Hypogea2023

Proceedings of IV International Congress of Speleology in Artificial Cavities
Italy, Genoa, September 29th / October 1st

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Journal of Speleology in Artificial Cavities

Organized by

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PER LA RICERCA E VALORIZZAZIONE DELL'AMBIENTE IPOGEO NATURALE ED ARTIFICIALE

PROCEEDINGS OF IV INTERNATIONAL CONGRESS OF SPELEOLOGY IN ARTIFICIAL CAVITIES

HYPOGEA2023

SEPTEMBER 29th / OCTOBER 1st
GENOA, ITALY

PALAZZO DUCALE, SALA MINOR CONSIGLIO
Piazza Matteotti 9, Genova

GENOVA ypogea 2023

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Supplement to issue 1-2 / 2023
Opera Ipogea - *Journal of Speleology in Artificial Cavities*
Memorie della Commissione Nazionale Cavità Artificiali
www.operaipogea.it
Semestrale della Società Speleologica Italiana ETS
Autorizzazione del Tribunale di Bologna n. 7702 dell'11 Ottobre 2006

Composition and layout
Luca Paternoster, Stefano Saj

Graphic project
Carla Galeazzi, Stefano Saj

Cover photo
Martina Gogioso

Back cover photos
Ivan Greco, Fernando Naldoni, Danilo Repetto,
Stefano Saj, Luca Torti, Mauro Traverso

Typography
Corigraf Srl – Viserba, Rimini, Italy

With the financial support of
Società Speleologica Italiana ETS

€ 200,00

ISBN 978-88-32241-32-7

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UNDERGROUND RELIGIOUS AND CULT STRUCTURES

Intended use and dating of rock-cut dovecotes in Cappadocia (Turkey)

Andrea Bixio, Roberto Bixio[1,], Andrea De Pascale[1], Ali Yamaç[2]*

Abstract

Cappadocia is a historical land, located in the centre of Turkey, over time inhabited by different populations, from the Hittites to the Romans and the Byzantines, for centuries attached by Arabs, after the 11th century conquered by the Seljuk Turks, and then by the Ottomans. This land is known worldwide for its volcanic landscape shaped into extraordinary tuff morphologies and, above all, for its ancient settlements carved into the rock, consisting of shelters, churches and dwellings and, of course, rural facilities, including thousands of rock-cut pigeon houses. Their conformation has been documented, analyzed and described in various articles, to which we refer. Here we want to consider the information gathered from historical and oral sources on the past intended use of these structures, now almost completely abandoned, designed for the breeding of pigeons, mainly for the purpose of collecting their droppings to be used as fertilizer for crops. It seems, they were sometimes included in the marriage dowry. Assumptions about other uses, considered here, are not documented with certainty. It is also considered the possibility, still open to debate, that part of the dovecotes originated from burial chambers of Roman times to receive the ashes of the dead. We try also to provide information and suggestion about the possible epoch of their excavation and use.

Keywords: Cappadocia, artificial cavities, dovecotes, columbaria.

Cappadocia region and its rock-cut structures

Cappadocia is an historical region of Turkey, today corresponding to the territory of more or less six provinces whose main town is Kayseri, located in the centre of the Anatolian Plateau (fig. 1). It was inhabited by many populations, from the Hittites in 2nd millenium BC, followed by Frigians, Persians, Romans, Byzantines, to name the most significant. From the 7th to the early of the 11th century AD the country has been the subject of several seasonal Arab raids each year, until the conquest of the Seljuk Turks at the end of 11th century, then the Ottomans. Mainly during Byzantine times thousands of rock-cut and underground structures were carved in an area of about 20,000 sq. km of volcanic rocks, at an average altitude between 1000 and 1500 m a.s.l. Nowadays, in the cliffs, buttes, gullies, canyons and pinnacles of soft tuff, there are remains of ancient rock-cut dwellings, churches, shelters, water systems and their rural rock-cut service facilities, most of which consist of dovecotes. They are associated with settlements excavated in the rocks or built on the surface, but they are spread mostly in the canyons, near the cultivated areas. Today this pigeon houses are abandoned and very often collapsed and open in the rocky faces of much of the territory of Cappadocia (fig. 2). They are essentially of three types: cliff dovecotes, usually carved into the vertical rock faces, at half height (fig. 3); dovecotes of reuse

