NEW INSIGHTS INTO NUBIAN ARCHERY

Łukasz Zieliński
Independent

Abstract: Archeological sites in Nubia are a continuous source of new material connected either generally or specifically with Nubian archery. Objects of this kind discussed here and in other publications of excavated assemblages (including excavations of the Polish Centre of Mediterranean Archeology, University of Warsaw) are seldom perceived as such, indiscernible as they are among the range of metal objects judged as being weaponry in a general sense. The lack of any synthetic work on Nubian archery is also evident in the literature in general and the few works that undertake the theme contain errors that are in need of being corrected. This article deals with issues related to the topic, which, although discussed separately, will hopefully work toward establishing the groundwork for a final reconstruction.

Keywords: Nubian archery, Nubian bow, longbow, bowman, archer's loose/archer's ring, post-Meroitic

The history of the use of the bow in Nubia is very long and has its origins somewhere in the obscure period referred to as the Khartoum Neolithic. The oldest preserved flint and bone arrowheads date to this period and are known from archeological sites such as the eponymous Khartoum Hospital site (Arkell 1975: 25).

Very little can be said about the beginning of archery in Nubia, because the only archaeological data that we have at our disposal are arrowheads and rock art, mostly petroglyphs, which are difficult to date and only depict part of the true picture that the artist wanted to show. Hunting scenes generally dominate, which suggests that archery in Nubia had its origins in hunting.

The bows represented on the rocks take the form of simple self bows. The self bow is constructed from a single piece of wood, or sometimes from two pieces joined at the handle section. We can judge from their uncomplicated design shown in the pictograms that they were made from a single piece of wood, the typical dimensions being about 110–130 cm. In the absence of other data, we can only extrapolate the other elements used in the manufacture of the bow, such as the bowstring, shaft of flights, as well as the technique of shooting and the possibilities of contemporary archers.

During this era, however, a tradition was formed that played a very important role in local culture, placing the bow and

skill in its use to the forefront. The best evidence of this is the fact that from the very beginning of the establishment of mutual relations between Egypt, then emerging from the Naqada period, and Neolithic Nubia, the Egyptians hailed Nubia as Taseti — Land of the Bow. The Egyptians were quick to recognize the potential and skill of the Nubians in their handling of the bow, and incorporated Nubian troops into their own army in the role of archers.

It is not known exactly when the form of the Nubian longbow, described by Herodotus (VII:69), evolved. Given that this type of bow, due to its very length, was designed to be used on foot, and that Nubians were employed as infantry by the Egyptians during the Old Kingdom period, it can be assumed that bows of this type emerged long before they came to be described by Herodotus in the 5th century BC. The model from the tomb of Mesehti in Asyut, however, shows Nubian warriors with bows of relatively small size. It is also worth noting that the longbow appears in iconography on a larger scale in the times of Napata and Meroe.

A stele from Gebelein, which belonged to a Nubian archer in the Egyptian service, shows its owner already in possession of a longbow [***Fig. 1***]. So it appears that bows of this type were already in use by the time of the Middle Kingdom. By the 5th century, when Herodotus described them, they were so common a weapon among Nubians that the Nubian mercenary regiments in the army of Xerxes used them. The Nubian longbow is not a typical self bow as, for example, the English longbow was. The ends of the limbs were

Fig. 1. Nubian mercenary archer holding longbow with unlatched bowstring; left, longbow and weaponry of Nuba tribe in the Ethnographic Museum in Khartoum (note similarities with the Meroitic longbow) (Digitizing Ł. Zieliński after the Gebelein Stele; photo Ł. Zieliński)

bent (probably using steam) into a light reflex shape. With bows of this size this seems to be a rather strange arrangement, as the reflex shape is generally used to increase the tensile force of bows with a very short shaft of less than 100 cm, but the Nubian longbow had a length of four ells (approximately 200 cm) as said by Herodotus (VII:69).

