

Χρυσοπράσινο φύλλο ριγμένο στο πέλαγο Cyprus – Crossroads of Civilizations

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Abstract: Cyprus is one of the few regions rich in copper ores in the Mediterranean. Copper production and trade in copper have shaped the cultural history of the island in antiquity. The article discusses archaeological evidence for copper and bronze production from the Philia phase to the Late Cypriot period, trade with Cypriot copper in the Mediterranean (especially distribution of oxhide ingots), cultural interactions between Cyprus and Sardinia at the end of the Late Bronze Age and in a more general way cultural interrelations, processes of contact and acculturation between Cyprus and the civilizations of the Levant as well as the Aegean during the Late Cypriot period (c. 1600 – 1100 B.C.E.).

Keywords: Cyprus in the Late Bronze Age, copper production, copper trade, oxhide ingots, bronze work, Sardinia and Cyprus

Χρυσοπράσινο φύλλο ριγμένο στο πέλαγο “gold-green leaf thrown into the sea”, the title, which I chose, is a line from a famous song by Leonidas Malenis (music by Mikis Theodorakis) praising the island of Cyprus. It characterizes very well the geographical position of the island of Aphrodite, its central position in the Eastern Mediterranean, at the cross-roads of seafaring between East and West. Cyprus was an intermediary station for traders and seafarers on the way from the Aegean towards the Levantine coast and back, a favorable prerequisite for intensive contacts with east and west, with the Aegean and the civilizations of the Ancient Near East.

But the specific role of Cyprus within the network of cultural interaction and contacts during the Late Bronze Age in the East Mediterranean is based on its natural resources, its immense

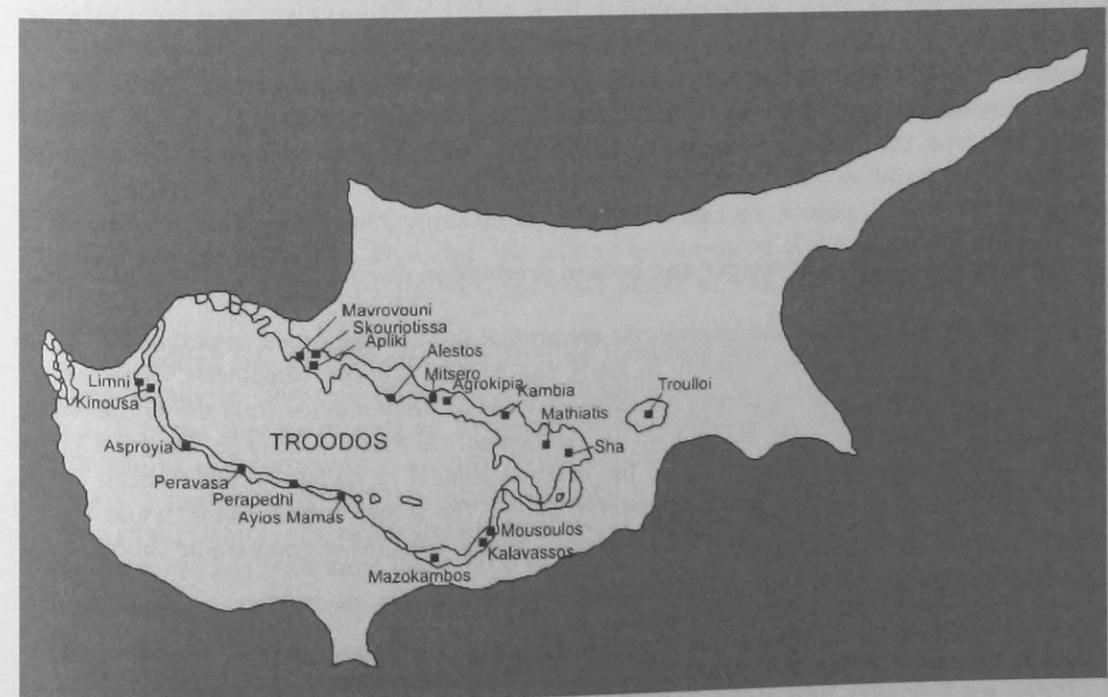


Fig. 1: Cyprus, location of copper ore deposits



Fig. 2: Skouriotissa, Roman slag heap

copper ore deposits, perhaps the largest in the East Mediterranean, exploited since the beginning of the Early Bronze Age, which starts on the island around the mid of the 3rd millennium B.C.E. In the East Mediterranean, the Near East and Egypt only few regions could yield sufficient quantities of copper to supply the various cultural groups: the Taurus mountains in south-east Anatolia, the Timna and Faynan areas, and Cyprus, an island, which was able to produce abundant quantities of copper. Trade in copper, the resulting contacts and processes of acculturation shaped the cultural history of Cyprus during the Bronze Age as well as during the Iron Age, the Roman and the Early Byzantine period, when the Cypriot mines were depleted.

The ore deposits are located in the foot-hills of the Troodos mountains, to the south as well as to the north (fig. 1). Those in the northwest, from Apliki to Skouriotissa have provided some 90% of Cypriot copper production in modern times. Huge slag heaps, e.g. at Skouriotissa, offer monumental evidence of ore smelting especially in the Roman Imperial period. The amount of slag at Skouriotissa alone has been estimated to about two million tons (fig. 2). Slag heaps of earlier date, from the Classical to the Hellenistic periods, have been identified at Kalavassos and Mitsero.¹

Archaeological evidence of copper and bronze production during the Late Cypriot period

Copper and bronze weapons and implements are present in huge quantities, unparalleled in other parts of the Mediterranean, already in Early and Middle Cypriot cemeteries.² The earliest evidence of workshops casting copper artifacts are finds of stone moulds from the Philia phase, predating EC I (around 2500 B.C.E.), in the settlement of Marki-Alonia in central Cyprus (cf. fig. 3), although unfortunately not in the original context of metalworking ateliers, but in secondary position, reused as building material among the stone foundations of house walls.³ These are stone moulds used for casting bar-shaped ingots, flat axes or comparable simple tools.

