

Horse sacrifice in a Pazyryk culture kurgan: the princely tomb of Berel' (Kazakhstan). Selection criteria and slaughter procedures

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ABSTRACT

The discovery of a Pazyryk frozen prince's tomb in Berel' (Altaï, Kazakhstan) led to the unearthing of a funerary chamber enclosing two human bodies and thirteen horse bodies. The horses were buried harnessed beside the humans and some of them were wearing masks and two fake ibex horns in gold-painted wood. Meticulous excavation and the study of the *equids* resulted in a description of the animals and revealed the importance of their position in the tomb – as well as the selection criteria that led to their sacrifice.

RÉSUMÉ

Sacrifice de chevaux dans un kourgane de la culture de Pazyryk : la tombe princière de Berel' (Kazakhstan). Critères de choix et procédés d'abattage.

La découverte à Berel' (Altaï, Kazakhstan) d'une tombe princière gelée de la culture de Pazyryk a permis de mettre au jour une chambre funéraire renfermant deux corps humains à côté desquels 13 chevaux ont été inhumés harnachés ; certains portaient un masque soutenant des cornes postiches d'ibex en bois doré. La fouille minutieuse et l'étude des équidés ont permis de décrire les animaux, leur position dans la tombe et de définir les critères de choix qui ont conduit à leur sacrifice.

KEY WORDS

Sacrifice,
horse,
Pazyryk culture,
Scythia,
Central Asia,
tombs, Kurgan,
funeral rituals.

MOTS CLÉS

Sacrifice,
cheval,
culture de Pazyryk,
scythe,
Asie centrale,
tombes,
kourgane,
rites funéraires



FIG. 1. — The geographical location of Berel'.

The role of horses in Scythian funeral rituals has been well known since the excavations conducted by Rudenko in Pazyryk or other sites in Siberia, Mongolia, or Kazakhstan (Rudenko 1970; see also, for example: Bourgeois *et al.* 2000, Derevianko and Molodin, 2000; Benecke 2007; Benecke and Weber 2007). Horses are often laid to rest next to the deceased within tombs, and provided that conservation conditions were favorable, it is possible to observe harnessing, saddling and/or other decorative features on these animals.

The way in which the horses were placed within the tomb, the different types of decoration and other associated attributes, give insights into the overall funerary ritual and point towards a very elaborate, complicated and precise scenario. However, most of these funerary rites are not perceptible, as they are not related to any tangible traces. Part of the ritual scenario involves the selection, slaughter and subsequent burial of the horses to be sacrificed. Each step of this process followed precise methods that we were able to reconstruct according to different, intrinsic factors, such as the caliber and sex of the animal – and extrinsic factors, such as traces of inflicted, fatal wounds. The purpose of the analysis carried out here is to identify the practices involving

the choice of animals to be sacrificed (size, sex and age) and their post-mortem treatment (the position of these animals within the tomb).

Between 1998 and 1999, an international team from the Archeological Institute “A. Kh Margulan” in the Kazakhstan Republic, the French Archeological Mission in Central Asia and Centro Studi Ricerche Ligabue, directed by H.P. Francfort and Z.S. Samashev, conducted several Kurgan archeological excavations in the Katonkaragay region (Altai — Kazakhstan – Samashev *et al.* 2000; Francfort *et al.* 2000). The Berel' cemetery (Fig. 1), situated in a valley at an altitude of 1,200 meters, consists of about thirty Kurgans aligned along a northwest-southeast axis¹.

Kurgan n°18 consists of a stone mound with a diameter of 18.3 meters, covering a funeral chamber 4 meters deep, and 3x4 meters wide. The tomb was plundered long ago, but nevertheless contained several artifacts and the remains of four horses. Kurgan n°11 dates back to the beginning of the 3rd century BC and consists of a burial mound about 33 meters wide, covering a sepulchral pit about 5

1. Other tombs in this necropolis were excavated by Z. Samašev's team. The Kurgan n° 10 revealed 10 horses, the Kurgan n°31, 2 Equids (Samašev 2007)



FIG. 2. — Kurgan n° 11 during excavation (photo S. Lepetz).

meters underground, measuring 3 to 5 meters (see Figs 2 & 3), dug into the permafrost. The tomb contains a rectangular funerary chamber made of planks and covered in birch bark and bush branches (*Dasiphora fructicosa*), enclosing a monoxyloous sarcophagus, consisting of a hole carved into the trunk of a larch tree. In this sarcophagus, the remains of a forty-year-old man and an old woman along with clothing and other decorative elements were found.

Outside the chamber, on the north side, lying below layers of birch bark, thirteen harnessed and saddled horses were unearthed, some of which bore fake horns of golden wood or a wooden sculptured griffin on the forehead. Furthermore, the animal bodies displayed motifs depicting feline, deer, mountain sheep or griffin heads, plated with gold or tin.

