anthropozoologica

2019 • 54 • 11

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art. 54 (11) — Published on 16 August 2019
www.anthropozoologica.com

MUSÉUM
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PUBLICATIONS SCIENTIFIQUES

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Crâne de mouton avec d'importants impacts anthropiques, probablement causés par une hache. Photo: Can Yümni Gündem./*A sheep skull with strong human impacts, probably caused by a hand axe. Photo: Can Yümni Gündem.*

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Diffusion – Publications scientifiques Muséum national d'Histoire naturelle
CP 41 – 57 rue Cuvier F-75231 Paris cedex 05 (France)
Tél. : 33 (0)1 40 79 48 05 / Fax : 33 (0)1 40 79 38 40
diff.pub@mnhn.fr / http://sciencepress.mnhn.fr

ISSN (imprimé / *print*) : 0761-3032 / ISSN (électronique / *electronic*) : 2107-08817

Archaeozoological study of a unique Late Neolithic pit from Tepecik-Çiftlik, central Turkey

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Submitted on 7 September 2018 | Accepted on 29 April 2019 | Published on 16 August 2019

In memory of my beloved uncle Mehmet B. Kaçmaz.

Gündem C. Y. 2019. — Archaeozoological study of a unique Late Neolithic pit from Tepecik-Çiftlik, central Turkey. *Anthropozoologica* 54 (11): 97-110. https://doi.org/10.5252/anthropozoologica2019v54a11. http://anthropozoologica.com/54/11

ABSTRACT
The absence of written evidence from prehistoric periods makes it difficult to understand the origins of sacrifice or offering ceremonies. Archaeological finds from prehistoric periods are the only solid evidence for these acts and rituals. One probable case of animal sacrifice or offering in the Neolithic period has been found at the site of Tepecik-Çiftlik Höyük in central Turkey. This study is focused on a single unique pit, which contained only animal bones and was found in an open space. The contents clearly indicate that this pit can not be interpreted simply as mixed kitchen garbage since an almost complete cattle skeleton as well as sixteen left front leg remains from sheep were placed in the pit after a social, or more specifically, ritual act. Similar pit with similar content was found neither in the close region to Tepecik-Çiftlik nor within Anatolia. The main aim of this study is to introduce a special archaeological find group, those were left after certain prehistoric activity.

KEY WORDS
Archaeozoology,
Anatolia,
Neolithic,
ritual,
Tepecik-Çiftlik.

RÉSUMÉ
Étude archéozoologique d'une fosse unique du Néolithique supérieur à Tepecik-Çiftlik, Turquie centrale.
L'absence de sources textuelles pour les périodes anciennes rend assez difficile la mise en évidence de cérémonies de sacrifice ou d'offrande. Les découvertes archéologiques sont les seules preuves tangibles de ces actes et rituels pour les périodes pré- et proto-historiques. Un cas probable de sacrifice ou d'offrande d'animaux daté du Néolithique a été découvert sur le site de Tepecik-Çiftlik Höyük, au centre de la Turquie. Cette étude se concentre sur une fosse unique, qui ne contient que des os d'animaux et a été trouvée dans un espace ouvert. Le contenu indique clairement que cette fosse ne peut pas être interprétée comme un simple dépôt de déchets d'alimentation, car un squelette presque complet de bovin, ainsi que seize restes de pattes antérieures gauches de mouton, ont été placés dans la fosse après un acte social ou, plus précisément, rituel. Aucune fosse ayant un contenu similaire n'a été trouvée dans la région proche de Tepecik-Çiftlik ou en Anatolie. L'objectif principal de cette étude est de présenter un ensemble particulier de structures archéologiques caractéristiques de certaines activités préhistoriques.

MOTS CLÉS
Archéozoologie,
Anatolie,
Néolithique,
rituel,
Tepecik-Çiftlik.

Fig. 1. — Map of Turkey. ◇, site mentioned in the text; ○, largest city of Turkey; ☆, capital of Turkey.

INTRODUCTION

Although the early and middle phases of the Neolithic period are well documented on the Anatolian plateau at sites such as Aşıklı Höyük and Çatalhöyük, the later portions of the period are poorly explored. In this paper, I describe a unique pit feature from Tepecik-Çiftlik, a site located in the uplands of the Melendiz Mountains in central Anatolia. Dating to the Late Pottery Neolithic, *c.* 6300 BC, this square pit contains the remains of articulated portions of multiple sheep skeletons and a complete immature cow and appears to represent a "special" or ritual deposit rather than household waste. This feature is unique in prehistoric Anatolia and provides valuable information concerning the complex ritual behaviours in this community perhaps relating to the origins of the practice of animal sacrifice.

EXCAVATION AND STRATIGRAPHY

Tepecik-Çiftlik Höyük is located in the southern part of the Central Anatolia Plateau on the Melendiz Plain close to the region of Cappadocia (Fig. 1). The oval shaped mound is *c.* 33 300 m^2 and rises 9.6 m above the plain. Excavations led by Erhan Bıçakçı since 2000 show the extent of prehistoric settlement was around six hectares (Bıçakçı *et al.* 2012). The primary occupation of the mound dates to the 7th and 6th millennium BC, representing the Late Neolithic and Early Chalcolithic periods. Four main stratigraphic levels have been uncovered with Late Neolithic and Early Chalcolithic being the most important. The upper-most layer is Late Roman/Byzantine while the second layer represents the Early Chalcolithic dated to *c.* 6000-5000 BC. The third layer reflects a Late Neolithic occupation and is dated *c.* 6300-6000 BC. Layers four through nine are Neolithic and dated *c.* 7500-6650 BC. The earliest layers, 10-14, date to the early eighth millennium BC and represent the Aceramic Neolithic (Çakan 2013).

The pit, which is the focus of this paper, was discovered and unearthed during the 2012 season from a Neolithic stratum. Indeed, the pit was identified specifically in Level 3.2c, which is associated with the Late Neolithic and known as the "Building with Oven" (Fırınlı Yapılar) phase (*c.* 6400-6300 BC) (Fig. 2). The pit is located in an open space in Trench 16/L, and two houses around this open space were detected from this phase (structures three and seven, each with a single room; Çakan 2013). Several graves were also found in close proximity to the pit; however, it is currently unclear how the pit is associated with these graves (Çakan & Büyükkarakaya pers. comm.).