¹ Bear 1963; Kassianidou 2000, 2012c, forthcoming.

² Catling 1964; Balthazar 1990. Archaeometallurgy of Cyprus in general: Muhly et al. 1982; Betancourt and Ferrence 2011; Kassianidou and Pappasavvas 2012; comparison Crete – Cyprus: Muhly and Kassianidou 2012.

³ Frankel and Webb 1996, 2006; Moulds: Frankel and Webb 2006, 215–17; Pilides and Papadimitriou 2012, 50, fig. 7.1; 134 no. 48; Knapp 2012, 15, fig. 3.2.



Fig. 3: Cyprus, map showing Middle and Late Cypriot sites

The earliest evidence of primary ore smelting in the mining areas came to light in the MC I settlement of Ambelikou-Aletri in northwestern Cyprus, where clay tuyères, a crucible and a double-sided mould were discovered during trial excavations in 1942. But of greater importance was the discovery of ancient galleries during the tunneling of the ore body by the Hellenic Mining Company, firmly dated by Red Polished III pottery, contemporary to the settlement site and situated some 300 m to the west.⁴ The galleries are up to now the earliest known from Cyprus to date.

More or less contemporary to Ambelikou-Aletri is the settlement of Alambra-Mouttes south-west of Idalion in the center of the island of Aphrodite.⁵ Fragments of stone and terracotta moulds as well as clay crucibles indicate that metalworking played an important role in this community, although no workshop area has been identified.

Archaeological evidence for metal production and the significance of the copper and bronze industries for the economy of Cyprus during the following Late Bronze Age can be detected at the smelting site of Politiko-Phorades, the mining settlement of Apliki-Karamallos, the urban centers of Enkomi, Kition, Palaipaphos and other places as well as the sanctuary of Athienou-Bamboulari.

The smelting site of Phorades near Politiko/Tamassos was discovered during the Sydney Cyprus Survey in 1996 and excavated over the following years. It is situated in the northern foot-hills of the Troodos mountains, in the middle of nowhere. No settlement has been identified at the site or in its immediate vicinity. What the excavators were able to trace are heaps of stones and approximately 3.5 tons of slags, mixed with fragments of furnace linings and clay tuyères of different types, either straight or elbow-shaped (fig. 4), almost 30 of which were complete examples and with more than 500 fragments. Politiko-Phorades is a place where primary ore smelting was carried out near a mining area in the hilly country around Politiko, although

⁴ Merrillees 1984; Tylecote 1971, 55 (tuyères); Kassianidou 2012b, 77.

⁵ Coleman et al. 1996, 135–36, figs. 31, 32.

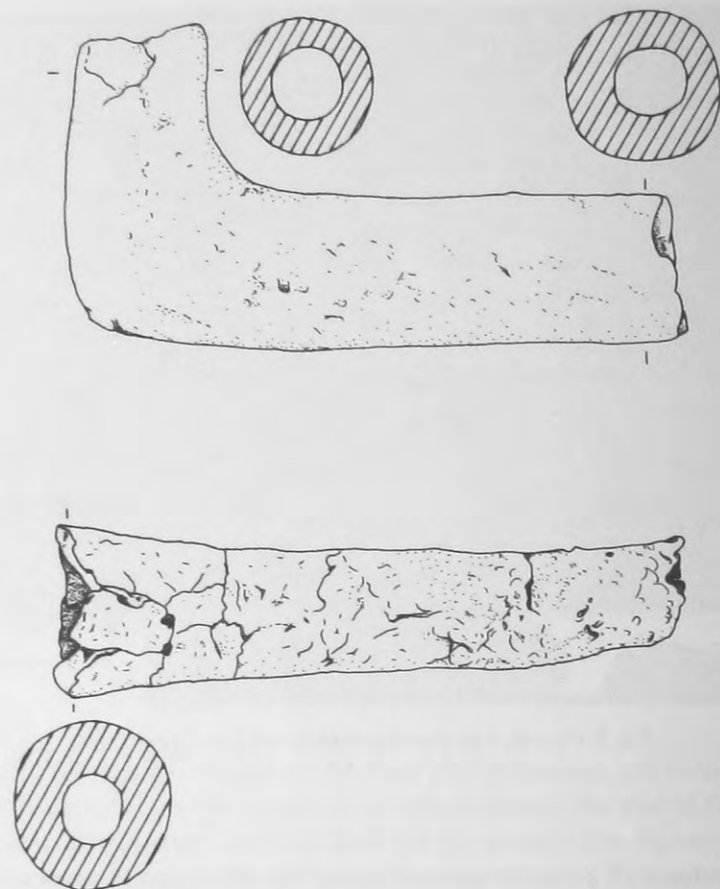


Fig. 4: Politiko-Phorades, clay tuyères of straight type and elbow type, Nicosia, Cyprus Museum

the specific mine has not yet been identified. Pottery of White Slip I and early White Slip II as well as Base Ring I type date the site to LC IB, i.e. the 15th century B.C.E.⁶

The second well-known site in the mining zone is Apliki-Karamallos in the valley of Marathasa, discovered in 1938 during exploration work of the Cyprus Mining Corporation, partly excavated and preliminarily published by Joan du Plat Taylor in 1952.⁷ Parts of several houses of a settlement have been unearthed, which can be dated to LC IIC to IIIA, i.e. the 13th and 12th centuries B.C.E.⁸ Large quantities of slags, hammer stones for crushing the ores and tuyères have been discovered. It is the settlement of a community involved in ore processing, the only mining settlement known on the island of Cyprus. Rich ore deposits were located in the neighborhood, and ancient galleries, some still lined with timber, were opened during the operations of the Cyprus Mining Corporation near the site. However, as far as their chronology could be established, they are of first millennium B.C.E. or Roman date.

