Magda Pieniążek, Ekin Kozal

West Anatolian Beads and Pins in the 2nd Millennium BC : Some Remarks on Function and Distribution in Comparison with Neighboring Regions

Polish Archaeology in the Mediterranean 23/2, 187-208

2014

WEST ANATOLIAN BEADS AND PINS IN THE 2ND MILLENNIUM BC

SOME REMARKS ON FUNCTION AND DISTRIBUTION IN COMPARISON WITH NEIGHBORING REGIONS

Magda Pieniążek,[1] Ekin Kozal [2]

[1] Marie Curie Fellow, German Archaeological Institute, Department Istanbul,
[2] Department of Archaeology, Faculty of Letters and Sciences, Çanakkale Onsekiz Mart University

Abstract: Middle and Late Bronze Age sites in Anatolia have yielded a great number of dress and body ornaments made of glass, faience, frit, stones, semiprecious stones, metal, ivory, shells and clay. The article discusses selected aspects related to the meaning and origin of the ornaments, their local production and role in interregional trade networks and fashions between the Aegean and Mesopotamia. Special attention is given to patterns of distribution and the function of pins and beads from Troy, Beycesultan, Boğazköy and other Anatolian centers, as well as to a comparison with the Aegean on one side and central Anatolia on the other.

Keywords: jewelry, pins, beads, glass, faience, semiprecious stones, trade, western and central Anatolia, Middle and Late Bronze Age, Troy, Beycesultan, Boğazköy

Jewelry can have many different symbolic meanings and cultural values, and, as the title of the volume "Beyond Ornamentation" indicates, decoration is just one of them.

MEANING

Magical and religious implications of jewelry can be related to its decoration, shape or material. This was postulated, for example, for Mycenaean glass relief beads decorated with cowry shell, lily or ivy-leaf motifs and beads in the shape of a figure-of-eight shield (Hughes-Brock 1999: 287–289; Nightingale 2008: 80–81).

Distinctively shaped or decorated pendants and beads, made of amber, red semiprecious stone (carnelian), and materials white in color (rock crystal or bone), may have functioned as apotropaic amulets protecting the owner from danger (Hughes-Brock 1999; Konstantinidi 2001: 235–236; Maran 2004: 58–61). Objects made of amber and semiprecious stones were additionally bearers of energies and virtues associated with the intrinsic properties of these materials (Hughes-Brock 1999; Konstantinidi 2001: 235–236; Maran 2004: 58–61; Schuster-Brandis 2008).

As demonstrated by Harald Klein (1992: 254–259), pins could also have apotropaic and cultic functions, as appears

from Mesopotamian and Hittite textual evidence, as well as numerous finds coming from cultic contexts.

Social function is important as well (Kanungo 2007; Munan 2007). Necklaces, diadems, rings etc. are highly visible and as such, draw attention and can present a clearer status message than other potential indicators, such as clothes, tattoos and weapons. Size is an unquestionable advantage as it allows very small objects to be endowed with values and meanings that can be complex and highly significant. In addition, jewelry is easy to attach, remove and exchange. For instance, a change of social status or the transition from one age group to another can easily be expressed by changing a piece of jewelry, but this cannot be as easily accomplished in the case of a tattoo. The potential of weapons and clothing as message bearers, even the most elaborate, is limited by their strong utilitarian connotations. For these reasons, small decorative objects made of precious metal, stones, glass or faience were used as important prestige goods. Ethnographic sources show that elites acting within stratified societies (such as chiefdoms and archaic states of the Bronze Age) could use jewelry in various ways (Earle 2002). Individuals can display jewelry to enforce their privileged position and to show an affiliation with the ruling class. Luxury items may also have been used to maintain and/or manipulate social relations between elites and non-elites (Helms 1981; Earle 2002).

Finds from the Shaft Graves in Mycenae and other Mycenaean elite graves from the Middle Helladic III–Late Helladic IIA period (about 18th–16th century BC) provide an excellent example of the political use of jewelry. At the transition of the Middle to Late Bronze Age, southern Greece was an arena of political competition and the chiefs from Mycenae used *exotica* to underline their high status. Objects like ostrich eggs, golden masks, ornaments made of faience, lapis lazuli and amethyst were not only deposited as grave goods, but most probably also displayed during the funeral ceremony, and therefore fulfilled certain political aims (Wright 1995; Voutsaki 1999; Burns 2012).

Besides social, political, magical and decorative functions, some kinds of jewelry, for example beads and metal rings, could have also been used for utilitarian purposes such as means of payment (Boehmer 1972: 165–166; Dercksen 2005; Kozal, Novák 2007; Pieniążek forthcoming). Some of them could have been produced according to norms of weight and measure. One example of such objects comes from modern Turkey, where gold bracelets have a standard weight and their value is calculated accordingly. Excavations of the *Henrietta Marie* shipwreck of AD 1699–1700 provide another interesting parallel. The ship was carrying a large collection of beads that had monetary value and were used to buy slaves (Moore, Malcom 2008).

Some valuable items were used in conjunction with one another. The archaeological record indicates that textiles and jewelry could have been used together, creating a single composite object of value. Although textiles are seldom preserved, a pertinent example was recovered from Level III of the Acemhöyük Sarıkaya Palace dated to the Old Assyrian Colony period (about 1950–1680 BC). Carbonized textiles, probably linen, with dark and light blue faience beads sewn

on with golden wire, were found on the palace floor (Özgüç 1966: 47, Pl. 27:1–3). One of the Mycenaean graves at Dendra contained more than 40,000 tiny faience beads, uncovered in a zigzag pattern of four colors that must have been originally sewn on a shroud or other kind of textile (Barber 1991: 171–172; Hughes-Brock 1999: 282). In addition, Minoan and Mycenaean frescos attest that beads were used both for dress and body ornamentation (Younger 1992). Therefore, the presence of beads in archaeological contexts represented not just trade in beads, but also possibly in bead-decorated textiles. Another example of the conjunction of valuable materials/products are the composite pins discussed below.

TRADE AND PRODUCTION

How jewelry was obtained during the Bronze Age is one of the most discussed archaeological problems. Objects of exotic shape or material were most probably imported within the framework of elite-sponsored exchange, but items such as simple beads made of clay may have also been produced at the household level. The production of objects like faience and glass beads is particularly unclear. On one hand, they were surely mass-produced and, once the technology was known, quite easy to make. On the other hand, the presence of more than 70,000 such beads in the Uluburun shipwreck, which sunk around 1300 BC (Ingram 2005; Pulak 2005; and see Ingram 2014, in this volume), indicates that they also accompanied gold, ivory and semiprecious stones in the framework of large-scale eastern Mediterranean exchange networks.

The need to obtain luxury goods was one of the reasons why elites engaged in interregional trade (Helms 1993). On the other hand, the ruling class was also interested in developing local production based on known technologies, such as the manufacture of jewelry made of metal, as well as importing new technologies in order to produce and control "exotic" objects locally. Glass production, for example, was surely one of these desirable technologies.

At present there are no clear indications that glass was locally produced in western Anatolia itself. Whether this technology was known in central Anatolia in the Late Bronze Age is a matter of debate (Yağcı 1998; Baykal-Seeher, Seeher 2003). A full discussion of this issue requires consideration of both textual and archaeological material. Riemschneider has dealt with the Hittite texts mentioning glass production in Anatolia where he pointed out the strong influence of Akkadian terms and words. The presence of Akaddian terms or word roots indicates that the technology of glass manufacture was probably introduced to Anatolia from Mesopotamia and did not develop locally at Boğazköy. Riemschneider also listed the words related to glass manufacture, which were connected to the different stages of the production process (i.e., raw material to finished product, see Riemschneider 1974: 263–264).

Glass production at Boğazköy/Hattusha has also been discussed in terms of archaeological finds (Baykal-Seeher, Seeher 2003), e.g., a two-sided stone mould probably used for glass pro-duction. Another find from Boğazköy was a mould for glass spacer beads (Barag 1985: 46). The Luwian hieroglyph meaning 'Babylon', found carved on the first of these two moulds, can be associated with 'Babylon

stone', thus possibly referring to a kind of glass (Baykal-Seeher, Seeher 2003). Hittite knowledge of this glass technology and its uses is obvious, but one should examine in detail the first appearance of this technology and the scope of its application in Anatolia. Glass beads, as well as glass ingots were an important item of interregional trade between the eastern Mediterranean, Anatolia and the Aegean, amply evidenced by the cargo of the Uluburun shipwreck (Pulak 2005; Ingram 2014, in this volume). Therefore, the moulds from Boğazköy can speak for either local glass production or reworking of imported ingots.

