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Epipalaeolithic Ritual Practices at Gedikkaya Cave, Northwestern Türkiye

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ABSTRACT

This paper examines the Epipaleolithic occupation of Gedikkaya Cave in northwestern Türkiye, which also served as a settlement during the Neolithic and Chalcolithic periods. The Epipaleolithic marks a period of increased human mobility, likely influenced by climatic events following the Last Glacial Maximum. During this time, the cave functioned as a shelter or refuge for local hunter-gatherers and transient populations. Artifacts suggest connections between European Upper Paleolithic cultures and the Pre-Pottery Neolithic A cultures of Anatolia and the Levant.

The study focuses on the extraordinary symbolic and ritual manifestations found in a layer dated to 13,166–11,200 Cal BC, including artifacts, niches, and a special area featuring a stalagmite structure. These findings suggest the presence of well-developed and complex symbolic structures.

Keywords: Epipalaeolithic, Ritual, Anthropomorphic Sculpture, Zoomorphic Sculpture, Gedikkaya Cave

Introduction

Epipalaeolithic occupation sites in Türkiye are predominantly caves and rock shelters, with rare instances of open-air sites (Figure 1). Findings from northwestern Anatolia, often associated with the Epigravettian culture, are typically derived from surface surveys (Gatsov & Özdoğan, 1994). Systemic excavations at cave sites like Karain B, Öküzini, and Kızılin in the western Mediterranean region have revealed detailed insights into the stages of this period (Otte et al., 1995; Erbil, Kartal, & Ağırsoy, 2021; Kartal, 2009).

Epipalaeolithic culture is characterized by microlithic industries, including dense lunates and geometric microliths, which appear unique to Anatolia and are particularly prominent at Öküzini (Kartal, 2011). Several cave sites, such as Ballık (Aksan et al., 2023) and Girmeler (Erdoğu et al., 2021) in the Aegean and western Mediterranean Regions, Direkli (Erek M. C., 2012; Baysal, 2016) and Eşek Deresi (Altınbilek Algül, Kayci, & Balcı, 2022) in the eastern Mediterranean Region, Pınarbaşı B (Baird, 2012) in Central Anatolia, and Yarımburgaz and Gedikkaya in northwestern Anatolia, show evidence of first occupation between 14,000 and 12,000 BC. These settlements belong to the Late Epipalaeolithic Period and exhibit distinctive regional variations and toolkits.

By 10,000 BC, hunter-gatherer communities predominated in the Aegean and Mediterranean basins, while permanent villages, such as Boncuklu Tarla in the Upper Tigris Valley, began to emerge (Kodaş, 2021). By 9,500 BC, these settlements grew denser, with advanced architectural features, such as those seen at Çayönü and Körtiktepe in the Tigris Basin, and Göbeklitepe and Karahantepe in the Euphrates Basin. These sites feature monumental stelae, cult areas, and specialized structures, indicative of complex social organization and developed cultural practices (Kuniholm, Başgelen, & Özdoğan, 2011; Özdoğan, Başgelen, & Kuniholm, 2011; Karul 2022).

Gedikkaya Cave offers fresh perspectives on the transition from shelters to settlements with cult areas. Radiocarbon dating of Layer 3 at Gedikkaya places the Epipaleolithic occupation between the 15th and the 16th millennium BC. The findings in this layer are unique and suggest ritual practices. This paper explores these vestiges in the context of Gedikkaya's Epipaleolithic period, highlighting its role in bridging earlier European Paleolithic cultures within later Pre-Pottery Neolithic (PPN) cultures of the Near East.

Location and History of Research

Gedikkaya Cave is situated approximately one kilometer south-southeast of İnhisa, in Bilecik Province, northwestern Turkey. It lies at the intersection of the Marmara, Aegean, and Black Sea zones (Figure 1). Positioned about 350 m above sea level on the northern slope of İnkaya, a rocky hill dominating the Sakarya (Sangarius) River valley, the cave is

located roughly 180 m from the river. The slopes in front of the cave contain remnants of a Hellenistic necropolis, and medieval structures are found about 500 m to the north, nestled among the bushes.

