

## Ritual depositions of *Sus domesticus* from Poduri – Dealul Ghindaru (Cucuteni culture, Bacău County, Romania)

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**Résumé:** Les dépôts rituels de *Sus domesticus* trouvés à Poduri-Dealul Ghindaru (culture Cucuteni, département Bacău, Roumanie). Sur le site de Poduri (département Bacău, Roumanie), l'étude archéozoologique a mis en évidence le dépôt intentionnel de deux individus juvéniles de porc (*Sus domesticus*) quasiment complets (S1 et S2) sous une habitation attribuée à la phase A2 de la culture Cucuteni. Ces deux suinés auraient en outre été déposés dans deux fosses distinctes (Gr. 56 et Gr. 55). De telles découvertes sont rares pour la culture Cucuteni, ce qui ajoute encore au caractère exceptionnel du dépôt mis au jour à Poduri. L'étude taphonomique a montré, pour les deux individus, que l'homme était intervenu au niveau de la cage thoracique : une éviscération partielle a été pratiquée dans le cas de S1, elle a été totale dans le cas de S2. Les interventions anthropiques mises en évidence sur les squelettes indiquent également des différences de traitement entre les deux suinés : S2 a ainsi probablement été écorché avant d'être déposé dans la fosse. Les animaux ont été sacrifiés à l'âge de 10 mois (S1) et de 11-12 mois (S2). À cet âge les porcs n'ont pas atteint leur maturité pondérale (c'est-à-dire le poids permettant une rentabilité maximale du point de vue économique). Par ailleurs, il est vraisemblable que l'individu S2 ait été une femelle, un os attribué à un fœtus de suiné ayant été identifié dans la même fosse (Gr. 55).

**Key words:** zooarchaeology, ritual deposition, *Sus domesticus*, taphonomy, Cucuteni culture.  
**Mots clés:** archéozoologie, dépôt rituel, *Sus domesticus*, taphonomie, culture Cucuteni.

### Introduction

The Eneolithic (Chalcolithic) tell at Poduri – “Dealul Ghindaru” is located on the right terrace of the River Tazlăul Sărat, in a point named “Între Pâraie” by the locals. This location falls within the territory of the former village “Rusăiești”, presently part of the outskirts of the Poduri village, Poduri township, Bacău County, Romania (fig. 1).

The tell harbors remains belonging to the Precucuteni II and III, Cucuteni A,

A-B and B cultures. It covers a surface area of approximately 12 000 m<sup>2</sup> and has a slightly ellipsoidal shape. The northern side of prehistoric settlements which existed on the emplacement of the tell was defended by a steep slope. This northern slope was eroded by the Tazlăul Sărat River in historic times and, as a result, the edge of the river's terrace now cuts through the center of the archeological deposits of the tell. Another steep slope that marked the eastern side of the tell, was

leveled by housing development and agriculture (orchards and vineyards). Southward, a smoother, terraced slope descends toward the Pârâul Bisericii stream. Access to the tell was from the northwest and was defended, in prehistoric times, by 1 or 2 ditches. The ditches were

probably abandoned during the Cucuteni period when the settlements extended by more than 200 m on the western side of the tell. The total surface containing vestiges of houses and archeological artifacts is approximately 60 000 – 80 000 m<sup>2</sup> (D. Monah et al., 2001).



Fig. 1 - Geographical position of the Poduri site (Bacău county, Romania).

#### **Archeological situation**

During the summer 2000 archeological campaign we discovered on the floor of a Cucuteni A2 unburned house, two domestic pig (*Sus domesticus*) skeletons. The skeletons were deposited in two separate pits designated as Gr. 56 and Gr. 55 (C. Bem and A. Bălăşescu, 2003) and are interpreted by archeologists as representing

ritual depositions in foundation pits of the house (C. Bem, 2007).