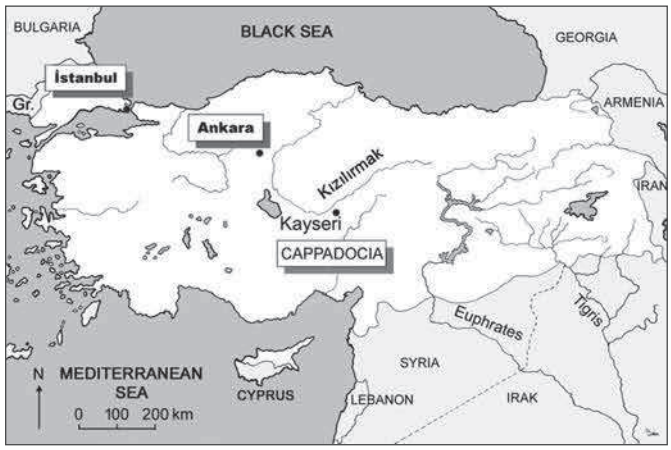

Fig. 1 – Turkey. Location of the historical territory of Cappadocia and the city of Kayseri, capital of one of its six provinces (drawing R. Bixio).

(fig. 4), obtained in pre-existing structures, with entrances generally at ground level, originally intended for different purposes; tower dovecotes (fig. 5), consisting of rooms carved underground and topped by small towers built on the surface. Obviously, each with its own peculiarities, in size, shape, type of entrance and flight windows for pigeons, niches for nesting and perches, decorations. The matter is widely discussed in a paper presented at this same congress (Bixio *et al.,* 2023).

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Fig. 2 – Göreme. Cluster of collapsed dovecotes showing internal niches for nesting arranged on overlapping rows (photo A. De Pascale).

Intended use

Cappadocian dovecotes were made with the main purpose of collecting the excrement of birds to be used as fertilizer (*koğa,* in Turkish), in order to obtain more crops from the land available to farmers, in particular to improve the fertility of orchards and vegetable gardens, frequently obtained by terracing and draining the waters of small plots on the bottom of the canyons. Actually, pigeon droppings are not as rich in nitrogen as real guano (i.e., seabirds droppings and their dead bodies deposited along the rainy poor coasts and isles of South America). "It is nevertheless fine quality fertiliser, containing 20-25% organic materials, 1-2% nitrogen, and 0,50-1,596 phosphoric acid" (Gülyaz, 1998: 552).

According to Demenge (1995: 46) pigeon droppings, after being collected, were mixed with the manure of sheep and, above all, donkeys. "*Cela permit de s'affranchir de la jachère* (EdN., set aside in rotation of an agricultural land to replenish fertility) *et même dans certains cas d'obtenir par repiquage deux récoltes par an*". A possible employ of droppings as a component of the "Greek fire", which the Byzantines used, is the subject of research by Tolga Uyar of Nevşehir Hacı Bektaş Veli University, Byzantine Studies (personal communication). In Ottoman times it seems that *koğa* was used in the production of gunpowder (Imamoğlu *et al.*, 2005, quoted in Tok and Yamaç, 2015).

According to some researchers, it turns out that after farmers had smoothed the rock around the small flight windows that allowed pigeons to enter, the egg white mixed with lime plaster was applied to the outer walls of the dovecotes (fig. 3) to make the surface slippery to predators such as martens, foxes, weasels and the like (see, for example, Gülyaz and Yenipınar, 1997; Gülyaz,1998; Amirkhani *et al.*, 2010).

We point out that the use of egg white mixed in the so-called "Khorasan mortar" type is attested "*...in Ottoman buildings as early as the 15th century. In general, such mortars were used by the Romans, Byzantines, Seljuks, and Ottomans in the construction of wells, cisterns and baths...*" (Işıkdağ and Topçu, 2013). It is believed that Mimar Sinan, born in Kayseri-Cappadocia in 1489, have used Khorasan mortar in Süleymaniye Mosque, in Istanbul (see, for example, https://www.bursaarena.com.tr). However, we do not know whether egg white from Cappadocia has been used to produce, in general, Khorasan mortar or, in particular, in the construction of buildings in this region.

Instead, the use of egg white (or yolk, as well) as a binder for paintings decorating the interior of rock-cut churches (fig. 4) is uncertain. In this regard, experts working on the ICCROM project for the conservation of wall paintings of churches in Göreme, leave an area of uncertainty, arguing that "(in Tokalı Kilise) *the pigments were applied on the dry plaster using a proteinaceous material as the binder, possibly casein*" (Schwartzbaum, 1995: 194) and "(in Karanlık Kilise) *the paint is gradually applied with casein and eventually other binding media*" (Dangas, 1995: 174). On the other hand, experts of the team of Department of Cultural Heritage Sciences, University of Tuscia (Viterbo, Italy), write that "*The in situ observation and documentation of the painted surfaces revealed the use of the a secco technique for the wall paintings probably by a proteinaceous binder [...] the results of a first survey of eleven Cappadocian churches are reported and discussed. It must be stressed that these results will need further integration and research in order to characterize the organic binders of the paintings...*" (Pelosi *et al.*, 2013: 100/106).

