

Seafaring and seafarers: the case for Late Bronze Age Cyprus

A. Bernard Knapp

Introduction

Many Mediterranean archaeologists assume that the island of Cyprus served as a 'crossroads of civilisations' (e.g. Karageorghis 1986, 2002; cf. Knapp in press), especially during the Protohistoric Bronze Age (ProBA, ca. 1750/1700–1100 Cal BC). The primary coastal towns of this period are argued to have been oriented towards the sea and to overseas relations (e.g. Howitt-Marshall 2012: 113–114; Knapp 2013: 353–356). Given such assumptions, it is surprising how little attention has been devoted specifically to examining the hard evidence for seafaring and seafarers on Bronze Age Cyprus.

There are other signs of this shortcoming. Broodbank (2010: 251, 255), for example, in his essay on the 'making of Mediterranean societies, ca. 3500–800 BC', refers to Cyprus twice: first as a 'sequestered island society' during the Chalcolithic and secondly mentioning how the new sailing technology and mentality that emerged during the 3rd millennium BC enabled the 'intrusion of the outside world into Cyprus around 2500 BC'. In a volume entitled *Thalassa* (Aegaeum 7), ostensibly dealing with seafaring in the Bronze Age Mediterranean, not a single paper treats Cyprus; its only mention concerns the Cypriot pottery found on the Uluburun shipwreck (Lambrou-Phillipson 1991: 14). Even a volume entitled *Cyprus and the Sea* (Karageorghis & Michaelides 1995) contains only a single paper that refers to 'Late Cypro-Mycenaean seafaring', but deals mainly with harbours in Greece's Saronic Gulf, or with Cypriot pottery found on board the Cape Iria shipwreck (Lolos 1995).

Seafaring as it relates to Bronze Age Cyprus thus seems to be mentioned only in passing or in making assumptions from 'indirect evidence' (Ward 2010: 149; see further below). Moreover, renowned Australian archaeologist James Stewart once said (1962: 290): 'The Cypriote has never been a great sea-farer ... nor has he been a keen fisherman, until the coming of dynamite'. Stewart may have been correct about Cypriot seafaring during his own era of expertise, the Prehistoric Bronze Age (PreBA, ca. 2400–1750/1700 Cal BC), but by the ProBA this was certainly not the

case. From Middle–Late Bronze Age boat models to Late Bronze Age (LBA) shipwrecks, and from several other materials as well as contemporary documentary evidence, it is clear that some people on Cyprus—merchants, mariners, ship owners, monarchs—had become deeply involved in maritime activities within if not beyond the eastern Mediterranean.

Previous work

Gifford's (1978, 1985) palaeogeographical research resulted in a reconstruction of the prehistoric coastlines around Kition and Hala Sultan Tekke, and provided information on actual and potential harbour sites in the Larnaca lowlands (for site locations, see **Figure 1**). My own study on 'Mediterranean maritime landscapes' (Knapp 1997) was intentionally generalised to the wider Mediterranean, but dealt to some extent with Cypriot terrestrial landscapes, extrapolating where possible to their maritime aspects, as follows:

- some Cypriot harbours seem to have been spatially separate from town centres, e.g. Maroni *Tsarroukkas* (from the rest of the Maroni complex), Episkopi/Kourion (from Alassa), and now Tochni *Laksia* (from Kalavassos *Ayios Dhimitrios*) (Sewell in press);
- the distribution of known ProBA coastal centres suggests that undiscovered ports might one day be found near Polis, Soli or Kyrenia;
- analysing place names (e.g. *limani*, *pyla*, *zygi*, *potamos*) or topographic features and geomorphological processes of known harbours could help to predict the likely location of ports or anchorages.

The *Res Maritimae* volume (Swiny *et al.* 1997) contained two further papers directly relevant to the study of Cypriot seafaring and maritime landscapes. Blue's 1997 paper outlined a topographical typology of potential anchorage sites along eastern Mediterranean coastlines. She took her Cypriot examples from the Larnaca region, the Kouris River valley and the Akrotiri peninsula. Prior to the end of the Bronze Age, the area of the Akrotiri Salt Lake may have been a lagoon linked to the sea, or a maritime

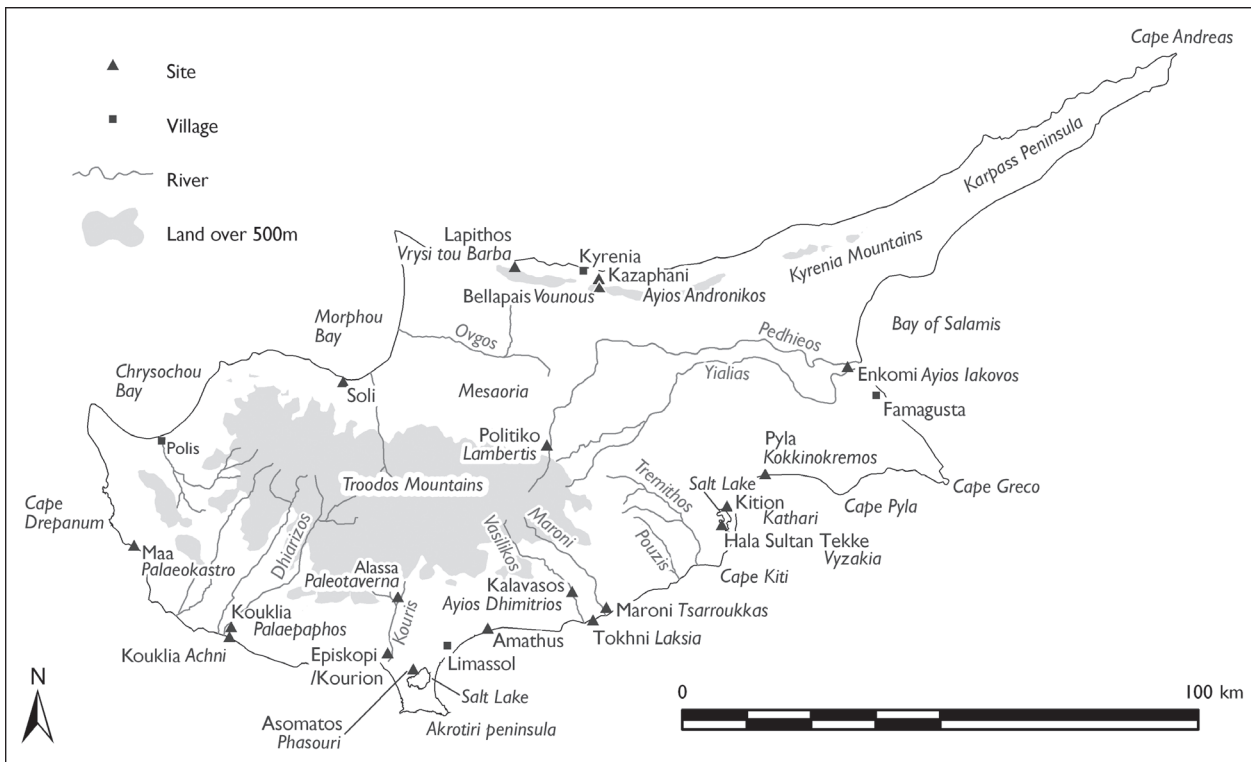


Figure 1. Map of Cyprus showing sites and areas mentioned in the text (prepared by Luke Sollars)

embayment providing a sheltered anchorage behind the offshore island of Akrotiri (Blue 1997: 36–37, fig. 5). Blue also suggested there may have been a well-sheltered anchorage near the LBA cemetery site of Asomatos Phasouri on the north shore of this lagoon (also Catling 1962: 161; Heywood 1982: 166). Her point is that Bronze Age harbour sites today may no longer be situated in the same relationship to the sea as they once were, and that in order to identify them topographical, geomorphological and palaeogeographical investigations are necessary.

The second paper, by Georgiou (1997: 121), provided cautionary weather tales as they might relate to the location of Bronze Age ports. The north and northwest coasts, in particular Chrysochou Bay and Morphou Bay, offer little shelter and would have been dangerous as anchorages in bad weather, especially given the prevailing northwest winds. Even the old Kyrenia harbour was unsafe when strong northerlies or gales arose. On the west coast, between Paphos and Cape Drepanum, the reef is littered with wreck sites; by contrast, the promontory at Maa is an ideal location. Georgiou suggests that the most prominent anchorages or harbours on Cyprus have always been situated in bays and inlets on the south and southeast coasts, between modern day Famagusta, Larnaca and Limassol, where Bronze Age harbours or anchorages likely existed at Enkomi, Kition, Hala Sultan Tekke and Kourion/Episkopi.

Reporting on recent work at a coastal site below Palaepaphos, Kouklia Achni, where 120 stone anchors

were discovered, Howitt-Marshall (2012) concludes that these finds point to a significant level of maritime activity, perhaps even a ‘proto-harbour’ during the Bronze Age (cf. Iacovou 2008: 271, who suggests the main harbour may have been at the locality *Loures*—see below) (Fig. 2). Finally, Sawicky’s (2007) unpublished Masters dissertation makes an important contribution to the study of maritime landscapes in the eastern Mediterranean, especially on Cyprus. All these papers provide clues and crucial bits of information, but none (excepting Sawicky’s) attempt to develop a more holistic view of maritime archaeology on prehistoric Cyprus. In what follows, I present both material and documentary evidence indicating that Cyprus increasingly became involved in seafaring activities within and beyond the eastern Mediterranean during the second millennium BC.

