Composite bows at ed-Dur (Umm al-Qaiwain, U.A.E.)

This article discusses seven bone fragments excavated during the second Belgian archaeological campaign at ed-Dur (tomb G.3831, area N). Rather than weaving implements, these objects are identified as the reinforcing bone laths of composite bows. Information on the composite bow in general—origins, structural composition and technical advantages—will be given. Additionally, the question of which types of composite bows could have been present at ed-Dur and what role these weapons could have played at the site are discussed.

Keywords: archery, ed-Dur, Oman, weaponry, composite bow

Introduction
In Arabian Archaeology and Epigraphy 2.1 (1991), the preliminary report of the second Belgian campaign at ed-Dur (1) was published. During that season the large burial G.3831 in area N was excavated, and among the grave goods ‘several weaving implements made of animal ribs’ were found (2). Although bone objects (Fig. 1) were used in weaving (3), another function for the artefacts from G.3831 can be suggested. Rather than weaving implements, they could have been the reinforcing bone laths of composite bows.

The aim of this article (4) is to explain the function of these bone reinforcements in the composite bow, to give an overview of the types of bows which could have been present at ed-Dur, and to consider the role of this weapon at the site. In studying these weapons, much literature on ‘the composite bow’ was found but details on their bone laths were often lacking, particularly in regard to their origins and evolution. This lack of information is a by-product of the nature of the sources available on ancient bows—archaeological finds, iconographic representations and written texts. Because of the perishable nature of the materials from which bows were manufactured, few remains have been excavated. Furthermore, pictorial evidence is often lacking in detail and written sources, especially by authors familiar with archery (5), are scarce.

The composite bow
The earliest bows were simply made of one flexible wooden body. The composite bow (6) was developed during the fourth millennium BC. Since this type of weapon displays much insight in the characteristics and functioning of a bow, it probably originated in a culture where there was a long tradition of archery, such as the Turkmenian Steppe, Iran, the Arabian Peninsula, the Levant or Anatolia (7).

The composite bow was manufactured from different kinds of pliable materials: over a wooden core (8), horn was glued on the inside—the belly—to resist compression, and sinew was fixed onto the outside—the back—to resist tension (9). Finally, parts of the bow or the whole weapon could have been covered with a sheath made of bark, leather or tendon (10). Because of the complexity of the manufacturing process (e.g. the drying of the glue), it took several months—sometimes even years—to complete a composite bow. Therefore, these weapons were quite valuable (11).
At the extremities of the arms—the limbs—of the bow, rigid ‘ears’ were fastened. These ears could follow the curve of the body, but more often they deviated from this line (12). They could have been reinforced with bone or antler laths. A. MacGregor describes these laths as follows: ‘characteristically elongated and curving blade-like strips of bone or antler, usually rounded and wider at one end and irregularly plano-convex in section; the underside is roughened to facilitate glueing to the ear of the bow and the nock for the string is cut into the thinner of the two edges, close to the rounded end’ (13). These laths were used in pairs, one at each side of the ear (14), and the laths of the upper and lower limbs would usually have been of differing length (15). The bowstring was attached to the ‘nock’, a groove at the tip of the body of the bow. This nock was either cut in the body or the ears themselves, or in the bone/antler plates (16).

A perfect combination of all these elements created a bow which was much more elastic and powerful than the simple bow types. In flexing a simple bow, the tension on the weapon was sometimes so strong that it broke the body. Another advantage of composite bows is the fact that they could be made smaller because their strength was derived from the combination of the different materials used, not from their length (17).

In the course of time, the composite bow became widespread, from Europe to Japan, (18) and many different types were developed. These can be classified by analysing both their profile and their structural composition.

As already noted, it is not the aim of this article to give an overview of all types of composite bows in which stiffening bone/antler rods were used, since this weapon underwent a very complex technological evolution and enjoyed a very wide distribution amongst very different kinds of people. Only those types which could have been present at ed-Dur—the types which are chronologically contemporary with ed-Dur (19)—will be discussed.