This fact throws light on one of the main problems of Cypriot archaeometallurgy: The areas rich in copper ores were exploited continuously from the Bronze Age until the beginning of the Early Byzantine period, with earlier remains often destroyed in the course of later mining activities.

⁶ Knapp et al. 1998, 1999; Knapp 2003; Kassianidou 2008; Knapp 2012, 18–9; Kassianidou 2012a, 100–4. Tuyère from Phorades: Pilides and Papadimitriou 2012, 132 no. 46.

⁷ Du Plat Taylor 1952; Kling and Muhly 2007 (part 1 of the final publication, the second part dealing with the archaeometallurgy of the site will come out soon); Knapp 2012, 19–21; Gale and Stos-Gale 2012.

⁸ Slag from Apliki: Pilides and Papadimitriou 2012, 130 no. 43.

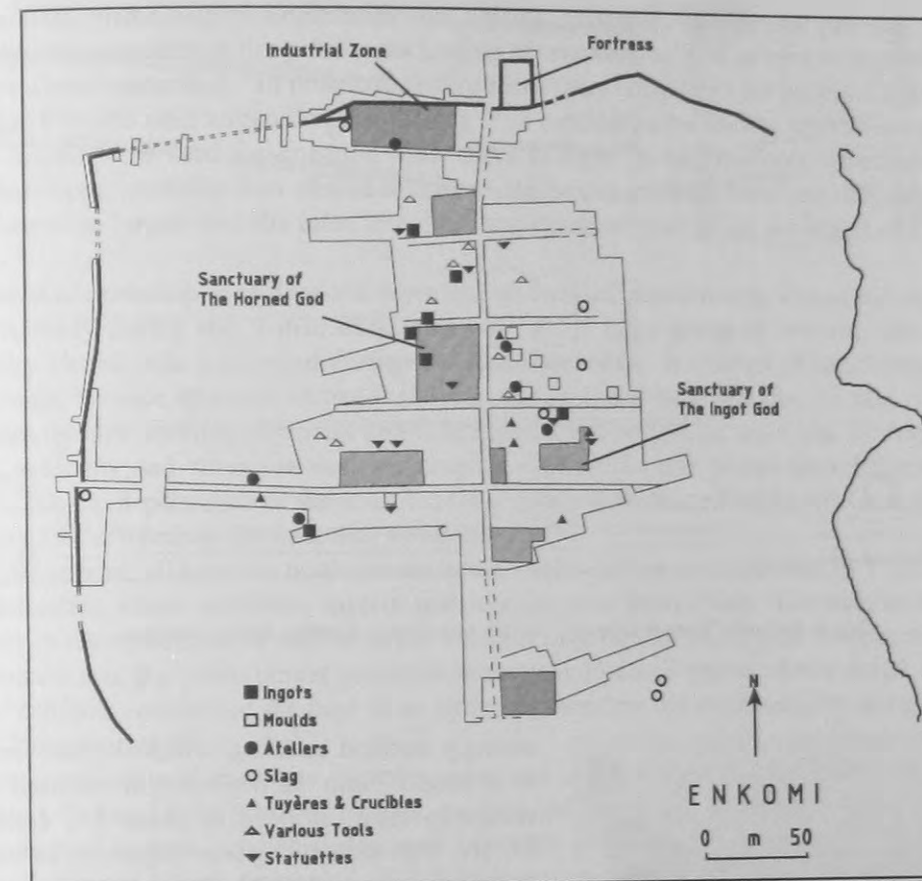


Fig. 5: Enkomi, map showing locations of metallurgical finds

We may very probably observe an operational chain: primary smelting, which produced raw copper – matte – took place in sites like Ambelikou-Aletri, Politiko-Phorades and Apliki-Karamallos near the copper mines, where not only the ores, but also the necessary fuel was available, usually the common Cypriot pine, *pinus brutia*, although other kinds of wood were used. The next step was the transport of copper overland or on the larger perennial rivers from the Pediaios to workshop areas, which were located in smaller settlements as well as in the urban centers on the coast like Enkomi and Kition, where refining operations, casting of copper ingots, oxhide ingots as well as bun ingots, alloying of the metal to bronze, and the production of artifacts took place. From the coastal sites copper as raw material in the shape of ingots as well as metal artifacts were exported overseas. Up to now it is unknown in which form raw copper was transported from the mining areas, whether as bun ingots or already as oxhide ingots.

The excavations at Enkomi (fig. 5) offer detailed insight into copper and bronze production in a Cypriot urban center, especially during LC IIC and LC IIIA, the 13th and 12th centuries B.C.E., although metal production goes back to the beginning of the Late Cypriot period. During LC IA, at the northern periphery of the later town, a fortress comparable in type to that of Dhali-Nikolidhes, was erected (P. Dikaios' area III), although its function has been disputed by M. Fortin, who interpreted the building from the beginning as a workshop area.⁹ Nevertheless, the massive external walls and a dog-leg entrance system seem to be characteristics of the large

⁹ Dikaios 1969, 15–152. Metallurgical activities: Kassianidou 2012a. Function of the "fortress": Fortin 1989. MC–LC fortresses in Cyprus: Peltenburg 2008.

