.E. Keskin).
Fig. 7 - Prima sezione della galleria principale della Città Sotterranea n. 2 di Belagasi (foto A.E. Keskin).

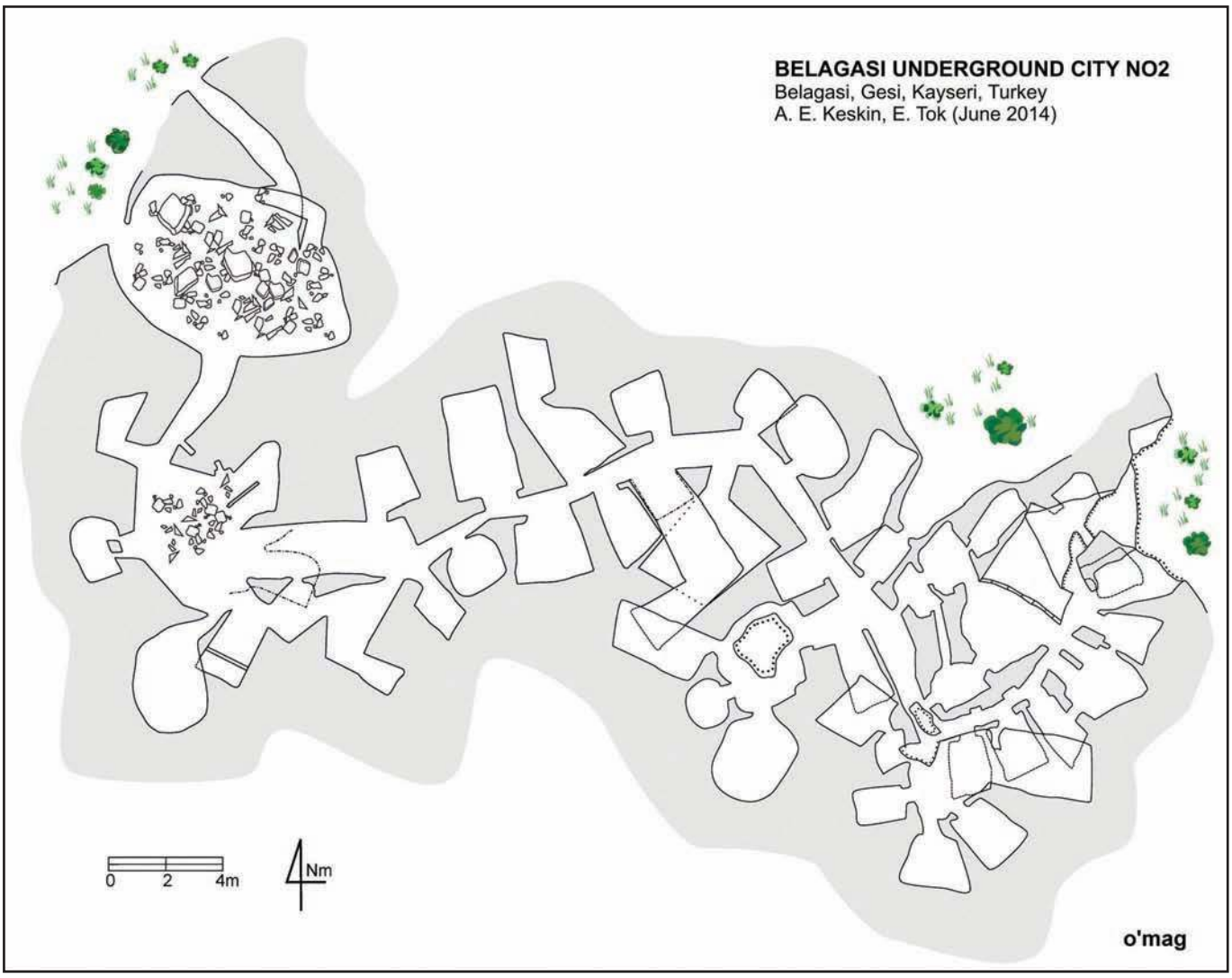


Fig. 6 - Plan of Belagasi Underground City No 2 (drawing A.E. Keskin and E. Tok).
Fig. 6 - Pianta della Città Sotterranea n. 2 di Belagasi (disegno A.E. Keskin e E. Tok).