The excavation of the horses in tomb n°11 turned out to be complex, since it involved animals with intact fur, skin and muscle (Fig. 4). For this reason, it was sometimes complicated to distinguish the horses from the artifacts (associated saddle, blanket, felt and

cloth). The mixed-up heap of partially decomposed soft organic material rendered the identification and the understanding of the layout of the different elements difficult. Thus, the onsite intervention of a zooarchaeologist throughout the excavation, as well as during related subsequent laboratory work, was indispensable. The greatest difficulty was identifying, distinguishing and separating the different animals. Certain zones of the excavation site were even more complex, as they contained a greater number of horses to be unearthed. The central zone of the lower level held 2m² of the hindquarters of three different animals and the forequarters of two others. In this compact agglomeration of shapeless organic matter, bones were precious indicators throughout the excavation process, as they helped differentiate the animals and provided pointers for anatomically situating the various harnesses, decorations and so on. Therefore, whenever possible, body outlines were drawn, as was the position of the skeleton once the skin and flesh had been partially removed. It is important to



FIG. 3. — The funerary chamber and the monoxylous casket. In the foreground, under the plastic, is the zone reserved for the horses (photo S. Lepetz).

point out that all the animals (aside from the two individuals in the plundered hole) conserved their skin. Therefore, bones were not drawn *in situ* but were rather reconstructed *a posteriori*.

For the purposes of this article, skeleton drawings are fundamental since bones illustrate the animal's position much better than body contours.

POSITION AND LAYOUT OF THE HORSES

As the excavation revealed the presence of thirteen horses, (Fig. 5) we gave them 'names' from "A" to "N", according to their order of appearance during work in the funerary chamber.

The upper level contained six animals facing east, named "A" to "F" – in two groups of three. Horse "A" suffered quite a lot of damage when the tomb was plundered; its bones were dispersed throughout the

hole made by the looters and thus became mixed up with those of Horse "D", which was damaged at the same time. A right hind leg, as well as other elements like phalanges and neck vertebrae, were in anatomical connection. However, these were found further away in the southwest area of the cavity (within the coffin). It is important to note that these remains are practically devoid of any organic material (i.e. skin or flesh), therefore, all things considered, we can conclude that the looting occurred when the carcasses were still in relatively good condition, since the articulations resisted. Some bones bear traces of blows or were broken by the tools the robbers used to break into the tomb. A fractured humerus was found in the eastern part of the cavity. It was impossible to entirely reconstruct the two damaged animals; only the longest bones could be more or less put back together.

The head of Horse "A" was lying on its left side, and was the furthest east of the group of horses found in the pit (Fig. 6A, B). Below this animal was Horse "C",



FIG. 4. — The heap of organic material (muscle, skin, fur); Heads of horses « A » (in front) and « C » (behind). Harnessing elements in gold-plated wood are visible (photo S. Lepetz).

with the front part of its body resting on its left flank while the back part was positioned on its underside. It also suffered damage when the tomb was broken into. All that was found of its forelimbs were the scapula and right humerus. The hindquarters of Horse “D” were found lying on the hindquarters of Horse “C”. This was all that was found of Horse D, the rest of its body having disappeared. The rear limbs were folded under the body in a position similar to that of Horse “C”.

Behind this group of three individuals was Horse “B”, lying on its left side, with its left foreleg forcibly folded. Horse “F” was lying on Horse “B” in a ventral position. Only its neck and head were resting on the left, while its back legs were folded under its stomach. Horse “E” was situated under “B” and its four limbs were also folded beneath its underside in a forced position. Here too, the head was resting on its left side.

The lower level is separated from the upper one by a layer of birch bark and small branches and contains seven animals, all with their heads pointing eastward. Horse

“G” was resting on its underside with its forelegs bent under the thorax, its hind legs extended on either side. The neck was at a right angle to the rest of the spinal column, with the head pointing southward. Horse “H”, to the right of “G”; was in a right-sided lateral-ventral position. Its right limbs were folded beneath its body while the left limbs were extended outward to the side. Horse “I” was further to the north, behind “G”, lying on its underside with its left hind leg and left front leg folded beneath it. The right front leg opened outwards slightly, and rested on the hind side of “G”, with the neck in the axis of the hindquarters. Animal “K” was also positioned on its underside, with its four limbs bent beneath its body and its head resting on its left side, showing that the neck had been twisted; Horse “K” was to the right of Horse “I”. Horse “L”, behind “K”, was in a similar lateral-ventral position to that of “H”: lying on its right-hand side with its right limbs folded under its body while the left limbs were facing slightly outward, next to the tho-

