

# Bone and ivory manufacturing at Ebla (Syria) during the Early and Middle Bronze Age (c. 2500–1600 BC)

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The corpus of bone tools and other objects from Tell Mardikh-Ebla constitutes a basis for studying the role and development of bone working at this urban centre between 2500 BC and 1600 BC. A preliminary assessment of bone artefact production that takes into account typology, distribution, and relation with other broad functional classes of items is presented, underlining trends and changes over time. During the Early Bronze Age III–IV a specific local production is attested through decorated bone sticks/pins. Decorated tubes are documented by three exemplars, showing that this kind of bone artefact — widespread in the Levant and Anatolia — was also present at Ebla. Bone tools were also widely used. Craft workers producing figurative and patterned inlays and beads preferred other materials, such as semi-precious stones and shell. A trend towards a dichotomy between the highly-specialized manufacture of valuable objects, such as inlays and incrustations linked to the ivory industry, and the production of tools that seem to have been focused upon spinning and weaving activities is evident during the Middle Bronze Age, when the number of bone tools decreased sharply.

## Introduction

Bone artefacts, together with items made of stone, served several diverse functions in the Neolithic and Chalcolithic periods of the Levant before the introduction of metallurgy. Bone working was a fundamental industry that played an important role in the agro-pastoral societies of that region. A variety of bone implements were widely used in textile manufacture, leather and wood working, basketry, as well as for food processing. Bone ornaments, amulets and seals were also largely attested. As bone working remained prominent throughout the Bronze Ages, it progressively developed to become more specialized. While archaeological assemblages indicate substantial continuity from the previous periods during the Early Bronze Age, demonstrated by a wide range of tools (awls, needles, blades, pointed bones, spatulas, etc.) and ornaments (pendants, amulets, pins, sticks, etc.), during the 2nd millennium BC they show a trend towards a dichotomy between highly-specialized manufacture of valuable objects, such as inlays, incrustations, toilet implements, linked with the ivory industry, and domestic production of tools, especially for spinning and weaving activities (spindle and spindle-whorls, shuttles, beaters (swords), needles, etc.) (Ayalon and Sorek 1999; Moorey 1994: 112–14). The working of animal bone, antler and tusk in the Levant has been studied in detail especially for the Neolithic period (Le Dosseur 2008), and a useful ‘multiple’ classification method has been elaborated by the French school and tested on various Near Eastern assemblages (Stordeur 1982; 1988). Ivory carving techniques during the 2nd millennium BC have been closely scrutinized by several scholars (Caubet 2013; Caubet and Poplin 1987; Caubet and Gachet-Bizollon 2013; Gachet-Bizollon 2007; Luciani 2006a; 2006b; Turri 2015; Gachet 1987), while a few investigations targeted on particular classes of bone objects are available for the Bronze Age (e.g. Genz 2003 on 3rd millennium decorated bone tubes; the analysis of Middle Bronze Age (MBA) incised bone strips by Liebowitz 1977). Working places or activity areas are virtually unknown in the Bronze Age Levant, with the exception of an workshop discovered at Tell Sakka, and rooms possibly devoted to ivory working in the Northern Palace at Ebla and in the palace of Alalakh VII (see *infra*) dating to the Middle Bronze Age. Some possible bone workplaces have been also identified in the Southern Levant (Megiddo, Ashkelon, and Tell es-Safi/Gat), dating to

later periods (Gadot and Yasur-Landau 2006; Horwitz et al. 2006; Maeir et al. 2009). In this context, bone and ivory items from Tell Mardikh-Ebla offer the possibility of evaluating this production in a urban centre of the northern Levant during the final and most flourishing period of the Early Bronze Age (c. 2500–2300/2200 BC), and to follow its development during the renewal of urbanization in the Middle Bronze Age, the so-called ‘Amorite period’ (c. 2000–1650/1600 BC). Ebla offers also an opportunity to investigate co-occurrences of bone artefacts and other classes of materials in well-documented primary contexts related to different public and private buildings. In particular, the documentation examined here includes the Royal Palace G, which was organized in quarters that were functionally diversified (administrative, residential, for processing and storing primary products), and that dates to the high Early Syrian period (Early Bronze IVA, c. 2500–2300 BC) (Fig. 1), and secular, cultic, defensive and private buildings of the Old Syrian period (Middle Bronze I–II, c. 2000–1600 BC) (Fig. 2). Notwithstanding the uneven nature of the archaeological evidence, Ebla is the only large urban settlement of the Northern Levant that offers the possibility to compare the bone industry within the two different chronological periods. A preliminary typology and an overview of the most important categories is here presented taking into account items retrieved during the 1964–2004 excavation seasons. All the bone items related to textile manufacture have been already published in a volume on textile tools dating from the EBA to the Persian Period (Peyronel 2004). A volume on the ivory inlays retrieved in situ in the Northern Palace dating from the Middle Bronze II (Scandone Matthiae 2002) includes an appendix with a short note on the material and manufacture technique, while some other bone and ivory objects were briefly discussed in various preliminary excavation reports. Only in some cases have the specific animal bones and the species to which they belong to been identified.<sup>1</sup> 1 Diaphyses of long bones and metapodials of sheep/goat and cattle are the parts of the mammalian skeleton that are most suitable for the working of objects such as toggle-pins, punches and awls. Flat bones (ribs, scapulae), on the other hand, are typically used for peculiar implements such as the spatulas or for pendants. The ‘head’ or articular condyle of the humerus and femur of bovid, ovids and caprines was cut to obtain spindle-whorls. Hippopotamus ivory was used during the MBA and some perforated horns of ram, and a boar’s tusk were found in EB and MB contexts.