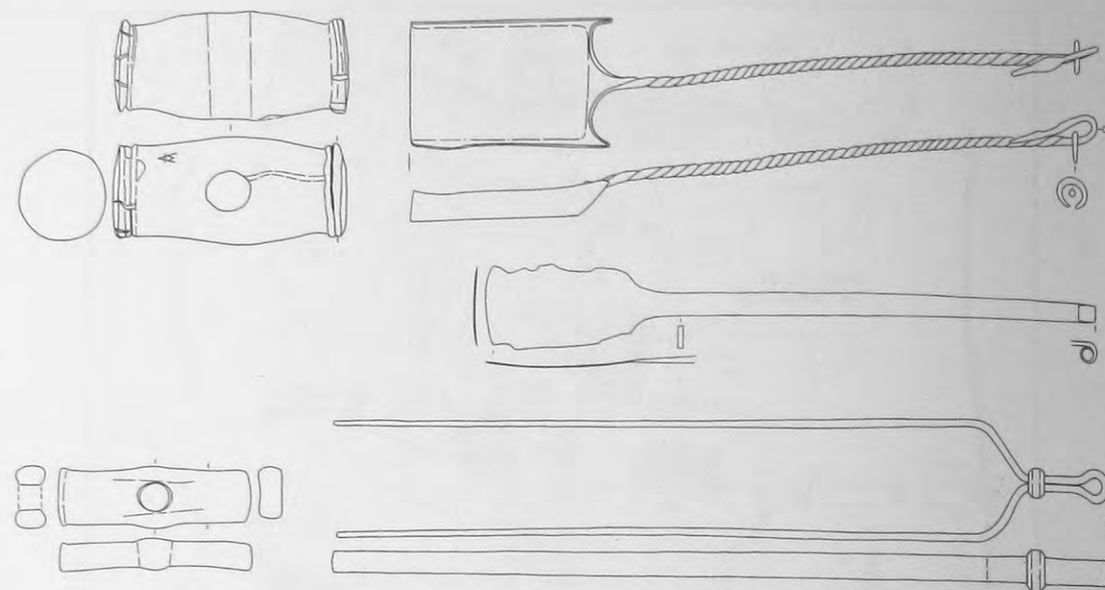


Fig. 6: Enkomi, "Foundry Hoard": Metallurgical tools. London, British Museum

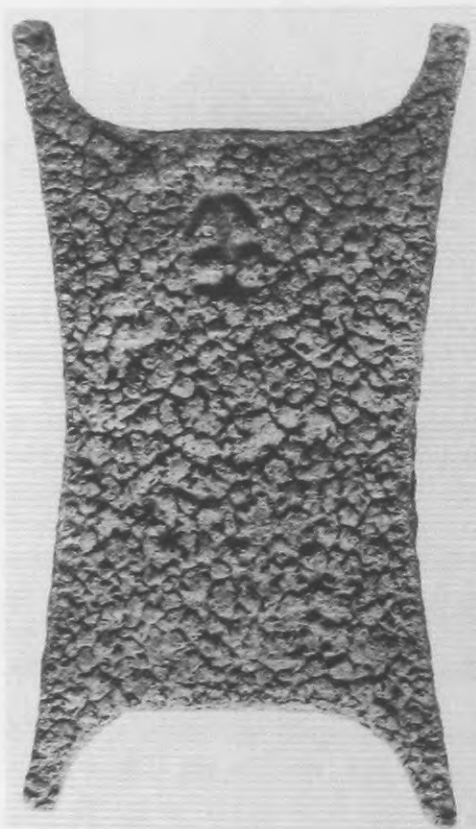


Fig. 7: Enkomi, "Foundry Hoard": Oxhide ingot. London, British Museum

strongly fortified building, which is more than 30 m in length. From the beginning it enclosed some workshop areas, starting in phase IA, dating to LC IA, with finds of tuyères fragments as well as fragments of crucibles in Room 101 in its north-west corner. Following a destruction the building was remodeled in phase IB, dated LC IB. Rooms 103, 105 and especially 106 contained slags, tuyères of elbow type, crucibles as well as two stone pot bellows.¹⁰

Following another destruction at the end of LC IB in level IIA (dated to LC IIA-B), a new building was constructed. Architectural layout and function changed, it was a three-aisled building with a central court, mostly for domestic and residential purposes, and workshop installations in its western part, although these, as the excavator P. Dikaios observed, were not as extensive as in the latest fortress period or in the subsequent building phases.¹¹

Metallurgical activities increased during the following periods and reached their zenith during LC IIC and LC IIIA, when the whole area of Enkomi was surrounded by a city wall, which incorporated the former fortress and the level IIA building above. The building complex was transformed in level II B (LC IIC) into a large ensemble of metal workshops consisting of several rooms,

¹⁰ Cypriot bellows: Kassianidou 2011.

¹¹ Dikaios 1969, 44.

where slags, metallurgical implements like tuyères, crucibles, moulds and pits full of ashes, probably the remnants of fire pits for the heating of crucibles, as well as bronze implements and weapons were unearthed. "In practically every room there is evidence for metalwork suggesting (...) that this was once a metallurgical factory."¹² In contrast to the mining sites no ground stone tools, which were used for crushing ores, came to light. In this northern industrial zone of Enkomi copper probably was alloyed to bronze and bronze artifacts were cast. Dikaios' area III represents the largest and the most important metallurgical context on the island of Cyprus to date.

But this workshop area does not represent an isolated phenomenon within the area of the city. Already during the British excavations of 1897 a large group of bronzes, the so-called Foundry Hoard, was discovered during the search for tombs. It consists of metalworking tools like tongs, furnace spatulae, charcoal shovels, metallurgical hammers (fig. 6), jets, unfinished castings, bronze sheeting, formless lumps of metal, a copper oxhide ingot (fig. 7), fragments of tools, weapons and vases, as well as complete objects. To this group, later finds of oxhide ingots, bronze depots such as the so-called Gunnis hoard (excavated by Rupert Gunnis in 1927) or Schaeffer's Trésor de Bronzes may be added.¹³

Furthermore, all over the northern and central areas of Enkomi excavated by P. Dikaios and Cl. Schaeffer, slags, crucibles, tuyères and moulds have been found. The number of bronze objects in the settlement as well as in the tombs is unparalleled in Cyprus. Copper and bronze production was the predominant economic activity in Enkomi; export of raw metal as well as metal artifacts constituted the base of an extremely wealthy urban community during the 13th and 12th centuries B.C.E.