The material evidence

Ward (2010: 149) argues that the ‘primary’ evidence through which we learn about ancient seafaring and exchange involves shipwrecks, island occupations, harbours, island non-endemic species, imports and representations of ships and boats. Broodbank (2010: 249) adds more: ancient descriptions; experimental sea journeys; materials and objects exchanged or displaced; network modelling; later comparanda; ethnography. Based on earlier work by Braudel (1972) and Westerdahl (1992), Sawicky (2007: 8–9) suggests



Figure 2. Satellite image of Kouklia Achni, where 120 stone anchors were discovered (from Howitt-Marshall 2012: 110, fig. 7.5). Courtesy of Duncan Howitt-Marshall

that the ‘maritime cultural landscape’ consists of three elements: (1) maritime transport (fishing boats, merchantmen, warships); (2) exploitation of marine resources (fishing gear, fish traps, salt collection); and (3) seafaring facilities (ship sheds, quays, stone anchors). In the case of ProBA Cyprus, there is ample evidence for virtually all of these features.

Ship graffiti and boat models

Within the ‘temple precinct’ (Area II) at ProBA Kition, ship graffiti are incised onto the walls of two structures. In ‘Temple’ 4 (Floor I, C11th BC), two or possibly three ships were engraved on two vertical limestone slabs (Basch & Artzy 1985: 323–324, 329, figs 1–2). The two clear engravings depict ships (identified as ‘round boats’) with a distinctive triangular, inward-curving ‘fan’ at their left extremity (perhaps a bird’s head finial—Wachsmann 1998: 148). Four very similar ships represented on a limestone slab from Tell Akko in Israel—dated to the C12th BC—suggest that the extremity represents the bow (front) of the ship (Artzy 1987: 75–77, figs 1–2). On the southern façade of ‘Temple’ 1 at Kition (Floor IIIA, post-1200 BC), there are 19 engraved ship depictions (Fig. 3), and four further ship-like ‘scratchings’ (Basch & Artzy 1985: 324–326, 330, fig. 3). Some show the fan-like extremity seen on the representations in Temple 4.

Basch and Artzy (1985: 326–327) argue that at least one of these ships represents a ‘long boat’ (like Mycenaean ‘galleys’), and maintain that all the representations show the prow on the left, perhaps indicating they were pointed towards Kition’s harbour (Sawicky 2007: 39).

From Enkomi comes another ship graffito, likely dated to LC III (ProBA 3), which may also depict a long boat (Schaeffer 1952: 102–103, fig. 38, pl. 10; Basch 1987: 147–148, fig. 12). On an ashlar block of similar date from Hala Sultan Tekke *Vyzakia*, a ‘rough’ graffito depicts what Wachsmann (1998: 49–50, fig. 3.14) terms a ‘Syro-Canaanite’ ship (Öbrink 1979: 16–17 [N4007], 73, figs 103–104).

In general, ship iconography is difficult to interpret, as the ‘artists’ were clearly unconcerned with nautical reality (Sawicky 2007: 39; Wedde 2000). It is impossible, therefore, to say what kinds of ships these engravings represent, beyond the likelihood that they depict two different types, one a round boat (or ‘merchantman’) with raised prow and curved stern, the other a long boat with less flaring elements. If correct, this would indicate that two different boatbuilding traditions existed in the eastern Mediterranean by the end of the LBA (Artzy 1985: 139). More importantly for the present study, they demonstrate that some people on ProBA Cyprus—whether they owned, built or sailed these ships—were familiar with seafaring and the most common ships of the day.

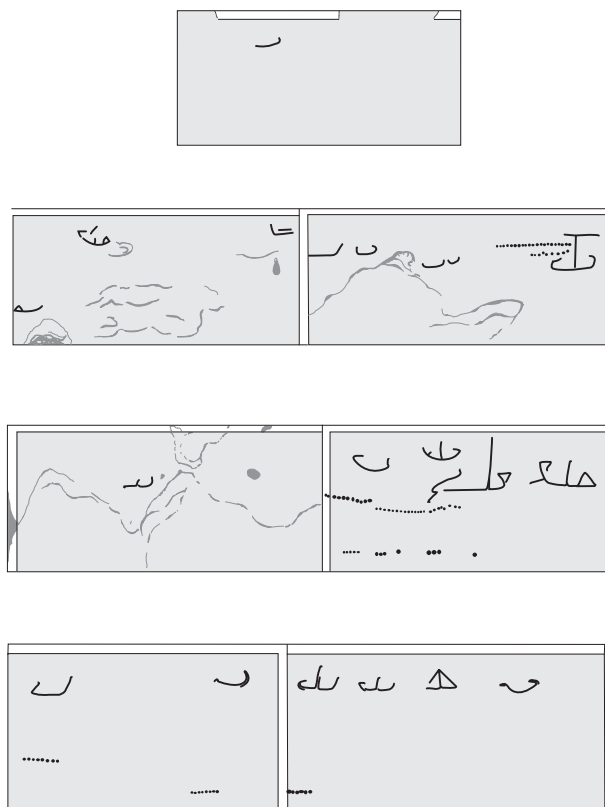


Figure 3. Schematic rendering of ship graffiti on south wall of 'Temple 1' at Kition (from Webb 1999: 302, fig. 94). Courtesy of Jennifer Webb

Turning to clay models of boats, Basch (1987: 71–72, fig. 137) suggests that an enigmatic vase from PreBA Bellapais *Vounous* may be the earliest representation of a Cypriot ship (also Frankel 1974: 47). Wachsmann (1998: 62–67, figs 4.1–4.9) discusses six other models of ProBA date that he regards as 'indigenous' Cypriot vessels:

- 1) Largely reconstructed Early or Middle Cypriot (PreBA) Red Polished III ware model of unknown provenance that may represent a boat (Westerberg 1983: 11, no. 4, fig. 4).
- 2) Middle Cypriot (PreBA 2) White Painted II ware model of unknown provenance, depicting eight people and two birds sitting atop the cap rail (Basch 1987: 71, figs 132–135).
- 3) MC III (ProBA 1) White Painted IV ware model of unknown provenance, depicting a single human figure perched on the hull (Westerberg 1983: 10, no. 3, fig. 3).
- 4) LC I–II (ProBA 1–2) White Painted IV ware model from Kazaphani *Ayios Andronikos*, with a deep hull, a circular socket for the mast amidships and what appears to be a massive stern construction (Basch 1987: 71–72, figs 138–141).
- 5) LC I–II (ProBA 1–2) model from Maroni *Tsarroukkas* (A50) of Plain White Handmade ware, with the hull missing, and two horizontal ledges on either side

amidships (Göttlicher 1978: 34, pl. 9, no. 147; Basch 1987: 71, 73–74, figs 143, 145) (Fig. 4 right).

- 6) LC I–II (ProBA 1–2) Plain White Handmade ware model from Maroni *Tsarroukkas* (A49), with a narrow flattened bottom and a raised mast socket amidships (Göttlicher 1978: 34, pl. 9, no. 146; Basch 1987: 71, 73, fig. 144) (Fig. 4 left).

To these now must be added the following:

- 7) LC IIC/IIIA (ProBA 3) fragment of a painted, terracotta boat model from Maa *Palaeokastro*, showing a high prow with painted horizontal lines and rows of festoons (Karageorghis & Demas 1988: 120, 228, no. 691, pls LXVI, CLXXXVI).

Wachsmann (1998: 64, 66, 328) suggests that models 1–6 represent 'beamy wood-planked craft constructed with a keel', and the three Late Cypriot models (nos 4–6) '...an indigenous class of spacious Late Cypriot seagoing merchant ships'. Elsewhere he mentions the internal construction of Bronze Age Cypriot ships (e.g. the use of a lateral cable system for stabilising a ship's mast), making it clear that he considers LBA Cypriots to have been shipbuilders and seamen (Wachsmann 1998: 250, 254). He concludes: 'Ships and traders of Cyprus may have played a crucial role as middlemen between Egypt, the Syro-Canaanite coast, and the Aegean world during the Late Bronze Age' (Wachsmann 1998: 328).

Other clay models are more contentious, either because of their dates, or because they may not actually be ship models:

- 8) LC I–II (?) model from unknown context at Enkomi *Ayios Iakovos* with symmetrical prow and stern (Basch 1987: 73–74, fig. 146). Wachsmann (1998: 50–51, fig. 3.15) regards this as a 'Syro-Canaanite' ship.
- 9) MC II–III (PreBA2–ProBA 1) fragmentary White Painted IV ware deep bowl from Politiko *Lambertis*, with five people sitting on the edge but incongruously facing outward (Frankel 1974: 46–47, pl. VIII; Westerberg 1983: 10, no. 2, fig. 2).
- 10) Late Cypriot or, more likely, Protogeometric model from the sea near Amathus, with rounded hull, pointed ends and a mast socket amidships (Westerberg 1983: 14–15, no. 8, fig. 8).
- 11) Late Cypriot or, more likely, Cypro-Achaic model of rough red clay, also from the sea near Amathus (Westerberg 1983: 16, no. 11, fig. 11; Basch 1987: 254, 257, no. 554).