Within the same stratigraphic sequence was identified a pit covered by the remains of the same house and containing the remains of a *ca.* 1 year old infant (with the extremities of the limbs and a few ribs missing). This stratigraphic situation suggests that the infant was, along with the two animals, part of a ritual

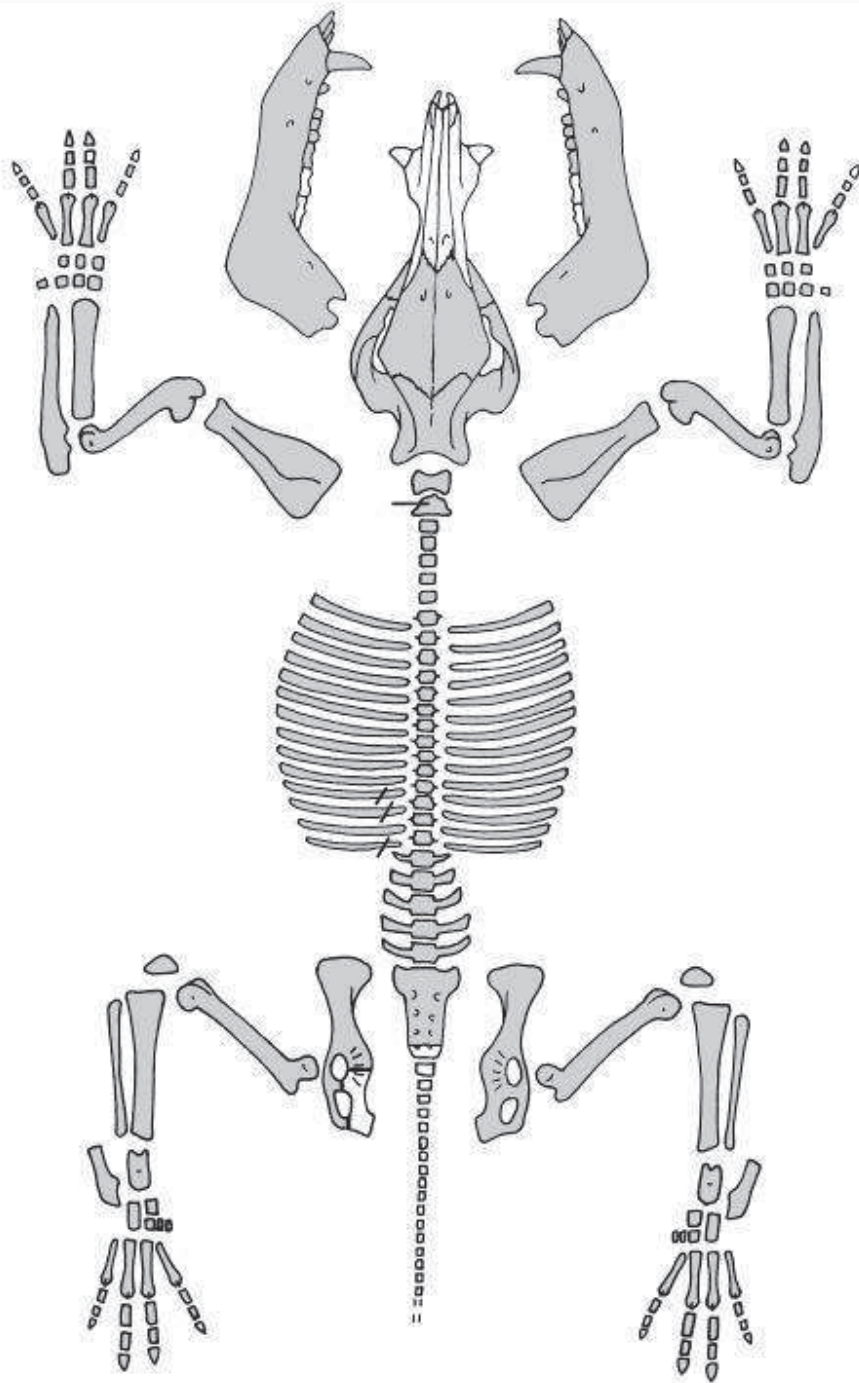


Fig. 2 - Anatomical elements of the *Sus domesticus* skeleton S1 discovered in Gr. 56 (grey) and anthropogenic marks (species description card based on Helmer, 1987).

deposition for the consecration of the inhabited space (C. Bem, 2007).

