# LATE CYPRIOT I A MARITIME TRADE IN ACTION: UNDERWATER SURVEY AT MARONI *TSAROUKKAS* AND THE CONTEMPORARY EAST MEDITERRANEAN TRADING SYSTEM[1]

## I. INTRODUCTION

IN the Levant and Delta Egypt the final phase of the Middle Bronze Age, variously referred to as the Middle Bronze (MB) III or MB II C period, is characterized and almost defined in

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Abbreviations in addition to those in standard use:

Åström 1966 = P. Åström, *Excavations at Kalopsidha and Ayios Iakovos in Cyprus* (SIMA 2; Lund, 1966).

Åström 1972*a* = P. Åström, 'Some aspects of the Late Cypriot I period', *RDAC* 1972, 46–57.

Åström 1972*b* = P. Åström, 'The Late Cypriote Bronze Age. Relative and absolute chronology, foreign relations, summary and historical conclusions', in *The Swedish Cyprus Expedition*, iv, part 1D (Lund, 1972), 675–781.

Åström 1972*c* = P. Åström, 'The Middle Cypriote Bronze Age', in *The Swedish Cyprus Expedition*, iv, part 1B (Lund, 1972).

Åström 1972*d* = P. Åström, 'The Late Cypriote Bronze Age architecture and pottery', in *The Swedish Cyprus Expedition*, iv, part 1C (Lund, 1972).

Åström and Herscher 1996 = P. Åström and E. Herscher (eds), *Late Bronze Age Settlement in Cyprus: Function and Relationship* (SIMA Pocket-Book 126; Jonsered, 1996).

Bergoffen 2001 = C. Bergoffen, 'The Proto White Slip and White Slip I pottery from Tell el Ajjul', in Karageorghis 2001, 145–55.

Bietak 2000 = M. Bietak, '"Rich beyond the dreams of Avaris: Tell el-Dabʿa and the Aegean—a guide for the perplexed": a response to Eric H. Cline,' *BSA* 95 (2000), 185–205.

Bietak and Hein 2001 = M. Bietak and I. Hein, 'The context of White Slip wares in the stratigraphy of Tell el-Dabʿa and some conclusions on Aegean chronology', in Karageorghis 2001, 171–94.

Dikaios 1969–71 = P. Dikaios, *Enkomi: Excavations 1948–1958* (Mainz am Rhein, 1969–71).

Eriksson 1992 = K. O. Eriksson, 'Late Cypriot I and Thera: relative chronology in the eastern Mediterranean', in P. Åström (ed.), *Acta Cypria: Acts of an International Congress on Cypriote Archaeology held in Göteborg on 22–24 August 1991*, Part 3 (SIMA Pocket-Book 120; Jonsered, 1992), 152–223.

Frost 1963 = H. Frost, 'From rope to chain; on the development of anchors in the Mediterranean', *The Mariner's Mirror*, 49 (1963), 1–20.

Frost 1970 = H. Frost, 'Some Cypriot stone-anchors from land and from the sea', *RDAC* 1970, 14–24.

Herscher 1984 = E. Herscher, 'The pottery of Maroni and regionalism in Late Bronze Age Cyprus', in V. Karageorghis and J. D. Muhly (eds), *Cyprus at the Close of the Late Bronze Age* (Nicosia, 1984), 23–8.

Hult 1992 = G. Hult, *Nitovikla Reconsidered* (Medalhavsmuseet Memoir 8; Stockholm, 1992).

Karageorghis 1990 = V. Karageorghis, *Tombs at Palaepaphos. 1. Teratsoudhia. 2. Eliomylia* (Nicosia, 1990).

Karageorghis 2001 = V. Karageorghis (ed.), *The White Slip Ware of Late Bronze Age Cyprus. Proceedings of an International Conference Organized by the Anastasios G. Leventis Foundation, Nicosia in Honour of Malcolm Wiener, Nicosia 29th–30th October 1998* (Vienna, 2001).

coastal areas by the appearance of a set of initial Late Cypriot (LC) ceramic imports.[2] There had been previous Middle Cypriot (MC) exports to the region,[3] but a clear horizon of contact is evident during the succeeding LC I A chronological period, characterized by new early LC-style *and/or* continuing late MC-style artefacts. These Cypriot exports are central to several major issues in eastern Mediterranean archaeology: polity formation on Cyprus, the still not fully appreciated major Hyksos–Canaanite trading world of the later MBA running from the north of Egypt to Syria, and east Mediterranean interregional chronology. The find of a unique deposit directly derived from Cypriot international trading activities at this time on the seabed off Maroni *Tsaroukkas* on the south coast of Cyprus provides both important new evidence for this period, and an opportunity to resolve some problems in existing scholarly literature.

## II. Cypriot Stylistic-Stratigraphic Sequence and Export Patterns (fig. 1)

We must begin with the terminological issue of what is the LC I A period. This is a complicated matter because of the well known, but marked, regionalism of ceramic use, trade, and deposition at the onset of the Late Bronze Age (LBA) on Cyprus.[4] This is not a new

Keswani 1996 = P. S. Keswani, 'Hierarchies, heterarchies, and urbanization processes: the view from Bronze Age Cyprus', *Journal of Mediterranean Archaeology* 9 (1996), 211–50.

Knapp 1997 = A. B. Knapp, *The Archaeology of Late Bronze Age Cypriot Society: The Study of Settlement, Survey and Landscape* (Glasgow, 1997).

Knapp and Cherry 1994 = A. B. Knapp and J. F. Cherry, *Provenience Studies and Bronze Age Cyprus: Production, Exchange and Politico-Economic Change* (Monographs in World Archaeology, 21; Madison, 1994).

McCaslin 1980 = D. E. McCaslin, *Stone Anchors in Antiquity: Coastal Settlements and Maritime Trade-Routes in the Eastern Mediterranean ca. 1600–1050 BC* (SIMA 61; Göteborg, 1980).

Manning 1999 = S. W. Manning, *A Test of Time: The Volcano of Thera and the Chronology and History of the Aegean and East Mediterranean in the Mid Second Millennium BC* (Oxford, 1999).

Merrillees 1971 = R. S. Merrillees, 'The early history of Late Cypriot I', *Levant*, 3 (1971), 56–79.

Merrillees 1974 = R. S. Merrillees, *Trade and Transcendence in the Bronze Age Levant* (SIMA 39; Göteborg, 1974).

Merrillees 2001 = R. S. Merrillees, 'Some Cypriote White Slip pottery from the Aegean', in Karageorghis 2001, 89–100.

Oren 2001 = E. D. Oren, 'Early White Slip pottery in Canaan: spatial and chronological perspectives', in Karageorghis 2001, 127–44.

Pearlman 1985 = D. Pearlman, 'Kalavasos Village Tomb 51: tomb of an unknown soldier', *RDAC* 1985, 164–79.

Popham 1972 = M. R. Popham, 'White Slip ware', in *The Swedish Cyprus Expedition*, iv, part 1C (Lund, 1972), 431–71.

Swiny et al. 1997 = S. Swiny, R. L. Hohlfelder and H. Wylde Swiny (eds), *Res Maritimae: Cyprus and the Eastern Mediterranean from Prehistory to Late Antiquity* (Atlanta, 1997).

*TTS* = E. D. T. Vermeule and F. Z. Wolsky, *Toumba tou Skourou. A Bronze Age Potter's Quarter on Morphou Bay in Cyprus. The Harvard University–Museum of Fine Arts, Boston Cyprus Expedition* (Cambridge, Mass., 1990).

Wachsmann 1998 = S. Wachsmann, *Seagoing Ships & Seamanship in the Bronze Age Levant* (College Station and London, 1998).

[2] W. G. Dever, 'The chronology of Syria-Palestine in the second millennium BCE: a review of current issues', *BASOR* 288 (1992), 1–25, at 16, for example, refers to the 'easily recognizable Cypriot wares whose sudden and brief appearance [in Palestine] may be said to characterize "MB III/LB I A"'. The Cypriot imports and inspiration includes Bichrome Wheelmade ware, which is often cited as a key diagnostic: e.g. E. Oren, 'The "Kingdom of Sharuhen" and the Hyksos Kingdom', in E. D. Oren (ed.), *The Hyksos: New Historical and Archaeological Perspectives* (Philadelphia, 1997), 253–83, at 271. At inland sites the appearance of Chocolate and White Ware marks a related and largely contemporary horizon: see P. M. Fischer, 'Chocolate-on-White ware: typology, chronology, and provenance: the evidence from Tell Abu al-Kharaz, Jordan Valley', *BASOR* 313 (1999), 1–29; S. J. Bourke, 'The transition from the Middle to the Late Bronze Age in Syria: the evidence from Tell Nebi Mend', *Levant*, 25 (1993), 155–95.

[3] P. Johnson, 'The Middle Cypriote pottery found in Palestine', *Op. Ath.* 14 (1982), 49–72; P. Åström, 'The chronology of the Middle Cypriote Bronze Age', in id. (ed.), *High, Middle or Low? Acts of an International Colloquium on Absolute Chronology Held at the University of Gothenburg 20th–22nd August 1987*, Part 1, (SIMA Pocket-Book 56; Göteborg, 1987), 57–66; L. C. Maguire, 'The circulation of Cypriot Pottery in the Middle Bronze Age' (Ph.D. diss., University of Edinburgh, 1990).

[4] R. S. Merrillees, 'Reflections on the Late Bronze Age in Cyprus', *Op. Ath.* 6 (1965), 139–48; Merrillees 1971; id., 'The absolute chronology of the Bronze Age in Cyprus: a revision', *BASOR* 288 (1992), 47–52, at 47–8; Åström 1972*a*; Åström 1972*b*, 765; J. R. Stewart, *Tell el ʿAjjul: The Middle Bronze Age Remains* (SIMA 38; Göteborg, 1974), 62–3; A. B. Knapp, 'A re-examination of the interpretation of Cypriote material culture in the MC III–LC I period in the light of textual data' (Ph.D. diss.; University of California, Berkeley, 1979), 19–26; C. Baurain, *Chypre et la Méditerranée Orientale au Bronze Récent: synthèse historique* (Études Chypriotes 6; Paris, 1984), 27–103; Herscher 1984; Hult 1992, 23–4.

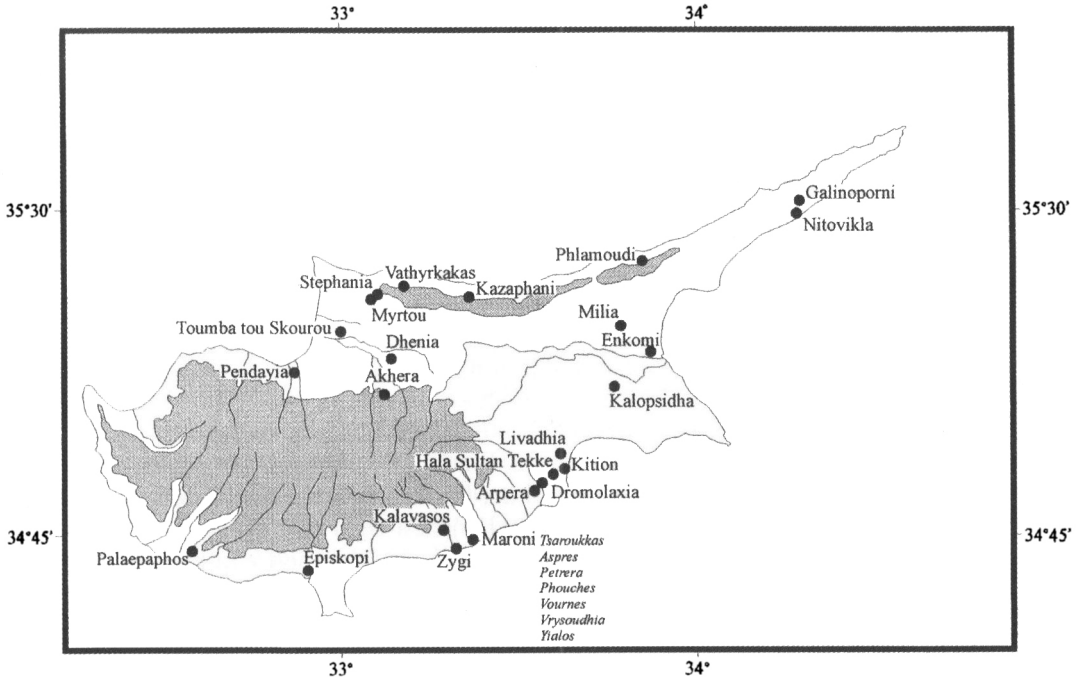


FIG. 1. Map of Cyprus showing sites mentioned in the text.

problem. In essence, the first part of the problem was summed up by Sjöqvist when in his 1940 study he observed of the start of the Late Cypriot period: 'The Middle Cypriote tradition continues with remarkable tenacity'. He was referring to material mainly represented in the east of the island. Subsequent fieldwork in the north-west of Cyprus allowed Stewart, in a posthumously published study, to go further and to identify the other part of the problem, when he noted that the MC to LC transition at Myrtou *Stephania* was quite abrupt, whereas in the east of the island the MC wares had a considerable survival.[5] Given this foundation,

The situation at the start of the LC period is often regarded as rooted in a perceived long-term E–W political division through the MC period (e.g. Åström 1972*c*, 275). The MC situation is, however, not conclusive and the case is largely based on minor differences in ceramic decoration. As Frankel has long argued, factors centred in local production, and small-scale, kin-based interaction, could successfully (even better) explain the MC ceramic style palimpsest, without resort to any putative higher-level socio-political organization: D. Frankel, *Middle Cypriot White Painted Pottery: An Analytical Study of the Decoration* (SIMA 42; Göteborg, 1974); id., 'Uniformity and variation in a Cypriot ceramic tradition: two approaches', *Levant*, 13 (1982), 88–106; id., 'Pottery production in prehistoric Bronze Age Cyprus: assessing the problem', *Journal of Mediterranean Archaeology* 1/2 (1988), 27–55; id., 'Inter- and intrasite variability and social interaction in prehistoric Bronze Age Cyprus: types, ranges, and trends', *BASOR* 292 (1993), 59–72. The situation is very different at the start of the LC period; this is not just an instance of asserting the conventional scholarly paradigm which regards regionalism as the *de facto* norm on prehistoric Cyprus (a position noted and questioned by Knapp 1997, 46 with refs.). In the case of ceramics, the issue is not merely different decorative motifs on essentially similar pottery, but quite differing overall assemblages, and regional introductions of key new wares. Ideas of regional and intra-regional distinctions are moreover largely supported by existing archaeometric data (Knapp and Cherry 1994, 158–61). And this is set within a framework of new settlement patterns with apparent territories forming in some areas, evidence of militarism and again likely territoriality in some areas, social change and the development of social stratification, and new trading systems. The LC I period marks a clear change from the previous status quo across Cyprus.

[5] Quotations from E. Sjöqvist, *Problems of the Late Cypriote Bronze Age* (Stockholm, 1940), 103; Stewart (n. 4), 63.

Merrillees published in 1971 'a complex and persuasive interpretation of the regional issues involved in the beginning of the Late Bronze Age on Cyprus' in which he argued that the new LC styles evolved in the north-west and centre of Cyprus (he used the term 'west') while the east predominantly continued in the MC tradition. These processes formed the LC I A period. The new LC styles were only slowly adopted in the east (i.e. the eastern Mesoria and north-eastern Cyprus), with a homogenous LC culture not found all over the island until the LC I B period.[6] Once adopted—and thus largely in the LC I B period—White Slip (WS) I, Base Ring (BR) I and Monochrome were then made in and distributed from the eastern part of the island, and finds occur in quantity.

Work since has filled out the picture, especially in the south. Writing over a decade later, Merrillees included the south to south-east of Cyprus, as represented by the LC I A Kalavasos *Mavrovouni* Tomb 2, as 'well within the western cultural zone during Late Cypriote I A', stating the tomb assemblage 'exhibits the ceramic features which are the hallmarks of the time in this part of the island—Monochrome, Proto Base-ring and Proto White Slip Wares . . .'. By comparing the Kalavasos assemblage with that in Livadhia *Kokotes* Tomb 1, he effectively extended this grouping as far as the Larnaca district. But, at the same time, finds at Maroni *Kapsaloudhia* indicated that the southern to south-eastern region was (predictably) best seen as having links with both the eastern (perhaps especially) *and* western groups.[7] Thus, on detailed examination, there is a typically complex regional mosaic, which any description necessarily oversimplifies; further, we must remember that our evidence still comes in the main from only a few sites and we are largely ignorant about details elsewhere. However, despite such caveats, the general picture may be described, and it for the most part follows and sustains the Merrillees model of 1971.

The very start of the LBA sees the creation (derived largely from local regional MC antecedents, including a tradition of monochrome surfaces that can be seen to lead to both Base Ring and Monochrome) in the north-west to centre of the island of a novel tradition that includes what become the characteristic new LC styles of ceramics, e.g. Proto Base Ring (PBR), Monochrome, and Proto White Slip (PWS). These ceramic types are progressively found elsewhere around the island, but more examples come from the north-west, only this region offers a comprehensive range of shapes and fabrics for these ceramic types, and only the north-west to centre regions offer a comprehensive evolutionary context. Western region MC styles also continue into the start of the LC period in the north-west, but the period is defined by the new LC styles. The bulk of the available evidence comes from the excavations

[6] Merrillees 1971. The quote approving of the Merrillees analysis is from J. D. Muhly, 'The Late Bronze Age in Cyprus: a 25 year retrospect', in V. Karageorghis (ed.), *Archaeology in Cyprus 1960–1985* (Nicosia, 1985), 20–46 at 23. The following year Åström 1972*a*, 49 likewise wrote: 'I would like to emphasize that, according to the archaeological evidence, the formative stages of these wares were not in the east, but in western Cyprus.' He then developed this point (pp. 54–5): 'What was the situation in eastern Cyprus in LC I A? There is very little Base-ring or Monochrome, whereas Red-on-Black and White Painted VI ware continue. There does not seem to be a gap in occupation, but rather it seems that Middle Cypriote traditions lingered on longer here.'

The evidence for LC I in the real 'west' of Cyprus is scant at present. It is evident that there was a significant site at Kouklia *Palaepaphos*: F. G. Maier and M.-L. v. Wartburg, 'Reconstructing history from the earth, *c.* 2800 BC–1600 AD: excavating at Palaepaphos, 1966–1984', in V. Karageorghis (ed.), *Archaeology in Cyprus 1960–1985* (Nicosia, 1985), 142–72, at 146–9. But at present this is largely known only on the basis of tombs—and one important set of mortuary data has never been properly published: cf. H. W. Catling, 'The St. Andrews–Liverpool Museums Kouklia tomb excavation', *RDAC* 1979, 270–5, esp. 274–5. We therefore at present rely on the unstratified material from the tombs at *Teratsoudhia*: Karageorghis 1990, 3–71.