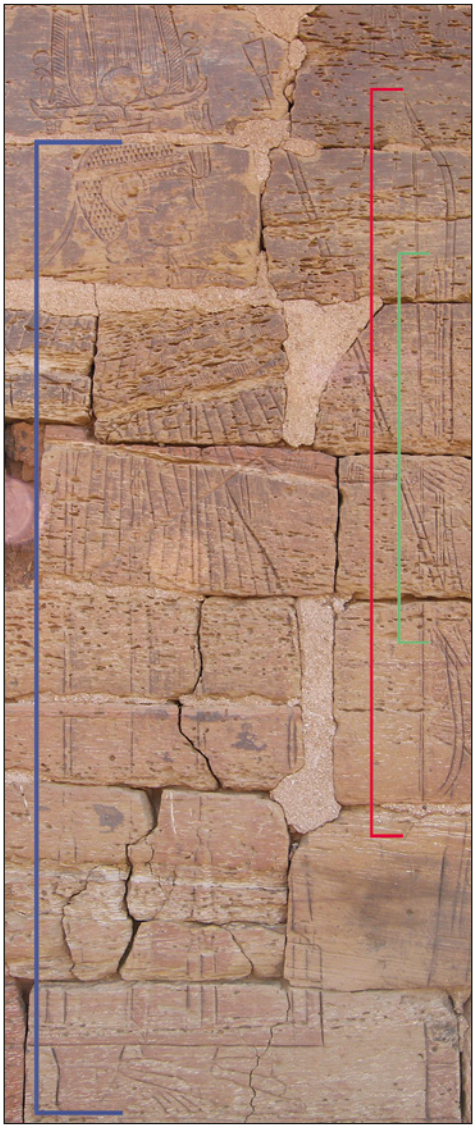

Fig. 2. Meroitic ruler (in blue) with bow (in red) and arrows (in green), relief from the South Pyramid complex in Meroe (Photo Ł. Zieliński)

But were the bows described by Herodotus really that long? The issue can be examined analyzing a relief from Meroe showing a Meroitic ruler with a longbow. The relief is located in the chapel of the pyramid in the Southern cemetery [*Fig. 2*]. If it is assumed that the Meroitic ruler was tall, between 170 and 180 cm, and appropriate proportions are maintained, then the length of the bow in its strung state would have been approximately 140 cm and after the removal of the bowstring it would have gained approximately another 10 cm in length [*Table 1*].

In describing the length of Nubian bows, Herodotus probably had in mind the length of the unstrung shaft, which is longer than the strung length, but is the one adopted by units on the march. It also seems that the size of four ells mentioned

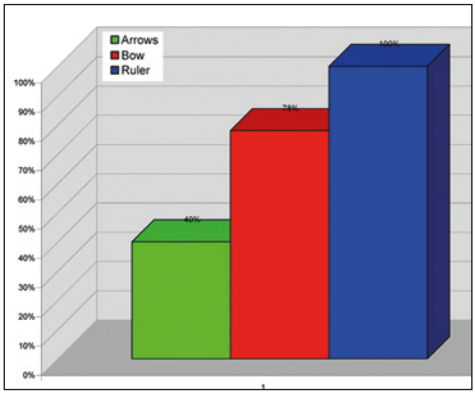

Table 1. Length of longbow and arrows and height of ruler based on an examination of reliefs in Meroe (Estimates Ł. Zieliński)

by Herodotus is an exaggeration caused by the fact that the Nubians with their bows seemed huge to the Greeks, who were of much smaller stature. Comparing further data coming from the relief, it is clear that the arrows shown on it were approximately 70 cm long. This is a size typical for bows of a tension 27 inches long (about 68.50 cm), and this fact is evidence that Nubian longbows already had such a tension.

Interestingly, in order not to weaken the structure of the wood at either end of the limbs, the bow does not have a nock carved into the ends of the shaft, or any device for catching hold of the bowstring. The latter was held in place by leather of string bindings at both ends of the stave. By this device the weight of the working ends of the limbs was slightly increased, slowing down somewhat their movement. One can only imagine under how strong a tensile force the bowstring must have been in these bows, since the designers did not choose to weaken the ends of the stave, frightened of breaking the ends of the bow, and decided on this arrangement instead. Bows of such a large size are usually drawn to a length of 26–28 inches (about 66–71 cm), at which they reach their full potential, that is, a force which is measured in pounds. The best arrow to fit such a bow will normally have a shaft length of at least 70 cm, excluding the arrowhead, which protrudes beyond the outline of the riser and working limbs. It is surprising, then, that the only complete arrows with their shafts preserved, coming from the Meroitic period, which have been found in Nubia in Meroe grave W.122, have a length of only 50 cm, including the arrowhead (Shinnie 1967: 164–165). These arrows, then, were not intended for a longbow.