Fig. 8 - Every part of Belagasi Underground City No 2 is full of small rooms (photo A.E. Keskin).
Fig. 8 - Ogni settore della Città Sotterranea n. 2 di Belagasi è piena di piccole stanze (foto A.E. Keskin).

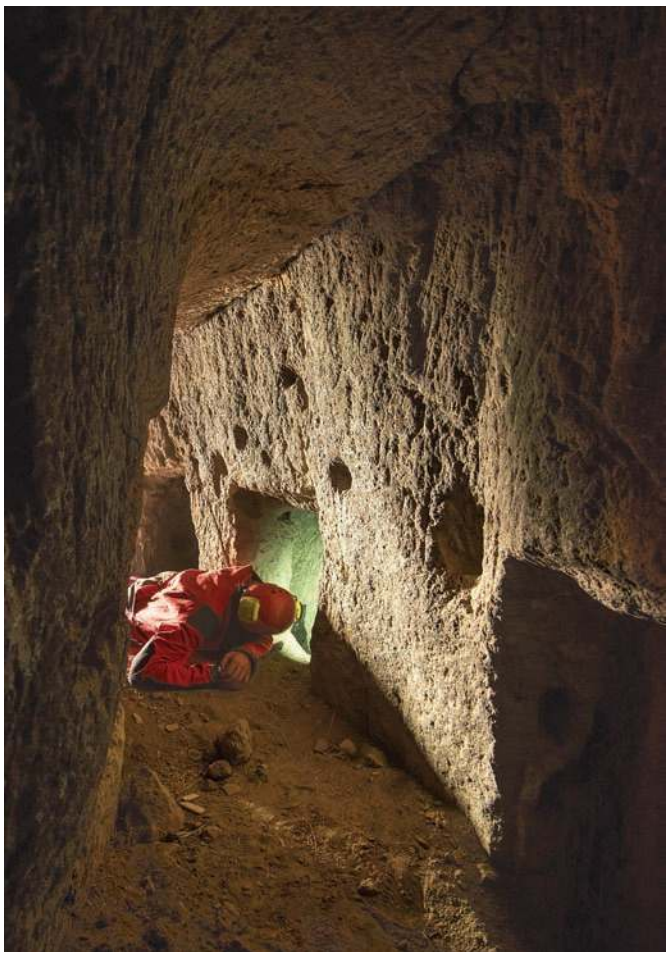


Fig. 9 - Towards the end of main passage of Belagasi Underground City No 2 (photo A.E. Keskin).
Fig. 9 - Verso la fine del passaggio principale della Città Sotterranea n. 2 di Belagasi (foto A.E. Keskin).



Fig. 10 - Google Earth view of Belagasi Cave Settlements, with two underground cities and hydraulic structures. Blue line is the underground aqueduct, reaching to Belagasi Village (A. Yamaç).
Fig. 10 - Vista da Google Earth dell'insediamento rupestre di Belagasi, con le due città sotterranee e le strutture idrauliche. La linea blu indica l'acquedotto sotterraneo, che raggiunge il villaggio di Belagasi (A. Yamaç).

Otedere Valley Underground City No 1

Otedere Valley Underground City No 1 is approximately 900 m southwards of Belagasi Cave Village that we had mentioned above and on the eastern slope of Otedere Valley, on a steep rocky wall (fig. 11). Whereas it has connections with many rooms having broad windows facing the valley, it also has stone masonry-type walls with 4-5 m height (fig. 12).

This structure, named as "Leprosy Hospital" by the local people is probably one of the interesting structures of Kayseri. Even if high stone walls defending the slope are not, tunnels within the structure and two large mill stone doors securing these tunnels are the evidences of that initial construction purpose of this structure is not a leprosy hospital. There are two tunnels going towards east and west after the room at the entrance of the structure (fig. 13).



Fig. 11 - Google Earth view of Belagasi Village and Otedere Valley (A. Yamac).
Fig. 11 - Vista da Google Earth del villaggio di Belagasi Village e della valle di Otedere (A. Yamaç).