[7] R. S. Merrillees, 'A Late Cypriote Bronze Age tomb and its Asiatic connections', in J. N. Tubb (ed.), *Palestine in the Bronze and Iron Ages. Papers in Honour of Olga Tufnell* (London, 1985), 114–35, at 133. For Livadhia *Kokotes* Tomb 1, see P. Åström, 'Livadhia, "Kokotes", Tomb 1', *RDAC* 1974, 51–9. For the ceramics from Maroni *Kapsaloudhia*, and the mixture of eastern WP, Red-on-Black, Bichrome Wheelmade wares, etc., and then other north-western linkages, see Herscher 1984, 25–7.

of 1971–3 at Morphou *Toumba tou Skourou*; the first clear recognition of this early LC process in the north-west was as a result of the excavations of Hennessy at Stephania. In the north-west, PWS and PBR seem to develop relatively rapidly into what may be called early WS I and early BR I, with a variety of finds appearing to belong to an almost transitional phase.[8]

Other parts of the island took up the new LC styles in a varying process over the course of the LC I A period. This includes distinct regional/local variants in terms of fabric and shape.[9] The first appearance of these new traditions on Cyprus defines the start of the LC I A period on Cyprus (even though some areas did not really adopt these styles until the LC I B period). As noted above, subsequently, and seemingly fairly rapidly, the north-west region (in particular, and western cultural grouping in general) sees the further development of proper WS I and BR I (also in LC I A). Because of changes in the elaborate painted decoration, it is possible to isolate some WS I that appears to belong to this initial period of WS I production—what may be termed *early-style* WS I—and so the beginning of the classic expression of the LC I period (see the Appendix for definition and discussion of 'early-style' WS I). This latter stage, with early WS I and BR I, is particularly evident in the material from *Toumba tou Skourou*, and the site may have led its development, but it does also occur elsewhere across the island, although not common in extant deposits; for example one sherd of 'early-style' WS I occurs, with initial BR I, but still mainly PWS, in a PWS-like fabric in Phase Ib at Maroni *Vournes*. A few other less chronologically indicative examples may be noted, for instance at Hala Sultan Tekke, and in the east at Enkomi and Milia.[10] However, when WS I and BR I typically appear, and certainly in significant

[8] See references in n. 4 above, especially Merrillees 1971. An additional complication is that sometimes the allocation of objects to the various typological categories is problematic because the early LC period sees various transitional or hybrid objects, where shape and/or fabric do not necessarily conform to the standard definitions, e.g.: *TTS* 397–8; S. J. Eames, 'A re-examination of the definition, distribution, and relative chronology of Proto Base Ring ware', *Mediterranean Archaeology*, 7 (1994), 127–40, at 127–8. For a more significant monochrome tradition in NW Cyprus MC, than in east Cyprus, see e.g. Merrillees 1971, 56–7, 65. For the north-west as home to initial Monochrome development, see D. Pilides, 'Monochrome Ware: its regional variation', in P. Åström (ed.), *Acta Cypria: Acts of an International Congress on Cypriote Archaeology held in Göteborg on 22–24 August 1991*, Part 2 (SIMA Pocket-Book 120; Jonsered, 1992), 289–305. For Morphou *Toumba tou Skourou*, see *TTS*. For Stephania, see J. B. Hennessy, *Stephania: A Middle and Late Bronze Age Cemetery in Cyprus* (London, 1963). The ceramic material from *Toumba tou Skourou* currently best articulates the NW developmental trajectory, from close of MC to early LC I A with Proto-LC wares, and then a transition into early WS I, BR I and so on. The initial LC developmental phase of the NW is also clearly evident in the early material from Kazaphani, confirming that the patterns evident at *Toumba tou Skourou* do have regional relevance: I. Nicolaou and K. Nicolaou, *Kazaphani: A Middle/Late Cypriot Tomb at Kazaphani-Ayios Andronikos: T.2A, B.* (Nicosia, 1989). For an example of a detailed analysis demonstrating the NW heartland of one of the set of new LC wares, PBR, see Eames op. cit., figs. 1–3. For discussion of the transition from PWS to early WS I, and a 'transitional' style, see M. Padgett in *TTS* 373–4.

[9] For discussion of regional variations in early BR in the south, see E. Herscher, 'Early Base Ring ware from *Phanerometi* and Maroni', in P. Aström (ed.), *The Chronology of Base-ring Ware and Bichrome Wheel-made Ware* (Konferenser 54; Stockholm, 2001), 11–21. For the local PWS imitations at Episkopi *Phanerometi*, see S. Swiny, 'Southern Cyprus, *c.* 2000–1500 BC' (Ph.D. diss., University of London), 237–9; J. R. Carpenter, 'Excavations at Phaneromeni, 1975–1978', in J. C. Biers and D. Soren (eds), *Studies in Cypriote Archaeology* (Monograph 18; Los Angeles, 1985) 59–78, at 64. In line with the Merrillees 1971 scenario (and the observations of Åström 1972*a*), PWS, PBR, 'early-style' WS I, and LC I A context BR I and Monochrome are noticeably rare at eastern sites, such as Kalopsidha (Åström 1966), Enkomi (Dikaios 1969–71), Nitovikla (Hult 1992), and Phlamoudi *Vounari*: S. M. S. Al-Radi, *Phlamoudhi Vounari: A Sanctuary Site in Cyprus* (SIMA 65; Göteborg, 1983).

[10] For discussion of the evidence at Maroni *Vournes*, including mention of this sherd, see G. Cadogan, E. Herscher, P. Russell, and S. Manning, 'Maroni-Vournes: a long White Slip sequence and its chronology', in Karageorghis 2001, 75–88; Herscher (n. 9). For the suggestion of *Toumba tou Skourou* developing the fabric, see Padgett in *TTS*, 374. One may note, in addition to the published finds from *Toumba tou Skourou*, the report of much PWS and WS I at the nearby *Toumba tou Tyllirou* (*TTS* 15, 397). For instances of 'early-style' WS I at Hala Sultan Tekke, Enkomi and Milia, see e.g. P. Åström, D. M. Bailey and V. Karageorghis, *Hala Sultan Tekke 1: Excavations 1897–1971* (SIMA 45/1; Göteborg, 1976), pl. 39. 33; P. Åström, *Hala Sultan Tekke 8: Excavations 1971–1979* (SIMA 45/8; Göteborg, 1983), figs. 245, 253, 361. *b*; id., *Hala Sultan Tekke 9: Trenches 1972–1987, with an Index For Volume 1–9* (SIMA 45/9; Göteborg, 1989), fig. 92 (with later, classic, examples also – hence early *style* but not necessarily early date in this case); E. Gjerstad, J. Lindros, E. Sjöqvist, and A. Westholm, *The Swedish Cyprus Expedition*, i (Stockholm, 1934), pl. 114 no. E19. 146 (= Popham 1972, fig. 80. 6); Popham 1972, 461 type I A δ' no. 3.

quantities, in the east they are already of (or predominantly of) the subsequent mature, or classic, types characteristic of the LC I B period (Phase Ic at Maroni *Vournes*): see the Appendix.

In sharp contrast to the situation in the north-west of Cyprus during LC I A, the *contemporary* situation was distinctly different in the east of the island, and, moreover slightly different among the north-east, east, and south-east areas. The east continued to produce and distribute ceramics in the existing eastern MC tradition, often with relatively little evidence of the new LC I types. Among the finer wares, MC-style White Painted (WP) wares thus continued, with WP III–IV (Pendent Line Style) still found in LC I A contexts (although classically a later MC ware), and the now dominant WP V and WP VI styles forming the hallmark of LC I A in the area (including WP IV–VI Cross Line Style, WP V Framed Broad Band Style and Tangent Line Style—or the 'Eastern Mesoria Styles'—and WP VI Soft Triglyphic Style).[11] Cypriot Bichrome Wheelmade ware was also invented at this time in the eastern area.[12] PWS, PBR, and 'early-style' WS I are uncommon. In the north-east (the Karpass region) Red-on-Black/Red-on-Red wares especially characterize the period.[13] The south-eastern coast as represented at Maroni and Kalavasos has a mixed assemblage, showing elements in common with both the eastern and north-western regions (there is a significant PWS presence at Maroni *Vournes* in LC I A). LC I A is not currently well attested further west along the southern coast. The limited LC I A material from Episkopi *Phaneromeni* appears to represent a local imitation of the north-western or south-eastern LC I A styles.

All these differing but contemporary regional datasets are LC I A in temporal terms (with artefacts of, variously, LC I A, MC III–LC I A, and/or MC III *style*). The article by Robert S. Merrillees, published in 1971, remains seminal as a starting point to understanding.[14]

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Merrillees 2001, 93 suggests that the 'early-style' WS I as represented by the Thera WS I bowl derives from either the south coast of Cyprus, or the SW. This is possible. It should be remembered, as quoted earlier, that Merrillees (n. 7), 133 includes the south of Cyprus as 'well within the western cultural zone during Late Cypriote I A'. The key point is that the area of origin is *not* eastern Cyprus. To the present authors, there seems a better case for NW Cyprus as the initial or primary home of 'early-style' WS I. But this point of variance in details has no impact on the overall 'west–east' case advanced in this paper.

[11] For the standard MC–LC I WP sequence, chronology, and finds, see Åström 1972*c* and 1972*d*; summary at 1972*b*, 700–1 chart. For the term 'Eastern Mesoria Styles', see Merrillees 1974, 53.

[12] Åström 1972*b*, 758 states that Bichrome Wheelmade ware is an indicator of earliest LC I. See also Merrillees 1971, 65, who argues that it does not occur before LC I A. Other scholars have in the past accorded it an initial 'MC III' appearance, but this was in eastern contexts where the relevant 'MC III' should in fact be considered as LC I A (see discussion in main text). For the eastern Cypriot provenance of Bichrome Wheelmade ware, see L. M. Artzy, 'The origin of the Palestinian Bichrome ware' (Ph.D. diss.; Brandeis University, 1972); ead., 'The Late Bronze Age "Palestinian" Bichrome ware in its Cypriote context', in H. A. Hoffner Jr. (ed.), *Orient and Occident. Essays Presented to Cyrus H. Gordon on the Occasion of his Sixty-Fifth Birthday* (Alter Orient und Altes Testament 22; Kevelaer and Neukirchen-Vluyn, 1973), 9–16; M. Artzy, E. Asaro, and I. Perlman, 'The origin of the 'Palestinian' Bichrome Ware', *JAOS* 93 (1973), 446–61; M. Artzy, I. Perlman, and F. Asaro, 'Imported and local Bichrome ware in Megiddo', *Levant*, 10 (1978), 99–111; iid., 'Cypriote pottery imports at Ras Shamra', *IEJ* 31 (1981), 37–47; Knapp and Cherry 1994, 56. Indicative of the distinction between eastern Cyprus with its Bichrome Wheelmade ware, and NW Cyprus with its own styles, little Bichrome Wheelmade ware was found at *Toumba tou Skourou*, and the few examples present are considered as 'imports': *TTS* 385. A similar fall-off as one moves along the southern coast away from the east of Cyprus may be observed. By Maroni *Vournes* on the SE coast it is noticeable that, although present, Bichrome Wheelmade ware is much less prevalent than PWS: Cadogan et al. (n. 10).

[13] R. S. Merrillees, 'Pottery trade in Bronze Age Cyprus', *RDAC* 1979, 115–34, developing initial observation in Merrillees 1971. Merrillees defines a regional grouping in the Karpass and the SE, and a more restricted presence in the west.

[14] Merrillees 1971. See also Åström 1972*a*. For a subsequent review which supported this case, see various discussions within Baurain (n. 4), 27 103. Thirty years having passed since Merrillees's study was written, it is time now for him or someone else to undertake a comprehensive review of all the subsequent data. Detailed science provenance work is also required to test and refine the visual style characterizations on a regional or sub-regional basis within Cyprus (for a synthesis of science–provenance work to the early 1990s, see Knapp and Cherry 1994). It is not possible to attempt either of these tasks here, but in the interim we may regard the general patterns in material culture identified by Merrillees as remaining valid today. The major advance since he wrote has been in the acquisition of a more detailed knowledge of the south coast and western Cypriot assemblages.

Scholarship which ignores this fundamental reality of the Cypriot data is inherently flawed: see Section IX below.

This distinctive regionalism in ceramic assemblages pervades the entire LC I A period on Cyprus. None of the regional divisions are in any way absolute, of course, but they are clearly evident if one surveys the material culture of the island. This situation only ends in the subsequent LC I B period, when the north-western LC I A inventions, WS I, BR I, Monochrome, are adopted broadly across the island as the standard assemblage, and a new era of relative cultural uniformity exists on Cyprus. It is important to appreciate that, by this time, WS I and BR I were already *mature* styles. Earlier WS I and BR I had developed during the later LC I A period (and especially in the north-west LC heartland).

The regional patterns in material culture on Cyprus translate into the patterns of Cypriot exports and imports. As Merrillees argued in his 1971 paper, the vast majority of Cypriot exports to Egypt across the relevant period come from the east (to south-east) of Cyprus.[15] This is hardly surprising on commonsense grounds, since it is the closest region of Cyprus to Egypt, but, more specifically, it is explicable in the light of the coastal-port site of Enkomi in eastern Cyprus developing rapidly into the first advanced polity (even state-like) entity on Cyprus at this very time, and seeming to be actively concerned with the production and distribution of copper, and the receipt of imported prestige goods.[16] Thus LC I A exports to Egypt appear in general to be 'MC' in style (with the addition of east Cypriot Bichrome Wheelmade ware, and a little PWS). With just very rare exceptions which merely serve to

Although Merrillees's attention solely on the ceramic-style evidence is clearly one-dimensional, and he does not consider the wider theoretical issues in his underlying assumption that pots are surrogates for people and social dynamics, his recognition of differing regional groupings in the material culture may reasonably be considered as identifying social groupings. While objects are mere markers for people, and so similarity and conservatism in material culture, or difference and change, may or may not represent change in population or social construction, it nonetheless is the case that objects and experience of them form part of the (reflexive) definition of self—see H. Dittmar, *The Social Psychology of Material Possessions: To Have is to Be* (Hemel Hempstead, 1992)—and, overall, the historical construction of any community. Objects thus very much form part of Bourdieu's concept of the *habitus*: P. Bourdieu, *Outline of a Theory of Practice*, trans. R. Nice (Cambridge, 1977), 72. Further, since any one object communicates very little information by itself, it is instead groupings of objects that come to form historically complementary sets which are recognized and intelligible to members of a community: in general, see G. McCracken, *Culture and Consumption: New Approaches to the Symbolic Character of Consumer Goods and Activities* (Bloomington, 1988); D. Miller, *Material Culture and Mass Consumption* (Rev. repr.; Oxford, 1994). The patterns Merrillees recognizes in the LC I period are therefore likely to be manifestations of such contemporary sets of objects common to closely interacting population groupings.

[15] See in general Maguire (n. 3). See also L. C. Maguire, 'The Middle Cypriot pottery from Tell el-Dab'a, Egypt' (M.A. diss.; Department of Archaeology, University of Edinburgh, 1986); id., 'The classification of Middle Bronze Age painted pottery: wares, styles . . . workshops?', in J. Barlow, D. Bolger, and B. Kling (eds), *Cypriot Ceramics: Reading the Prehistoric Record* (University Museum Monograph 74/University Museum Symposium Series, 2; Philadelphia, 1991), 59–66, at 64; L. C. Maguire, 'A cautious approach to the Middle Bronze Age chronology of Cyprus', *Ägypten und Levante*, 3 (1992), 115–20, at 118; L. C. Maguire, 'Tell el-Dab'a: the Cypriot connection', in W. V. Davies and L. Schofield (eds), *Egypt, the Aegean and the Levant: Interconnections in the Second Millennium BC* (London, 1995), 54–65, at 54.

[16] For the development of the archaic Enkomi polity or state including the apparent role of forts to protect copper production and distribution, see E. J. Peltenburg, 'From isolation to state formation in Cyprus, *c.* 3500–1500 BC', in V. Karageorghis and D. Michaelides (eds), *The Development of the Cypriot Economy from the Prehistoric Period to the Present Day* (Nicosia, 1996), 17–43, at 27–35. Although data are scanty, most scholarship on the topic has reached the view that Enkomi formed the heart of the first, and at the time perhaps only, state or polity of Cyprus, e.g. J. D. Muhly, 'The organisation of the copper industry in Late Bronze Age Cyprus', in E. J. Peltenburg (ed.), *Early Society in Cyprus* (Edinburgh, 1989), 298–314, at 299; J. D. Muhly, R. Madden, and T. Stech, 'Cyprus, Crete and Sardinia: copper oxhide ingots and the metals trade', *RDAC* 1988, 281–98, at 294–5; A. B. Knapp, 'Ideology, archaeology, and polity', *Man* 23 (1988), 133–63; Knapp 1997, 65–6; Knapp and Cherry 1994, 137. Mortuary data (especially imported objects) attest the rise of new élite groupings from the LC I period, especially at Enkomi: P. F. S. Keswani, 'Mortuary Ritual and Social Hierarchy in Bronze Age Cyprus' (Ph.D. diss., University of Michigan, 1989), esp. 512–22; ead., 'Dimensions of social hierarchy in Late Bronze Age Cyprus: an analysis of the mortuary data from Enkomi', *Journal of Mediterranean Archaeology* 2 (1989), 49–86.

confirm the generalization (see below), the developed LC styles of BR I, WS I, and so on, only appear in Egypt *after* they were generally adopted in the east of Cyprus in the LC I B period. This has important chronological implications. For example, the typical horizon of first appearances of BR I and WS I in Egypt from the early 18th Dynasty therefore defines the appearance of LC I B exports, and not, as often claimed, LC I A or LC I A 2 exports.[17] The entire LC I A period was by definition earlier: later Second Intermediate Period (SIP).[18]

Products from the eastern regions of Cyprus also went to a number of sites in the Levant. LC I A ('MC'-style with Bichrome Wheelmade ware and some PWS) exports appear from the final MBA phase of Syria-Palestine. LC I B products appear from the LB I period (but again only after this style is taken up by the east of Cyprus).[19] This pattern of eastern Cypriot material linkages with Egypt and some of the Levant is reflected in reverse on Cyprus, with

[17] Examples of the view correlating LC I A or (better) LC I A 2 with the 18th Dynasty, and not before, abound, and represent the conventional view in most scholarship until recently, e.g. E. D. Oren, 'Cypriote imports in the Palestinian Late Bronze I context', *Op. Ath.* 9 (1969), 127–50; Oren 2001; M. Bietak 'The Late Cypriot White Slip I-Ware as an obstacle of the high Aegean chronology', in M. S. Balmuth and R. H. Tykot (eds), *Sardinian and Aegean Chronology: Towards the Resolution of Relative and Absolute Dating in the Mediterranean* (Studies in Sardinian Archaeology 5; Oxford, 1998), 321–2; Bietak 2000; Bietak and Hein 2001; B. M. Gittlen, 'Cypriote White Slip pottery in its Palestinian stratigraphic context', in N. Robertson (ed.), *The Archaeology of Cyprus: Recent Developments* (Park Ridge, NJ, 1975), 111–20; id., 'Studies in the Late Cypriote Pottery Found in Palestine' (Ph.D. Diss., University of Pennsylvania, 1977); id., 'The cultural and chronological implications of the Cypro-Palestinian trade during the Late Bronze Age', *BASOR* 241 (1981), 49–59; Eriksson 1992. A solid case for rejecting/modifying this view has existed since Merrillees 1971, but was largely ignored, or became bogged down in details.

Red Lustrous Wheelmade Ware may be added as another Cypriot ware first invented in late LC I A, but typical of LC I B onwards on Cyprus, and first found in Egypt from early 18th Dynasty contexts: K. O. Eriksson, *Red Lustrous Wheel-Made Ware* (SIMA 102; Jonsered, 1993). See however, C. Knappett, 'The provenance of red lustrous wheel-made ware: Cyprus, Syria or Anatolia?', *Internet Archaeology*, 9 (2000), http://intarch.ac.uk/journal/issue9/knappett_index.html.

An important ancillary issue is that different importers of Cypriot products desired different things. As Oren 2001, 140 discusses, at no time does Egypt appear particularly interested in open Cypriot ceramic shapes, such as WS bowls (although a caveat exists, since the majority of extant Egyptian contexts are funerary, which may explain the difference). Instead, they imported closed shapes and presumably the contents. In contrast, some group at Tell el-ʿAjjul in Palestine seemed to like all ceramics of the open type from Cyprus, from Red-on-Black/Red to WS. But this did not necessarily apply to all Canaanites either (or they had no opportunity to indulge) since WS I is not common at major sites like Hazor, Lachish, and Megiddo. Presence/absence of certain types in Egypt thus cannot be used to determine the relative or absolute chronology of Cyprus. Indeed, except for Tell el-Dabʿa, PWS and WS I are hardly or not found in Egypt: R. S. Merrillees, *The Cypriote Bronze Age Pottery Found in Egypt* (SIMA 18; Göteborg, 1968), 168–9, though his data derive mainly from mortuary contexts, and settlement contexts may be different. And even the very Egyptianized Canaanite culture of Tell el-Dabʿa hardly over-dosed, given less than a score of finds in total from many years of work at this huge site from both settlement and mortuary contexts (Bietak and Hein 2001).

