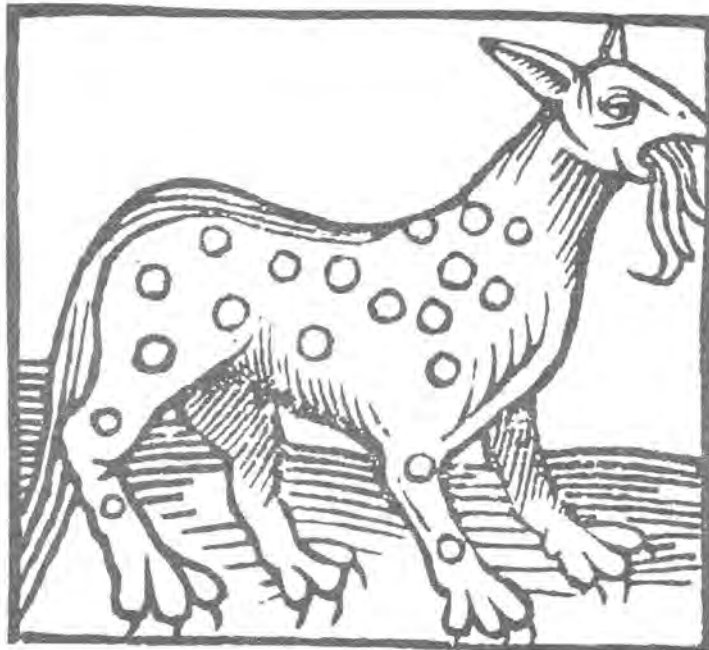


# Animals and Man in the Past

Essays in honour of Dr. A.T. Clason  
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## 1. INTRODUCTION

The excavations which have been conducted for more than 20 years by the Archaeological Mission of the University of Geneva on the site of Kerma have revealed the existence of an original culture in an area on the border of African and Egyptian influences (Bonnet, 1990; 1991).

At the height of its glory, around 1700 BC, the Kush kingdom, of which Kerma was the capital, stretched, from the first to the fourth cataract, over more than 1000 kilometres from north to south. Little as yet is known of its extension towards the west. However, several sites in the western desert bear witness to its influence. Situated on the right bank of the Nile, about 20 kilometres south of the third cataract, the ancient city emerged, around 2500 BC, out of a place of worship. During subsequent stages, the city developed around a massive temple made of unfired bricks, the "deffufa", surrounded by various religious and administrative buildings. Other districts show evidence of an already highly hierarchical society, with areas for crafts, unfired brick houses and huts.

The abundance of animal bones discovered in the city give evidence of a meat diet based almost entirely on domestic animals. Cattle takes first place, while caprines come next. One can however detect a change in the importance of the species: during the ancient periods cattle is most abundant while later on, and particularly during the Classical Kerma (1750 to 1500 BC), it's the caprines (sheep and goats) which become the principal source of protein (Chaix, 1994a). The consumption of cereals is also testified by the numerous carbonised barley seeds and by very abundant implements for grinding.

The necropolis lies a few kilometres east of the ancient city which shelters more than 25,000 graves. Its situation in a desert zone, away from the influence of the Nile, allowed excellent preservation of the tombs and their contents.

Most frequently, during the ancient stages, the graves are circular pits of small dimension reaching over 10 metres in diameter in the later stages. A superstructure covered the burial place and it was decorated with black stones and white pebbles.

The deceased rests either between two shrouds of tanned ox skins, or later, on a wooden bed with

leather braiding, very similar to the Sudanese "angarebs" of today.

Very often, the bodies are mummified by natural desiccation and the various objects of organic matter are preserved.

From the beginning of the Middle Kerma, towards 2000 BC, animals played an important role in funerary ritual. Numerous pieces of meat are often found beside offerings (pottery and pottery bread models). Most usually they come from stereotyped butchering of a few month old lambs (Chaix & Sidi-Maamar, 1992). This viaticum is placed in the north of the pit.

Several lambs, goats or dogs are placed at the foot of the body and in the south area of the grave. They are whole and often unskinned. One can find as many as 15 lambs in certain graves, generally they are under two year old males (Chaix & Grant, 1987).

On the south border of the burial mound, on the exterior of the grave, one finds shallowly buried frontals of oxen, attesting to the preparation of bucranes. These pieces are carved differently according to the period. During Ancient Kerma, the frontal, possessing its horn cores, is prolonged by the two nasal bones still present. In Middle Kerma, the cut is made at the level of the nasal spine, while during Classical times, the frontal is cut very high, a few centimetres under the base of the horns (Chaix, 1993).

