Çatalhöyük 2014 Archive Report
by members of the Çatalhöyük Research Project
Report compiled by Scott D. Haddow

Cover image: ArcScene screen capture of Building 80
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Speleothems and Their Context at Çatalhöyük

Holley Moyes, UC Merced

Introduction

Neolithic cave use is well-reported in many areas. It is frequent in Ireland where burial caves were predominant from approximately 3600 B.C. to 3400 B.C. (Dowd 2008) and in Great Britain in the 4th millennium B.C. (Chamberlain 2012). Peter Tomkins (2012:66) reports that there are no less than 100 cave sites in Crete that contain Neolithic-EM material. Israel contains a number of caves with Neolithic materials and the Chalcolithic burial site, Peqi’in Cave, is reported to have Neolithic components (Rowan & Illan 2012). Further afield, Niah cave in Borneo contains at least 200 Neolithic burials (Barker & Smith 2012) as part of an overall pattern of the funerary use of caves dating to this period in Island Southeast Asia (Anderson 1997).

In her analyses of Neolithic caves in Italy, Ruth Whitehouse (1992:132-33) proposed a number of ritual themes operating at the time that included cults devoted to “abnormal water,” which could include steam, bubbling water, still pools, or “solid water” (speleothems). The Grotta Scaloria in North Apulia provides an interesting example. Although the upper chamber of the cave was a Late Neolithic burial site containing 137 individuals, Whitehouse proposed that the lower part of the cave was the venue of a water cult. In the centre of the sloping area of the chamber, there was a hollowed rectangular basin used to collect the water dripping from the stalactites on the roof (Skeates 2012:34-35). Surrounding the basin, pottery vessels, some of which were whole, were placed near stalactites or directly underneath them to catch drips. A single radiocarbon sample collected from the surface near the vessels returned a date range of c. 4470-4160 B.C., but the vessels themselves suggested earlier placement.

Given the prevalence of cave use during the Neolithic, it is no surprise that the people of Çatalhöyük were familiar with the region’s caves as evidenced by the presence of speleothems excavated from the site. Speleothems represent a class of artifact that often goes unreported because they are not recognized by archaeologists. One reason is that they exhibit many different shapes and sizes that can be composed of numerous minerals (though they often consist of calcium carbonates or gypsum). Speleothems are typically classified by their morphology as opposed to their mineral structures because they are of interest to recreational cavers (Hill & Forti 1997:13, 45). This classification allows for easy identification because it is based on visible properties. For the archaeologist, this type of formal identification helps to provide a phenomenological tie to people of the past because the visual and tactile features of the artifacts are easily observed once one knows what to look for.

Speleothems are considered to be sacred or special objects in many cultures. For instance, in ancient Mesoamerica, harvested speleothems were used as stelae or in architectural constructions, carved as idols, or deposited in burials and caches (Brady et al. 1997). Their use in ritual contexts likely had to do with their formation from water dripping in caves. Drip water, referred to by the Maya as zuhuy ha or “virgin water,” was considered sacred and used in ritual throughout Mesoamerica during prehispanic times and continues into the present. The Yucatec term for speleothem is xix ha tunich or “drip-water stone.” This lexical evidence suggests that the Maya were cognizant of the process of speleothem formation and that these stones were considered sacred because they were composed of and therefore represented pure or sacred water (Moyes 2001:79-80).

Speleothem breakage and removal has an even deeper history. It is well-known that humans used caves as special or ritual spaces beginning in the Paleolithic period but less well-reported that speleothem breakage was part of Paleolithic cave practice. For instance, Jean Clottes (2012) noted that at Cosquer cave the tops of stalagmites were broken and removed from the site.
Speleothems at Çatalhöyük

Aside from Whitehouse, there have been few studies of Neolithic speleothems per se; therefore reports of their use at Çatalhöyük are of interest. During the 2013 field season I searched the site’s archives for speleothems or possible speleothems in the collections that may have gone unrecognized. My goal was to examine the materials, evaluate the contexts and look for possible patterning in the assemblage. I was able to physically locate 21 samples and here I have included four additional samples reported by Erdoğan and his colleagues (2013). Caroline Nakamura (2010:312-313) reported the presence of another eight crystals, only three of which I was able to observe. I did not include the other five here. In the following section I describe the speleothems and their contexts. Some unit numbers contain more than one artifact of the same material and I count each as an individual object unless it was a single fragmented piece that could be refitted. I am unable at this time to suggest any temporal patterning and focus solely on context and form, but when possible I comment on dating of contexts. Dating each deposit would no doubt be fruitful but will be a task for future research.