[18] Some finds, and the patterns of correlations between Cyprus, Egypt, the Levant, and the Aegean, confirm this: see Manning 1999, 107–92 for a detailed discussion. No one disputes that types first appearing in LC I A (and then typical through LC I A and into I B) such as PWS, Bichrome Wheelmade ware, and WP V–VI, occur in late MBA or late SIP contexts in the Levant and Egypt (see n. 17). The recent evidence from Tell el-Dabʿa has made this totally clear: M. Bietak, *Avaris, the Capital of the Hyksos. Recent Excavations at Tell el-Dabʿa* (London, 1996), 63. The question has concerned LC I A 2 and the first production of WS I and BR I. Thus, did initial LC I A just overlap with the end of the MBA/SIP (the conventional view), or instead did the entire of the LC I A period lie contemporary with the Levantine late MBA and the SIP of Egypt? An appreciation of the regionalism of LC I A Cyprus, and in export patterns of LC I products, and the review of the wider cultural connections at this time, demonstrate that the latter position is in fact correct. Confirmation appears to come from the site of Tell el-ʿAjjul, where: (i) early-style (likely NW Cypriot origin), LC I A 1/2 to LC I A 2, WS I occurs in later MBA Palace I: Bergoffen 2001; ead., 'Early Late Cypriot ceramic exports to Canaan: White Slip I', in E. Ehrenberg (ed.), *Leaving No Stones Unturned: Essays on the Ancient Near East and Egypt in Honor of Donald P. Hansen* (Winona Lake, 2002), 23–41; Manning 1999, 181–7; and (ii) BR I occurs in a tomb (Tomb 14) shown below a wall of the MB III (MB II C) City III on Petrie's plan: C. J. Bergoffen, 'The Base Ring Pottery from Tell el-ʿAjjul', in Åström 2001 (n. 9), 31–50, who also discusses a few other similarly early finds of BR I at the site. A find of what may be guessed to be early BR I, and so perhaps from NW Cyprus, from a SIP context at Memphis provides further support: see discussion and references in Manning 1999, 120 and nn. 552–7. See also n. 24 below. In reverse, some of the bone artefacts from *Toumba tou Skourou* offer evidence of Hyksos period associations for NW Cyprus: *TTS* 332–3.

[19] Oren (n. 17); Oren 2001; Bergoffen 2001; ead., 2002 (n. 18); Gittlen, all (n. 17); Åström 1972*b*; Merrillees 1971; Eriksson 1992.

the majority of contemporary Egyptian and Levantine imports found at sites in the east to south-east of Cyprus.[20] The north-west of Cyprus—and notably the major site of *Toumba tou Skourou*—has many fewer (the west of Cyprus is largely *terra incognita* at this time—apart from the couple of published tombs at Palaepaphos which include a vase fragment with a cartouche of Ahmose). But, in a clear instance of emulation indicating the contemporary value of such exotica entering the east and south-east of Cyprus, there was production of imitations of such Egyptian-Levantine material during the LC I A period in north-west Cyprus.[21] Thus, whoever was principally purveying the trade (Cypriots, Syrians, Canaanites, Hyksos-Egyptian traders, or any combination of these), the dominant east/south-east Cyprus link with Egypt and the Levant is clear.

In contrast to the geographically and politico-economically logical eastern Cyprus link with Egypt, some north-west Cypriot LC I A products were exported both to the Levant and into the Aegean, or the reverse.[22] The site of Tell el-ᶜAjjul in Palestine, in particular, appears to receive a number of likely north-west Cypriot imports (notably PWS and then 'early-style' WS I, but also early Monochrome), in addition to, or as well as material from the north-east and east of Cyprus. The élite at each of the emergent MB III coastal centres of the southern Levant will have been seeking new and different trading partners, resources, and exotica: it would seem that a key grouping at Tell el-ᶜAjjul established relations with north-west Cyprus (and arguably *Toumba tou Skourou*). Copper may have been the fundamental item, with the emergent élite at Tell el-ᶜAjjul seeking or welcoming different supply partners.[23] Exports from north-west Cyprus to Egypt appear to have been rare exceptions to the general pattern—although, as in the case of the early find of a possible north-western BR I vessel in a SIP context at Memphis, these exceptions prove the Merrillees model, with LC I A contemporary with the later SIP, and LC I B (when these items have become *de rigueur* in the east of Cyprus and thus common as exports to Egypt) contemporary with the earlier 18th Dynasty.[24]

[20] e.g. the Tell-el-Yahudiyeh and El-Lisht imports found in Cyprus: O. Negbi, 'Cypriote imitations of Tell-el-Yahudiyeh ware from Toumba tou Skourou', *AJA* 82 (1978), 137–51; Merrillees 1971, 73–4; id., 1974; Bietak (n. 18), fig. 48. b. Chocolate and White ware, or apparently derived styles, are another link between the east of Cyprus (Enkomi, Phlamoudhi *Vounari*) and the Levant: C. J. Bergoffen, 'Two "Chocolate-on-White" vessels from Enkomi', *RDAC* 1990, 51–4; Al-Radi (n. 9), 48; Fischer (n. 2).

[21] In particular, local imitations of the Tell-el-Yahudiyeh juglet type: Negbi (n. 20). Also some worked bone with general Syrian-Egyptian or Hyksos connections: *TTS* 332–3. For the vase fragment with the cartouche of Ahmose from Palaepaphos, see G. Clerc in Karageorghis 1990, 95–103.

[22] For likely examples of western/north-western LC I A Cypriot exports to the Levant, we can suggest on subjective art-historical grounds at least some of the instances of early imports there of Monochrome, PWS, PBR, and 'early-style' WS I and BR I: Bergoffen 2001; id., 2002 (n. 18). No relevant scientific provenance data have yet been published. A few likely LC I A imports from the Aegean are known in the north-west of Cyprus at *Toumba tou Skourou* (*TTS* 381–3), and it may be argued that a PWS sherd from Miletus (B. Niemeier and W.-D. Niemeier, 'Milet 1994–1995. Projekt «Minoisch-mykenisches bis protogeometrisches Milet»: Zielsetzung und Grabungen auf dem Stadionhügel und am Athena tempel', *AA* (1997), 189–248, at 235 and fig. 66), and the WS I bowl from Thera (Manning 1999, 150–8 with refs.; Merrillees 2001), were western/north-western Cypriot exports into the Aegean.

[23] For the 'early-style' WS I and other Cypriot ceramic imports to Tell el-ᶜAjjul, see C. J. Bergoffen, 'A Comparative Study of the Regional Distribution of Cypriote Pottery in Canaan and Egypt in the Late Bronze Age' (Ph.D. diss., New York University, 1989); ead., 'Overland trade in northern Sinai: the evidence of the Late Cypriot pottery', *BASOR* 284 (1991), 59–76; Bergoffen 2001; ead. (both n. 18); Oren 2001, 133–40; Manning 1999, 182–5. For the site and its context among the emergent MB II–III urban centres of Canaan, see Oren (n. 2); A. Kempinski, *Syrien und Palästina (Kanaan) in der letzten Phase der Mittelbronze IIB Zeit (1650–1570 v. Chr.)* (Wiesbaden, 1983).

[24] For the BR I sherd from Memphis, see J. Bourriau, 'Memphis/Kom Rabᶜia 1990', *Bulletin de Liaison du Groupe International d'étude de la Céramique égyptienne* 15 (1990), 7–8; ead., pers. comm.; Eriksson 1992, 169; ead., pers. comm.; Merrillees 1992 (n. 4), 50–1. See discussion in Manning 1999, 120–1 and nn. 552–7. This vessel could be a NW Cypriot import, but it may also be noted that BR I appears slightly earlier than WS I at several eastern and SE sites on Cyprus: Åström 1972*b*, 675–6; Cadogan et al. (n. 10), 77. Hence this SIP export could also be an initial eastern Cypriot product, especially if late SIP in date.

The regionalism in ceramic styles at the start of the LC period, and the corresponding distinct export and import patterns, appear to have politico-economic relevance, in addition to mere geography and material culture. Regionalism has often been considered a recurring feature of pre-modern Cyprus, explicable both in terms of the island's physical geography, and the several potential external influences often operating contemporaneously in the east Mediterranean. However, in the LC I A period, the regionalism apparent in the ceramic material seems to correlate in addition with major politico-economic changes within the island. It has some reality beyond taxonomy. The period around the start of the LC period has long been characterized by a general move of primate settlements to coastal locations,[25] but the key development was the founding of several important towns, and, in particular, one in the east at Enkomi *Ayios Iakovos*, and one in the north-west at Morphou *Toumba tou Skourou*.[26] Although the evidence is patchy, the associated appearance of fortified settlements or fortresses in strategic locations, and the overall settlement pattern, provide a strong case for the creation at this time of geopolitical entities—which we might describe as polities—centred on each of these sites.[27] It is usually assumed that copper production and trade, and the control thereof, were the basis to these developments.[28]

[25] H. W. Catling, 'Patterns of settlement in Bronze Age Cyprus', *Op. Ath.* 4 (1962), 129–69; R. S. Merrillees, 'Settlement, sanctuary and cemetery in Bronze Age Cyprus', *Australian Studies in Archaeology*, 1 (1973), 44–57; Baurain (n. 4), 76–8; A. B. Knapp, 'Settlement and society on Late Bronze Age Cyprus: dynamics and development', in Åström and Herscher 1996, 54–80, at 58–60; Knapp 1997, 46–8.

[26] Important LC I 'urban' centres existed at Enkomi, *Toumba tou Skourou*, Hala Sultan Tekke, and (from LC I B) Episkopi *Bamboula*: O. Negbi, 'The climax of urban development in Bronze Age Cyprus', *RDAC* 1986, 97–121; Keswani 1996, 220–34. Although E. T. Vermeule, 'Toumba tou Skourou', in Åström and Herscher 1996, 50–3, at 50 downplays *Toumba tou Skourou* as 'scarcely a town', it is clear that the area remaining when her project carried out its excavation was 'probably an outlying fragment of a lost Bronze Age town' (*TTS* 397). Indications from earlier visits to the site, and pre-destruction accounts, confirm the significant status of the site (*TTS* 7, 14–16).

Enkomi and *Toumba tou Skourou* stand out. They were new foundations and appear to form centres of new geopolitical entities (see n. 27). Enkomi quickly gains monumental architecture, and it is likely that this was also originally present at the large, and only partially explored, site of *Toumba tou Skourou*. Other sites may be added with further research; for example, as discussed in this paper, it is increasingly clear that a significant LC I centre existed on the coast in the lower Maroni Valley (Maroni *Vournes* and *Tsaroukkas*). Another candidate is Kouklia *Palaepaphos*.

[27] See above (n. 16) for Enkomi. The full extent of the LC I site at *Toumba tou Skourou* is very imperfectly known. For the forts of the period, see M. Fortin, 'Recherches sur l'architecture militaire de l'âge du bronze à Chypre', *Échos du monde classique/Classical Views* 27 (1983), 206–19; id., 'La soi-disant forteresse d'Enkomi I (Chypre) à la fin du bronze moyen et au début du Bronze récent', in R. Laffineur (ed.), *Transition: Le monde égéen du Bronze moyen au Bronze récent. Actes de la 2e Rencontre égéene internationale de l'Université de Liège, 18–20 avril 1988* (Aegaeum, 3; Liège, 1989), 239–49; Keswani 1996, 219. These forts or fortified settlements were usually dated to the MC period in older literature (e.g. J. C. Overbeck and S. Swiny, *Two Cypriot Bronze Age Sites at Kafkallia (Dhali)* (SIMA 33; Göteborg, 1972), 25–8), but, as in the detailed redating of the example at Nitovikla (Hult 1992 and R. S. Merrillees's review, *Op. Ath.* 20 (1994), 256–8), or the general reinterpretation by Merrillees 1971, 75, an initial LC date (or end MC to start LC I A date) is likely in most cases; see also Baurain (n. 4), 61–6, 80–7. For discussions of the changes in Cyprus at this time, see Merrillees 1971; Knapp (n. 4); id., '*Alashiya, Caphtor/Keftiu*, and eastern Mediterranean trade: recent studies in Cypriote archaeology and history', *JFA* 12 (1985), 231–50, at 247–50; id., 'Production, exchange and socio-political complexity on Bronze Age Cyprus', *OJA* 5 (1986), 35–60; id. (n. 16); Baurain (n. 4), 75–103; Keswani 1996, 219–20. Factors include regionalism, instability, militarism, the growth of urban centres, the rise of literacy, the development of intensive copper production, and participation in inter-regional exchange. Mortuary data attest the rise of new élite groupings from the LC I period: Keswani (n. 16).

[28] e.g. Knapp 1985 (n. 27); id., 1986 (n. 27); id., *Copper Production and Divine Protection: Archaeology, Ideology and Social Complexity on Bronze Age Cyprus* (SIMA Pocket-Book 42; Göteborg, 1986); id. (n. 16); Knapp 1997; J. D. Muhly, 'The role of Cyprus in the economy of the eastern Mediterranean during the second millennium BC', in V. Karageorghis (ed.), *Acts of the International Archaeological Symposium 'Cyprus between the Orient and the Occident', Nicosia 8–14 September 1985* (Nicosia, 1986), 45–62; Keswani 1996, 219.

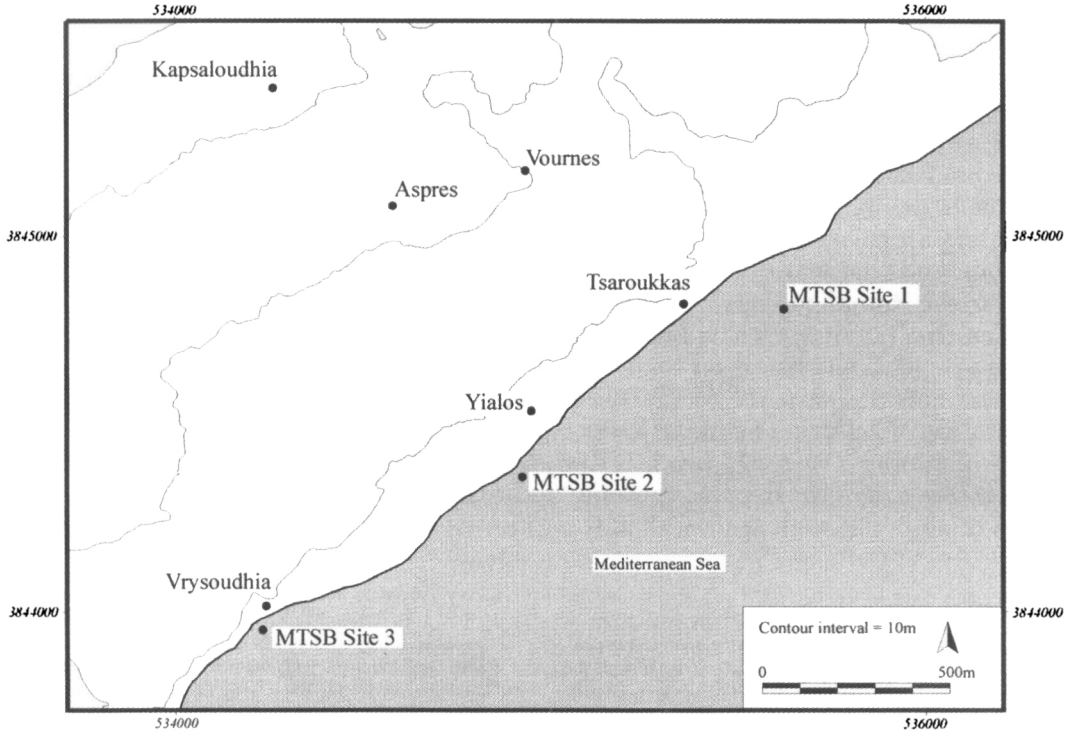


FIG. 2. Sites in the lower Maroni Valley mentioned in the text. Grid references refer to the 1 : 5000 Cyprus topographical series, co-ordinated with the UTM grid, Zone 36.

## III. LOCATING LC I MARITIME TRADE: MARONI *TSAROUKKAS* (FIG. 2)

The general move to coastal locations for primate centres right around the island clearly seems to indicate a new importance for overseas trade, as does the dramatic increase in finds of Cypriot objects in the east Mediterranean. However, apart from recognizing the settlement shift (above), or occasional imports/influences into Cyprus,[29] or pointing to references to copper from *Alashiya* in ancient Near Eastern texts—a place widely thought to be Cyprus or a town or polity therein[30]—there was little or no archaeological knowledge of the nature and scale of such international trade at the start of the LC period.

One of the aims of the investigation of the LC coastal settlement in the Maroni Valley of southern Cyprus by the *Tsaroukkas*, Mycenaeans and Trade Project was to try to recover direct evidence for the material remains of LC trade in action. There were reasons to be optimistic. All through history the southern coast of Cyprus has been the favoured safe anchorage for seafarers, and, in this specific case, work by a British Museum team in 1897, and Cadogan's discoveries in the 1980s at Maroni *Vournes*, all gave reason to expect that the coastal area had been involved in

[29] See Keswani 1996, 219 with refs.

[30] Knapp 1985 (n. 27); A. B. Knapp (ed.), *Sources for the History of Cyprus*, ii: *Near Eastern and Aegean Texts from the Third to the First Millennia BC* (Altamont, 1996), 3–11; Keswani 1996, 219.

LC maritime trade.[31] As part of a holistic strategy incorporating survey, geophysical prospection, and excavation on land, we therefore surveyed part of the seabed off the site.

A number of underwater surveys have taken place around the coast of Cyprus, revealing evidence of sea travel and the transport of goods in many periods, both prehistoric and historic.[32] And of course archaeological, historical, and literary evidence testifies to the ample maritime links between Cyprus and other polities throughout history: 'the island played a pivotal role in the maritime affairs of the empires of Antiquity'; 'The study of Roman Cypriot harbours, in particular, testifies to the island's well-travelled coastlines, far-reaching economic connections, and vital maritime culture.'[33] However, to date, the majority of such work relates, as above, to the Roman period.

Major eastern LC sites, such as Enkomi, Kition, and Hala Sultan Tekke, each have apparent anchorages or harbours based on observation, geomorphological studies, and finds, although few of these facilities have yet been actively investigated in archaeological terms.[34] A second important class of LBA sites lie in the lower reaches of the river valleys along the south coast of Cyprus, including Maroni *Vournes/Tsaroukkas*, Kalavasos *Agios Dhimitrios*, Episkopi *Phaneromeni/Bamboula*.[35] In the past, possible anchorages have been hypothesized as associated with each of these, although again with little positive evidence beyond topography and location.

