

Randi Haaland

## **Ritual and political aspects of iron working; iron in war and conflict**

---

### **Introduction**

Meroe has been referred to as the Birmingham of Africa because of the enormous slag mounds surrounding the ancient city (Sayce 1911: 55).

I have in an earlier article discussed the importance of the slag mounds both for dating and for an estimation of the extent of iron working which took place, based on the volume of the slag recorded (Haaland 1980; 1985). My approach during the 1980's was focused on the technology and economy of iron smelting, as well as political aspects. I saw the political control and monopoly of iron working as important ways for the ruling class to control not only means of production but also the means of destruction (Haaland 1985). What eluded me at that time was the importance of the ritual-symbolic aspects of iron working. I had observed that a temple was built on top of a slag mound, but my interest at that time was not to get an understanding of the symbolism surrounding iron working. However, if we look at metal working from a wider cross-cultural perspective one sees that it is generally entrenched with symbolic meaning and ritual activities (see also Barndon 2001; Schmidt & Mapunda 1997). I thus think that the ritual aspects of iron working have to be considered and it is in this light that I see the building of the temple on top of the slag mound. This will be discussed below.

### **Ethnography of Iron working**

Ethnographic studies provide abundant accounts of the symbolism of iron, iron making, blacksmiths and iron products. We find the transformative aspects of iron working to be striking in these cross-cultural studies. My own ethnographic studies show that there is a wide variation in technology of smelting iron

(four case studies). There is variation in the technique of treating the slag from the use of slag-pits to slag tapping, to variation in the type of furnace super-structures. However, transcending the variation in technology is the strikingly similar symbolic and ritual activities surrounding the smelting. The blacksmith's role in the material transformation (ore to iron) is claimed to be a metaphoric model for social transformation (rites of passage). The act of smelting is looked upon as an act of reproduction. Inserting the tuyeres and the blowing of the bellows are seen as an act of procreation, the smith penetrating the furnace (woman) and fertilising it, the product is the bloom (the child). Ideas associated with smelting are thus closely related to general ideas about procreation and transformation (Haaland et al. 2002; Haaland et al. 2004; Haaland 2004; Haaland 2004).

The earliest archaeological evidence for iron smelting comes from the Near East, in Anatolia. It is apparent that the ritual and symbolic significance of early iron objects was more important than the productive-technological aspects. The first smelted iron (13th century BC) was used to make ritual objects and ceremonial weapons. These were high prestige material being produced in the palace or the temple (Pleiner 2000: 8). Even as iron was gradually produced on a much larger scale these aspects of metal working remained. It was a metal looked upon with fear and viewed as evil. It was primarily used as means of applying political control. Linguistic and archaeological data indicate that iron, at least in the early phases, was under direct control of the ruling groups, whether religious or secular and a monopoly of craft specialists which would have facilitated the control by the ruling groups related to the palace or the temple. Among the Assyrians in the 9th century the metal daggers of the rulers came to represent his army (Pleiner 2000: 9). The political control of iron is a dominant feature in the history of iron.

The ethnography of today and history of early iron working in the Near East shows the ritual and symbolic importance of iron. Iron thus appears to have qualities that everywhere seem to stimulate people to spin far-reaching webs of significance (Geertz 1973) around objects and activities connected with its production and use. Although there are variations there seems to be global structural similarities that are difficult to explain only as a result of diffusion of ideas or migration of people. In the following, I shall look at the iron and iron working from this perspective. By drawing on the ethnographic case studies I will explore the evidence for ritual and symbolic importance of iron production at Meroe.

### **Iron working at Meroe**

The very extensive remains of iron working (Fig. 1), clearly show the importance of this metal, however the puzzle is the limited amount of iron



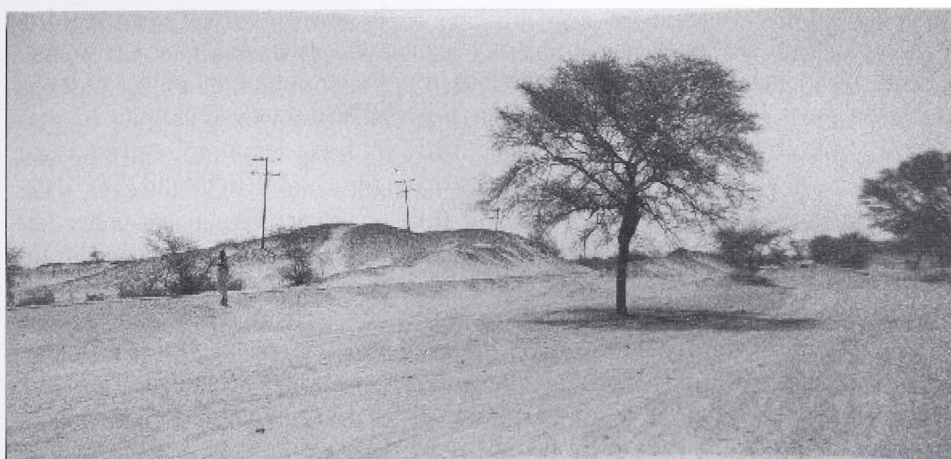


Fig. 1. Slag mounds east of the city of Meroe. Note that the railroad is cutting across the slag mounds (Photo Randi Haaland).