In the collection I was able to identify stalactites, dogtooth spar crystals, one calcitic concretion, a single flowstone fragment, and a possible cave pearl. Stalactites hang from the cave ceiling and accrete much like tree rings. Their growth begins with a small “soda straw” at the center of the formation. Even in very old stalactites, remnants of this original “straw” are visible making them easily identifiable. We think of stalactites as long and thin and the ones that grow quickly tend to have this appearance, but under different conditions they may grow slowly and horizontally depending on the amount of precipitation and ground water chemistry. Slow growing stalactites can take on a lumpy or popcorn-like appearance (Hill & Forti 1997:105-107), like some found in the deposits at Çatalhöyük. Although stalactites are usually opaque, it is also possible for them to have a more crystalline structure under particular environmental conditions, but these forms still exhibit the “soda straw” in the center differentiating them from spars.

Spars are any transparent or translucent, light-colored, crystalline mineral and usually cleavable (Hill & Forti 1997:101). Dog toothed spars are calcitic and have a scalenohedral forms and a yellowish tint. In the archaeological record they are often identified as “crystals” but do not have the clear glassy look we associate with gypsum crystals or some quartz. Flowstone is a sheet-like formation that is usually calcitic. It can form on cave floors or cascade over rocks and other formations or anywhere where thin films of water flow over an area (Hill & Forti 1997:70). Cave pearls usually have some sort of nuclei at their center such as sand grains or pebbles and form concentric bands around them. They can take on a variety of shapes but are usually round and often smooth. They are most often composed of calcite or aragonite and are an opaque white or gray color (pp.84-85). Concretions are a general term for calcite nodules or irregular calcitic formations. They are not strictly found in caves and are common in karstic environments.

Below is a description of speleothems found in deposits at Çatalhöyük and their contexts.

East Mound

(10475.x2)-(modified stalactite figurine). This special find is a figurine of a goddess carved from a stalactite (Erdoğan et al. 2013:24, figure 5; Nakamura & Meskell 2004). The material is easily recognized from holes from the stalactite’s growth incorporated into the feet of the figure. I was not able to measure or photograph it. The figurine was found in a midden context closely associated with burials in B.42 of the South Area, Sp.2002, F.1512, a disturbed grave that was backfilled. It contained the vertebra of an adult Sk(10499) and the remains of a disarticulated juvenile Sk(10476) as well as nine beads. B.42 was thought to be Level IV or V but later assigned to Level III by S Farid (2013). This structure was considered “special” by the excavators because of the number of burials present as well as their unique grave goods. For instance, burial F.1517 contained a plastered skull. They also noted a “high finish” of the plaster of the platforms in the building as well as the presence of bucrania.

(11804)-(dogtooth spar). This large block of pinkish spar is disintegrating and breaking into fragments (Figure 24.1a). It weighs 270g and measures 8cm in length, 5cm in width and 2-3cm in thickness. It was collected in the
IST Area of the East Mound from Sp.251 and is associated with kerpic blocks.

(11904)-(stalactite). This is a large, burned stalactite is broken into several pieces in its current condition, but originally measured 11cm x 13cm as reported by Erdoğlu et al. (2013:22, figure 1). It is quite heavy weighing 2.3kg. While most speleothems show evidence of rings, similar to tree rings, but this stalactite exhibits a crystalline structure. Because it was burned, the stalactite has become friable and is disintegrating into small pieces along the crystal fault lines. It was discovered in B.52 on the North Area (Bogden 2005). This is a well-elaborated structure that contained an embedded bucrania in an installation set within a niche in the western wall as well as three right-sided cattle horn cores fixed in a row adjacent to it. Recent studies suggest that the building slowly burned but it is inconclusive as to whether this was intentional (Harrison et al. 2013). Building 52 contained a group of four storage bins in the northeast corner of the structure. The stalactite was found in fill (11904) directly above a bin along with a burned boar skull. Excavators suggest that both items fell from above during the fire.

Figure 24.1 (a) (11804) is a large block of pinkish spar is disintegrating and breaking into fragments; (b) (13429) is likely to be a large crystal that has fragmented with age and weathering; (c) (16253) is a weathered speleothem; (d) (16258) is a conical shaped crystal or spar (photos by author).
(12357)-(flowstone). This roughly square 8cmx4cmx1cm piece of flowstone was found in Sp.1002 in the North Area. The area is associated with post-Chalcolithic burials.