As regards the use of meat or eggs as food, while the sources show that in the first century BC, and at least until the time of Diocletian (3rd century AD), in the area of Rome "*dall'allevamento si ricava un notevole vantaggio economico, dato che il piccione, che si mangia bollito o arrosto, era piuttosto ricercato…*" (Quilici, 1981: 111), for the Cappadocia we have no reliable information: "*textual sources furnish little evidence of*

Fig. 3 – In several Cappadocian localities entire rock faces host clusters of dovecotes, outside identified by whitened small windows (photo A. De Pascale).

Fig. 4 – Reuse of rock-cut church of St. Eustachius (Göreme). Pigeonholes (niches) and holes for perches (pegs) partially intercept the zoomorphic frieze at the springing of the painted vault. Even the square bowls carved into the seat of the stone bench are considered nests (photo A. De Pascale).

pigeons being used as food item [...] the consumption of pigeon meat was not a tradition common to the Christian faith, due to its attributed sanctity, and it therefore remains unclear whether common people partook in its consumption" (Germanidou, 2015: 34-35). Gülyaz (1998: 549) also argues that *"...most Muslim communities hold them sacred* (EdN, the pigeons) *as bringers of good fortune, and do not eat*". But according İnceköse (2020: 6) "*Information from interviews with local people shows that birds were also a source of food for humans*".

According to Tok and Yamaç, 2015 (quoting Imamoğlu *et al.*, 2005) "*their feathers were used as filling material in home textile products as they are strong insulators*". In addition, pigeons were useful because they fed on insects harmful to crops. Özen (2012, quoted in Tok and Yamaç, 2015), points out that some sources suggest that both the Seljuks and the Ottomans used pigeons to send messages ("carrier pigeons"). According to Murat Gülyaz, it seems that pigeons, at least in Ottoman times, were the object of trade and, sometimes, were also included in the marriage dowry.

With the arrival of chemical fertilizers, in the 20th century, almost all rock-cut dovecotes in Cappadocia have gradually fallen into disuse. In addition, off-season hunting and excessive use of pesticides that eliminated insects, contributed to reduce the number of pigeons (Gülyaz, 1998: 556). The abandonment of the collection of excrement would have led to the suspension of the maintenance of dovecotes, an event that may have accelerated the phenomena of degradation of decorations, consumption of external footholds, and collapse of the structures themselves that today overlook in great number on the valleys from the high overhanging rocks (fig. 2).

Fig. 5 – Gesi, in the eastern part of the Değirmendere Valley (Kayseri). At the centre a collapsed dovecote, with triangular niches, contiguous to a tower-dovecote, still standing on the right, with its entrance at the base of the low crag. Some alleged underground *columbaria* are in the same district (photo A. Yamaç).

Fig. 6 – Great dovecote at Ağırnas, Koramaz Vadisi (Kayseri). According to Yazlık (2019) it was originally a *columbarium*, that is, a burial chamber where the ashes of the dead were kept in urns located in niches (*loculi*), later transformed into niches for the brooding (pigeonholes) of a dovecote (photo R. Straub).

Fig. 7 – "Columbarium 73" at San Lorenzo, Viterbo/Lazio (Italy). Actually, it has recently been established that it is a dovecote (photo Germani, archive of Centro Ricerche Sotterranee Egeria - after Galeazzi, 2011: 47). We note that it has remarkable similarities with the arrangement of niches in fig. 2.

Dovecotes vs Columbaria

It seems appropriate to recall that, according to some recent research (Yamaç and Gilli, 2016; Gilli, 2017; Yazlık, 2019), in Cappadocia there are structures carved into the rock, at the site of Golgoli (Ürgüp-Nevşehir), and in the valley of Koramaz (Kayseri), very similar to dovecotes, or transformed into dovecotes, which originally may have had the function of "*columbaria*" (fig. 6). But the debate is still open, "*anche in considerazione della scarsa diffusione che ebbe in queste regioni (orientali) la cremazione"* (Quilici, 1981: 118-119).

Columbarium is the term with which, in Roman times (until the 1st century, and partly to the 2nd century AD), were called the groups of niches (named "loculi"), placed in structures built on the surface or in rooms carved into the rock, where urns with the ashes of the deceased were kept. The word evidently derives from the niches arranged in the same way and similar in shape, used for the nesting of pigeons (*columba* in Latin), more precisely called columbaries. However, the (funerary) *columbaria*, usually, had larger loculi (up to 60 cm) and no small flight windows for bird access, unless a subsequent transformation took place.