It is worth adding that over 50 quite diverse ship models are known from early Iron Age Cyprus (Demesticha 2012: 81, cat. nos 78–79), which suggests a continuing if not growing involvement in maritime matters.

Other representations

- LC II (ProBA 2) Late Helladic IIIB ware krater from Enkomi, showing two round boats with warriors standing on deck and smaller figures below deck



Figure 4. Plain White Handmade ware boat models from Maroni Tsarroukkas. © The Trustees of the British Museum, Reg. no. 1898,1201.121 (AN362832)

(Sjöqvist 1940: fig. 20.3; Basch 1987: 147–148, fig. 312) (Fig. 5).

- Proto-White Painted ware (PWP) (LC III?) amphora from Vathyrkakas (on north coast) with schematic boat on shoulder showing two figures rowing (or fishing?), with large fish below (Westerberg 1983: 16–17, no. 12, fig. 12).
- Three PWP (LC III?) rhyta from Lapithos, possibly in the form of long ships (Basch & Artzy 1985: 326, 334, figs 11–12) or ‘Mycenaean galleys’ (Wachsmann 1998: 151, fig. 7.48).
- LC III (?) serpentine cylinder seal depicting a crescent-shaped ship with mast, possibly a crow’s nest and two people (Kenna 1967: 573, fig. 31).

Stone anchors

Honor Frost first drew attention to the significance of stone anchors in the Mediterranean and on Cyprus, emphasising that diagnostic examples found on

the seafloor are best dated with respect to the find-spots of similar types recovered in stratified land excavations (Frost 1963, 1970, 1985: 282). Trying to attribute a specific type of anchor to a single region or ‘nationality’, however, remains problematic (Harpster 2013; Howitt-Marshall 2012: 109, discussed further below). Frost (1985: 283–284, fig. 1) classified pierced anchors into three types: (1) sand anchors (with multiple holes for wooden pieces to take hold in sandy bottoms); (2) weight anchors (with a single hole for the hawser, for use in rocky sea beds or low-lying reefs); and (3) composite anchors (with three holes, for the hawser and wooden arms, for use in sandy or rocky bottoms). Most ancient vessels probably carried more than one type, to facilitate anchoring on different kinds of seabeds.

McCaslin (1980: 21–31) compiled an updated corpus, with a refined typology, of anchors found on Cypriot sites, and Frost, in two other articles (1985, 1991), provided engaging arguments on the role and significance of stone anchors in Cypriot and Levantine

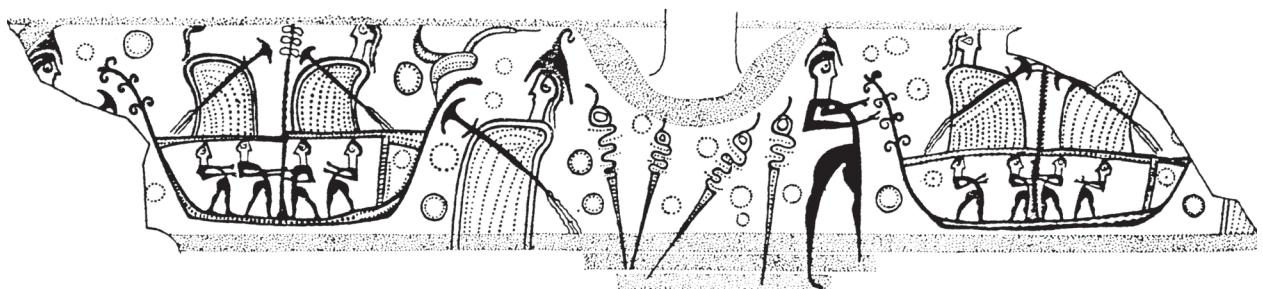


Figure 5. Late Helladic III B krater from Enkomi, showing two round boats, with warriors above deck and smaller figures below deck (after Sjöqvist 1940: fig. 20.3)

maritime trade. Green (1973) characterised the numerous finds around Cape Andreas at the northeast tip of the island as an 'anchor graveyard'. Wachsmann (1998: 328) remarked that the large number of anchors found on Cypriot land sites underscores the importance of seafaring on ProBA Cyprus.

ProBA harbour sites or anchorages like Hala Sultan Tekke, Vyzakia, Kition, Enkomi, Maroni, Tsarroukkas and Palaepaphos have divulged numerous stone anchors, on land and in the sea. At Kition, nearly 150 anchors were recovered in the 'temple precinct' (Frost 1985, 1991: 359–360). These range in shape from triangular to trapezoidal to rectangular, and are not unlike anchors recovered from Ugarit in Syria (Frost 1985: 282, 293). One particular type—a composite anchor with a rounded, triangular shape—may be native to the Kition region (Frost 1985: 293). Lithological thin section analyses indicated that only three of the Kition anchors were made from stone foreign to the site (Frost 1985: 287–288, 290–291). The Kition anchors were found upright or laid horizontally as corner stones, paving stones, in foundation courses and on thresholds, and in five wells (Frost 1985: 294–295). One anchor from Temple 2 has a Cypro-Minoan sign almost identical to that engraved on another anchor from Hala Sultan Tekke (Frost 1970: 14, fig. 1.1). Several miniature anchors (used as line-weights for fishing?) were found in other contexts at Kition (Frost 1985: 319–320).

Frost (1970: 14–17) published four additional stone anchors from Hala Sultan Tekke. Like the one already mentioned, they were recovered at the east edge of the settlement, near the Larnaca Salt Lake; two others derive from a tomb. The anchor with a Cypro-Minoan sign led to speculation that all inscribed anchors might be of Cypriot origin (Frost 1970: 14–15, fig. 1.1, 1.3; Nikolaou & Catling 1968: 229). Other anchors have been excavated more recently in both habitation levels and tombs at the site (Hult 1977; Öbrink 1979: 19–20; McCaslin 1980: 21–22). The recently renewed excavations at Hala Sultan Tekke have uncovered three new 'weight' anchors, two of which were incorporated into one wall, and a third that lay at the base of another wall (Blattner 2013: 75, fig. 19). All were made of limestone, and are arguably of local manufacture; two seem to have been broken before use so may have been incomplete or inferior products, all of which suggests *local* manufacture. Twenty-six other anchors were recovered from nearby Cape Kiti (McCaslin 1978), and another five recorded from the sea around Capes Pyla and Greco (McCaslin 1980: 26).

Along the southern coast of Cyprus, directly off the excavated areas at ProBA Maroni, Tsarroukkas and extending some 300m into the sea, 35 stone anchors were recorded during underwater survey. The same contexts preserved some 75 examples of ProBA 1 (mostly LC IA) pottery, plus four Canaanite jars (Manning *et al.* 2002: 111–118, 123–143). These anchors consisted of 22 single-hole (weight), ten three-hole

(composite) and three broken anchors (Manning *et al.* 2002: 117, fig. 11). From settlement and mortuary contexts at Tsarroukkas came a further ten (single-hole) anchors (Manning *et al.* 2002: 114 and table 1, 116, fig. 10). This underwater area ('Site 1') may well have been a ProBA anchorage (hypothetical reconstruction in Manning *et al.* 2002: 113, fig. 6, 121–123). In the island's southwest, as already noted, underwater survey at the 'anchorage' of Kouklia Achni (some 2.5km south of ProBA Palaepaphos) recorded 120 stone anchors—96 of weight type and 24 of composite type (Howitt-Marshall 2012: 111) (Fig. 2).

Fish hooks, line weights

Many of the smaller, single-hole anchors may be line weights, spaced at intervals along the hawser line with a large composite anchor at the end. Alternatively, they may have served for 'set-long-line' fishing, which uses a string of baited hooks held on the bottom by the rough stone weights (Frost 1985: 319). Two miniature one-holed anchors ('for anchoring fishing tackle') were found in a well at Enkomi, one with a distinctive Cypro-Minoan sign (Dikaio 1969–1971: 205, 891, no. 4039/1); Frost (1991: 360, 366) notes six more miniature anchors from the site.

At Kition, as already mentioned, six fishing line weights were found in the 'precincts of Temple 1', three in workshops attached to this structure and others in disturbed contexts in the same area (Frost 1985: figs 11.10–12, 12.9, 11). Because fishing weights, fish hooks and a conch shell were found on Floors I–III of Area I at Kition (Karageorghis & Demas 1985: pls XXI, XXV, XXXII), Frost (1991: 366) suggested these structures might have been 'fishermen's houses'. Unfinished weights and anchors were recorded in the workshops at Kition (Sawicky 2007: 40). At Hala Sultan Tekke, stone and lead net-weights attest to the presence of fishermen, as do bones from tunny, bass, shark/ray, parrot fish, black sea bream and gilthead. In addition, a bronze trident may have served as a spear for fishing (Åström 1986: 14–16, figs 17, 24).

