

Louis Chaix, Jérôme Dubosson, Matthieu Honegger

## **Bucrania from the Eastern Cemetery at Kerma (Sudan) and the Practice of Cattle Horn Deformation**

---

A Nubian culture that emerged in the early third millennium, the Kingdom of Kerma has retained in a rather lively fashion certain traditions of the pastoral societies that preceded it, notably the tight relationship between man and cattle. Evidence is plentiful and shows that cattle not only played an economic role, but also served a social function. Cattle have been depicted as small figurines discovered in the ancient city of Kerma (Ferrero 1984) or painted on murals decorating one of the large funerary chapels of the Eastern Cemetery (Bonnet 2000). More spectacular, however, is their use in funerary rituals, where thousands of bucrania were placed in front of burials.

During all phases of the Kerma culture, domestic animals have played an essential role in the economy (Chaix, Grant, 1992). The study of numerous remains found in the kingdom's capital shows the importance of livestock, which represent more than 95 % of the fauna (Chaix 1994). Hunting activities were rare, with only scarce remains of gazelles, hippopotami and small game of various sorts. The meat diet of the Kerma people was essentially based on cattle (*Bos taurus* L.) and caprines, sheep (*Ovis aries* L.) and goat (*Capra hircus* L.). Some donkeys were also eaten. Cattle represent around 50% of stock breeding, while caprines form 44%. These proportions changed as the Kerma culture developed (2450-1480 BC). From 1750 BC onward, a strong increase of domestic caprines is noted, cattle becoming more rare and precious during the Kerma classique period (Chaix 1994). The decrease of oxen is probably due to the more arid environmental conditions of the second millennium BC.

Kerma's Eastern Cemetery reveals much information that allows the study of the role of cattle within funerary practices (Chaix 1986; 1988; 1993). The significance associated with the presence of oxen in this context attests to their importance within society at that time. Starting with bucrania deposited in front of burials, notably those with deformed horns, the authors hope to understand the meaning of this practice by observing its technical aspects and by making ethnographic comparisons, following an investigation amongst the Hamar of Southern Ethiopia. Finally, it is expected that this research shall shed some light on the bucrania deposits found in front of tombs of the Kerma civilisation.

### **The Eastern Cemetery at Kerma and funerary practices**

The Eastern Cemetery at Kerma is located four kilometres east of the ancient city, in the direction of the desert. It is a distinctive funerary complex that includes the burials of Kerma's sovereigns and, therefore, was accessible to only a certain class of the population. The cemetery's vast surface measures 70 hectares and, according to estimates calculated from completely excavated sectors, comprises approximately 40,000 tombs<sup>1</sup> (Fig. 1). Developed from north to south, the necropolis was exploited during the entire span of the Kerma civilisation. Typological studies of locally manufactured ceramics and Egyptian imports as well as the results of a dozen C14 dates have helped define the chronological markers and the development stages of this funerary assemblage, which, from 2450 to 1480 BC, spans almost a millennium (Bourriau 2004; Bonnet 2000; Privati 1999).

North, the Kerma ancien tombs are round and small; they generally contain the remains of a single individual. Only at the end of this period do larger burials appear; these are indicative of greater social distinction amongst individuals. Objects deposited within and around these burials are notably more numerous, as is the presence of animal offerings. Within the largest graves, the bodies of accompanying individuals can be found buried next to the deceased. Differences between burials increase during the Kerma moyen and, at this time, it is not rare to find grave pits of up to 10-15 m in diameter. During the Kerma classique period, pits are generally rectangular and the principal burials are of impressive size: the famous royal tombs excavated in the early twentieth century by G. A. Reisner measure up to 90 m in diameter. Since 1977, the Swiss Archaeological Mission has excavated over 280 burials. These are found in 27 sectors and cover almost all phases of the Kerma civilisation (Fig. 1).

---

1 During the Kerma ancien, the diameter of the tombs is lower and their density higher, 750 tombs per hectares on average. During the Kerma moyen, the dimensions of burials increase, but their density decreases to 570 tombs per hectare. Finally, during the Kerma classique, the development of royal tumuli measuring several dozen of metres in diameter results in an average density of 300 tombs per hectare.

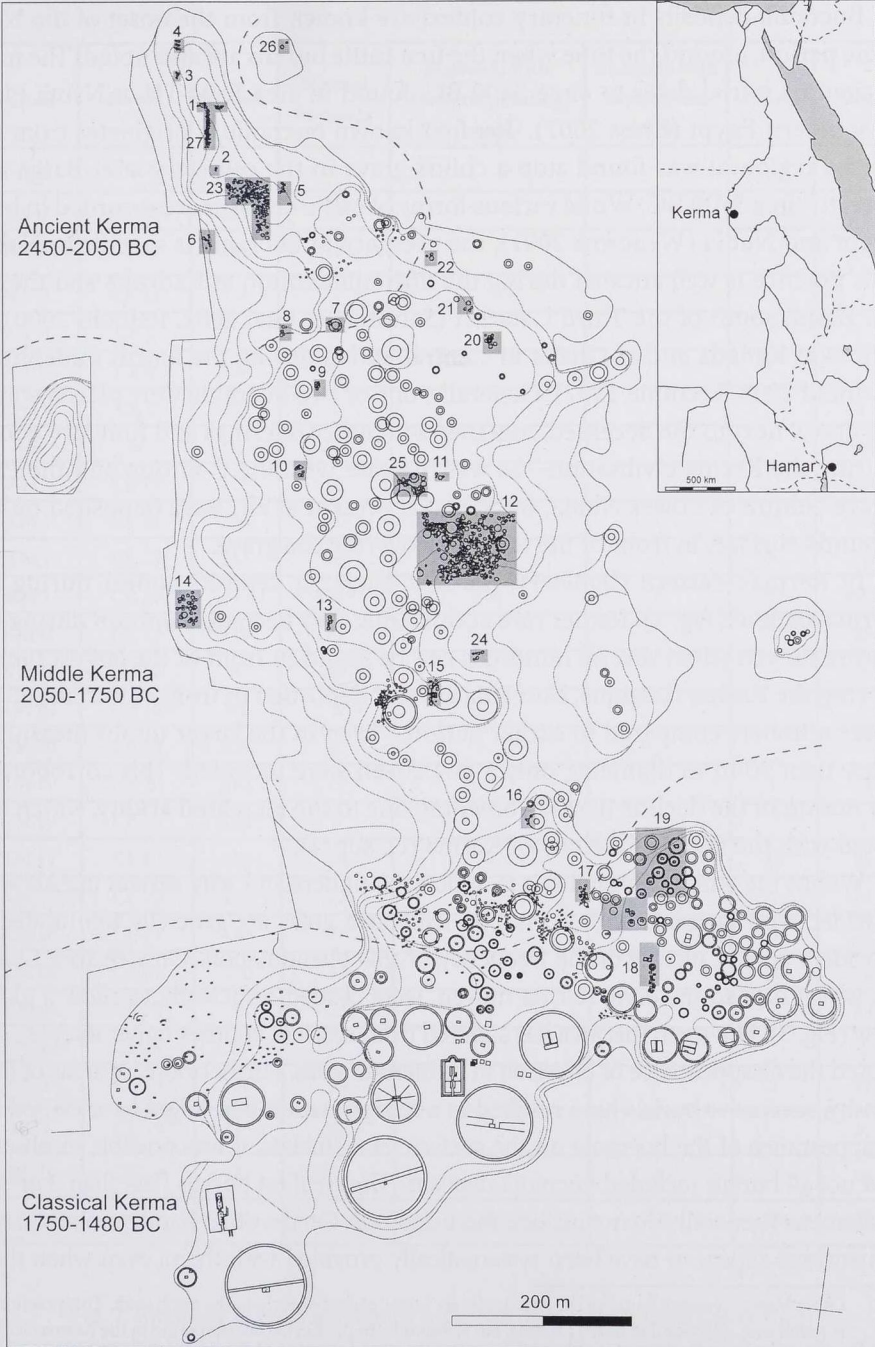


Fig. 1. Plan of the Eastern Cemetery at Kerma, with the location of the excavated sectors.