### **Early Bronze Age IV (c. 2500–2000 BC)**

Although references to bone, ivory, horn and related artifacts are very rare in the large corpus of cuneiform documents in the State Archive of Palace G, nonetheless they are of great interest. The sumerogram *si* was used to indicate horn, bone or ivory (Pasquali 2005: 11, 70). A major interpretative difficulty is that the term seems to indicate, without clear distinction, objects shaped as horns, as well as actual worked animal horns, and the material used for precious items such as furniture decoration, containers, plaques and small figurines (Biga 1998). An object called *an-zam* can be also considered a container made of ivory, and it has been proposed too that ivory tusks were indicated by the term *si-am*. It is worthy of note that *si-am* together with linen textiles comes to Ebla from Dugurasu, a place for which an identification as the Nile Delta has been suggested (Biga and Roccati 2012). Unfortunately, no precious ivory decorations, horns or elephant’s tusks have been discovered in the Early Syrian public buildings of Ebla. However, the archaeological evidence includes several types of bone artefact retrieved from the destruction level of the Royal Palace G and Building P4, a large multi-functional public complex brought to light at the foot of the north-western acropolis slope. These may be grouped into the following classes: pointed tools; sticks/pins; spindle whorls; decorated tubes; ornaments and inlays. Several different types of pointed tool are

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<sup>1</sup> The animal bones were identified by Claudia Minniti of University of Salento, zooarchaeologist of the Ebla Expedition, who I sincerely thank; the identification of the ivory inlays from the Northern Palace was done by Barbara Wilkens.

attested during the EB IVA, usually defined in the literature as punches, awls or needles. They might have been used for a variety of activities, especially in relation to the flourishing textile manufacture (Peyronel 2004: 132–45, pls XXIX–XXXVI). Made from pieces of the diaphyses of long bones or metapodials of sheep and goats (rarely of cattle), these items are frequently smoothed or polished, with the pointed end usually showing clear signs of wear. The implements can be divided into ‘needles’, pierced at one end, and ‘pointed tools’, items with a pointed tip and the opposite end not pierced (Peyronel 2014: 130–31, figs 8.4–5). The former group consists of specimens 5–10 cm in length belonging to two different types: one with an arched section of the shaft opposite to the point and the other having a rounded shaft with circular section. The function of this kind of tool might be related to textile manufacture: a ‘needle’ used for ‘sewing’ and perhaps also the needle binding technique of textile production. Several pointed bone implements without pierced ends dated to the EB IVA can be distinguished on the basis of their dimensions: shorter (type a: 5–10 cm in length), longer (type b: 10–20 cm in length), and pointed tools (type c) with a smaller shaft and usually with arched section towards the blunt end (very similar to the needles, but unpierced). It is probable that these were multi-functional implements used in many ways for working several soft materials. However, they could also have functioned well as so-called pin-beaters, weaving tools used to push up the weft after changing the shed or that was thrust up between the weft threads at intervals in order to drive the weft home.

These pointed tools are widespread in the EB IVA (c. 2500–2300 BC), although some pieces date to the MBA, testifying to their development and use during the Old Syrian period alongside more elaborate bronze tools and implements (i.e. chisels, burins, drill-heads, points and blades). A similar situation can be observed at Hama, where several bone implements are present in phase J (EB IVA–B), with numbers decreasing markedly during Phases H–G (Fugmann 1958: figs 64:3E876, 65:3D325, 85:3B727, 93:3B733, 106:5D45, 5E590, s.n.F11 — Hama J8-1 — and fig. 132:7A521, 5E618 — Hama H5-1, G3-1; pre- and protohistoric periods, phases L–K, Thuesen 1988: 84–85, 168–72).

Some of the well-finished pointed tools and pierced needles, more carefully executed and with worked heads and decorations, could have been pins. Pins might have been used to fasten clothing, but it is also possible that some of them were hair pins, and the distinction between toggle-pins and hair pins is not easy to make during the pre-classical periods in the Near East. Decorated bone sticks with a pointed end which can be considered ‘pins’ are well attested at Ebla during this period. These objects could be also cosmetic sticks (kohl-sticks), especially those with a flattened head, and consequently we prefer to maintain the general terminology of ‘sticks/pins’ which includes both possible functions, since it is very difficult to distinguish two functional groups. Several elements suggest the existence of a specialized production of this kind of bone object during the Early Syrian period: some sticks/pins are carved to very high standards with few standardized types. There is a marked difference between these and other more roughly executed utilitarian implements; they represent the most common type during the EB IVA (87 specimens), and the high percentage present in Royal Palace G and Building P4 shows that they were used by the highest-ranking persons in society.

Four main types can be distinguished (Fig. 3):

- a) sticks/pins with worked head, hourglass- or spatulashaped, pierced immediately under the head; without decoration; c. 5–10 cm in length;
- b) small sticks/pins with worked globular, pointed or hourglass shaped head; decorated with parallel lines and cross-hatched lines; usually pierced by very small hole (1 mm in diameter) between the two areas patterned with engraved lines; c. 5–10 cm in length, with a circular section c. 0.4 cm in diameter;
- c) sticks/pins similar to b) but longer, c. 15–20 cm in length with a circular section c. 0.6 cm in diameter;

d) pins with simple rounded head, pierced or unpierced.

This homogeneous class of carefully worked sticks has a very few parallels at Hama J 6–4 (Fugmann 1958: fig. 65:n.4,R2, 74:3E875, similar to Ebla type b, 85:3B734, resembling Ebla type a) and is not attested elsewhere in the northern Levant, suggesting its regional focused, specialized production, with Ebla itself being the centre of production.

The distribution of bone objects in the destruction levels of Royal Palace G reveals that they were scattered through all the excavated wings of the building without any particular concentration of finds (Fig. 1). In the southern unit of the Central Complex, a sector devoted to the warehousing of storage jars and vessels of different sizes, worked bone objects were found in four rooms (L.3464, 3466, 3500, 3512). Some sticks/pins were also discovered in the storerooms, and inside the rooms devoted to activities related to the grinding of cereals (L.3914, 3926, 3932). This pattern of distribution should, of course, be evaluated in relation to evidence of the existence of an upper storey (e.g. layers of collapsed mudbrick structures) and, in the case of finds on floor surfaces, as perhaps the result of the abandonment of the items there during the sack of the palace.

The lack of by-products of working, or of semi-finished, items indicates that the working places were outside the excavated area; the room with most objects yielded four sticks/pins and one awl (L.3914), but it is unlikely that the items were stored in this place, a large rectangular room equipped with a plastered bench and grinding facilities still in situ (Matthiae 2010: 379, fig. 206). Interestingly, a similar distribution can also be observed for the spindle whorls, which have high domed shapes and were made from local stone (limestone and basalt) and also in a black-greyish stone (Peyronel 2004: 104–14). Only two bone whorls (9 and 21 g; 3.8 and 5 cm in diameter) were found in EB IVA contexts (Fig. 4; Peyronel 2004: 107, pl. V:33, 35): together with stone spindle whorls (usually small and lightweight, 6–22 g), perhaps suggesting spinning activity performed by high-ranking members of the palace (Peyronel 2014: 128–29), as indicated by texts recording quantities of wool delivered to the queen mother, to the queen and to women of the court as the raw material for textile production (Biga 2014: 145). The variation in spindle whorl weights and experimental spinning tests carried out by the CTR team of Copenhagen (Andersson et al. 2010: 164–65) indicate that these whorls were probably employed for spinning small quantities of thin fibres.