Details concerning the dimensions of the pits were not published. The only available information is a statement that “the bones, although complete, are only connected anatomically in small groups, due to the original small size of the pits in which the individuals were crammed” (C. Bem, 2007). It should also be noted that, despite the importance of the faunal material, the content of the two pits containing the pig skeletons was not sieved. This could explain the loss of some of the smaller-sized anatomical elements. The faunal material was analyzed in spring 2001 in the Archaeozoological Laboratory, the National Center of Pluridisciplinary Research from the Romanian National History Museum (Bucharest).

#### **Description of the faunal material**

Skeleton no. 1 (S1) was discovered in Gr. 56. It was deposited on a bed of five *Bos taurus/Bos primigenius* rib fragments, of which two represent proximal and three represent distal extremities. The relatively large sizes of the five ribs preclude accurate identification of the species: domestic cattle or aurochs.

The majority of the skeletal parts have been recovered for S1. The missing anatomical elements are: a terminal sacral vertebra, caudal vertebrae, right rib III, sternum, left pubis, phalanx 2 of a main digit, four phalanxes 2 and 7 phalanxes 3 from lateral digits (fig. 2).

If the absence of the vertebrae and phalanxes could be explained by loss due to their small size and the lack of sieving of the pit contents, the absence of the pubis and rib may be due to deficient excavation and sampling technique for zooarcheological

material. The sternum was probably still cartilaginous (or at best, in early stages of ossification, judging by the young age of the animal) and, hence, did not preserve.

The cranial skeleton is relatively complete (there are cracks at the premaxillaries). The skull shape is comparable to that of primitive pig species. The inferred length of the snout is similar to that of wild pig. However, the shape of the lacrimal bone (square rather than elongated), the profile of the forehead (convex rather than straight) and the angle between the parietals and the occipital bone, all reminiscent of domestic pigs, led us to assign this individual to the domestic species (*Sus domesticus*) (fig. 3)

The age of S1 was estimated based on the mandible dentition (dental eruption and wear). Presence of P<sub>1</sub>, dP<sub>2</sub>, dP<sub>4</sub>, M<sub>1</sub>, as well as an erupting M<sub>2</sub>, indicate an age of around 7-8 months (according to P. Rowley-Conwy, 1993) or 8-10 months (according to M-P. Horard Herbin, 1997); on the other hand, according to S. Hilson (2005), M<sub>2</sub> erupts between 7 and 13 months after M<sub>1</sub> (depending on the maturity type of the species). These show the uncertainties of age estimation based on dentition. However, considering that this Eneolithic individual belonged to the domestic species, we can relatively safely assume a late, or at least medium, maturity type. This would suggest an eruption age for M<sub>2</sub> of around 13 months (late maturity type) or 10 months (medium maturity type). The latter age seems to be better supported by the incomplete eruption of M<sub>2</sub>, which had only broken through the mandibular edge, and by the stage of primary wear of M<sub>1</sub> (fig. 4).

The axial skeleton is represented by 30 vertebrae: 7 cervical vertebrae (atlas, axis and 5 cervicals), 14 thoracic vertebrae, 5 lumbar vertebrae and 4 sacrals. The greatest majority of appendicular skeleton bones are present.