In Italy, in the area of Tuscia, between Rome and Orvieto, there are over 300 rock-cut structures, originally identified as *columbaria,* but recent studies have established that most of them had no sepulchral functions: they are, instead, real dovecotes (or pigeon houses) (fig. 7), term today more commonly used, as said, instead of columbaries (Quilici, 1981; De Pascale, 2014).

Considerations on dating

According to archaeologists of the Nevşehir Museum, most of the rock-cut dovecotes of Cappadocia date from the 19th/early 20th centuries, while only a few would date back to the 18th century (Gülyaz and Yenipınar, 1997: 164). This opinion is also reported by Amirkani *et al.* (2010: 48) who, in turn, quote İşçen (2008). Of course, this information refers to the use of dovecotes in the Ottoman times. In addition, we point out that there is evidence that some dovecotes were obtained in relatively recent times by transforming abandoned churches, for example in Göreme, in the early 1900s (Jerphanion, 1932: VI). For considerations of exterior decoration, see Bixio *et al.*, 2023.

However, it would be surprising if their origin were not much older, dating back at least to the Byzantine times, if not to the Roman, that is, implemented by a population with a long sedentary tradition and agricultural practices consolidated for centuries.

On the other hand, the shape of the niches of some rock-cut dovecotes of Cappadocia has remarkable similarities to those of some pigeon houses carved into the rocks of Tuscia (central Italy), mentioned above (compare fig. 7 with fig. 2, and also with the dovecote at Gülşehir/Cappadocia in Bixio *et al.*, 2023: fig. 5). The Tuscia dovecotes are generally attributed to medieval times, but for some of them is not excluded an earlier date, related to the late republican and imperial period, probably referring to chamber tombs reused (Quilici, 1981; 113-116).

In Cappadocia, the antiquity of some dovecotes is also witnessed by the remains of groups of nesting niches brought to light by ancient collapses of underground rooms and rendered mere "ghosts" by the prolonged action of meteoric agents.

As for the sources, Sophia Germanidou mentions one of the Fathers of the Church of Cappadocia, of the 4th century AD: *"one of the most distinct and early accounts alluding to the practice [of the domestication of birds, including pigeons] can be quoted from saint Basil of Caesarea's Hexaemeron (377/8)"*. Then she adds: *"the practice of pigeon domestication spread particularly throughout many parts of central and east Anatolia [...]. A sole reference from Byzantine hagiography asserts the significance of this specific feature of pigeon breeding to the development of local primitive farming, even for small-scale gardening. A passage from*

Fig. 8 – Rendering of a Cappadocian underground shelter with an internal entrance for people to a dovecote that could also be used as a last refuge in the case of raids. In the Mimar Sinan shelter (Kayseri), and Mucur (Kırşehir), the flight windows for pigeons open into the ceiling (chimney) instead of in the vertical wall (drawing R. Bixio).

version (A) of saint Athanasios Life (EdN., founder of Great Lavra monastery at the Mount Athos, c. AD 1000) *demonstrates the use of various animal waste as garden fertilisers, collected annually or biennially and mixed with other domestic mammal's guano*" (Germanidou, 2015: 34).

Geoponika, a 10th century Byzantine treatise on agronomy, includes extracts from Greek and Roman literature dedicated to the construction techniques of the dovecotes, although not specifically to those of Cappadocia, including plastering and coating with plant substances on the external walls, around the flight windows, to protect pigeons from predators. It is thus attested that Byzantine literature on agro-pastoral issues followed the tradition inherited from the late Roman treaties (Germanidou, 2015: 37). Indeed, already Varro (*Res rusticae*, 30 BC) and Columella (*De re rustica*, 1st century AD) described the characteristics of the dovecotes, as we can see in those carved into the rock of Cappadocia: a single door for operators, small and narrow windows for the flight of pigeons, smoothed and plastered walls, nests carved side by side for each pair of pigeons. "*Cappadocian dovecotes display the common features with their Roman ancestors*" (Germanidou, 2015: 45).

We also report the opinion of Demenge (1995: 46) which, referring to the frequent Arab raids (two or three times a year), historically documented between the 7th and 10th centuries AD, argues that: "*les paysans s'adaptèrent, disparaissant à la première alerte dans les villes souterraines qui doublaient leurs villages, en s'enfermant dans le roc de leurs châteaux perchés et...en aménageant des pigeonniers presque inacessibles"* (fig. 8).

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