Eastern tunnel is blocked with debris at its 3rd m. There is a mill stone door shaft at the beginning of this gallery and it is definite that this eastern tunnel continues after the collapsed part. After 3,5 m of western tunnel, a mill stone door with 1,20 m diameter and 26 cm thickness used for closing the rest of this tunnel stays *in situ* (fig. 14).

This main gallery; which is defended through a mill stone door and its difficulty excavated tunnels were left unfinished 40 m below. On the other hand; a small branch of the same gallery reaches to several rooms with windows opening to Otedere Valley and, afterwards, of these rooms to the largest chamber of this underground structure with another long tunnel.

As for another tunnel, which is going to the east of this chamber and a result of a significant engineering with a 43° slope and staircase reaches to another chamber located on the top floor. The facade of this top chamber is completely open to Otedere Valley (fig. 15).

The structure does not resemble any other known underground city with this interesting architecture. Although rooms completely open to the valley and with broad windows gives rise to thought of that are a rocky



Fig. 12 - Front view of Otedere Valley Underground City No 1. On the right side of the photo high rock walls can be seen (photo A.Yamaç).

Fig. 12 - Vista frontale della Città Sotterranea n. 1 nella Valle di Otedere. Sul lato destro della fotografia si vedono le alte mura costruite in pietra (foto A.Yamaç).



Fig. 14 - Mill stone door of Otedere Valley Underground City No 1 from the operation room (photo A.E. Keskin).

Fig. 14 - Porta macina nella Città Sotterranea n. 1 nella Valle di Otedere vista dalla camera di manovra (foto A.E. Keskin).