A well-known type of bone item attested in the Levant, Anatolia and the Aegean during the EBA is a bone tube made from the long bone of a sheep/goat or bovine with the ends cut off and decorated with patterns of geometric lines and dotted circles (Genz 2003; Zarzecki-Peleg 1993). An incomplete example and two small fragments of decorated tubes

have been found at Ebla. One fragment was collected on the surface in the East Lower Town (TM.70.N.566), another is from Building P4 (TM.94.P.711), and the largest piece is from the Royal Palace G (TM.93.G.298). The latter, broken at both ends, is made from a bovine long bone and is decorated with horizontal lines, hatched bands, herringbone patterns, triangles filled with parallel lines, oblique crossed lines and dotted circles (Fig. 5).

Similar objects come from Tell Hariri/Mari (Beyer and Jean-Marie 2007: 87–88, fig. 15: nos 68–69), Tell Bi'a/Tuttul (Strommenger and Miglus 2010: 183–84, tafn. 199:5, 200:1), Tell Munba'qa (Czichon and Werner 1998: 104, tafn. 96:943, 97:944–946), Selenkayeh, Hammam et-Turkman (van Loon and Meijer 1987: fig. 6), Tell Banat (McClellan 1998: fig. 13), Tawi graveyard (Kampschulte and Orthmann 1984: tafn. 33:16, 34:15), Hama (Zarzecki-Peleg 1993: fig. 11:2); exemplars characterized by the dotted circle motif probably surround a regional centre of production in northern and central Syria. Decorated bone tubes are widespread in the Levant, Anatolia and the Aegean.

The seminal study of Genz (2003) lists 49 sites in which these items were found and Rahmstorf raises the number to 57 (2006: 58–62). Rahmstorf claims the widespread presence

in the Eastern Mediterranean and Anatolia of decorated tubes, balance weights, specialized ceramic vessels, cylinder seal impressions and other categories of item as a result of intense relations and interactions during the EBA. The bone tubes from the Aegean have been the topic of a recent article (Saliari and Draganits 2013) in which more than one hundred tubes are listed, with a distribution concentrated in the islands (especially in tombs) and in coastal mainland sites (especially in residential contexts).

The function of this item is debated, but the presence of residues of the blue-coloured mineral lazurite, and other pigments in some items (especially from sites in the Aegean) suggest that the tubes' contents can be identified as colour pigments and it seems probable that they were often included in the funerary assemblages of rich graves because of their content. However, the presence of exemplars in ritual deposits (e.g. at Mari and Tell Banat) shows that a related symbolic importance cannot be excluded.

Precious metals, lapis lazuli, steatite, marble, limestone, shell, carnelian and jasper were the predominant materials worked at Ebla to produce inlays and parts of small figurines used in composite panels, friezes, standards, amulets and furniture (Peyronel and Vacca 2013: 442–44). Bone and ivory were rarely used as components of these valuable objects (e.g. Matthiae et al. 1995: no. 108), and a similar situation can be observed also at Mari in the pre-Sargonic period. However, some pieces were found in the palace, and especially in a room of Building P4, where one hundred inlays of different materials, and the remains of silver and gold sheetmetal, presumably used as settings, have been found, suggesting a function linked to the work of assembling components made of precious materials, if not to the direct manufacture of these (Marchetti and Nigro 1995–96: 14, 16).

### **Middle Bronze Age I-II (c. 2000–1600 BC)**

Looking at the following MB period, we can identify a marked change in bone object manufacture, with a strong decrease in implements of everyday use and the appearance of new categories of standardized artefacts.

Moreover, Old Syrian Ebla became a centre for the manufacture of precious ivory items and inlays, attesting to the development of specialized workshops in the Levant that precede the flourishing and widespread ivory carving ateliers of the Late Bronze Age.

In contrast with the previous period, only a few pointed bone implements have been found in MBA deposits, and the production of pins/sticks completely disappears. On the contrary, bone spindle whorls are frequent in MB contexts (Peyronel 2004: 161–72, pls VII–XI, nos 40–47, 49, 51–52, 54, 62–64, 74, 80; 2007: 27–28). They are always light (from 1 to 20 g), domed and with a plain, highly polished surface; occasionally the convex side is decorated with incisions (Fig. 6). The presence of a very small central hole (0.2–0.4 cm in diameter) makes it possible that exemplars weighing less than 5 g could have been buttons or some kind of decoration for furniture. A small whorl with flattened dome covered in engraved geometric patterns might be considered a 'symbolic' fly-wheel, since it was found in a ritual well in the sacred area of Ishtar, together with two bronze spindles and hundreds of vessels, precious items and votive objects (Peyronel 2004: 169–70, pls IX, LXXXVI). Decorated bone/ivory whorls are attested at Syro-Palestinian sites (from Alalakh to Ajjul) during the MB period, becoming more popular during the following LBA (Peyronel 2004: 173–95).

Local bone and ivory carving workshops are attested at Ebla during the MB by the discovery, inside the Northern Palace, of an atelier for the manufacture of precious decorations in ivory, and by some distinctive objects found in other public buildings and in the royal necropolis. Together with this high-level, specialized handicraft manufacture, a more common production consisted of decorated strips of bone used to inlay wooden boxes or parts of furniture. Several small fragments were stored in the Northern Palace workshop and some very fragmentary pieces were found in the Northern Fort, Southern Palace and Western

Residence, indicating that this type of decoration was quite common at Ebla and present in both private and public buildings. Three remarkable complete strips were found in situ in a room of the Western Fort, a large defensive building located on the top of the western rampart (Peyronel 2000: 1363, fig. 15). The inlays, well preserved in spite of the burning of the bone, were found together with stone balance weights and the remains of burnt wood, which suggest the original presence of a wooden box containing the weights. Two of them are decorated with double zigzag lines with dotted circles, while the third smaller strip has only a row of double dotted circles (Fig. 7). Bone strips decorated with geometric motifs, including longitudinal and oblique lines, chevrons, herringbone patterns, dot-in-circles and guilloches, were widespread, especially in settlements and cemeteries in the southern Levant, and several have been found in the northern Levant: e.g. at Ugarit, Alalakh and Byblos (Liebowitz 1977), but also at more distant northern and eastern sites such as Kültepe (Özgüç 1986: 70, pls 121, 123), 'Usiyeh (Oguchi 2000: 86, pls 1:6, 6:c) and Haradum (Kepinski-Lecompte 1992: 338, fig. 170:4). The strips would have decorated small boxes or pieces of furniture, as demonstrated by the complete examples found in funerary assemblages and in particular in the Megiddo (Guy 1938: pls 108, 111, 113; Loud 1948: pls 192–194) and Jericho tombs (Kenyon 1960: 496, 510–13, 534, figs 215, 222–223; 1965: 355, 462, figs 143, 264).