Figure 1: The location of Gedikkaya Cave and of other sites mentioned in the text

From the Upper Jurassic and Lower Cretaceous limestone beds (Nazik et al, 2001, 57), the cave extends approximately 180 m in length. Its north-facing entrance measures 6 m in width and 3.5 m in height. The ceiling of the main gallery, which spans 30 m in width, rises to a height of - 15–20 m. The floor is littered with large collapsed stones, some exceeding 10 m in length, which likely cover Paleolithic materials. This serves as a habitat for bats. A partially blocked natural provides some light and ventilation to the main gallery. Nearby, two additional caves feature numerous stalactites and stalagmites (Figure 2).

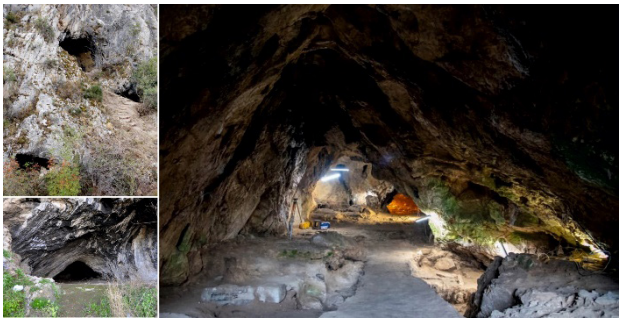

Figure 2: The entrances and the corridor from Gedikkaya Cave

Exploration of Gedikkaya Cave began in 1960 when it was investigated for phosphorite mining under the direction of Karl Heinz Rupprecht on behalf of the General Directorate of Mineral Research and Exploration of Türkiye (MTA) (Rupprecht 1960). In 2001, a team led

by Lütfi Nazik revisited the site as part of the Central Sakarya Basin Natural Caves project, again under the auspices of the MTA (Nazik, et al. 2001).

The archaeological significance of the cave was first reported during the 2017 season of the Bilecik Province Archaeological Survey on the "Documentation of Cultural Heritage in Bilecik Province and its Districts" (Sarı, 2019, 444–446). Evidence of significant destruction, including damage from illegal excavations, was observed. Salvage excavations commenced in 2019 under the direction of the Republic of Türkiye Ministry of Culture and Tourism, with support from the Bilecik Museum, Bilecik Şeyh Edebali University, and the İnhisar Municipality. Since then, five excavation campaigns have been conducted by a multidisciplinary team, and the archaeological material has been entrusted to various specialists for analysis.

Chronology and Cultural Layers in Gedikkaya Cave

Gedikkaya cave was occupied during at least four distinct periods, ranging from the Epipalaeolithic to the Chalcolithic. Evidence also suggests occasional visits during the Hellenistic period by residents of nearby settlements.

Calibrated radiocarbon dating places the most recent occupation in the Chalcolithic period. The deposit in the entrance corridor was reported to be at least 50 cm thicker in 1960 (Rupprecht, 1960, 5), suggesting the loss of Late Chalcolithic layers. Layer 1B, representing the end of the Early Chalcolithic Period, dates to 5316–5212 calBC and 5041–4879 calBC, with an average OxCal calibrated range of 5263–4960 calBC. Layer 1A, attributed to the Middle Chalcolithic Period, dates to 4729–4584 calBC and 4616–4456 calBC at 2σ probability. Architectural features in Layer 1B include hearths and oval-shaped silos made of small stones (Figure 3a, Squares E 8-11).