The schematic layout of the settlement during Late Neolithic layers 3.2c, 3.2b and 3.2a is shown in Figure 3 from bottom (Fig. 3A) to top (Fig. 3C). The pit was detected in an open space in layer 3.2c. This plaza-like area remained open in the following layer 3.2b but a building, structure four, was built in this area and covering the pit in layer 3.2a (Fig. 3C).

Material and Method

The pit feature is subrectangular and of moderate size with an east to west diameter of 1.0 m and a north to south diameter of 0.75 m and it is 0.55 m deep. The pit tapers with depth with dimension reduced to 0.20 m at its base. The pit contained a dense concentration of animal bones evident from the uppermost fill but no other finds were recovered (Fig. 4). Animal bones were tightly packed into the pit and show no signs of weathering or damage indicating that the deposit was closed soon after it was filled. Many of the skeletal remains represent articulated limb segments indicating that they were probably placed in the pit in a fresh state and that the pit was not reopened – there is no evidence for later disturbance of this feature and the erection of structure four on top of it in a subsequent Late Neolithic building phase did not damage the pit (Figs 4; 5).

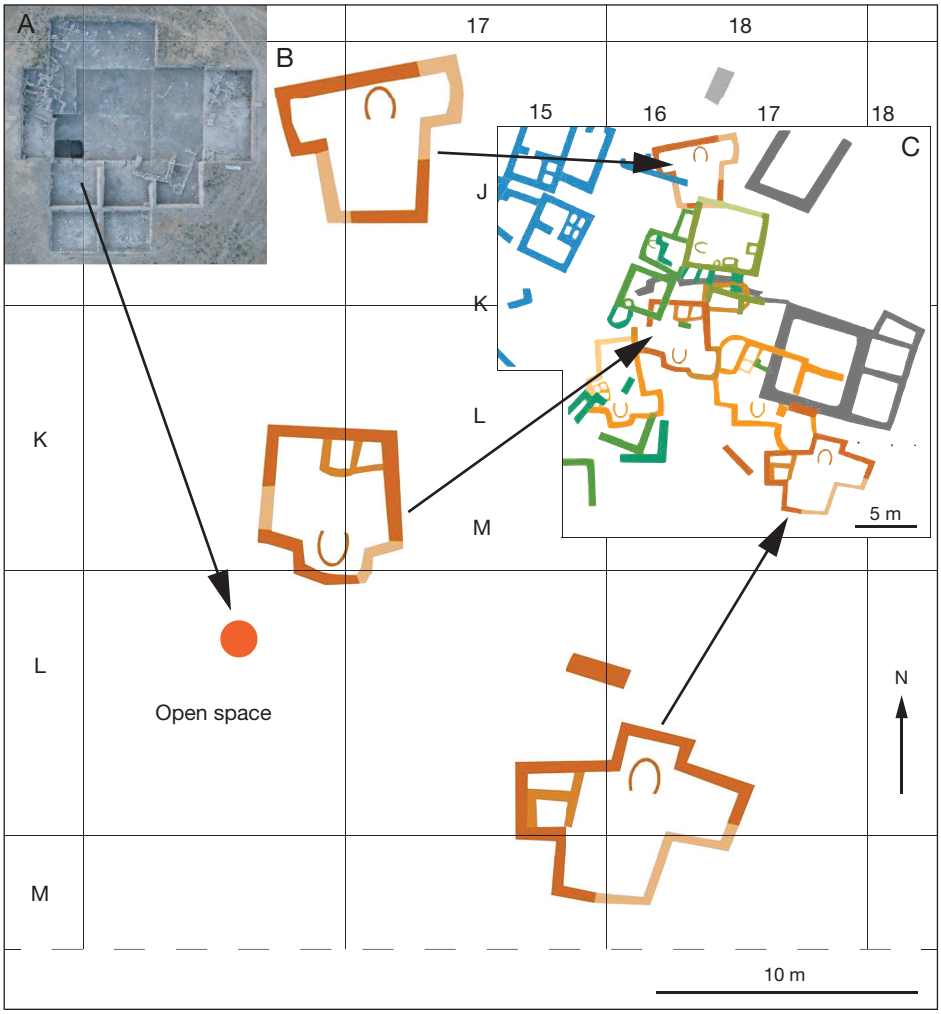

Fig. 2. — **A**, aerial photo of the whole excavation area (excavation archive); **B**, schematic layout of the settlement during Phase 3.2c (based on Çakan 2013: fig. 92); **C**, schematic layout of the settlement from different phases (Çakan pers. comm.). The red dot indicates the location of the pit (modifications were made by the author).