The evidence from Boğazköy can be compared with the case of the Mycenaean relief beads mentioned above. This kind of bead, mould-impressed or cast from glass, faience or gold in stone moulds, was a typical Mycenaean product. Many such moulds have been found in Mycenae and other Late Bronze Age centers, and the possibility and extent of local glass production is still a matter of debate (Nightingale 2008). Some recent scientific analyses have demonstrated that Mycenaean beads were made of glass most likely coming from Egypt (Smirniou *et alii* 2012). However, other analyses have not excluded a Near Eastern or local

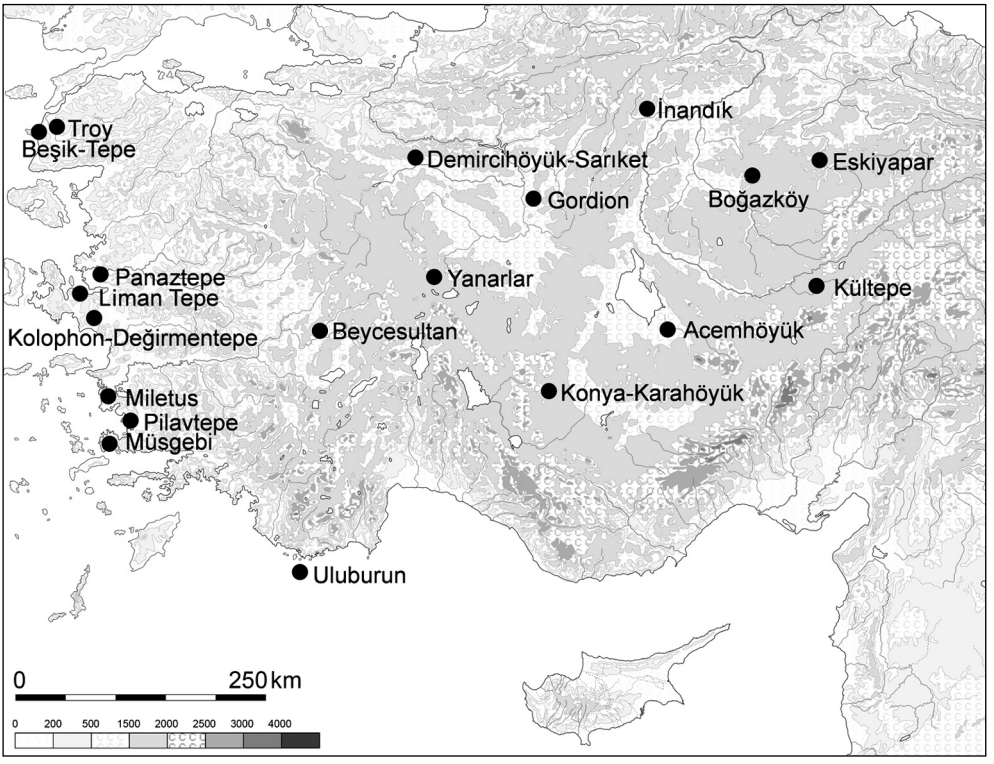

Fig. 1. Anatolian sites mentioned in the text (Original map, courtesy of Richard Szydlak)

provenance for some LH IIIB (approx. 13th century BC) beads (Nikita *et alii* 2006; Panagiotaki 2008: 47; Tite *et alii* 2008: 117–122).

Mycenaean relief beads were also found at different sites in western Anatolia: Müsgebi, Kolophon-Değirmentepe, Pilavtepe and Panaztepe (Atik 2007; Çınardalı-Karaaslan 2012; Kozal 2006: 194) [***Fig. 1***]. No relief beads are known from the Troad, but four spacer beads came from the cemetery in Beşik-Tepe (Basedow 2000: 135, Cat. No. 21.7, Pl. 84,1). So far there is no evidence to suggest that these were produced locally in western Anatolia, they were not found in any quantity and their rarity may also be an indication of their foreign origin. They most probably came from one of the main Mycenaean centers.

Faience beads are known from almost all western Anatolian centers, the oldest examples dating to Early Bronze Age Troy (Troy III, approx. 2300–2200 BC), Sazcı 2001: 385, Fig. 430). They represent various shapes, tubular, disc-shaped, biconical, "grain-of-wheat", rhombus-shaped, spacer beads. The richest collections came from coastal sites such as Troy, Beşik-Tepe and Panaztepe [see ***Fig. 1***], and most of them must have been imported from the eastern Mediterranean. Some of them are tiny faience beads, and as was mentioned above, these may have been sewn on textiles (Çınardalı-Karaaslan 2012: Fig. 3; Pieniążek 2012a: Pl. 75c, e–h). In the distribution pattern of faience in western Anatolia there is one remarkable concentration: the tubular beads with incised geometric decoration from Panaztepe (Çınardalı-Karaaslan 2012: Fig. 3–11, especially Figs 7–8, some also described as made of "frit" and glass). These objects resemble cylindrical seals, but were surely used as beads. At other Anatolian and Aegean sites, these beads are represented by singular examples (e.g., at İnandık, Alacahöyük, Alişar, see Kozal 2006: 230, 249, 252–254). They are not present in the cargo of the Uluburun shipwreck and this is surprising, since most of the known types were found there (Ingram 2005; and see Ingram 2014, in this volume). Interestingly, one similar object has been reported from Beycesultan, Layer II (Murray 1995: 141, Cat. No. 210, Fig. O.20, listed as "seal made of clay"). In light of this evidence, it seems that Panaztepe (or some other centre in the vicinity) may have been the place of manufacture for these seal-shaped beads. If the technology of faience production was known, then this could mean that other items, such as simple disc-shaped beads, could have been locally manufactured as well.

In the case of exotic semiprecious stones, it is obvious that the objects found on Anatolian sites were either imported as finished products or as raw material to be worked locally. Lapis lazuli is a textbook example of this. So far, no unworked pieces of lapis lazuli have been found from Middle and Late Bronze Age Anatolian contexts, but some objects from central Anatolia do point to importation of raw material, since they are produced in the Anatolian style, indicating local manufacture (for example, a lapis lazuli cylinder seal from Kültepe Ib, see Özgüç 2005: 250: Fig. 312). No lapis lazuli is known from western Anatolia, although other exotic materials, such as some amber and amethyst beads, have been reported from Panaztepe (Çınardalı-Karaaslan 2012: 125). Amber, probably of Baltic origin, must have arrived to Panaztepe from southern Greece, similar to

other singular pieces known from central and southern Anatolian sites (Alişar, Korucutepe, Tille Höyük, see Kozal 2006: 198; Kültepe, Özgüç 1953: 73, Pl. 58, 640). Amethyst came to the Aegean in large quantities in the Early Mycenean period most probably from Egypt (Phillips 2009). In the case of finds from western Anatolia the same provenance is highly probable, although it is not possible to determine if these gemstones were direct Egyptian imports, or if they arrived via the southern Aegean.

The provenance of other semiprecious stones, such as carnelian and agate, is still a matter of debate. Various locations have been suggested, ranging from the Indus Valley to Egypt and the Caucasus (Hughes-Brock 1999; Reinholdt 2008). It was recently demonstrated that Early Bronze Age long biconical carnelian beads from Troy and Boğazköy originated from the area of the Indus Valley (Ludvik *et alii* forthcoming). This is also possible in the case of other Anatolian long biconical beads (such as examples known from the treasures from Eskiyapar and Troy, see Özgüç, Temizer 1993: 616, Pl. 115,1; Tolstikov, Trejster 1996: Cat. Nos 121–122, 218–221). On the other hand, the presence of so-called "opium-poppy shaped" pendants in Anatolia (in, e.g., Boğazköy, Ludvik *et alii* forthcoming) and the Aegean (see, e.g., Perati, Hughes-Brock 1999: 280) speaks in favor of an Egyptian provenance of at least some of the carnelian beads circulating in the Aegean and Anatolia in the 2nd millennium BC. Unfortunately, sources of carnelian in the 2nd millennium BC have still not been identified. Generally speaking, beyond importation from distant areas, one cannot exclude exploitation of local Anatolian sources of chalcedony and other semiprecious stones at this time (Hatipoğlu *et alii* 2010).