[31] For the south coast as the preferred safe anchorage, see H. Georgiou, 'Seafaring, trade routes, and the emergence of the Bronze Age: urban centres in the eastern Mediterranean', Swiny et al. 1997, 117–24, at 121. For the previous work at the LC Maroni site, see: (i) for the 1897 British Museum activities, J. Johnson, *Maroni de Chypre* (SIMA 59; Göteborg, 1980); and G. Cadogan, 'The British Museum's work at Maroni', in G. C. Ioannides (ed.), *Studies in Honour of Vassos Karageorghis* (Nicosia, 1992), 123–6; (ii) for work at Maroni *Vournes*, G. Cadogan, 'Maroni VI', *RDAC* 1992, 51–8; G. Cadogan, 'Maroni: change in Late Bronze Age Cyprus', in Åström and Herscher 1996, 15–22; and (iii) for the *Tsaroukkas*, Myceneans and Trade Project, S. W. Manning, '*Tsaroukkas*, Mycenaeans and Trade Project: preliminary report on the 1996–1997 seasons', *RDAC* 1998, 39–54; id., 'Changing pasts and socio-political cognition in Late Bronze Age Cyprus', *World Archaeology*, 30 (1998), 39–58; S. W. Manning and S. J. Monks, 'Late Cypriot Tombs at Maroni *Tsaroukkas*, Cyprus', *BSA* 93 (1998), 297–351; S. W. Manning and F. A. De Mita Jr., 'Cyprus, the Aegean, and Maroni *Tsaroukkas*', in *Cyprus and the Aegean in Antiquity: Proceedings of the International Conference Cyprus and the Aegean in Antiquity from the Prehistoric Period to the 7th Century AD, Nicosia 8–10 December 1995* (Nicosia, 1997), 103–41; S. W. Manning, D. Collon, D. H. Conwell, H.-G. Jansen, D. Sewell, L. Steel, and A. Swinton, 'Tsaroukkas, Mycenaeans and trade project: preliminary report on the 1993 season', *RDAC* 1994, 83–106. For the relative prominence of Maroni as a recipient of imports, see Y. Portugali and A. B. Knapp, 'Cyprus and the Aegean: a spatial analysis of interaction in the 17th–14th centuries BC', in A. B. Knapp and T. Stech (eds), *Prehistoric Production and Exchange: The Aegean and Eastern Mediterranean* (Monograph 25; Los Angeles, 1985), 44–78.

[32] e.g. J. R. Leonard, 'Evidence for Roman ports, harbours and anchorages in Cyprus', in V. Karageorghis and D. Michaelides (eds), *Proceedings of the International Symposium, Cyprus and the Sea, Nicosia 25–26 September 1993* (Nicosia, 1995), 227–45; R. L. Hohlfelder and J. R. Leonard, 'Underwater explorations at Paphos, Cyprus: the 1991 preliminary survey', *American Schools of Oriental Research Annual*, 51 (1993), 45–62; J. R. Leonard, R. K. Dunn and R. L. Hohlfelder, 'Geoarchaeological investigations in Paphos Harbour, 1996', *RDAC* 1998, 141–57, with further bibliography at p. 141 n. 1; C. Giangrande, G. Richards, D. Kennet, and J. Adams, 'Cyprus Underwater Survey, 1983–1984: a preliminary report', *RDAC* 1987, 185–97; J.-Y. Empereur and C. Verlinden, 'The underwater excavation at the ancient port of Amathus in Cyprus', *International Journal of Nautical Archaeology*, 16 (1987), 7–18; H. Hauben, 'Cyprus and the Ptolemaic navy', *RDAC* 1987, 213–26; O. T. Envig and M. Beichmann, 'Underwater activities and the situation at Cape Kiti, Cyprus', *Op. Ath.* 9 (1984), 181–6; N. C. Flemming, 'Report of preliminary underwater investigations at Salamis, Cyprus', *RDAC* 1974, 163–73; J. N. Green, 'An underwater archaeological survey of Cape Andreas, Cyprus, 1969–1970: 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* (London, 1973), 141–78.

[33] Respectively from Hauben (n. 32), 213 and Leonard (n. 32), 227. For discussion of the literary sources in general, see ibid., 230–4. For general reviews, see papers in V. Karageorghis and D. Michaelides (eds), *The Development of the Cypriot Economy from the Prehistoric Period to the Present Day* (Nicosia, 1996); and in Swiny et al. 1997.

[34] L. K. Blue, 'Cyprus and Cilicia: the typology and palaeogeography of second millennium harbors', in Swiny et al. 1997, 32–7. The Kition harbour is increasingly the exception, e.g. C. Morhange, J.-P. Goiran, M. Bourcier, P. Carbonel, J. Le Campion, J.-M. Rouchy, and M. Yon, 'Recent Holocene paleo-environmental evolution and coastline changes of Kition, Larnaca, Cyprus, Mediterranean Sea', *Marine Geology*, 170 (2000), 205–30.

[35] For the division of the Late Cypriot sites into two main categories, (1) new settlements in coastal areas, and (2) continuing occupation in long-settled river valleys, see Keswani 1996.

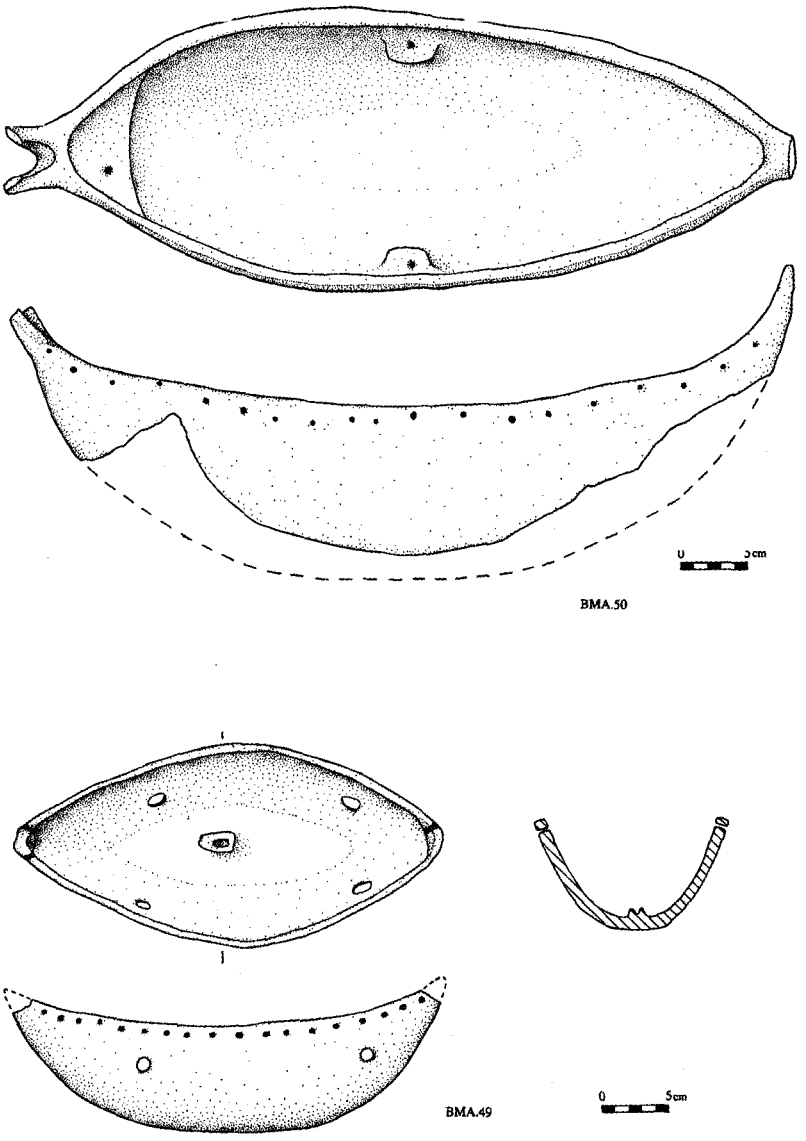


FIG. 3. Drawing of ceramic boats, BMA.49 and BMA.50, recorded from British Museum excavations in 1897.

In the case of Maroni *Tsaroukkas*, Courtois argued at a 1985 conference that: 'And sometime when there are excavations at *Tsaroukas* on a large scale I think we will have nice surprises too. Because I think *Tsaroukas* was the export harbour for the Kalavassos copper . . . I insist on it', and, in an intervention at a 1991 conference, Hadjisavvas made a similar suggestion.[36] Two terracotta boat models found in 1897 in LC tombs at Maroni *Tsaroukkas* (British Museum

[36] J.-C. Courtois, 'A propos des apports Orientaux dans la civilisation du Bronze Récent à Chypre', in Karageorghis (n. 28), 69–90, at 89; S. Hadjisavvas, 'Intervention', in P. Åström (ed.), *Acta Cypria: Acts of an International Congress on Cypriote Archaeology held in Göteborg on 22–24 August 1991*, part 3 (SIMA Pocket-Book 120; Jonsered, 1992), 329. McCaslin 1980, 104 also hypothesises an anchorage at Maroni.

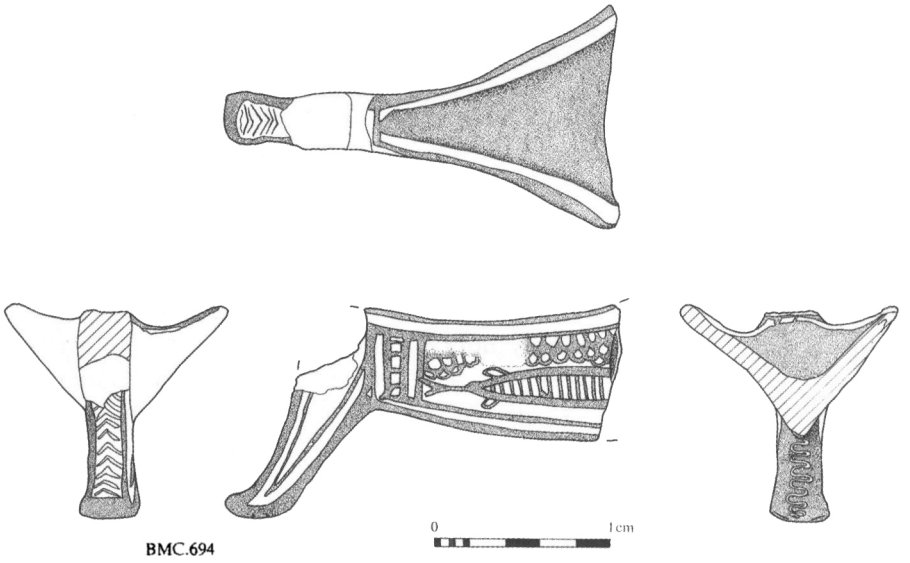


FIG. 4. Drawing of a fragment of a boat model with decoration in LH III A 2 style showing a boat, BMC.694, recorded from British Museum excavations in 1897.

Tombs 1 and 7: see FIG. 3) provided further circumstantial evidence;[37] and, indeed, the very presence of the LBA cemetery with many imported goods on a low bluff overlooking the key liminal sea and beach arena seemed to emphasize the links between the population, the local

[37] Johnson (n. 31), 15 no. 15, 18–19 no. 60, pl. 9. 15, 16. 60; Wachsmann 1998, 63–6. See also K. Westerberg, *Cypriote Ships from the Bronze Age to c. 500 BC* (SIMA Pocket-Book 22; Göteborg, 1983), 13–14, fig. 7; and V. Karageorghis, *The Coroplastic Art Of Ancient Cyprus II: LC II–CG II* (Nicosia, 1993), 74, fig. 62, pl. 32. 2–3. There is in addition the fragment from an imported Mycenean ship model found in British Museum Tomb 17 at the site: Johnson 1980, 23 4 no. 132, p. 25. 132; Wachsmann 1998, 185 and 187 fig. 8. 48. See FIG. 4. The complete boat (BM A49 = Johnson 1980, 15 no. 15, Pl. 9. 15), from British Museum Tomb 1, is made of a Plain White type fabric. It has a flat base, convex sides with four oar (?) holes, two in each side, and a small raised area in the middle, which most probably represents an installation for the mast. Small pierced holes line the rim edge, nineteen on each side. The larger boat from British Museum Tomb 7 (BM A50 = Johnson 1980, 18–19 no. 60; pl. 16. 60) is also made of a Plain White fabric. It is larger than the complete boat and is missing its base (sympathetically reconstructed in illustrations). It also has nineteen holes on each side and two pierced ledges half way along the interior of each side. Two narrow prongs are located at one end of the boat, perhaps acting as a rowlock for a steering device or rudder (?). The third fragment (see FIG. 4), a Late Helladic III A 2 boat model (BM C694 = Johnson 1980, 23–4 no. 132, pl. 25. 132) recovered from British Museum Tomb 17, consists of the stern end of a boat with a rudder attached. (Wachsman 1998, 187 argues that this represents a possible bird's head ornament topping a stern post. Johnson 1980, pl. 25. 132 appears to agree, since the sherd is shown with the protuberance pointing upwards. This orientation is possible, but leaves what appears to be a fish motif oriented somewhat oddly directly downwards. Having examined the object, and taking into account the nature and location of decorative motifs, it would seem that this is perhaps not the case, and that it is instead the stern end of a boat with rudder attached.) The fragment is decorated in black paint and depicts an oar and part of a fish (the depiction of the fish is very similar to that on the Proto-White Painted amphora from *Vathyrkakas* in Westerberg, fig. 12) towards the lower part of the boat fragment. A scale pattern near the rim gives the impression of waves and movement. Westerberg's study of Cypriot boats lists only seven examples belonging to the LBA. Four of these are of uncertain provenance, leaving the two examples from Maroni (excluding the Mycenaean example) and one from a tomb at Kazaphani: Nicolaou and Nicolaou (n. 8), 52 no. 249 + 377, fig. 14, pl. 34. 249 + 377. Westerberg regards the two Plain White boats as being large ocean-going vessels, with a socket for the mast (in one case), and pierced holes which represent oar-holes (in other words combining sailing and rowing). Wachsman 1998, 66 agrees, writing: 'Therefore, I believe that the three models from Kazaphani and Maroni probably portray an indigenous class of spacious Late Cypriot seagoing merchant ship for which additional information is lacking at present.' Furthermore, he suggests the boat models are so similar that, 'they may have originated in the same workshop' (ibid., 64).

and imported prestige goods buried in the tombs, and the sea.[38] However, direct archaeological evidence from the site was not then available.

The *Tsaroukkas*, Mycenaeans and Trade Project began work at Maroni in 1993 with the aim of investigating the predictions of Courtois, Hadjisavvas, and others, and, specifically, with the aim of finding and exploring a LC port/anchorage site and the associated trading activities. Previous work by a British Museum team in 1897 in the lower Maroni Valley, the Cyprus Survey, excavations under Gerald Cadogan at Maroni *Vournes* and Maroni *Kapsaloudhia*, and the Maroni Valley Archaeological Survey Project, already indicated that a continuous sequence existed in the area from the very beginning of the LC I period through to late in the LC II C period, and, moreover, that overseas imports from both the Levant and the Aegean from initial LC I through LC II C were apparent.[39] Further, in addition to suggestive archaeological evidence (previous paragraph), local fishermen stated that artefacts, especially stone anchors and pottery, were located on the seabed off the site, and indeed some of these objects are now housed in private collections. Local fishing boats operate from the port of Zygi to the west and fish east along the coast beyond the *Tsaroukkas* site. Weekend fishermen and octopus divers also operate in the vicinity. Thus, despite modelled predictions of, and local evidence for, significant coastal erosion, circumstances appeared favourable for archaeological investigations.[40] We report here on initial seabed exploration at the site, and, in particular, the discovery in one area of an important LC I A assemblage.

## IV. The Maroni *Tsaroukkas* Seabed (MTSB) Project

A preliminary underwater survey took place off the LBA site of Maroni *Tsaroukkas* over four seasons in 1993–6. The main aim of the underwater survey was to determine whether any cultural material, related to the terrestrial LBA site, remained on the seabed. A relatively large area of

[38] For the tombs, see Johnson 1980; Manning and Monks (n. 31). M. W. Helms, *Ulysses' Sail: An Ethnographic Odyssey of Power, Knowledge, and Geographical Distance* (Princeton, 1988), 25 remarks on the central role of the beach as the intermediary zone of interraction with ships, traders/foreigners, and so a liminal zone between local and foreign, known and unknown.

[39] Johnson 1980; G. Cadogan 'Maroni and the Late Bronze Age of Cyprus', in V. Karageorghis and J. D. Muhly (eds), *Cyprus at the Close of the Late Bronze Age* (Nicosia, 1984) 1–10; id., 'The British . . .' (n. 31); id., 'Maroni VI' (n. 31); id., 1996 (n. 31) with further refs.; Catling (n. 25), 148; Cadogan et al. (n. 10); Herscher 1984; S. W. Manning and D. H. Conwell, 'Maroni Valley Archaeological Survey Project: preliminary report on the 1990–1991 field seasons', *RDAC* 1992, 271–83, at 281–3; Manning et al. (n. 31) 89–92; S. W. Manning, D. Bolger, M. J. Ponting, L. Steel, and A. Swinton, 'Maroni Valley Archaeological Survey Project: preliminary report on 1992–1993 seasons', *RDAC* 1994, 345–67 at 347.

[40] Knowledge of the LBA coastline in the area is limited (and detailed specific study is required to further disentangle the processes of local coastline changes, caused by a variety of mechanisms, versus overall sea-level changes: e.g. Morhange et al. (n. 34) 223–9). Existing studies would indicate that the sea-level was either similar to, or a few metres below, present levels: J. A. Gifford, 'Paleogeography of Archaeological sites of the Larnaca Lowlands, South-East Cyprus' (Ph.D. diss., University of Minnesota, 1978); N. C. Flemming and C. O. Webb, 'Tectonic and eustatic coastal changes during the last 10000 years derived from archaeological data', *Zeitschrift für Geomorphologie, Suppl.-Bd.* 62 (1986), 1–29; P. A. Pirazzoli, *World Atlas of Holocene Sea-Level Changes* (Oceanography Series 58; Amsterdam, 1991); A. J. Poole, 'Sedimentology, Neotectonics and Geomorphology Related to Tectonic Uplift and Sea-Level Change: Quaternary in Cyprus' (Ph.D. diss., Edinburgh University, 1992); I. Kayan, 'Holocene geomorphic evolution of the Beşik Plain and changes in environment of ancient man', *Studia Troica*, 1 (1991), 79–92. In particular, the study of Kayan, offering the nearest available sea-level curve, estimates sea-level at -2.0 m for the relevant period about 3,500–3,000 years ago. The study of B. Gomez and P. P. Pease, 'Early Holocene Cypriot coastal palaeogeography', *RDAC* 1992, 1–8, based on a general review of the Cypriot data, modelled the seashore of Cyprus as largely similar to today's by 5000 BP. Their 5000 BP reconstruction would indicate a shoreline along the relevant area of the south coast only 100 m or so further out than today. The difference will have been smaller by the start of the LBA some *c.* 3600 years ago. To date only limited geomorphological consideration of the specific shoreline at Maroni *Tsaroukkas* has taken place, but an assessment by Dr Martin Bell (pers. comm.) in 1999 including coring to 3 m depth, leads to the view that some 30+ m of coastline, including an LC anchorage area, has very likely been lost to erosion.