Bucrania deposits in funerary context are known from the onset of the Neolithic period, around the time when the first cattle burials are also noted. The most ancient ox burial dates to circa 5400 BC, found in area E-94-1N at Nabta Playa in southern Egypt (Brass 2007). The first known bucranium originates from the Kerma region; it was found atop a child's grave in the cemetery at el-Barga and dates to circa 5700 BC. While various forms of cattle deposits are recorded in both Egypt and Nubia (Wengrow 2001), the presence of bucrania is specific to Nubia. This practice is well attested during the fifth millennium at Kadruka and the Selim Basin, south of the Third Cataract (Salvatori et Usai 2002, Reinold 2000), as well as at Kadada and el-Ghaba in Central Sudan during the fourth millennium (Reinold 2008, Lecointe 1987). Generally, one or two bucrania were placed within the grave, next to the deceased, together with other offerings and funerary goods. During the Kerma civilisation—as was the case with the C-Group and the Pan-Grave culture of Lower Nubia, bucrania (if present at all) were deposited on the ground's surface, in front of the tumulus covering the grave.

In Kerma's Eastern Cemetery, the first bucrania deposits appear during the Kerma ancien<sup>2</sup> (Fig. 2). Rather rare at this time, they become common during the Kerma moyen when several hundreds can be found in front of the largest tombs. During the Kerma classique, bucrania are still deposited in front of burials, but in lesser numbers compared to earlier periods. Even in the larger tombs measuring more than 30 m in diameter, only a few dozen were included. This corroborates the notion of the decline in stock breeding due to the increased aridity, which was noted with the fauna of the city of Kerma (cf. *supra*).

Within the entire necropolis, it is difficult to understand why certain burials were provided with bucrania and others not. Excavated areas are generally too limited to provide a precise picture of the frequency of this phenomenon. Only sectors 12 and 25, which date to the early Kerma moyen, were cleared sufficiently to allow a global view (Fig. 3). However, this area has suffered from erosion, at times rather intense. This caused the disappearance of bucrania in numerous areas. Furthermore, in areas of high density, successive burials have resulted in a reorganisation that might have caused the disappearance of the bucrania on the surface. Nonetheless, it was possible to observe that not all burials included bucrania deposits. The smallest burials (less than 2 or 3 m in diameter) generally do not include these deposits. On the other hand, tombs of larger dimensions appear to have been systematically provided with them, even when these

---

2 Other bovine remains found in the necropolis are horns placed directly in the tomb shaft. This practice is rather rare, expressed in only 11 tombs, but is found from the Kerma ancien period to the Kerma classique. Additionally, the deceased is often placed on ox hide and similarly covered. Other animal remains are found inside the tomb—complete dog or sheep skeletons as well as chunks of sheep meat.

Period	Sector	Grave	Normal bucrania	Bucrania with forward-pointing horns	Bucrania with asymmetrical horns	Calves	Total
KA II	CE 2	53	1				1
KA II	CE 23	229	17		2		19
KA II	CE 23	231	13			1	14
KA II	CE 23	236	5				5
KA II	CE 4	57	1				1
KA II	CE 4	58	1				1
KA IV	CE 8	80	1				1
KM	N	24	241				241
KM I	CE 11	115	98			31	129
KM I	CE 25	238	343	75	1	36	455
KM I	CE 25	241	22	4		5	31
KM I	CE 25	253	4069	560	5	265	4899
KM II	CE 12	119	27			6	33
KM II	CE 12	A	49	1			50
KM III	CE 10	92	2			1	3
KM III	CE 10	109	2				2
KM IV	CE 20	182	17			1	18
KM IV	CE 20	183	6				6
KM IV	CE 20	185	34	7		10	51
KM IV	CE 20	186	12		1	1	14
KM IV	CE 21	189	21			3	24
KM IV	CE 21	190	41		1	10	52
KM V	CE 15	B	23			6	29
KM VI	CE 14	25	1				1
KC I	CE 19	156	36			1	37
KC I	CE 19	175	37				37
KC II	CE 19	181	59		2	2	63
		Total	5047	647	12	376	6082

Fig. 2. Inventory of excavated tombs with rows of bucrania placed before them. The chronology is based on the period subdivisions proposed by ceramic studies (Privati 1999). KA: Kerma ancien; KM: Kerma moyen; KC: Kerma classique.



Fig. 3. Plan of sectors 12 and 25 (Middle Kerma I-II) with the location of bucrania and associated burials.

could not be brought to light due to erosion. Among the latter, the largest were covered by a large tumulus around which small subsidiary burials were dug.

In general, the number of bucrania is proportional to the dimensions of the tomb (Fig. 4). In a rather obvious manner, this displays the wealth and the power of the deceased individual, whether it is by the abundance of funerary objects and offerings or by the number of subsidiary burials positioned around the grave. A clear connection thus exists between the status of the deceased and the number of skulls placed before his grave.

### Bucrania with deformed horns

We shall now focus on the areas dated to the beginning of the Kerma moyen (KM I, circa 2,000 BC) which revealed the largest number of bucrania. Among these is found the largest number of specimens with deformed horns. At this time, the funerary ritual follows very specific rules, as demonstrated by tomb 115<sup>3</sup>

3 This ritual is valid for tombs of a certain size (generally diameter of two metres or larger). Smaller tombs, often considered subsidiary burials around a principal tomb, are much simpler: they contain

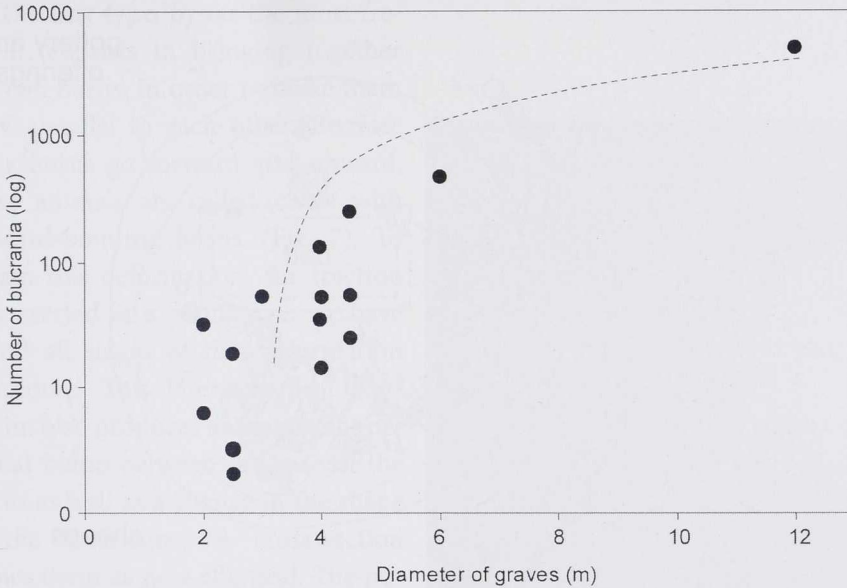


Fig. 4. Graphic correlation between the diameter of Kerma moyen tombs and the number of skulls placed before them (logarithmic scale). The dotted line indicates the regression line.