objects found from the Meroitic period. An early survey of the iron products was published by Wainwright (1945) and by Trigger (1969). Recently more general remarks have been written by Welsby (1996) and Edwards (2004). It appears that most of the objects recovered consist of small items such as light weapons and objects used for personal decoration, only rarely do we find tools of direct value for agriculture or for other forms of production<sup>1</sup>. Few iron objects are found in the mortuary contexts, and it was only during the late Meroitic period that iron objects, iron tipped spears and arrows, became common in burials over a wide area. Arkell stated in 1966 that of the 1.500 graves at Napata which preceded Harsiotef (4th century BC) only 18 contained iron objects and they were small consisting of arrowheads, tweezers etc. At other Meroitic cemeteries, which date between the 2nd century BC and 3rd century AD, the single barbed arrowhead is the most prominent artefact, especially from the 2nd century AD.

More recent work during the 1990's has considered the scale of iron production at Meroe. An estimate of the quantities of slag in the area of Meroe suggests it might represent some 5000 tons of iron, or 2500 tons of finished metal iron objects after smithing. This might represent an annual production of perhaps 5-20 tons of iron objects over a period of 500 years (Rehren 2001). However,

<sup>1</sup> Mahmoud Mohamed Beshir is for the moment working on a catalogue of the iron objects in the Sudan National Museum. This important work will be the basis for a Master thesis at the University of Bergen.

archaeological finds of iron objects are very scarce and it is clear that the vast Meroitic iron industry is not accounted for in the graves, even if one considers the possibility that much material was recycled and discarded. One has to consider other explanations; I will argue that iron was an important object of trade, Egypt being a likely candidate for export; this will be discussed below.

There are very few dates on iron working. Slag from iron smelting was found in a level, which is C-14 dated to the sixth century BC. However, dates from furnaces point to the main part of iron smelting taking place rather late within the Meroitic period. (Shinnie & Kense 1982). The ore was found in the hills to the east (Fig. 2) where it occurs as a black crust on the surface of the sandstone, which actually covers a large part of the Northern Sudan (Trigger 1969). Tylecote (1970) analysed the iron remains and he assumes that the ore has been roasted and broken up in smaller pieces before being smelted. The hardwood acacia trees needed to produce charcoal for iron smelting would have been available in the area. Two millennia ago the environment and vegetation



Fig. 2. The Pyramids of Meroe in the background, flanked by the sandstone hills rich in iron ore (Photo Randi Haaland).

would have been significantly richer than what we see today, and the local environment of the Meroe region might be classified as low Woodland Savannah (Edwards 2004). The area which today is semi-arid and quite barren is, to a large extent, the product of human activities especially over-exploitation of trees which would have been related to charcoal production for iron smelting, but also to



overgrazing (Haaland 1985). The Meroitic iron-smelting furnace was dome-shaped, made of fired bricks. Surrounded by six pot-bellows, with two holes made for fastening two tuyeres to the furnace. The pot-bellows were probably covered with animal hide. The pot-bellows and tuyeres were made of the same type of clay as used for making household pottery. The tuyeres were used to force air into the furnace and the technique of tapping the slag was used (Tylecote 1982; Shinnie 1985).

The technology of slag tapping has been closely associated with Roman iron working. The furnaces seem to have been used repeatedly and the re-use is taken to indicate an organized specialist industry with a division of society into activity areas (Shinnie & Kense 1982). Iron smelting appears to have taken place within constricted areas as was pottery making (Shinnie and Kense 1982; Török:1979). The smelting furnaces and associated finds such as the roasting of the ore are enclosed by a brick structure. The location of iron smelting within the walled city of Meroe close to the palace suggests that the iron working was controlled by the state, and is also an indication of the importance of this work, which needed to be protected. The unpredictable attacks and raids of different groups especially the nomads in the area might have been a factor in placing the activities within the royal quarters.