Metalworking activities have played a major role in many Cypriot Late Bronze Age centers, e.g. Hala Sultan Tekke (finds of moulds, tuyères and crucibles), Kalavassos-Ayios Dhimitrios (fragments of tuyères, crucibles, slags and a possible coppersmith's workshop in Building IX), Maroni-Vournes (slags, fragments of oxhide ingots) and Alassa-Pano Mandilaris (workshop with pot bellows, fig. 8, miniature ingot).¹⁴

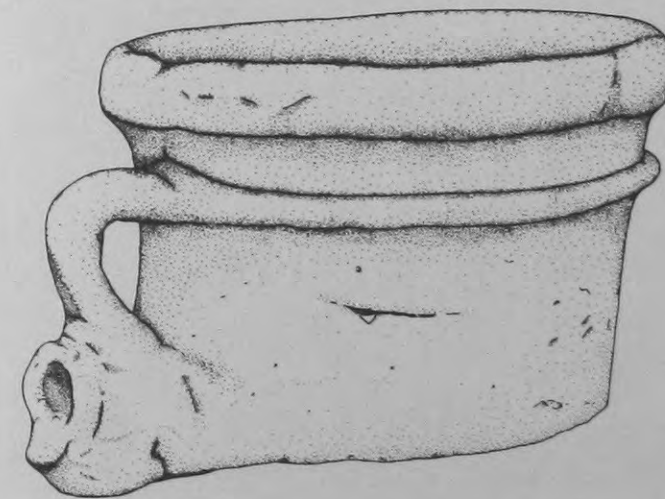


Fig. 8: Alassa-Palioaverna, clay pot bellows, Nicosia, Cyprus Museum

¹² Kassianidou 2012a, 99.

¹³ Bronze hoards: Matthäus and Schumacher-Matthäus 1986; Knapp 1988; Muhly et al. 1988.

¹⁴ Hala Sultan Tekke: Åström et al. 1976, 11, pl. VII, 127–28; Karageorghis 1989; Åström 2000 (Åström's identification of some clay fragments, pl. 4, 5, as moulds for casting a tripod is not correct; thanks to P. Åström's generous permission the author has had the opportunity to study the tiny fragments in the Larnaca Museum; they can be identified as parts of crucibles). Kalavassos: South 2012. Maroni: Doonan et al. 2012. Alassa: Hadjisavvas 2011.

Workshops producing bronze artifacts have been identified in the large urban center of Kition on the southeast coast of Cyprus in a LC IIIA stratum (Floor III A); among the diagnostic finds are two furnaces, fragments of tuyères, crucibles, slags and two pieces of copper matte. The workshop area is situated between the city wall and the temple district of the town, and it was accessible directly from the monumental temple 1.¹⁵ Metal production seems to have been controlled, at least in part, by the administration of the sanctuaries. Supporting archaeological evidence has been brought to light in the sanctuary, the later Temple of Aphrodite, in Palaepaphos, as Maria Iacovou has recently pointed out, and in Athienou-Bamboulari.¹⁶ Slags as well as scrap metal are abundant in these sanctuaries.

Deities standing on oxhide copper ingots – the famous *dieu au lingot* from Enkomi, and a statuette of a naked goddess in Oxford – point to the same direction of “metal production under divine protection”.¹⁷ The *dieu au lingot* is a warrior god of Levantine type, although certainly manufactured locally in Cyprus, protecting copper production, whereas the female statuette represents fertility and wealth of the Cypriot earth. Furthermore copper ingots are carried by gift bearers in religious processions, e.g. on a wheeled bronze stand, dating to c. 1200 B.C.E., from the Borowski collection, now in Jerusalem (fig. 9), on a miniature stand, said to be from Kourion, in the British Museum and on a fragment of a stand in Toronto, all clear indications of ingots having a function as valuable offerings and religious symbols.¹⁸ The religious function of copper ingots is underlined by miniature ingots from Enkomi and Mathiatis, some of them inscribed, which are very probably votives, small-scale substitutes of larger copper ingots.¹⁹



Fig. 9: Cyprus, exact provenance unknown: Wheeled bronze stand, procession of offering bearers, Jerusalem, Bible Lands Foundation

¹⁵ Karageorghis and Demas 1985, 388–430 (contributions by T. Stech, R. Maddin, J.D. Muhly, U. Zwicker, R.F. Tylecote); Karageorghis and Kassianidou 1999; Kassianidou 2005.

¹⁶ Palaepaphos: Iacovou 2012, 64. Athienou: Dothan and Ben-Tor 1983, 132–38; Karageorghis 2011.

¹⁷ I quote the title of A.B. Knapp's monograph: Knapp 1986. *Dieu au lingot*: Courtois 1971; Schaeffer 1971, 505–10; Papasavvas 2011. Female statuette from the Bomford collection, now in the Ashmolean Museum Oxford: Catling 1971.

¹⁸ Matthäus 1985, pls. 102, 106, 107; Papasavvas 2001, figs. 45, 81, 82; Karageorghis and Papasavvas 2001.

¹⁹ Giunlia-Mair et al. 2011; add a fragment from Alassa-Pano Mandilaris: Hadjisavvas 2011, 24, fig. 3.3.