(Fig. 5). The pit is covered by a tumulus of earth topped by an arrangement of black and white stones. In certain cases, a chapel was erected on the west side and ceramics were frequently placed on the ground at the edge of the tumulus. Bucrania were positioned in a semicircle, facing the tomb, on the south side, while an alignment of posts is often present in the north. These might have served as windscreens, unless they were flagstaves (Bonnet 2000: 24-25). Within the tomb, the deceased rests on a wooden bed; he is dressed and accompanied with personal goods. Complete sheep, often placed in a leather sack, were deposited south and west of the bed (Chaix 2000). Occasionally, one or more individuals accompany the deceased within the pit, in the same location as the sheep. North of the principal deceased are located chunks of sheep meat, cut following a very specific procedure (Chaix 2003), as well as bowls and vessels that must have contained liquids and perfumes.

The bucrania were also prepared in a very specific manner, by cutting the jawbone and occipital bone in order to preserve the frontal bone and the horns. In tombs that included several hundred skulls, these were placed in a very precise order (Fig. 6). The front row comprised cows and their juvenile offspring; it was followed by a row of bulls and, finally, by a series of oxen.

---

fewer funerary goods and do not include beds and animal offerings.

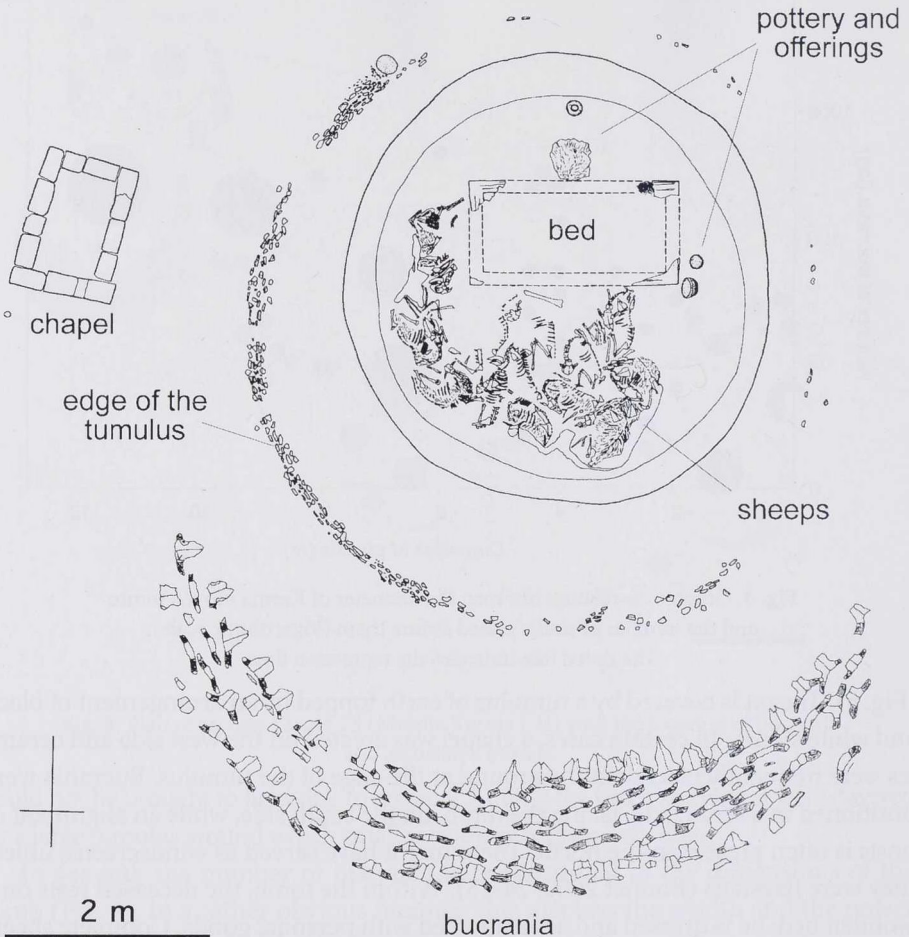


Fig. 5. Plan of grave 115, dated to Middle Kerma.

This arrangement could be repeated several times (Chaix 2007). Interestingly, certain graves revealed within this arrangement unusual specimens with artificially deformed horns (Chaix 2004). From a total of 27 excavated graves containing bucrania, nine included such specimens (Fig. 2). When a tomb includes only a few dozen skulls, there are only one or two specimens with deformed horns among them. Within more richly endowed tombs, deformation is more frequent. On average, there is one deformed specimen per eight heads of cattle (between 6 and 9.5, depending on each case). Two major types of deformed horns have been observed.



The first type, by far the most frequent, consists in bringing together the two horns, in order to make them grow parallel to each other. Because their horns go forward and upward, these animals are called 'cattle with forward-pointing horns' (Fig. 7). To obtain this deformation, the traction was exerted at a young age; we have found all stages of this deformation procedure. This biomechanical constraint also produces an important occipital bump between the base of the horns as well as a change in the shape of the horn-cores. A cross-section shows them as now elliptical. The position of cattle with forward-pointing horns is carefully planned within the whole funerary assemblage. For example, in grave 185, the seven deformed specimens form a single line (Fig. 8); the 75 parallel bucrania of grave 238

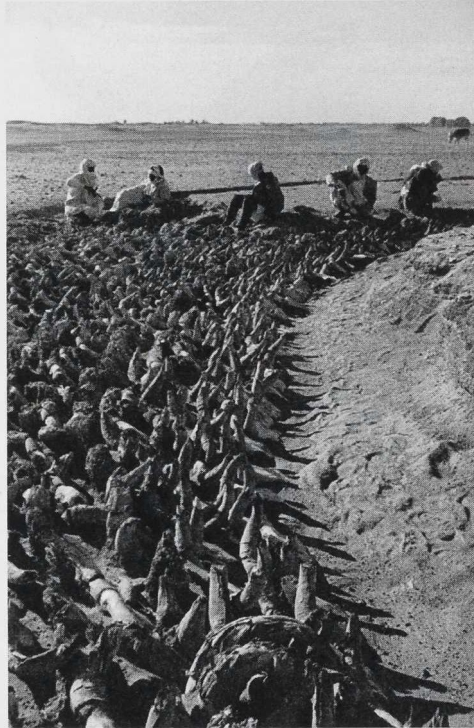


Fig. 6. Clearing of skulls placed in front of grave 253.

are arranged in two rows, and in the very large grave 253, the 560 parallel bucrania form five lines interspersed by rows of cows, bulls and probably bullocks.

The second type of artificial deformation consists of pulling forward one of the horns, while the other keeps its natural growth direction (Fig. 9). These specimens were found in different sectors of the cemetery. Type 2 deformation is rare compared to type 1 (12 against 647).

Traces found on certain skulls have revealed information regarding the deformation techniques used. Some calves, with well-preserved horn-sheaths, show typical excrescence at the tips. These were artificially created in order to put a rope and a tightener between the two horns (Fig. 10). Nowadays, these morphological features can be observed on living cattle raised in East Africa. The Murle of Sudan and the Turkana of Northern Ethiopia, for example, use a strap between the two horns in order to make them grow parallel to each other.