At this point one should mention another change in Nubian weaponry, which took place during the Meroitic or post-Meroitic periods. It was the use of the Nubian composite reflex bow on a much larger scale than before. Bows made of composite materials, like reflex bows, were known much earlier in Nubia, but it was during the post-Meroitic period that they started to be used on a larger scale. Most finds of bows of this type come from this period (Williams 1991: 76–86). The composite reflex bow is of small size (Nubian specimens have been reconstructed at approximately 100 cm). This type of bow is normally associated with the nomadic populations of the great Eurasian steppes.

From the very beginning this kind of bow was designed with the idea of shooting from horseback, hence its small size. To compensate for the low strength of the short limbs, they had to be bent outwards so that in extreme cases bows of this type changed their shape to the letter C, or Greek Ω, after the removal of the bowstring. Thanks to their construction, bows of this kind would match, or even exceed, the strength of the self bow. To withstand the extreme stress during the flexing of the bow, the makers would combine wood with other materials in a composite structure, which, thanks to the properties of the individual components, appropriately exploited in different zones, gave the bow great strength.

The Nubian composite bow belonged to this group of bows. According to Williams (1991: 76–86), writing on the Qustul bows, the limbs were bent under steam into a double S-shape. As was the case with the longbow, no nock was cut in the limbs from the outside, but the bowstring

was kept in place by braiding which was circled round the ends of the limbs. The bow had a wooden core, although it is not known what type of wood it was, on which was glued a layer of braided fabric. The riser had a reinforcement of a horn plate with a length of 25–30 cm. The limbs on the spine side were covered with animal sinews, while everything was covered with an encircling thong binding. The limbs of the bow were about 1 cm thick.

Since the bow itself was approximately 100 cm in length, its bowstring at approximately 80–85 cm was certainly shorter. Obtaining full tension within the range of 28 inches (about 71 cm) with so short a bowstring is impossible. It means that the arrows accompanying Nubian composite bows were significantly shorter than was the case with the longbows. At this point one should go back to the finds of arrows from the Meroe tomb W.122 mentioned above (Shinnie 1967: 164–165). Since these arrows were 50 cm long, it is reasonable to assume that these were arrows meant for a short draw bow, the composite bow. If that is the case, Tomb W.122 would provide the oldest indirect evidence for the existence of the Nubian composite bow, which accordingly existed as early as the Meroitic period.

Bracelet-gloves in the shape of a fly are not a typical Nubian product. Very similar archer's bracelets were used by the Egyptians, and it seems that Nubians adopted the habit from the Middle Kingdom, when Egyptians occupied the cataracts. Most specimens of this equipment come from the post-Meroitic era. In their richest version the bracelets were made of silver and decorated in repoussé technique with geometric or symbolic patterns over their entire surface. Examples of richer bracelets of this kind have been found mainly in the royal tombs in Qustul and Ballaña (Emery and Kirwan 1938: 232–233, Pl. 52). In poorer versions they were made of rawhide and were mainly decorated on the surface of the "fly wings" with openwork geometric patterns, often in combination with pressing (Adams 2005: 148, 151) [***Fig. 3***].

Bracelets were worn on the hand holding the bow, and their function was to prevent injury to which the archer was exposed when the arrow was resting on his hand without the adequate support given by the riser (arrow rest). The shape of the bracelet and the fact that leather copies of the "head" of the "fly", which was worn on the archer's thumb, were not decorated, gave the author reason to think that the Nubian archer rested his arrow on the thumb. Thus, arrows shot by the Nubian technique would have rested on the right side of the grip and not on the left as is the case in contemporary European technique.