There are still many questions and ambiguities related to the exchange mechanisms of valuable objects in the eastern Mediterranean. In Middle and Late Bronze Age Anatolia, both the coastal settlements of western Anatolia and the inland settlements of central Anatolia had access to foreign luxury goods. However, as will be demonstrated below, this access was not uniform. Was maritime trade in objects like beads always controlled by the elites or was there also a small-scale independent exchange? "Freelance trade" is one of the most debated issues (Knapp, Cherry 1994: 142–145), but the fact that plain glass and faience beads did belong to the modest cargo of the Cape Gelidonya shipwreck (Bass 1967; Nightingale 2008: 87) indicates that they could also have been a matter of private enterprise. How had these objects traveled inland from the harbor sites? Were independent merchants travelling with bags filled with beads, concluding exchanges along their route? Or did the items also move according to Renfrew's "down-the-line" trade model (Renfrew 1972: 465–466)?

TROY AND BEYCESULTAN: TWO EXAMPLES OF A WESTERN ANATOLIAN JEWELRY REPERTOIRE

Western Anatolia in the 2nd millennium BC was an area ensconced between two very strong and influential cultural entities: the Hittites in the east and the Minoans/Mycenaeans in the west. In addition, the region also had access to eastern Mediterranean trade. The southwestern Anatolian coast was also strongly affiliated with Minoan and Mycenaean culture

(Niemeier, Niemeier 1997; Mountjoy 1998).

There are two large settlements in western Anatolia, Troy and Beycesultan, the jewelry from which has been fully published (Blegen *et alii* 1953; 1958; Murray 1995; Korfmann [ed.] 2006; Mac Sweeney 2011). Two sites cannot be representative for the area as a whole, yet a comparison between them can be quite instructive, since they represent two different types of sites and consequently may differ in significant aspects. Both sites were chief regional centers, though Beycesultan was larger and may have dominated a greater territory than Troy. Both had monumental architecture, although the central buildings in Troy have not been preserved. With the exception of a few known graves, the most important cemeteries at both sites remain to be discovered. Beycesultan is an inland site located far from the coast, whereas Troy lies just about 7 km from the coastal settlement of Beşik-Tepe, which must have served as Troy's harbour on the Aegean Sea. Beycesultan enjoyed its greatest development at the end of the Middle Bronze Age (Level V) and another period of significant prosperity in the Late Bronze Age (Level II, dated to about 13th–mid 12th century BC; Mac Sweeney 2011: 111–121). Development in Troy was much different. Troy was a modest settlement during the Middle Bronze Age (Periods V and early VI, about 20th to mid 18th century BC). It changed during the Late Bronze Age (late Troy VI and VIIa, approx. 14th–13th century BC), when the most imposing architecture appeared and the most intensive overseas contacts took place. The second, more modest prosperity observed in Level II at Beycesultan, was roughly contemporary with Troy VIIa.

In Troy, there was almost no jewelry from the early and developed Middle Bronze Age. Bronze pins of simple shapes were the most common items (Blegen *et alii* 1951). Many flat cylindrical beads made of bone were found in one grave in the area of the lower town and a lead ring and a "duck vase" (spouted jar) came from another burial (Blum 2006: 151, Fig. 7, right). Change came quite clearly at the end of the Middle Bronze Age when southern Aegean contacts abruptly grew in intensity, as testified by the abundance of foreign goods (Guzowska 2002; Pavúk 2005; Pieniążek 2012a). Imported jewelry was represented by numerous beads made of blue faience coming from one or possibly two child graves (Pieniążek 2012b: 205–207, Fig. 1). The intensification of foreign contacts may have been related to the strong Minoan influence or presence on Samothrace and Lemnos (Matsas 1991; Boulotis 2009; Girella, Pavúk forthcoming). Unfortunately, very little is known about the Aegean coast of Anatolia between Troy and the Karaburun Peninsula during the first half of the 2nd millennium BC. It is therefore not clear what role this area could have played in the trade networks of the Middle Bronze Age (for Ceşme on the east side of the peninsula, see, for example, Erkanal, Keskin 2009).

Exchange in luxury items flourished on the Aegean coast during the 14th and 13th centuries BC. Already during late Troy VI ivory, carnelian, glass and faience beads reached Troy and Beşik-Tepe in large quantities, as testified by the finds from the settlement layers at Troy, as well as the grave goods from Beşik-Tepe and the cemetery outside the lower town at Troy. These included not only simple beads like the approximately 200 roughly cut

carnelian or some 20 similar ivory beads, but also rare examples of high quality pieces, such as almond-shaped carnelian [*Fig. 3*] and ivory beads or biconical and segmented gold ones (Basedow 2000: 137–139, Pls 86–89, Blegen *et alii* 1953: 262–263, 373–374, Figs 298, 346). This trend continued until the end of Phase VIIa at Troy, as testified by the finds from the settlement layers (Kozal 2006; Pieniążek 2012a; 2012b). Interestingly, the Trojans did not adopt all the standard repertoires of southern Aegean dress and body ornaments, such as conical buttons made of steatite that are uncommon at Troy (altogether 10 examples), while 287 such items came, for example, from the settlement layers at Tiryns (Rahmstorf 2008: 126–138). These objects were most probably weights attached to Mycenaean dress as suggested by S. Iakovidis (1977). More recently a presumable function as both spindle whorls and beads has been emphasized for these "Mycenaean *conuli*" (Rahmstorf 2008: 134–138).

Evidence from Troy and Beşik-Tepe suggests that not only the elites had access to exotic goods but, to a certain degree, so did the less privileged members of society. Approximately 30% of Trojan Late Bronze Age jewelry was deposited in a single cultic context (Aslan, Pieniążek forthcoming) but most of the items were found in various settlement layers, many outside the citadel, where they were most probably lost accidentally. In Beşik-Tepe, small glass and carnelian beads were deposited in varying quantities and where found also in the "poorer" graves. Besides fashionable, exotic and luxury objects,

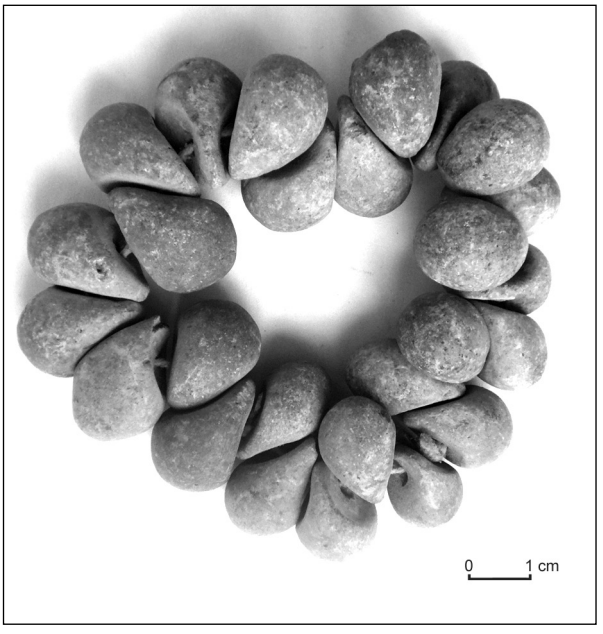

Fig. 2. Drop-shaped beads of clay, Troy (After Blegen et alii 1953: Fig. 304; photo M. Pieniążek)

Fig. 3. Almond-shaped bead made of carnelian, Troy (After Blegen et alii 1953: Cat. No. 35-531, Fig. 298; photo M. Pieniążek)

other kinds of jewelry made of traditional, more easily accessible materials were also in circulation. For example, the clay beads from Beşik-Tepe that obviously imitated faience beads (Basedow 2000: 140–141, Pls 86,3, 87,7, 88,3–4). Drop-shaped beads from Troy (Blegen *et alii* 1953: 232–233 Cat. Nos 38–450, Fig. 304) also merit attention [***Fig. 2***]. These are extremely simple objects: small clay balls that have been pinched on one side and then pierced. They are not standardized in size as their diameter varies between 1.1 cm and 1.9 cm. Such beads (or pendants) are known from Liman Tepe (see Erkanal, Günel 1996: 233), as well as from Orchomenos and other Mycenaean sites (Fappas 2010). Their function is not clear; they could have formed a necklace, but other functions cannot be ruled out. With a weight of approximately 3.4 g, they are too light to be fine loom weights (M. Siennicka, L. Rahmstorf, personal communication). Theoretically, they might have been used as dress weights in a way similar to the steatite buttons mentioned above. The fact that they were found only in the citadel at Troy (altogether 31 examples, 27 at one spot in the Pillar House, Period VI Late, approx. 14th century BC) and in the settlement of Liman Tepe and not one was found in any funeral context, neither at Troy nor in Beşik-Tepe, can suggest that they were not used as jewelry.