Hundreds of ivory inlays of Egyptianizing style were found together with bone, steatite and shell inlays in a peripheral room (L.4070) of the Northern Palace in the Lower Town (Scandone Matthiae 1990; 1991; 2002; 2006). The presence of an atelier for the manufacture of precious items of furniture or their inlaid decoration, is suggested by the discovery of several unfinished or partially worked ivory and bone inlays, and especially by a number of tools in chert, obsidian and bronze that were found on the floor together with the inlays. Five chert blades, one obsidian blade and one core, two chert drill-points, five small bronze burins, a gouge and six small chisels were found together with the worked inlays (Peyronel 2015: 133, figs 5–7). The ivory inlays (thin elongated inlays, flat and thin inlays, small strips, tesserae) were manufactured from hippopotamus tusks and include more than one hundred pieces pertaining to figures, 24 thin strips decorated with guilloches, 9 arched elements, around 600 small fragments of undecorated thin strips and rectangular elements, several of which were unfinished, 50 thicker rectangular plaques with slightly concave backs, and 40 cylindrical pivots (Scandone Matthiae 2002: 7–14, 51–55; Wilkens 2002) (Figs 8–9). The more complete restored ajouré inlays are figures related to Egyptian royalty and the divine world, with male heads wearing the 'atef crown and the plumed tiara of Amun, deities such as the crocodile god Sobekh, Hathor with the horned head and the sun-disk, and Horus with the human body and the falcon head (Scandone Matthiae 2002: 15–39).

It has been suggested (Molfese 2007) that the production of decorated ivories and cylinder seals, showing the re-elaboration and hybridization of Syrian, Mesopotamian and Egyptian motifs, might be considered as the first appearance of a figurative artistic language that then spread in the Near East from Ebla and other major sites (such as Aleppo and Alalakh) indicates that, with artistic roots in the Mature Early Syrian period, it is clearly the expression of the Old Syrian culture and its interactions. The exploitation of hippopotamus ivory during the Middle and Late Bronze Age is widespread in the Levant (Caubet and Poplin 2015). At Ugarit, taking into consideration only the worked ivory artefacts in which the identification of the species is possible, the percentages of hippopotamus and elephant ivory are respectively 75% and 25% (Caubet and Poplin 1987; Gachet-Bizollon 2007).

Hippopotamus ivory is also prevalent at Qatna, although some of the most precious items were manufactured from elephant's tusks, and elephant bones have been discovered in the north-western wing of the Qatna Royal Palace (Pfälzner 2013; Vila 2015). Some bones and five tusks of elephant were also found in the palace of Alalakh VII, showing the local exploitation of the material (Yener 2007). The Asian elephant and the hippopotamus were

probably hunted in the Litani and Orontes valleys, where the habitat was most favourable, and the distribution of bones in Late Bronze and Iron Age settlements indicates that another core region for elephant hunting was the Middle Euphrates valley. A change in the procurement of ivory for inlays and prestige items may be recognized during the 1st millennium BC, when most artefacts were made from elephants' tusks (Moorey 1994: 115–16), suggesting that the hippopotamus was becoming extinct in the Levant region.

through the circulation of prestige and luxury items during the Late Bronze Age, developing into an 'international' style (Feldman 2006). However, the evidence The evidence from Ebla demonstrates the existence of highly developed bone and ivory carving handicraft production at Tell Mardikh during the Middle Bronze Age, which probably replaced the stone and shell figurative miniature statuettes and inlays of the Early Syrian period. Other bone/ivory workshops have been identified in the Middle Bronze Age palace at Tell Sakka (al-Besso 2015) and in the palace of Alalakh VII (Rooms 11–13; Yener 2007: 154), indicating that during the Old Syrian period production was strongly centralized and controlled by the palace administration. The presence of skilled bone and ivory artisans at Ebla is also attested by the discovery of some extraordinary pieces of craftsmanship, such as a small ivory figurine of a worshipper holding a gazelle (Fig. 10; Matthiae et al. 1995: 463, n. 382) from a large refuse pit immediately outside the Northern Palace, an inlay (7 cm high) portraying the Old Syrian king wearing the typical royal fringed cloak and oval headdress (Fig. 11; Matthiae et al. 1995: 397, n. 246), found in the throne room of the Northern Palace, and the two extraordinary ivory funerary talismans or amulets (one almost complete, Fig. 12, and the other very fragmentary) retrieved from the Tomb of the Lord of the Goats below the Western Palace (Matthiae 2010: 301–04; Matthiae et al. 1995: nos 379–381, 470; Polcaro 2015). The best preserved of these is 35 cm long and composed of ivory plaques, fixed back to back by upper and lower curved rods, decorated with small figurines of animals fixed by means of small rods. On the two faces of the talisman other small figurines of ivory carved in high relief are applied, composing two scenes that were interpreted by Matthiae as the funerary banquet and the adoration of the deceased king in the form of a bull. Moreover, the discovery in a private house of a plain ivory plaque, which was probably the lid of a wooden box (TM.07.B.588; Fig. 13), and the presence of several bone cylinder seals (Fig. 14; Mazzone 1975) related to the so-called 'Syro-Cappadocian common style', suggest that local ateliers also produced items to fulfil the demand from wide sectors of Eblaitic society.