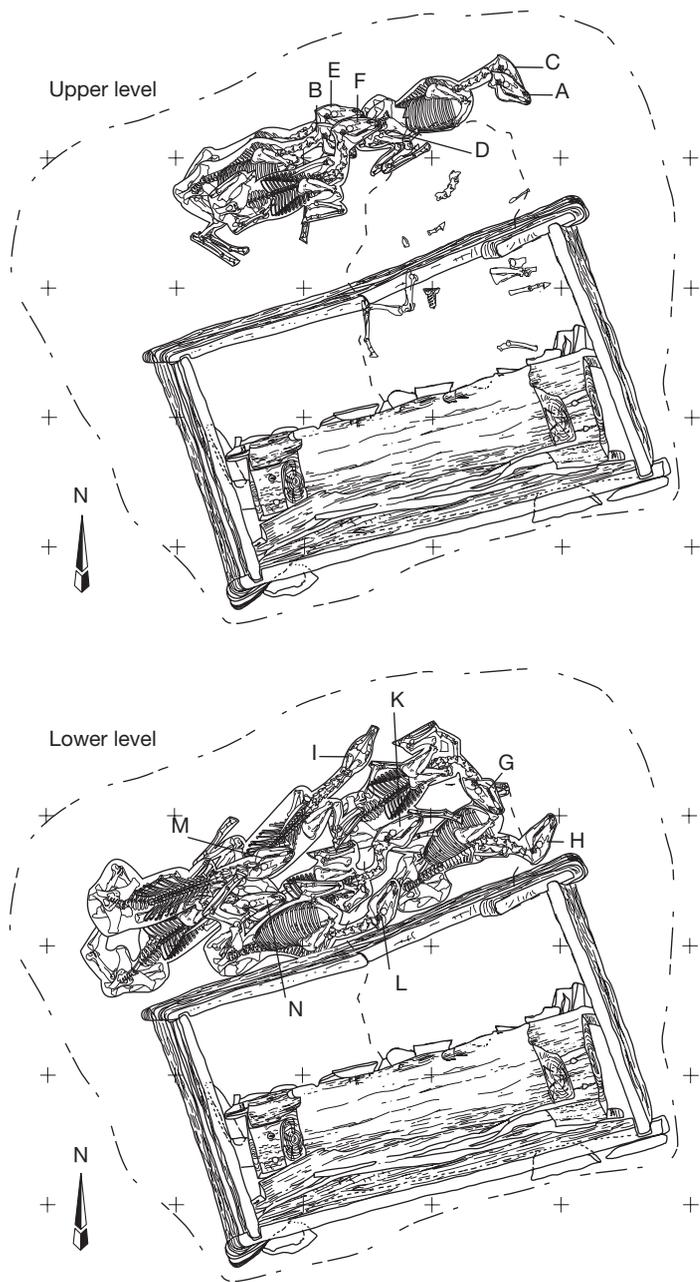


FIG. 5. — Position of horses in upper and lower levels (drawing of funerary chamber: A. Cornet; drawing of horses: S. Lepetz; CAD: S. Lepetz).