When we compare this repertoire with the finds from the inland site of Beycesultan, interesting differences become apparent. The absence of exotic objects at this important site is striking. For example, there is only one simple bead made of frit from Level III and 17 from Level II (Murray 1995: 126–127). The last one was a necklace, most probably a votive gift found in the vicinity of the altar in the East Shrine in Trench R. This scarcity is probably a reflection of the distance from the Mediterranean and the Aegean harbors. However, it should be pointed out that although only plain cylindrical faience beads were found in Beycesultan, other bead types can possibly be recognized in the shape of the bronze pinheads (Murray 1995: Cat. Nos 23, 28, 31, 32, 51, 59, 60, 82, Levels IV to II). That these various kinds of faience beads did circulate in that area is also attested by the finds from Yanarlar (Emre 1978: 120–121), at least for the Middle Bronze Age. Both the pinheads from Yanarlar and Beycesultan have clear parallels among the Middle- and Late Bronze Age faience, stone, and metal beads from the eastern Mediterranean and the Aegean, such as the grooved and plain oval, biconical, melon-shaped, cogwheel-shaped or gadrooned-shaped beads (Blegen 1937; Effinger 1996; Hughes-Brock 1999; Konstantinidi 2001; Ingram 2005). As for some of the pins, it is also apparent that they imitated a pin with an "external" bead, even the protruding end of the shaft is sometimes distinguishable (especially in the case of Nos 31, 32, 82 in Beycesultan, Murray 1995) [***Fig. 4:A***]. This is not coincidental, but deliberately planned. One pin from Yanarlar consists of two separate parts: "the shaft of one pin (Yn. 76/19) is set into the head" (Emre 1978: 107, 119, Pl. XL,5b, Fig. 121). Other pins from Yanarlar are also very interesting: one has a head of a shape that strongly resembles faceted almond-shaped beads [***Fig. 4:2***, left] and another is large and melon-shaped [***Fig. 4:2***, right]. These kinds of beads were usually made of semiprecious stone and appeared already in Aegean contexts in the Old Palace period

(approx. 19th–18th century BC) (Effinger 1996: 26–27). They were also present at Boğazköy (Ludvik *et alii* forthcoming).

THE CASE OF COMPOSITE PINS: EXAMPLES FROM ANATOLIA AND THE AEGEAN

Bronze pins with bead-like heads were also common at Boğazköy ("Lamellenkopfnadeln", Boehmer 1972: 86–92, Nos 294–315, 359–363, 446–447; see also Boehmer 1979: 11–21, Pls XII–XIII). Some of the heads were not cast with the shaft, but were attached. One bead made of onyx was interpreted by Boehmer as the head of "Lamellenkopfnadel" (Boehmer 1972: Cat. No. 2370) [***Fig. 4:3d***]. These pins were also known in Mesopotamia, where they were produced from the 3rd millennium BC and used throughout the 2nd millennium BC (Klein 1992: 205–209).

A few glass and faience pinheads fastened on bronze and silver shafts have also been found in central Anatolian contexts. A golden shaft with a pinhead of lapis lazuli and a silver shaft with a pinhead of carnelian were discovered at Kültepe (for lapis lazuli, see Özgüç 1986a: 31–32, Pl. H22, Fig. 30, for carnelian, see 32–33, Pl. 70:17). Some pinheads from Level IVd at Boğazköy should be mentioned here as well, because they are especially interesting in this context. The head has the shape of a star with deeply cut ribs (this is sometimes referred to as gadrooned, fluted or melon-shaped). In five cases, traces of a frit-like substance was found between the ribs, filling the spaces in between (Boehmer 1972: 80, Pl. XVII,301, 307–310) [***Fig. 4:3c***]. This type of composite pin would have actually looked like a decorated faience bead on a bronze shaft. All composite pins of this type were found in Level IVd (Middle Bronze Age), so this tradition may have not survived into the Late Bronze Age.

Composite pins made of a metal shaft and heads of carnelian, rock crystal and other materials are already known from the EB III (approx. 2500–2000 BC) , i.e., finds from Alacahüyök in north-central Anatolia (Maxwell-Hyslop 1971: 42–43, Fig. 25; Musche 1992: 110–111, Pl. 38,1–3). Some of the gold beads could have functioned as pinheads as well (Maxwell-Hyslop 1971: 44,c–d). Composite pins were also among the most widespread kinds of pins in Mesopotamia and Syria from the Early Bronze Age (Klein 1992: 193–222, 225–231). Stone pinheads (lapis lazuli, carnelian, alabaster and other) were common in the 3rd millennium BC. Glass became popular near the end of the 2nd millennium BC. Heads made of faience beads and shells were also represented. Stone pinheads, especially ones made of lapis lazuli, were often cupped or mounted in gold or silver. Shafts were made of metal and rarely also of bone, ivory or even wood (Klein 1992: 225–227).

This discussion of composite pins brings us to the issue of the function of single beads found in different contexts. The single beads found in graves are especially intriguing, as are the beads not matching the rest of the deposited jewelry in size or shape. Two explanations should be considered: either these were amulets or they were the heads of pins made of perishable materials, such as wood (Hughes-Brock 1999). This was also suggested in the case of a rock crystal bead found in a child's grave at Troy (Pieniążek 2012a). The most famous composite Mycenaean pins came from the Shaft Graves. They had bronze or silver shafts with big heads made of rock crystal (Karo 1930: Cat. Nos 102–104,