Additional marks point to the utilisation of cutting tools; these consist of cuts at the base of the horn or on the frontal bone (Fig. 11). Ethnographic examples show

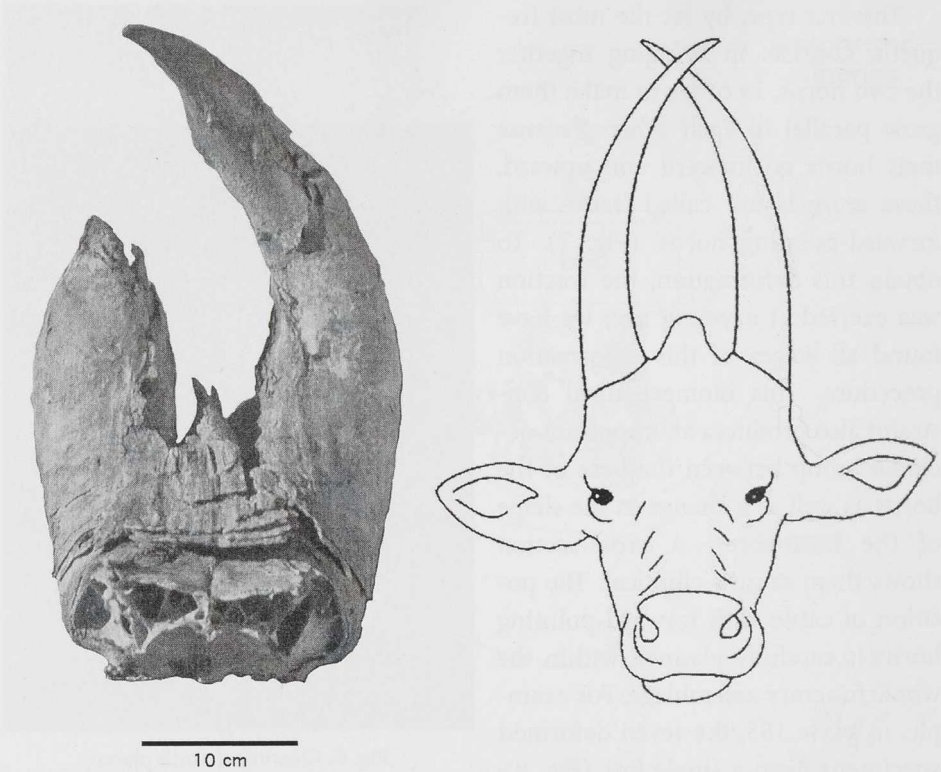


Fig. 7. Bucrania with forward-pointing horns from grave 253 and reconstruction of a bovine.

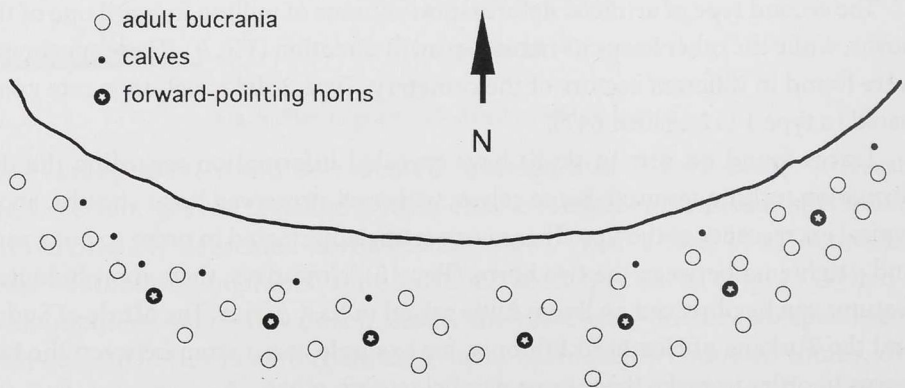


Fig. 8. Location of forward-pointing horns amongst normal bucrania of grave 185.

that the modification of the direction of the horn is made by fracturing the base of the horn-sheath. Two methods are known for this procedure. The first consists of cutting the base of the sheath with a white-hot spear, as performed by the Nuer and the Dinka in Sudan (cf. *infra*). The use of sharp tool creates deep incisions at the base of the horn, as those observed on some skulls. The second technique was observed by one of the authors, Jérôme Dubosson, during an ethnoarchaeological investigation among the Hamar of southern Ethiopia. It shall be described below in more details and within its social context. The necessity of expanding our ethnographic observations of pastoral societies prompted this visit, undertaken in order to understand better the complex connections between

man and cattle. As this research project was conceived to answer questions brought forward by field archaeology at Kerma, an emphasis was placed on the meaning of deformed horns and on the deformation techniques currently used.

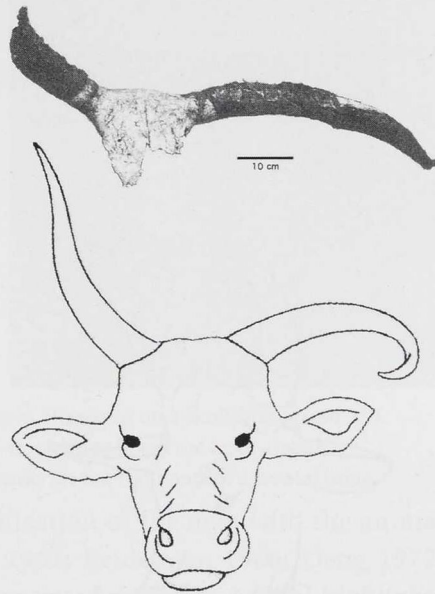
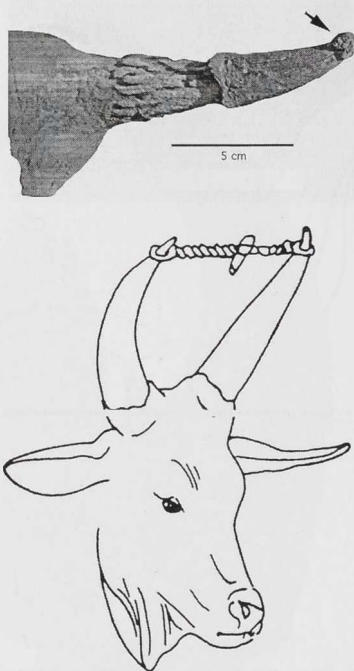


Fig. 9. Bucrania with asymmetrical horns from grave 190 and reconstruction of a bovine.

### Pastoralism and society among the Hamar of Ethiopia

In numerous pastoral and agro-pastoral societies, cattle horns possess practical, aesthetic or symbolic values. However, there exist very few historical or anthropological documents that explain their true function and meaning within societies of African breeders—hence the reason for a 6-month ethnoarchaeological investigation held in 2005 among the agro-pastoral society of the Hamar of southern Ethiopia.

Hamar pastoralism is chiefly a masculine activity. Men are constantly moving between the low- and highlands, not only to find pastures and watering holes for their herds, but also to maintain their social and political connections. Although cattle are the main subjects of conversation, they are also the favourite objects of attention. Cattle ownership is highly valued and deemed essential to human activities, and therefore herders take good care of their animals. Indeed,



**Fig. 10.** Calves' bucrania showing the artificial excrescence at the tip of the left horn-sheath and technical system used for deformation, after ethnographical observations amongst the Turkana pastoralists (after Jones, 1984).

the Hamar not only live from their animals, they live with them. The spatial and temporal framework of domestication therefore contributes to the birth of intimate connections between a man and his animal. Because it also incorporates a set of representations, values and perceptions, cattle domestication cannot be considered only as radical transformation of the connections between man and his natural environment, these connections being fostered by pastoral knowledge and technique. Approaching pastoralism as an ideological system enables us to highlight new elements in domestication processes.