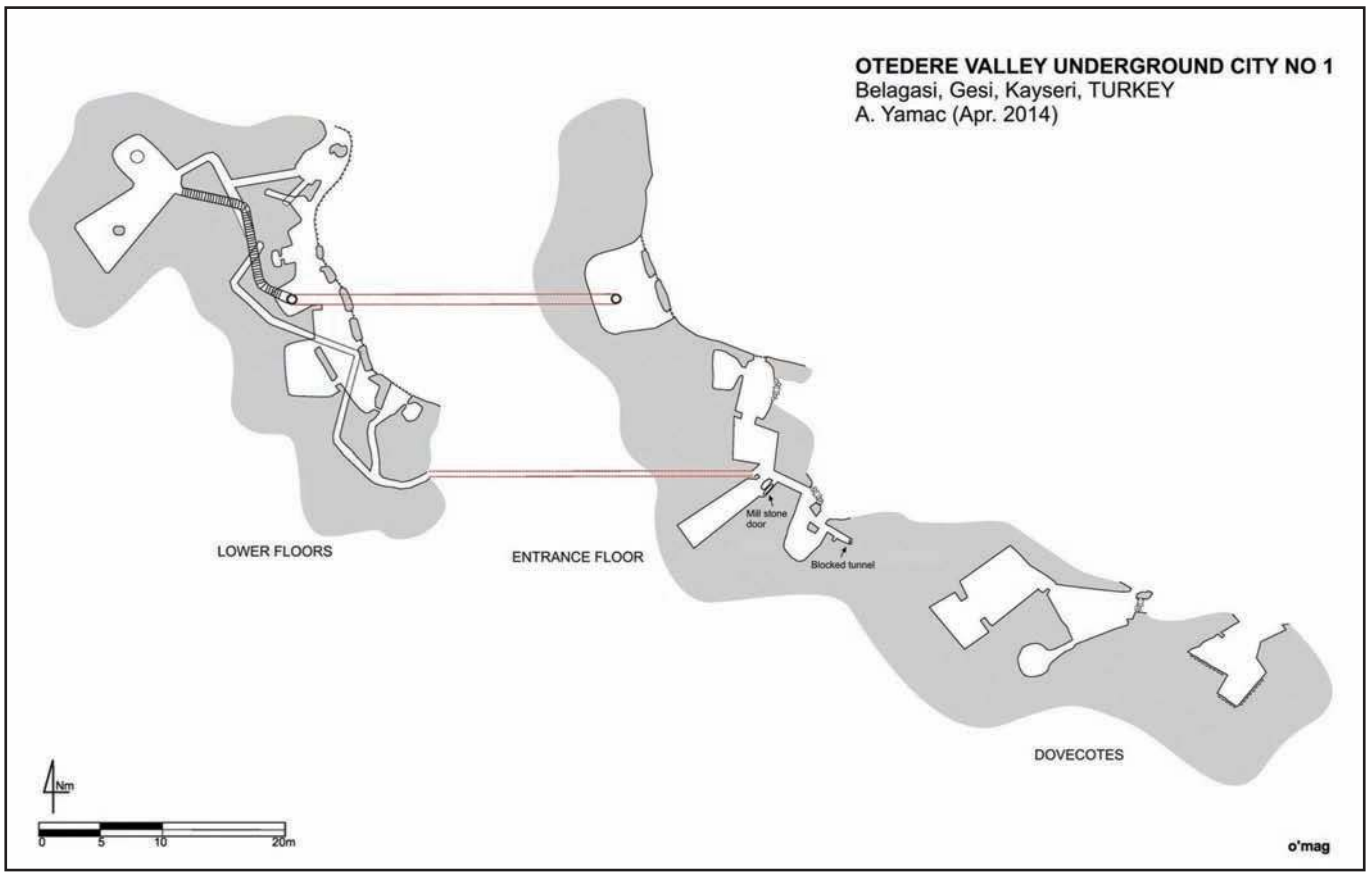


Fig. 13 - Plan of Otedere Valley Underground City No 1 (drawing A.Yamaç).

Fig. 13 - Pianta della Città Sotterranea n. 1 nella Valle di Otedere (disegno A. Yamaç).

settlement, there are also underground passages protected by mill stone doors and a highly large chamber again excavated completely underground and supported with a column. When taken into consideration as a whole, it can be thought that, this is an underground city that had been started to excavated and left unfinished. Afterwards, some parts of the structure were used as cave settlements (fig. 16).
Construction reason of the stone walls with 4-5 m height and completely surrounding this structure is unknown.

Otedere Valley Underground City No 2

This second underground city is on eastern slope of Otedere Valley and 600 m northwards of the first underground city, near to the entrance of valley. In front of the entrance there are several ancient tombs carved on rocks. The entrance to this underground city is through a tunnel located on the south of a highly large cave dwelling (fig. 17).
Behind a large mill stone door (fig. 18), a chamber with a size of 6x2 m exists. However, the essentially interesting thing is that the tunnel turning east before this chamber goes on 13 m downwards by maintaining a slope of 30° through smoothly dug staircases.



Fig. 15 - Outside the second room at the entrance level of Otedere Valley Underground City No 1 (photo A.E. Keskin).
Fig. 15 - Vista esterna della seconda camera al piano di ingresso della Città Sotterranea n. 1 nella Valle di Otedere (foto A.E. Keskin).

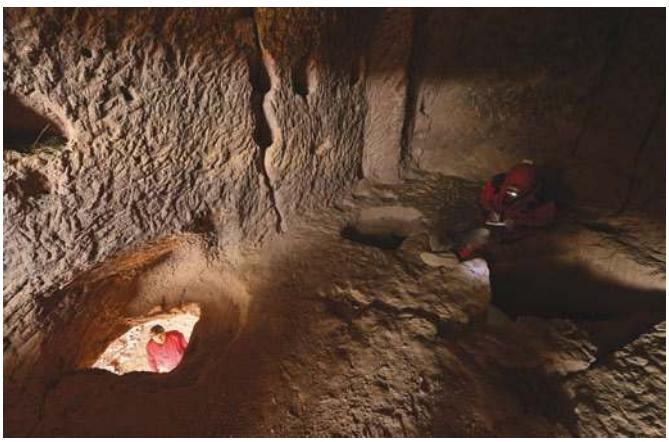


Fig. 16 - View from the first floor towards the entrance floor in Otedere Valley Underground City No 1 (photo A.E. Keskin).
Fig. 16 - Vista dal primo piano verso il piano di ingresso della Città Sotterranea n. 1 nella Valle di Otedere (foto A.E. Keskin).

Through this stepping down ending at a crossroads, 6 m below of entrance elevation is reached.
Three different tunnels existing here open to three different rooms. Northwest and southeast rooms have a plain and simple architecture, whereas there are ceiling bracket wall, a small communication hole on ceiling and a tunnel engorged with earthworks after going



Fig. 17 - Cave dwelling house at Otedere Valley. Entrance tunnel to Otedere Valley Underground City No 2 is on the left of photo (photo A.E. Keskin).
Fig. 17 - Una delle cavità artificiali nella Valle di Otedere. Il tunnel di ingresso alla Città Sotterranea n. 2 è sulla sinistra della foto (foto A.E. Keskin).