Layer 2 is associated with the Neolithic period, with radiocarbon dating for the earliest phase, Layer 2C, indicating occupation during the VIIIth millennium BC. However, intact deposits from this period have been found, and materials from this layer were intermixed with those from younger strata. Accordingly, only the upper layers 2B and 2A can be confidently identified. Layer 2B, corresponding to the early phase of the Neolithic Period, has been dated to 7187–7046 calBC, 6591–6542 calBC, and 6593–6451 calBC at a 2σ probability. The most abundant finds in the cave are attributed to the Late Neolithic, with dates corresponding to 5990–5831 calBC, 6246–6077 calBC, as well as an average date of 6150–5910 calBC according to the OxCal radiocarbon calibration program.

The oldest cultural layer discovered to date belongs to the Epipalaeolithic Layer 3, which spans the XVth, XIVth and XIIth millennia BC (14495–14121 calBC; 13309–13023 calBC; 11227–11131 calBC at 2σ probability) (Figure 4). This layer, composed of a yellow clay deposit extending throughout the entire entrance corridor, has not yet been fully excavated

to its base level. Directly above Layer 3, approximately 15 cm of ash deposits, devoid of any artifacts, have been identified in squares D 6-7 and E 6-7**.** This ash layer serves as the terminus ante quem of the Epipalaeolithic Layer 3 in this area.

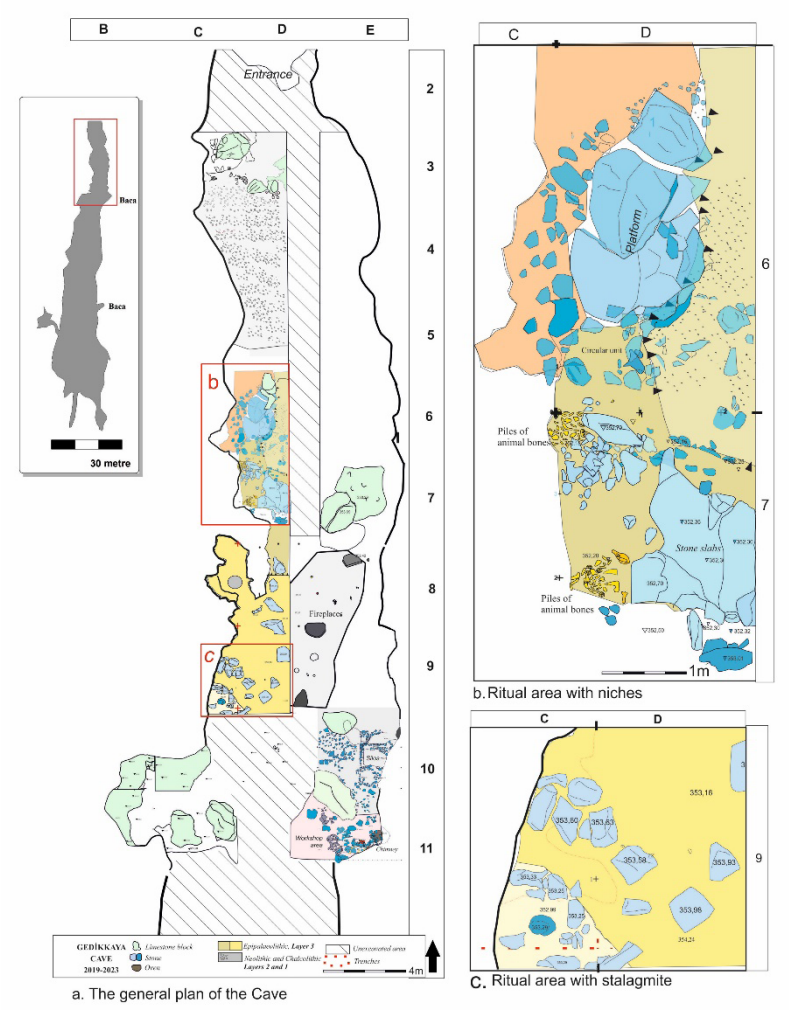

Figure 3: Plans of excavated areas in Gedikkaya Cave

Extraordinary Space Arrangements and Items

Layer 3 presents evidence of at least two distinct extraordinary spatial arrangements that suggest a special function for the. The first arrangement, in squares D6-7, dates to a mean of 13166 calBC, while the second, located in square D9, is younger, dating to a mean of 11177 calBC, both determined with a 2σ probability.