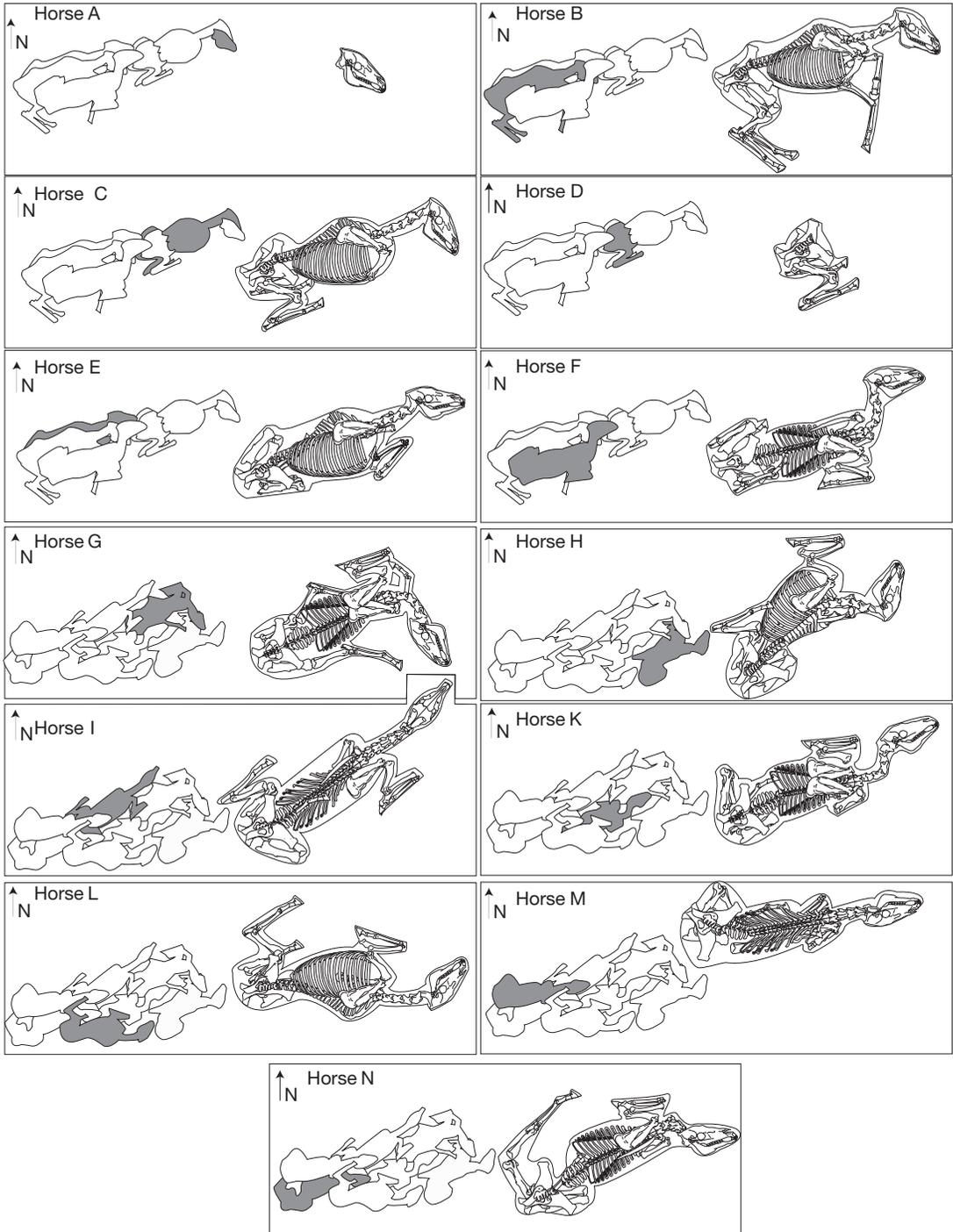


FIG. 6. — Location and position of each of the horses.

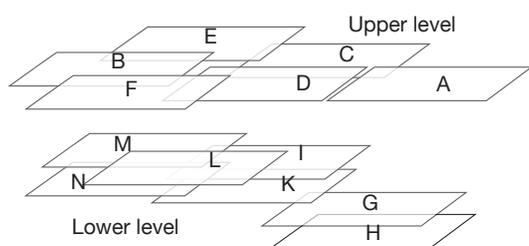


FIG.7. — Chronology of the depositing of the horses .

rax and hind side. Animal “L” was lying on “K”. Plundering of the tomb resulted in damage to the archeological environment, so it was impossible to excavate the head of “L” in good conditions. Horse “M” was resting on its underside with its fore limbs completely bent beneath it; the back limbs were in slight extension, especially the right one, which was parallel to the spinal column. The head, in extension of the spine, was lying on its right side, on the hindquarters of “I”. Horse “N” was set to the right of “M” in a relatively similar position. Unlike for “M”, the rear left limb was extended. The head was in the same axis as the body, lying on its left-hand side.

All of the animals were positioned along a southwest/northeast axis, with their heads facing northeast. Individually, some of the heads point towards the south, such as “G”, or southeast, such as “K”. The horses seem to have all been placed on their undersides. Even though a few beasts were found on their flanks, their four limbs were never found fully extended to the side. In the lower level, the hindquarters of the horses were often in a ventral position with the hind limbs folded under the abdomen. Surprisingly, in rare cases, (“G” and “N”), one or two back legs were extended forwards, along the span of the thorax.

CHRONOLOGY OF THE DEPOSITS: IN WHICH ORDER WERE THEY LAID TO REST?

In situ and laboratory analyses of bone positions revealed the order in which the animals were deposited (Fig. 7). The first animal to be placed in

the pit was Horse “H”, which was incidentally the furthest east of all the animals in the bottom level. Immediately behind “H” was “G”, with its head placed on the left front side of “H”. The head of “K” was resting on “G”, therefore it was put down third and “I” was lying at its side (with its right front flank resting on the hindquarters of “G” and the left front of “K”), followed by “N”, (its head on the back side of “K”). Part of “M”, the sixth horse to be deposited, was resting on “N”. It is clear that the lower level follows a rule consisting of placing the animals in the chamber two by two, starting from the east and working towards the west. In addition, for each of the couples, the animal further to the south was deposited first (in the following order: (H-G), (K-I), (N-M)). A last horse, “L”, was placed on top of all the others in direct contact with three other animals (K, N and M).