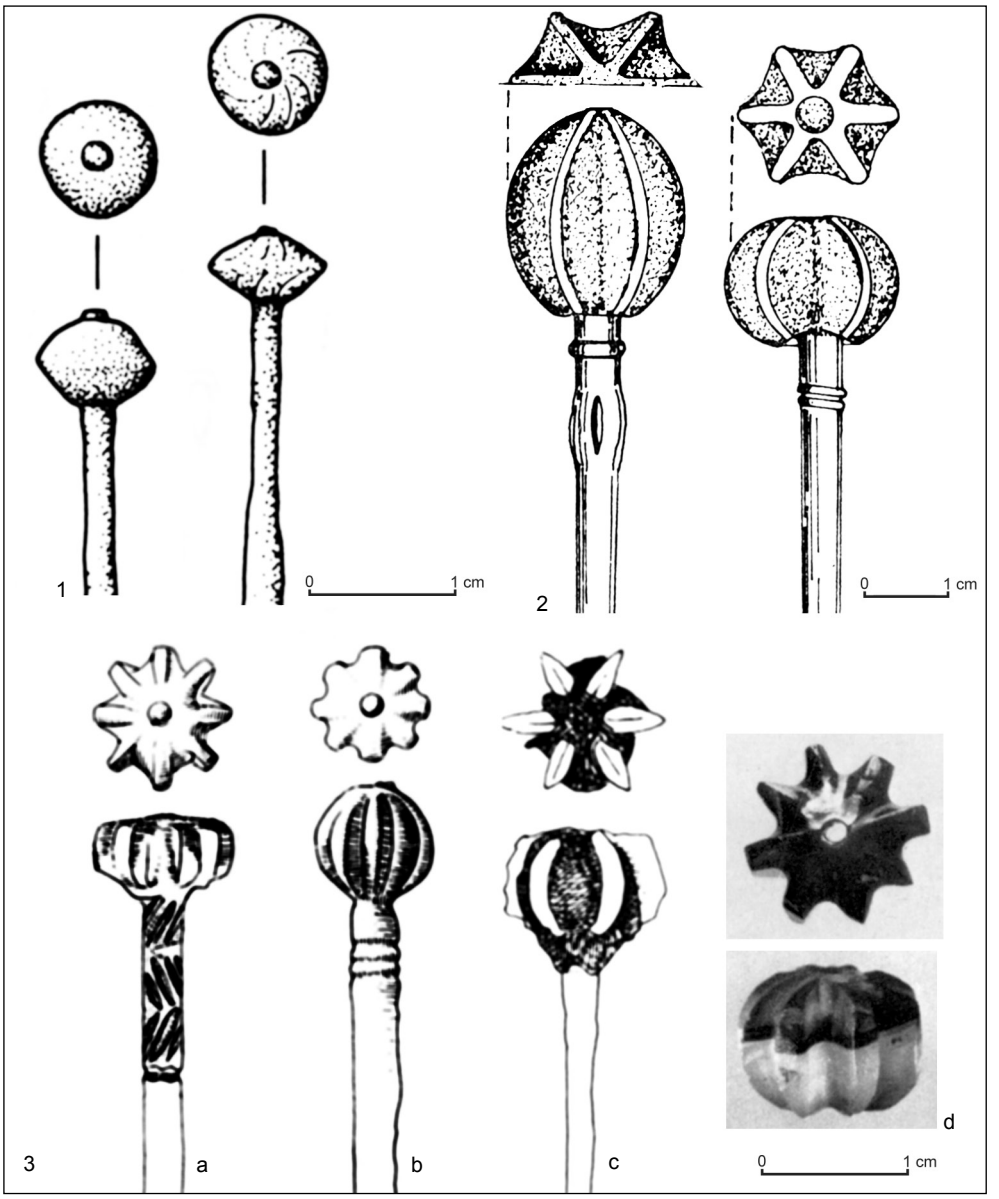

Fig. 4. Pinheads: 1 – bronze pins with bead-shaped heads, Beycesultan (After Murray 1995: Cat. Nos 31–32, Fig. O.3, courtesy of the British Institute in Ankara); 2 – bronze pins with melon- (right) and almond-shaped (left) heads, Yanarlar (After Emre 1978: Fig. 118, courtesy of K. Emre); 3 – "Lamellenkopfnadeln": a–b – pins with bead-like heads, c – pin with traces of "frit" on the head, d – pin bead made of onyx, Boğazköy (After Boehmer 1972: Cat. Nos 446–447, Pl. 21[a–b], 307, Pl. 17[c], 2370, Pl. 95[d]; Boğazköy archives, courtesy of A. Schachner)

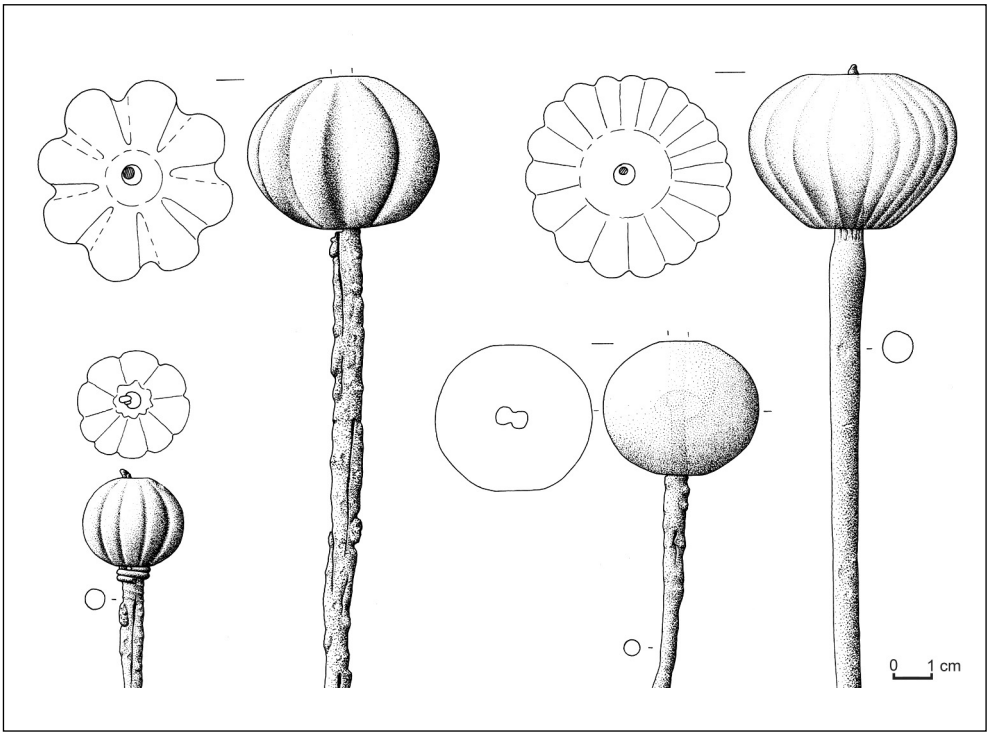

Fig. 5. Pins with heads made of rock crystal from Shaft Graves III, A and O, Mycenae (Kilian-Dirlmeier 1984: Cat. Nos 81–85, Pl. 2, courtesy of the editorial office of Prähistorische Bronzefunde)

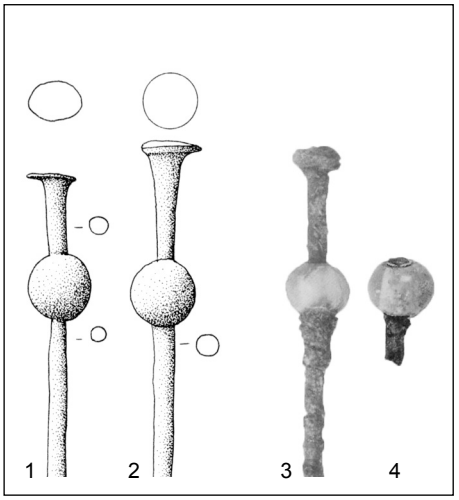

Fig. 6. Bronze pins from the Aegean: 1, 2 – "Kugelkopfnadeln", Argos and Tiryns, Submycenaean-Protogeometric (about mid 11th–10th century BC), (Kilian-Dirlmeier 1984: Cat. Nos 206–207, courtesy of the editorial office of Prähistorische Bronzefunde); 3, 4 – Lefkandi, Late Protogeometric (about second half of the 10th century BC) bronze and iron pins with heads made of glass beads (Lemos 2002: Fig. 44,4a–4b, courtesy of I. Lemos and the British School of Athens)

Pl. 31; Kilian-Dirlmeier 1984: Nos 82–88) [*Fig. 5*]. Very few composite pins have been reported from Crete (Effinger 1996: 57). However, while bronze pins were generally not very popular in the Aegean Bronze Age, this changed during the Submycenaean period and Early Iron Age (about 1050–700 BC), when pins made of bronze became abundant (Kilian-Dirlmeier 1984: 69ff., Cat. No. 192 and following). The most beautiful examples are the Late Protogeometric (approximately second half of the 10th century BC) composite pins with heads made of glass from Lefkandi (see Lemos 2002: Fig. 44,4a–4b) [*Fig. 6*].

FINAL REMARKS

If we compare the repertoire of the Aegean coast with inland western Anatolia and central Anatolia, it is clear that there is an abundance of various types of beads in the former and of pins in the latter. In light of the evidence presented, we would like to suggest that some single beads found in Middle and Late Bronze Age Aegean contexts could have originally formed the heads of pins made of perishable material. It seems that such pins were imitated in bronze in Beycesultan and other Anatolian inland sites. The same phenomenon can probably be observed in Greece after the collapse of the Mycenaean palace centers, when trade contacts and local production of glass and stone beads ended (Nightingale 2008: 88–90). At that time, pins with ball-shaped heads ("mit kugeligen Kopf") made entirely of bronze became the most popular kind of pin (see *Fig. 6*, for examples) and the type continued during the entire Early Iron Age (Kilian-Dirlmeier 1984). They obviously represented a pin with bead-shaped head. This supports the suggestion that such pins made of bronze, at least originally, imitated composite pins consisting of a shaft and bead.

It does not follow from this that all single beads found in graves had to be used as pinheads. It is not our intention to reject other possible functions previously mentioned, such as amulets or pendants. The distribution and repertoire of jewelry can be influenced by many factors, such as local traditions, distance from maritime trade routes and political situation that impact on the directions and intensity of contacts or access to raw materials. It is still not possible to say which one could have played the most important role. The popularity of "composite" pins made of bronze at inland Anatolian sites lying far from the centers of the Mediterranean trade may have originally been due to limited access to such imported goods as faience or semiprecious stones. However, it could also be related to a more restricted access to these goods. Perhaps jewelry made of exotic and/or luxury materials, imported or produced locally, was only available to the highest elite of Bronze Age Anatolia and/or for special purposes, while the jewelry made of bronze was more widely distributed. Another possibility is that the popularity of metal jewelry could have originated from different aesthetic preferences than in the eastern Mediterranean and the Aegean. Syria and Mesopotamia influenced Anatolia in many ways. Central Anatolian jewelry production was affected by Syria and Mesopotamia through intense commercial interaction since the Old Assyrian Colony Period, if not earlier in the Early Bronze Age III (approx. 2500–2200 BC), when the Akkadians became interested in Anatolian raw materials (Özgüç 1986b). It is likely that Syrian and Mesopotamian

composite pins were responsible for the development of Anatolian pins, both those with heads made of bronze and stone, and those of another material.