These bucranes can sometimes be quite abundant, such as those of tomb KN 24, about which we will talk and which number 241. We have discussed elsewhere the significance of such collections and the clues they provide on paleoenvironment, but also on the possible allochthonous contributions at the death of a person of importance (Chaix, 1985; Chaix & Grant, 1993).

On the ground, the bucranes form a vast crescent and their lay-out suggests a symbolic herd, with the oxen at the head followed by the cows often together with the bucrane of a small calf.

## 2. THE GRAVE KN 24

We now wish to briefly present the important collection which we discovered during the field campaign of 1996. The imposing mound which we had



Fig. 1. Bucrania from the grave KN24 (drawing, D. Berti).

located tallied with a tomb excavated by G. Reisner during his excavations from 1914 to 1916 (Reisner, 1923). The remains of two individuals, one of which was in the normal position for bodies buried at Kerma, namely the body flexed on its right side with its head towards the east, lay buried in the pit which had been emptied at that time. The remains of another person undoubtedly give evidence of human sacrifice, quite usual in Classical Kerma. Five pottery vessels and an ostrich feather fan made up the personal objects of this grave. It is highly probable that the grave had been plundered shortly after the funeral, which explains why Reisner discovered it already extremely disarranged (Dunham, 1982).

Yet, the good conservation of the burial mound's south border indicated that the bucranes there were well preserved. We therefore excavated the site which enabled us to dig out an impressive quantity of pieces and we counted 241 of them. (Fig. 1).

Two absolute datings were made, one on a horn-sheath (KN24/228), the other on a horn core (KN24/231). The dates found are, respectively,  $3330 \pm 57$  BP (CRG 1440) and  $3504 \pm 130$ BP (CRG 1441), that is to say in calibrated dating, between

Table 1. Distribution of the various types of upper frontal profiles and intercornual ridges (type after Grigson, 1976).

Upper frontal profile			
		N	%
2	Flat	133	63.9
3	Slight boss	49	23.5
1	Convex	24	11.5
4	Pointed boss	2	0.9
	T	208	
Intercornual ridge			
2	Low double arch	114	57.2
4	High double arch	38	19.0
3	High single arch	27	13.5
1	Low single arch	13	6.5
5	Downward bow	4	2.0
6	Concave	3	1.5
	T	199	

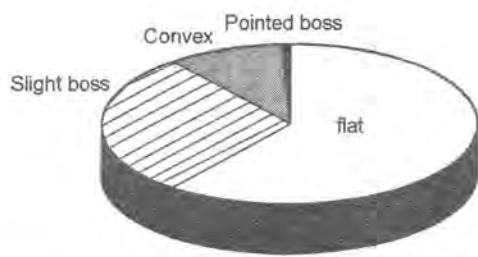


Fig. 2. Distribution of the various types of upper frontal profiles.

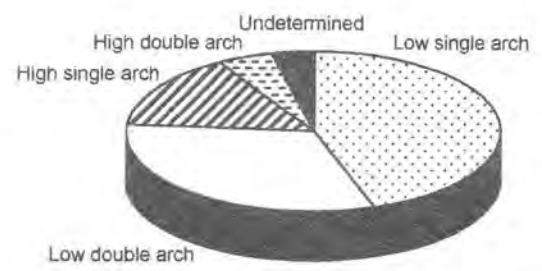


Fig. 3. Distribution of the various types of intercornual ridges.