The disruption resulting from the plundering of the tomb is clearly marked in the upper level. It is thus important to be cautious in establishing the chronological order in which the animals were laid down, at least for “A” and “D”, who suffered the most from this human intrusion. Horse “C” was the first to be placed in this level, followed by “A” and “D”, in a non-determinate order. Like in the lower level, the depositing of the animals began on the east side of the tomb. Horse “E” was partially lying on the hind side of “C”; it was therefore put into place afterwards. “B” and finally “F” were laid on “C”. The horses here were grouped three by three, beginning with the animal furthest to the north.

It is difficult to say with certainty whether the depositing of horses followed decreed rituals, or rather more prosaically, whether the disposition of the slain beasts was simply the most practical method for arranging them. It should be noted that the procedure diverges between the two levels. In both levels of the pit, the first beasts were laid to rest at the east end. However, in the lower level, the horses were set down two by two, beginning in the south, whereas in the upper level, they were deposited three by three, beginning in the north.

In Pazyryk, the animals were mostly laid to rest with their heads pointing eastward (eight out of ten in tomb n°1, six out of seven in tomb n°2, eight out of fourteen in tomb n°3). In tomb n°4,

six out of fourteen animals were facing northeast. The horse in Kurgan n°2, in Kizil, was also facing east (Massart et al, 1995; Eryvnyck, 1995: 141), just like the horses from Ak-Alakha 5 (Levine, 1999), in Olon-Kurin-Gol (Molodin *et al.*, 2007)², or those from excavations carried out in recent years by the Franco-Mongolian Mission in Altai³. Therefore, it would seem that there was a global rule favoring an eastern orientation, but *in fine* the positioning was dictated by the necessity of managing the available space (Rudenko, 1970: 40), with the wedging of extra horses in between or at the boundaries of the set order, wherever there was still room. It is interesting to note that for three of the tombs in Pazyryk, the animals were placed in two rows of three or four individuals, which is reminiscent of the first level of horses in Berel’.

HORSE SLAYING – TRACES OF SACRIFICE

Depending on the state of the skull, it is possible to observe round-shaped traces, indicating perforation of the animal’s forehead. These are present on Horses “E”, “F” “H” and “I”. “D” presented a frontal recess, but this was not preserved due to extraction conditions (Fig. 8). The fragmentation of other parts did not enable us to determine whether such wounds were present on all the animals, although this appears to be highly probable. Impacts of this type are typical for horses buried during this period; in Kurgan n°18, there are two similar cases. In Pazyryk, Rudenko indicated that horses had been slain in this manner: i.e., by a blow to the top of the forehead (1970, p. 40), strong enough to fracture and pierce the bone (Vitt, 1952). The diameter of the holes is 7 to 16 millimeters and the weapon used is well known: it is an axe with

2. Slightly southeast for the latter

3. In Mongolian Altai, works under the supervision of Tsgaagan Turbat (School of History and Social Sciences — Department of Mongolian History) and P.-H. Giscard at Tsendel Khaikhan (TSK), Turger Gol (BTG), Syrgal and Khatuu, (Bayan-Ulgii aimak, Mongolia) resulted in the recent excavation of 16 Pazyryk culture tombs. The study of the horses is ongoing.

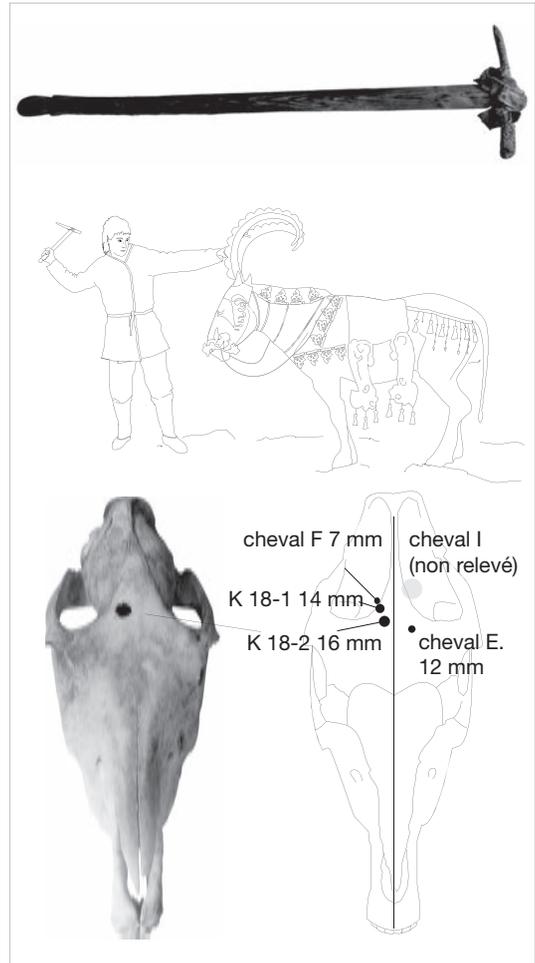


FIG. 8. — Observation of traces of blows to the skulls on the Berel’ horses; an example of a Kurgan skull n°18 (on the left); schematic reconstruction of the slaying of a harnessed horse decorated with fake ibex horns (in the middle); axe (upper photo, Mongolian Altai, photo from T. Turbat with his kind permission).

one sharp, pointed side and a flat side. This axe is sometimes found in the tombs, beside the hips of the deceased.