The ‘composite segment bow’ (Fig. 2.a) was already known at the end of the fourth millennium...
In the middle of the first millennium BC, ears reinforced with bone/antler laths were added. This type is called the composite segment bow of Median type. It became widespread—both eastwards and westwards (20)—and remained in use into the fifth century AD. It is uncertain from which type of composite bow these laths derived (21). According to G. Rausing, the best example of this weapon is the famous ‘Yrzi bow’ (22), but according to M.C. Bishop this bow is not really representative of the Median type (23). In any case, the Yrzi bow is probably the best archaeological example available to illustrate the use of bone stiffenings (Figs 3–4).

Then, we have the so-called ‘Parthian bow’: a doubly convex bow (Fig. 2.b) with typical long, thin and forward-bending ears reinforced by bone laths. This powerful type was developed in the Parthian Empire from the Scythian doubly convex bow (24). It is unlikely that Scythian bows had bone reinforcements since none have ever been found in Scythian cemeteries (25).

Finally, we have the ‘Hunnic’ or ‘Hsiung-nu’ composite bow (Fig. 2.c) (26), which was developed in Central Asia during the first century BC/first century AD (27). The ears of this weapon were stiffened with rods. In addition, the handle of the bow was reinforced with three trapezoidal laths (28).

**Bows in Arabia and at ed-Dur**

According to pre-Islamic Arabic poetry, the bow was a frequently used weapon in Arabia (29). Originally, the Arabs used the simple, asymmetrical bow (upper and lower limbs being of different length). Later, the ‘Arab composite bow’ was introduced: a large, segment-shaped bow with long ears bent forwards, a descendant of the above-mentioned ‘composite segment bow’ with bone coverings. When ed-Dur was occupied (late first century BC-first half of the second century AD), this type was widely used by the Arabs (30). Surprisingly, however, ed-Dur is the only site in the Arabian Peninsula where bone nock-plates have been excavated. Moreover, no illustrations of the Arab composite bow have been found, perhaps because of the ‘iconoclastic tendencies common to Islam and to the pre-Moslem religions of the country’ (31).
Description of the bone reinforcements excavated at ed-Dur (area N, G.3831):

1 & 2. N 81 & N 112 (32) (length: 21.2 cm; width: max. 1.6 cm; thickness: max. 0.4 cm) (Figs 5–6) (33).

Made from an animal rib. Very slightly curving lath with rounded upper part (with U-shaped nock) tapering towards the rounded lower part. Plano-convex section.

3. N 108 (length: 23.6 cm; width: max. 1.7 cm; thickness: max. 0.4 cm) (Figs 5–6).

Made from an animal rib. A complete curving lath with rounded upper part (with U-shaped nock) tapering towards the rounded lower part. Plano-convex section.

4. N 109 (length: 22.4 cm; width: max. 1.6 cm; thickness: max. 0.4 cm) (Figs 5–6).

Made from an animal rib. A complete curving lath with rounded upper part (with U-shaped nock) tapering towards the rounded lower part. Plano-convex section.

5. N 110 (length: 10.8 cm; width: 1.2 cm; thickness: 0.35 cm) (Fig. 5).

Made from an animal rib. A fragment, probably from a lath whose upper and lower parts were broken off irregularly. Plano-convex section.

6. N 111 (length: 6.9 cm; width: 0.9 cm; thickness: 0.3 cm) (Fig. 5).

Made from an animal rib. A fragment, probably from a lath whose upper and lower parts were broken off irregularly. Plano-convex section.

7. N 113 (length: 4.3 cm; width: 1 cm; thickness: 0.3 cm) (Fig. 5).

Fig. 5.
Made from an animal rib. A fragment, probably from a lath whose upper part was broken off irregularly. Plano-convex section.

The large tomb G.3831 (c. 6 x 5.40 m) was unique amongst the 121 graves excavated by Ghent University. It was the only above-ground tomb discovered and its entrance would have faced the temple of ed-Dur. How many individuals were buried in this grave is uncertain since the tomb was badly disturbed. On the basis of some grave goods (one arrowhead and two spindle whorls), the burial of a man and a woman may be postulated. Although the tomb was plundered, many artefacts were still present. These included fragments of glass vessels, an iron arrowhead, iron nails, bone plaques, bone inlay pieces, spindle whorls, beads (agate, amethyst, carnelian, rock crystal, glass [paste] and pearl), an intaglio decorated with the goddess Athena and a silver obol.