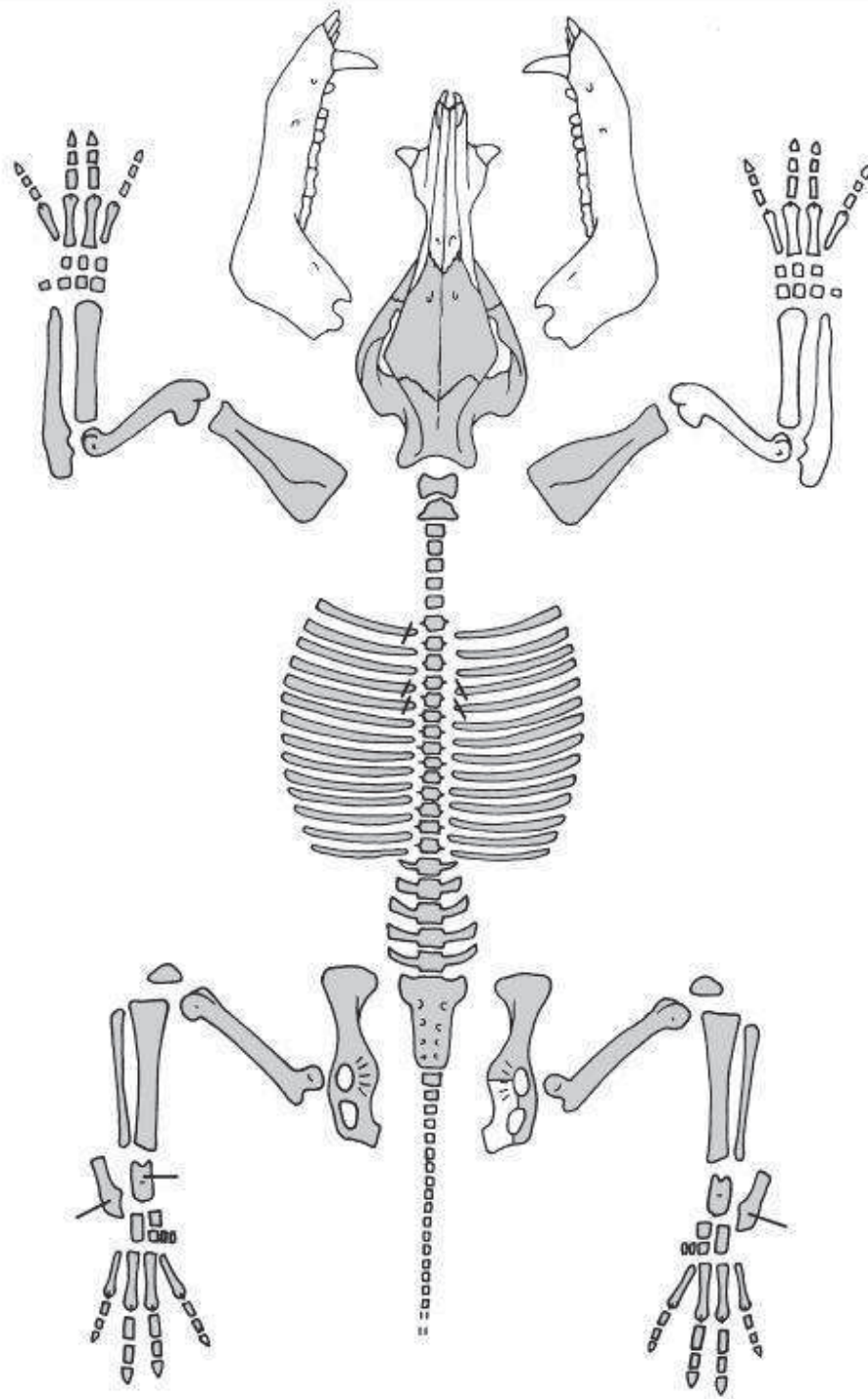


Fig. 6 - Anatomical elements of the *Sus domesticus* skeleton S2 discovered in Gr. 55 (grey) and anthropogenic marks (species description card based on Helmer, 1987).

The bones have unfused epiphyses, which corroborates our interpretation of a juvenile individual (V. Forest, 1997) and the inferred dental age. Epiphyses generally fuse at around one year (12 months) of age in *Sus domesticus*, starting with the proximal radius and the acetabular socket of the coxae (E. Schmidt, 1972).