(12438)-(dogtooth spar). I was unable to physically locate this in the collections, but Erdoğu and his colleague (2013:23) reported that it is a worked fragment of spar found in association with obsidian tools in B.63 in the IST Area.

(13342)-(dogtooth spar). I was unable to locate this in the collections, but Erdoğu and his colleagues (2013:23) reported that it is a small 5x3cm piece of dogtooth spar found in association with a polished stone axe and a pigment in B.56 in the South Area.

(13429)-(calcite crystals). These crystals were informally identified in the field as “gypsum” but a simple scratch test suggests that they are calcite. The many crystal fragments weighed 223g and were probably part of a larger rock that disintegrated over time (Figure 24.1b). They were found in Sp.304 (B.67) of the 4040 Area in and were considered to be a special find (x4). Space 304 is described in the field notes as a storage room or workspace that was backfilled. However, on the map in the 2006 Archive report (p.21, figure 15), there is a wall between B.67 and the space. There is however an opening between B.58 and Sp.304. The crystals were associated with four other special finds- a flat grinding stone, a round grinding stone, a flint tool, and a flattened round grinding stone. These objects were all placed inside of a blocked crawl hole in wall F.2354.

(13952)-(dogtooth spar). This large piece of spar is pinkish to brown in color and weighs 187g. It was collected in B.63 Sp.283 in the IST Area of the East Mound. The building was a large room 2.6 x 5.0 divided in two. The space dates to two phases with the spar dating to the oldest. This was dated by Mellaart to Level V-IV. The area is in the southwest corner of the building and had storage bins, one of which contained barley, a number of natural stones, and a clay figurine depicting life and death (see Archive Reports 2005 and 2006:115).

(14019)-(dogtooth spar). I was unable to locate this artifact reported by Erdoğu and his colleagues (2013:22). The authors describe it as a small 6.5x3cm piece of banded dog-tooth spar found in B.65 in the South Area in a storage area.

(16253)-(stalactite). This stalactite was labeled as “stone” by the excavators. It is the mid-section of a very old and somewhat disintegrated speleothem measuring 4.5 x 2cm and weighing 14.9g and is gray in color (Figure 24.1c). It may have been dead when it was harvested or simply collected from a cave floor. It was found in the South Area of the East Mound in Sp.129. The space is described as an external midden south of B.44, which post-dates the construction of the building. Bone, charcoal, obsidian, modified stone, and pottery were associated with it (see Archive Report 2008).

(16258)-(dogtooth spar). This spar fragment is conical shaped, yellowish in color, measures 4cm in length and 2cm in diameter and weighs 5.7g (Figure 24.1d). It was collected in the South Area in Sp.129. The space is described as external midden space south of B.44 and postdates its construction. Associated artifacts were pottery, animal bone, and stone (see Archive Report 2008).

(16507) (dogtooth spar-two crystals). These two yellowish-tinted calcite crystals weighing 8g and 6g respectively were located in the South Area in midden fill (Sp.319) exterior to and on the south side of B.44 (Figure 24.2a). This area post-dated the structure and Farid (2013) places this space in Level II.

(16590) (dogtooth spar-two crystals). These two dogtooth spars have a typical yellowish-cast (Figure 24.2b). The first is 3cm x 2cm and weighs 6.9g. The second is 2cm x 2cm and weighs 4.6g. They were collected from Sp.339 in the South Area. It is external to B.56 on its south side and postdates the structure. Mellaart dated this to Level V, but more recently Farid (2013) reassigned it to Level III. The area is described as a midden with deposits interspersed with fire spots and pits. Artifacts in the area included charcoal, a large number of phytoliths, and bone fragments (See Archive report 2008).
(17017)-(dogtooth spar-two crystals). These two yellowish-tinted calcite spars weighing 3g each were found in the South Area in Sp.339, which was designated as a midden. This is an external space south of B.56. The midden deposit was interspersed with fire spots and pits. Farid (2013) places this area in Level III.

(17600)-(stalactite). This stalactite was found in the TP Area of the East Mound in B.81, Sp.420 (See Erdoğu et al. 2013:23 for photo). The unit is a thick infill layer placed in the northern part of the building. It consists of clay and inclusions. The speleothem was part of a possible cache accompanied by seven pieces of ground stone, a cluster of worked stones, a single worked stone, a bead, and two clay objects. The stalactite actually consists of three stalactites that have grown together, which is recognizable because of the three remnant holes from early growth. It is heavy weighing 69.2g and the flakey cortex suggests that it was likely to have stopped growing long before it was harvested or alternatively fell naturally and was collected from the cave floor.