Harbours

There are no material remains of built harbours on Bronze Age Cyprus. Indeed, no artificial moles or breakwaters are known anywhere in the Levant during the Early or Middle Bronze Ages (Raban 1995: 145). Even during the LBA, evidence for ports is entirely 'indirect'. Nonetheless, because imported goods are prominent in the coastal towns of ProBA Cyprus, and Cypriot exports are not uncommon in their Levantine and Aegean counterparts, common sense if not economic imperative dictates that towns like Enkomi, Hala Sultan Tekke, Maroni and Kition had harbour facilities, whether 'altered estuaries' or coastal lagoons.

Following survey work in the hinterland of

Larnaca, west of Hala Sultan Tekke, Leonard (2000: 135–137) suggested that ancient ports may have existed both at the mouth of the Tremithos River (near Perivolia, just west of Cape Kiti), and at the mouth of the Pouzis River (below Kivisili village). Similarly, survey and geophysical work by the Palaepaphos Urban Landscape Project has led to the suggestion that *Loures*—directly east of the natural terrace where the Palaepaphos sanctuary is situated—may have been the inlet of the site's original harbour (Iacovou 2008: 271; 2012: 62, fig. 7.4, 64).

At Hala Sultan Tekke, rich in imports from the Aegean, the Levant and Egypt, the harbour facilities would have been situated in the shelter of a coastal lagoon, with a navigable outlet to the sea (Gifford 1985). As noted above, based on the imported pottery and stone anchors recovered during underwater survey just off the coast at Maroni *Tsarroukkas*, Manning *et al.* (2002: 113, fig. 6, 121–123) argue that 'Site 1' served as a ProBA anchorage. At nearby Tochni *Laksia*, although work has only just begun, the finds already salvaged (Canaanite jars, Mycenaean sherds, three stone weights), as well as its location on the coast some 600m east of the mouth of the Kalavassos River, leads Sewell (in press) to suggest that this may have been the port associated with the site of Kalavassos *Ayios Dhimitrios*, some 4km inland.

Enkomi, also located 4km inland but on the common estuary of the Yialias and Pedhaios Rivers, must have had an estuarine port accessible to water craft via a navigable channel from the Bay of Salamis (Sawicky 2007: 19–20; Howitt-Marshall 2012: 114). This port received and handled imported goods and specialised products such as precious metals, ivory, faience, jewellery, cylinder seals and Egyptian and Levantine pottery (Courtois *et al.* 1986; Keswani 1989; Crewe 2007: 16–25). Enkomi lay only a day's sail from markets in north Syria and Cilicia and, to judge from the rich material record (Knapp 2013: 427–432), its harbour must have been a key link in Cyprus' overseas trade.

Compared to Enkomi, Kition's nautical material referents are much more prominent, from stone anchors found throughout the 'temple precinct', to net weights, fishhooks and shells recovered in several domestic structures (Sawicky 2007: 43). Kition lay on a long exposed stretch of coast, with no obvious evidence for a natural bay or offshore ridge that might have protected it (Gifford 1978). Morhange *et al.* (2000), however, suggest that an open bay, bounded by a north–south oriented spit, separated the inner harbour of (Iron Age) Kition *Bamboula* (now 400m inland) from the sea. In their reconstruction, moreover, Kition *Kathari* (the ProBA site) lies directly on a (reconstructed) marine embayment that may also have had access, via an inlet, to the sea (also Collombier 1988: 43–44). Even if Kition lacked a well-protected harbour during the ProBA, its role as a major maritime centre has never been in doubt (Karageorghis 1973; Crewe 2007).

Shipwrecks

Based on detailed studies of the stone anchors from Kition and Ugarit, Frost (1985, 1991: 370–371) concluded that some of the largest LBA ships plying the sea-lanes of the eastern Mediterranean must have been of Cypriot and Levantine origin. Depending on their state of preservation, shipwrecks provide crucial information on traded goods (the cargoes), sailing routes and, occasionally, the ports of origin or destination. Our understanding of the nature and forms of Bronze Age maritime transport, however, remains limited, despite the wealth of new information gleaned from studies of the Uluburun shipwreck and its cargo (e.g. Pulak 2008, 2009; Monroe 2010).

Currently there are eight known shipwrecks or, better, wreck deposits of Middle–Late Bronze Age date—in Turkey, Cape Gelidonya (Bass 1967), Sheytan Deresi (Bass 1976) and Uluburun (Pulak 2008); in Greece, Cape Iria (Lolos 1999), Modi (Agouridis 2011, 2012), Laconia (Spondylis 2012) and Pseira island (Hadjidaki & Betancourt 2005–2006); in Israel, Hirshuley Carmel (Galili *et al.* 2013). Attempts to determine the origin or 'nationality' of ships such as these, some of which must have been involved in long-distance trade, is problematic on several grounds. Harpster (2013) maintains that interpretations of the Uluburun wreck—and by extension those of the Cape Gelidonya and Cape Iria wrecks—are no more than modern constructs designed by maritime archaeologists to 'identify' the ships (as 'Canaanite', 'Mycenaean') and to predict their likely destination.

When Bass (1967) identified the Cape Gelidonya shipwreck as being of 'Phoenician' (i.e. Canaanite) origin, he went against the grain of prevailing thought, which held that Minoans or Mycenaean ruled the waves. Recent revisits to the Gelidonya wreck, however, have produced finds of Cypriot pottery (notably a handle with a Cypro-Minoan mark), whilst analytical work on the ship's anchor, oil lamp, stirrup jars and two pithos bases have indicated that the stone of the anchor and the clay of the pottery are Cypriot in origin. Thus Bass (2013: 70) and Hirschfeld *et al.* (2010: 25), like Ward (2010: 155, 157), conclude that the Gelidonya wreck was a Cypriot vessel. They also suggest that the Cape Iria wreck was of Cypriot origin (Hirschfeld *et al.* 2010: 25). Indeed, the excavators of that wreck have always suggested that its cargo as well as its location '... point to the coast of Cyprus, as the probable base of the ship' (Lolos 1999: 49). Despite all the hypotheses offered by the excavators on the origins and destination of the Cape Iria wreck (e.g. Phelps *et al.* 1999), Ward (2010: 157) rightly observes: '... there is little support for such assumptions from material culture remaining at the site'.

When it comes to the Uluburun shipwreck, opinion is quite divided. On its final journey, this ship must have stopped both in the Levant (the Canaanite jars were produced somewhere near the Bay of Haifa; the

house-mouse found on board came from somewhere farther north) and on Cyprus (ten tonnes of copper ingots; Cypriot fine wares stacked in the pithoi). The excavator and others argue for a Levantine or even an Egyptian origin and an Aegean destination (e.g. Pulak 2008; Bachhuber 2006; Goren 2013). Different scholars, however, maintain that the Uluburun ship is as likely to be of Cypriot as of Levantine origin (Broodbank 2013: 402; Hulin, in White 2002: 173–174; Muhly 2011: 44; cf. Monroe 2011: 92).

Others are more equivocal. Hirschfeld (2011), for example, concludes that the ‘odd assortment’ of Cypriot pottery from the shipwreck could have been collected at any number of trading ports in the Levant or Cyprus; she thus echoes the view of the excavator (Pulak 2008: 299). Ward (2010: 155–156), by contrast, observes that nine or ten cultures are represented by the finds: a heavy Cypriot cargo (ingots, pottery), 24 anchors typical of Levantine sites, a variety of raw materials and ‘high status’ finished products (gold, silver, ivory, cobalt, tin, amber, ostrich eggs) with multiple origins, and much more. She concludes that the Uluburun ship exemplifies ‘directional trade’ by some of the most ‘conspicuous consumers’ of the LBA, but that ‘... definitive proof of who operated the ship, how the ship’s cargo was financed, or where it was going is tenuous at best’. In the same vein, Wachsmann (1998: 330) stresses that any ship’s ethnic identity ‘... remains the single most difficult question to solve in shipwreck archaeology’.

In my view, it makes neither logistical nor economic sense to transport over ten tonnes of Cypriot copper as well as newly-made Cypriot fine wares and pithoi to some collection point in the Levant or Egypt for the Uluburun ship to upload as cargo (Pulak 2008: 299–300). Moreover, it is normal practice first to load the heaviest part of the cargo (i.e. the oxhide ingots) at the bottom of the hold. But the point to be made here is that for prehistoric shipping, we simply do not know all possible permutations of ownership, sponsorship or ‘nationality’. From such documentary evidence as we have (see below), one could imagine that a ship built on Cyprus was captained by a Minoan or a Canaanite, whilst the goods on board were ‘owned’ by an Ugaritic merchant who was having them transported to Egypt under royal sanction. Even more imaginative is Goren’s (2013: 60) scenario: the ship was a Canaanite vessel loaded in Egypt with ‘palatial’ goods and precious raw materials and sent to the Aegean in order to form an Egypto-Aegean alliance. Nonetheless, along with several others, I would suggest that the Uluburun wreck could have originated on Cyprus, or at least made its last stop there before heading toward the Lycian coast.

Other maritime matters

In considering the case for Cypriot seafarers and seafaring, other factors must be taken into account.