Taphonomic study of S1 produced interesting observations regarding intentional human interventions. Fine to semi-coarse cut marks made by a stone implement are present on the axis, on the left side. These are interpreted as indications of the way the animal was sacrificed, showing that the animal's neck was sliced, thus sectioning the respiratory tract and major blood vessels (carotid and jugular), an operation still practiced today in rural communities. Also, at the level of left ribs 11, 12 and 14 we noted cut marks on the inner side of the dorsal third/quarter, which could have been produced while an organ was being pulled out of the rib cage (fig. 5). Based on these observations we hypothesize that the animal was killed by slicing its neck and then it was eviscerated (partially or, possibly, totally) at the level of the rib cage, before being deposited in the ritual foundation pit of the Cucuteni A2 house.

Skeleton no. 2 (S2) from Poduri was discovered in Gr. 55 and, like S1, is not complete (figure 6).

The skull is broken at the snout which makes it difficult to reconstruct its shape. However, close similarity of most anatomical features with those of S1 supports assignment to the domestic species. The mandible is missing, therefore the age at which the animal was sacrificed was determined using dental eruption and wear of the upper maxillary with the following dental formula: dP4, M1 and M2 still erupting. As noted previously, dental age estimates vary within wide limits between different authors and as a function

the maturity type of a given species. Thus, we can infer have an age of 9-10 months (according to P. Rowley-Conwy, 1993); or 10-12 months (according to M.-P. Horard Herbin, 1997); or between 10 and 13 months (according to S. Hilsson, 2005). Supporting an older age of S2 as compared to S1 is the fact that in S2 a quarter of M<sup>2</sup> is erupted whereas in S1, M<sup>2</sup> is just breaking through the alveolus of the maxillary bone. Consequently, we propose a difference in age between the two individuals of only 1-2 months and therefore an age of 11-12 months for S2 (figure 7 and 8).

The axial skeleton of S2, with 33 vertebrae, is much better represented than that of S1; we have identified: 7 cervical vertebrae, 14 thoracic vertebrae, 5 lumbar vertebrae, 5 sacral vertebrae and 2 caudal vertebrae. The sternum is missing for reasons previously noted.

The majority of appendicular skeleton elements are present for the left anterior leg and both posterior legs. The right anterior leg is represented only by a scapula; it is difficult to ascertain whether this leg was cut in ancient times or it was not collected during excavation. In any instance, the right scapula bears no marks that could have pointed to cutting of the leg at that level. The absence of a pubis is also noted for the right posterior legs. The unfused epiphyses of all the bones of skeleton S2 argue for an age no older than 12 months. Biometrically, the long bones of S2 are slightly larger than those of S1, which could be used as an argument for an older age for S2 as compared to S1 (fig. 9).

Taphonomically, S2 exhibits more human intervention marks than S1. Such marks were identified on the ends of ribs 4 and 5 from both sides of the body, as cracks made with a hard object (possibly an axe) or by a human trying to tear them from inside out). The position of the cracks



1



2

Fig. 3 - Mandible and skull (left) and skull (right) of the *Sus domesticus* S1 discovered in G56 at Poduri.



1



2

Fig. 4 - Skull in norma basilaris (left) and mandible (right) of *Sus domesticus* S1, showing dentition used in age estimation.



1



2

Fig. 5 - Human cut marks at the level of the axis (left) and the left ribs (details) 11, 12 and 14 (right).



1



2

Fig. 7 - Skull of *Sus domesticus* S2 from Gr. 55; left – norma lateralis left, right – norma lateralis right.