(19442)-(stalactite). This calcite nodule was mislabeled as quartz. It is broken into five pieces and weighs 22g. It resembles the stalactite (19461) and (20686) (below) with its lumpy or “popcorn-like” appearance but does not
refit with either sample (Figure 24.2c). The artifact was collected from a disturbed layer above the three burials in Sp.77, an external area east of B.1. In addition to the speleothem, the layer contained obsidian, shell, clay ball fragments, animal, and human bones.

**{(19461)}-**{(speleothem-stalactite)}. This popcorn-like limestone concretion is broken into three pieces and weighs 40g. It is likely a stalactite due to its overall conical shape (Figure 24.3a). It was found in the North Area of the East Mound in Sp.77. Sp.77 is an external area east of B.1 and north of B.77. The area contained a burial complex with three adjacent burial pits of 14 individuals, six of which were represented only by their skulls.

*Figure 24.3* (a) (19461) is a popcorn-like stalactite; (b) (20686) is the distal end of a stalactite that exhibits popcorn-like growth. The interior hole from its formation is quite visible; (c) (20965) is a calcite popcorn-like concretion (photos by author).
(20686.x7)-(stalactite). This is the distal end of a stalactite that exhibits popcorn-like growth. It measures 4cm. in length and 2cm in width, and weighs 25.8g. The interior hole from its formation is quite visible (Figure 24.3b). It was found in the North Area in Building 77, Sp.336, F.3697. This was an elaborate building that was burnt. Space 336 was a highly decorated living area. F.3697 is an undisturbed adult burial k(20683) within a platform (F.3615), found in a flexed position. Excavators suggest that a skull Sk(20684) may have been placed with the individual but later reassessed and assigned it to F.3619. Accompanying the individual were beads made of copper, stone, bone, and shell. Several beads fell out of the hole in the stalactite. Excavators suggest that these objects along with the speleothem may have been placed in a leather bag. A number of small black beads were found in the vicinity of stone palette, a clay object, three fragments of ground stone, two horn cores, and eight pieces of worked bone. No dating information was available.

(20965)-(calcite concretion). This calcite formation is a “popcorn” formation weighing 376g. It was found in a midden on the north part of the East Mound (Figure 25.3c). The midden (Sp.511) was located between structures B.52, B.113 and Sp.488/518 beneath a fallen wall. The midden contained pieces of a clay oven dome, plaster, crushed bricks, charcoal, seeds, and an ash coating. Other artifacts found in the midden included a stone ball, six bone pins, a copper bead, a stone ball, alocated near the surface in a disturbed area characterized as “burial infill.” Directly associated with the speleothem was an obsidian tool, a shell, a figurine fragment, and two beads, one of which was limestone. F.3686 was associated with these deposits. This feature consisted of two disarticulated skeletons Sk(19493) and Sk(19450). These were headless and their long bones were interlocking and arranged like a “bird’s nest.” As reported in Archive Report, 2012, two obsidian mirrors were found with an associated interment of two disarticulated individuals in the same spatial unit.

West Mound

(13734)-(dogtooth spar). This calcite crystal measures 3cm x 1.5cm and weighs 2.8g. It is unusual in that it was modified with two notches carved into the edge. Collected from the West Mound in Trench 5 in an “arbitrary” layer that contained artifacts, bones, and pebbles, it dates to the Chalcolithic Period.

(18331)-(dogtooth spar). This calcite crystal measuring 2cm x2cm and weighing 3.7g was found in the West Mound in Trench 5, Sp.345. It is located in the southern part of the trench in a refuse pile that also contained pottery, tools, building material, and animal bones and may be associated with burial F.5060.

Other

(31108.x3)-(possible cave pearl). This is a possible cave pearl irregular in shape measuring approximately 2cm in length and 1cm in width. It weighs 1.3g and is a grayish white color. It cannot be found in the database.