As Tylecote has pointed out the iron smelting technique used during the early period, i.e. 6th century BC, would have been different from the later Roman slag tapping type (see also van der Merwe 1980 for further discussions and references). There is little evidence of the earliest furnaces, however, finds of bowl-like pits could either be remains of slag pits from non-slag tapping furnaces or from forging activities (Tylecote 1970 van der Merwe 1980). The increased importance of iron from around the beginning of the first millenium BC and onwards, is consistent with the use of a more efficient slag tapping technique practised in the Roman period. The slag tapping technique probably spread southwards along the Nile valley during the first century AD, when there was an active Roman military presence in Nubia (Shinnie 1967; 1985; Török 1979; Tylecote 1982; Welsby 1996; Edwards 2004). The older technique of using slag pits would have been introduced much earlier, during the 6th century BC, most probably also from Egypt (Arkell 1961; Kense 1985; van der Merwe 1980; Miller & van der Merwe 1994), or possibly from the Horn of Africa-via the Arabian Peninsula (Kense 1985; van der Merwe 1980; Miller & van der Merwe 1994).

It does not seem that the technique of tapping the slag was continued in use, nor did it diffuse to the rest of Africa until almost 1000 years later, and then only to rather limited areas (Chiticure 2005). As stated by Miller and van der Merve (1994: 9) "The iron smelting technique at Meroe relates to the Egyptian and Roman technology and appears to have no bearing on the development of

metallurgy in West or East Africa". What is recorded of iron smelting in the Sudan and adjacent areas of Ethiopia today is all based on slag pits (Haaland 1985; Haaland et al. 2004, a, b; Todd 1985; van der Merwe 1980).

Interesting work on Meroitic iron objects has been done lately by Abdu and Gordon (2004). They have analysed objects from the early to the classic Meroitic period (300 BC - 250 AD), and they suggest that these represent a distinctive iron making style which is not found in the eastern Mediterranean or in Sub-Saharan Africa, but rather suggests transmission of knowledge to Meroe from the east, from Arabia or perhaps India, by way of the Horn of Africa. They emphasise here the deliberate use of iron-arsenic alloys and piled metal, probably to produce distinctly decorated surfaces. The smiths achieved a high level of skill in the preparation of their metal and in the shaping of small, complex objects. They argue that the material suggests that iron-objects-knowledge might have been introduced via trade across the Indian Ocean. Several cultural features show Indian cultural influence on the Meroitic culture, and this has led Vercoutter to suggest that Meroitic art was "indianissant (quoted in Shinnie 1967: 114).

### Centralised control

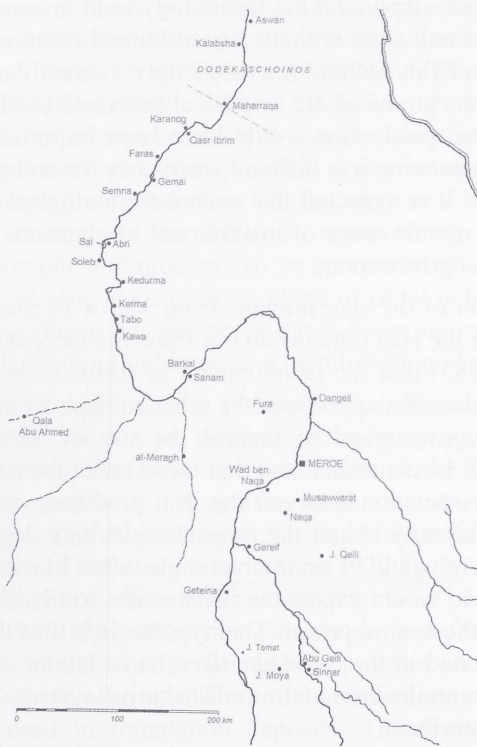


Fig. 3. The ruins of the temple of the war god Apedemak built on top of the slag mounds (Photo Randi Haaland).

I have in my earlier work (Haaland 1980; 1985) argued for a centralised political control of the iron production at Meroe; in this article I will make a case for the importance of temples in this production. Two factors are relevant to discuss here, first the role of temples in maintaining centralised control of the



production and thus the system of redistribution and secondly the ritual role of temples in this production. The location of a temple in the south eastern part of the city dedicated to the war god Apedemak (dated to 246-266 AD) on a slag mound is an indication of the importance of the temple in the ritual and political aspects of iron working (Fig. 3). Slag mounds are reported at a number of important Meroitic sites such as Kawa, Napata, and Argo Island (Fig. 4). At these sites the slag heaps occur in connection with a Meroitic temple (Trigger 1969; Wainwright 1945).



Major centres of the Meroitic period

Fig. 4. Major Meroitic sites.