As a result of the daily caring for their cattle, herders are led to pay attention to the physical qualities of their animals. While the consideration for the health and well-being of the animals is an important element of this charge, it appears that the

simple viewing of the animals—and specific physical attributes, in particular—is source of daily satisfaction for their owners (Coote 1992). The animals' visual appearance contributes to their owner's attachment. While every beast is noted for the colours and the shine of its hide, the shape of its tail and horns, and for the size and appearance of its hump and body, only a few play a pivotal role in the social life of their owners. Indeed, in some East African pastoral and agro-pastoral societies, every young man is socially obliged to maintain a special relationship with a bovine, which becomes a prestige item due to its personality and appearance. The bovine also becomes a partner in a deep and complex emotional relationship. Man and animal thus become mutually dependent, a relationship that reinforces the individuality of the herder, while facilitating his social integration and cultural training. This symbiotic relationship has intrigued a number of anthropologists who, since C. G. Selig-

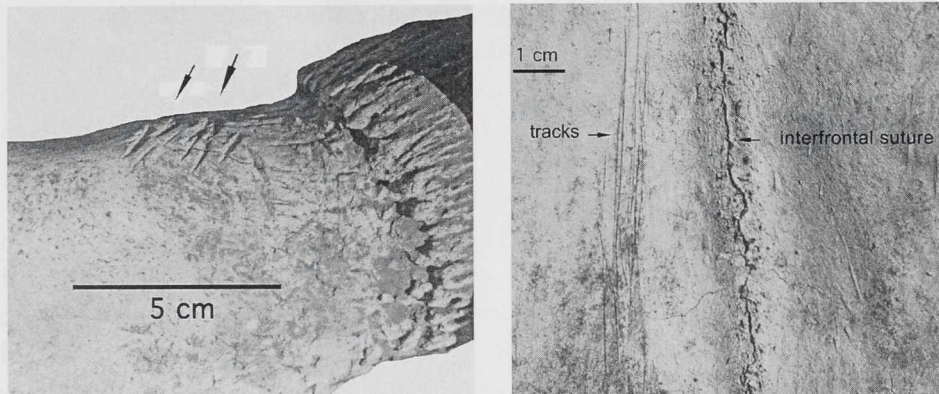


Fig. 11. Left: cut-marks at the base of the left horn, observed on a skull from grave 253. These marks were made by a sharp blade, in order to break the horn-sheath, before deformation. Right: longitudinal cut-marks on the right part of a frontal bone.

man (1932), have talked about the identification of the man with the animal (Evans-Pritchard 1953; 1956; Lienhardt 1961; Beidelman 1966; Deng 1972; Gourlay 1972). The diversity of terms associated with this animal highlights the complexity of this phenomenon (bell-ox, name-ox, dance-ox, display-ox or favourite beast), and the difficulty of translating such vernacular terms. However, most scholars agree on the non-economic aspect of the favourite animal, which can be a bull, an ox or a goat, but rarely a cow (Fukui 1996). They also insist on the animal's symbolic and aesthetic values (Evans-Pritchard 1940; Gulliver 1955; Lienhardt 1961; Buxton 1973; Burton 1981). Indeed, the animal is set apart from the herd by markings on its body and specific attributes that confirm these values. Breeders will even go so far as to artificially modify its visual appearance in order to satisfy aesthetic desires and respond to cultural demands peculiar to the pastoral ideology<sup>4</sup> of their society.

The favourite animal phenomenon is known in several cultures, without necessarily being found in all pastoral and agro-pastoral societies of East Africa. We note it in the Sudan among the Dinka, Longarim, Mandari, Murle and the Nuer; in Uganda, among the Dodoth, Jie and the Karimojong; in Kenya, among the Pokot and the Turkana; and in Ethiopia, among the Bodi, Dassanetch, Mursi, Nyangatom and the Hamar. Far from being complete, the study of this phenomenon already reveals that the favourite animal is the emblematic expression of the complex connections that bond a herder, his herd and his society (Hazel 1997; Dubosson in press).

4 Here, we understand this ideology as the « *ensemble social de représentations* ; [such as the] *ensemble des idées et valeurs communes dans une société* (Dumont 1983 : 263).

### The role of cattle horn and deformation practice amongst the Hamar

The horns of South Ethiopian cattle display a wide variety of natural forms<sup>5</sup>, some of which are particularly appreciated by herders due to the meaning given them. The Hamar artificially reproduce two of these forms on their cattle. Horns angled upward in a circle or a semicircle above the head, the tips of which converge, are called *loukouri*. These evoke the door of the cattle pen and symbolise protection. The horns of certain cows can be given the shape of *loukouri* because this is said to enhance their fertility. However, this particular modification of horns is rare and does not concern favourite animals. On the other hand, horns called *kamara* are found on oxen and this consists of the deformation of the left horn of the animal towards the front and downward, while leaving the right horn to grow upward naturally. Occasionally, the right horn is deformed.<sup>6</sup> *Kamara* horns, which are the most prized among young breeders, are a true marker of cultural identity of the Hamar and their bovines. Other ethnic groups of the region prefer different types of horns. Bovines with forward-pointing horns, for example, are much appreciated by the Mursi; however, the Hamar consider this type unlucky. Therefore, the Hamar shall never select these bovines as favourite animals, but might eventually keep them for their economic and practical value (exchange, meat, blood, hide, etc.).

For the Hamar, the pastoral practice of horn deformation is the ultimate step in the embellishment procedure of the favourite animal (*Errewak*). Previously, the animal was castrated, its ears incised with notched motifs, its dewlap cut in the shape of a pendant, and its hide scarred with geometric designs. These body markings are clear signs that differentiate the animal and make obvious its *Errewak* status. Horn deformation is painful and can be fatal to the bovine if not executed by an expert. The owner shall call upon this expert, if he isn't one himself. The operation takes place when the horns of the animal, then one to three years old, have developed enough to indicate their natural growth direction—should the owner choose not to keep it. The operation generally takes place by the river where men gather to water the animals, but it has been known to take place at the pastoral camp or the *Errewak* owner's house, as was the case for this particular deformation (Fig. 12).

Horn deformation takes place during the dry season, at the time of famine, and it strengthens the bond between the herders gathered for the occasion

5 We have identified at least 14 Hamar words describing the various forms of natural horns; each possesses a name and holds a particular significance.

6 Amongst the Longarim of south-eastern Sudan, society is divided up in two groups: lions and monkeys. Horn deformation is connected to this social organisation: "If a 'lion' wishes to deform his favourite ox's horns so that they will grow asymmetrically, he must do this so that the right horn will bend upwards and the left horn downwards. The 'monkeys' must pattern theirs in the opposite way." (Kronenberg 1961: 263).