Discussion

To start to think about understanding how these formations may have been used at the site, I divided the contexts between burials, middens, and “other” (See Table 24.1). I reserved the “other” category for contexts that were uncertain, not well identified or described as “fill.” Speleothems were relatively easy to categorize as crystalline spars and more opaque limestone stalactites. I focused on these two categories because they represented the majority of the material. Although I did find a single cave pearl in the collections, there was no provenience data available. I found only one concretion in a midden context, but did not include it in the overall analysis because it is possible that it did not come from a cave. I focused on the East Mound because only two samples of speleothems came from the West Mound, which of course may be meaningful. Both of these examples were spars, one of which came from a midden and the other from a less defined context. The only fragment of flowstone in the collection came from a Chalcolithic burial context that clearly dated much later than the rest of the material so it was not included. This left 21 artifacts of which 14 are spars and 7 stalactites (Figure 24.4). While this is a very small sample, some observations can be made about the data.
First, the most striking result is that only stalactites are located in burial contexts. By examining individual cases we find that this pattern may be even stronger than the initial analysis suggests. For instance, in the case of (10475.x2), the modified stalactite figurine, excavators classified the context as “midden,” yet the object was closely associated with burial F.1517, which contained a plastered skull. Therefore, it is unlikely that the context is a true “midden” but may be part of this burial, thus strengthening the pattern. Another stalactite (11904) associated with “storage” also bears discussion. This example—though clearly a stalactite—has a crystalline structure similar to a spar. There are a myriad of reasons why this piece remained in a storage area, but it could be because of its spar-like properties. The stalactite (17600) fits into the “other” context, but was likely part of a cache. It was accompanied by seven pieces of ground stone, a cluster of worked stones, a single worked stone, a bead, and two clay objects.

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Table 24.1. Speleothem morphologies and contexts by area.

When we consider the burial contexts it is instructive to consider (19461). The speleothem accompanied not just a single individual but an entire burial complex. The complex contained 14 individuals, six of which were represented only by crania and two disarticulated skeletons Sk(19493) and Sk(19450) whose heads were removed and their long bones interlocked so that the arrangement resembled a “bird’s nest.” Not only this, but obsidian mirrors accompanied two additional disarticulated individuals in the same spatial unit. Artifacts directly associated with the speleothem included an obsidian tool, a shell, a figurine fragment, and two beads. Therefore, this was no ordinary context but a highly specialized ritual venue. When we bear in mind the special contexts in which we find the stalactites there can be little doubt as to their importance.
Spars contrast with stalactites in that none were found in burials and at least half were recovered from midden contexts. The remaining examples included five from unclear contexts and two from storage. Another five “crystals” reported by Nakamura (2010:312-313) were found in similar deposits or construction fill. This sparse data tentatively suggests spars may have had a function and meaning aside from stalactites. Recall that spars are translucent and morphologically distinct. It is quite possible that this property “affords” particular activities. For instance, among the Maya crystals are used for divining (Brady & Prufer 1999). Ritual specialists must be given their crystal (sastun) or they must find it in which case it is a gift from the deities. One of the appealing properties of spars is that the inclusions in the crystal allow them to be “read” in divinatory practice. However, a healer’s crystal is considered to be valuable and it closely guarded so it is hard to imagine that a magical or valuable object would be tossed into a midden unless it had for some reason lost its power or value. Even then ritual objects are typically disposed of in special ways.

Also worth considering is that some spars were found in special contexts. For instance, in (13429) there were a large number of crystals that appeared to have disintegrated from a single rock, placed inside of a blocked crawl hole in a wall. There were other artifacts in this hole as well-- a flat grinding stone, a round grinding stone, a flint tool, and a flattened round grinding stone suggesting that this was a ritual cache, but the data were not conclusive.

**Conclusion**

The presence of speleothems at Çatalhöyük indicates that the ancient inhabitants visited caves. It is likely that the caves were at least 50 km distant (Erdoğu 2013), so visitation was either linked to some other activity such as resource collection or may have represented a specialized journey. The speleothems collected and brought to the site linked the inhabitants to the cave. It is likely that activities also occurred in caves and it is probable that they were ritual in nature given the predominance of ritual cave use cross culturally (Moyes 2012). While the sample here is not complete, the samples available for observation suggest that speleothems were used in different ways depending on their morphological characteristics. The presence of stalactites in burials suggests that there was a cognitive link between caves and death or even perhaps an afterlife, which is something that bears further exploration. Spars or crystals were most often found in middens or unclear contexts; therefore, they likely had a different function. Nakamura (2010) suggested that they were part of “magical” deposits, which indeed may be the case as can be argued from cross-cultural examples. While speleothems may be considered as “magic” or sacred, it is interesting to note that stalactites were removed from active social or systemic contexts and literally *buried* whereas spars were found in multiple contexts suggesting that they may have served a more active role in social interactions.

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*Figure 24.4. Distribution of speleothem morphological types in burial, midden and other contexts.*
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