I discussed (1985) how the concentration of iron working in a specific area would have had a negative effect on the vegetation, and lead to deforestation of the trees needed for iron smelting. In economic terms centralisation implies that more labour has to be devoted to the transport of charcoal to the smelting sites, than would have been the case under a decentralised system. Both ecologi-

cal and economic consideration would thus seem to favour decentralisation. There must have been very strong forces working in the other direction. The hypothesis is that these forces are found in the field of politics. The early savannah states were significantly based on military technology where iron products played an essential role (Goody 1971: 46). Control over the supply of these iron weapons depended on supervising and controlling the actual process of iron production, not in controlling the raw material: iron and charcoal, since this is readily available in the area. From the point of view of a central government this must have been a critical problem. On the one hand the raw material for iron production is in abundant supply and the technology used in iron production can be readily applied on a small scale without any additional resources. On the other hand decentralised use of this technology may imply a direct danger to political control since the weapons produced are a political source of locally decentralised power. Control over iron production would have been important to the central power, but the task of achieving it is difficult since once the technology is known it is simple to maintain. It is expected that such a technological situation would favour development of a wide range of institutional mechanisms – which served the interest of the central government.

The centralisation of the slag remains from Meroe is consistent with this interpretation. However the slag remains do not show the mechanisms involved. I have argued earlier (1985) that the development of forms of belief and institutions which set the blacksmiths apart from the other subjects of the state makes it easier for the central government to control the use of the iron producing technology which has to be controlled and that these belief forms were related to caste. The closer the association between the iron producing activities and the blacksmiths caste-like identity is and the more the ideology degrades the caste, the more constraints there would be on interaction between blacksmiths and other people, and the more one would expect the blacksmiths to be directly dependent in relation to agents of the central power. The hypothesis is thus that the stigmatisation, which is manifested in the caste-like division of labour, emerged in connection with political centralisation and a redistributive system of circulation of specialised goods and services.

I thus see that the iron working could have been based on a caste like division of labour that we can still observe among blacksmiths in Sudan, Ethiopia and in the savannah area. I will argue that the Kingdom of Kush was based on a strong centralisation of the production of iron, a centralisation that must have had as a consequence severe deforestation. An important question is the implication this ecological deterioration had for the centralised political power. I have previously argued (Haaland 1985) that this was one factor of many in the decline of the kingdom of Kush.



### Ideology-rituals

As mentioned above a temple dedicated to the war god Apedemak, dated to the 3rd century AD is built on a slag mound at the south-eastern part of the ancient city of Meroe. In the political control and monopoly of iron working I see the temple manifested by the god Apedemak as ideologically and ritually important in legitimizing the political power. The temple could have been important in the investiture of the king, in his initiation into his new role. Ethnographically it is striking that cross-culturally one finds that the symbolism of iron working to a large extent occurs in social life - most importantly to status transformation. Such transformations, particularly by initiation into a new role, implies that a continuity in the community's status structure is brought about by the transformation of individual status (Haaland et al. 2002; Herbert 1993; de Maret 1995; Reid & McLean 1995; Sassoon 1983; Childs 1991; Schmidt 1997; Schmidt & Mapunda 1997). In our ethnographic studies of iron smelting it was obvious that the activities involved took place in contexts of techno/practical concerns as well as in contexts of symbolic meanings. Iron production can be seen as a kind of ritual where the transformative character of the activities, transforming ore to iron - nature to culture - is a complicated process. To be successful one has to perform certain rituals/magic to be able to succeed. A range of ritual is found in the whole technological process. From this perspective it is tempting to see the building of the temple on the slag mound in Meroe as a manifestation of rituals of iron smelting.

The lion god Apedemak is a Meroitic god that is mainly seen as a god of war (Žabkar 1975). We can see this in the iconography where Apedemak is presented with weapons, which are first and foremost the bow and arrow (Fig. 5), but also the spear and sword. A graffito on the temple wall at Musawwarat es-Sufra shows Apedemak dispatching large single barbed arrows, from a composite bow, into the back of a fleeing army (Hintze 1979: fig 3; Welsby 1996: 42). Within the same temple Hintze recovered several fragments of iron objects during his excavations in 1960-1961. Most interestingly are iron fittings and nails probably originating from a box, which contained the point of an iron spear. It is alluring to see these as votive offerings. The ritual significance of iron is also evidenced in iron being used in foundation deposits. The foundation deposits were a common feature of early Kushitic ritual and followed standard Egyptian practice. The objects were placed in pits dug under corners of buildings or tomb monuments. It is worth noticing that some of them were iron objects specially produced for this function (Welsby 1996: 19). They have been found in early contexts such as the foundation deposits beneath the pyramids at Nuri at the time of Harsiotef, 404-369 BC (Welsby 1996: 170).