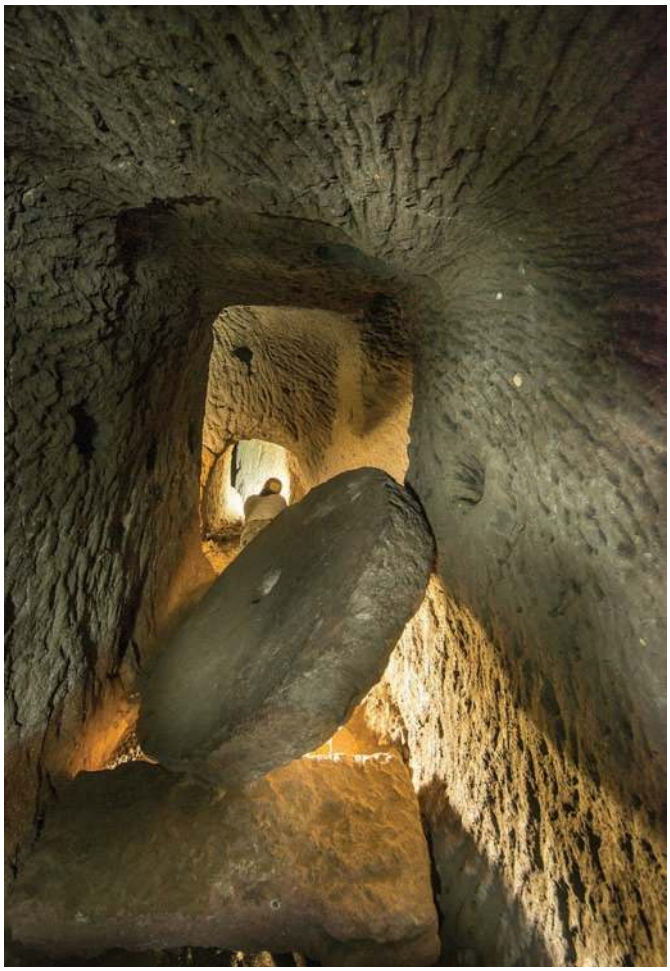


Fig. 18 - Main tunnel of Otedere Valley Underground City No 2 (photo A.E. Keskin).
Fig. 18 - Il tunnel principale della Città Sotterranea n. 2 nella Valle di Otedere (foto A.E. Keskin).

8 m in the third large room reached through climbing up a small staircase. A tiny communication hole located on the ceiling may be the evidence of the probability to reach another room at the top elevation by the continuation of the blocked tunnel.
A mill stone door, belonging this underground city is situated outside of the entrance and at a point near to tombs. Probably, this door must be the one of which the shaft is apparent on tunnel wall that is 4 m after the entrance.
The only house around that underground shelter is the one that has the entrance to this structure. In fact, as we wrote above, there is not a single cave or normal settlement in this valley and, just like Otedere Valley Underground City No 1, this second shelter is also a large structure.
With its 160 m total length, having 9 different chambers of which some are larger than the largest cave houses of Belagasi Village and not having any ventilation shaft are some of the interesting features of this underground city (fig. 19).

Otedere Valley Hydraulic structures

Some of the stream existing in Otedere Valley has been transferred to a channel dug on western rocky wall 1200 m before northern end of the valley. Water leakages from the broken parts of the old channel are prevented by placing pipes inside the channel recently.
This channel enters into a tunnel excavated in the mountain at a point near to north end of the valley and