Worked or modified animal knuckle bones have been found in several MBA contexts at Ebla. They are usually sheep or goat bones, sometimes cut lengthwise with one side smoothed (Minniti and Peyronel 2005; 2008). The Eblaitic evidence suggests that astragali were both utilitarian and ritual objects during the Middle Bronze Age in the Northern Levant. The ritualism, and the symbolic nature of this specific animal bone is indicated by the discovery of 147 astragali as grave goods in a child burial located on the slope of the Acropolis mound (Minniti and Peyronel 2005: 11–12). The ritual meaning of knuckle bones during the Iron Age is well attested in the Levant, Eastern Mediterranean and Anatolia: several groups have been found in sacred buildings as cultic offerings, buried in tombs as grave goods, and hidden below wall foundations (Affanni 2008; Gilmour 1997; Minniti and Peyronel 2005: 13–16). However, the scattered presence at Ebla of smaller groups of knuckle bones from private houses, forts and public buildings seems to also suggest a utilitarian function as gaming pieces, which is supported by ethnographic parallels and their use during Roman times (Fig. 15).

## **Conclusion**

Preliminary analysis of bone and ivory objects dating to the EBA and MBA allows certain trends in the development of this craft at Ebla to be perceived. During Early Bronze Age IV the

inventory of bone items shows the local production of standardized objects of high quality that can be interpreted as pins and/or cosmetic sticks. These were found together with more common, roughly worked household implements (especially awls and needles). The craftsmanship of figurative and decorative inlays employed different materials, such as semi-precious stones, lapis lazuli in primis, which was stored in large quantities inside the palace treasury, although cuneiform texts and some rare pieces attest that bone and ivory were also used in the palace workshops. The presence of three fragmentary exemplars of decorated bone tubes, one of which came from Royal Palace G, indicates that at Ebla these items were used, possibly as pigment containers together with bone sticks, of which a large number has been retrieved from the rooms of the palace.

The flourishing production of bone and ivory carvings with figurative and geometric designs is attested at the site during the Middle Bronze Age I-II, indicating a radical change in the preference for precious materials adopted for luxury artefacts. The inventory includes pieces in typical Old Syrian style and also an Egyptianizing style, in keeping with local tastes, that are reflected in the glyptic of the period. The latter is attested by hundreds of inlays discovered in a palace atelier, and the presence of workshops at Tell Sakka and Alalakh during the same period points to the centralization and control of ivory working by the palace administrations during the first half of the 2nd millennium BC. At the same time, the proportion of more common utilitarian products decreases sharply, as bone ornaments such as pins and implements were replaced by bronze items. However, certain specific object types, spindle whorls and buttons, which were carefully worked, polished and sometimes decorated with engraved geometric decoration became popular. This might be considered as a practice directly influenced by ivory carving.

In a historical perspective, the passage from the EBA to MBA at Ebla shows, on the one hand, the continuity of the tradition of the manufacture of composite panels, standards and inlaid friezes widely attested in artistic production of the high Early Syrian, and on the other, a radical change in raw material preferences, with the widespread use of ivory. This new artistic genre stemmed from the previous one and was to reach full development during the following Late Bronze Age.

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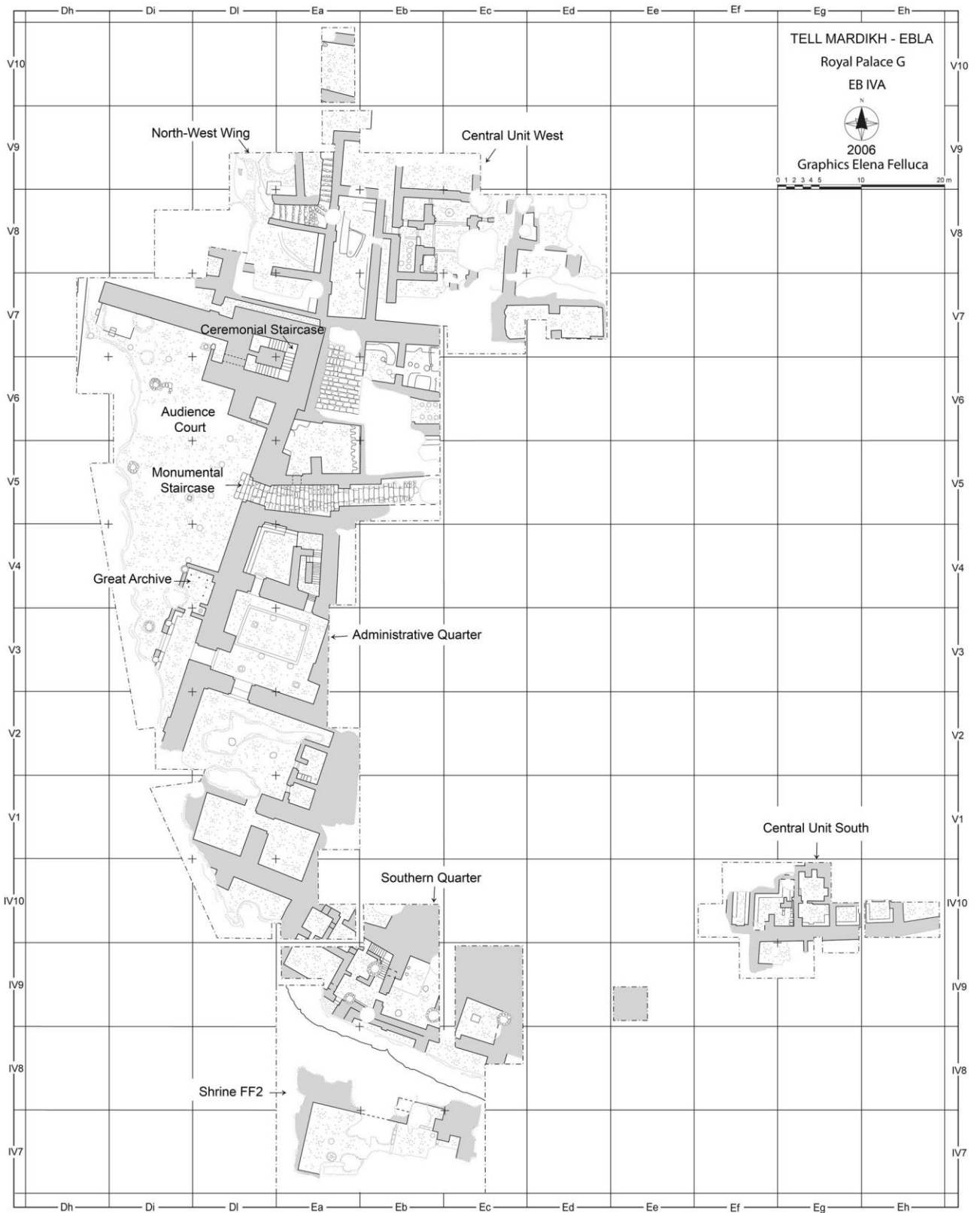


Figure 1 Plan of the Royal Palace G of Ebla. © MAIS.