Fig. 5. The war god Apedemak holding a bow and arrow in one hand and a cord of prisoners in the other. Relief from the south wall at the temple at Musawwarat es-Sufra (Photo Randi Haaland).

Iron was very rare before the 6th century. An iron spearhead found in the tomb of Taharqo (690-664 BC) is wrapped in gold foil, indicating the very special nature of iron<sup>2</sup>. Swords are depicted on temple walls, famous is the relief found at Jebel Qeili of king Shorkaror (20-30 AD), which shows him slaying the enemies holding a large spear and a quiver full of arrows. From his left shoulder there is a band from which hangs his long straight sword. He thus carries the sword in the same way the Beja and other tribes of the Sudan still do today (Hintze 1959; Shinnie 1967: 51). Hintze suggests that this scene could be a glorification of a Meroitic victory, against an attempted advance of the Axumites. A

<sup>2</sup> The dates used here are based on the list of rulers presented by Derek Welsby (1996) in his Appendix pp. 207-209.



similar scene is depicted on a sandstone plaque showing prince Arikhankharer (1-20 AD) slaying his enemies; the sword is carried in the same manner as referred to above.

The weaponry recovered from graves show the evidence for archery to be overwhelming, and indicates the importance of this in the Kushitic army. The arrowheads take a variety of forms; they are mostly tanged, with one or two barbs. Remains of bows have been found in the tomb of queen Amanikhatashan (62-85 AD) at Meroe. Examples of spears are frequently found in graves, and rare examples of swords (Welsby 1996: 42). A man buried with late Kushite pottery at Wadi es-Sebua, was found with an iron arrowhead lodged in his thorax. Two other individuals, who seem to have met a similar fate, were buried in the cemetery at Karanog (Welsby 1996: 41).

The iconography related to sovereigns and similarly to the god Apedemak underlines weapon and warfare, combinations of weaponry such as bow and arrows, spears and swords Török (1987). But as the discussion above illustrates the most prominent weaponry is the archery. An important scene is from the Lion Temple at Musawwarat es-Sufra where the king is elected by the ram headed Amon, which holds the bow and arrow in his right hand (Török 1987: fig. 29a). The relief of Apedemak shows him holding a bow and arrow in his left hand and a cord to which a prisoner is tied. As Shinnie expresses "His whole appearance as well as his equipment suggests strongly that we have here a warrior god of extreme importance" (Shinnie 1967: 142). Millet (1980) sees the god Apedemak first and foremost as the king's own god, a male deity par excellence, worthy of worship by a warrior king. Other reliefs show the rulers depicted with archery such as queen Shanadakheto (second century BC) and queen Amanishakheto spearing her enemies with weapons consisting of a bow and arrow, besides a long spear (Török 1990: figs 36, 38). The interesting iconography here is that weapons are associated both with male and female rulers (fig. 6), an indication of the dual nature of iron. Lenoble has looked at the representation of weaponry and found these to be quite abundant upon funerary chapel walls. What seems to be changing over time is the appearance of smiting scenes, stressing the military functions of the kingship. The stele of Harsiotef records a number of campaigns in which the king sent out his bowmen to do battle, the inscription also mentions the use of horsemen (Welsby 1996: 40). This seems to become increasingly important during the late Meroitic period, and Reliefs on the pylons of the Lion temple, Naga (Lenoble 1990: 253).

To sum up: important royal insignia were the sword, the spear, and arrows which are depicted on pyramid chapels and temples (Török 1990; Lenoble 2004). The large numbers of arrowheads found at Faras, Karanog, and Meroe in late Meroitic times may be seen to reflect the role of the central government in main-

taining security in an increasingly troubled period. It is only after the decline of Meroe that iron became a wide spread technology (Mapunda 1997; Trigger 1969).



Fig. 6. Reliefs on the pylons of the Lion temple, Naga. The king Natakamani to the left and the queen Amanitore to the right. The queen is holding a sword both in her right and left hand, while the king is holding an axe in one and a sword in the other hand (Photo Mahmoud Suliman Beshir).

We also know from written sources that the Meroites were threatened by war and rebellion. Strabo (25-21 BC) writes about the war between Meroe and the Romans during the office of Gaius Petronius as Roman prefect of Egypt. Pliny in his *Natural History* (VI. 35) gives an account of the campaign of Petronius, here he refers to a group of Praetorian troops which had been sent to Ethiopia by the Emperor Nero in about AD 61 (Shinnie 1967: 20). There is the account of King Aezenas, where he describes the defeat of Meroe by an Axumite army in 350 AD. The significance of this inscription has been much debated both in terms of whom they were fighting; as well as the time this happened (Shinnie,



1967: 52-54). However there can be little doubt that the Meroites had a strained relationship with the Axumites and that there were several conflicts as the reference to Hintze's interpretation of the scene depicted at Jebel Queili above indicates (Hintze 1979). Another major threat to the Kushite state has been posed by the nomadic raiding parties (Welsby 1996).