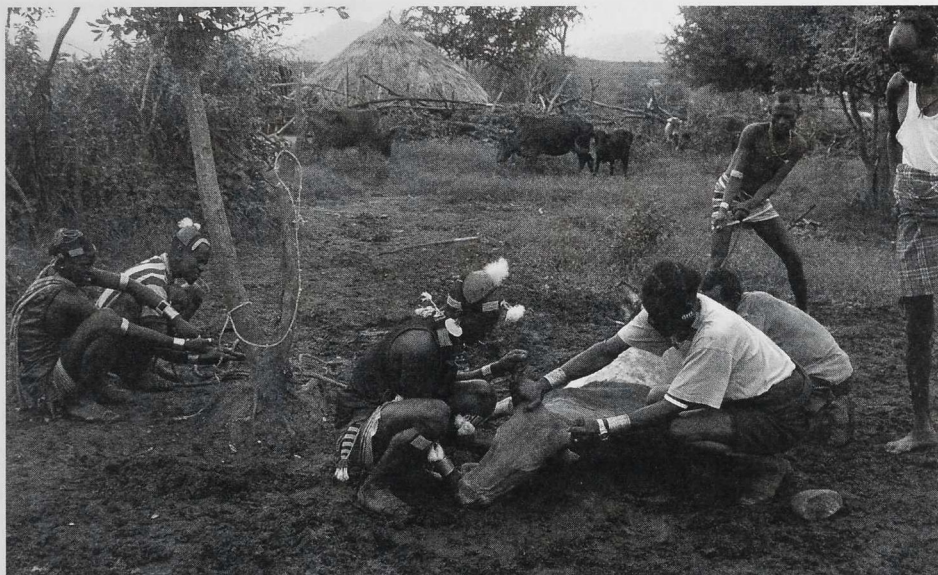


Fig. 12. Deformation procedure of an ox's horn, near the house of its owner, Hamar society of southern Ethiopia.

in order to insure its success. The Hamar elders (*donza*) perform the *barjo éla* ritual, which is to say that they call for rain, abundance and the health of men and cattle to come. *Barjo* is a complex Hamar notion that takes different meanings (destiny, good fortune, luck, life force, well-being) and that is possessed by certain substances as well as things, words, 'invisible beings,' places, water, plants, animals and mankind (Strecker 1988). The Hamar say that their bovines contribute to their own *barjo*. Horn deformation aims to not only strengthen their own *barjo*, but also that of their *Errewak*.

The ownership of a favourite animal appears to indicate the herders' compliance with the norms of their society, insofar as it is key to their pastoral training and social integration. Through it, they experience the difficult handling of a herd (necessary to their future collective and family lives), a youthful manliness (strength, courage, beauty, endurance, warlike fervour) away from a feminine presence, the ethics of equality that prevails amongst friends of the same age group that are at the onset of their social career and, finally, subordination to the elders (*donza*), who hold cultural knowledge and political power. Thus, the acquisition of such an animal does not reflect a herder's personal interest for bovine aesthetics, but the will to belong fully to one's age group by corresponding to the Hamar's conception of the ideal man.



Fig. 13. Fracturing the base of the horn-sheath with a stone weight.

At the moment of deformation, the organiser has the opportunity to present to the attending Hamar his own singularity and that of his *Errewak*. Indeed, friends of his own age group (*anamo*) choose at this time the name of the favourite ox, based on the colour of the animal's hide. Then, the herder takes this name for himself as 'father of this hide colour,' a name by which his friends shall refer to him out of respect and acknowledgement. The deformation of the horns is therefore a fundamental step in the future life of a man who endangers the life of his favourite animal itself, in order to insure his status as a herder.

'Deforming horns' is the English translation of the Hamar words *kroshumba para*—the first word means 'horn' and the second, 'throwing a stone.' Indeed, a Hamar herder modifies the shape of a favourite bovine's horns by dealing precise repetitive blows with a stone weighing between 1 and 3 kilos. Found on riverbanks, this stone is often pitted so as to offer a good handgrip and to make its edges round, thereby avoiding the deep fracturing of the skull's bones. The stone is extremely difficult to find and is generally used only within this context. After



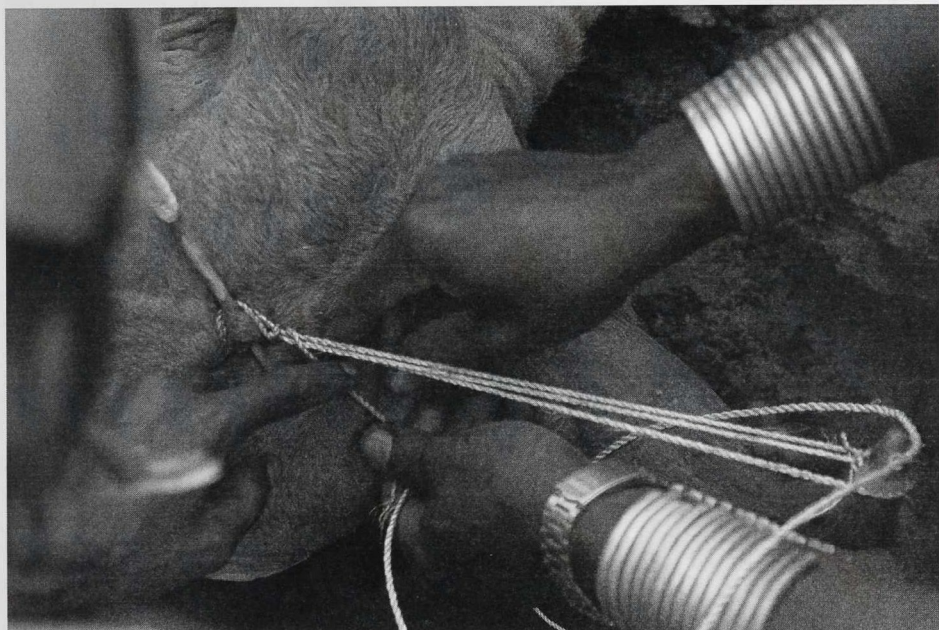


Fig. 14. After the forehead of the animal is cut, a stick is inserted in order to maintain the tension on the rope attached to the horn.

each use, it is stored in a safe place until another man needs it for his favourite animal. The stone does not hold a particular significance for the Hamar; it is simply an ordinary stone appreciated for its physical properties. However, the Hamar do give a certain importance to stones that were deemed effective during a previous usage—in other words, stones that were used for successful deformations.

During the deformation procedure, (in this example, we are dealing with future *kamara* horns) the animal is isolated from the herd and held lying on its left side by a few men, while the expert confidently deals a dozen blows to the ox's skull, specifically at the base of the horn-sheath (Fig. 13). The blows slowly free the sheath from its bony base and create a semicircle of fractures towards which the horn shall be pushed and twisted until the cracking sound indicating its release is heard. The horn shall then grow against the break. The intervention is brutal and occurs only once. Supposedly, it promotes docility in the animal, in the same way castration is said to. If it fails and the animal does badly, the owner shall have to find a new *Errewak*, because it is considered the herald of bad luck.

A rope is then affixed to the tip of the left horn and the head of the animal (Fig. 14). With a knife, the expert carefully cuts parallel lines on the animal's muzzle. The two cuts that he attempts to produce must be deep enough to insert a stick

that shall hold a rope connecting the forehead of the *Errewak* to its horn, which was previously incised. Indeed, the expert creates a groove along the circumference of the tip with his knife in which he will secure the rope (Fig. 15). Thanks to the rope, which shall fall off by itself about a month later, this technique allows for the creation of the tension needed for the desired alignment of the horn and keeping it stationary. Fresh cow dung is later applied to the wounds, used as disinfectant and painkiller. Finally, in order to mark their participation, additional lines are handmade by the individuals present. Referred to as *gomorro* (ornaments), these have a temporary aesthetic value that distinguish the *Errewak* from the other animals as well as a propitiatory value. Once the procedure on the horns is completed (approximately 10 minutes), the animal gets up by itself and rejoins the herd.

This step completes the aesthetic transformation of the favourite ox. The visual characteristics of this animal are noticeable against the other animals of the herd, thanks to the care given by its owner. These also confirm the symbolic value of the *Errewak*, which, by its *barjo*, guarantees the good health of its owner. In fact, a Hamar breeder believes that his *Errewak* personifies his own *barjo*. Horns having been deformed as prescribed by tradition, he can now honour his *anamo* and celebrate the qualities of his favourite animal in his songs. Also, in his dances, when surrounded by his close relatives and friends, he imitates with his arms the shape of his *Errewak's* horns (Strecker 1986).