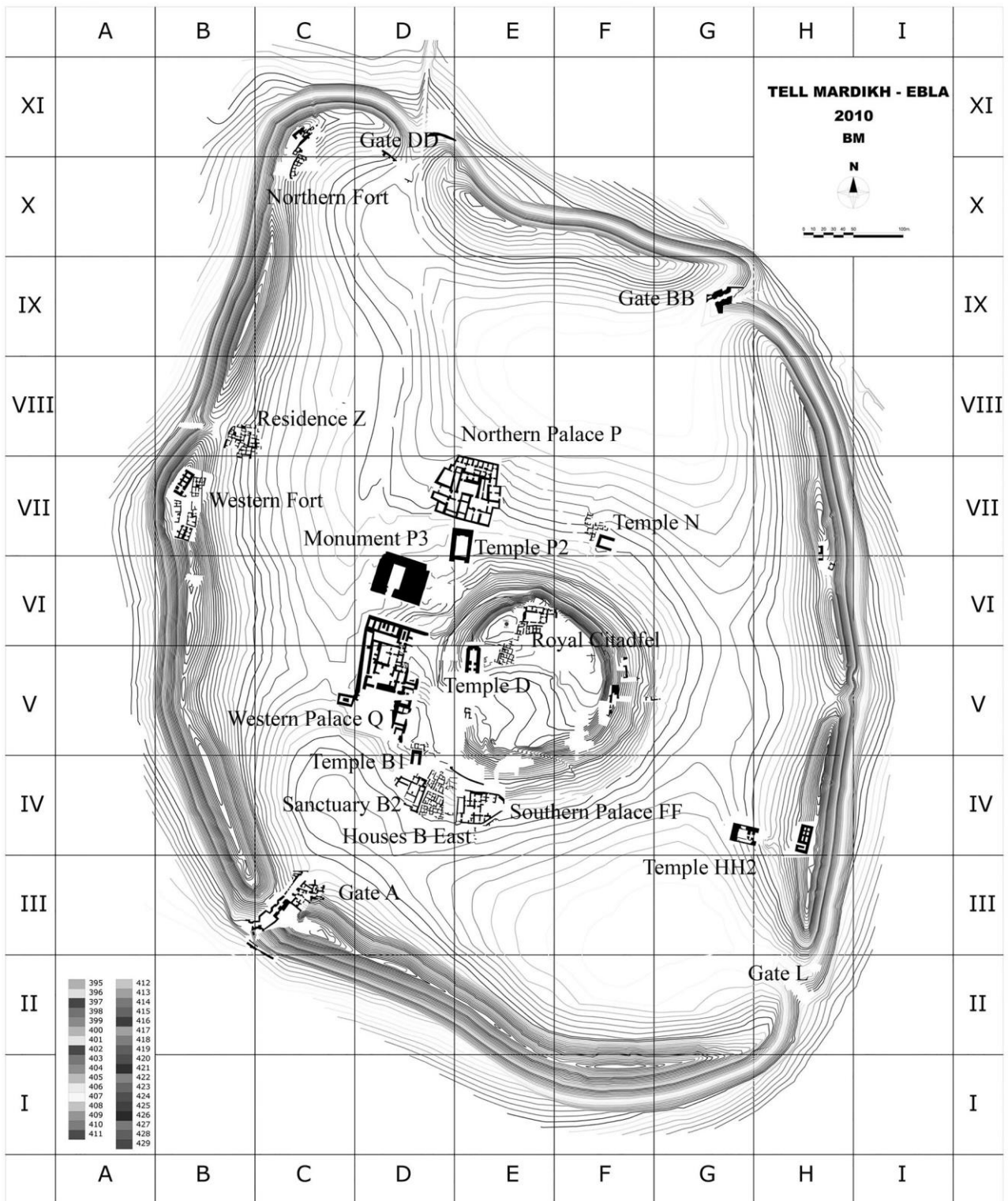


Figure 2 Topographic map of Tell Mardikh-Ebla during the Middle Bronze Age. © MAIS.

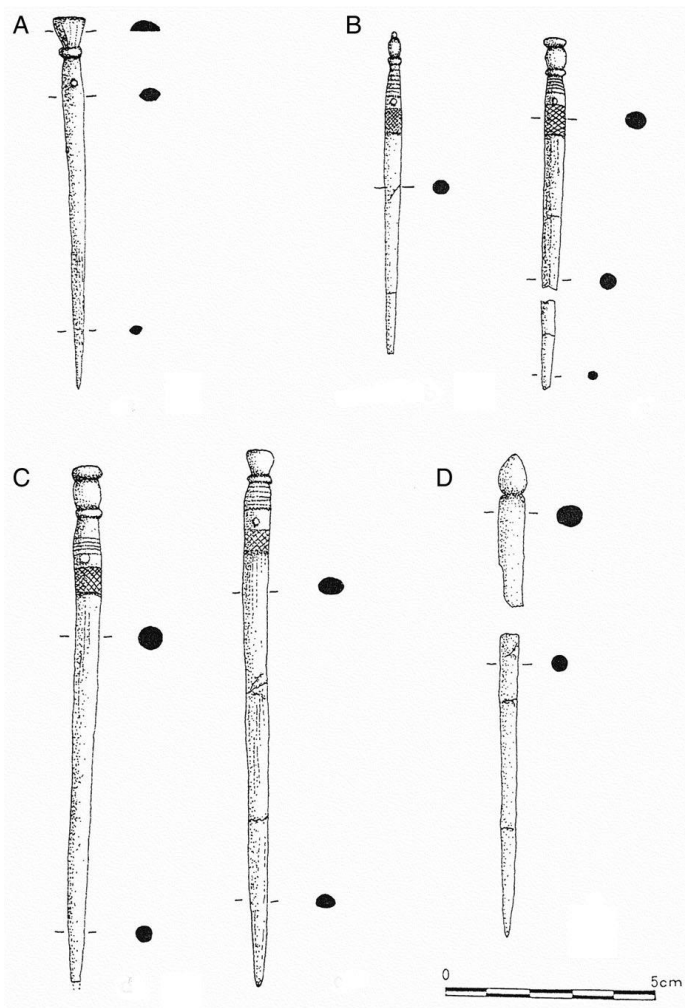


Figure 3 Bone sticks/pins from Ebla (type A: TM.75.G.479; type B: TM.94.P.644; type C: TM.91.P.715, TM.91.P.716; type D: TM.84.G.111) — EB IVA (c. 2400–2300 BC). © MAIS.