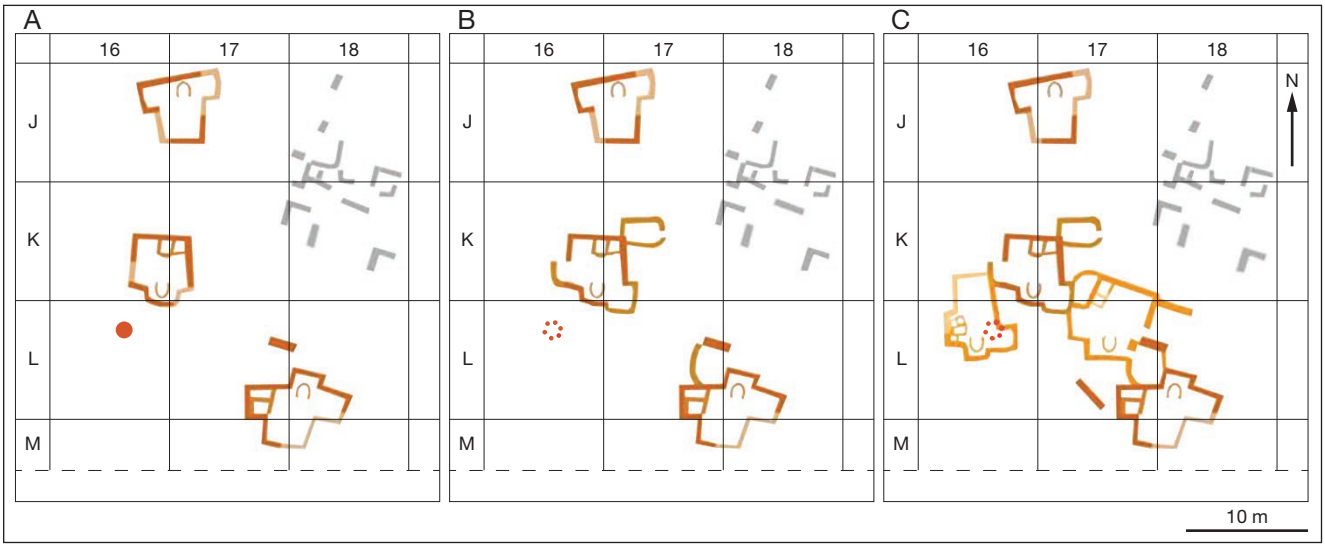

Fig. 3. — Schematic layout of the settlement, from the bottom to the top. **A**, layer 3.2c; **B**, layer 3.2b; **C**, layer 3.2a; **red dot**, location of the pit. The pit was dug out, filled and closed during the 3.2c layer (based on Çakan 2013: fig. 92-4).

Fig. 4. — **A**, location of the pit in Trench 16/L, Layer 3.2c; **B**, close up photograph of the pit (excavation archive). Scale bar: 50 cm.

Fig. 5. — The articulated limbs from cattle and sheep in their anatomical positions were clearly noticeable. Bones highlighted with red stripes belong to the almost complete cattle and articulated left front limbs from sheep are visible here as well. Scale bar: 20 cm.

From the very beginning of its excavation in 2012, it was clear that this pit was not a typical feature filled with household waste. In contrast to most pit features at the site which contain highly fragmented and sometimes burned animal bones, the remains of past meals, this pit contained complete elements including skulls and long bones many in anatomical position. The contents of the pit were carefully excavated and brought to the prehistoric archaeology laboratory at Istanbul University for further archaeozoological analyses. Each individual bone fragment was recorded in a Microsoft Excel spreadsheet including taxonomic and anatomical identification, degree of fragmentation, and the presence of cut-marks, burning and other modifications (Schmid 1972; Hillson 1992; Fisher 1995; O'Connor 1999,

2000; Reitz & Wing 2008). The weight of each bone remain was also recorded as a way to estimate the meat contributions (Kubasiewicz 1956; Uerpmann 1973). In addition, information on the age of the respective animals at the time of their death was recorded using dental development and fusion of the epiphyses for determination of slaughtering ages. Slaughter age can provide insight into the goals of livestock management and also shed light on season of slaughter (Uerpmann 1971; Habermehl 1975; Grant 1982; Deniz & Payne 1982; Hillson 1986; Zeder 2006).

As a unit of quantification, Minimum Number of Individuals (MNI) has been calculated for this study. MNI was calculated as follows: bone remains from each species were separated based on their element and side, and then the most repeated element with the same side used as the estimated MNI count (Grayson 1978). Measuring the bones allows statements to be made concerning size and stature of the animals, as well as on their physical development. The methodology used for measuring was summarized by Von den Driesch (1976). The Logarithmic Size Index (LSI) has been used to generalize and compare body sizes between layers and with different sites (Meadow 1999; Arbuckle *et al.* 2014). A recent wild sheep skeleton (*Ovis orientalis* Gmelin, 1774) measured and published by Uerpmann in 1979 is used to compare the measured sheep remains from the site (Uerpmann 1979; Arbuckle *et al.* 2014).

ARCHAEOZOOLOGICAL STUDIES

No detailed archaeozoological results have yet been published for Tepecik-Çiftlik since the study of the material is still in progress by the author as well as P. Crabtree & D. Campana. In general, the faunal assemblages from the prehistoric levels of Tepecik-Çiftlik include domestic as well as wild taxa including domestic sheep (*Ovis aries* Linnaeus, 1758), goat (*Capra hircus* Linnaeus, 1758) and cattle along with wild sheep (*Ovis orientalis*), red deer (*Cervus elaphus* Linnaeus, 1758), wild horse (*Equus ferus* Boddaert, 1785), and hemione (*Equus hemionus* Pallas, 1775). Other wild taxa including hare (*Lepus europaeus* Pallas, 1778), carnivores and birds are also present. Animal remains from the Late Neolithic layers primarily represent kitchen waste and include abundant evidence for burning, cut marks, and fragmentation associated with the removal of within bone nutrients such as marrow. Sheep are the most abundant domestic animal species in the faunal assemblage during the Late Neolithic occupation followed by cattle. However, due to the large size of cattle, the reconstructed amount of beef and mutton consumed was almost equal. Although hunting wild species was an important part of the Late Neolithic economy, the importance of hunting decreased over time from the Late Neolithic through the Early Chalcolithic levels. Despite the wide range of species represented in the overall faunal assemblage at the site, only two taxa, domestic cattle and sheep, were identified from the pit discussed in this article.

TABLE 1. — Cattle remains from the pit. Abbreviations: **L**, left; **m.**, months; **M2**, second molar; **MC**, metacarpus; **R**, right.