The presence of symbolic meanings connected with different kinds of jewelry known from western Anatolia can be anticipated from various archaeological contexts. Relief beads from southwestern Anatolian cemeteries dating from the LH IIIA–B (approx. 14th–13th century BC) period have confirmed strong cultural ties between this area and the southern Aegean. As mentioned above, these beads probably had cultic or social meanings. They depicted Mycenaean motifs and were seldom encountered on sites lying outside the core area of Mycenaean culture. The fact that these ornaments were not recorded either at Troy and Beşik-Tepe or inland in western Anatolia probably indicates that their symbolism was alien in these regions. This is especially clear in the case of Troy and Beşik-Tepe, because both sites were located on the Aegean coast and had access to maritime trade networks. Various foreign goods, like ivory, carnelian, different types of faience beads and even glass beads with spiral decoration did reach these sites. This clearly points to the fact that the absence of relief beads is a deliberate rejection of meanings hidden behind their ornamentation.

Another case is the abundance of carnelian beads and the simultaneous scarcity of rock crystal in funeral contexts. Rock crystal was more easily accessed than carnelian; many worked chunks of rock crystal were found in Early Bronze Age layers in Troy and some can be dated to the 2nd millennium BC. But for some reason, jewelry made of this stone was excluded from the repertoire of burial goods. One of the few exceptions is the Middle Bronze Age child burial from Troy mentioned above. Whether the single rock crystal bead from this grave (probably used as a pin head) was primarily an amulet or a symbol of prestige (in a clearly elite grave) is difficult to decide, but one of these reasons must have played a role. The case of carnelian is different. Carnelian was surely difficult to obtain, however beads made of this material are the most common among the jewelry deposited in LH IIIA–B graves in the Aegean. This is evident at western Anatolian sites: more than 200 objects were discovered at Beşik-Tepe and hundreds at Panaztepe (Pieniążek forthcoming). One can suspect more than just fashion behind this habit. Carnelian had most probably gained some special significance related to the funeral rites.

To sum up, in the 2nd millennium BC many factors had an impact on the repertoire of jewelry from west Anatolian sites. Access to maritime trade, control over resources, local traditions, religion and burial rites as well as other agents, mostly hidden from the archaeologists' eyes, all influenced the patterns of use of personal adornments in both coastal and western inland Anatolia.

This article discusses selected aspects related to jewelry function and origin with a special focus on beads and pins from Anatolia and the Aegean. The objective was not a comprehensive study of ornaments from these regions. That would hardly be possible in a single paper. The idea was to propose new explanations and provoke further discussion. Once again it is clear that generally little is known about jewelry from archaeological contexts. Its meanings and values on functional, personal, social and economic levels are often difficult

to determine. Therefore, this study not only discusses the subject, but also shows how Anatolian jewelry is a topic that has great potential for further research and attention.

ACKNOWLEDGMENTS

The authors would like to thank Zuzanna Wygnańska and Amir Golani, organizers of the workshop "Beyond Ornamentation" at the 8th ICAANE congress in Warsaw in 2012, for the kind assistance and patience they have shown during the process of preparing of this paper. We would also like to express our gratitude to the two anonymous reviewers whose comments helped to improve the quality of our contribution.

Dr. Magda Pieniążek
Marie Curie Fellow, German Archaeological Institute, Dpeartament Instanbul
Inönü Caddesi 10, 34437 Istanbul, Turkey
m_pieniazek_sikora@yahoo.de

Dr. Ekin Kozal
Department of Archaeology, Faculty of Letters and Sciences, Çanakkale Onsekiz Mart University
17100 Çanakkale, Turkey
ekozal08@gmail.com

REFERENCES

Aslan, C., Pieniążek M.
Forthcoming Heroic past, ritual and memory at Troy [in:] E. Alram-Stern, F. Blakolmer, S. Deger-Jalkotzy, R. Laffineur, J. Weilhartner (eds), *Metaphysis. Ritual, Myth and Symbolism in the Aegean Bronze Age. Annales liégeoises et PASPiennes d'archéologie égéenne*, Leuven

Atik, Ş.
2007 A series of Mycenaean glass beads from Lindos [in:] J. Allen, V. Hector (eds), *International Bead & Beadwork Conference, 22–25 November 2007, Istanbul,* Istanbul: Rezan Has Museum, Kadir Has Üniversitesi

Barag, D.
1985 *Catalogue of Western Asiatic Glass in the British Museum* I, London: British Museum Press

Barber, E.J.W.
1991 *Prehistoric Textiles. The Development of Cloth in the Neolithic and Bronze Ages, with Special Reference to the Aegean*, Princeton, NJ: Princeton University Press

Basedow, M.A.
2000 *Beşik-Tepe. Das spätbronzezeitliche Gräberfeld* [=*Studia Troica Monographien* 1], Mainz am Rhein: Philipp von Zabern

Bass, G.
1967 Cape Gelidonya: a Bronze Age shipwreck, *Transactions of the American Philosophical Society* 57/8, 1–177

Baykal-Seeher, A., Seeher, J.
2003 Götterbilder aus Babylonstein? Eine hethitische Gussform aus Boğazköy-Hattuša, *Istanbuler Mitteilungen* 53, 99–111

Blegen, C.W., Boulter, C.G., Caskey, J.L., Rawson, M.
1958 *Troy* IV. *Settlements VIIa, VIIb and VIII*, Princeton, NJ: Princeton University Press
Blegen, C.W., Caskey, J.L., Rawson, M.
1951 *Troy* II. *The Third, Fourth, and Fifth Settlements*, Princeton, NJ: Princeton University Press
1953 *Troy* III. *The Sixth Settlement*, Princeton, NJ: Princeton University Press
Blegen, E. Pierce
1937 Jewellery and ornaments [in:] C.W. Blegen, *Prosymna. The Helladic Settlement Preceding the Argive Heraeum*, Cambridge: Cambridge University Press, 264–327
Blum, S.W.E.
2006 Troia an der Wende von der frühen zur mittleren Bronzezeit — Troia IV und V [in:] M. Korfmann (ed.), *Troia. Archäologie eines Siedlungshügels und seiner Landschaft*, Mainz am Rhein: Philipp von Zabern, 145–154
Boehmer, R.M.
1972 *Boğazköy-Hattuša* VII. *Die Kleinfunde von Boğazköy aus den Grabungskampagnen 1931–1939 und 1952–1969* [=*WVDOG* 87], Berlin: Mann
1979 *Boğazköy-Hattuša* X. *Die Kleinfunde aus der Unterstadt von Boğazköy. Grabungskampagnen, 1970–1978*, Berlin: Mann
Boulotis, C.
2009 Koukonisi on Lemnos: Reflections on the Minoan and Minoanising evidence [in:] C.F Macdonald, E. Hallager, W.-D. Niemeier (eds), T*he Minoans in the Central, Eastern and Northern Aegean. New Evidence*, Athens: Danish Institute at Athens, 175–218
Burns, B.E.
2012 *Mycenaean Greece, Mediterranean Commerce, and the Formation of Identity*, Cambridge: Cambridge University Press
Çınardalı-Karaaslan, N.
2012 The East Mediterranean Late Bronze Age glass trade within the context of the Panaztepe finds, *Oxford Journal of Archaeology* 31/2, 121–141
Dercksen, J.G.
2005 Metals according to documents from Kültepe-Kanish dating to the Old Assyrian Colony Period [in:] Ü. Yalçın (ed.), *Anatolian Metal* III, Bochum: Deutsches Bergbau-Museum, 17–34
Earle, T.
2002 The ecology and politics of primitive valuables [in:] T. Earle, *Bronze Age Economics. The Beginnings of Political Economies*, Boulder, CO: Westview Press, 19–42
Effinger, M.
1996 *Minoischer Schmuck* [=*BAR IS* 646], Oxford: Tempus Reparatum
Emre, K.
1978 *Yanarlar. Afyon Yöresinde bir Hitit Mezarlığı / Yanarlar. A Hittite Cemetery near Afyon*, Ankara: Türk Tarih Kurumu Basımevi
Erkanal, H., Günel, S.
1996 1995 Yılı Liman Tepe Kazıları, *Kazı Sonuçları Toplantısı* 18/1, 231–260
Erkanal, H., Keskin, L.
2009 Relations between the Urla Peninsula and the Minoan World [in:] C.F. Macdonald, E. Hallager, W.-D. Niemeier (eds.), *The Minoans in the Central, Eastern and Northern Aegean. New Evidence*, Athens: Danish Institute at Athens, 97–110