Techniques related to the deformation of cattle horn vary from one ethnic group to another. While the stone weight used to break the base of the horn-sheath is common to the populations of southern Ethiopia (Bodi, Dassanetch, Hamar, Mursi, Nyangatom) as well as the Pokot of northern Kenya (Brown 1990) and the Longarim of south-eastern Sudan (Kronenberg 1961), this is not the case amongst the Murle, Dinka and Nuer of Sudan, for example (Lewis 1972; Ryle 1982; Streck 1982). Shortly after his initiation, a youth receives an ox, the beauty of which he tries to enhance and for which he composes songs that inspire respect from the other herders. An expert is called to modify the shape of the horns of the favourite animal in order to personalise it according to the youth's wishes. The expert softens the horn by exposing it to the heat of a firebrand, and cuts it diagonally with a freshly sharpened spear. The incision is made through the stratum germinativum deep into the corium (Schwabe 1984). The base of the horn is then garrotted with bark fibres to stop the blood weeping from the wound. The horns will grow back, curving in the direction of the open angle. This technique of incision with a spear allows for its repeating until the shaped desired by the owner is obtained. The animal suffers and certain



Fig. 15. Cuts, made with a knife, on the tip of the horn help secure the rope.

anthropologists remind us that the Nuer compare this ordeal to the initiation that transforms adolescents into men, during which parallel incisions are made on their forehead (Evans-Pritchard 1953; Streck 1982).

#### **What is the significance for the bucrania at Kerma?**

Bucrania deposits at Kerma demonstrate without a doubt the fondness for cattle and the value their ownership represented within society. Deposited around tombs, they symbolised the wealth and the power of their master. Evidently, it

is extremely tempting to make parallels with modern pastoral societies of East Africa, where the social and symbolic role of cattle is important. The deformed horns that characterise certain skulls at Kerma evoke the practices related to the embellishment and differentiation of the favourite animal, as performed amongst numerous groups of modern herders, notably the Hamar. It would be rather simplistic to transpose directly these ethnographic observations to the archaeological context. Yet, the animals (cattle) with deformed horns at Kerma were without a doubt imbued with a special significance and the will to physically mark them expresses a desire to distinguish them from others. Perhaps these were favourite animals, represented by only one or two per herd. Our calculations show that their ratio was one animal to eight. We can thus suggest the existence of family herds (from the same lineage), each provided with a favourite ox.

The most richly endowed tombs show that, within the hierarchical society of the Kerma moyen, certain individuals were sufficiently powerful for 500 to 5000 heads of cattle to be gathered at their death. In this case, we are mostly likely dealing with the gathering of several herds for the funeral. The distinctive diets of certain bovines—highlighted by carbon/nitrogen isotope analyses—suggests different environments, thus herds of various origins (Iacumin et al. 2001; Thompson et al. 2008). There would have been, among each of these herds, several favourite animals; however, their skulls would have been arranged according to other criteria: beast with deformed horns, cows, bulls, oxen, and bullocks. However it is also possible that special herds existed, for example a herd entirely comprised of cattle with forward-pointing horns. Such “royal” herds, belonging to the monarch himself, would symbolise his power and his special rank.

In interlacustrine kingdoms and in Madagascar, pastoralism has played an important role related to the wielding of power. Known examples have revealed much on the status certain bovines might have had. In Rwanda, the ownership of one or several cows granted a certain social prestige, which created class divisions (De Heusch 1982). The monarchical system rested on the ownership of bovine herds. In theory, the king was the owner of every cow in the kingdom and trusted its management to the Tutsi lords. The most prestigious of all herds was that of the king; it was comprised of specifically chosen cows, with great horns and a slender figure obtained by crossbreeding. In Bunyoro, there were also royal herds and any person owning a herd was assured of high social status (Mafeje 1991). The existence of royal herds is also mentioned in the south-west and the south of Madagascar, among the Bara and the Mahafaly (Faroux 1989). Within these societies, pastoral practices cannot be separated from the religiosity experienced by these

groups. Oxen remain at the centre of communication between the living and the family ancestors, on which their prosperity depends. The quality of this communication is always achieved by sacrifice of oxen—the ultimate wealth. Similarly, connections of power are also made through ostentatious display: the family that sacrifices the greatest number of oxen during important ceremonies (circumcision, funerals) is the one with whom alliances are most sought. Thus a herder can build, for his own profit, a network and, when the need arises, mobilise groups of labour beyond the potential offered by his extended family. At the death of the last Mahafaly king, Tsiamponde, in 1911, a large platform of 40 m square, which took six months to build, was erected (Boulfroy 1976). At the funerary ceremony, 700 zebu skulls were deposited, representing only half of the total number of animals sacrificed. Fifty percent of these were taken from the royal herd itself and vassal clans provided the rest. After the slaughter of the 1400 zebus—an event that lasted 3 days—the meat was distributed to the inhabitants of the kingdom.

In Kerma, like in these kingdoms, cattle ownership must have conferred a certain prestige, the expression of which was also demonstrated by funerary customs. While certain oxen might have been favourite animals, it is also possible that horn deformation was reserved for the animals belonging to the elite, like the royal herd found in certain African kingdoms. As in Madagascar, the sacrifice of these animals during particular ceremonies, notably during funerals, must have corresponded to a demonstration of power and a means of establishing one's authority over an alliance network.

*Text translated in English by Caroline M. Rocheleau*

## REFERENCES

- BEIDELMAN, T. O. 1966. The ox and the Nuer sacrifice: some Freudian hypotheses. *Man New Series* 1: 453-467.
- BONNET, C. 2000. *Edifices et rites funéraires à Kerma*. Paris. Errance.
- BOULFROY, N. 1976. Vers l'art funéraire mahafaly. *Objets et Mondes* 16 : 95-116.
- BOURRIAU, J. 2004. Egyptian pottery found in Kerma ancien, Kerma moyen and Kerma classique graves at Kerma. In: T. Kendall (ed.), *Proceedings of the IXth International Conference of Nubian Studies (Boston, 21-26 August 1998)*: 3-13.
- BRASS, M. 2007. Reconsidering the emergence of social complexity in early Saharan pastoral societies, 5000-2500 BC. *Sahara* 18: 7-22.
- BROWN, J. 1990. Horn-shaping Ground-Stone Axe-Hammers. *Azania* 25: 57-67.