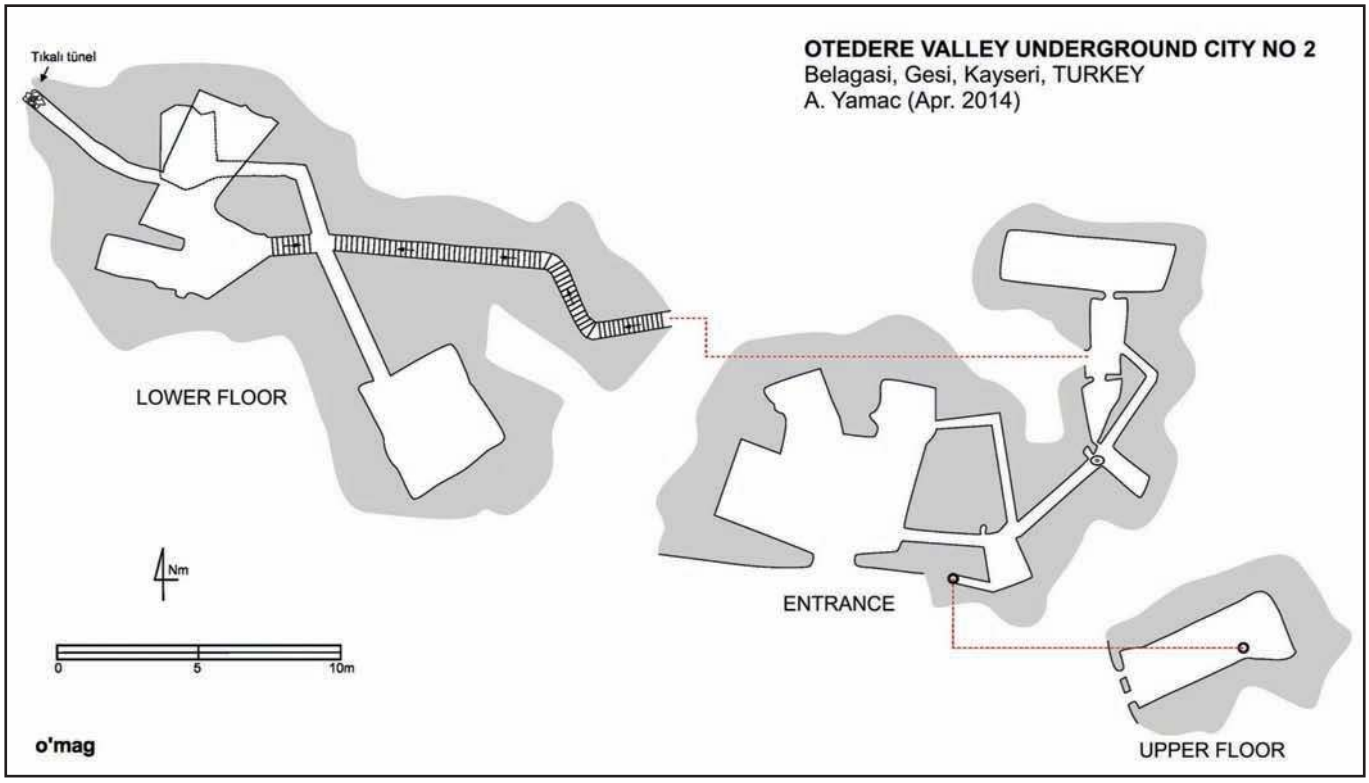


Fig. 19 - Otedere Valley Underground City No 2 (Drawing A. Yamaç).
Fig. 19 - Città Sotterranea n. 2 nella Valle di Otedere (disegno A. Yamaç).