Skeletal elements	Almost complete Aged: *c.* 18 m. (just erupting M2)	1st articulated limbs Aged: *c.* 12-15 m.	2nd articulated limbs Aged: *c.* 12-15 m. (not fused MC epiphy.)	Single humerus Aged: *c.* 18 m.
Head				
Skull	Present	–	–	–
Mandible	L-R	–	–	–
Rump				
(in number)				
Atlas	Half	–	–	–
Axis	Half	–	–	–
Cervical	3	–	–	–
Thoracic	6	–	–	–
Lumbar	5	–	–	–
Sacrum	1 (3 parts)	–	–	–
Rib's head	10	–	–	–
Front leg				
Scapula	L-R	–	–	–
Humerus	L-R	R	–	R
Radius	L-R	R	–	–
Ulna	L-R	R	–	–
Metacarpus	L-R	–	R	–
Phalage I	2L-2R	–	2R	–
Phalage II	2L-2R	–	2R	–
Phalage III	2L-2R	–	2R	–
Hind leg				
Pelvis	L	–	–	–
Femur	L-R	–	–	–
Patella	L-R	–	–	–
Tibia	L	–	–	–
Astragalus	–	–	–	–
Calcaneus	L-R	–	–	–
Metatarsus	L	–	–	–
Phalage I	1L	–	–	–
Phalage II	1L	–	–	–
Phalage III	1L	–	–	–

In total, more than 2300 animal bones were recovered from the pit with a total weight of *c.* 8.7 kg. These remains are described in detail below.

CATTLE REMAINS

One almost complete cattle skeleton as well as several articulated limbs from different cattle were recovered from the pit. The size of the cattle bones indicates that these remains represent domestic cattle since they are clearly smaller than wild aurochs (*Bos primigenius* Bojanus, 1827). The cattle skeleton is mostly complete but half of the atlas and the axis is missing as well as a few other vertebrae; moreover the ribs, the right pelvis, both tali, the right metatarsus and some of the phalanges are also missing (Table 1). Given the lack of evidence for weathering or other taphonomic processes, the absence of these parts seems intentional. The partially broken skull with intact mandibles was found placed at the bottom of the pit (Fig. 6). Based on the eruption of the second mandibular molar, this animal was somewhere

Fig. 6. — Cattle's skull, both scapulae and some other long bones from the almost complete cattle are marked here with red stripes. Scale bar: 20 cm.

around 18 months old when it was killed (Habermehl 1975). Based on pelvis morphology, the remains represent a male (Greenfield 2005).

In addition, the remains of two articulated cattle forelimbs and a single cattle humerus were also found in the pit. These remains clearly do not belong to the almost complete individual and represent two or three additional individuals. The first articulated limb includes a right humerus and radius/ulna can be aged as younger than 12 to 15 months old, based on the lack of fusion of the distal epiphysis of the humerus and of the proximal epiphysis of the radius. The size and texture of the bones indicate that they do not belong to a young calf (Habermehl 1975).

The second articulated limb consists of a right metacarpus with phalanges I, II and III and should also be aged around 12 to 15 months based on the unfused distal epiphyses of the metacarpus and unfused proximal epiphyses of phalanges I and II (again the size of the bones do not indicate a younger cattle) (Habermehl 1975). It is possible that the first and second articulated limbs could belong to the same individual; however, they have been placed separately in the pit.

Finally, a single right humerus was found in the pit. Based on the unfused distal epiphysis the individual was aged younger than 18 months when it was slaughtered (Habermehl 1975). Based on the long bones from cattle, three individuals (MNI) are represented from the pit, based on a total of three right humeri.

SHEEP REMAINS

Understanding the placement of the sheep remains in the pit was more complicated than the cattle remains since the sheep remains were found in greater numbers in the pit. Even though the excavation of the pit was done cautiously, some skeleton elements were already crushed beneath the earth, broken and some were damaged while unearthing them from the pit. Almost 2050 animal bone fragments were recorded as sheep with identifications based on the studies by Zeder & Lapham (2010) as well as Boessneck *et al.* (1964).