- BURTON, J. W. 1981. *God's Ants: A study of Atuat Religion*. Studia Instituti Anthropos 37. St. Augustin, Germany. Anthropos Institute.
- BUXTON, J. 1973. *Religion and Healing in Mandari*. Oxford. Clarendon Press.
- CHAIX, L. 1986. Les troupeaux et les morts à Kerma (Soudan) (3000 à 1500 avant J.C.). *Anthropologie physique et archéologie*: 297-304. Paris. Centre national de la recherche scientifique.
- CHAIX, L. 1988. Le monde animal à Kerma (Soudan). *Sahara 2* : 77-84.
- CHAIX, L. 1993. The archaeozoology of Kerma (Sudan). In: W. V. Davies, R. Walker (eds), *Biological anthropology and the study of Ancient Egypt*: 175-185. London. British Museum Press.
- CHAIX, L. 1994. Nouvelles données de l'archéozoologie au nord du Soudan. C. Berger, G. Clerc, N. Grimal (eds), *Hommages au Professeur J. Leclant. Bibliothèque d'Etudes. Institut français d'archéologie orientale. volume 2: Nubie, Soudan, Ethiopie*: 2, 106, 105-110.
- CHAIX, L. 2000. Les animaux et les morts à Kerma (Soudan) entre 2500 et 1500 avant J.-C. Faits archéologiques et interprétations. In : L. Bodson (ed.), *Ces animaux que l'homme choisit d'inhumer. Contribution à l'étude de la place et du rôle de l'animal dans les rites funéraires. Colloques d'histoire des connaissances zoologiques*: 11, 15-39.
- CHAIX, L. 2003. La découpe de l'agneau: un rite funéraire à Kerma (Soudan) vers 2000 av. J.-C. *Revue Archéologique de Picardie* 21: 219-224.
- CHAIX, L. 2004. Déformations anciennes et actuelles du cornage bovin en Afrique du Nord-Est. In : C. Guintard, Ch. Mazzoli-Guintard (eds), *Elevage d'hier et d'aujourd'hui. Mélanges d'Ethnozootechnie offerts à Bernard Denis*: 21-32. Rennes. Presses Universitaires de Rennes.
- CHAIX, L. 2007. Contribution to the knowledge of domestic cattle in Africa : The osteometry of fossil *Bos taurus* L. from Kerma, Sudan (2050-1750 BC). In: G. Grupe, J. Peters (eds), *Skeletal series and their socio-economic context*: 120-249. Documenta Archaeobiologiae, Bd. 5. Rahden. Verlag Marie Leidorf GmbH.
- CHAIX, L. and A. GRANT. 1992. Cattle in Ancient Nubia. *Anthropozoologica* 16: 61-66.
- COOTE, J. 1992. 'Marvels of Everyday Vision': The Anthropology of Aesthetics and the Cattle-Keeping Nilotes. In: J. Coote, A. Shelton (eds), *Anthropology, Art and Aesthetics*: 245-273. Oxford. Clarendon Press.
- DE HEUSCH, L. 1982. *Rois nés d'un cœur de vache*. Paris. Gallimard.
- DENG, F. M. 1972. *The Dinka of the Sudan*. New York. Holt, Rinehart & Winston.

- DUBOSSON, J. in press. How the "Favourite Animal" influences the Hamar Herder's Identity. In: K. Arabio, S. Epple (eds), *Images of Self and Other. Essays on Identity and Cultural Diversity in Ethiopia*. Mainz Series of the Institute of Anthropology and African Studies, Johannes-Gutenberg University Mainz. Köln. Köppe Verlag.
- DUMONT, L. 1983. *Essais sur l'individualisme. Une perspective anthropologique sur l'idéologie moderne*. Paris. Editions du Seuil.
- EVANS-PRITCHARD, E. E. 1940. *The Nuer: A Description of the Modes of Livelihood and Political Institutions of a Nilotic People*. Oxford. Clarendon Press.
- EVANS-PRITCHARD, E. E. 1953. The Sacrificial Role of Cattle Among the Nuer. *Journal of the International African Institute* 23(3): 181-198.
- EVANS-PRITCHARD, E. E. 1956. *Nuer Religion*. Oxford. Clarendon Press.
- FAROUX, E. 1989. Une étude pluridisciplinaire des sociétés pastorales de l'ensemble méridional de Madagascar. *Cahiers des sciences humaines* 25(4): 489-497.
- FERRERO, N. 1984. Figurines et modèles en terre mis au jour dans la ville de Kerma. In: C. Bonnet at al. (eds), *Les fouilles archéologiques de Kerma (Soudan)*. *Genava* 32 : 21-25.
- FUKUI, K. 1996. Co-evolution Between Human and Domesticates: The Cultural Selection of Animal Coat-Colour Diversity Among the Bodi. In: R. Ellen, K. Fukui (eds), *Redefining nature: ecology, culture and domestication*. Oxford, Washington D.C., Berg.
- GOURLAY, K. A. 1972. The Ox and Identification. *Man New Series* 7(2): 244-254.
- GULLIVER, P. H. 1955. *The Family Herds. A Study of two Pastoral Tribes in East Africa. The Jie and the Turkana*. London. Routledge & Kegan Paul LTD.
- HAZEL, R. 1997. Robes colorées et cornes déformées: les pasteurs est-africains et leurs bœufs de parade. *Anthropologie et Sociétés* 21(2-3): 67-85.
- HONEGGER, M. 2005. Kerma et les débuts du Néolithique africain. In: C. Bonnet, M. Honegger at al. (eds), *Les fouilles archéologiques de Kerma (Soudan)*. *Genava* 53: 239-249.
- IACUMIN, P., BOCHERENS, H., CHAIX, L. 2001. Keratin and N stable isotope ratios of fossil cattle horn from Kerma (Sudan) : a record of dietary changes. *Il Quaternario* 14(1) : 41-46.
- JONES, D. K. 1984. *Sheperds of the desert*. London. Elm Tree Books.
- KRONENBERG, A. 1961. The Longarim favorite beast. *Kush* 9 : 258-277.
- LECOINTE, Y. 1987. Le site néolithique d'El Ghaba: deux années d'activité (1985-86). *Archéologie du Nil Moyen* 2 : 69-87.

- LEWIS, B. A. 1972. *The Murle. Red Chiefs and Black Commoners*. Oxford. Clarendon Press.
- LIENHARDT, G. 1961. *Divinity and Experience. The Religion of the Dinka*. Oxford. Oxford University Press.
- LYDALL, J. and I. STRECKER. 1979. *The Hamar of Southern Ethiopia, vol. II: Baldambe Explains*. Arbeiten aus dem Institut für Völkerkunde Göttingen, Bd. 13. Hohenschäftlarn: Renner.
- MAFEJE, A. 1991. *The Theory and Ethnography of African Social Formations. The Case of the Interlacustrine Kingdoms*. London. Council for the Development of Social Science Research in Africa.
- PRIVATI, B. 1999. La céramique de la nécropole orientale de Kerma (Soudan). Essai de classification. *Cahiers de recherches de l'Institut de papyrologie et d'égyptologie de Lille* 20 : 41-69.
- REINOLD, J. 2000. *Archéologie au Soudan: les civilisations de Nubie*. Paris. Erance.
- REINOLD, J. 2008. *La nécropole néolithique d'El-Kadada au Soudan central. Vol 1 : les cimetières A et B du kôm principal*. Paris. Éditions Recherche sur les civilisations.
- RYLE, J. 1982. *The Warriors of the White Nile*. Amsterdam. Time-Life Books.
- SALVATORI, S. and D. USAI. 2002. The second excavation season at R12, a late neolithic cemetery in the Northern Dongola Reach. *Sudan and Nubia* 6: 2-7.
- SCHWABE, C. W. 1984. A unique surgical operation on the horns of African bulls in ancient and modern times. *Agricultural History* 58: 138-156.
- SELIGMAN, C. G. and B. Z. SELIGMAN 1932. *Pagan tribes of the Nilotic Sudan*. London. Routledge.
- STRECK, B. 1982. *Sudan. Steinerne Gräber und lebendige Kulturen am Nil*. Köln. DuMont Buchverlag.
- STRECKER, I. 1986. *The Song of Hamar Herdsman*. Ethnographic film, 16mm, 45min, Colour. Baden-Baden. Südwestfunk.
- STRECKER, I. 1988. *The social practice of Symbolisation*. London. Athlone Press.
- THOMPSON, A. H., CHAIX, L., RICHARD, M. P. 2008. Stable isotopes and diet at Ancient Kerma, Upper Nubia (Sudan). *Journal of Archaeological Science* 35: 376-387.
- WENGROW, D. 2001. Rethinking "cattle-cult" in early Egypt: towards a prehistoric perspective on the Narmer palette. *Cambridge Archaeological Journal* 11(1): 91-104.