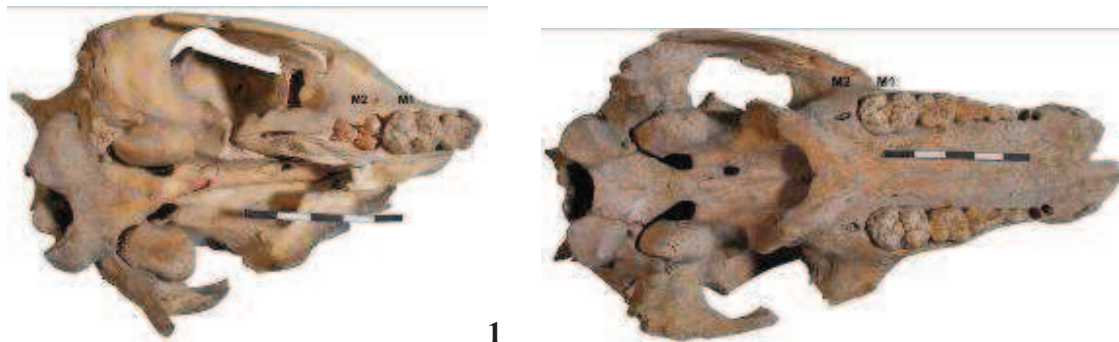


Fig. 8 - Comparison between *Sus domesticus* maxillary dentition of S2 (left) and S1 (right); in S2, M2 had already erupted through the maxillary edge, while in S1, this tooth was just breaking the bone.



Fig. 9 - Comparison between anatomical elements: humerus, radius, ulna and femurs (left S1 to right S2).



Fig. 10 - Human cut marks on ribs 4 and 5 (left) and rib 1 (right).





Fig.11 - Human cut marks on the calcaneus (left and right) and the left astragalus (middle).



Fig. 12 - Right humerus of a pig foetus (from left to right): norma dorsalis, norma medialis, norma ventralis and norma lateralis.

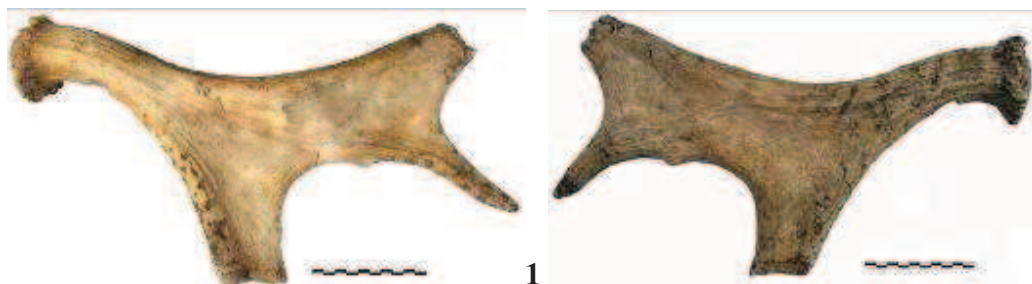


Fig. 13 - *Alces alces* – left antler found at Poduri (norma dorsalis in left side et norma basilaris in right side).

indicates that they were made from the inside of the rib cage and, therefore, after the animal was eviscerated (figure 10). The proximal part of rib 1 (body side identified), also bears a cut mark made from the inside of the animal (fig. 10).

Numerous cut marks are present on the tarsal bones, especially on the calcaneus and astragalus (only the left one). However, since the skeleton was not found in anatomical connection, the scope of these cut marks is difficult to determine. Nevertheless, they may have resulted from deep cuts of the skin, which is quite tough at this place; it is also possible that the animal was skinned or butchered prior to being deposited in the pit (fig. 11).

Interestingly, the remains of a pig foetus (a right humerus, greatest length = 25,8 mm ; figure 12) accompanied the pig skeleton in the pit Gr. 55 (W. Prummel 1987b). This could indicate that the animal was pregnant when it was sacrificed. *Sus domesticus* females are known to be reproductively mature at an age as early as 8 months (M. Udrescu et al., 1999).

In conclusion, the animal represented by skeleton S2 was a female that was completely eviscerated at the level of the rib cage and skinned and butchered at the level of the posterior legs.

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The species identification of the two skeletons is supported by fossil DNA analysis performed by Greger Larson (Oxford University) in 2006 within the project “*The bioarchaeology of pig domestication and husbandry: its role in the biological, economic and social development of complex human society*” led by Keith Dobney (University of Durham). The genetic signature of the two pig individuals from which tooth remains have been analyzed (inferior premolar for

S1 and superior premolar for S2) ascribes them to the Asiatic pig haplotype.

Recent paleogenetic studies (G. Larson et al., 2007) show that wild boar domestication centers that appeared in Europe during the Eneolithic produced a European domestic pig that was genetically different from the Asiatic domestic pig brought on Romanian territory from the Near East by the first early Neolithic communities. There is the possibility to find such domestication centers in Romania (in the South). Their presence, proved by paleogenetic studies, would have been extremely difficult to ascertain using classic archaeozoological methods.