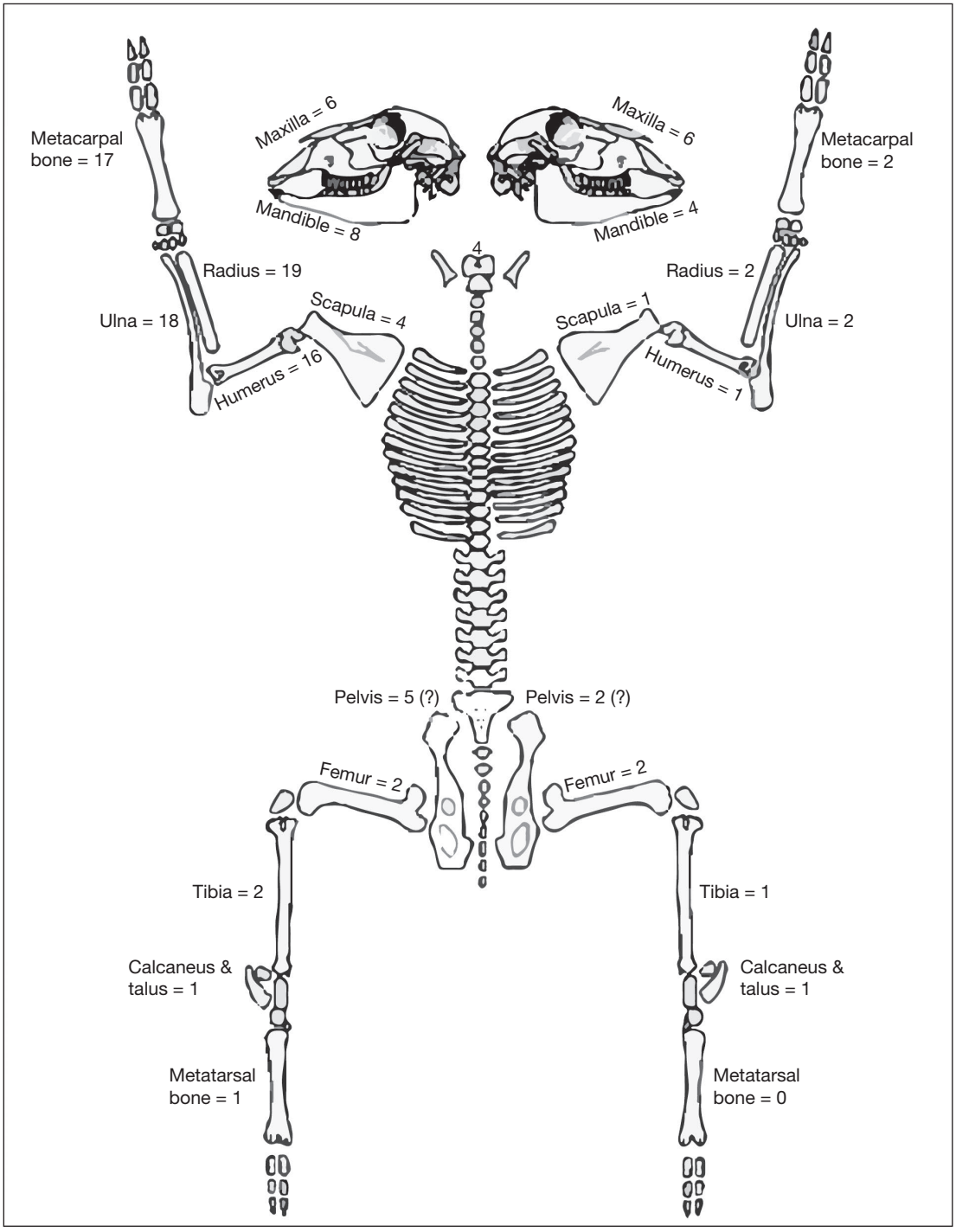

Fig. 7. — The distribution of the sheep bone assemblage (the empty diagram is produced by C. Y. Gündem & S. Sarı).

Figure 7 shows the elements present in the sheep bone assemblage. Heavy fragmentation of skulls made it difficult to estimate the number of skulls put into the pit. At least six skulls were placed in the pit based on the number of identified maxillae. The articulated remains of left forelimbs include humerus, radius/ulna, metacarpus, and phalanges I-III. 20 pairs of phalangial sets (including phalanx I, II and III) were found and at least 17 specimens belong to the articulated left front leg. Articulated left hindlimb and forelimb remains indicate that two partial sheep carcases had been placed in the pit. This is supported by the identification of an incomplete vertebra row and a right and left femur-tibia (both without any fused epiphyses) and a set of proximally fused radius and ulna remains (see Tables 2; 3).

The reconstruction of mortality profiles for sheep remains from the pit were calculated using humerus, first phalanges and metacarpus remains. Among the 16 left humeri, the distal epiphyses of eight were in the process of fusing and the other

TABLE 2. — The epiphysis fusing periods of only left front leg sheep remains from the pit. Abbreviations: **dist.**, distal; **prox.**, proximal.

Sheep (*Ovis*) left front leg	Unfused	Fusing	Fused
Scapula-coracoid	1	–	3
Radius prox.	–	–	17
Humerus dist.	–	8	8
Metacarpus dist.	16	–	1
Humerus prox.	16	–	–
Ulma prox.	17	–	1
Radius dist.	17	–	1

TABLE 3. — The epiphysis fusing periods of right front and back leg sheep remains from the pit. Abbreviations: **dist.**, distal; **MC**, metacarpus; **MT**, metatarsal ;**prox.**, proximal.

Sheep (*Ovis*) right front & back leg	Unfused	Fusing	Fused
Radius prox.	–	–	2
Humerus dist.	–	–	1
Tibia dist.	1	–	
Metapods dist.	1 (MC)	–	1 (MT)
Calcaneus prox.	1	–	–
Femur prox.	2	–	–
Humerus prox.	1	–	–
Ulma prox.	1	–	1
Radius dist.	1	–	1
Femur dist.	2	–	–
Tibia prox.	1	–	–

TABLE 4. — The epiphysis fusing periods of left back leg sheep remains from the pit. Abbreviations: **dist.**, distal; **prox.**, proximal.

Sheep (*Ovis*) left back leg	Unfused	Fusing	Fused
Tibia dist.	2	–	–
Metatarsus dist.	1	–	–
Calcaneus prox.	1	–	–
Femur prox.	2	–	–
Femur dist.	2	–	–
Tibia prox.	2	–	–

eight were found in a fused state (none of the proximal epiphyses from the left humerus were found in a unfused state). 19 pairs out of 21 first phalanges displayed unfused proximal epiphyses. Similarly, among the metapodials sixteen left metacarpi, a left metatarsus and a right metacarpus displayed unfused distal epiphyses while a right and left metacarpus each included fused epiphyses (Table 2). None of the long bone epiphyses from the left hindlimb were found in fused state (Table 4). The fusing/fused humerus and the unfused first phalanges from the left front leg articulated limb remains indicate that those sheep should have been killed around a year old. Zeder [2006: 107, fig. 15] grouped those kind fusion state under the Group C.

Fused epiphyses of distal radius and proximal ulna from the left as well as the right sides indicate sheep between 30 and 48 months old (they probably belong to the same individual) (Zeder 2006: 107, fig. 15). Among identified vertebrae, very few were detected with fused or fusing disks. Unfused vertebrae should be from animals aged less than four years, whereas fused vertebrae could be from animals aged over five years (again, these could be belonging to the possible complete sheep skeleton) (Habermehl 1975) (Table 3).

Partial skull remains include six pairs of maxillae as well as eight left, and six right hemi-mandibules. High fragmentation of skull remains is clear and likely occurred as a result of pressure from overlying sediment as well as human impact just before killing the animal (see below). Teeth from the eight left mandibles were used to estimate the killing age of these individuals. Specifically, teeth including the fourth deciduous premolar (dp4) and first molar (M1) were helpful to estimate the age at death; the state of eruption and wear of these teeth indicate that these individuals were killed more or less between 12 and 18 months of age (*Group IV*, based on Zeder 2006: 96, fig. 32).

Based on horncore morphology, two ram skulls were identified in the pit; these skulls were positioned facing the bottom of the pit. Four other skulls with horncore bases (portions of the frontal bone) were unearthed and it could be assumed that these individuals were probably juvenile rams with still growing horns.