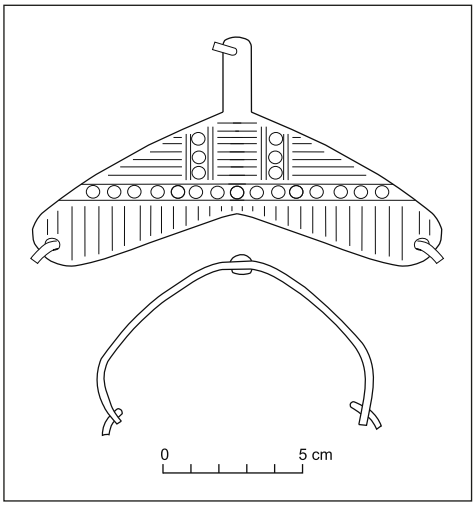

Fig. 3. Archer's bracelet-glove from Serra (After Adams 2005: Fig. 59)

Archer's rings are most often found in contexts of Meroitic and post-Meroitic graves (Emery and Kirwan 1938: 233–248). They are also present in the iconography of rulers, mainly on the walls of temples (Shinnie 1967: 110–111). The examples which have been found are usually made of very hard metamorphic rock, carefully worked with almost perfectly smooth surfaces. However, there are also silver rings, and there is also at least one wooden ring known from the excavations of a Polish mission at the El-Ar 1 archaeological site. The archer's ring is actually a cylinder, hollow in the middle, and wider at one end. A large degree of variation exists in the dimensions and shapes found among the rings. Meroitic rings are much shorter and the side surface is almost straight. Post-Meroitic examples, however, are much longer and with the lateral surface often arched inwards. One can see in this change evidence of an evolution toward a particular shape. If so, there was probably a reason, perhaps purely practical, for this change. If we assume, after Mahmoud El-Tayeb (Zieliński 2011: 94 and Fig. 42 on page 99), that the ring was actually a rest under the arrow, and was used interchangeably with the glove on the archer's hand which held the bow, and was held on the right side of the bow's riser, then there could be several reasons for such a transformation. First, the curvature of the ring fits the contour of the riser, and makes it easy to hold when used as a rest on which to place the arrow. Second, the plane on which the arrow rested is much smaller, and so there is less friction impacting the flight path of the arrow. Thus, it seems that some elements support this theory. In any case, in my experience as an archer I have been able to prove experimentally that a ring could have been used in this way, indeed quite comfortably.

A much older theory, derived from depictions on reliefs and burial finds has it that the archer's ring played the same role as it did in other cultures, where it was a tool used for hooking the bowstring, making it easy to hold the bowstring when drawn. If this were the case then the ring would have been worn on the thumb of the right hand, the digit that was holding the bowstring. It is possible, however, to reconstruct speculatively the Nubian archer's grip quite convincingly. This was attempted by Emery and Kirwan (1938: Fig. 87), but in my opinion their attempts were faulty, because of their lack of experience as archers. The grip they propose would be very uncomfortable for any archer [***Fig. 4***].

The difficulty in this case is that the archeological data are contradictory. In the iconography, archer's rings are always shown on the subject's right hand,

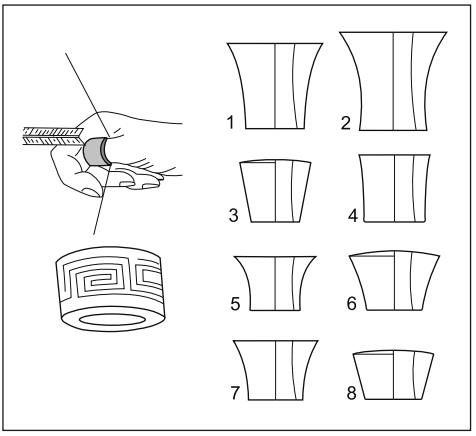

Fig. 4. Reconstruction of an archer's grip (left) and ring typology (right) (Digitizing Ł. Zieliński, after Emery and Kirwan 1938: Fig. 87)

on the thumb with its wider side closer to its base. Motifs of this kind are known from the context of Meroitic-period temples, such as the Lion Temple in Musawwarat el-Sufra (Shinnie 1967: 110–111). On the other hand, Arkell's excavations in Khartoum (Shinnie 1967: 111) show clearly that in burial contexts the archer's rings were found on skeletons on the nearest phalanx of the thumb of the left hand, the narrower side of the ring on the phalanx base, and therefore the other way round. Identical moreover is the setting of a ring found *in situ* during the NCAM excavations and shown on display in the National Museum in Khartoum [***Fig. 5***]. This convergence is confusing, and can be explained in many ways, none of which brings us closer to the truth. Perhaps the Nubians used the rings in two roles, both as a stand under the arrow, and as a typical archer's ring, but this is only a hypothesis. It seems to me that a combination of certain deductions that can be made of the use of the ring in iconography, together with experimental archeology, can give us some idea of Nubian archery techniques.