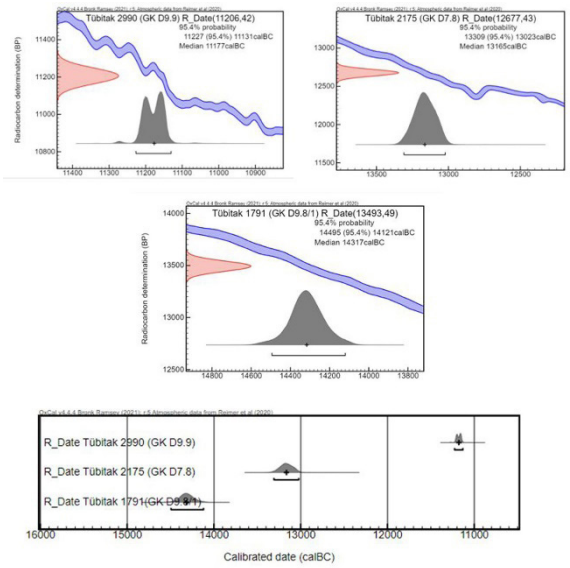

Figure 4: Calibrated samples from the Oxford Radiocarbon Accelerator Unit (ORAU)'s online OxCal calibration program (https://c14.arch.ox.ac.uk/oxcal/OxCal.html)

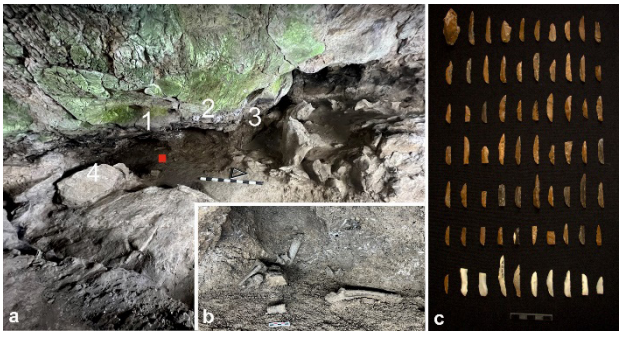

Figure 5: a.1-2: the niches, a.3: silo-like unit, a.4: animal sculpture lying on its side; b: the niches; c: Epigravettian chipped stones

Figure 6: Animal bones, molluscs and chalcedony tools from the ritual Context in D6-7 Squares

The first arrangement, located approximately 20 m from the cave entrance along the west wall, features a limestone block that had fallen from the ceiling before the Epipalaeolithic period, forming a platform in front of the wall. Adjacent to this platform is a circular, silo-like unit of about 1 m² (Figures 3b; 5a3). This unit contained approximately 70 chipped stones, including backed blades, lunates, and microliths, which exhibit characteristics of the Epigravettian flint industry (Figure 5c). In front of the silo-like structure are two natural niches in the cave wall (Figure 3b; 5a1–2)**.** Each niche contained stacks of animal bones and chalcedony tools (Figure 6), with a C14 analysis of a bone from the southern niche in square D7 dating to 13309–13023 calBC. The animal bones include vertebrae, pelvic bones, horns from wild goats and sheep, fallow deer antlers, an eagle claw, tortoise remains, and mollusk shells. Notably, a wild goat horn was found upright against the back wall of the southern niche (Figure 5b, Figure 6). One vertebra showed a possible embedded arrow mark, hinting at hunting activities (Figure 6).