The size of the sheep was examined using biometrics for two groups based on age. The first group includes the juvenile sheep with unfused epiphyses (e.g. unfused radius and humerus) and the second group includes the smaller number of remains of adult sheep. Biometric data from the separate age groups are used without considering if they belong to the same individual. Results based on LSI values indicate that juvenile and adult sheep from the pit are clearly smaller than the standard animal (a female wild sheep, *Ovis orientalis*). The median LSI for the juveniles (–0.0833) is significantly smaller than that for adults (–0.0475). However, the box and whisker graphic suggests that there were rams among the juvenile sheep – a conclusion confirmed by the horncore remains – as well as female sheep among the adults (Fig. 8).

Biometrics were also used to calculate the shoulder height of the adult sheep from the pit according to the method provided by Teichert (1975). The complete bone remains from sheep indicate that the shoulder heights of the animals were between 58.9 and 61.1 cm (based on a metacarpus with 12.3 cm in length and two radii 14.65 and 15.2 cm in length). The sample size is too small for a detailed analysis of sex based on shoulder height. These results show that the sheep remains from the pit are clearly domestic animals which are much smaller in size than the wild standard animal. Nineteen sheep individuals (MNI) were recovered from the pit, based on a total of 19 left radii.

MODIFICATIONS ON ANIMAL BONES

Modifications on the animal bones can indicate work processes during and after killing the animal, such as cut-marks or traces of fire. Modifications may reveal possible pathological changes during the lifetime of the animal as well. Only few cut marks are evident on the remains from the pit. No traces of breakage for marrow extraction were observed on the bones. Cut marks were identified on both the metacarpus (right) and metatarsus (left) from the almost complete cattle. A few dull and shallow

cut marks on the metacarpus are located on the medial aspect of the dorsal portion of the proximal end. Parallel and clear cut marks were also detected on the proximal metatarsus. Similar parallel cut marks were detected on two cattle ribs as well.

Cut marks were detected on sheep remains as well; but again they appear only in a very small numbers. A second phalange with an unfused proximal epiphysis display a deep cut mark. Slight cut marks are visible on the dorsal side of a right tibia that might belong to an almost complete sheep; this probably occurred during the skinning process. A sheep skull with strong human impacts was found. It is clear that the tool used was much heavier than a simple blade or stone knife, and perhaps it was a hafted axe or another heavy tool. Three strong parallel chop marks were found on the back part of the skull (*planum parietal* region). These blows on the head were probably done to kill the animal or maybe (less likelihood) happened as the head was separated from the body (Fig. 9).

INTERPRETING THE PIT DEPOSIT

Horwitz (1987) as well as Kansa & Campbell (2004) have pointed out in their studies how to decode the animal bone remains found in tombs and graves, which might have been associated with possible sacrifice and ritual activities. Horwitz (1987: 251) has argued that burial offerings are often characterized by one or more of the following seven features:

– close association with a tomb, or with human remains;
– a narrow range of animal species;
– deliberate selection of particular parts of the body;
– body parts (such as limbs) in articulation;
– preference for one side of the body;
– age-based selection;
– sex-based selection.

In regards to the first criterion, the pit at Tepecik-Çiftlik is located in an open space and in the following level the parcel was kept as an open space. Graves have been excavated from and around this "open space"; however their relation to the pit is still unclear.

Second, ritual deposits are often associated with a narrow range of animal species. At Tepecik-Çiftlik, despite the wide range of taxa recovered from the overall faunal assemblage, only cattle and sheep have been identified from the pit. Both remains of the species are found abundantly in the animal bone remain assemblage from the site.

A third feature of ritual deposits is the deliberate selection of particular parts of the body for deposition. In our pit feature, a combination of complete carcasses and partial articulated limbs were placed in the pit. An almost complete cow, possibly one or maybe two complete sheep and at least 16 left front leg remains from sheep have been deliberately placed into the pit. Besides the limb bones, sheep skulls should be taken into consideration as deliberate selection as well.

Fourth, body parts (such as limbs) in articulation are often characteristics of ritual deposits. At Tepecik-Çiftlik cattle and sheep body parts have been found in articulation which clearly differentiates this pit from "normal" household deposits.

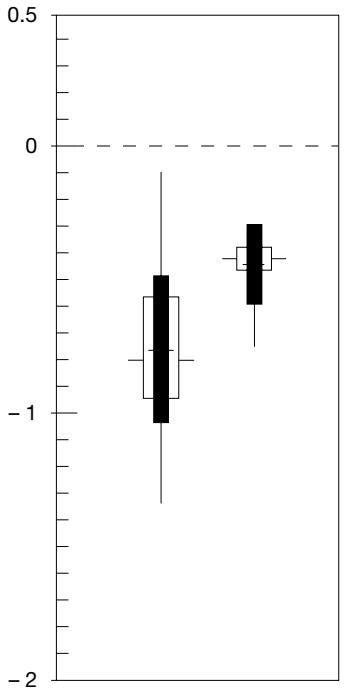

Fig. 8. — The LSI calculation of sheep remains from pit. The left box & whisker diagram represents the size of the juvenile sheep (n: 51) and the right one adult sheep (n: 7).

In some cases, ritual deposits may show a preference for one side of the body. In our pit feature, in addition to a complete bull, it seems that the right side of cattle body parts have been purposely placed in the pit. On the other hand, in addition to the possible complete sheep carcasses, the left front legs of sheep have been deliberately deposited into the pit.

Ritual deposits sometimes show evidence for specific age-based selection. At Tepecik-Çiftlik cattle individuals were averagely aged to 15 months old, with a range between *c.* 12 to 18 months old. Sheep were killed at two ages: most individuals were culled between 12-18 months old while two individuals were slaughtered as adults.

Finally, ritual deposits may be characterized by sex-based selection. In our pit feature, some of the sheep skull remains were identified as rams based on their horns. However, LSI calculations indicate that female sheep were present as well in the pit.

DISCUSSION

The pit is located in an open-space and surrounded by graves. At the very first sight, the pit with its contents fit very attractively into the picture of an offering pit for the ancestors or an offering pit associated with mortuary rituals. The Tepecik-Çiftlik pit shares many features of a ritual sacrifice identified by Horwitz (1987) as well as Kansa & Campbell (2004). However, other specialists from the excavation have mentioned their concerns about this idea since the pit and graves do not have any direct contact with each other.