For example, although the most common and best known maritime transport containers of the LBA were ‘Canaanite jars’ (several were produced in and around the Bay of Haifa) and ‘transport stirrup jars’ (most produced in western or south central Crete) (Knapp & Demesticha forthcoming), at some point potters on Cyprus also developed a vessel suitable for transporting liquids overseas: the medium-size Group II (and perhaps IB1) pithos (most recently, Keswani 2009). This is important because it indicates that Cyprus, along with Minoan Crete and the Levant, was involved on some level in the movement of bulk commodities (and not just copper ingots) by sea.

Group II pithoi have been found on board the Iria and Uluburun shipwrecks, at Kommos on Crete, at Ugarit and its port Minet el-Beidha in Syria, in Lebanon at Tell Kazel, Tyre and probably at Sarepta, and at several southern Levantine sites (Pilides 2000: 48–51). Of 15 Cypriot pithoi recorded at Marsa Matruh in western Egypt, all but one belonged to Group I (largely IB1); the single exception belonged to Group II (Hulin, in White 2002: 29–38). Using both chemical and petrographic analyses, Jones and Day (1987: 262) determined that a pithos rim fragment found at Kommos on Crete and a body sherd from Antigori on Sardinia originated in the Maroni-Kalavassos area of south-central Cyprus.

The largest single source of the pottery recovered at Marsa Matruh was Cyprus, a point that Broodbank (2013: 404) sees as ‘... a startling premonition of the rise of Cypriot maritime enterprise during the coming centuries’. Cypriot pottery outnumbers Aegean types both at Marsa Matruh and on the Uluburun wreck. Another striking point is that to the east of Cyprus counts of Aegean pottery drop off sharply, with something like a 3:1 (Cypriot:Aegean) ratio characteristic on Levantine sites (Manning & Hulin 2005: 284). Were all these Aegean pottery vessels transhipped from Cyprus to the Levant? If so, were they transported on Aegean or, as seems equally likely, Cypriot carriers? In Broodbank’s view (2013: 411), they should be seen as ‘... an index of growing Cypriot rather than Aegean activity’. Tartaron (2013: 202) likewise questions the capabilities of ‘Mycenaean merchants’ in interregional trade: ‘A dominant role for ships operated by intermediaries based at Cypriot or Syro-Canaanite entrepôts (represented by the Uluburun and Gelidonya wrecks) in maintaining long-distance networks cannot be discounted’.

Documentary evidence

Several Akkadian, Ugaritic and Hittite cuneiform texts found in Egypt (Amarna), Syria (Ugarit) and Turkey (Boğazköy) speak directly to Cyprus’ involvement in seafaring activities during the ProBA (see also Knapp 2008: 307–335).

Akkadian letters from Amarna (Egypt)

Most scholarly discussions of Cyprus (*Alashiya*) in the Amarna letters are concerned with the quantities of copper sent to Egypt by the king of *Alashiya* (e.g. Muhly 1972: 208–212; Knapp 2008: 309–312). Equally important is the mention of ships, merchants and other maritime matters. Most of the nine Amarna letters from *Alashiya* refer at some point to ‘messengers’ or ‘merchants’, and make it clear that messengers fulfilled roles both mercantile and ambassadorial.

- EA 33: notes the exchange of messengers (i.e. merchants) between Egypt and *Alashiya*.
- EA 35 mentions that payment is due to the king of *Alashiya* for timber sent to Egypt; Wachsmann (1998: 313, n. 133) assumes that Egypt imported ships from Cyprus, but this is nowhere mentioned in the Amarna texts.
- EA 36 is a fragmentary text treating the exchange of various products, including copper. Wachsmann’s (1998: 313) proposed translation of line 13—‘[S]hips in quantity I will build’—is not preserved in the cuneiform text.
- EA 39: the king of *Alashiya* asks pharaoh to let his messengers return to Cyprus because ‘These men are my merchants’; at the same time he asks that Egyptian officials be prevented from approaching ‘my merchants or my ships’.
- EA 40: a letter from the prefect of *Alashiya* to his Egyptian counterpart, telling the latter that (as in EA 39) ‘these men’ (i.e. the merchants) and ‘this ship’ belong to the king of *Alashiya*. In lines 9 and 15, the prefect mentions that he has sent two ship beams.

Akkadian and Ugaritic texts from Ugarit

Cuneiform texts from Ugarit indicate that ships from several states or city-states—Cyprus (*Alashiya*), Crete (*Kabduri*), Egypt and the Levant (Beirut, Byblos, Tyre, Sidon)—docked at its ports, and that seafaring merchants from Cyprus, Egypt, Crete and Cilicia conducted business there, mainly through local merchants (Heltzer 1989: 12–13; Monroe 2009: 171–189).

Akkadian

- RS 20.238 (royal letter): from the king of Ugarit to the king of *Alashiya*. The writer reports that ‘ships of the enemy’ have arrived in Ugarit, creating havoc, and that all of his ships are in the land of Lukka. He asks the king of *Alashiya* to inform him if any other ships of the enemy turn up, which assumes that the king of *Alashiya* had access to such vital maritime information. RS 20.18 (official’s letter) and RSL 1 (royal letter) also deal with ‘enemy ships’. All three letters suggest that ships were readily available to the rulers of Ugarit and *Alashiya*.

- RS 94.2447 (according to Singer 2006: 255, RS 94.2475): a letter from the king of *Alashiya* to the king of Ugarit, informing him that a consignment of 33 copper ingots had been shipped (Yon 2003: 48). Yon also states that the (1994) texts found at Ras Shamra include ‘... lists of merchandise, commercial contracts, bills of lading, and lists of residents, sailors and merchants of diverse origin (Tyre, Akko, Byblos, *Alashiya*, etc.) who lived at Mahadu, the main port of Ugarit’. These texts indicate that some people from Cyprus, resident in Ugarit, were involved in commercial transactions, also evident in census, ration and provision lists found at the site (Knapp 2008: 319).

- RS 34.153 (letter): refers to horses that the king (of Ugarit) is delivering to the messenger (i.e. merchant) of *Alashiya*; one of the new (1994) texts from Ugarit also mentions the dispatch of a royal messenger to *Alashiya* concerning a shipment of horses.

Ugaritic

- Ugaritic royal letter RS 18.113A: written by an official at Ugarit to its king, asking for permission to sell ships to the king of *Alashiya* (Knapp 1983).
- Ugaritic inventory list RS 18.119: an inventory of the cargo on a ship from *Alashiya*, which seems to be docked in an Ugaritic port (Atlg).
- Ugaritic inventory list RS 18.42: notes shipments of oil in various quantities to people in *Alashiya*, Egypt and elsewhere. Yon (2003: 47) believes it details the cargo of a ship that sailed from Ugarit with a large quantity of oil.

Hittite document from Boğazköy

- KBo XII 38: the Hittite king Suppiluliuma states that he set out to sea and that ‘...the ships of *Alashiya* met me in battle three times’. He claims to have set them on fire and destroyed them. This action, however, was followed by a battle on land, in which the Hittite king may have been defeated (Singer 2000: 27).

These documents provide tantalising information that complements the much richer corpus of archaeological and representational evidence bearing upon the role and presence of ships, seafaring and seafarers on Bronze Age Cyprus.

Discussion: seafaring and seafarers on LBA Cyprus

Fishermen at sea would never have ignored the island of Cyprus, however visible it may have been from nearby continental shores (Held 1993: 26). As Demesticha (2012: 80) put it: ‘A ship that sails in the eastern Mediterranean would find it very difficult to bypass Cyprus; ... it was always known to local mariners as a landmark or as a necessary stopover’.

The prevailing winds in this region are from the west or northwest, wind changes are regular, and the coastal currents run in a south–north direction: all this means that experienced fishermen or mariners could rely on returning safely to the coasts of Cyprus or the Levant. Moreover, the Syrian and southern Anatolian coasts lie, respectively, some 70 and 120kms distant. According to Marcus (2007: 146), this distance could be covered in 12–21 hours by a ship travelling in a straight sail of three knots; Demesticha (2012: 80) estimates 30 hours for rafts or canoes propelled by paddles. Sailing in a westerly direction against the wind and currents, a trip from eastern Cyprus to Rhodes may have taken some 11 days, although the trip from Rhodes to Cyprus would only have taken about four days (Tartaron 2013: 209–210, fig. 6.3).

Based on the numbers and types of goods exchanged, as well as indicators in representational art, it is clear that seagoing ships under sail were operating between the Levant, the Aegean and the Cyclades, and Cyprus by the mid-3rd millennium BC (Marcus 2002: 407–409; Şahoğlu 2005; Webb *et al.* 2006), and throughout the Aegean by the end of that millennium (Broodbank 2010: 255–256, fig. 20.2). By the LBA, seaborne trade in the eastern Mediterranean made the region an economic epicentre, one in which there was no room for Minoan, Mycenaean, Canaanite or Egyptian trading empires or ‘thalassocracies’ (Knapp 1993). Indeed, the world of Mediterranean seafaring and seafarers became much more complex, involving ‘... a multiplicity of interactions by a panoply of peoples’ (Wachsmann 1998: 332). Long distance maritime ventures were carried out by people from several lands, not least the island of Cyprus, whose merchants or mariners had acquired the knowledge and skills necessary for building and using seagoing ships (Wachsmann 1998: 327). Cyprus and its port towns thus became not just stopovers for sailing ships, but also key emporia on diverse maritime routes.