Trade of Cypriot copper in the Mediterranean

Oxhide ingots, as they are called in Anglo-Saxon terminology, *Vierzungenbarren* in German, are the typical shape of copper ingots – besides smaller bun ingots – for export, whether overland by caravan or overseas (fig. 7). The four horn-like handles allow for the ingots to be carried on the shoulder, be tied up on pack animals or secured in a ship's hold. Typology, chronology and geographical distribution of oxhide ingots have been discussed since Hans-Günter Buchholz' first systematic analysis published in 1959.²⁰ During recent years work by J.D. Muhly, F. Lo Schiavo, C. Pulak, V. Kassianidou and others has considerably expanded our knowledge of trade routes, trade mechanisms and the powers involved in maritime exchange.²¹

The weight of the ingots varies, but typical specimens range from 20 to 30 kilograms. Their distribution from southeast Turkey via the Aegean and the Black Sea to Corsica and Sardinia in the west, from Egypt in the south to central Europe in the north illustrates a network of maritime communication between the highly developed civilizations of the East Mediterranean as well as peripheral regions of Bronze Age Europe (fig. 10). Spectacular finds like the Cape Gelidonya shipwreck of around 1200 B.C.E. and the even more prolific ship with a cargo of approximately ten tons of copper on board, which sank at Uluburun during the second half of the 14th century B.C.E., have shed new light on trade in raw materials during the Late Bronze Age.

Lead isotope analyses during the last decades, the pioneering work done by N.H. Gale and Z.A. Stos-Gale, have clearly confirmed that the majority of the oxhide copper ingots found in the Mediterranean were produced on the island of Cyprus, most of them probably in the Apliki area and its vicinity. There is only one exception: the ingots found in the Minoan villa of Agia Triada in south Crete, whose origin at the moment remains unknown. Cast and incised signs on a rather large number of oxhide ingots, even as far west as Sardinia, seem to resemble characters of the Cypro-Minoan script, a further argument for a Cypriote origin.



Fig. 10: Distribution of oxhide ingots

²⁰ Buchholz 1959.

²¹ Gale 1991; Yalçın et al. 2005; Lo Schiavo et al. 2009 (with contributions on Cyprus by V. Kassianidou and G. Papasavvas, on the Aegean and Egypt by J.D. Muhly). Recent contributions: Liard 2010; Lo Schiavo et al. 2013.

The earliest extant specimens come from Cretan Neopalatial contexts of LM IB date (around 1450 B.C.E.), a remarkable series from the villa of Agia Triada, just mentioned, others from Gournia, Kato Zakros, Tyllissos, Mochlos, which are probably made of Cypriot copper. In Egypt, e.g. in the Tomb of Rekhmire in Thebes, from the mid 15th century B.C.E., copper ingots are carried by emissaries from Keftiu/Crete as valuable presents to the Pharaonic court.

The earliest fragments of oxhide ingots from Cyprus itself came to light in a 14th century B.C.E. context in Maroni-Vournes, contemporary with the Uluburun shipwreck, followed by a large number of 13th to 12th century specimens from Cyprus, from Enkomi, Kalavassos, Alassa, Pyla-Kokkinokremos, Maa-Palaeokastro, Mathiatis. This period represents the zenith of Late Bronze Age Cypriote urban civilization, a period which saw the acme of copper and bronze production in Enkomi, as described above. Again this observation underlines that metal production and metal export formed the economic base of Cypriote urban centers, their wealth and prosperity. The series of ingots from the Cape Gelidonya shipwreck, the Greek mainland and other Aegean areas may be dated to the same period. In the east ingots are known in the Urfa region of southeast Turkey, in the northeast in the Black Sea. In the north fragments of oxhide ingots have been discovered as part of a 14th century B.C.E. metal hoard at Oberwillingen (Ostalbkreis)²² in southwestern Germany. In the central Mediterranean a surprisingly large number of ingots and ingot fragments have been found in Nuraghic sites on Sardinia (see below). The 14th, 13th and 12th centuries B.C.E. mark the widest distribution of oxhide ingots in the Near East and the Mediterranean.

Only one mould for casting an oxhide ingot, made of limestone, is known: not from Cyprus, as one would expect, but from the North Palace of Ras Ibn Hani on the Syrian coast, a summer palace of the rulers of Ugarit, probably of Aḥat-Milku, mother of King 'Ammistamru II.²³ The kingdom of Ugarit had no copper sources, but depended on imports of copper from Cyprus, as shown by fragments of oxhide ingots found in the city, as well as other Near Eastern mining zones.²⁴ Possibly refining operations were carried out at Ras Ibn Hani, but up to now there is no definite publication and no scientific analyses have been made of the object and its adherent metal traces. In the palace, which was destroyed at the end of the 13th century B.C.E., finds of clay crucibles and clay tuyères document metallurgical activities as well.

Cyprus and Sardinia

For the years around 1200 B.C.E. very close interrelations between Cyprus and Sardinia are observable in the archaeological record. Sardinia had some copper deposits in the south, but probably not in sufficient quantities.²⁵ Lead isotope analyses indicate large scale exports of Cypriot copper to Sardinia, which in those days saw the zenith of Nuraghic civilization. Complete oxhide ingots are known from two places only, Serra Ilixi-Nuragus (Nuoro) and S. Antioco di Bizarcio-Ozieri (Sassari), whereas fragments of oxhide ingots came to light in 31 (till 2012) Sardinian find-spots.²⁶ Some of them bear incised signs, resembling characters of the Cypro-Minoan script. The date of the ingots and ingot fragments is difficult to establish in detail, as precise find contexts are rare.

Besides raw metal, East Mediterranean technology was also introduced to Sardinia at this time.²⁷ Metal-working tools like hammers, tongs, charcoal shovels, furnace spatulae have their prototypes in Cyprus. Transfer of technology very probably means contact with metallurgical

²² Primas and Pernicka 1998.

²³ Lagarce 1986; Bounni et al. 1998.

²⁴ Galliano and Calvet 2004, 123 no. 101.

²⁵ Cultural interrelations between Cyprus and Sardinia in general: Lo Schiavo et al. 1985; Balmouth 1987; Matthäus 2000a (with extensive bibliography); Kassianidou 2001; Lo Schiavo 2003a, 2003b; Bernardini 2008; Lo Schiavo 2008; Bernardini 2010; Russell 2010.

²⁶ Lo Schiavo et al. 2009; Lo Schiavo 2011.