In the native iconography of Meroitic Nubia there is not a single scene showing an archer in a pose with a taut bow at the moment of release. They are always static, the bow is strung, but the figures just hold it in their hands. In the iconography of Egypt, on the other hand, archers are shown in the act of shooting. It is especially interesting for us to analyze the fingers of the right hand on scenes from the Ramessid period [***Fig. 6***]. One visible arrangement is the so-called fig, in which the fingers which are holding the bowstring are thumb and

Fig. 5. Hand with archer's ring found in situ, some of the rings visible next to hand are in the elongated variant (National Museum in Khartoum) (Photo Ł. Zieliński)

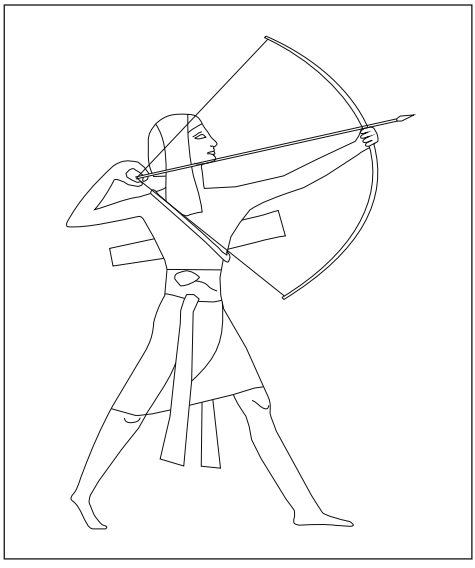

Fig. 6. One of the Ramessid archers (archer's "fig" grip) (Digitizing Ł. Zieliński)

forefinger. This pose is comfortable when the fingers are unsecured, and cannot be used with the archer's ring, because the force accumulated in the bowstring will remove the ring from the finger at the moment of shooting (my own experience). The fact that generation upon generation of Nubian archers served and were trained in the Egyptian army leads us to the conclusion that it was probably a technique used by the Nubians as well (on occasions when they did not use the ring). But it was not the only one. The explanation of my hypothesis lies in the ring itself.

As said above, the archer's ring is a cylinder, hollow in the middle, and rather smooth-sided, its edges can be treated in various ways. The ring evolved over time. Meroitic rings were quite short, with rounded edges, but post-Meroitic rings from Ballaña and Qustul are often very long, with sharp edges. The shortest ring described by Emery and Kirwan (1938: 233–248) was 26 mm, the longest 59 mm (almost 6 cm!), whilst the vast majority of rings discovered were between 30 and 40 mm. I now turn to an observation not made by Emery and Kirwan. Namely, the rings were always found on the proximal phalanx of the thumb. The length of the proximal phalanx in the average adult European varies from 35 mm to 40 mm. Even in the case of the individuals examined from the Fourth Cataract in Meroitic and post-Meroitic times the length did not exceed 45 mm. This means that the 6-centimeter ring overlaps a further phalanx of the thumb, immobilizing the phalanx-joint and stiffening the thumb in a straight position. In this setting, it

Fig. 7. Views of the shorter ring's inner bore (Photos Ł. Zieliński)

is impossible to hold the bowstring in the manner reconstructed by Emery and Kirwan [see ***Fig. 4***]. Also the "fig grip" hold is heavily impeded by the thumb being rigid.

For some time the author thought that a different technique had been employed for using the long ring. One candidate could be the Persian shot, in which the ring rests on the upright thumb. The other option would be a technique used by the Chinese, who have archer's rings similar to Meroitic specimens (Grayson, French, and O'Brien 2007: 44–47). Understanding came with an article by Samantha L. Cook (2012: 165–176) and the author's own discovery at the El-Zuma cemetery. Studying large series of rings from British collections, Cook was able to prove that these two types of rings were connected with two traditions. The short ring is a usable tool for archers from an earlier date, while the long ring is an element of prestige and probably not usable at all (later tradition). In the El-Zuma cemetery, five archer's rings were found. Two of them were of the short type with rounded edges, three of the long type with sharp edges. A thorough examination of these obejcts has led to some interesting observations.