Mostly, the pointed side is used for the sacrifice, but in some cases (the Kizil Kurgan studied by A. Eryvnyck (1995) and Altai Mongolian horses), animals were slain by driving the flat side of the axe into the skull.

The sacrificial slaying of horses by western Scythians is described by Herodotus (Book IV, 60):



FIG. 9. — Representation of a mounted, horned horse, in front of which is a person applying the metallic part of an axe to the extremity of the animal's nose: Tamgalay III n°23 (Kazakhstan — photo H.-P. Francfort, with his kind permission).

“They have all the same manner of sacrifice established for all their religious rites equally, and it is thus performed: -the victim stands with its forefeet tied, and the sacrificing priest stands behind the victim, and by pulling the end of the cord he throws the beast down; and as the victim falls, he calls upon the god to whom he is sacrificing, and then at once throws a noose round its neck, and putting a small stick into it he turns it round and so strangles the animal”⁴.

If these descriptions correspond to actual facts, then it would seem that the practices of Scythian people, in western Asia north of the Caspian Sea somewhere near the Dnieper River, are quite different from those of the Sakas. This text seems to imply that two different practices coexisted among Altaic people: one which draws blood and the other, which does not. However, slaughtering is often codified and there are rarely any exceptions for any given cultural area studied. Whenever observation conditions were favorable, the animal was slain by a blow to the forehead. This gesture may have been followed by throat slitting, but no identifiable traces of this subsist today.

It is probable that the slaying ritual was carried out quite close to the “grave”, immediately before lowering the horses into the pit, since once *rigor mortis* sets in, the limbs are much less mobile. This rigidity sets in only a few hours after death, at the

most. It would thus prevent positioning them on their ventral side with their legs bent beneath them. It remains to be deciphered whether the sacrifice could have been practiced in the pit itself or not. This seems most unlikely, given the spatial limitations of the pit and the difficulty in managing horse reactions in stressful conditions.

In any case, the slaying of a horse disguised as an ibex is without doubt an act with major implications. It is a gesture reminiscent of other animal depictions on Central Asian petroglyphs, where horned horses were drawn, sometimes with a person in front of them, about to slay them with the blow of an axe. Beautiful examples of this can be seen in Tamgalay (Kazakhstan — Francfort *et al.* 1995 — Fig. 9).

HORSE STATURE AND MORPHOLOGY

Working with dead horses with partially conserved organic material provides information concerning the color of their coat. Our excavation at Berel’ revealed bay coats (chestnut with a black mane and a black tail), similar to those found in Pazyryk, which were either entirely chestnut or bay. On the other hand, it is difficult to determine to what extent other types of coat existed at the time — and therefore to evaluate the degree of choice involved. In the same way, we shall analyze the size and morphology of the horses in order to contribute to defining the choice of the animals to be sacrificed. Are stature and age related to the positioning and ornamentation of the animals within the tomb?

Bones were measured according to criteria provided by V. Eisenmann (1986). The method used for taking samples from certain horses involved cutting and removing frozen blocks which were subsequently transported to the laboratory. This procedure did not always allow for bone preservation, as some of them were sectioned during block cutting, rendering measurement impossible. Due to the position of the horses in the funerary pit, their great variety, number and the fragility of the associated ornaments, choices had to be made with regard to sampling and some horses were thus more affected than others by the cutting of the blocks.

4. The History of Herodotus, parallel English/Greek, tr. G. C. Macaulay, [1890], at sacred-texts.com

In this way, horses “I” and “L” were sampled more than the others. In addition, the thieves’ intervention modified the layout of the levels in the tomb. When the top layer was destroyed, the anatomic connections of horses “A” and “D”, along with the forelimbs of Horse “C”, became mixed up with the bottom layer of the pit. Remains collected from the disturbed zone could not be specifically identified as belonging to one or other of the animals. Moreover, some of these bones, found in the hole through which the thieves passed, were broken, which also rendered measurement impossible.

The other limiting factor in the osteometrical study is related to the taphonomic conditions at the site. The weight of the sediments on cold and humid bones caused damage to the most fragile parts. Ribs and vertebrae, in particular, suffered from this type of deterioration. For our approach, the most problematic aspect was the frequent deformation of the animals’ heads. Skulls were squashed and sometimes broken by the weight of the sediments. It was difficult, and in some cases impossible to put them back together. Therefore, we focused on taking partial measurements for five skulls, rendering illusory any approach to cranial morphology, which is often very instructive (see for example, the analysis of Vitt, 1952).