²⁷ Lo Schiavo 2004.

specialists from the east, in other words, their presence in Late Bronze Age Sardinia. Other types of tools, agricultural and wood-working tools, exhibit Cypriot influences as well.

Imports of more ambitious prestige objects of Cypriot origin are also known, such as Late Bronze Age rod tripods, e.g. in a private collection in Oristano (exact provenance unknown, but certainly from Sardinia), fragments from Sa Sedda e Sos Carros, Oliena (Nuoro) and S'Arcu e is Forras, Villagrande Strisáili (Nuoro). Few of these are known from Sardinia, but they had their influence on later local metalwork, as the type was imitated by Sardinian craftsmen. Examples from S. Maria in Paulis, Ittiri (Sassari), Grotta Piroso su Benatsu, Santadi (Cagliari), fragments from S. Vittoria di Serri (Nuoro) and Costa Nighedda, Oliena (Nuoro) as well as a tripod of unknown provenance in the Archaeological Collection of the University of Bern are worth mention.²⁸

Imported Cypriot pottery is rare in Sardinia in contrast to Late Mycenaean wares. There are few fine wares, whereas a fragment of a Cypriot pithos with wavy line ornament from the Nuraghe Antigori, which has a parallel in the area of Cannatello (Agrigento) on Sicily, is a typical container of LC IIC to LC IIIA date, which was used in sea transport in the Mediterranean; earlier types of Cypriot pithoi have been found in the Uluburun shipwreck.

Altogether we observe a very coherent picture of exchange between Cyprus and Sardinia, which comprises raw material (copper ingots), metallurgical tools, other types of tools and implements, prestige objects, used by social elites and later on imitated in local workshops, and some pottery, transport vessels and fine wares. The types of metallurgical tools are typical Cypriot products; they are not at home in the Aegean. Direct interrelations must have been established between the two great Mediterranean islands during the 13th and 12th centuries B.C.E. A physical presence of Cypriot metalworkers and other specialists on Sardinia seems to be a plausible hypothesis.

Cyprus in the Mediterranean

This final section deals with Cypriot Late Bronze Age civilization in a more general way, with the connections and consequences of copper production and export as the most important economic factors in the development of Cypriot Late Bronze Age civilization.²⁹

During the Early Bronze Age, in the second half of the third millennium B.C.E., Cypriot civilization may be defined as self-contained, with few trans-maritime contacts. Between 1900 and 1600 B.C.E. the Middle Bronze Age saw intensive cultural interaction with the Levant, Egypt and to a lesser degree the Aegean, indicated by pottery exports and imports, although no precise information about the copper trade is yet available.³⁰

Around 1600 B.C.E. a remarkable phenomenon within the island of Cyprus can be observed: a shift in settlement location away from the multiple inland sites to the coast.³¹ The requirements of increasing sea trade seem to be the motive for this change in settlement pattern, and sea trade probably means export of metal. At the same time, the export of Cypriot pottery to the Levantine coast increases considerably.

Contact with the Aegean is observable from the Cretan Protopalatial period. From the sites of Ayia Irini, Toumba tou Skourou and Enkomi imported pottery from Crete as well as the Greek Mycenaean mainland of LM I/LH I–IIA increases, although the absolute number is not very impressive.³² Nevertheless, the impact of Minoan civilization was so strong that in LC IB,

²⁸ Lo Schiavo et al. 1985; Lo Schiavo 2003, 159 (with references); Lo Schiavo 2008, 431; Carnes 1994 (certainly a Sardinian rod tripod).

²⁹ For the following synthesis cf. Baurain 1984; Matthäus 2000b; Mantzourani 2001; Karageorghis 2002; Steel 2004; Knapp 2008 (with further references).

³⁰ Maguire 2009.

³¹ Hein 2009.

³² Graziadio 2005.

around 1500 B.C.E., the Cypriots adopted a syllabic script, which has its roots in Cretan Linear A, in spite of the fact that the neighboring civilizations of the Levant used cuneiform.³³ The earliest tablet was found in the workshop area of the fortress in Enkomi. During the 13th and 12th centuries B.C.E. the characters of later Cypro-Minoan tablets show that the technique of cuneiform script has influenced the style of writing, but the system as a whole remained unchanged until the end of the Bronze Age and continued into the Cypriot syllabaries of the first millennium B.C.E. The transfer of an Aegean writing system is contemporaneous with the first identifiable Cypriot copper imports in Neopalatial Crete, in Gournia, Mochlos and other sites.

As is well known, imports of Mycenaean pottery during the 14th and 13th centuries B.C.E. are abundant in Cyprus. In 1972 Paul Åström counted some 3500 Mycenaean vases, today the number is considerably greater.³⁴ Cyprus may have had one more function, as an intermediary for Mycenaean trade with the Levant. Nicole Hirschfeld some years ago has pointed out that the incised pot marks on Mycenaean pottery from Ugarit seem to be Cypro-Minoan, applied to the vases in Cyprus.³⁵

At the same time the economy of Cyprus was so prosperous that the social elites of the island were able to acquire luxury goods from Egypt as well as from the Levant and the Aegean, as is evidenced in wealthy burials at sites like Enkomi or Kalavassos. Famous examples are the silver cup with gold and niello inlays from Enkomi, a creation of Mycenaean workshops in the Argolid, and an Egyptian pectoral from Enkomi. The 14th century B.C.E., LC IIA–B, is a period of increasing copper production in Cyprus itself and copper export, the time at which, in the second half of the 14th century B.C.E., a ship with a cargo of 10 tons of Cypriot copper sank at Cape Uluburun.