The number of bone plates in the tomb points to the presence of at least two composite bows. Since neither the shape nor dimensions of bone laths are diagnostic of the type of composite bow to which they belonged, we can only guess which types were present. In all likelihood, the ed-Dur laths derive from the large, segment-shaped ‘Arab composite bow’ which was widespread during the main occupational phase of ed-Dur. However, because of the excavation of many imported objects at the site, the presence of the ‘Parthian’ bow as well as the ‘Hunnic’ bow cannot be excluded.

With regard to tomb G.3831, E. Haerinck has suggested that it could have been the final resting place of a sort of tribal ruler. Moreover, G.3831 was the only tomb in which bone laths of the composite bow were discovered. This fact may reinforce the hypothesis that the burial was that of an important person (or persons).

What function could these bows have had? Were they used in warfare and/or hunting? Were they precious gifts or simply curiosities exchanged during trade or barter activities?

Bows are not often mentioned with reference to combat in southeastern Arabia, but according to D.T. Potts, ‘The absence of references can be attributed to the fact that the [pre-Islamic Arabic] poetry is concerned with individual reputation which can only be achieved in hand-to-hand combat’. Composite bows, especially those with rigid ears and bone reinforcements, were extremely powerful weapons. As such, they were probably manufactured with the intention of fighting. Whether the bows of ed-Dur were really used during combat is, however, impossible to say.

On the other hand, archaeozoological research has indicated that hunting was not a very important activity at ed-Dur. Only a few remains of hare, gazelle and the Arabian oryx were found.

Whatever the case may be, the composite bow was a powerful and accurate weapon and thus it would have been a valuable and highly valued object. Moreover, the rarity of this weapon at ed-Dur may point to the fact that composite bows were only
own by a very few, élite members of society. In all probability, the composite bows discovered in tomb G.3831 reflected the prestige and authority of their owners.

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References


4. This paper forms part of my PhD dissertation at Ghent University on the small finds from ed-Dur, found during the Belgian excavations at the site.


6. In 1877, General Pitt-Rivers coined the term ‘composite bow’. He was the first to classify the different sorts of bows by analysing their technology. Although the term ‘Scythian bow’ is sometimes used as a synonym of ‘composite bow’, this weapon was just one type of composite bow. See Rausching G. The bow. Some notes on its origin and development. Lund: CWK Gleerups Forlag. 1967: 11, 109.


8. Several different kinds of wood could have been used in one bow.


14. MacGregor, Bone, antler, ivory and horn, 158.


19. The main occupation phase of ed-Dur (to which burial G.3831 is dated) is situated between the last decades of the first century BC and the beginning of the second century AD. We will consider the types of composite bows provided with bone/antler reinforcements, which date to between the second half of the first millennium BC and the second century AD.

20. According to Simpson, Bone, ivory, and shell: 345, the Romans would have adopted this bow from their Syrian auxiliaries.


22. Rausing, The bow: 138. The Yrzi bow was found in a tomb (dated to the first century BC-third century AD) in the part called ‘Yrzi’ from the necropolis of Baghous (c.40 km southeast of Dura-Europos). The exceptionally good preservation of the bow (the grip, one entire limb, horn and sinew as well as the bone laths) was noteworthy. See Brown, A recently discovered compound bow: 1.

23. Bishop, Production and distribution of Roman military equipment: 240.


32. As fragments N 81 and N 112 join each other they will be described as one lath.
33. Figs 5–6 were created by Erik Smekens, draughtsman and photographer of the Belgian team at ed-Dur.
35. This material includes objects from both the Roman and Parthian Empires, Characene, India, South Arabia etc. Haerinck, *Internationalisation and business in SE-Arabia*: 202–205.
37. Most of the graves analysed at ed-Dur by the Belgian team were plundered. Of the 121 tombs excavated, only fourteen were unplundered.