The appearance of two types of bulk commodities—Canaanite jars for organic goods, oxhide ingots for metals—demonstrates that the Levant and Cyprus, respectively, specialised in the production of bulk goods transported by sea (Sherratt & Sherratt 1991: 354). And, as the documentary evidence demonstrates, the king of *Alashiya* controlled both the internal production of copper and its export to Egypt and the Levant; ambassadorial merchants in his service typically managed these external transactions. The rich material remains, both local and foreign-made, found in Cyprus’ coastal towns point to the island’s success in capitalising on the long distance shipping and commercial interaction sphere that operated within, if not beyond, the eastern Mediterranean. Moreover, given its timber resources, a network of ports around the island would have been able to shelter, supply and build or repair ships, which gave the island ‘... an intrinsic maritime value throughout history’ (Demesticha 2012: 82).

The few large-size merchant ships known from the Late Bronze and early Iron Ages carried sizeable cargoes between the main ports of the eastern Mediterranean, including Enkomi, Kition, Hala Sultan Tekke and Palaepaphos on Cyprus, Tel Abu Hawam in the Levant, and Kommos on Crete (Knapp & Demesticha forthcoming). From these ports, some of the cargo may have been transhipped onto smaller vessels that carried materials in demand to secondary ports, havens or anchorages (on Cyprus, for example, to Pyla *Kokkinokremmos*, Maa *Palaeokastro*, Maroni *Tsarroukkas*, Tochni *Laksia*) within easy coastal sailing distance of the main harbours. In turn, the practice of cabotage (coastal shipping) would have brought all manner of goods and supplies from the secondary ports to the main harbours, where they were offloaded and transhipped to larger carriers, as part of a well-organised network of maritime exchange (Knapp & Demesticha forthcoming).

Conclusion

Linder (1981: 37 and n. 28) pointed out long ago that the regular transport of copper by sea was most likely conducted by ‘an Alashiyan (i.e. Cypriot) fleet’ and that ‘... the references in the El Amarna correspondence and the Ugaritic texts point to the existence of a sizeable fleet operating out of the island’s harbours’. Amarna letters EA 39–40 both demonstrate that the king of *Alashiya* owned what seem to be merchant ships (‘round boats’), whilst Ugaritic royal letter RS 18.113A indicates that the king of Ugarit intends to sell ships to the king of *Alashiya*. In the Hittite text KBo XII 38 from Boğazköy, the Hittite king reports that the ships of *Alashiya* met him in battle at sea, which indicates that the king of *Alashiya* also had warships (i.e. ‘long boats’) in his fleet, yet another strong signal of a centralised polity on Cyprus toward the end of the LBA.

The evidence provided in this study indicates that the ships, merchants and mariners of LBA Cyprus conducted a considerable amount of seaborne trade, and may also have played some role as middlemen in commercial activities amongst the merchants and ship owners of the Aegean, the Levant and Egypt (Wachsmann 1998: 328). The several instances of ship graffiti, up to ten ship models (at least three of which may represent merchant ships of Cypriot origin), depictions on pottery and a cylinder seal, and the stone anchors, fish hooks and line weights provide substantial material witness to the importance of seafaring and fishing to those who lived and worked on Middle–Late Bronze Age Cyprus. Likewise, the analysis of its harbour towns—gateways to other Mediterranean ports—as well as the ‘direct’ evidence provided by Cypriot materials found on five of the eight known Middle–Late Bronze Age wreck deposits, demonstrate that at least some people from Cyprus

served as mariners or merchants who operated on an international scale, whilst others were involved in the production and distribution of goods for export, as well as in fishing and seafaring more generally.

Farr (2006: 89) rightly maintains that 'the social side of seafaring and the relationship people may have had with the sea are often overlooked'. On Cyprus, one exception to this observation is Webb (1999: 302), who associates the maritime paraphernalia seen in Kition's 'temples', stone anchors and numerous sea shells, and the marine motifs (murex shells, octopus, fish) represented on its pottery, with an ideological ('conceptual') relationship between 'cult' and maritime trade. Another is Sawicky (2007: 8), whose thesis overall regards the maritime landscape as an '... essentially interfacing social entity ... and extraordinarily dynamic zone of human activity'.

Whereas one impetus for regional or international trade was the procurement of foreign goods and raw materials, another was to create or maintain the social relationships upon which such exchanges relied. This is the *social* domain of the maritime cultural landscape, the one hardest to get at. The study of seafaring as a social process also facilitates consideration of other key factors in maritime landscapes or seascapes: e.g. mobility, connectivity, the length and purpose as well as the risk of the journey, the knowledge and experience of navigation (currents, tides, wind directions, lunar cycles), the impact of distance and access to the exotic upon people's identity and ideology, and much more.

Seafaring is a mode of travel, a way to cross space that enables not only the transport of goods and materials but also of people and ideas, of communicating and sharing knowledge across the sea and between different lands. Further research on the social dimension of voyaging could also be illuminating, especially in cases where maritime activity would not have been a casual, routine pastime without social connotations—on Cyprus for instance, during the Late Epipalaeolithic or Early Aceramic Neolithic when the island was first visited, and then settled. Or, at the historical end of the spectrum, during the Roman period, when Cyprus became involved in an imperial maritime system that covered the entire Mediterranean.

Now that the material groundwork has been laid, something on which the honorand of this volume has always insisted, the way is open to address such challenging issues.

Bibliography

- Agouridis, C. 2011: The Late Bronze Age shipwreck off the islet of Modi (Poros), *Skyllis* 11.2, 25–34
- Agouridis, C. 2012: Ενάλια αρχαιολογική έρευνα στον Αργοσαρωνικό, *Ενάλια* 11, 70–85
- Artzy, M. 1985: Merchandise and merchantmen: on ships and shipping in the Late Bronze Age Levant, in Th. Papadopoulos & S. Hadjistellis (eds), *Πρακτικά του Δεύτερου Διεθνούς Κυπριολογικού Συνεδρίου* (Λευκωσία 20–25 Απριλίου 1982), 135–140, Nicosia
- Artzy, M. 1987: On boats and sea peoples, *Bulletin of the American Schools of Oriental Research* 266, 75–84
- Åström, P. 1986: Hala Sultan Tekke—an international harbour town of the Late Cypriote Bronze Age, *Opuscula Atheniensia* 16, 7–17
- Bachhuber, C. 2006: Aegean interest on the Uluburun ship, *American Journal of Archaeology* 110, 345–363
- Basch, L. 1987: *Le Musée Imaginaire de la Marine Antique*, Athens
- Basch, L. & M. Artzy 1985: Ship graffiti at Kition, Appendix II, in V. Karageorghis & M. Demas, *Excavations at Kition Volume V.1*, 322–336, Nicosia
- Bass, G.F. 1967: *Cape Gelidonya: A Bronze Age Shipwreck* (*Transactions of the American Philosophical Society* 57.8), Philadelphia
- Bass, G.F. 1976: Sheytan Deresi: preliminary report, *International Journal of Nautical Archaeology and Underwater Investigation* 5, 293–303
- Bass, G.F. 2013: Cape Gelidonya redux, in J. Aruz, S.B. Graf & Y. Rakic (eds), *Cultures in Contact: From Mesopotamia to the Mediterranean in the Second Millennium BC*, 62–71, New York
- Blattner, D.M. 2013: Appendix 5: three Late Bronze Age stone anchors from 2012, in P.M. Fischer & T. Burge, *The new Swedish Cyprus Expedition 2012: excavations at Hala Sultan Tekke*, *Opuscula* 6, 74–76
- Blue, L.K. 1997: Cyprus and Cilicia: the typology and palaeogeography of second millennium harbours, in S. Swiny, R. Hohlfelder & H.W. Swiny (eds), *Res Maritimae: Cyprus and the Eastern Mediterranean from Prehistory Through the Roman Period* (Cyprus American Archaeological Research Institute Monograph 1), 31–44, Atlanta
- Braudel, F. 1972: *The Mediterranean and the Mediterranean World in the Age of Philip II*. Volume 1, New York
- Broodbank, C. 2010: 'Ships a-sail from over the rim of the sea': voyaging, sailing and the making of Mediterranean societies c. 3500–800 BC, in A. Anderson, J. Barrett & K. Boyle (eds), *The Global Origins and Development of Seafaring*, 249–264, Cambridge
- Broodbank, C. 2013: *The Making of the Middle Sea: A History of the Mediterranean from the Beginning to the Formation of the Classical World*, London
- Catling, H.W. 1962: Patterns of settlement in Bronze Age Cyprus, *Opuscula Atheniensia* 4, 129–169