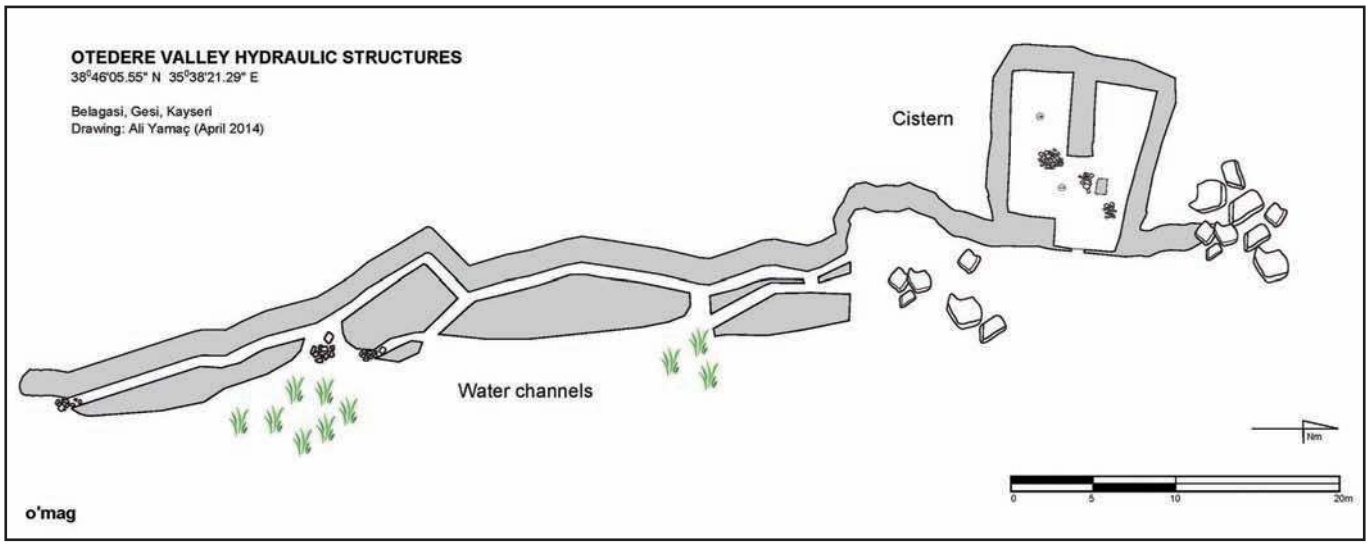


Fig. 20 - Otedere Valley Hydraulic Structures (drawing A. Yamaç).
Fig. 20 - Strutture idrauliche nella Valle di Otedere (disegno A. Yamaç).

reveals at Belagasi Village at the north of the mountain and water coming from this tunnel which is active today is still used by villagers (fig. 10).
There is another double water channel excavated in the rock at approximately 25 m north of the point where this underground aqueduct enters into the mountain. Main parts of this old water channel, which was probably previously connected to the today's aqueduct going on towards north is completely destroyed due to collapsed stones (figs. 20, 21 and 22).
At this point, a plastered-wall cistern (fig. 23) located in 2.7 m lower elevation from the exit gate of the tunnel and having 73 m^2 area and the structure similar to a well at 7 m north of that cistern with 26 m depth have quite interesting hydraulic architectural characteristics that are not encountered commonly in the region.

Conclusion

The reason for that residents of such a small village like Belagasi constructed four different underground cities in total having such many rooms in the village and Otedere Valley is unknown.



Fig. 21 - Some collapsed water tunnel sections of Otedere Valley. The rock carved door towards the right of the photo is the entrance of the cistern (photo A.E. Keskin).
Fig. 21 - Alcune sezioni crollate dell'acquedotto nella Valle di Otedere. La porta scolpita nella roccia sulla destra della foto è l'ingresso della cisterna (foto A.E. Keskin).



Fig. 22 - Entrance of a water tunnel (photo A.E. Keskin).
Fig. 22 - Ingresso dell'acquedotto (foto A.E. Keskin).



Fig. 23 - Cistern of Otedere Valley (photo A.E. Keskin).
Fig. 23 - Cisterna della Valle di Otedere (foto A.E. Keskin).

Only possibility is the existence of another settlement in Otedere Valley centuries ago, of which remains has not reached the present day.
Belagasi cave dwellings, two underground cities of this village and the two other underground cities of Otedere Valley, with the hydraulic works in the valley are highly important cultural values belonging to the history of Kayseri. Immediate preservation and appraisement for touristic purposes of these cave dwellings and underground cities together with Otedere Valley as a whole would be preferable.

Acknowledgement

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References

Alici Sen P., Temel A., Gourgaurd A., 2004, *Petrogenetic modelling of Quaternary post-collisional volcanism: A case study of central and eastern Anatolia*. Geological Magazine, pp. 81-98.
Ayhan A., 2004, *Geological and Morphological Investigations of the Underground Cities of Cappadocia Using GIS*. PhD Thesis (unpublished), ODTU, Ankara.
Bixio R. (ed.), 2012, *Cappadocia: Schede dei siti sotterranei / Records of the underground sites*. Archaeopress publisher of British Archaeological Report (BAR), International Series 2413, Oxford.