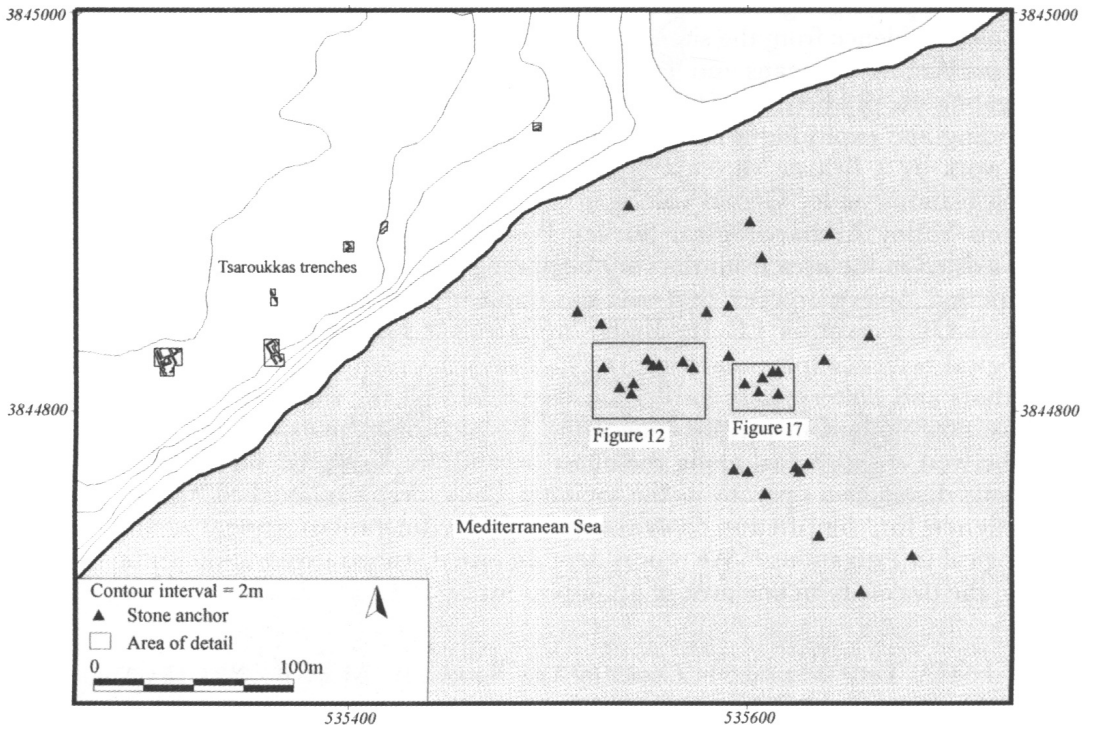


FIG. 5. The area around the Late Bronze Age site of Maroni *Tsaroukkas* indicating Late Bronze Age walls and the scatter of the stone anchors at MTSB Site 1.

seabed, out to about 300 m from the modern coastline, from a small cape a few hundred metres east of the Maroni *Tsaroukkas* site and then westwards until off the Roman site of Maroni *Vrysoudhia* (see FIGS. 2, 5), was the subject of an 'extensive' survey, with observation of the seabed from snorkelling, tow-snorkelling behind a boat, and limited scuba-diving. The seascarp along this area was also examined. The specific seabed area off the *Tsaroukkas* site was more intensively and systematically surveyed, and, in 1999, a brief geomorphological assessment was made of the Maroni *Tsaroukkas* coastline by Martin Bell. The Maroni *Tsaroukkas* seabed (MTSB) survey was designed to be an extension of the Maroni Valley Archaeological Survey Project. Similar recording techniques were used, although modifications had to be made to allow for the peculiar conditions of working underwater. The excavation of areas of the seabed was not the intention of the Maroni *Tsaroukkas* seabed survey, and the lifting of objects was kept to a minimum.[41] The intensive survey area off *Tsaroukkas* was studied within a 50 m × 50 m grid system (extended via sighting compass and land-based theodolite from the MVASP grid) by divers swimming transects along pre-laid lines secured with buoys. When found, artefacts were recorded, photographed and drawn *in situ*.[42] Groups of artefacts, designated as a 'site', were then subsequently studied in greater detail.

[41] The presence of fishermen and recreational divers in the area, and the visibility of our diving a short distance off the coast, presented a concern. We did not wish to promote the disturbance and removal of antiquities.

[42] Underwater photography was carried out by E. A. Sewell, using a Nikonos V underwater camera with a 20 mm lens and a strobe SB103. Underwater recording was done by writing/drawing on mylar sheets with pencil. Whilst every effort was made to ensure accuracy, the recording process was made difficult by wave action because of the shallowness of the remains, their proximity to land, and changing sea conditions, which affected visibility as well as the stability of the divers.

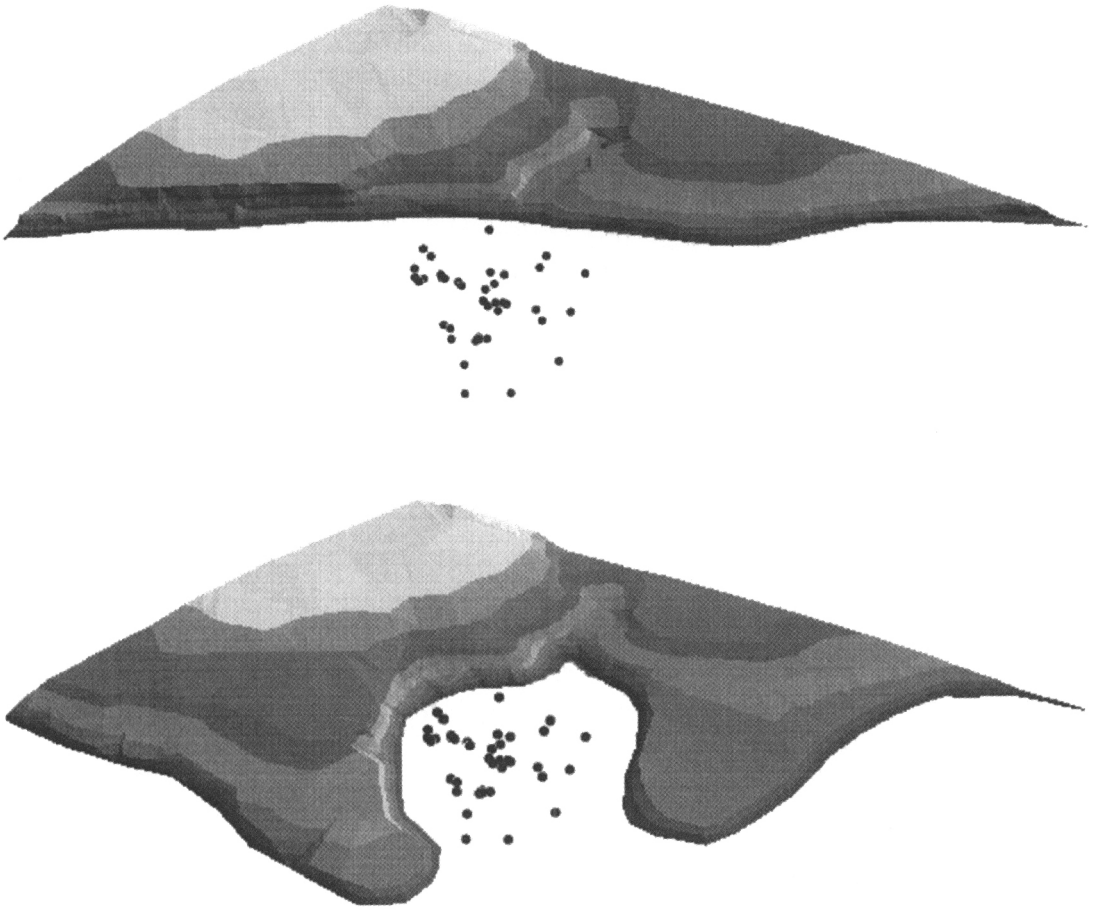

FIG. 6. Upper section shows a 3D model of the area of Maroni *Tsaroukkas* and MTSB Site 1 based on the current 2 m contour data. Lower section shows a possible hypothetical reconstruction of the coastline based on the distribution of the anchors recorded.

The seabed off *Tsaroukkas* consists of areas of cobbles, separated by sandbanks. The cobbles are identical with those found on the beach, both of which probably derive from eroded riverine and gravel terrace deposits. Outside the surf zone, the cobbles are covered by low vegetation growth, although this does not severely hamper observation of the seabed. The sandbanks are susceptible to winter storms, which can move sand across the seabed, covering cobble beds. At other times, this process removes sand to reveal a mud or clay base. In certain areas, and especially towards the west, pottery was found concreted into outcrops of reef rock or beneath overhangs. Farther to the west is a series of gullies and banks, upon which more dense vegetation grows. To the south, a shelf slopes gently away from the shore, reaching about 10 m in depth at a distance of *c.* 300 m from current shore. The prevailing current is from the south-west inshore, although specific weather conditions can quickly change this.

### MTSB SITE 1

Site 1 (see FIG. 5) lies directly off the excavated area at *Tsaroukkas*, and occupies part of what was likely to have been a sheltered anchorage/inlet in the LBA coastline (see FIG. 6 for a

possible hypothetical reconstruction). This overall area was found to contain cultural remains from a number of periods, though with a definite bias towards LBA material. Site 1 is approximately 32,000 m² in size, although its true extent may be larger since cultural material was observed farther to the east and south, but outside the safe area for maritime investigation as determined by the project given resources and facilities.[43] The most obvious artefacts noted were a number of large pierced stones which may be identified as LBA stone anchors (FIGS. 7 and 8). These are of the types, one-hole, and three-hole or composite, previously identified by other scholars as LBA stone anchors from Cyprus; further, analogues of these seabed finds (one-hole types only though) are found around, or stratified in, LBA terrestrial contexts (both settlement and funerary) at Maroni *Tsaroukkas* (FIGS. 9–10; TABLE 1), a pattern found at other LC sites where pierced stones either fulfil utilitarian roles, are reused in architecture, or are associated with tombs.[44] A total of thirty-five anchors were recorded on the seabed (FIG. 11); five of these were lifted.[45] In summary, at Site 1, twenty-two single-hole anchors, ten three-hole or composite anchors, and three broken (holes uncertain) anchors were recorded in total.

TABLE 1. Larger pierced stone artefacts from terrestrial contexts at Maroni *Tsaroukkas*

| | *Context* | *Length, cm* | *Width, cm* | *Depth, cm* | *Holes* | *Worked (Y/N)* |
|---|---|---|---|---|---|---|
| MVASP 187 | B41/I U18 T10 | 38 | 33 | 9 | 1 | Y |
| MVASP 188 | B41/II U18 T5 | 62 | 42 | 13 | 1 | Y |
| MT.52 | Area A | 43 | 30 | – | 1 | N |
| MT.111 | P/25 | 52 | 40 | 20 | 1 | Y |
| MT.113 | T/28 | 61 | 49 | 17 | 1 | N |
| MT.188 | ZY/14 | 57 | 31 | 13 | 1 | Y |
| MT.418 | H/20 | 47 | 37 | 12 | 1 | Y |
| MT.420 | ZY/15 | 33 | 64 | 21 | 1 | Y |
| MT.421 | ZU/4 | 43 | 31 | 24 | NA | N |
| MT.484 | H/15 | 57 | 37 | 17 | 1 | Y |

Very little ceramic material was initially recorded from any part of Site 1 (in 1994), because of a lack of familiarity with visual recognition criteria under the prevailing conditions. In time

[43] A motorized boat was available only for some work in 1995. In its absence, work was limited on safety grounds to no more than *c.* 300 m from the coastline.

[44] For Cypriot LBA stone anchors in general, see Frost 1963; Frost 1970; ead., 'Bronze-Age stone-anchors from the Eastern Mediterranean: dating and identification', *The Mariner's Mirror*, 56 (1970), 377–94; ead., 'Appendix 1: the Kition anchors', in V. Karageorghis and M. Demas (eds), *Excavations at Kition V.1: the Pre-Phoenician levels, Areas I and II* (Nicosia, 1985), 281–321; McCaslin 1980; Wachsmann 1998, 273 4. For a general review of Bronze Age anchors, see Wachsmann 1998, 255–93. For a review of Bronze Age ships in the east Mediterranean, see ibid., esp. 61 7 on Cypriot ships.

For terrestrial uses and contexts of larger pierced stones/anchors, other than at Maroni *Tsaroukkas* or nearby Maroni *Vournes* (e.g. a medium-sized single-hole pyramidal pierced stone found at the latter believed to have been rebuilt into a LBA wall: G. Cadogan, 'Maroni I', *RDAC* 1983, 153–62, at 161), we note the following instances to support the statements in the text: (i) instances of pierced stone weights (LBA and later) of various shapes and sizes for use in the production of olive oil (S. Hadjisavvas, *Olive Oil Processing in Cyprus: From the Bronze Age to the Byzantine Period* (SIMA 99; Nicosia, 1992), or for that matter for production processes for metals, wine, textiles, grain, etc.; (ii) instances of LBA anchors reused in LBA buildings from the Levant to the Aegean, e.g. Frost 1970; ead., 1970 (n. 44); J. W. Shaw, 'Two three-holed stone anchors from Kommos, Crete: their context, type and origin', *International Journal of Nautical Archaeology*, 24 (1995), 279–92; Wachsmann 1998, 255–81; and (iii) instances of LBA stone anchors, sometimes broken, associated with LBA tombs and/or ritual loci on Cyprus and elsewhere in the LBA east Mediterranean, e.g. H. Frost, 'The stone anchors of Ugarit', in C. F.-A. Schaeffer (ed.), *Ugaritica VI* (Paris, 1969), 235–45, at 242; Åström et al. (n. 10), 72, 78; Wachsmann 1998, 258–9, 271, 273, 279, 281, 292–3.

[45] The smaller examples were thought to be in danger of being removed by others, since they could be raised easily, and so were recovered for further study. One of the larger anchors was also lifted as it was particularly visible. The anchors were lifted using air bags and were then towed to shore. We thank Stuart and Phillip Swiny for their help with this operation, and Helena Wylde Swiny for organizing assistance from the Dekelia Diving Club, including the lifting equipment.

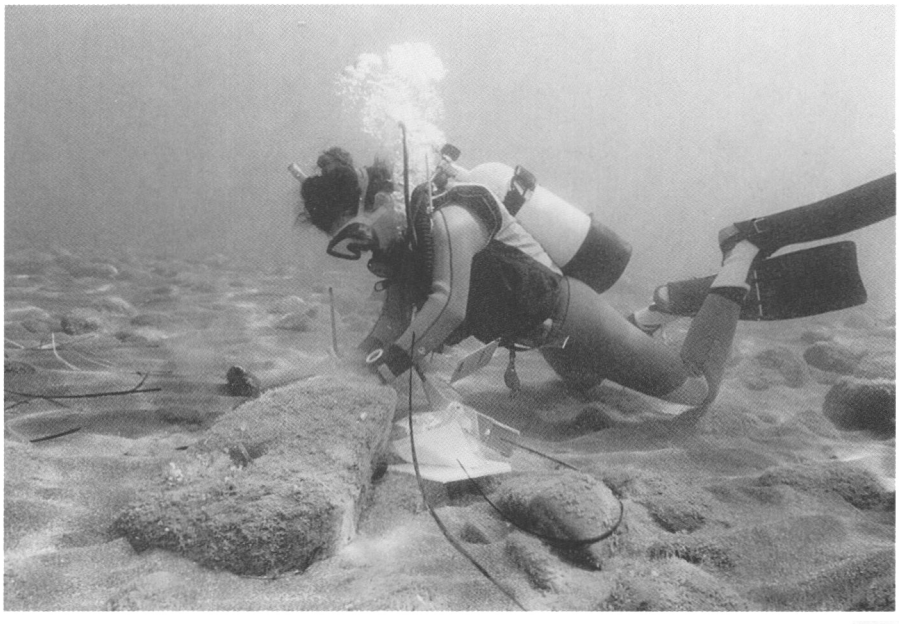

FIG. 7. Diver Kate Mackay recording one of the stone anchors at MTSB Site 1.

FIG. 8. TSBS.037 *in situ* on the seabed with the main hole and one of the secondary holes freed from concretion. The other secondary hole had not been revealed at the time of the photograph.


FIG. 9. MT.418 *in situ* reused within wall S503 in trench H/20 at the Maroni *Tsaroukkas* site.

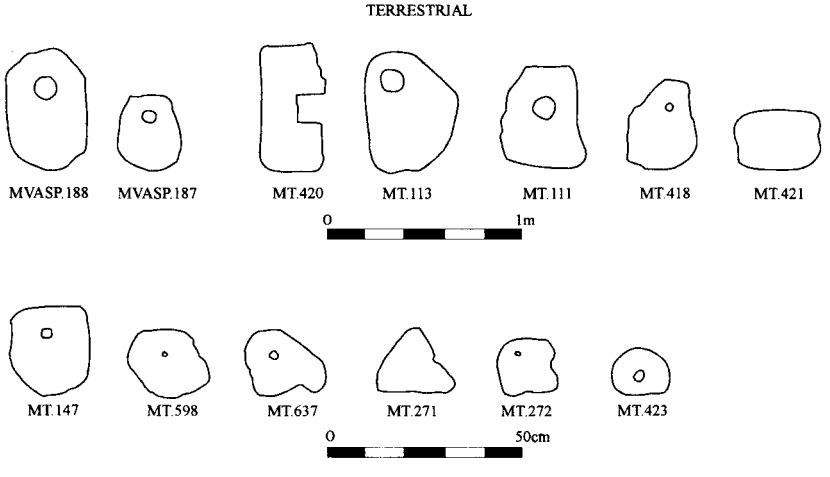


FIG. 10. Stone anchors and weights recorded in terrestrial survey and excavation around the Maroni *Tsaroukkas* site.

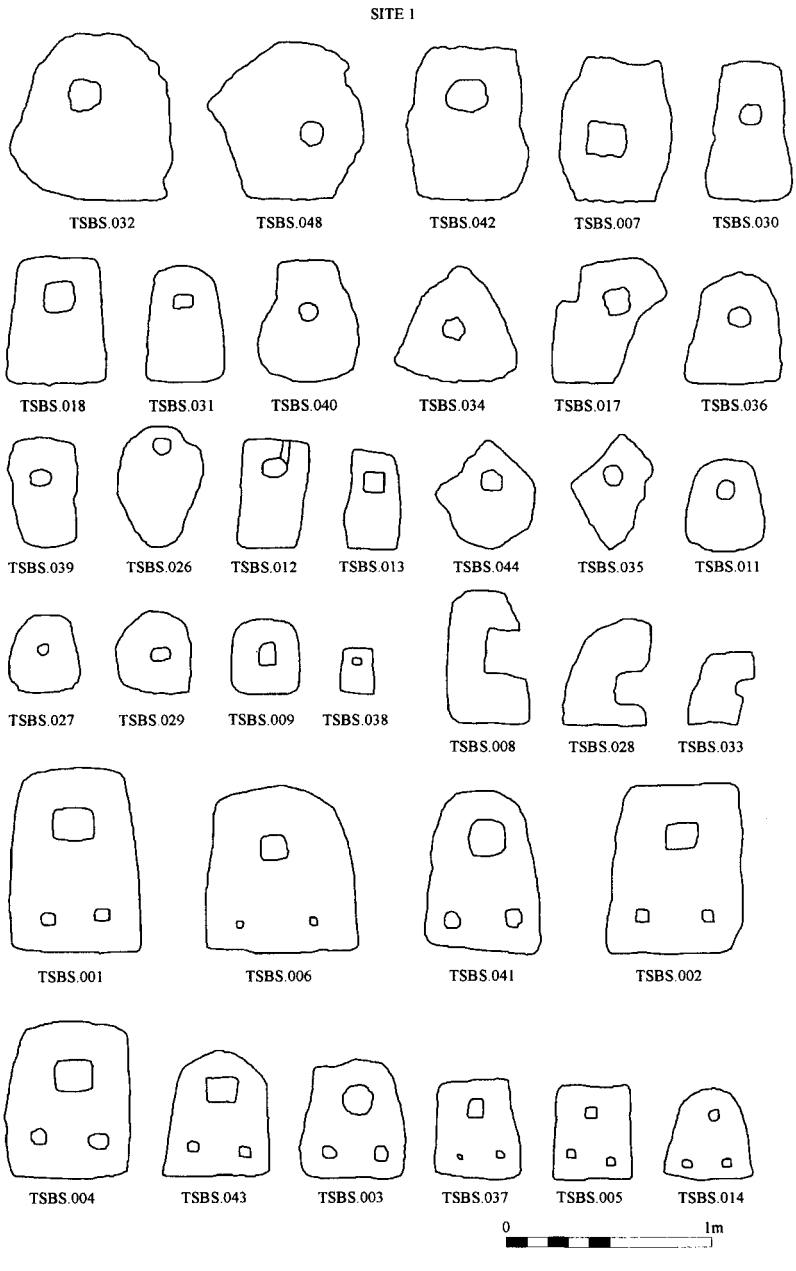


FIG. 11. Stone anchors recorded at MTSB Site 1.