- Collombier, A.M. 1988: Harbour or harbours of Kition on southeastern coastal Cyprus, in A. Raban (ed), *Archaeology of Coastal Changes (British Archaeological Reports International Series 404)*, 35–46, Oxford
- Courtois, J.-C., J. Lagarce & E. Lagarce 1986: *Enkomi et le Bronze Récent à Chypre*, Nicosia
- Crewe, L. 2007: *Early Enkomi. Regionalism, Trade and Society at the Beginning of the Late Bronze Age on Cyprus (British Archaeological Reports International Series 1706)*, Oxford
- Demesticha, S. 2012: Harbours, navigation and sea trade, in D. Pilides & N. Papadimitriou (eds), *Ancient Cyprus. Cultures in Dialogue*, 80–83, Nicosia
- Dikaïos, P. 1969–1971: *Enkomi. Excavations 1948–1958* (three volumes), Mainz-am-Rhein
- Farr, H. 2006: Seafaring as social action, *Journal of Maritime Archaeology* 1, 85–99
- Frankel, D. 1974: A Middle Cypriote vessel with modelled figures from Politiko, “Lambertis”, *Report of the Department of Antiquities, Cyprus*, 43–50
- Frost, H. 1963: From rope to chain: on the development of the anchor in the Mediterranean, *Mariner's Mirror* 49, 1–20
- Frost, H. 1970: Some Cypriot stone anchors from land sites and from the sea, *Report of Department of Antiquities, Cyprus*, 14–24
- Frost, H. 1985: The Kition anchors, Appendix I, in V. Karageorghis & M. Demas, *Excavations at Kition Volume V.1*, 281–321, Nicosia
- Frost, H. 1991: Anchors sacred and profane. Ugarit-Ras Shamra, 1986: the stone anchors revised and compared, in M. Yon (ed), *Ras Shamra-Ougarit 6: arts et industries de la pierre*, 355–408, Paris
- Galili, E., N. Gale & B. Rosen 2013: A Late Bronze Age shipwreck with a metal cargo from Hishuley Carmel, Israel, *International Journal of Nautical Archaeology* 42, 2–23
- Georgiou, H. 1997: Seafaring, trade routes, and the emergence of the Bronze Age: urban centers in the eastern Mediterranean, in S. Swiny, R. Hohlfelder & H.W. Swiny (eds), *Res Maritimae: Cyprus and the Eastern Mediterranean from Prehistory Through the Roman Period (Cyprus American Archaeological Research Institute Monograph 1)*, 117–124, Atlanta
- Gifford, J.A. 1978: Palaeogeography of Archaeological Sites of the Larnaca Lowlands, Southeastern Cyprus. Unpublished PhD Dissertation, University of Minnesota, Duluth
- Gifford, J.A. 1985: Paleogeography of ancient harbour sites of the Larnaca lowlands, southeastern Cyprus, in A. Raban (ed), *Harbour Archaeology (British Archaeological Reports International Series 257)*, 45–48, Oxford
- Goren, Y. 2013: International exchange during the late second millennium BC: microarchaeological study of finds from the Uluburun ship, in J. Aruz, S.B. Graf & Y. Rakic (eds), *Cultures in Contact: From Mesopotamia to the Mediterranean in the Second Millennium BC*, 54–61, New York
- Göttlicher, A. 1978: *Materialien für ein Korpus der Schiffsmodelle im Altertum*, Mainz-am-Rhein
- Green, J.N. 1973: An underwater archaeological survey of Cape Andreas, Castros, Cyprus, 1969–70: a preliminary report, in D.J. Blackman (ed), *Marine Archaeology. Proceedings of the Twenty-third Symposium of the Colston Research Society held in the University of Bristol, April 4th to 8th, 1971*, 141–180, London
- Hadjidaki, E. & P.P. Betancourt 2005–2006: A Minoan shipwreck off Pseira island, east Crete. Preliminary report, *Eulimene* 6–7, 79–96
- Harpster, M. 2013: Shipwreck identity, methodology, and nautical archaeology, *Journal of Archaeological Method and Theory* 20, 588–622
- Held, S. O. 1993: Insularity as a modifier of cultural change: the case of prehistoric Cyprus, *Bulletin of the American Schools of Oriental Research* 292, 25–33
- Heltzer, M. 1989: The trade of Crete and Cyprus with Syria and Mesopotamia, and their eastern tin-sources in the XVIII–XVII centuries B.C., *Minos* 24, 7–28
- Heywood, H.C. 1982: The archaeological remains of the Akrotiri Peninsula, in H.W. Swiny (ed), *An Archaeological Guide to the Ancient Kourion Area and the Akrotiri Peninsula*, 162–175, Nicosia
- Hirschfeld, N. 2011: The Cypriot ceramic cargo of the Uluburun shipwreck, in W. Gauß, M. Lindblom, R.A.K. Smith & J.C. Wright (eds), *Our Cups Are Full: Pottery and Society in the Aegean Bronze Age: Papers Presented to Jeremy B. Rutter on the Occasion of his 65th Birthday (British Archaeological Reports, International Series 2227)*, 115–120, Oxford
- Hirschfeld, N., G.F. Bass, C. Pulak & H. Özdaş 2010: Cape Gelidonya, *Institute of Nautical Archaeology Annual*, 18–25
- Howitt-Marshall, D. 2012: The anchorage site at Kouklia Achni, southwest Cyprus: problems and perspectives, in A. Georgiou (ed), *Cyprus. An Island Culture. Society and Social Relations from the Bronze Age to the Venetian Period*, 104–121, Oxford
- Hult, G. 1977: Stone anchors in Area 8, in P. Åström, G. Hult & M. Strandberg Olofsson (eds), *Hala Sultan Tekke 3: Excavations 1972 (SIMA 45.3)*, 147–149, Göteborg
- Iacovou, M. 2008: ‘The Palaepaphos Urban Landscape Project’: theoretical background and preliminary report 2006–2007, *Report of the Department of Antiquities, Cyprus*, 263–289
- Iacovou, M. 2012: From regional gateway to Cypriot

- kingdom. Copper deposits and copper routes in the chora of Paphos, in V. Kassianidou & G. Papasavvas (eds), *Eastern Mediterranean Metallurgy and Metalwork in the Second Millennium BC. A Conference in Honour of James D. Muhly, Nicosia, 10th–11th October 2009*, 58–69, Oxford
- Jones, R.E. & P. Day 1987: Aegean-type pottery on Sardinia: identification of imports and local imitations by chemical analysis, in M.S. Balmuth (ed), *Nuragic Sardinia and the Mycenaean World (Studies in Sardinian Archaeology 3, British Archaeological Reports International Series 387)*, 257–269, Oxford
- Karageorghis, V. 1973: Kition: Mycenaean and Phoenician, *Proceedings of the British Academy* 59, 259–281
- Karageorghis, V. (ed) 1986: *Acts of the International Archaeological Symposium: Cyprus Between the Orient and the Occident*, Nicosia
- Karageorghis, V. 2002: *Early Cyprus: Crossroads of the Mediterranean*, Los Angeles
- Karageorghis, V. & M. Demas 1985: *Excavations at Kition Volume V. Plates, The Pre-Phoenician Levels*, Nicosia
- Karageorghis, V. & M. Demas 1988: *Excavations at Maa-Palaeokastro 1979–1986*, Nicosia
- Karageorghis, V. & D. Michaelides (eds) 1995: *Proceedings of the International Symposium: Cyprus and the Sea*, Nicosia
- Kenna, V.E.G. 1967: The seal use of Cyprus in the Bronze Age II, *Bulletin de correspondance hellénique* 91, 552–577
- Keswani, P.S. 1989: Dimensions of social hierarchy in Late Bronze Age Cyprus: an analysis of the mortuary data from Enkomi, *Journal of Mediterranean Archaeology* 2, 49–86
- Keswani, P.S. 2009: Exploring regional variation in Late Cypriot II–III pithoi: perspectives from Alassa and Kalavassos, in I. Hein (ed), *The Formation of Cyprus in the 2nd Millennium BC. Studies in Regionalism during the Middle and Late Bronze Ages (Contributions to the Chronology of the Eastern Mediterranean 20)*, 107–125, Wein
- Knapp, A.B. 1983: An Alashiyan merchant at Ugarit, *Tel Aviv* 10, 38–45
- Knapp, A.B. 1997: Mediterranean maritime landscapes: transport, trade and society on Late Bronze Age Cyprus, in S. Swiny, R. Hohlfelder & H.W. Swiny (eds), *Res Maritimae: Cyprus and the Eastern Mediterranean From Prehistory Through the Roman Period (Cyprus American Archaeological Research Institute Monograph 1)*, 153–162, Atlanta
- Knapp, A.B. 2008: *Prehistoric and Protohistoric Cyprus: Identity, Insularity and Connectivity*, Oxford
- Knapp, A.B. 2013: *The Archaeology of Cyprus: From Earliest Prehistory Through the Bronze Age*, Cambridge
- Knapp, A.B. in press: Prehistoric Cyprus: a ‘crossroads’ of interaction?, in C. von Rueden & A. Lichtenberger (eds), *Multiple Mediterranean Realities*, Munich
- Knapp, A.B. & S. Demesticha forthcoming: Maritime transport containers and Mediterranean connectivity: a long-term perspective (unpublished manuscript in progress)
- Lambrou-Phillipson, C. 1991: Seafaring in the Bronze Age Eastern Mediterranean: the parameters involved in maritime travel, in R. Laffineur & L. Basch (eds), *Thalassa. L’Égée préhistorique et la mer (Aegaeum 7)*, 11–20, Liège
- Leonard, A. Jr. 2000: The Larnaka Hinterland Project: a preliminary report on the 1997 and 1998 seasons, *Report of the Department of Antiquities, Cyprus*, 117–146
- Linder, E. 1981: Ugarit: a Canaanite thalassocracy, in G.D. Young (ed), *Ugarit in Retrospect*, 31–42, Winona Lake, Indiana
- Lolos, Y.G. 1995: Late Cypro-Mycenaean seafaring: new evidence from sites in the Saronic and Argolic gulfs, in V. Karageorghis & D. Michaelides (eds), *Proceedings of the International Symposium: Cyprus and the Sea*, 65–87, Nicosia
- Lolos, Y.G. 1999: The cargo of pottery from the Point Iria wreck: character and implications, in W. Phelps, Y. Lolos & Y. Vichos (eds), *The Point Iria Wreck: Interconnections in the Mediterranean ca. 1200 BC*, 43–58, Athens
- McCaslin, D. 1978: The 1977 underwater report, in G. Hult & D. McCaslin, *Hala Sultan Tekke 4 (SIMA 45.4)*, 97–157, Göteborg
- McCaslin, D. 1980: *Stone Anchors in Antiquity: Coastal Settlements and Maritime Trade-routes in the Eastern Mediterranean ca. 1600–1050 B.C. (SIMA 61)*, Göteborg
- Manning, S.W. & L. Hulin 2005: Maritime commerce and geographies of mobility in the Late Bronze Age of the eastern Mediterranean: problematizations, in E. Blake & A.B. Knapp (eds), *The Archaeology of Mediterranean Prehistory*, 275–307, Oxford
- Manning, S.W., D. Sewell & E. Herscher 2002: Late Cypriot IA maritime trade in action: underwater survey at Maroni Tsarroukkas and the contemporary east Mediterranean trading system, *Annual of the British School at Athens* 97, 97–162
- Marcus, E. 2002: The southern Levant and maritime trade during the Middle Bronze IIA period, in E.D. Oren & S. Ahituv (eds), *Aharon Kempinski Memorial Volume: Studies in Archaeology and Related Disciplines (Beer-Sheva 15)*, 241–263, Beersheva