The deliberate selection of such a wide variety of animal remains, including terrestrial avian, and marine species, suggests the area may have been used for rituals related to hunting and gathering. A stone slab, possibly a prepared surface, lay in front of the niches, alongside a stone shaped like a seated animal, about 45 m and 40 m wide, with indications of intentional carving, such as grooved "claws" on one "paw" (Figures 5a4; Figure 8). This "sculpture" reinforces the interpretation of the niches as a site of ritual activity. Additionally, a stone resembling a tortoise was found nearby, echoing the turtle bones placed within the niches (Figure 9).

Close to this sculpture was a pendant (Figure 12c) and an equid phalanx (Figure 12d), which, though unmodified, may have held symbolic significance. The equid phalanx, for instance, resembles anthropomorphic forms seen in PPN and Chalcolithic contexts in the northern Levant and Southeastern Anatolia (Christidou, Coqueugniot, & Gourichon, 2009; Campana & Crabtree, 2018).

Approximately 40 m from the cave entrance, in square D9, a semi-circular double row of carefully selected stones forms an arrangement about 1.2 m in diameter (Figure 3c, 7). At the center of the semicircle stands a large stalagmite, approximately 1 m high and 40 cm wide, left in its natural position. Its shape closely resembles a phallus (Figure 7a–c*)*. The stones forming the inner row of the semicircle are flat and appear to have been carefully selected (Figure 7a–b). A C14 analysis of a bone sample from this zone, specifically in D9 square, yielded data of 11227–11131 calBC at a 2σ probability (Figure 4, Figure 7b).

Figure 7: The 'ritual area'; a-b: The stalagmite with flattened top and the stone rows arranged around it; c: the detail of the phallus-shaped stalagmite. The red point is the location of the C14 sample