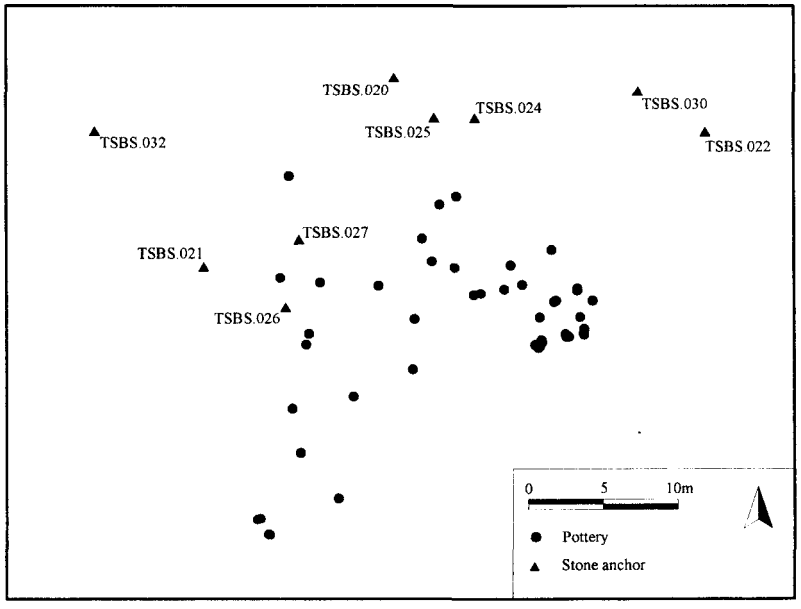


FIG. 12. Location of the ceramic concentration at MTSB Site 1 and the surrounding anchors.

(during the 1995 season), a background scatter of pottery was noted, and, in particular, a notable concentration of sherds in one small locus was recognized. This specific locus, an area of *c.* 400 $m^2$ (FIG. 12), was more thoroughly investigated in 1996, and forms the core of the present report. It is our impression that LBA anchors and other material (including we assume a variety of ceramics) lie on the seabed across a larger extent of the Site 1 area, but that this specific locus was recognized in 1995–6 by the chance of good visibility at this point due to the (then) state of the seabed.

No underwater excavation took place at Site 1, except where material already visible was concreted into reef rock or set in a surrounding matrix. Hand-fanning was used on one occasion where a number of sherds had come to rest in a hollow, among them an important Proto White Slip sherd (**MTSB.070**, FIGS. 13 and 18) and a fragment of animal horn (unidentified). Other stone artefacts observed or recovered included possible architectural elements, querns, a large basin and a mortar (see TABLES 4 and 5 below).

### MTSB SITE 2

In 1994 Sewell and Manning were shown an area of the coast by two local fishermen, where a Roman site was reported to exist (see FIG. 2). The fishermen reported seeing pottery on the seabed off the site, especially several hundred metres further east; one claimed to have removed a whole vessel, which was described as a two-handled amphora. The terrestrial locus referred to roughly matched the Roman site of Maroni *Vrysoudhia* (see MTSB Site 3 below).[46]

[46] The Maroni *Vrysoudhia* site, west of Maroni *Tsaroukkas*, was recognized by MVASP: Manning et al. (n. 39), 347, pl. 89. 1; see also S. W. Manning, A. Manning, S. J. Monks, R. Tomber, D. A. Sewell, M. J. Ponting, and E. C. Ribeiro, *The Late Roman Church at Maroni Petrera: Survey and Salvage Excavations 1990–1997, and Other Traces of Roman Remains in the Lower Maroni Valley, Cyprus* (Nicosia, 2002). Much of the site lies on the property of, or under, a modern building. Some of the site has been destroyed by bulldozing, in order to create a small marina and mole at the back of the modern building.

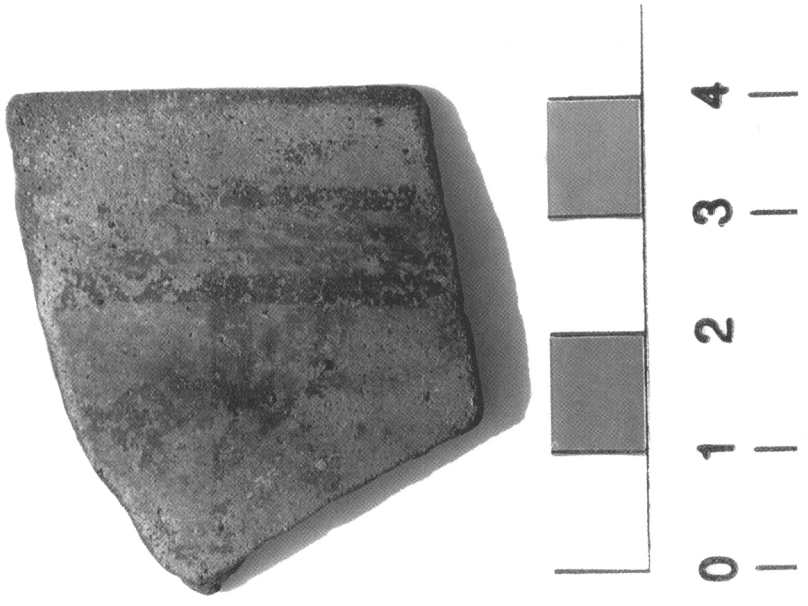


FIG. 13. Photograph of the MTSB.070 Proto White Slip sherd prior to conservation.

The reported seabed site farther to the east could also potentially be linked with the Cypro-Archaic to Cypro-Classical site of Maroni *Yialos* (a site which may have also had some LBA component). The first expedition to investigate the area of seabed indicated, east of *Vrysoudhia*, recorded a number of amphora necks, identified by Dr Roberta Tomber as being of the local LRA 1 type (FIG. 14),[47] and five likely anchors. The area was characterized by an undulating landscape of valleys and outcrops, topped with seaweed. The site was revisited in 1995, at which time six further stone anchors were recorded. The total of 11 anchors observed comprised four single-hole, three two-hole, and four three-hole (composite) examples (FIG. 15). There was no visible pottery associated with these; the sherds identified in 1994 were to the west of the anchor scatter. The conditions surrounding these finds were similar to those at Site 1, with outcrops of cobbles and boulders, surrounded by patches of sand. Heavily abraded Roman (or undiagnostic) pottery was found scattered on the beach adjacent to these finds, although there is no evidence of a site eroding into the sea in this specific area.[48]

MTSB SITE 3

Five stone anchors or pressweights are discussed by Hadjisavvas as having come from the Maroni *Kollitsis* collection.[49] Two of these are deemed to be of LBA date (nos. 10 and 11), one of the Hellenistic period (no. 12) and two of the Late Roman–Early Byzantine period (nos. 13 and 14). The Roman site of Maroni *Vrysoudhia* lies close by, with walls, floors and a well visible

[47] For more information on LRA1 from the coastal area around Maroni and Zygi, see S. W. Manning, S. J. Monks, D. A. Sewell, and S. Demesticha, 'LRA1a production at the Late Roman site of Zygi-*Petrini*, Cyprus', *RDAC* 2000, 233–57.

[48] There are two known Roman sites eroding into the sea along this general region of the Cyprus coast: Maroni *Vrysoudhia* (n. 46), and Zygi *Petrini*, just west of the modern town of Zygi: Manning et al. (n. 47).

[49] Hadjisavvas (n. 44), 66–8, nos. 10–14, figs. 123–7, 141.

FIG. 14. Late Roman amphora heads (LRA 1) recovered from MTSB Site 2.

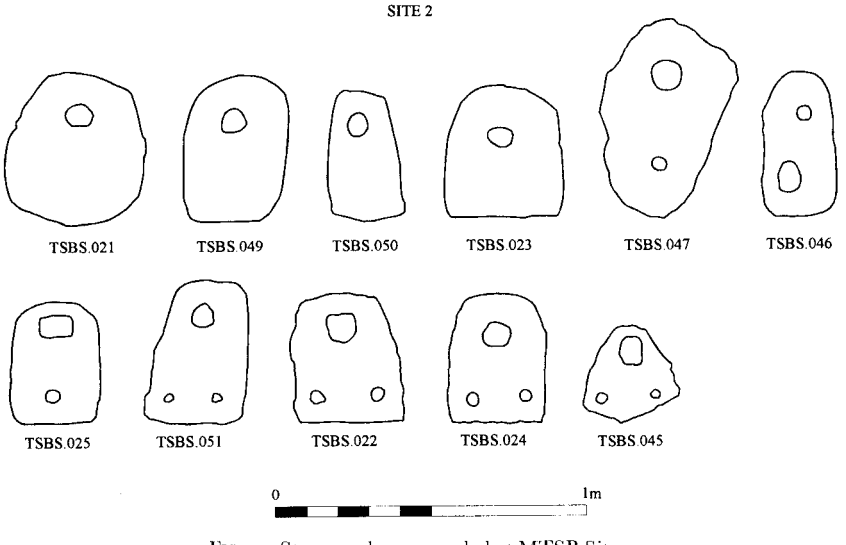


FIG. 15. Stone anchors recorded at MTSB Site 2.

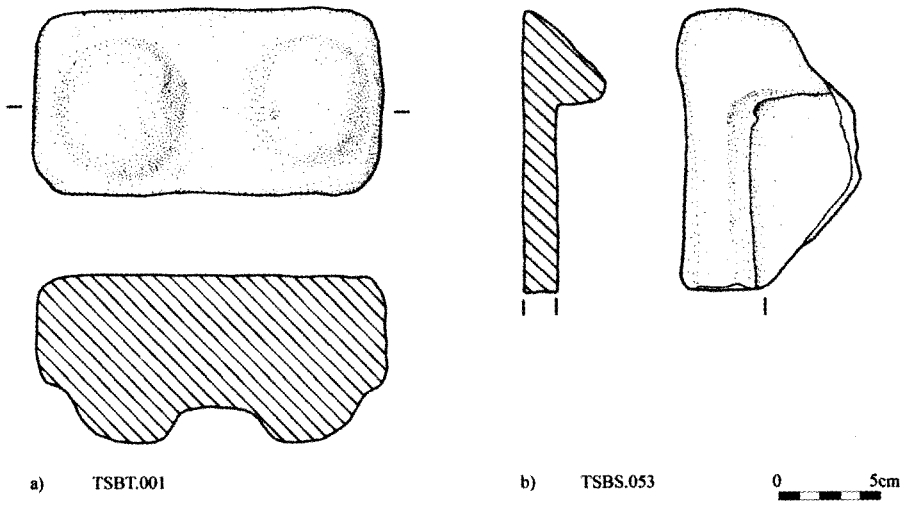


FIG. 16. (*a*) TSBS.053 marble breast weight recovered from MTSB Site 3. (*b*) TSBT.001 Roman roof tile recovered from MTSB Site 3.

in the actively eroding sea-scarp; it has been partly disturbed by recent development of a building on the coast in this area. It seemed quite likely that some of these stone objects may have derived from this site or associated maritime activity, some perhaps as a direct result of the recent construction work. A short exploratory dive was carried out. A single anchor was spotted on the seabed off the site. Other finds included a marble weight (TSBS.053, FIG. 16 *a*, discussed in detail below), and a fragment of a Roman roof tile (TSBT.001, FIG. 16 *b*). Such finds associated with Roman maritime activity and trade are not surprising in view of the significant evidence of Roman to Late Roman activity recovered by MVASP in the lower Maroni Valley and nearby areas in addition to Maroni *Vrysoudhia*: a Roman to Late Roman site along the Ayias Minas river at Maroni *Phouches*, a Roman site at Maroni *Aspres*, a Late Roman church and associated structures at Maroni *Petrera*, Roman material from both the Maroni *Tsaroukkas* and *Vournes* excavations, and a coastal settlement with LRA1 production facility at Zygi *Petrini*, among a general background scatter of Roman material across this valley and the adjacent Vasilikos valley.[50]

## V. NATURE AND FORMATION OF THE LC DEPOSIT AT MTSB SITE 1

The key to any interpretation of the group of some 75 LC ceramic objects found on the seabed at MTSB Site 1 is ascertaining how they came to be there. In essence, the question is whether the material found on the seabed derived from shipping and maritime activity, or instead from more mundane erosion of terrestrial deposits. Since the overall deposit, and especially the specific ceramic deposit within the Site 1 area discussed in this report, lie close to the shore, it is a reasonable concern. Further, the coastal scarp at Maroni *Tsaroukkas* is subject to erosion, and cultural artefacts may be seen eroding out; and, in general, the coastline of this area of southern Cyprus is actively eroding away.

[50] See Manning et al. (n. 46) for further details.

However, it seems unlikely that the LC I artefacts recovered from the seabed survey have been eroded from the terrestrial site. First, the ceramics are found in the general anchorage area delimited by the anchor finds (see FIGS. 5, 12), and this must have been a marine rather than terrestrial context in the LBA. Second, the state of preservation is far too good. They are not the randomly assorted, worn, and frequently unidentifiable kind of ceramic material commonly found in the shallow waters of the eastern Mediterranean. Instead, large parts of vessels have been found in good condition. It is simply not possible that these pots eroded out of the coastal scarp and passed through the surf zone in the shallow water immediately off the beach. Even modern bricks sometimes left or dumped on the beach in the Maroni area are found later highly abraded within just a few years. Late Roman material found in and below other eroding seascarps in the region is also very clearly abraded once it has been in the surf zone. LBA pottery would not have survived even this well. It is thus no coincidence that no recognizable prehistoric ceramics have been recorded by this project on the water's edge, or in the immediate surf zone. It would seem that prehistoric pottery simply does not survive in these conditions, possibly because of the lower firing temperature involved; this seems to be confirmed by the fact that, near sites 2 and 3, where there is evidence of Roman occupation, some abraded pottery is found scattered on the beach. The LBA pottery, with large vessel parts and not just the toughest sections of a pot, and well-preserved surfaces, cannot have experienced erosion and intensive water action. Therefore, the most likely scenario is that it was deposited at sea, probably directly from ships (either deliberate jettison or accidental washing overboard, or through shipwreck). Whole or near whole vessels or vessel parts thus sank to the seabed where they became quickly buried in mud (or sand—but the former in this area) and subsequently became encased in rocks or reef rock and silt in some cases, or were protected by overhangs.

One method to prove this point, and to compare the depositional effects on different pottery types, is to weigh representative samples from a number of sources. Ten random sherds were selected from the LC seabed material from MTSB Site 1 and were weighed (dry weight). LC material was also taken as a random sample from the MVASP survey, the excavation at Maroni *Tsaroukkas*, the excavation at Maroni *Aspres*, and from a tomb deposit (MT Tomb 15) that had been disturbed by recent building work. TABLE 2 clearly shows that, even where coarseware sherds alone are counted, the average weight of the underwater sherds is far greater than typically encountered in terrestrial contexts.

TABLE 2. Comparison of random Maroni sherd weights, contrasting those from terrestrial contexts with the MTSB Site 1 LC I A ceramic assemblage (the seabed sherds are significantly heavier)

| | *Number of sherds* | *Weight in grams* | *Average weight of sherd, grams* |
|---|---|---|---|
| *Tsaroukkas*, Deposit I/14 12.0 | 12 | 90 | 7.5 |
| *Aspres*, Deposit 44 | 39 | 1440 | 36.9 |
| MVASP, B41/II U14–19 | 8 | 1505 | 188.1 |
| *Tsaroukkas*, Tomb 15 1.0, fine | 10 | 168 | 16.8 |
| *Tsaroukkas*, Tomb 15 1.0, coarseware | 10 | 700 | 70 |
| Seabed pottery | 10 | 6325 | 632.5 |

The locations and state of the anchors found on the seabed confirm the view drawn from the ceramics. The anchors were found lying directly on, or set into, the cobble beds, or lodged within sandbanks. For example, TSBS.018 was almost entirely buried within a sandbank and

only *c.* 5% visible when it was first noted. TSBS.001, 002, 004 were first recorded in 1994, were subsequently covered by sand, and did not become visible again until 1997. Often the holes in the anchors lying on cobble beds were filled with small stones and became concreted, making recognition difficult.[51] These anchors have clearly been in the sea a long time, and, in the cases of the larger ones especially, ideas of erosion and transport from land over any great distance are implausible. They must be flotsam or jetsom from ships. Critically, the MTSB Site 1 ceramics were found *within* the area of scatter of the LBA-type anchors. Indeed, the scatter of anchors roughly seems to define the extent of a likely LBA anchorage area (an inlet/bay) of which at best just the northern (landward) margin survives today in a gully mouth at *Tsaroukkas*: see FIG. 6 for a possible schematic reconstruction/impression. The formerly surrounding land sides of this stretch of water have been eroded away since prehistoric times. The absence of anchors or observed ceramics from these likely eroded areas is telling.

In conclusion, a significant extent of coastline has undoubtedly been lost since LBA times at *Tsaroukkas*. This certainly included LBA tombs based on 1990s finds of tombs actively eroding out of the seascarp,[52] and possibly also various buildings and anthropogenic land-surfaces. The loss of this coastline renders the original LBA anchorage area at the site no longer evident, except as approximately delimited by way of a negative image through the scatter of anchors from where ships moored in LBA times. It is clear that the LC ceramics and anchors from MTSB Site 1 do not derive from coastline erosion and modification, but from LBA jettisoning or loss at sea in the LBA anchorage area off the *Tsaroukkas* site.

## VI. Anchors From MTSB Site 1 (and Comparisons With Those From Sites 2 and 3)

As previously noted, the coastal area continues to be used by local fishermen to this day. Different shapes and sizes of pierced stones have been used for various purposes by fishermen for centuries. The variability in size, shape, weight and number of holes makes it difficult to fit all examples found into typologies and to attribute them to particular periods of use (although some hypotheses may be advanced).[53] The anchors from Sites 1, 2 and 3, discussed here, are no less diverse (FIGS. 11, 15). TABLE 3 shows the presence of different forms between Site 1 and 2.

However, it is possible to attribute with confidence some of the anchors to the LBA period when *Tsaroukkas* was occupied. Many of the large three-hole anchors are the quintessential Cypriot LBA type, thereby confirming the presence of ships anchored off the coast. The larger

[51] Similar conditions are recorded by O. T. Engvig and P. Åström, *Hala Sultan Tekke II: The Cape Kiti Survey: An Underwater Archaeological Survey* (SIMA 45/2; Göteborg, 1975), figs. 15–17.

[52] Manning and Monks (n. 31), esp. tombs 2, 3, 6, 7, and 10.

[53] Cf. Frost 1963, ead., 1985 (n. 44); ead., 'Anchors sacred and profane (Ugaritic anchors revised and compared)', in M. Yon (ed.), *Ras Shamra-Ougarit VI: arts et industries de la Pierre* (Paris, 1991), 355–410; A. Nibbi, 'Stone anchors: the evidence re-assessed', *The Mariner's Mirror*, 71 (1993), 5–26; S. A. Kingsly and K. Raveh, 'Stone anchors from Byzantine contexts in Dor Harbour, Israel', *International Journal of Nautical Archaeology*, 24 (1994), 1–12; Wachsmann 1998, 258–92.

Most problematic are examples of small pierced stones, which have been recovered from the seabed by excavation and survey. Many of these are too small to be classified as anchors and are therefore deemed to be weights. Weights would have been required in, among other things, the textile industry (for stretching and holding down cloth, and keeping looms firm), olive oil (Hadjisavvas [n. 44]) and wine processing, and metal-working (for crushing ore). Furthermore, they could also act as fishing-net weights. The wide range of shapes, sizes, and placement of the hole, means that standardized properties were not important to whatever function they served.

The problem of definition is also applicable to some of the larger pierced stones. These have a number of possible uses apart from as anchors, the most obvious being press weights or tethering stones. Seabed context, and similarity to other pierced stones interpreted as anchors, support the anchor interpretations in the present cases.