What comes across as an important part of the Meroitic political setting was war and conflict. The success of the Kushite army was attested by the survival of their state for over a thousand years. Without an efficient military force it is unlikely that this would have been achievable. My suggestion is that this was made possible not only by the large amount of iron being produced into weapons but most importantly that this was related to the centralised control of iron production. Hence we see the large slag remains, as evidence of large-scale iron working taking place in connection with the palaces and temples. The special activity areas related to iron production (and pottery production) are taken as an indication of the activities being restricted to people with a caste like identity. In this context it is apt to mention some interesting iron objects recovered at the town site of Meroe, which can be used in support of this argument. These were iron strips formed into an unusual shaped object, which may have been a standard placed on the end of a pole, in shape similar to some pot-marks, possibly used as royal property emblems (Shinnie & Kense 1982). If these were indeed markers of royal property it is a strong indication of royal monopoly of goods probably used in royal exchange.

Iron symbolism is ambiguous as it is associated with contrasting ideas - destruction versus production. In many of the great civilisations, it is the destructive (not the productive) forces that people generally associate with iron. The general impression is that iron tends to be associated with males with strength (physical as well as mental) and dominance. Interestingly iron objects predominantly are also associated with evil forces. On this background it is intriguing that iron-smelting activities are generally metaphorically associated with sex and reproduction. It is here worth mentioning that Apedemak the god of war was also seen as the god of fertility and provider of food (Žabkar 1975). The ritual significance is manifested in the temples being localised on slag heaps. Activities and tools connected with iron almost everywhere seem to be symbolically loaded. Iron symbolism is ambiguous as it may be associated with contrasting ideas - destruction versus production, death versus birth, male versus female.

## **Trade**

Trigger (1969) argues that the Ptolemaic accession in Egypt was marked by an intensification of trade that resulted in increased prosperity, cultural florescence, and strengthened royal authority in Egypt, and the Sudan. Trade with

Egypt continued to flourish and probably expanded into the early period of Roman rule. The rise of Axum as a major trading state, which had access to sea-ports along the southern coast of the Red Sea gave them an easy access to trading partners in the North. However Edwards (2004) has pointed to the marked absence of references in Egyptian texts (of this period) to trade or other contacts with Meroe itself (Edwards 2004: 167). On the Meroitic side there is abundant evidence for long-distance exchange. Most of the material comes from burials. Imports include mainly metal vessels (especially vessels for serving-display), jewellery, worked stone, glassware, faience and a wide range of ceramics as wine and oil containers (Török 1989; Edwards 2004: 167-168). The distribution of imports suggests that most foreign artefacts entering the Meroitic culture were being distributed through an elite network, probably royal. This type of exchange would most likely have been a royal monopoly. During the previous Napatan period most trade contacts seem to have taken the form of "Embassy Trade", a form of elite gift exchange widely encountered in the Mediterranean and Near Eastern World. It was apparently the case during the earlier Napatan period. Such exchange seems to have continued during the Meroitic period, linking the Meroitic kings with successive Ptolemaic and Roman rulers.

Edwards (1999) argues that the real economic power base of the Meroitic state lay in trade, while subsistence economy had relatively little surplus producing capacity. This has also been emphasised by Adams (1981) who sees the wealth and power of the Meroitic state being founded on the commercial rather than the agrarian base. Obviously some surplus production had to be available for the support of the royal palaces and specialists. The agriculture did not seem to have been founded on irrigation but on swidden agriculture (the Saqiya, the water wheel, was introduced at the end of the Meroitic period). The economic interest of the state was not based on productive processes. Edwards dismisses the idea of the presence of an administrative hierarchy or landed estates (royal or temple estates), he sees the state power as founded to a large extent on long-distance trade (Edwards 1999: 315).

Although the historical sources are almost non-existent, elephants, ivory, ebony and gold have been suggested to be important exports (Edwards 2004: 167-168). I will add a fifth item which I will argue to have been of crucial importance, and this is iron. Iron was a scarce commodity in Egypt, related both to the scarcity of charcoal for smelting and to ore, which both were present in abundance around Meroe. Arkell (1966) suggested that ore was imported to Egypt, Shinnie and Kense followed this up in 1982 where they argued that much of the iron objects in Egypt probably came from imported iron, smelted elsewhere, but forged in Egypt since there are hardly any remains of iron smelting. An indication of the importance of iron used as tributes to Egypt is attested from