Erkanal-Öktü, A.
2000 *Überblick über die Siegelfunde von Bakla Tepe, Liman Tepe und Panaztepe [in:] Minoisch–Mykenische Glyptik. Stil, Ikonographie, Funktion. V. Internationales Siegel-Symposium, Marburg, 23.–25. September 1999* [=*Corpus der minoischen und mykenischen Siegel* 6], Berlin: Mann, 67–77

Fappas, I.D.
2010 Apo tē Mesē stēn 'Usterē Epohē Halkon: mia oikotehnikē drastērioteta oton Boiōtiko Orhomeno. Anartēmenē anakolnōdē [in:] A. Philippa-Touchais, G. Touchais, S. Voutsaki, J. Wright (eds), *Mesohelladika. La Grèce continentale au Bronze Moyen. Actes du colloque international, organisé par l'École française d'Athènes, en collaboration avec l'American School of Classical Studies at Athens et le Netherlands Institute in Athens, Athènes, 8–12 mars 2006* [=*BCH Supplement* 52]. Athènes: École Française d'Athènes, 713–719

Girella, L., Pavúk, P.
Forthcoming Minoanisation, acculturation, hybridisation: the evidence of the Minoan presence in the NE Aegean between Middle and Late Bronze Age [in:] Ç. Maner, K. Kopanias, N. Stampolidis (eds), *Nostoi. Indigenous Culture, Migration and Integration in the Aegean Islands and Western Anatolia during the Late Bronze and Early Iron Age*, Istanbul: Koç University Press, in press

Guzowska, M.
2002 Traces of Minoan behavioural patterns in the North-East Aegean [in:] R. Aslan, S. Blum, G. Kastl, F. Schweizer, D. Thumm (eds), *Mauerschau. Festschrift für Manfred Korfmann*, Remshalden-Grunbach: Greiner, 585–594

Hatipoğlu M., Hakki, B., Chamberlain, S.C.,
2010 Gamstone deposits in Turkey, *Minerals* 85, 124–132

Helms, M.W.
1981 Precious metals and politics: style and ideology in the intermediate area and Peru, *Journal of Latin American Lore* 7/2, 215–238
1993 *Craft and the Kingly Ideal. Art, Trade, and Power*, Austin, TX: University of Texas Press

Hughes-Brock, H.
1999 Mycenaean beads. Gender and social contexts, *Oxford Journal of Archaeology* 18/3, 277–296

Iakovidis, S.
1977 On the use of Mycenaean "Buttons", *Annual of the British School of Athens* 72, 113–119

Ingram, R.S.
2005 *Faience and Glass Beads from the Late Bronze Age Shipwreck at Uluburun*, MA diss., Texas A&M University, online resource: http://anthropology.tamu.edu/papers/Ingram-MA2005.pdf [accessed: February 2013]
2014 Vitreous beads from the Uluburun shipwreck [in:] A. Golani, Z. Wygnańska (eds), *Beyond Ornamentation. Jewelry as an Aspect of Material Culture in the Ancient Near East* [=*PAM* 23/2*: Special Studies*], 225–246

Kanungo, A.K.
2007 Impact of social and political change on the use of beads among the Konyaks [in:] J. Allen, V. Hector (eds), *International Bead & Beadwork Conference, 22–25 November 2007, Istanbul*, Istanbul: Rezan Has Museum, Kadir Has Üniversitesi

Karo, G.
1930 *Die Schachtgräber von Mykenai* I, Munich: Bruckmann

Kilian-Dirlmeier, I.
1984 *Nadeln der frühhelladischen bis archaischen Zeit von der Peloponnes* [=*Prähistorische Bronzefunde* 13/8], Munich: C.H. Beck

Klein, H.
1992 *Untersuchuung zur Typologie bronzezeitlicher Nadeln in Mesopotamien und Syrien* [= *Schriften zur vorderasiatischen Archäologie* 4], Saarbrücken: Saarbrücker Druckerei und Verlag

Knapp, A.B., Cherry, J.F.
1994 Production and exchange in the Bronze Age Mediterranean [in:] A.B. Knapp, J.F. Cherry, *Provenience Studies and Bronze Age Cyprus. Production, Exchange and Politico-Economic Change*, Madison, WI: Prehistory Press, 123–156

Konstantinidi, E.
2001 *Jewellery Revealed in the Burial Contexts of the Greek Bronze Age* [=*BAR IS* 912], Oxford: J. and E. Hedges

Korfmann, M. (ed.)
2006 *Troia. Archäologie eines Siedlungshügels und seiner Landschaft*, Mainz am Rhein: Philipp von Zabern

Kozal, E.
2006 *Anatolien im 2. Jt. v.u.Z. und die Hinterlassenschaften materieller Kultur aus dem Ostmittelmeerraum, insbesondere Zyperns*, Ph.D. diss., Tübingen University, online resource: http://nbn-resolving.de/urn:nbn:de:bsz:21-opus-24811 [accessed: February 2013]

Kozal, E., Novák, M.
2007 Geschenke, Tribute und Handelswaren im Hethiterreich [in:] H. Klinkott, S. Kubisch, R. Müller-Wollermann (eds), *Geschenke und Steuern, Zölle und Tribut. Antike Abgabenformen in Anspruch und Wirklichkeit* [=*Culture and History of the Ancient Near East* 29], Leiden–Boston: Brill, 323–346

Ludvik, G., Pieniążek, M., Kenoyer, M.
Forthcoming Stone bead-making technology and beads from Hattuša: a preliminary report [in:] A. Schachner, Die Arbeiten in Boğazköy-Hattuša 2013, *Archäologischer Anzeiger* 2014/1

Lemos, I.S.
2002 *The Protogeometric Aegean. The Archaeology of the Late Eleventh and Tenth Centuries BC*, Oxford: Oxford University Press

Mac Sweeney, N.
2011 *Community Identity and Archaeology. Dynamic Communities at Aphrodisias and Beycesultan*, Ann Arbor, MI: University of Michigan Press

Maran, J.
2004 Wessex und Mykene. Zur Deutung des Bernsteins in der Schachtgräberzeit Südgriechenlands [in:] B. Hänsel, E. Studeníková (eds), *Zwischen Karpaten und Ägäis. Neoliticum und ältere Bronzezeit. Gedenkschrift für Viera Němejcová-Pavúková*, Radhen/Westf.: Leidorf, 47–65

Matsas, D.
1991 Samothrace and the northeastern Aegean: The Minoan connection, *Studia Troica* 1, 159–179

Maxwell-Hyslop, K.R.
1971 *Western Asiatic Jewellery, c. 3000–612 B. C.,* London: Methuen