The horses from Berel’ are of medium size, according to modern standards. Their shoulder height is slightly less than 1.40 meters (using the coefficients of May 1985). The difference between the tallest and smallest animals is only slight, about 7%, representing a group of relatively consistent size. The variation is less than half of that observed in Pazyryk, where it was close to 15%. At Pazyryk, V.O. Vitt (1952) singled out two size groups. The animals from Berel’ are of similar size to the Altai group of horses (referenced by Derevianko and Molodin 2000) and to those from Pazyryk. However, these are slightly larger than the average. An osteometric approach was undertaken elsewhere so as to establish a regional scale perspective (Francfort and Lepetz, 2010)⁵, and will not be developed here.

5. Moreover, molecular analysis was carried out: see Keyser-Tracqui *et al.*, 2005.

In the Berel’ group, it was not always easy to determine which were the largest animals. The fact that not all the bones could be measured, on the one hand, and differences in limb proportions on the other hand, both hampered this evaluation. We nonetheless concluded that “F” is the smallest of the group, animals “A”, “B”, and “F” are rather small, whereas “D” and “H” are quite large, as is “M” (to a lesser extent).

SELECTION CRITERION: THE SEX OF THE ANIMAL.

In Berel’, a series of dental observations show well-developed canines. All thirteen horses are male (as well as two in Kurgan n°18, while the sex of two other horses is unknown). It would be informative to determine whether these were full males, or geldings. In Pazyryk, there are also only males. Extremely good conservation conditions allowed Rudenko (1970) to conclude that they had all been castrated. Vitt suggested that the group of the largest horses consisted of geldings castrated early on in life. In Aržan 2, the horses are all males as well, and N. Benecke and C. Weber (2007) identified six of them as geldings. Nonetheless, osteological criteria do not always allow for a clear distinction between whole and castrated animals and research into this aspect was not undertaken in Berel’. There is a predominance of males in Kurgans during this period, although we do know that mares were also sacrificed and deposited beside the deceased. The individual in Kizil (Ervynck, 1995) is a good example of this.

ANOTHER CHOICE CRITERION: AGE

The description of buried animals also includes an estimation of their age. This approach can bring to light another aspect of selection, thereby enhancing our understanding of the condition, grade and role of the horses before being sacrificed.

Two methods, traditionally used by horse dealers, are employed to determine the animals’ age: the analysis of dental eruption, as well as the degree of wear, provide relatively reliable and accurate results (following Cornevin and Lesbire, 1894).

In Berel', all the animals are adults and their permanent teeth have come through. The degree of erosion on the incisors was thus used for the age analysis of these horses.

The horse mandible possesses six incisors, called I1 for the two incisors in the middle. These pincers are surrounded by two I2 (intermediates) on either side and by I3 situated at the extremities. Just as in "*dental eruption*", the progressive wearing down of these incisors follows a relatively fixed chronology. It is certain that food type and degree of abrasiveness influence the speed of this erosion, but do not affect the successive stages.

Age can be determined according to criteria such as the appearance of opposite teeth (upper and lower), in contact with one another, the disappearance of cups and the leveling and the shape of the surface of the teeth. The alternate observation approach yields relatively accurate animal ages as long as food was more or less similar, if not identical. However, beyond the ages of 10-12 years, the diagnosis becomes more and more uncertain and the range of uncertainty grows with age. Moreover, individual anomalies are not rare and can lead to estimation errors, which generally artificially render the animal younger.

Thus, rather than attributing a precise age to any given animal, we opted for age classes (corresponding to a scale of two years each) for categorizing the different individuals. In this way, the classes of animals represented in Berel' are noted from III to VIII, covering a span of about 12 years of the animal's life.

It is important to remain cautious when attributing ages to the deceased beasts, as it is impossible to advance absolute values. The values proposed here are only indicative.

None of the lower incisors from the Berel' horses correspond to stages I and II. Stage « I » wear corresponds to a class of age whereby the milk-I3 fall out (at about 4 ½ years) and the permanent I3 have started to wear down (at about 6 years of age).

The second stage « II » represents the entire period up until the phase when the enamel, the ivory and the cement are all at the same level of occlusion; the wearing down is about the same everywhere, presenting a plane, relatively flat surface.

All of the Berel' animal teeth were permanent, adult, and quite worn down. All cups had disappeared from

the lower jaw, including those of the I3. The period at which cup disappearance occurs varies widely from one individual to another, however it is safe to assume that all the horses were at least 8 years old.

The mandible of Horse "A" could not be studied. However, the upper corners presented wear suggesting that this animal was about 8 years old.

Stage "III" corresponds to a phase when the central enamel of the incisors diminishes and the I1 becomes rounded. Cornevin and Lesbre propose a 10 year age limit for this phase.