later periods. From the 14th century the tribute from the kingdom of Makuria (Dongola) to Egypt consisted of lances, besides slaves and wild animals (O'Fahey & Spaulding 1974: 17). This suggests the importance of iron weapons, although the armoury seems to have changed from the Meroitic time with an emphasis on archery to lances and spears. Edwards (1999), argues that iron occupied a central place in the Meroitic state, as it was the case in the development of early states across Sudanic Africa. Edwards (1999) sees the kingdom of Meroe to have shared many of the characteristics of other early savannah states of the Sudanic zone. The trade goods consisted of luxury goods such as imported wine, glass, and metalwork. This type of trade formed an important part of a wider prestige-goods-economy of exotic artefacts which was controlled by the crown and redistributed through the elite and formed the cement that bonded the political body together. With redistribution through the elites, they created and maintained political ties. The collapse of royal control over long-distance trade and the prestige goods it gave access to, would have had a significant effect to the political cohesion of the state (Edwards 1999).

### **Conclusion**

To sum up, the early savannah states like Meroe were significantly based on a military technology in which iron products played an essential role. The political control of those products was thus very important. Iconography and burial finds show the significance of iron objects related to the elite-rulers. Iron was also of ritual significance as we see manifested in the temples being localised on slag heaps. Iconography on temples, pyramid chapels and grave finds emphasises iron objects. These are in contexts of transformations from living to dead, and most importantly in the investiture of rulers.

### **Acknowledgement.**

This paper is written in appreciation of the pioneering role that Lech Krzyzaniak has played in the archaeology of Sudan. Lech did not only keep a high academic standard, but his generosity was widely known and appreciated, from which I benefited when I worked with him at Kadero in the early 1970s.

## References

- ABDU, B. and R. GORDON. 2004. Iron Artefacts from the land of Kush. *Journal of Archaeological Science* 31: 979-998.
- ADAMS, W.Y. 1981. Ecology and economy in the Empire of Kush, *ZÄS* 108: 1-11.
- ARKELL, A.J. 1961. *A History of the Sudan-from the earliest times to 1821*. 2<sup>nd</sup> edition. London: Athole Press.
- ..... 1966. The Iron Age in the Sudan. *Current Anthropology* 7: 451-452.
- BARNDON, R. 2001. *Masters of Metallurgy-Masters of Metaphors*. Ph.D. Thesis. University of Bergen.
- CHILDS, T. 1991. Style, Technology, and iron furnaces in Bantu speaking Africa. *Journal of Anthropological Archaeology* 10: 332-359.
- CHITICURE, S. 2005. *Iron production in Iron Age Zimbabwe: stagnation or Innovation*. Ph.D. Thesis. London: University College.
- DE MARET, P. 1985. The Smiths Myth and the Origin of Leadership in Central Africa. In: R. Haaland and P.L. Shinnie (eds), *African Iron Working; Ancient and Traditional*: Oslo: Norwegian University Press.
- EDWARDS, D.N. 1999. Meroe in the Savannah-Meroe as a Sudanic Kingdom? *Meroitica* 15: 312-320
- ..... 2004. *The Nubian Past. An Archaeology of the Sudan*. London: Routledge.
- GEERTZ, C. 1973. *Interpretation of Culture*. New York: Basic books.
- GOODY, J. 1971. *Technology, Tradition and the State in Africa*. London: Oxford University Press.
- HAALAND, R. 1980. Man's role in the changing habitat of Mema during the old Kingdom of Ghana. *Norwegian Archaeological Review* 13: 31-46.
- ..... 1985. Iron production, its socio-cultural context and ecological implications. In: R. Haaland and P.L. Shinnie (eds), *African Iron Working; Ancient and Traditional*.. Oslo: Norwegian University Press.
- ..... 2004. Iron Smelting A vanishing tradition: Ethnographic Study of this Craft in South-west Ethiopia. *Journal of African Archaeology* 1 (2): 1-13.
- HAALAND, G., R. Haaland and S. Rijal. 2002. The Social Life of Iron. A Cross-Cultural Study of Technological, Cognitive, and Political aspects of Iron Symbolism. *Antropos* 97: 35-54.
- HAALAND, G., R. HAALAND AND DATA DEA. 2004. Furnace and Pot; why is the iron smelter a big pot maker? *Azania* XXXIX: 146-165.
- HERBERT, E. 1993. *Iron, Gender and Power. Rituals of transformations in African Societies*. Bloomington: Indiana University Press.
- HINTZE, F. 1959. Preliminary Report on the Butana Expedition 1958, *Kush* 7: 171-196.
- HINTZE, U. 1979. The Graffiti from the Great Enclosure at Musawwarat es-Sufra. *Meroitica* 5: 135-150.
- KENSE, F. 1985. The Initial Diffusion of Iron to Africa. In: Haaland, R. and P. L. Shinnie (eds), *African Iron Working; Ancient and Traditional*: 11-27. Oslo: Norwegian University Press.