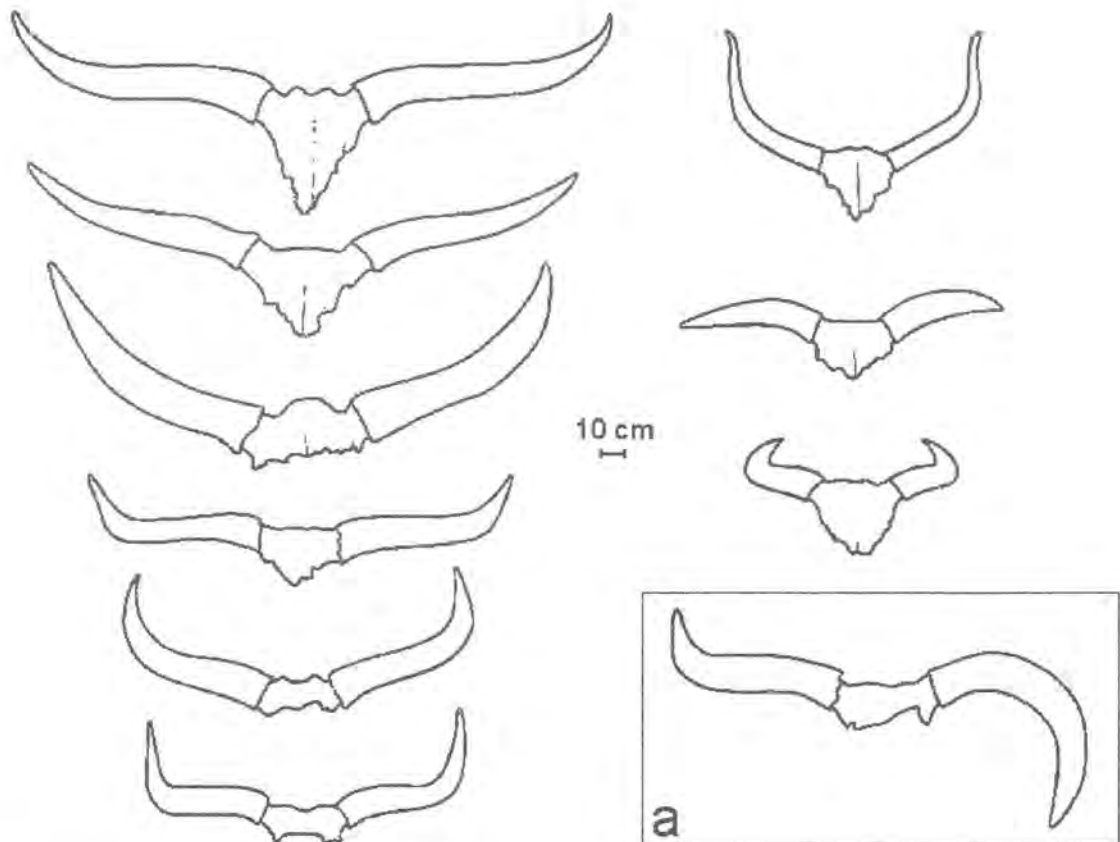


Fig. 4. Morphological types of bucrania from the grave KN24.

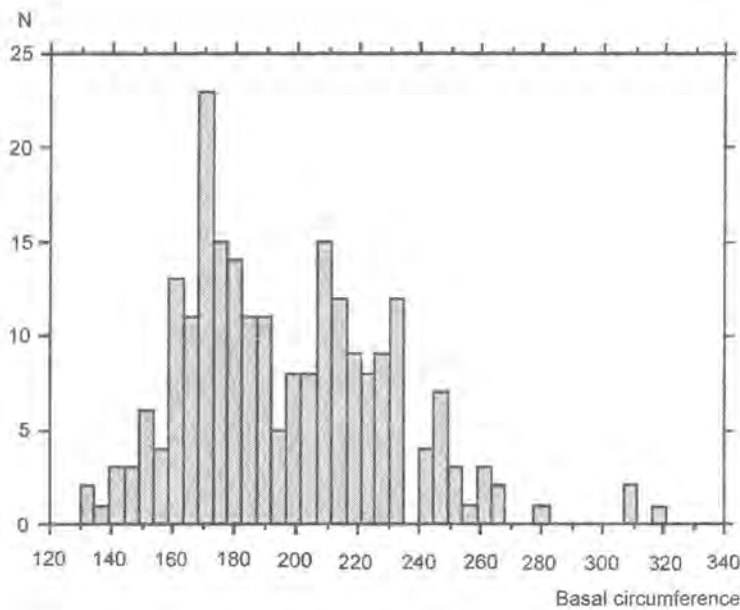


Fig. 5. Distribution of the basal circumference of the horn-cores.

1979 and 1256 BC. This grave can be therefore attributed to very late Middle Kerma or to early Classical Kerma.

### 3. THE BUCRANES

As has been mentioned above, 241 pieces were brought to light. Their state of conservation is generally excellent on account of being buried under the mound. In over 80 % of the instances the horn-sheaths were preserved.

We will first deal with the morphology and their dimensions before enumerating more specifically the archaeological aspects such as the shape of the cutting and the anthropic modifications.

The morphological characteristics used are those of Grigson (1976). In our case, the description is limited to the frontal zone, the only part conserved

here. Two characteristics were observed namely the shape of the superior frontal profile and that of the intercornual ridge. Table 1 (Tab. 1) as well as figures 2 and 3 (Figs 2 and 3) give a summary of the results obtained. As one can see, flattened or only slightly convex sections are widely found among the superior frontal section. They make up 87.4 % of the total. This morphology resembles that of the aurochs (Fig. 2).