- Marcus, E. 2007: Amenemhet II and the sea: maritime aspects of the Mit Rahina (Memphis) inscription, *Ägypten und Levante* 17, 137–190
- Monroe, C.M. 2009: *Scales of Fate: Trade, Tradition, and Transformation in the Eastern Mediterranean* (Alter Orient und Altes Testament 357), Münster
- Monroe, C.M. 2010: Sunk costs at Late Bronze Age Uluburun, *Bulletin of the American Schools of Oriental Research* 357, 19–33
- Monroe, C.M. 2011: 'From luxuries to anxieties': a liminal view of the Late Bronze Age world-system, in T.C. Wilkinson, S. Sherratt & J. Bennett (eds), *Interweaving Worlds: Systemic Interactions in Eurasia, 7th to the 1st Millennium BC*, 87–99, Oxford
- Morhange, C., J.-P. Goiran, M. Bourcier, P. Carbonel, J. Le Campion, M.-M. Rouchy & M. Yon 2000: Recent Holocene palaeo-environment evolution and coastline changes of Kition, Larnaca, Cyprus, *Marine Geology* 170, 205–230
- Muhly, J.D. 1972: The land of *Alashiya*: references to *Alashiya* in the texts of the second millennium B.C. and the history of Cyprus in the Late Bronze Age, in V. Karageorghis (ed), *Acts of the First International Cyprological Congress (Nicosia, 14–19 April, 1969)*, 201–219, Nicosia
- Muhly, J.D. 2011: Archaeometry and shipwrecks: a review article, *Expedition* 53.1, 36–44
- Nikolaou, K. & H.W. Catling 1968: Composite anchors in Late Bronze Age Cyprus, *Antiquity* 42, 225–229
- Öbrink, U. 1979: Excavations in Area 22, 1971–1973 and 1975–1978. Hala Sultan Tekke 5 (SIMA 45.5), Göteborg
- Phelps, W., Y. Lolos & Y. Vichos (eds) 1999: *The Point Iria Wreck: Interconnections in the Mediterranean ca. 1200 BC*, Athens
- Pilides, D. 2000: *Pithoi of the Late Bronze Age in Cyprus*, Nicosia
- Pulak, Ç. 2008: The Uluburun shipwreck and Late Bronze Age trade, in J. Aruz, K. Benzel & J.M. Evans (eds), *Beyond Babylon: Art, Trade, and Diplomacy in the Second Millennium BC*, 289–310, New York, New Haven and London
- Pulak, Ç. 2009: The Uluburun tin ingots and the shipment of tin by sea in the Late Bronze Age Mediterranean, *Tübaar* 12, 189–207
- Raban, A. 1995: The heritage of ancient harbour engineering in Cyprus and the Levant, in V. Karageorghis & D. Michaelides (eds), *Proceedings of the International Symposium: Cyprus and the Sea*, 139–190, Nicosia
- Şahoğlu, V. 2005: The Anatolian Trade Network and the Izmir region during the Early Bronze Age, *Oxford Journal of Archaeology* 24, 339–361
- Sawicky, B.A. 2007: Enkomi and Kition: Cypriot Case Studies of the Late Bronze Age Eastern Mediterranean Maritime Landscape. Unpublished Masters Dissertation, University College London, London
- Schaeffer, C.F.A. 1952: *Enkomi-Alasia I. Nouvelles Missions en Chypre 1946–1950*, Paris
- Sewell, D. in press: Tokhni Laksia: initial investigations at a Late Bronze and Archaic coastal site, *Report of the Department of Antiquities, Cyprus*
- Sherratt, A.G. & E.S. Sherratt 1991: From luxuries to commodities: the nature of Mediterranean Bronze Age trading systems, in N.H. Gale (ed), *Bronze Age Trade in the Mediterranean (SIMA 90)*, 351–386, Göteborg
- Singer, I. 2000: New evidence on the end of the Hittite empire, in E.D. Oren (ed), *The Sea Peoples and Their World: A Reassessment (University Museum Monograph 108. University Museum Symposium Series 11)*, 21–33, Philadelphia
- Singer, I. 2006: Ships bound for Lukka: a new interpretation of the companion letters RS 94.2530 and RS 94.2523, *Altorientalische Forschungen* 33, 242–262
- Sjöqvist, E. 1940: *Problems of the Late Cypriote Bronze Age*, Stockholm
- Spondylis, E. 2012: A Minoan shipwreck off Laconia, *Ενάλια* 11, 6–7
- Stewart, J.R. 1962: The Early Cypriote Bronze Age, in P. Dikaios & J.R. Stewart, *The Swedish Cyprus Expedition Volume IV, Part IA. The Stone Age and the Early Bronze Age in Cyprus*, 205–401, Lund
- Swiny, S., R. Hohlfelder & H.W. Swiny (eds) 1997: *Res Maritimae: Cyprus and the Eastern Mediterranean From Prehistory Through the Roman Period (Cyprus American Archaeological Research Institute Monograph 1)*, Atlanta
- Tartaron, T.F. 2013: *Maritime Networks in the Mycenaean World*, Cambridge
- Wachsmann, S. 1998: *Seagoing Ships and Seamanship in the Bronze Age Levant*, College Station, Texas
- Ward, C.A. 2010: Seafaring in the Bronze Age Aegean: evidence and speculation, in D.J. Pullen (ed), *Political Economies of the Aegean Bronze Age*, 149–160, Oxford
- Webb, J.M. 1999: *Ritual Architecture, Iconography and Practice in the Late Cypriot Bronze Age (SIMA Pocket-book 75)*, Jonsered
- Webb, J.M., D. Frankel, Z.A. Stos & N. Gale 2006: Early Bronze Age metals trade in the eastern Mediterranean. New compositional and lead isotope evidence from Cyprus, *Oxford Journal of Archaeology* 25, 261–288
- Wedde, M. 2000: *Towards a Hermeneutics of Aegean Bronze Age Ship Imagery (Peleus: Studien zur*

- Archäologie und Geschichte Griechenlands und Zyperns* 6), Mannheim und Möhnesee
- Westerberg, K. 1983: *Cypriote Ships from the Bronze Age to c. 500 BC* (SIMA Pocket-book 22), Göteborg
- Westerdahl, C. 1992: The maritime cultural landscape, *International Journal of Nautical Archaeology and Underwater Exploration* 21, 5–14
- White, D. 2002: *Marsa Matruh II: The Objects* (Institute for Aegean Prehistory, Prehistory Monograph 2), Philadelphia
- Yon, M. 2003: The foreign relations of Ugarit, in N.C. Stampolidis & V. Karageorghis (eds), *Ploes. Sea Routes...: Interconnections in the Mediterranean, 16th–6th c. BC*, 41–51, Athens