## Discussion

The spirituality of the Cucuteni communities was complex, as demonstrated, among others, by documented instances of ritual deposition of various items, such as parts of animals and humans (studied as bones), pots and tools. These are found buried beneath the floors of houses and their means was probably to consecrate the space inhabited by the family.

Excavations in the Cucuteni settlement at Poduri have led to several other discoveries of animal remains within ritual contexts. Particularly meaningful is the excavation, in 2001, of a shallow pit (25 cm deep and 95 cm in diameter) beneath the floor of a burned dwelling, that yielded a series of animal remains – a fragment of an elk antler (*Alces alces*) (figure 13) and fragments of a juvenile pig skeleton (six skull fragments, right scapula, right tibia, a left coxal fragment, a phalanx, three cervical vertebrae and a thoracic vertebra). These accompanied human remains – a foot in anatomical connection (tarsals, metatarsals and phalanges), a radius and a rib –, as well as several small-sized ceramic fragments. According to the archaeologist in charge of the excavation, the association of the human remains with animal remains, with the same

aim of ritually consecrating the inhabited space, cannot be excluded (C. Bem, 2007). Thus, the occurrence reported here is the second instance of association of human and animal remains, in a ritual Cucuteni context, at Poduri.

Another example is that of a dog skeleton deposited in a foundation pit located under a dwelling, in the Cucuteni settlement at Draguseni (Al. Bolomey and G. El Susi, 2000). At Veselyi Kut, another Cucuteni (A-B) settlement on Ukrainian territory, sheep depositions have been reported beneath the floors of some dwellings (E. Ţvec, 1996).

Thus, although relatively rare, the deposition of animal remains found in anatomical connection or not, is nevertheless documented in the Cucuteni-Tripolie areal; the scope of such depositions is thought to have been to the ritual consecration of the inhabited space. We note in these depositions the predominance of domestic animals remains (pig, dog, sheep, domestic cattle). Wild animals are poorly represented - a shed antler of elk (probably collected in the vicinity of the settlement), a species of low occurrence in Neo-Eneolithic faunal spectra (S. Haimovici, 1968 a and b; A. Bălăşescu et al., 2005).

The overall low number of ritual deposition findings could be a result of the low number of archaeozoologists involved in the study of Cucuteni sites and of a general lack of interest of archaeologists in the study of paleofaunas and in their paleoeconomic and cultural implications.

## Conclusions

Two juvenile individuals of *Sus domesticus* are described from intentional deposition structures excavated beneath the floor of a Cucuteni A2 dwelling from the Poduri – Dealul Ghindaru settlement. Evidence for intentional deposition is a rare occurrence in the Cucuteni areal, hence the importance of

the finding. The animals were sacrificed at ages of approximately 10 months (S1) and 11-12 months (S2), at which they had not reached mature weight. One of the individuals (S2) was probably a female, as suggested by the finding of a pig foetus bone in the same complex Gr. 55.

Taphonomic study points to human interventions at the level of the rib cage – at least partial evisceration in the case of S1 and total evisceration for S2. Intentional human marks also indicate differences in the treatment of the two individuals, suggesting that S2 was skinned before deposition in the pit. It is worth mentioning that both animals, although probably cut into large pieces in order to fit the relatively small pits, were not fleshed prior to being deposited, as indicated by the absence of butchering marks. This observation opens an interesting perspective on the flourishing economy of the Cucuteni community at Poduri, by indicating that the community (or maybe even an individual family) could afford to sacrifice and deposit two complete *Sus domesticus* individuals of about 40-60 kg each (J.-D. Vign, 1991). In the faunal spectrum of the Cucuteni A2 level at Poduri, the pig ranks third in terms of NR (15%) and as NMI (17%); however, we have reasons to believe that from an economic viewpoint pigs ranked second only to cattle (A. Bălăşescu, unpublished).

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