As far as the intercornual ridge is concerned a dominance of sinuous shapes is noted, representing 76.2 % of the total. Convex or concave ridges are rare (Fig. 3).

Horns show a fairly wide range of shapes. However, generally an important lateral development is observed as well as, in adults, a third well-marked posterior curve. The "lyre" shapes often used to describe the horns of the oxen of ancient Egypt are fairly rare here (Boessneck, 1988). Figure 4 shows the most frequent types of horns of this collection (Fig. 4).

There are two principal aims for the metrical study of the bucranes: the possible determination of sex and obtaining a comparison of the oxen of the Kerma with those of other populations.

As far as sex determination is concerned, we have attempted to put into relationship various measurements taken on the horn cores. Only the perimeter of the base seems to show a bimodal distribution which could correspond to the females, with figures between 125 mm to 200 mm, while the oxen and bulls range between 200 mm and 325 mm

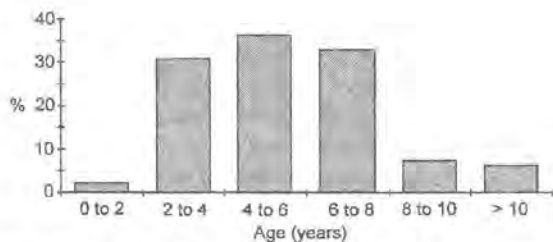


Fig. 6. Distribution of ages, estimated by the rings of the horn sheath.

Table 2. Bucrania of the grave KN24: statistical parameters. (N= number of measurements, m= mean, w= range, Sd= standard deviation).

Measurements	N	m	w	Sd
Least breadth between the bases of the horncores	207	155.5	110 - 205	14.2
Horncore basal circumference	227	196.7	130 - 321	33.6
Greatest diameter of the horncore base	227	65.6	41 - 106	11.8
Least diameter of the horncore base	227	57.0	35 - 92	9.5
Least frontal breadth	78	164.2	130 - 224	17.4
Least occipital breadth	98	128.8	88 - 192	21.5
Least distance between the horncore tips	194	617.6	200 - 1420	171.3

Table 3. Bucrania of the other graves from the necropolis of Kerma (without KN24): statistical parameters (cf. Table 2).

Measurements	N	m	w	Sd
Least breadth between the bases of the horncores	317	161.4	91.5 - 220	19.0
Horncore basal circumference	318	196.7	52 - 302	39.1
Greatest diameter of the horncore base	343	66.1	18.2 - 104.5	13.4
Least diameter of the horncore base	335	57.0	16 - 92	11.2
Least frontal breadth	249	165.7	94 - 230	18.4
Least occipital breadth	104	135.0	94.5 - 212	23.8
Least distance between the horncore tips	117	604.5	165 - 1460	159.6

(Armitage, 1982) (Fig. 5). According to this histogram, the number of oxen and bulls seems quite important and exceeds that normally observed in a managed herd.

An estimate of the age of the Bovidae was made based on the growth rings of the horns sheaths (Habermehl, 1975). It appears that the majority of the animals were slaughtered between the ages of 2 and 8 years with a maximum number between 4-6 years. There are few very young or very old animals (Fig. 6), and it must also be pointed out that the collection of bucranes of this grave did not produce pieces belonging to very young calves like those we have discovered in other burial mounds, usually placed behind the bucrane of a female (Chaix, 1990).

If one compares the oxen of Kerma with other bovine populations, one observes that they are larger animals, as we have already shown elsewhere (Chaix, 1994b). Unfortunately, the poor conservation of bony material in the ancient city only yielded short bones (carpal, tarsal and phalanx) whose statistical correlation with the height at the withers is unsatisfactory. Only two metapodials indicate a withers height of around 1.50 m for a female. The most important measurements taken of the pieces from tomb KN 24 are presented here (Table 2). Table 3 displays the same measurements for the other bucranes discovered in the necropolis.

The comparison of this data shows that the transversal diameter between the base of the horn cores

of tomb KN24 is significantly smaller than those of the other bucranes of the necropolis (U of Mann-Whitney:  $z = -3.989$ ;  $p = < .0001$ ). The result, though not quite so clearly, is the same, for the minimum diameter of the occipital bone ( $z = -1.807$ ;  $p = .0708$ ). The other measurements do not differ from those of the whole of the corpus.

Such results are difficult to interpret and at present it is impossible for us to differentiate animals possibly coming from different herds. Research in this particular field would be of great interest as it could validate the hypothesis we made of an exogenous addition of bovines at the time of funerary ceremonies (Chaix & Grant, 1993).