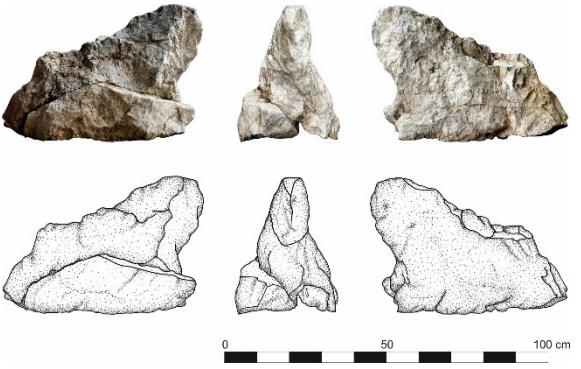

Figure 8: Seated animal sculpture

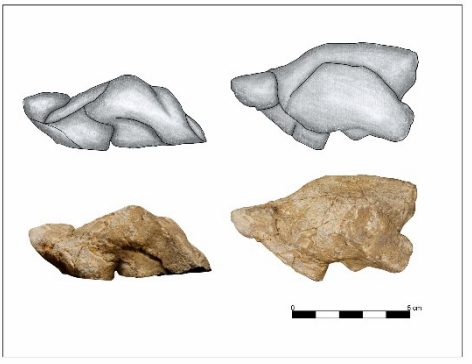

Figure 9: Tortoise sculpture

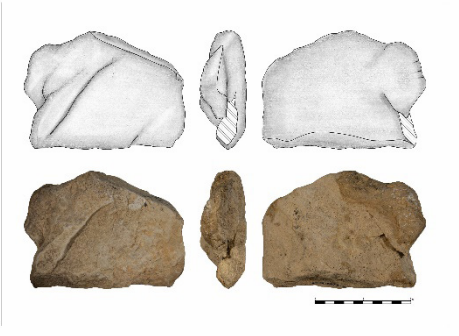

Figure 10: Animal sculpture

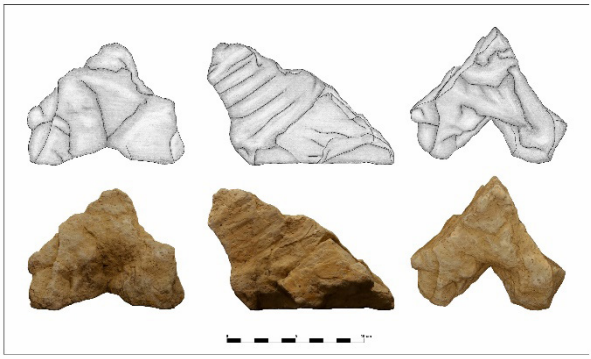

Figure 11: Stylized anthropomorphic sculpture

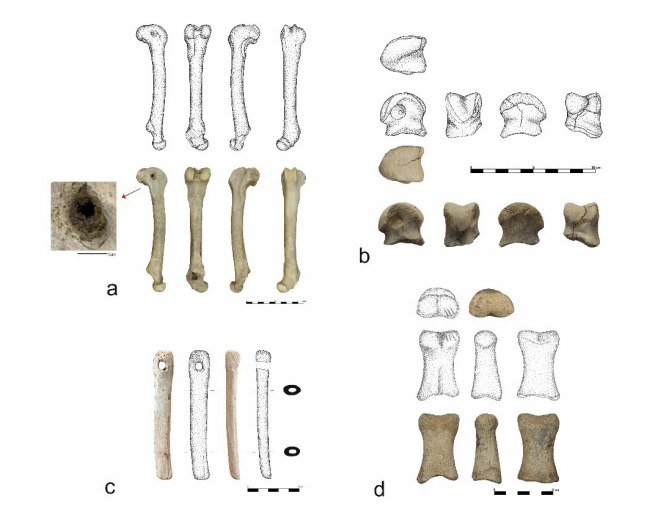

Figure 12: Bone objects from Gedikkaya Cave

Figure 13: Comparison with Magdalenian Culture

The function of this area can be explored through the discovery of bone and stone objects within it (Figures 10–12). Natural bones have been superficially modified to create objects that resemble human or raptor profiles (Figure 12a–b). One such object features a pierced "eye," suggesting a two-dimensional artistic approach. Comparable artifacts have been identified at European Upper Paleolithic sites, particularly pierced objects known as *bâton percé* (perforated baton) or *bâton de commandement* (baton of command), whose functions remain uncertain (Rigaud, 2021). The Gedikkaya examples are reminiscent of a piece found at Roc de Marcamps in the Dordogne, France, which has been variously interpreted as representing a human, eagle, or owl (Roussot & Ferrier, 1970, 299; fig. 5). Similar representations appear in the PPNA of Mesopotamia (e.g., at Nemrik, Hallan Çemi, and Körtik Tepe) as stone pestles or bird-headed characters (Kozlowski, 1989, fig. 8; Özkaya & Çoşkun, 2011, figs. 24, 36, 37.1; Rosenberg, 1999, fig. 4.1–7, b 15).

The ritual area also contained limestone objects and coarse sculptures depicting animals or humans. As with the bone artifacts, these sculptures were worked only on one side. One limestone object, interpreted as the profile of an elephant or a mammoth, features a humped back and a carved line suggesting the animal's front leg (Figure 10). The base of the sculpture is completely flattened, allowing it to stand freely. This piece is reminiscent

of ivory mammoth figurines and European cave art, such as those from Vogelherd Cave in Germany (Conard, 2009, 262).

Another stylized anthropomorphic sculpture found in the area represents the lower torso and upper legs of a seated or kneeling human figure, likely female, as indicated by the distinct V-shaped pubis, and pronounced belly represented with shallow grooves (Figure 11). Minimal attention appears to have been paid to the back. This juxtaposition of masculine and feminine entities, symbolized by the stalagmite and the sculpture[1], underscores the duality of gender representation in the ritual space.