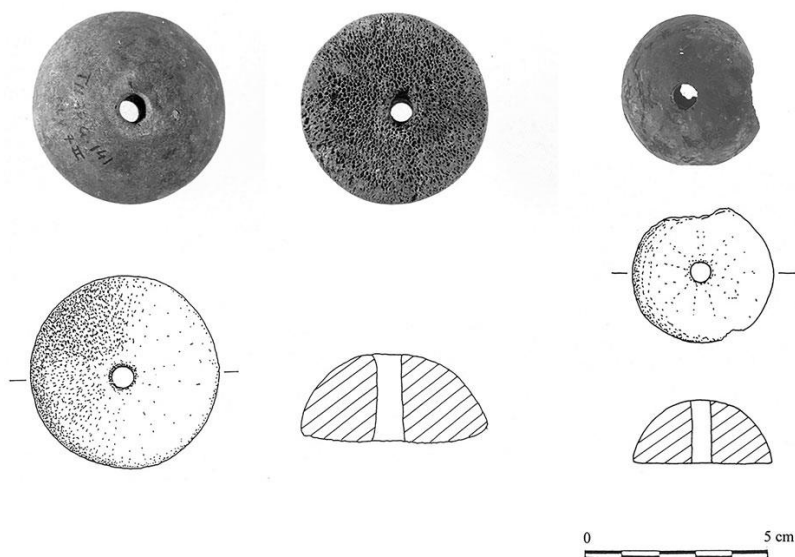


Figure 4 Bone spindle-whorls from the Royal Palace G and Building P4 of Ebla (TM.88.G.141 and TM.95.P.581) — EB IVA (c. 2400–2300 BC). © MAIS.

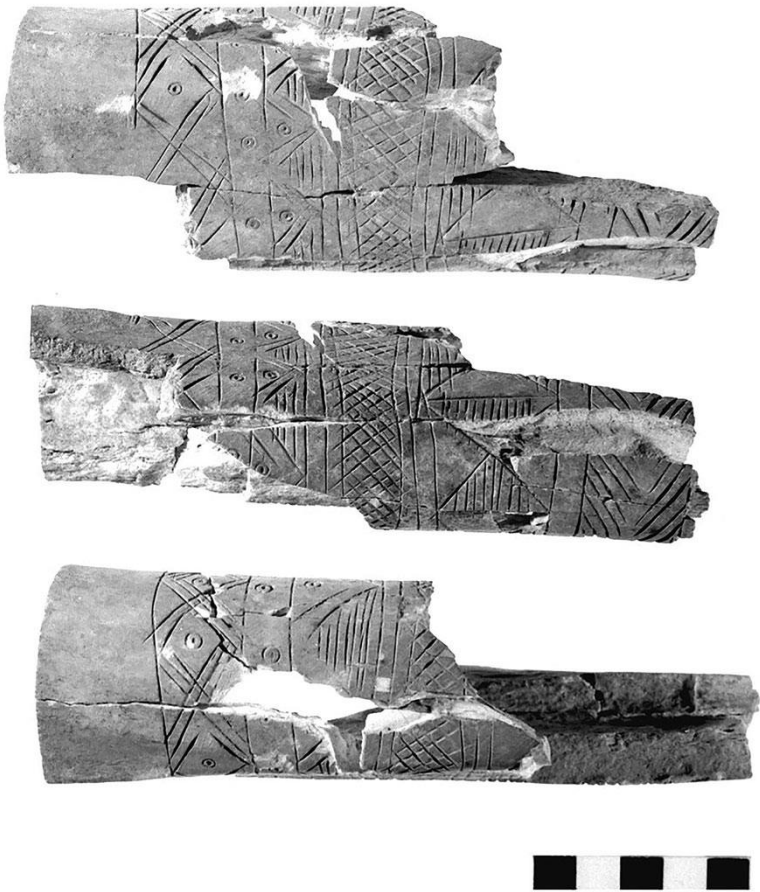


Figure 5 Decorated bone tube from the Royal Palace G (TM.93.G.298) — EB IVA (c. 2400–2300 BC). © MAIS.

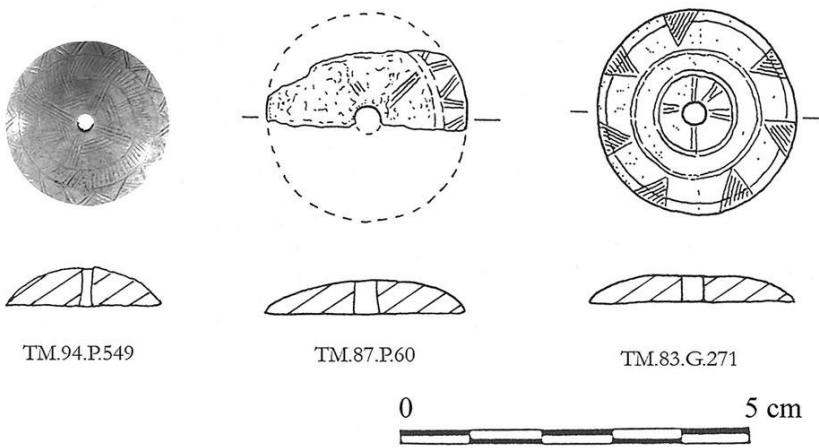


Figure 6 Decorated bone whorls —MB II (c. 1800–1600 BC). © MAIS.