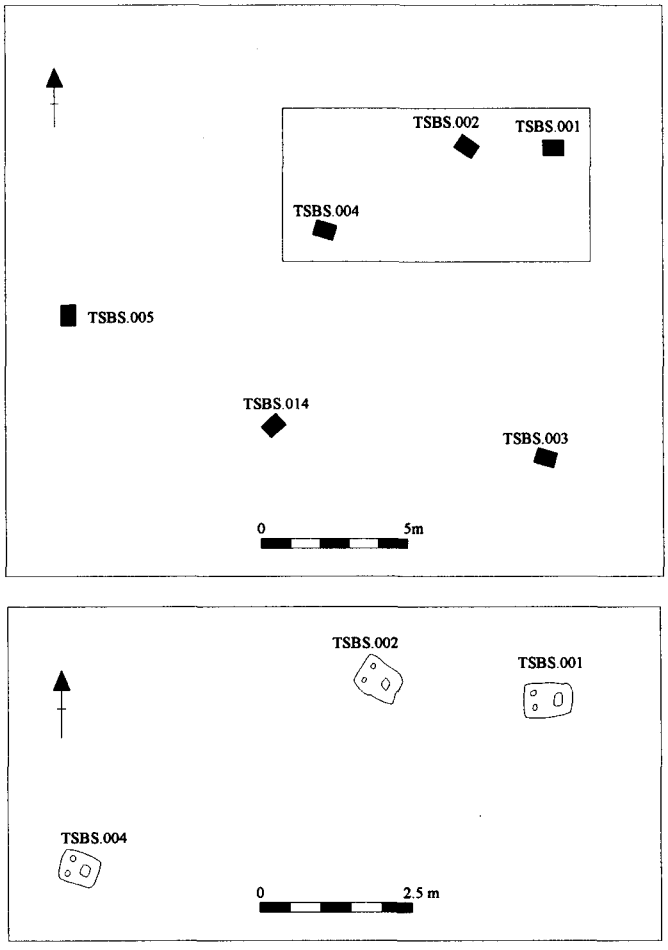


FIG. 17. Concentration of three hole anchors at MTSB Site 1.

one-hole anchors also closely parallel LBA east Mediterranean types. In the same vein, it is significant that no two-hole anchors are found at Site 1, although they do occur at Site 2. This may suggest that three-hole types are associated with the LBA period, whilst two-hole types are linked to the LBA/Archaic period.[54] However, one must not overlook the degree of variability within the various groups of anchors. For example, TSBS.001 is a carefully worked anchor with three well-shaped square holes, whereas TSBS.048 is a massive unworked piece of stone with a single misshapen hole. The corpus seen in TABLE 3 shows the whole range of Cypriot types as outlined by Frost and McCaslin.[55] In terms of the anchors recorded by the MTSB project, the relative size and number of holes will be used to classify the objects. Since

[54] McCaslin 1980, fig. 25 category 3 illustrates similar two-hole anchors from the site of Athlit in Israel. The absence at MTSB Site 1 of this type might lend support to a hypothesis that they are a later development from the LBA one- or three-hole types. Cf. also G. Käpitan, 'Ancient anchors: technology and classification', *International Journal of Nautical Archaeology*, 13 (1984), 33–44, at 34, fig. 2.

[55] Frost 1963; McCaslin 1980.

the majority of anchors have not been brought to the surface, classification based on weight categories is not appropriate in this case.[56]

TABLE 3. Stone anchors from MTSB Sites 1 and 2

MTSB SITE 1

| *OBJECT* | *Length, cm* | *Width, cm* | *Depth, cm* | *Holes* | *Broken (Y/N)* | *Worked (Y/N)* |
|---|---|---|---|---|---|---|
| TSBS001 | 90 | 62 | 19 | 3 | N | Y |
| TSBS002 | 82 | 65 | 19 | 3 | N | Y |
| TSBS003 | 61 | 44 | 12 | 3 | N | Y |
| TSBS004 | 76 | 60 | 18 | 3 | N | Y |
| TSBS005 | 44 | 35 | 9 | 3 | N | Y |
| TSBS006 | 78 | 70 | 12 | 3 | N | Y |
| TSBS007 | 70 | 53 | unknown | 1 | N | Y |
| TSBS008 | 65 | 39 | 16 | NA | Y | Y |
| TSBS009 | 37 | 23 | 10 | 1 | N | Y |
| TSBS011 | 40 | 12 | 8 | 1 | N | Y |
| TSBS012 | 53 | 34 | 22 | 1 | N | Y |
| TSBS013 | 47 | 27 | 18 | 1 | N | Y |
| TSBS014 | 41 | 38 | 5 | 3 | N | Y |
| TSBS017 | 72 | 38 | 11 | 1 | N | N |
| TSBS018 | 59 | 47 | 20 | 1 | N | Y |
| TSBS026 | 63 | 39 | 15 | 1 | N | N |
| TSBS027 | 42 | 34 | 9 | 1 | N | Y |
| TSBS028 | 52 | 42 | unknown | NA | Y | Y |
| TSBS029 | 40 | 28 | 10 | 1 | N | Y |
| TSBS030 | 56 | 38 | 14 | 1 | N | Y |
| TSBS031 | 55 | 37 | 11 | 1 | N | Y |
| TSBS032 | 81 | 64 | 10 | 1 | N | N |
| TSBS033 | 35 | 25 | unknown | NA | Y | Y |
| TSBS034 | 53 | 48 | 10 | 1 | N | N |
| TSBS035 | 55 | 37 | 8 | 1 | N | N |
| TSBS036 | 54 | 41 | 19 | 1 | N | Y |
| TSBS037 | 49 | 41 | 6 | 3 | N | Y |
| TSBS038 | 22 | 16 | 10 | 1 | N | Y |
| TSBS039 | 52 | 23 | 14 | 1 | N | Y |
| TSBS040 | 58 | 47 | 19 | 1 | N | Y |
| TSBS041 | 77 | 50 | 13 | 3 | N | Y |
| TSBS042 | 75 | 46 | 17 | 1 | N | Y |
| TSBS043 | 61 | 49 | 15 | 3 | N | Y |
| TSBS044 | 52 | 31 | 12 | 1 | N | N |
| TSBS048 | 78 | 62 | 10 | 1 | N | N |

MTSB Site 2

| *OBJECT* | *Length* | *Width* | *Depth* | *Holes* | *Broken* | *Worked* |
|---|---|---|---|---|---|---|
| TSBS021 | 64 | 55 | 14 | 1 | N | Y |
| TSBS022 | 59 | 47 | 14 | 3 | N | Y |
| TSBS023 | 58 | 47 | 14 | 1 | N | Y |
| TSBS024 | 57 | 40 | 12 | 3 | N | Y |
| TSBS025 | 55 | 36 | 12 | 2 | N | Y |
| TSBS045 | 40 | 44 | unknown | 3 | N | N |

[56] A number of different terms have been used to describe the different types of anchors. McCaslin 1980 uses the terms 'weight', 'sand', and 'composite' anchor as the main means of classification. See also F. Moll, 'The history of the anchor', *The Mariner's Mirror*, 13 (1927), 93–332; Nibbi (n. 53). E. Galili, J. Sharvit and M. Artzy, 'Reconsidering Byblian and Egyptian stone anchors using numerical methods: new finds from the Israeli coast', *International Journal of Nautical Archaeology*, 23 (1994), 93–107 have attempted to classify LBA one-hole stone anchors according to their shape/dimensions. We have not attempted to analyse the Maroni anchors in this way as the majority of our one-hole anchors are only roughly worked. Maroni weights are also unknown in most cases, as the anchors were not lifted.

MTSB Site 2 - *continued*

| *OBJECT* | *Length* | *Width* | *Depth* | *Holes* | *Broken* | *Worked* |
|---|---|---|---|---|---|---|
| TSBS046 | 65 | 34 | unknown | 2 | N | Y |
| TSBS047 | 83 | 52 | 15 | 2 | N | N |
| TSBS049 | 66 | 42 | 12 | 1 | N | Y |
| TSBS050 | 58 | 34 | unknown | 1 | N | Y |
| TSBS051 | 65 | 45 | unknown | 3 | N | Y |

The different functional uses of the various sizes, and especially varying hole configurations, have been widely debated. McCaslin argues, with reference to the three-hole type, that the main hole was for the hawser and the two smaller holes for flukes.[57] Nicolaou and Catling, in their article discussing anchors from Hala Sultan Tekke, expressed doubts about this interpretation, instead suggesting that the anchors were used the other way up.[58] Nibbi has also expressed doubts about this interpretation and has suggested that the two smaller holes may have been for additional hawsers, rather than flukes.[59] Finally, Wachsmann has proposed that the large square hole may have been used for multiple eye hawsers to prevent abrasion of the main hawser.[60]

In terms of the location of the different types, one area of the seabed at MTSB Site 1 warrants more detailed study, since it may represent a single deposition event. TSBS.001, 002, and 004, are three large, well made, three-hole anchors, which are located in a line (FIG. 17). Three additional, smaller, three-hole anchors, TSBS.003, 005, 014 also lie roughly in a line, and in close proximity to the first group. This configuration may have resulted from the severing of the main tethering line (the first group of large anchors) and a steadying line of smaller anchors, as observed in the Cape Andreas survey.[61] The fact that these anchors represented a significant investment in time and labour, suggests that their abandonment may have resulted from a sudden change in the weather/circumstances, forcing the ship to head for deeper waters.

## VII. The LBA Ceramics From MTSB Site 1

All visible potsherds at the small locus within Site 1 were recovered from the seabed; they were located according to the survey grid, removed, and individually tagged. The pottery underwent a process of gradual desalination and in 1997 a large number of sherds were dealt with by two conservators, and then studied.

The MTSB project over 1995 and 1996 recovered nearly 150 sherds from MTSB Site 1. Many of these sherds were of the randomly assorted, worn, and frequently unidentifiable kind commonly found in the shallow waters of the eastern Mediterranean. Approximately half the finds, however, exhibited a remarkable homogeneity and appeared to comprise a group of archaeological significance. This group of 75 classifiable LBA ceramic fragments has proved to be a 'deposit' unique in Cyprus, one that provides considerable new information about eastern Mediterranean trade and the beginnings of settlement at Maroni at the dawn of the LBA.

A discussion follows by ware; a catalogue then follows. Sherds illustrated are shown in FIGS. 18–22. The abbreviations employed for the LBA ceramic types are given progressively through the following discussion.

[57] McCaslin 1980, 19.

[58] K. Nicolaou and H. W. Catling, 'Composite stone anchors in Late Bronze Age Cyprus', *Antiquity*, 42 (1968), 225–9; see also H. Frost, 'Where did Bronze Age ships stow their stone anchors?', in summaries of lectures of *Third Symposium on Ship Construction in Antiquity* (Athens, 1989).

[59] Nibbi (n. 53), 10, fig. 8.

[60] Wachsmann 1998, 289, 291, fig. 12. 56.

[61] McCaslin 1980, 19, figs. 3 *b*, 7 *b*; Green (n. 32), 170, fig. 30.

PROTO WHITE SLIP WARE

A single worn sherd of a Proto White Slip (PWS) bowl (**MTSB.070**, FIGS. 13 and 18), the most common shape of this ware, was found in the seabed deposit.[62] Its fabric is of red-brown clay with many small black and white inclusions, covered by a thick very light grey slip. The decoration, painted in thick dark orange-brown paint, was too poorly preserved to distinguish the entire scheme, but a rope pattern around the rim and cross-hatched lozenges are visible.[63] These are among the most common PWS elements.[64]

Although the origins of PWS (and early LC wares in general) may be argued to lie in north-west to central Cyprus (see Section II above), Popham's additional view that finds of PWS are largely concentrated in the centre of the island is no longer supported by the archaeological evidence.[65] While a full study of PWS is beyond the scope of this study, current data show that it has now been attested (in varying amounts) in LC I A (and even into LC I B) levels from throughout Cyprus (see Section II above for discussion). It is attested also as an import in the Levant (notably at Tell el-ᶜAjjul and at Tell el-Dabᶜa)[66] and in the Aegean (Miletus).[67]

BASE-RING I (?) WARE

The single sherd of Base-ring (BR) type (**MTSB.160**) is too small, worn, and undiagnostic to make a certain attribution: it could possibly be Proto Base-ring rather than BR I, since it is virtually impossible to distinguish between the two without evidence for the type of base (flat or ring) on the vessel.

BR I appears in many Near Eastern contexts, where it became a major trade item during the LBA.[68] The Maroni seabed deposit may represent an early forerunner of this activity. A comparable context was found in Tomb 2, from the relatively nearby site of Dromolaxia *Trypes*,[69] where a BR I juglet was found along with a Syrian cylinder seal, two Syrian Red Burnished juglets, Tell el-Yahudiyeh juglets, and accompanied by Cypriot WP, R-on-B, BS wares, one Plain White wheelmade jug, and several bronzes. Except for the BR I juglet, the context seems purely early LC I A.

WHITE PAINTED HANDMADE

All the examples of White Painted handmade ware (WP) from the deposit are closed vessels. While **MTSB.072** (FIG. 18) was clearly from a large vessel, its walls are thin. **MTSB.002** (FIG. 18) and **MTSB.096** (FIG. 18) demonstrate that the jug necks were made separately and then attached to the body: the interior join shows clearly on **MTSB.002**, and **MTSB.096** has been broken off evenly at the neckline join.

[62] For the ware in general, see M. R. Popham, 'The Proto White Slip pottery of Cyprus', *Op. Ath.* 4 (1962), 277–97; Popham 1972, 431–6, 458–60.

[63] For a colour picture of the sherd, see Manning 1999, front cover. Unfortunately it did not react well to attempted conservation. The decoration is no longer visible, just the white slip. The drawings and photos of the sherd just after recovery in 1995 and during desalination offer the available evidence. We thank Vassos Karageorghis for visiting Maroni to examine the sherd before conservation, and for confirming the PWS identification.

[64] Cf. Popham 1972, fig. 79. 3, from Akhera Tomb 1; Dikaios 1969–71, pl. 56. 9–11, 15, from Enkomi Level I; Popham (n. 62), fig. 5, from Tell el-ᶜAjjul, T. 1463.

[65] On the origins of PWS, see Popham (n. 62); Manning 1999, 170–3; K. O. Eriksson, 'Cypriot Proto White Slip and White Slip I: chronological beacons on relations between Late Cypriot I Cyprus with contemporary societies of the eastern Mediterranean', in Karageorghis 2001, 51–64. See Popham 1972, 436 for views on distribution.

[66] For Tell el-ᶜAjjul: Popham (n. 62), 296–7; Stewart (n. 4), 91, fig. 2: 31; Bergoffen 1989 (n. 23); Bergoffen 2001; Oren 2001, 133–40. For Tell el-Dabᶜa: V. Karageorghis, 'Relations between Cyprus and Egypt—Second Intermediate Period and XIIIth Dynasty', *Ägypten und Levante* 5 (1995), 73–9, fig. 6; Bietak and Hein 2001. Note, as R.S. Merrillees, 'The Relative and Absolute Chronology of the Cypriote White Painted Pendent Line Style', *BASOR* 326, 1–9, at 2, points out, that PWS '. . . a diagnostic Late Cypriote pottery class . . . occurs only in pre-18th Dynasty deposits at Tell el-Dabᶜa'. It is important to stress that PWS occurs on Cyprus in LC I A 1, LC I A 2 and even in LC I B: see Åström 1972*b*, esp. 700–1; R. S. Merrillees in Karageorghis 2001, 159. A find overseas does not necessarily date to LC I A 1. Moreover, PWS exports could have occurred over quite a long period of time: at a minimum from LC I A 1 to LC I A 2, and possibly even into LC I B.

[67] Niemeier and Niemeier (n. 22), 235, fig. 66.

[68] Maguire 1995 (n. 15); Merrillees (n. 17); Bergoffen 1991 (n. 23); Gittlen 1981 (n. 17).

[69] S. M. L. Admiraal, 'Late Bronze Age tombs from Dromolaxia', *RDAC* 1982, 39–59, at 53–7.

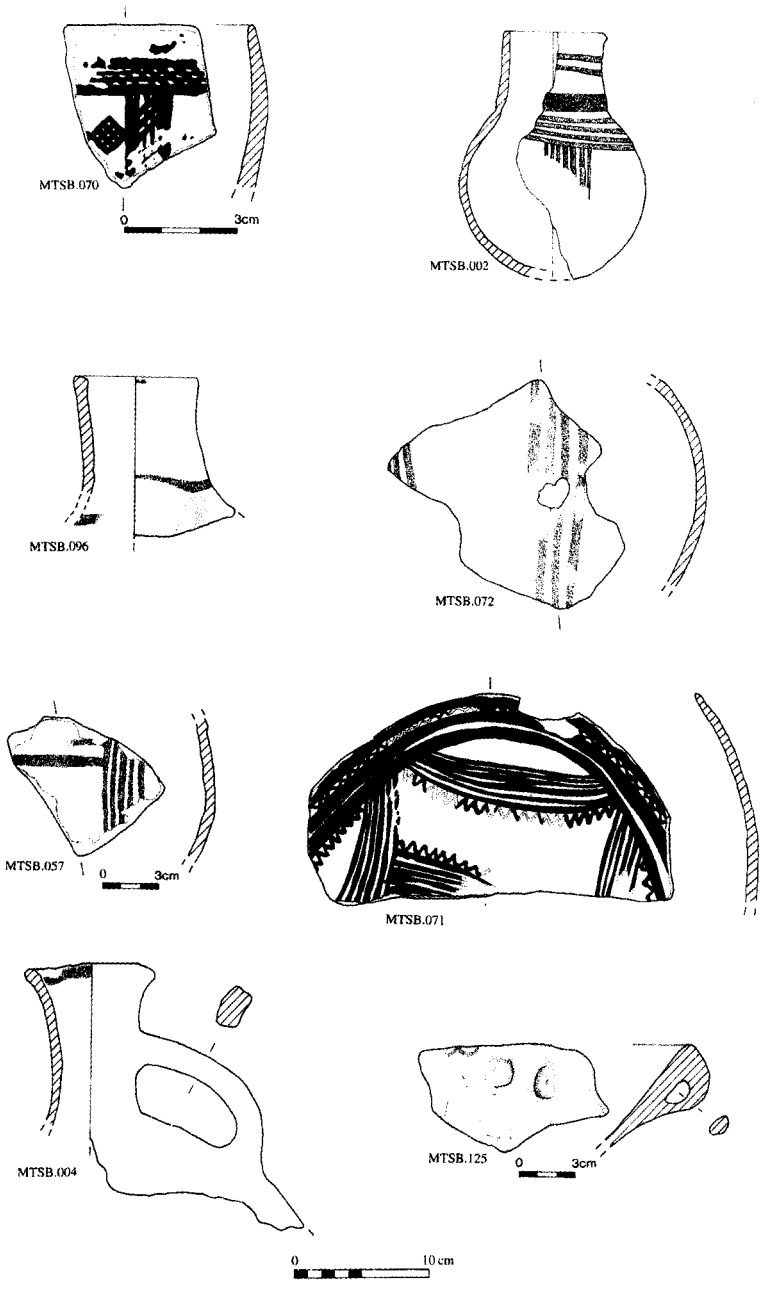


FIG. 18. Bronze Age ceramics from MTSB Site 1. MTSB.002, 004, 057, 070, 071, 072, 096, 125.

The fabric of the WP is a hard light red-brown clay with a very light yellow-brown surface and many small black, white and sometimes grey inclusions. Sometimes (e.g. **MTSB.096**) the clay has a more greenish-brown colour, with fine organic temper (burned out) creating a spongy appearance (similar to that occurring on Black Slip handmade ware). The surface is quite rough, and appears to have been wet smoothed (and more oxidized) rather than slipped. The decoration was painted in thick matt dark red-brown, brown or very dark grey paint. One example (**MTSB.057**, FIG. 18) is of a somewhat finer fabric with only a few small inclusions; it has been discoloured by apparent burning and immersion in the sea.