In microscopic view, the inner bore of the short rings showed traces of smoothing and signs of wear [***Fig. 7***]. However, the inner bore of all three long rings from El-Zuma had the same longitudinal traces of some tool-like file or chisel [***Fig. 8***]. It was very strange considering how precisely the other edges and planes were polished. Long rings are exaggeratedly beautiful (polished and sharp-edged) in comparison to the short rings, but the most important section for the comfort of the archer (inner bore) is unfinished.

Sharp edges were furthermore impractical. A couple of years ago, the author made a replica of the short ring, but with sharp edges. During experimental shooting, after only a few shots the wrapping on the bowstring was spoiled because of the sharp edges. Now there is more clarity on the ring itself.

Returning to shooting techniques, there are two substantially similar possibilities. In Persian shooting, the bowstring

Fig. 8. View of the longer ring's inner bore (left) and microscopic view of the same (right) (Photos Ł. Zieliński)

rests on a ledge that was created by the joint between the proximal phalanx and distal phalanx of the archer's thumb. The other fingers do not participate in the drawing of the bowstring, but the index finger is placed alongside the lateral plane of the ring creating a stable trigger. The technique is quite comfortable and not particularly tiresome, because, as opposed to the techniques described above, in this arrangement no muscle or tendon of the thumb is placed under tension. All of them are loose, and the whole tensile force of the drawn bowstring is placed along the axis of symmetrically held thumb bones. In any other technique, the finger muscles must operate against the tensile force of the bow, which often greatly exceeds 20 kg. Moreover, this technique cannot be applied without an archer's ring, since in practice it only functions to hook the bowstring. It would, therefore, have been an ideal technique for Meroitic and post-Meroitic archers. The only difference with the Chinese technique is that the index finger is placed askew on the upper plane of the archer's ring (Grayson, French, and O'Brien 2007: 44–47). But the main force is still placed on the thumb and the ring.

All these details are pictured in the reconstruction [***Fig. 9***]. The archer is using a short composite bow, such as the specimen found in the Ballaña cemetery. Typical of the post-Meroitic bows is the absence of a nock for the bowstring (which is held

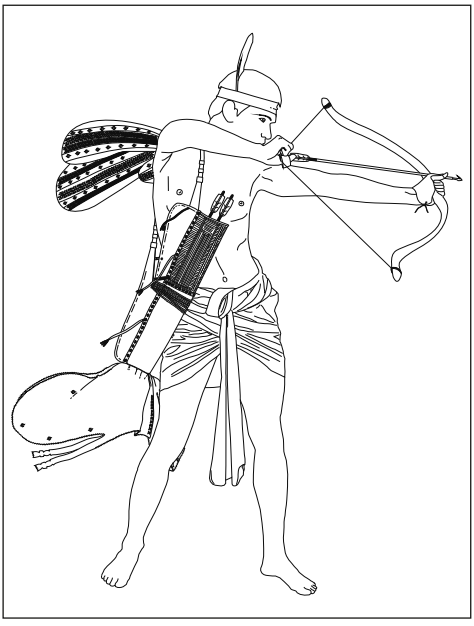

Fig. 9. Reconstruction of proper position of an archer with post-Meroitic arms (Model, drawing and digitizing Ł. Zieliński)

Fig. 10. Nubian ruler statue from Mussawarat el-Sufra, quiver location visible (Photo Ł. Zieliński)

in place thanks to loops). The arrows have a barbed type 1a arrowhead, which was common in the post-Meroitic period. The archer is using an archer's bracelet-glove, based on the one found in Serra [see ***Fig. 3***], and the arrow rests on the right side of the riser (on the thumb). The archer's ring is used in a different configuration from those shown in the reconstructions of Emery and Kirwan. The quiver is reconstructed on the basis of a specimen from Ballaña, and is placed in a position shown by one of the statues from Mussawarat el-Sufra (not on the back of archer, but in front) [***Fig. 10***]. In this position it is still possible to draw an arrow from the quiver easily. Other elements, like the headband with vulture feather, or tricuspid male skirt, are well known from Meroitic and Egyptian iconography. The archer is shooting in a slightly downward position as if he was shooting from horseback.

Replicas of the bracelet-glove and archer's ring were made use of for the purposes of reconstruction and experimental shooting.

Łukasz Zieliński
zielu-05@o2.pl

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