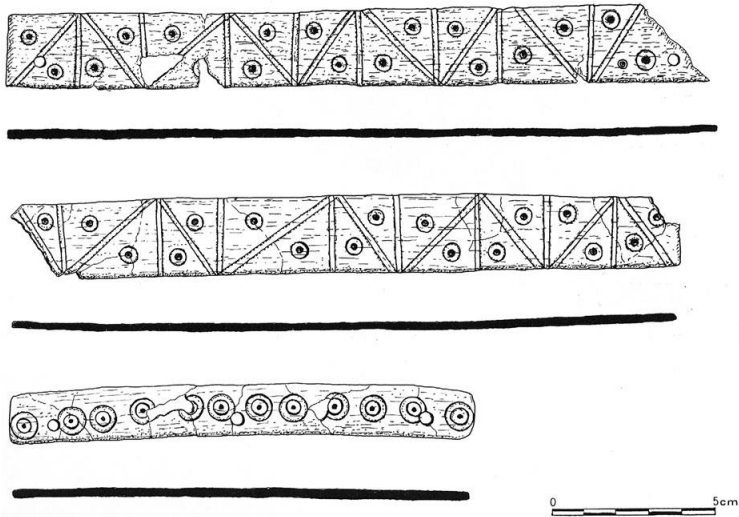


Figure 7 Decorated bone inlays (TM.96.V.258–260) from the Western Fort of Tell Mardikh-Ebla — MB II (c. 1800–1600 BC). © MAIS.



Figure 8 Ivory decorated strips from the workshop in the Northern Palace of Tell Mardikh-Ebla — MB II (c. 1800–1600 BC). © MAIS.

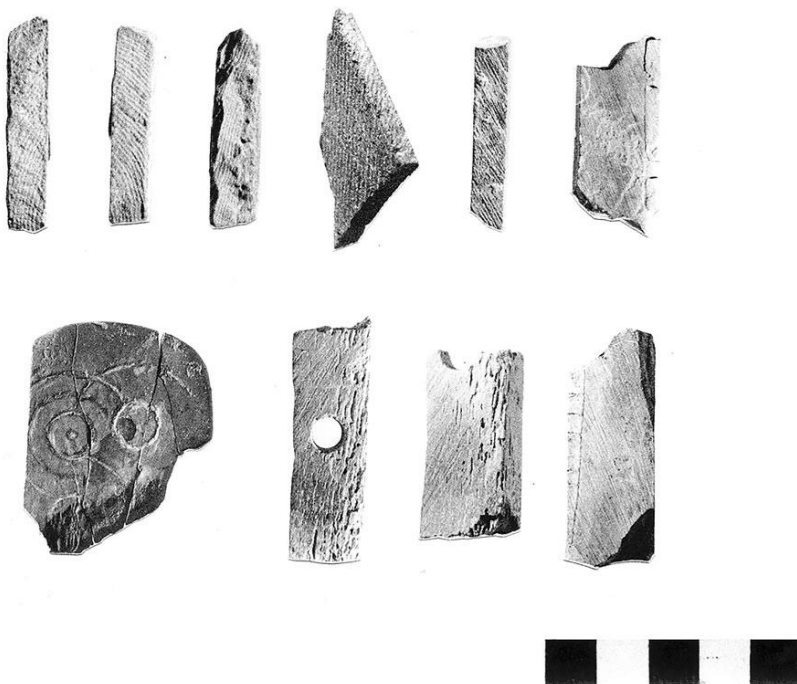


Figure 9 Ivory waste and unfinished elements from the workshop in the Northern Palace of Tell Mardikh-Ebla — MB II (c. 1800–1600 BC). © MAIS.





Figure 10 Ivory figurine (TM.93.P.340) from F.5861. MB II (c. 1800–1600 BC). © MAIS.

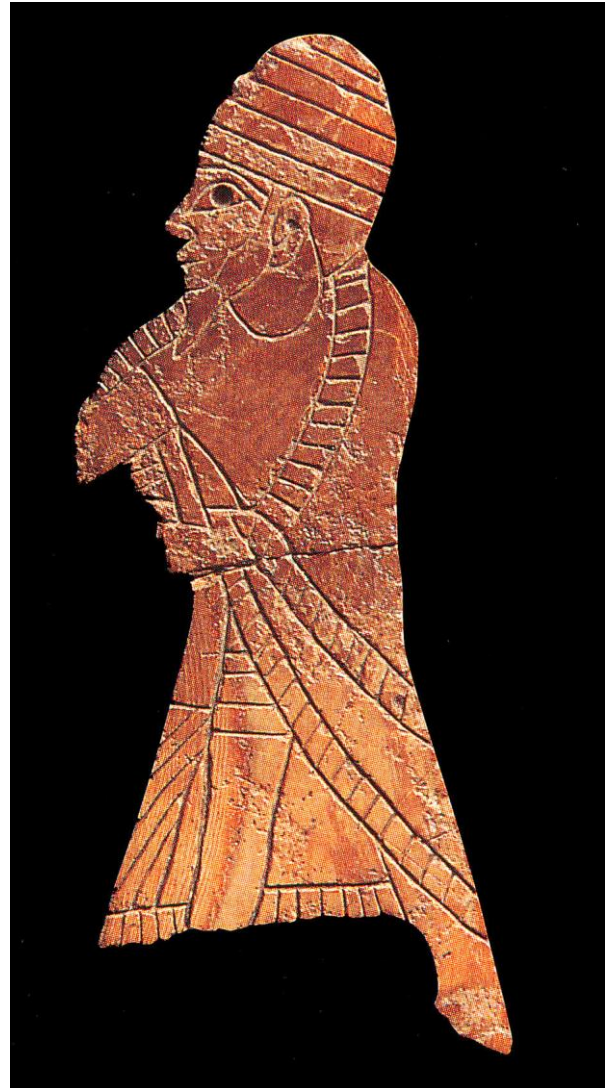


Figure 11 Ivory figurative inlay (TM.86.P.86) from the throne room of the Northern Palace of Tell Mardikh-Ebla — MB II (c. 1800–1600 BC). © MAIS.



Figure 12 Ivory funerary talisman (TM.78.Q.470) from the Tomb of the Lord of the Goats of Tell Mardikh-Ebla — MB II (c. 1800–1600 BC). © MAIS.



Figure 13 Ivory plaque (TM.07.B.588) from the private quarter B East of Tell Mardikh-Ebla — MB II (c. 1800–1600 BC). © MAIS.



Figure 14 Bone cylinder seal (TM.88.P.74) from Tell Mardikh-Ebla — MB I (c. 2000–1900 BC). © MAIS.



Figure 15 Worked knuckle bones on the floor in a house of the quarter B East at Tell Mardikh-Ebla — MB II (c. 1800–1600 BC). © MAIS.