Stylized human figurines have also been discovered elsewhere in Türkiye, including Epipalaeolithic examples from Kızılin Cave (Demirel et al., 2019, Figs. 7-8, 10-11) and Direkli Cave (Erek, 2014, Fig. 3-4), in the Mediterranean region, As well as Upper Paleolithic examples from the Beykoz district in the Marmara Region (Güldoğan, 2020). Limestone sculpture appears to be a cultural hallmark of the Epipalaeolithic in Türkiye, with varying styles. The closest parallel to the Gedikkaya sculpture is a piece from Dolní Věstonice (Czech Republic) found in a Gravettian context. Smaller than the Gedikkaya sculpture and crafted from mammoth ivory rather than limestone, this artifact has been described as a "Venus figurine" or a "pearl in the shape of a woman" (Lázničková-Galetová, 2019; Svoboda, 2008, Fig 46). The Gedikkaya example, characterized by its impression of steatopygia, evokes the "Venus" figurines of Upper Paleolithic European cultures and established a cultural link to PPN artifacts from the Levant (for instance, Netiv Ha'Gdud, Dja'de, Çayönü and Gürcütepe (Ayobi, 2014, Fig.3.6;4.1; Bar-Joseph, 1998, Fig.13.4; Broman-Morales, 1990, Pl. 22.d); Şanlıurfa Museum, 2017), and subsequently, the "Mother Goddess" figurines of the Neolithic period.

In the niche where the stalagmite forms part of the sculpture, natural shapes have been subtly arranged to highlight perceived motifs. This sophisticated level of symbolism occasionally persists into the Neolithic period, reflecting the enduring cultural memory of these practices.

Understanding Ritual Activities at Gedikkaya

It is impossible to fully comprehend the practices and objectives of the rituals[2] performed by those who lived in the distant past or to arrive at a conclusion that reflects their reality,

1 I would like to thank Jan Ritch Frel for providing insight regarding juxtaposition of masculine and feminine entities, which contributed to this work.

2 In "Dictionary of Concepts in Cultural Anthropology," Robert H. Winthrop examines the nature and significance of rituals across various contexts. Winthrop defines ritual as a formalized, socially prescribed symbolic behavior that is meaningful and structured, rather than arbitrary or utilitarian. Examples such as a handshake, a Mass, or a royal coronation illustrate how rituals consist of relatively invariant sequences of actions that convey sentiments or ideas within a societal framework (Winthrop, 1991, 245). This is among numerous references addressing the concept of rituals.

given the fragmentary nature of the archaeological evidence they left behind. However, when archaeological findings cannot readily be linked to craft or daily activities, it is reasonable to infer that they may not have been associated with the mundane. This invites an exploration of how these artifacts might pertain to other dimensions of the human condition and how past populations approached aspects of their world that seemed beyond rational explanation.

Human beings have always sought to understand the chains of causation behind natural threats–thunder and lightning, earthquakes, floods, volcanic eruptions, predator attacks, and more. These phenomena are often regarded as part of the "supernatural,' lying "beyond" the realm of ordinary experience. In response, humans have sought to mitigate these threats through supernatural means. Across cultures, people have developed ways to confront the unknown and defend against perceived existential threats using media such as cave paintings, statuettes, cultic monuments, burial rituals, or treated bones of humans and animals. Each of these can be seen as an interface between the known and the unknowable–a means of engaging with and attempting to comprehend what lies beyond human understanding.

Early societies may also have observed the behaviors of their surroundings–plants, animals, rivers–and incorporated these observations into ritual practices as symbolic items, allowing them to exert a perceived level of control over certain events, such as death and birth. The natural world's motions and cycles–a seed becoming a sapling and later a tree, the slow growth of stalactites, eagles catching prey and vanishing into the sky, the long lives of tortoises, and the rhythms of diurnal and seasonal changes–could have served as metaphors for the cycles of human existence. These metaphors, drawn from nature, likely formed a significant part of the ritual and spiritual lives of the inhabitants of Gedikkaya.