As has been mentioned above, the type of cut of the bucrane varies according to the period. We have defined 4 main cuts, indicated by the letters "a" to "d". The "a" type cut is distinctive of Ancient Kerma which preserves the nasal bones. No such piece of this type was discovered in our collection. The "b" type cut, appearing a little later, is made on the frontal at the level of the nasal spine: 5.4% of the pieces are prepared in this manner. The majority of the bucranes of this tomb, that is to say 65.7%, are cut a little above the nasal spine (type "c"). Lastly, 28.8% of them display a cut of the frontal, just beneath the base of the horns (type "d"). Figure 7 displays the distribution of these various cuts.

Among the bucranes of this tomb, several pieces either displayed pathological injuries or showed deformities of an anthropogenic origin. Holes with

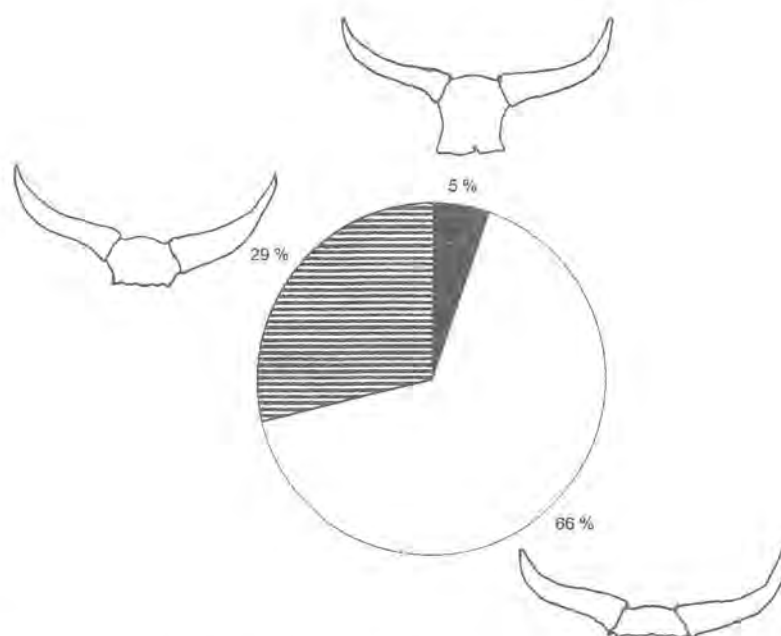


Fig. 7. Distribution of the three main types of carving.

rounded edges, varying in size are displayed on the posterior part of 16 frontals. This pathology, probably genetic in origin, is often described in articles, though its causes are still unknown or unclear (Baker & Brothwell, 1980).

One bucrane (no. 194) presents an irregular perforation obliterated by newly formed bone on the left part of the frontal. Could this be an old wound in the process of healing? Finally, cup-shaped depressions on the surface of the horn cores can be observed on two pieces (nos. 23 and 78). It would seem that this phenomenon is linked with malnutrition or possibly to lactation (Albarella, 1995).

#### 4. MODIFICATIONS OF ANTHROPOGENIC ORIGIN

A typical deformation of the left horn which is bent forwards and downwards is observed on bucranes 148 and 237. This artificial deformation has been known since antiquity as it appears on bas-reliefs of the Ancient Empire of Egypt and bucranes from Sudanese tombs of group C also present this same torsion (Hall, 1962). Among today's tribes of Sudan, it still is widely used (Huard, 1964). These practices prove, along with other types of deformities, the importance of the ox and of its image to the pastoral people of the valley of the Nile, but also of the Sahara and of the Sahelian areas (Chaix, 1996).

Lastly, 4 bucranes display a special constriction at the base of the two horn cores. This deformity can, undoubtedly, be attributed to the burden of a forehead yoke, most frequently used to draw a swing-plough (Barwell & Ayre, 1982). On bucrane 234, which displays this peculiarity, one can also observe that the points of the horn cores have been sawn, possibly to equip them with protective tips.

#### 5. CONCLUSION

The main role of the ox in the economic and religious spheres of the Kerma culture is testified here by the deposit of a large number of frontals of this animal which symbolises a herd whose size indicates the wealth or the renown of the deceased. The excavation of several graves of the necropolis of Kerma enabled us to study, as of Ancient Kerma, large collections of bucranes some of which were very numerous.

The presence of so many pieces, simultaneously deposited during funerary ceremonies, shows the enormous investment undertaken by the family or by the members of a larger clan (Chaix & Grant, 1993).

The bucranes present here also give evidence of ritual observances, characteristic of pastoral people since 3000 BC, and which live on even today in many regions of north east Africa.

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