The 13th and 12th centuries B.C.E. (LC IIC–IIIA), at the acme of metal exports as far west as Sardinia, are a turning point in Cypriot history. This period sees the development of an urban civilization, late – very late – in comparison to the Levant, and surviving even the catastrophes around 1200 B.C.E.³⁶ Building techniques not used before, such as ashlar masonry and rectangular orthostats of extremely large dimensions characterize the new architectonic tradition, observable at Enkomi, Palaepaphos, Kition, Kalavassos and Alassa. These new techniques go back to prototypes in Syria, where they are attested in Ugarit, Sidon and other places.³⁷ A differentiated system, as architecture is, comprising complex techniques, the combination of different materials (ashlar masonry, orthostats, mud brick, wood), problems in planning large-sized residential areas, and problems related to the statics of multistoried buildings could not be simply copied, but certainly required the presence of architects and building specialists from the Levant or at least specialists trained in Levantine building techniques.³⁸ Ties with the Syrian centers, especially neighboring Ugarit, must have been very close.

The towns of Enkomi and Kalavassos were planned on a regular grid system, as were Hala Sultan Tekke and other places later on. The insulae enclose residential areas, workshops and sanctuaries. The orthogonal grid system seems to be an independent Cypriot innovation. In Cyprus, where there had not yet been an urban tradition, new town-planning was possible, in contrast to the old, continuously inhabited cities on the Syrian coast, e.g. Ugarit.

In contrast to Syrian city-states no palaces have been identified on Cyprus. The political structure of the island is completely unknown. A centralized system has been proposed by B. Knapp. The alternative would be independent city-states, or city-states connected by some

³³ Olivier 2007; Duhoux 2009; Bombardieri and Jasink 2010; Ferrara 2012.

³⁴ Åström 1972, 289–414; cf. Wijngarden 2002.

³⁵ Yon et al. 2000, 181–200; Hirschfeld 2004.

³⁶ Negbi 1986; Hult 1983; Wright 1992; Negbi 2005; Graziadio 2006.

³⁷ Syrian influences in Cypriot architecture are known to have existed already earlier. The fortress of Nitovikla in the Karpasos peninsula is modeled after a building like the palace at Tell el-Burak cf. Peltenburg 2008; Syrian type tombs built of ashlar blocks, e.g. the famous British Tomb 66, are known in Enkomi – and only in Enkomi – before the 13th century B.C.E.

³⁸ Cf. e.g. Hitchcock 2005; more general remarks on the phenomenon of travelling craftsmen: Muhly 2005.

entente cordiale, treaties or other diplomatic agreements, as recently proposed by E. Peltenburg, suggesting an animating ideology that seems to have worked by “consensus rather than coercion”.³⁹ His theory tries to combine the archaeological evidence with the Near Eastern texts mentioning the state and king of Alašiya, a land which most scholars identify as Cyprus or a part of Cyprus.⁴⁰ Peltenburg himself does not attempt to prove this hypothesis, but regards the identification as certain. I shall not discuss the textual evidence. The information supplied by the texts are not too helpful for the topics discussed here, although Alašiya was a state or a state-like structure, which has sent loads of copper to Egypt during the Amarna period and later on to Ugarit. But one should keep in mind that emissaries from Crete, an island without copper resources, brought copper oxhide ingots as presents to the Pharaonic court during the 15th century B.C.E. Valuable raw materials, such as copper, were simply part of the gift exchange between rulers and ruling families in the Ancient Near East.

Also the organization of the Cypriot metal industry during this period remains unknown. What sort of relations existed between mining areas and coastal urban centers? We do not know anything about the internal communications within the island, road systems, or possible transport of metal on the larger rivers like the Pediaios. Who controlled copper and bronze production – the urban sanctuaries seem to have exerted some control, but only these? Which were the mechanisms of long distance sea trade? A network of sea routes must have been known, there must have been a chain of ports on the way to the west, with harbor installations, where ships could be repaired, water and other supplies taken on board. This would only have been possible if these maritime enterprises were accompanied by diplomatic activities and agreements, and if the security of the sea routes were controlled by the powers involved in maritime exchange, which means military and political control.

During the 13th and 12th centuries the nature of Cypriot relations with the surrounding Mediterranean civilizations changed, though Cyprus continued to export copper. At the same time workshops in the urban centers evolved, which were able to supply the local elites with prestige objects and luxury goods, which were no longer imported, but locally produced – and exported as well. The tradition of ivory carving in an “International Style”, combining Levantine and Aegean iconography is one of the most obvious signs of the flourishing of arts and crafts in Cyprus.⁴¹

Cypriot ateliers produced prestigious metalwork, such as rod tripods, four-sided stands and wheeled stands with figural decorations, all creations requiring a high degree of technical skill and of an elevated artistic quality unique in the Mediterranean world. These objects, typologically and iconographically combining local traditions with influences from the Levant and Aegean,⁴² are representative of a related development. These *objets d'art* were exported to east and west, to the Near East, the Aegean and to central Italy and Sardinia. At the beginning of the first millennium B.C.E., when Cypriot originals were no longer available in sufficient numbers, imitations began to be produced in the Aegean as well as in Sardinia. Cyprus thus became a center of autochthonous artistic production during the zenith of urban civilization on the island. The economic basis of this astonishing evolution at the end of the Later Bronze Age was the mining industry, copper production and export of copper all over the Mediterranean.

In his recent monograph on Sardinia,⁴³ Paolo Bernardini has characterized “le torri, i metalli, il mare” as determining factors of the economic development of the island. The Cypriot equivalent would be “urban centres, copper production and maritime trade”.

³⁹ Peltenburg 2012.

⁴⁰ Merrillees 1987; Goren et al. 2004; Merrillees 2005; Cline 2005; Knapp 2008, 298–335; Merrillees 2011; Buchholz 2011; Merrillees 2012; Peltenburg 2012 (letter of King Kušmešusa of Alašiya, from the House of 'Urtēnu in Ugarit); Peltenburg and Iacovou 2012.

⁴¹ Barnett 1982; Feldman 2006; Aruz 2008.

⁴² Catling 1964; Matthäus 1985; Papasavvas 2001.

⁴³ Bernardini 2010.

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