During the second architectural phase of the Late Neolithic (*c*. 6400-6300 BC), the pit was surrounded by two buildings. Structure three is located *c*. 3 meters northeast and structure seven is *c*. 10 meters southeast of the pit (phase 3.2c). The pit's location was still in an open space during the immediately following phase (phase 3.2b). During the next architectural phase, structure four was erected on top of and covering the pit (phase 3.2a). Deposit accumulation between phases 3.2b and 3.2a could be recognized clearly; therefore, again we do not have any direct information that the pit had been intended as a foundation deposit.

Perhaps the role of this special deposit should be evaluated from another perspective. The animal remains and body parts might have originally been displayed and later buried into this pit. Some of the missing parts of the complete carcasses might be explained this way since some bones have been taken away by dogs or they went missing during transferring them to the pit or maybe went missing as the meat was distributed among the inhabitants. Another point to discuss is the relation between the pit's volume and its contents. The pit is quite crowded for its small size; it is probably impossible to squeeze even a whole sheep into the pit. Therefore, it is almost certain that the flesh was removed from the skeletons before the bones were placed into the pit. This determination as well as the presence of cut marks on the remains suggest that the meat from these animals was removed for consumption prior to burial. However, the bones were not disarticulated and ligaments held the bones together when they were deposited – presumably immediately after butchery.

A narrow range of animal species were identified from the pit. Cattle and sheep were the only animals placed into the pit and they were quite commonly kept domestic animals at the site. Skull finds from sheep indicate that rams have been culled; however, this sex identification could not be applied for all of the individuals in the pit. This does not mean all the sheep finds originated from rams, yet it gives clues. Killing the rams in great number for a social event or for another act would not affect the survival of the whole herd since a small number of rams would be enough for mating to secure the herd.

Another interesting point is the presence of at least 16 articulated left forelimbs from sheep in the pit. This distribution is certainly not random and suggests that the part of the skeleton, the side, and even the number of individuals probably played an important role. Perhaps the front left forelimb might have been offered since it is closest to the heart? Apparently, the articulated limb, the left side and probably the number of individuals played an important role in the ritual act represented by this deposit.

The killing pattern of sheep indicates that sheep represented with left forelimbs were killed at the age of 12 months old and skull remains indicates those were killed between the ages of 12 and 18 months old. Unfortunately, we can not match the long bone remains with the skull remains. However, if we assume that left leg forelimbs and certain skulls are associated with each other than we can compare the relation between fusion and dental wear based on Zeder's study. Zeder (2006) presented the correlation between fusion and dental groups for sheep after studying the sheep and goat collections from the Field Museum of Natural History. Individuals aged older than fusion group C correlate with dental group IV; therefore those individual, which are represented here with left forelimbs and certain skulls, from the pit should have been killed between 12 and 18 months of age (Zeder 2006: 117, fig. 33).

The killing pattern of sheep could help to find out the approximate time period of this human activity. Indeed in nature, the breeding period of wild Anatolian sheep (*Ovis gmelinii anatolica* Valenciennes, 1856) takes place in November as well as in December and after five months of gestation (148 days), lambs are born in April and May, when weather is mild and grazing rich (Arıhan 2000). Henton's research about the birth seasonality of sheep at Çatalhöyük, located 200 km west of Tepecik, based on oxygen isotope and dental microwear, suggest the birthing season peaked in late spring in Neolithic Çatalhöyük (Henton 2012: 3271). If we assume the same lambing pattern was present at Tepecik, then it appears that the behaviors represented by the pit took place during end of spring or early summer based on the left front leg limbs and the teeth.

The cattle were killed before they reached their optimal weight for slaughter. Fodder consumption of the animal as related to body weight is considered optimal at approximately two years old. None of the cattle remains found in the pit reached the age of two.

The question remains, what were this pit and the animal remains for? Was it an offering pit or just a pit where the offerings remains were placed? The pit contains no extra installation or no marker has been found above the pit. No destruction has been observed within the pit; therefore, the pit was dug out and animal bone remains were placed and closed at once. The undisturbed articulated limbs indicate that after they were defleshed and, perhaps immediately or shortly afterwards, they were placed in the pit. No other offerings were placed in the pit. As a result, these details indicate that the pit itself was probably not sacred, but rather functioned as a resting place for offered or sacrificed animals.

Tepecik-Çiftlik is not the only Late Neolithic site on the Anatolian plateau. "Special deposits" containing animal bone materials have also been recovered from Çatalhöyük (Russell *et al.* 2009; Russell 2012; Russell & Martin 2013) and Domuztepe located *c*. 380 km southeast of Tepecik (Kansa *et al.* 2009).

At Çatalhöyük, Russell and colleagues have labelled specific deposits of animal remains as "special" or "commemorative". These deposits were usually placed under platforms on the south and west of the houses. These "commemorative deposits" are quite variable and the contents of each are a very personal collection of items including both wild and domestic mammalian taxa as well as mollusc and bird remains (Russell *et al.* 2009: 113, 114; see tables 1-3 for the identified species and their skeletal elements). Animal bone remains were not the only items placed in intramural

Fig. 9. — A sheep skull with strong human impacts, probably caused by a hand axe. Scale bar: 10 cm.

pits at Çatalhöyük; objects made of flint, obsidian, ground stone fragments, shell, seeds, worked stone, flint polisher were also found. For Russell and colleagues, those collected and buried animal remains are representatives of a larger set used in ritual practices associated with the houses in which they are deposited. They noted that these ceremonies may mark key points in the life cycle of the house and the deposits indicate the beginning, remodelling and end of houses (Russell *et al.* 2009; Russell 2012).