Moore, D.D., Malcom, C.
2008 Seventeenth-century vehicle of the middle passage: archaeological and historical investigations on the Henrietta Marie shipwreck site, *International Journal of Historical Archaeology* 12/1, 20–38
Mountjoy, P.A.
1998 The East Aegean–West Anatolian interface in the Late Bronze Age. Mycenaeans and the Kingdom of Ahhiyawa, *Anatolian Studies* 48, 33–67
Munan, H.
2007 Ritual and value beads of Borneo's indigenous people [in:] J. Allen, V. Hector (eds), *International Bead & Beadwork Conference, 22–25 November 2007, Istanbul*, Istanbul: Rezan Has Museum, Kadir Has Üniversitesi
Murray, A.
1995 The Middle and Late Bronze Age small objects [in:] J. Mellaart, A. Murray, *Beycesultan* III.2, London: British Institute of Archaeology at Ankara, 113–150
Musche, B.
1992 *Vorderasiatischer Schmuck von den Anfängen bis zur Zeit der Achaemeniden (ca. 10.000–330 v. Chr.)*. Leiden: Brill
Niemeier, B., Niemeier, W.-D.
1997 Milet 1994–1995. Projekt "Minoisch-Mykenisches bis protogeometrisches Milet". Zielsetzung und Grabungen auf dem Stadionhügel und am Athenatempel, *AA* 1997, 189–248
Nightingale, G.
2008 Tiny, fragile, common, precious. Mycenaean glass and faience beads and other objects [in:] C.M. Jackson, E.C. Wager (eds), *Vitreous Materials in the Late Bronze Age Aegean* [=*Sheffield Studies in Aegean Archaeology* 9], Oxford: Oxbow Books, 64–104
Nikita, K., Henderson, J., Nightingale, G.
2006 An archaeological and scientific study of Mycenaean glass from Elateia-Alonaki, Greece [in:] K. Janssens, P. Degryse, P. Casyns, J. Caen, L. Van't dack (eds), *Annales of the 17th Congress of the International Association for the History of Glas, 2006*, Antwerp: University Press Antwerp, 39–46
Özgüç, N.
1953 *Kültepe Kazısı 1949*, [*Excavations in Kültepe 1949*], Ankara: Türk Tarih Kurumu Basimevi
1966 Excavation at Acemhöyük, *Anatolia* 10, 29–52
Özgüç, T.
1986a *Kültepe Kanis* II. *New Researches at the Trading Center of the Ancient Near East*, Ankara: Türk Tarih Kurumu Basımevi
1986b New observations on the relationship of Kültepe with southeast Anatolia and North Syria during the third millennium B.C. [in:] J.V. Canby, E. Porada, B.S. Ridgeway, T. Stech (eds), *Ancient Anatolia: Aspects of Change and Cultural Development. Essays in Honour of Machteld J. Mellink*, Madison, WI: University of Wisconsin Press, 31–47
2005 *Kültepe. Kaniš/Neša*, Istanbul: Yapı Kredi Yayınları
Özgüç, T., Temizer, R.
1993 The Eskiyapar Treasure [in:] M.J. Mellink, E. Porada, T. Özgüç (eds), *Aspects of Art and Iconography. Anatolia and its Neighbors. Studies in Honor of Nimet Özgüç*, Ankara: Türk Tarih Kurumu Basımevi, 613–628

Panagiotaki, M.
2008 The technological development of Aegean vitreous materials in the Bronze Age [in:] C.M. Jackson, E.C. Wager (eds), *Vitreous Materials in the Late Bronze Age Aegean*, Oxford: Oxbow Books, 34–63

Pavúk, P.
2005 Aegeans and Anatolians, a Trojan perspective [in:] R. Laffineur, E. Greco (eds), *Emporia. Aegeans in the Central and Eastern Mediterranean. Proceedings of the 10th International Aegean Conference, Athens, Italian School of Archaeology, 14–18 April 2004* [=Aegaeum 25], Liège: Université de Liège, 269–279

Pieniążek, M.
2012a Luxury and prestige on the edge of the Mediterranean world. Jewellery from Troia and the Northern Aegean in the 2nd millennium B.C. and its context [in:] M-L. Nosch, R. Laffineur (eds), *KOSMOS. Jewellery, Adornment and Textiles in the Aegean Bronze Age* [=*Aegaeum* 33], Leuven: Peeters, 501–508
2012b Troianischer Schmuck im Kontext. Ein Vorbericht zu den Schmuckfunden des 2. Jahrtausends v. Chr, *Studia Troica* 19, 205–218
Forthcoming Dress and body ornaments as a testimony to cross-cultural influences in the northern area of the Aegean [in:] Ç. Maner, K. Kopanias, N. Stampolidis (eds), *Nostoi. Indigenous Culture, Migration and Integration in the Aegean Islands and Western Anatolia during the Late Bronze and Early Iron Age*, Istanbul: Koç University Press, in press

Phillips, J.
2009 Egyptian amethyst in the Bronze Age Aegean, *Journal of Ancient Egyptian Interconnections* 1/2, 9–25

Pulak, C.
2005 Das Schiffswrack von Uluburun [in:] Ü. Yalçin, C. Pulak, R. Slotta (eds), Das Schiff von Uluburun: Welthandel vor 3000 Jahren. Katalog der Ausstellung des Deutschen Bergbau-Museums Bochum vom 15. Juli 2005 bis 16. Juli 2006, Bochum: Deutsches Bergbau-Museum, 55–102

Rahmstorf, L.
2008 *Kleinfunde aus Tiryns. Terrakotta, Stein, Bein und Glas/Fayence vornehmlich aus der Spätbronzezeit* [=*Tiryns* 16], Wiesbaden: Reichert

Reinholdt, C.
2008 *Der frühbronzezeitliche Schmuckhortfund von Kap Kolona. Ägina und die Ägäis im Goldzeitalter des 3. Jahrstaunsends v. Chr.*, Vienna: Verlag der Österreichischen Akademie der Wissenschaften

Renfrew, C.
1972 *The Emergence of Civilisation. The Cyclades and the Aegean in the Third Millennium B.C.,* London: Methuen

Riemschneider, K.K.
1974 Die Glasherstellung in Anatolien nach hethitischen Quellen [in:] K. Bittel, P.H.J. Houwink Ten Cate, E. Reiner (eds), *Anatolian Studies. Presented to Hans Gustav Güterbock on the Occasion of his 65th Birthday* [=*Uitgaven van het Nederlands historisch-archaeologisch instituut te Istambul* 35], Istanbul: Nederlands Historisch-Archeologisch Instituut in het Nabije Oosten, 263–278

Sazcı, G.
2001 Gebäude mit vermutlich kultischer Funktion. Das Megaron in Quadrat G6 [in:] *Troia. Traum und Wirklichkeit* [exhibition catalogue], Stuttgart: Theiss, 384–390

Schuster-Brandis, A.
2008 *Steine als Schutz- und Heilmittel. Untersuchung zu ihrer Verwendung in der Beschwörungskunst Mesopotamiens im 1. Jt. v. Chr.* [=*Alter Orient und Altes Testament* 46], Münster: Ugarit-Verlag

Seeher, J.
2000 *Die Bronzezeitliche Nekropole von Demircihöyük-Sarıket. Ausgrabungen des Deutschen Archäologischen Instituts* [in:] *Zusammenarbeit mit dem Museum Bursa, 1990–1991,* [=*Istanbuler Forschungen* 44], Tübingen: Wasmuth

Smirniou, M., Rehren, T., Adrymi-Sismani, V., Asderaki, E., Gratuze, B.
2012 Mycenaean beads from Kazanaki, Volos: A further node in the LBA glass network [in:] D. Ignatiadou, A. Antonaras (eds), Annales du 18e congres de l'Association internationale pour l'histoire du verre, Thessaloniki 2009,, Thessalonik: AIHV, 11–18

Tite, M., Shortland, A., Hatton, G., Maniatis, Y., Kavoussanaki, D., Pyrli, M., Panagiotaki, M.
2008 The scientific examination of Aegean vitreous materials – problems and potential [in:] C. M. Jackson, E. C. Wager (eds), *Vitreous Materials in the Late Bronze Age Aegean*, Oxford: Oxbow Books, 105–125

Tolstikow, V., Trejster, M.
1996 *Der Schatz aus Troja. Schliemann und der Mythos des Priamos-Goldes. Katalogbuch. Ausstellung in Moskau* [exhibition catalogue], Stuttgart: Belser

Voutsaki, S.
1999 The shaft grave offerings as symbols of power and prestige [in:] I. Kilian-Dirlmeier, M. Egg (eds), *Eliten in der Bronzezeit: Ergebnisse zweier Kolloquien in Mainz und Athen*, Mainz: Verlag des Römisch-Germanischen Zentralmuseums, 103–117

Wright, J.C.
1995 From chief to king in Mycenaean society [in:] P. Rehak (ed.), *The Role of the Ruler in the Prehistoric Aegean. Proceedings of a Panel Discussion Presented at the Annual Meeting of the Archaeological Institute of America, New Orleans, Louisiana, 28 December 1992, with Additions* [=*Aegaeum* 11], Liège: Université de Liège, 63–80

Yağcı, E.E.
1998 İ.Ö. İkinci Binde Anadolu'da Cam [Glass in the 2nd millennium BC in Anatolia], *Olba* 1, 29–44 [in Turkish]

Younger, J.G.
1992 Bronze Age representations of Aegean jewelry [in:] R. Laffineur, J.L. Crowley (eds), *Eikon. Aegean Bronze Age Iconography. Shaping a Methodology. Proceedings of the 4th International Aegean Conference, University of Tasmania, Hobart, Australia, 6–9 April 1992* [=*Aegaeum* 8], Liège: Université de Liège, 257–293