- LENOBLE, P. 1990. Meroitic Imperial Ideology: The Last Avatar. *Meroitica* 15
- ..... 2004. The Pre-Christian Empire and Kingdoms. In: D. A. Welsby and J. Anderson (eds), *Sudan Ancient Treasures: 186-192*. London: British Museum Press.
- MAPUNDA, B.B.B. 1997. Patching up the Evidence for Iron working in the Horn. *African Archaeological Review* 14: 107-119.
- MILLER, D. and N.J. VAN DER MERVE. 1994. Early Metal working in sub-Saharan Africa: a review of recent research. *Journal of African History* 35: 1-36.
- MILLET, N.B. 1980. Meroitic Religion, *Meroitica* 7: 11-121.
- O'FAHEY, R. and J.L. SPAULDING. 1974. *Kingdoms in the Sudan*. London: Methuen.
- PLEINER, L. 2000. *Iron in Archaeology: The European Bloomery Smelter*. Praha.
- REHREN, T. 2001. Meroe, Iron and Afrika. *Der Antike Sudan* 12: 102-109.
- REID, A. and R. MACLEAN. 1995. Symbolism and Social Contexts of Iron Production in Karagwe. *World Archaeology* 27: 144-161.
- SASSOON, H. 1983. Kings, Cattle and Blacksmiths; Royal Insignia and Religious Symbolism in the Interlacustrine States. *Azania* XVIII: 93-107.
- SAYCE, A.H. 1911. Second Interim Report on the excavation at Meroe in Ethiopia. Part II The Historical Results. *Annales of Anthropology and Archaeology, University of Liverpool* 4: 53-65.
- SCHMIDT, P. 1997. *Iron Technology in East Africa; Symbolism Science and Archaeology*. Oxford: James Curry.
- SCHMIDT, P. and B.B.B. MAPUNDA. 1997. Ideology, and the archaeological record in Africa, interpreting symbolism in iron smelting technology. *Journal of Anthropological Archaeology* 16: 73-102.
- SHINNIE, P.L. 1967. *Meroe: A civilization of the Sudan*. London: Thames and Hudson.
- ..... 1985. Iron working at Meroe. In: R. Haaland and P.L. Shinnie (eds), *African Iron Working Ancient and Traditional: 128-35*. Oslo: Norwegian University Press.
- SHINNIE, P.L. and F. KENSE. 1982. Meroitic iron working. In: N. Millet and A.L. Kelley (eds), *Meroitic Studies (Meroitica 6)*, 1982. Berlin: Akademie-Verlag.
- TODD, J. 1985. Iron Production by Dimi of Ethiopia. In: R. Haaland and P.L. Shinnie (eds), *African Iron Working Ancient and Traditional: 88-101*. Oslo: Norwegian University Press.
- TÖRÖK, L. 1979. Economic Offices and Officials in the Empire of Kush A Review of Written Evidence. *ZÄS* 111: 45-69
- ..... 1987. *The Royal Crowns of Kush. A study in Middle Nile Valley regalia and Iconography in the 1<sup>st</sup> millennia B.C. and A. D.* Oxford: Cambridge Monograph in African Archaeology 18.
- ..... 1989. Kush and the External world. In: S. Donadoni and S. Wenig (eds), *Studia Meroitica*, (Meroitica 10), 1984. Berlin: Akademie Verlag.
- ..... 1990. The costume of the ruler in Meroe. Remarks on its Origins and Significance. *Archaeologie du Nil Moyen* 4: 151-202.
- TRIGGER, B.G. 1969. The Myth of Meroe and the African Iron Age. *African Historical Studies* 11 (1): 23-50.
- TYLECOTE, R.F. 1970. Iron working at Meroe, Sudan. *Bulletin of the Historical Metallurgy Group* 2: 23-50.

- ..... 1982. Metal working at Meroe, Sudan. In: N. Millet and A.L. Kelley (eds), *Meroitic Studies ( Meroitica 6)* 1982: 29-42. Berlin: Akademie-Verlag.
- VAN DER MERWE, N.J. 1980. The Advent of Iron in Africa. In: T.A. Wertheim and J.D. Muhly (eds), *The Coming of the Age of Iron*: New Haven and London: Yale University Press.
- WAINWRIGHT, G.A. 1945. Iron in the Napatan and Meroitic Ages. *Sudan Notes and Records* 26: 23-50.
- WELSBY, D. 1996. *The Kingdom of Kush*. London: The British Museum Press.