A very large pit (5 m × 4 m × 1 meter in depth) has been uncovered and carefully described at Domuztepe. This complex feature dates to the mid-6th millennium BC and was found to contain over 10 000 highly fragmented bones from both animals and humans. Known as the "Death Pit", beside the bones, large numbers of potsherds, stone artefacts, botanical remains, and the other archaeological finds like bone tools, beads, stamp seals and remains of plastered baskets were recorded from the pit. Kansa *et al.* (2009) point out that the results of the animal bone remains from the pit differ itself from the rest of the animal bone assemblage unearthed in the site. Five domestic species and more than 20 wild animal species including fish and bird remains were identified from the pit (Kansa *et al.* 2009: table 3). Kansa *et al.* concluded that the "Death Pit" was formed over a short timeframe and that living herds were culled in a single mortality event. In addition, cattle are more abundant

in the Death Pit than in "normal" deposits at the site. Prime aged animals are also more abundant emphasizing the high value of the animal resources conspicuously deposited in the pit (Kansa *et al.* 2009: 171).

Another comparison is available from the PPNB site of Kissonerga-Mylouthkia on the island of Cyprus. Here Croft (2003) described a situation in which the partial and disarticulated remains of humans along with the complete, un-butchered carcasses of nine sheep and 13 goats, most of them juvenile, were thrown into a well. The co-mingled human remains and animal carcasses in the same context and the lack of evidence for meat consumption lead to the conclusion that this context represents a case of ritual sacrifice (Russell 2012).

Moreover, a similar case was reported by Becker (2002) from Basta, a large PPNB site in Jordan. In this case a complete cow with its unborn calf was buried nearby an adult human male burial. The cow was killed and butchered prior to deposition. After stripping off the meat, the skeletal elements of the cow were placed almost in anatomical position for burial. The meat consumption, re-organizing the skeletal in anatomical position and the human burial led to the conclusion of a slaughter in a ritual context.

Other examples of ritual deposits of animal remains in pits show some similarities with the pit from Tepecik-Çiftlik and as well as with each other. However, the most and clear common point is the relation between the pits and the human burials. Apparently, even the pit from the Tepecik-Çiftlik appears to have no direct contact with the graves around it but even in that sense it was placed into sacred ground, where the ancestors of the inhabitants were buried.

It is clear that the pit deposit from Tepecik-Çiftlik was special and filled up after a specific occasion that likely occurred in the summer. No temple or possible sacred installations were found around the pit or in the architectural level. However, this does not mean that the ceremonies did not occur under the sky, in an open space, or away from the site and the rests of this act was placed into a pit where it might have been thought to be a sacred ground.

CONCLUSIONS

The pit assemblage from Late Neolithic Tepecik-Çiftlik should be categorized as a "special deposit", as the remnants of a "special event" or as "ceremonial trash".

This assemblage of bones from the Tepecik-Çiftlik pit is unique and can certainly not be identified as common kitchen garbage since no traces of breakage for marrow extraction, no burn marks, no random animal bone remains from various species and no inorganic finds mixed with organic waste were found in the pit. The contents of the pit do not have any similarity to common kitchen garbage present in other parts of the site.

Could the pit represent regular management practices at the site rather than ritual behaviors? Could the cattle and sheep deposited in the pit have been culled in response to shortages of fodder for the winter period? Or could they represent animals that died suddenly of disease? However, these more mundane explanations do not explain why skeletal elements were placed in an articulated state, why long bones were not processed for marrow, or why so many articulated left sheep forelimbs and right cattle forelimbs were deposited together. In addition, evidence for butchery and the presence of partial skeletons do not support the disease explanation where one would expect entire carcasses to be disposed of. Moreover, the low intensity of butchery is striking compared to kitchen waste, with the exception of the strong blows on the sheep skull.The pit itself looks like a regular pit and no extra installations were detected from the pit or around pit which could be called sacred. However, the pit was placed into sacred ground since graves indicate that the area was special ground for the inhabitants since they buried their ancestors. The author suggests that the pit is a regular pit but that its contents are special. Therefore the pit is rather a resting place for the animal bones after a specific ritual act. We therefore interpret this unique pit not so much as an offering pit, but as a special deposit commemorating a special important event.

The author assumes that there had been an "offering act" or a "special act" since the pit assemblage clearly meets almost all of the criteria mentioned by Horwitz (1987) as well as Kansa & Campbell (2004) as typical of ritual deposits. However, there is no evidence of frequent repetition. The human act represented by this pit might have been taken place once and did not occur again or other pits are yet to be found. Whatever this event was commemorating, it did involve a large quantity of meat from the butchery of three cattle and 19 sheep. This volume of animal products represented here reflects another unusual feature of this pit which separates it from the events of daily life.

In the course of continued excavation at Tepecik-Çiftlik and at other nearby settlements, the discovery of similar pits will help us clarify the interpretation of this feature. The absence of architectural installations, symbolic archaeological features or other associated finds such as figurines or ceramics makes it difficult to label the function and purpose of this pit. However, the combination of a relatively large number of individual animals representing a narrow range of ages and the presence of specific and articulated segments of the skeleton clearly identify this deposit as "special" and link this unique pit with other ritual deposits across the Neolithic Near East.

This study decipher an important and previously undocumented ritual act, which has been carried out *c.* 8000 years ago by the inhabitants of Tepecik-Çiftlik. Given the number of animals involved and the large amount of meat produced in this slaughter event, the latter may have involved participants from other Neolithic settlements in the region, particularly given Tepecik's proximity to the Göllüdağ obsidian sources which were used by diverse communities from across the region. Ongoing work at the site will continue to add to our understanding of the complex ritual practices evident in Neolithic Anatolia.

Acknowledgements
I would like to thank E. Bıçakçı, Excavation Director of the Tepecik-Çiftlik project, who gave me the opportunity to work on the material and I would like to extend my thanks to A. Büyükkaya & Y. Çakan, who helped me with the excavation data. I would like to thank my students M. Seçmen & A. Badem, who helped me with the bones. My special thanks also to N. Russell & B. Arbuckle, for reading my paper and making constructive comments. I would like to thank my wife as well, who had to listen all my ideas over and over. I finally thank the two anonymous reviewers of *Anthropozoologica* for their careful reading and their judicious remarks.

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Submitted on 7 September 2018;
accepted on 29 April 2019;
published on 16 August 2019.