Symbolism of Birth, Death and Transformation: Ritual Items Inspired by Natural Structures

When a human or animal died and its remains were left unattended, scavengers such as raptors would consume the flesh, and any remnants would decompose over time, disappearing from the visible world and perhaps symbolically transitioning into whatever lay "beyond." However, the skeletal system often remained, representing a tangible and fundamental link between the mundane and the supernatural. The inhabitants of Gedikkaya Cave, or their cultural predecessors, may have observed that certain bones–such as vertebrae from sheep, goats, or fallow deer–resembled the shapes of other creatures. For example, phalanges from these animals might evoke the human (female) body, while the distal epiphysis of a femur could resemble a raptor or a human profile. These natural forms may have inspired their adoption as symbolic items, meaningful patterns (Figure 12a–b, d). Such processed objects have been recognized as significant symbolic items in Eurasian Upper Paleolithic cultures (Caldwell, 2009).

The profile of a bovine phalanx (Figure 12a–b), such as those found at Gedikkaya, naturally resembles a raptor or a human figure. This inherent similarity may have inspired their use as ritual objects without requiring modification. Placing such objects in specific areas within the Epipalaeolithic layers highlights the ceremonial or symbolic importance of these locations. The symbolic significance of birds was widespread; for instance, bird reliefs and portable artifacts have been identified at sites like Göbekli Tepe, Nevali Çori, Domuztepe, and Köşk Höyük (Schmidt, 2007; Hauptmann, 1999; Tekin, 2023; Silistreli, 1989). Similarly, an equine phalanx recovered from Gedikkaya Cave (Figure 12d), naturally resembling a human or female form and capable of standing upright, reinforces the notion of naturally anthropomorphic bones being imbued with meaning. The tortoise sculpture (Figure 9) echoes the placement of tortoise shells in the niches, further emphasizing this symbolic interplay.

The feminine-stylized limestone sculpture from Gedikkaya Cave (Figure 11) also suggests a V-shaped pubis and was found within a structure featuring a central phallus-like stalagmite. The deliberate juxtaposition of male and female elements within this context appears intentional and highly symbolic. Likely reflecting a deeper ritual or cosmological understanding among the cave's inhabitants.

Conclusions

Radiocarbon dates from the Epipalaeolithic occupation layers of Gedikkaya indicate that the site was inhabited from around 14500 calBC, coinciding with the end of the last glaciation, until approximately 11200 calBC. This period marked the diffusion of European Upper Paleolithic cultural practices into regions such as the Balkans, the Caucasus, and the Mediterranean. While Gedikkaya's precise role in this cultural diffusion remains unclear, the anthropomorphic and zoomorphic stylized sculptures from its Epipalaeolithic layers suggest cultural links between European Upper Paleolithic groups and Levantine-Anatolian Epipalaeolithic cultures. Additional cultural associations may also be inferred (Figure 13).

The area featuring the stalagmite "stele" and the surrounding double row of stones strongly indicates ceremonial significance for the Epipalaeolithic community of Gedikkaya. The structure may have influenced later monumental, phallic pillars from the Pre-Pottery Neolithic (PPN), such as Karahantepe (Karul, 2021). The use of stalagmites in caves during the Upper Paleolithic and Epipalaeolithic periods may have inspired the monumental stelae of subsequent cultures. Gedikkaya thus represents one phase in a broader cultural continuum with many interconnected developments.

Evidence uncovered at Gedikkaya Cave highlights the integral role of ritual activity in the lives of its Epipalaeolithic inhabitants. The combination of the phallus-shaped stalagmite/stela, the double row of stones, and anthropomorphic and zoomorphic objects suggest that the community crafted imaginative belief systems by drawing connections between natural phenomena. These spiritual practices reflect an effort to confront fears, express hopes, and show thankfulness, similar to rituals in many modern contexts. It is possible that such cultic practices originated in cave settlements—environments that were both morphologically inspiring and protective against environmental adversities—and were passed down through chains of cultural memory.

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