Stages « IV » and « V » (between approximately 10 and 12 years of age) correspond to stages when the I1 and the I2 are rounded off and the central enamel has worn down to nothing more than a little islet. Four individuals bore teeth at these stages ("H", "I", "K" and "L"). Horse "L" presented slightly more central enamel on the I2; therefore we assume it to be slightly younger than the others, "H", "I" and "K". Horses "G" and "N" had both attained stage « V » wear, with rounded and leveled off incisors and no central enamel whatsoever on some teeth (I1 of "G", and I3 of "N").

During the following stages, wear progresses, with the central enamel disappearing altogether during stage « VI », giving the teeth a triangular shape. There were very slight traces of enamel on the I1 of Horse "D", attributed to stage « VII ».

Stage « VIII » corresponds to older horses (perhaps over 18 years of age). I1, I2, and then the I3, become biangular (the lingual surface is rounded; the front side presents two angles). The dental star (the dark area consisting of secondary dentine in the center of primary dentine) is rounded and central. Four of the animals present these characteristics: "C", "E", "F" and "M". Horse "E" is particularly old, with teeth worn all the way down to the gums.

This study shows that not all the animals were of the same age. There is a good ten year difference between the youngest ("A") and the oldest ("E" and "M"); the former was about 8 years of age and the other two were very elderly, over 19 years old. Selection for sacrifice was thus not governed by age, as no strict age selection was observed. Aside from the young eight-year-old individual, there was one group of six animals of about 10-14 years and a second group of five animals of over 16 years. They were thus all

older adults. In Kurgan n°18, the age span is even wider; a very young five-year-old animal was found next to an animal of 16 or 17 years. This diversity can also be observed in Aržan 2, with an age span of 8 to 18 years, at Ak-Alakha 5 (span of 10 to 16 years), or in the Mongolian sites in Altai.

The presence of bits and saddles clearly shows that these animals were ridden during their existence, although relatively little pathology was observed. Horse “E” displays extra bone growth on the lateral and ventral sides of the last two thoracic vertebrae, which joined them together. These osteophytes might be related to the mounting of the horse; however they could also be due to congenital disease, or just plain old age (Levine *et al.*, 2000 p.129). Horse “E” is, incidentally, the eldest of all the animals. It is nevertheless interesting to note that the Berel’ horses are much less affected by this type of pathology than any of the animals at other sites. This could perhaps be due to different saddling practices? M. Levine (Levine, 1999: 51-52; Levine *et al.*, 2000 p. 130-131; Derevianko and Molodin, 2000 p.243-249) indicates the probable link between this kind of pathology and the usage of pad saddles (in direct contact with thoracic vertebrae). Conversely, saddles with armatures do not rest directly on the spine. The low bone pathology frequency among the Berel’ horses could thus be due to mounting conditions?

BY WAY OF CONCLUSION

The role of horses in the funeral ritual still remains to be elucidated, which brings us back to our initial question concerning the selection of beasts to be buried. The Berel’ case is insufficient to settle the debate, and the study of the horses alone is also inadequate; it is imperative to take into account all the artifacts found in the tombs. The advanced ages of the horses and the frequency of bone pathology observed in horses from Scythian period Kurgans provided solid evidence for some authors (Bökönyi 1968) of the reasons for their slaughter. According to Bökönyi, they were selected because they could no longer be ridden and the animals with no bone pathologies must have suffered from some other kind of illness. In Berel’, the animals are certainly old, but

only one, the eldest horse, provides evidence of bone disease, and this case is slight. A paleoparasitological study (Le Bailly *et al.*, 2008) reveals that the Berel’ animals hosted some parasites (*Oxyuris equi* and another *nematoid* belonging to the *Strongylidae* order). However, these parasites were common and were not responsible for serious infections or handicaps. The horses’ state of health is therefore not a satisfactory cause for sacrifice, pointing to the limits of Bökönyi’s theory. Moreover, sacrificing an old horse, a companion of long date, is highly symbolic. Slaying one’s aged horse, (or should we say, even though it is an old horse) is an important and significant gesture, and must have caused considerable consternation to animal owners. From a very different standpoint, Rudenko (1970 p.119) observed that in each tomb at Pazyryk, one or two young animals from 2 to 3 ½ years old were found with much older horses (from 15 to 20 years old). He postulates that these ages correspond to what might be the lifespans of a herd owned by a person of high rank, and he concludes that the animals must have all belonged to the deceased. Berel’ is once again different from the general pattern described by Rudenko, in that no young animals are present. Therefore this rule, if it is a rule, was not followed here.

The care taken in harnessing the animals implies that they played a vital role in the funerary ritual, and therefore in the eyes of the living. If the predominance of males is anything to go by, this probably reflects the fact that they were among the most frequently mounted horses and the prevalence of aged animals must thus be linked to their status.

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