All four WP examples are decorated in the 'linear' styles typical of eastern Cyprus, and all appear to show the simplified, somewhat careless, decorative schemes and poor surface finishing that is characteristic of the latest stages of WP wares. The large jugs (?) **MTSB.096** and **MTSB.072** can probably be classified as WP VI, which does not appear in tombs earlier than LC I A.[70] Except for **MTSB.002** (which is too fragmentary to determine its overall decorative scheme), the painted lines do not appear to cross, perhaps suggesting that the fragments belong to the WP VI 'Soft Triglyphic' style. Overall, the closest parallels to **MTSB.096** and **MTSB.072** are WP VI Soft Triglyphic style,[71] which does not appear at Kalopsidha before the LC.[72]

Alternatively, some pieces may be WP V 'Tangent' style,[73] which provides the closest parallels to **MTSB.002** and perhaps also **MTSB.057**. The Tangent Style is typical of Kalopsidha, where it first appears in layer 71 of Trench 9.[74] Kalopsidha Trench 3 also produced several jug fragments decorated with parallel lines or bands.[75] (Most of the WP ware from Trench 3 was classified as WP V.) Significantly, none of the WP ware from the Maroni *Tsaroukkas* seabed deposit seems to be either WP Pendent Line Style or WP Cross Line Style, the standard Cypriot exports of the late MBA.[76] However, whether this represents chance, or instead a chronological, or regional, distinction is not clear from the limited data.

White Painted VI jugs with cylindrical necks and pinched mouths were common in Strata 1–2 of Gjerstad's excavation at Kalopsidha,[77] although usually the necks are narrower. One similar wide-necked example came from Tomb 2 at nearby Kalavasos.[78]

White Painted VI ware occurs in association with Canaanite jars at Tyre, in the earliest tombs (in Stratum XVIII) following reoccupation of the site at the end of the MBA,[79] and at Ras Shamra in Tomb LIV.[80] Juglets of WP VI ware are also frequently found in association with Bichrome Wheelmade ware abroad.[81] The wide-necked shape is also attested abroad,[82] although in general large WP jugs such as **MTSB.096** and **MTSB.072** appear to be quite unusual both on the island and abroad.

### COMPOSITE WARE (BLACK SLIP II/WHITE PAINTED III–IV)

This type of Composite ware, with Black Slip on the exterior and White Painted decoration on the interior, always occurs in the form of bowls, usually large ones (as **MTSB.071**, FIG. 18). Frequently they are equipped with a trough spout,[83] but there is no indication that this example had one. They are thought to have had a very limited area of manufacture (perhaps even a single site), somewhere in eastern Cyprus.[84] **MTSB.071** shows clearly that the horizontal bands around the rim were painted first, and then the central decorative motifs were filled in. If **MTSB.125** (FIG. 18) is actually Composite

[70] Following the analysis of Åström 1972*c*, 197.

[71] Åström 1972*d*, 53–69.

[72] Åström 1966, 92–2, fig. 105.

[73] Although designated WP V, the Tangent Line style seems to appear most frequently in early LC contexts, especially when the lines are of equal width: Åström 1966, 45, 89–90, 92, figs. 102, 105.

[74] Ibid., 89–90.

[75] Ibid., 45.

[76] Maguire (n. 3). Both styles are, of course, characteristic *also* of LCI: Merrillees (n. 66); Åström 1972c, 700.

[77] Åström 1972*c*, 171.

[78] Merrillees (n. 7), pls. iv, v.

[79] P. M. Bikai, *The pottery of Tyre* (Warminster, 1978), 43, pls. lii. 3, liii. 3, 4.

[80] C. F. A. Schaeffer, 'Les fouilles de Ras Shamra-Ugarit. Neuvième campagne (printemps 1937)', *Syria*, 19 (1938), 193–255, fig. 19. *k*.

[81] C. Epstein, *Palestinian Bichrome Ware* (Leiden, 1966), 126.

[82] Cf. Bietak (n. 18), pl. 26 *a*, in Pendent Line style, from Stratum E/1.

[83] Cf. Åström 1972*c*, fig. 37. 6; Åström 1966, fig. 51, rows 3 and 4.

[84] Åström 1972*c*, 125; Åström 1966, 68–9.

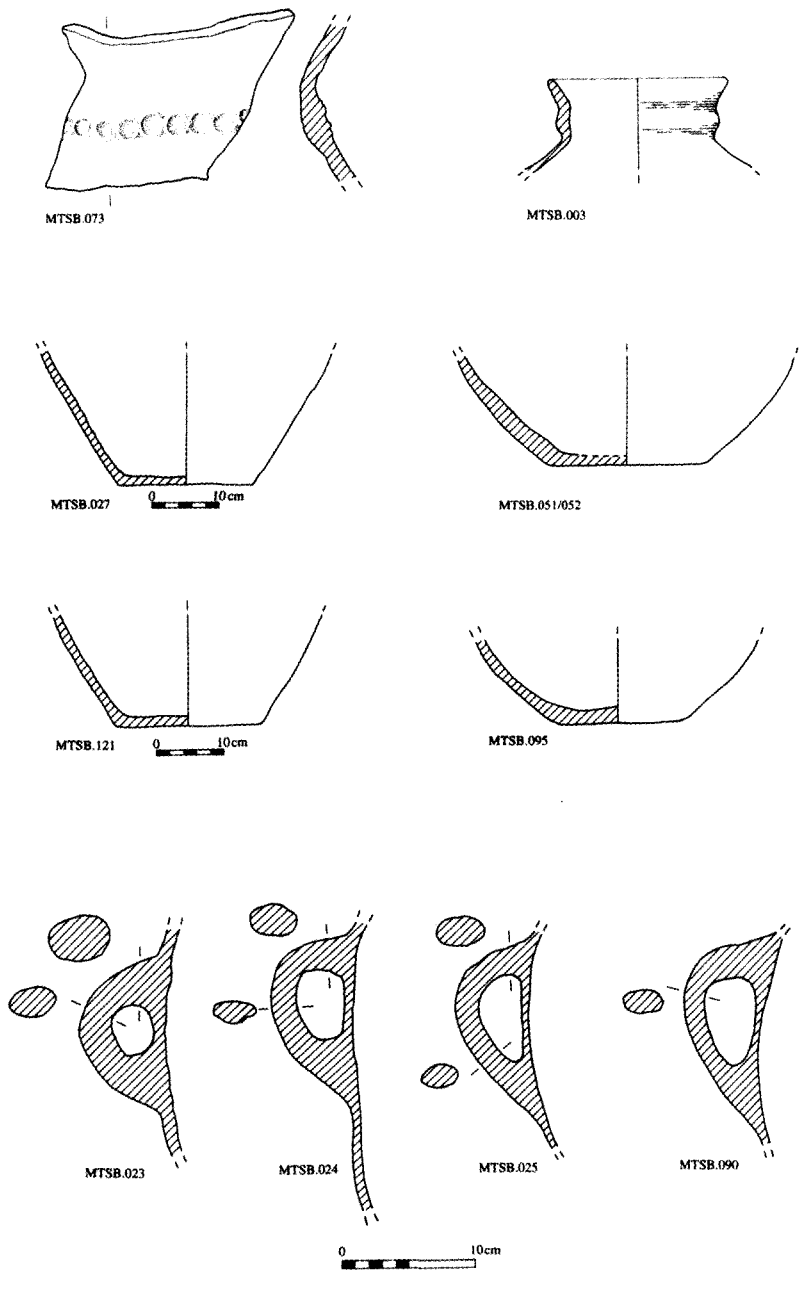


FIG. 19. Bronze Age ceramics from MTSB Site 1. MTSB.003, 023, 024, 025, 027, 051/052, 073, 090, 095, 121.

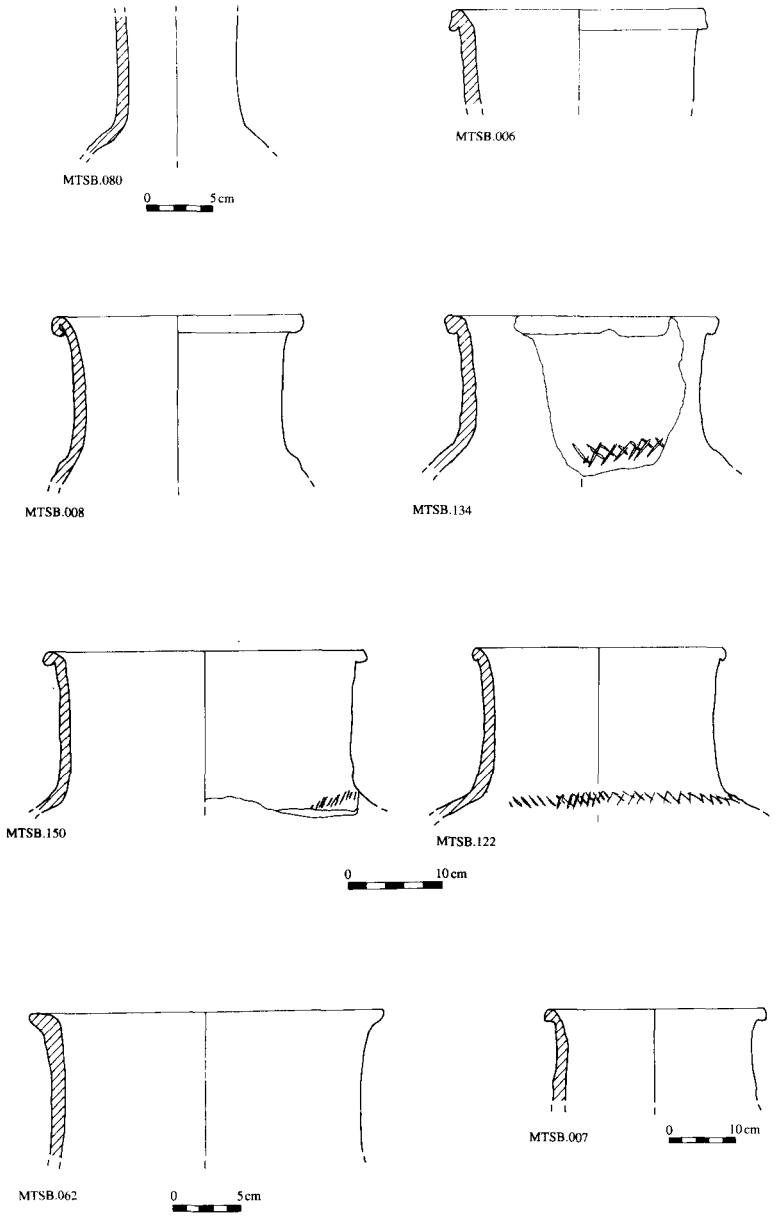


FIG. 20. Bronze Age ceramics from MTSB Site 1. MTSB.006, 007, 008, 062, 080, 122, 134, 150.

ware (it is not certain that there is in fact paint on the exterior), it is very unusual for having painted decoration on the *exterior* rather than the interior.[85] The fabric of **MTSB.071**, the certain example of the ware, is standard: light yellow-brown clay with slightly greenish surface and very dark brown paint.

Composite ware appears in settlement contexts at Kalopsidha, including Gjerstad's Strata 1–2 and Åström's Trench 9.[86] Similar bowls were found at Enkomi in Levels A and I,[87] and in the earliest levels at Hala Sultan Tekke.[88] It is also widely found abroad, representing the earliest Cypriot import at Megiddo,[89] and occurring in an MB II A context at Tel Nami.[90]

### RED-ON-BLACK WARE

The fabric of this typical MC III/LC I A ware[91] is sufficiently distinctive to recognize even when no surface is preserved. The extremely poor state of preservation of **MTSB.034** is in keeping with the soft nature of the fabric. This fragment appears to come from a large jug.

Red-on-Black ware is characteristic of the north-eastern Karpass region of Cyprus and is attested in small amounts (presumably as imports) in the settlements at Kalopsidha and Enkomi.[92] It also occurs in MB II B–LB I contexts in the Levant, being particularly plentiful at Tell el-ʿAjjul; jugs are less common than bowls.[93] Examples of exported large jugs have been found at Megiddo, Tell Nagila, and Tell el-Farʿa South.[94]

### BLACK SLIP HANDMADE

Black Slip handmade ware (BSHM) occurs in a wide variety of shapes throughout Cyprus during the entire Middle Cypriot period,[95] yet the examples from the seabed deposit are notably distinct types. Classified as BSHM II, the fabric itself is fairly standard, very light brown or very light red-brown clay with yellowish or more greenish surface; it contains small white inclusions in varying amounts, frequently with the addition of much fine organic temper which has burned out creating a spongy effect,[96] and preserves some straw impressions in the surface. The slip is thick and matt, varying (often on the same vessel) from very dark grey to very dark brown or dark red-brown, usually flaking off.

The manufacture of this type of vessel is clearly shown on jug **MTSB.004** (FIGS. 18, 23): the neck was attached separately and the lower end of the handle was pushed through the pot's wall (a typically Cypriot method). The rims on both **MTSB.004** and **MTSB.046** are irregular: not pinched or trefoil, but not really round either. The marks of scraping to thin the pot walls are clearly visible on the interior (FIG. 23).[97]

Large Black Slip II jugs like **MTSB.004** are not well known in Cyprus, occurring more often in settlements than in tombs.[98] The type is better attested in the distinctive Black Slip II (Reserved Slip) technique, and indeed jug **MTSB.004** is very likely BS II (Reserved Slip), which seems to provide the best parallels, although in this case the body decoration is completely worn off. BS II (Reserved Slip) is

[85] The Monochrome/WP III composite ware, with exterior decoration, from Dhenia (Åström 1972*c*, 123; P. Åström and G. R. H. Wright, 'Two Bronze Age Tombs at Dhenia in Cyprus', *Op. Ath.* 4 (1962), 225–76, 251) is different from **MTSB.125** in both shape and fabric.

[86] Åström 1972*c*, 171; Åström 1966, 68–9.

[87] Dikaios 1969–71, 223–4, pl. 54. 21.

[88] Åström 1983 (n. 10), 61, figs. 203, 218; Åström 1989 (n. 10), 59, 66.

[89] Åström 1972*c*, 229.

[90] M. Artzy and E. Marcus, 'Stratified Cypriote pottery in MB IIa context at Tel Nami', in Ioannides (n. 31), 103–10, at 105, fig. 4. 1.

[91] P. Åström, 'Red-on-Black Ware', *Op. Ath.* 5 (1964), 59–88; Åström 1972*c*, 108–18, 225–8.

[92] Åström 1966, 49–54, 77, 139; Dikaios 1969–71, 223–4.

[93] Åström (n. 91), 80–1; D. P. Williams, *The Tombs of the Middle Bronze Age II Period from the "500" Cemetery at Tell Fara (South)* (London, 1977), 31, fig. 13: 17; R. B. Koehl, *Sarepta III: The Imported Bronze and Iron Age Wares from Area II, X. The University Museum of the University of Pennsylvania excavations at Sarafand, Lebanon* (Beirut, 1985), 69–70; Johnson (n. 3), 66.

[94] Johnson (n. 3), 54, 60, figs. 6. Q1, 7. I1, I2, N22.

[95] Åström 1972*c*, 89–104.

[96] E. Herscher, 'A Potter's error', *RDAC* 1972, 22–33.

[97] Similar scraping marks have been recorded on the interior of a Black Slip (Reserved Slip) jug from Hala Sultan Tekke: Åström 1983 (n. 10), fig. 241.

[98] e.g. E. Gjerstad, *Studies on Prehistoric Cyprus* (Uppsala, 1926), 135, jug 4, probably from Kalopsidha; Åström 1972*c*, 225; Åström 1966, 40–7, 63–4; Dikaios 1969–71, pl. 54. 33, from Enkomi Level I.

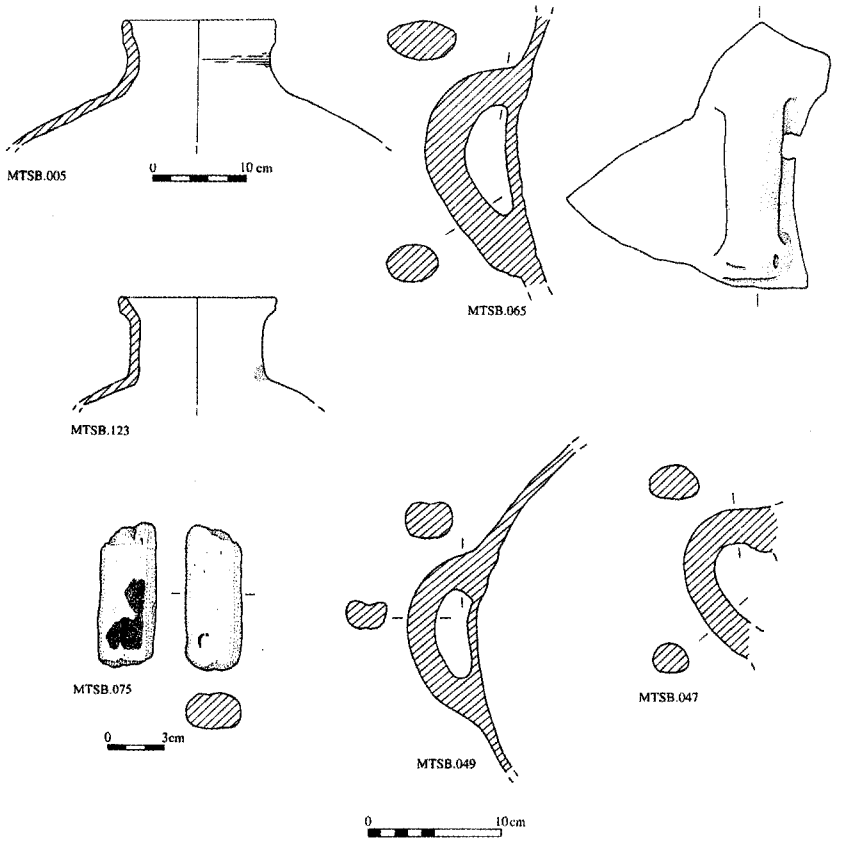


FIG. 21. Bronze Age ceramics from MTSB Site 1. MTSB.005, 047, 049, 065, 075, 123.

well attested at Morphou *Toumba tou Skourou*, where it was found primarily in the more industrial contexts (according to the excavator, this ware is 'too utilitarian' for tomb use[99]), in the earliest levels at Hala Sultan Tekke,[100] in Trench 3 at Kalopsidha,[101] and in Level I at Enkomi.[102] A few examples are also known from tombs.[103] Enkomi (French) Tomb 12 contained two of these jugs, one in the Reserved Slip style and the other plain;[104] Enkomi Tomb 3 also contained a BS (Reserved Slip) jug associated with an imported Red Slip juglet.[105] A comparable jug in BS (Reserved Slip) style with potmarked handle and accompanied by a Canaanite jar was found in a slightly later tomb at nearby Kalavasos.[106] A jug of similar shape in unusual but related White Painted style came from Arpera *Mosphilos* Tomb 1, where it also was accompanied by a Canaanite jar,[107] thus providing additional support for the view that this type of jug was frequently associated with foreign trade. Several examples of the ware have been found at Tell el-ᶜAjjul.[108]

[99] *TTS* 53, 363.

[100] Åström 1983 (n. 10), 61–4, figs. 227, 248; Åström 1989 (n. 10), 21, 57–67, figs. 19, 95, 112.

[101] Åström 1966, fig. 31 row 2: 2.

[102] Dikaios 1969–71, pl. 54. 26–7.

[103] e.g. Åström and Wright (n. 85), pl. vi. 3, from Dhenia T. 6; cf. Åström 1972*c*, pl. xxiii. 6; J.-C.Courtois, *Alasia II: les tombes d'Enkomi, le mobilier funéraire (fouilles C.F.-A. Schaeffer 1947–1965)* (Mission Archéologique d'Alasia, 5; Paris, 1981), figs. 69–70.

[104] Åström 1972*c*, 195.

[105] Dikaios 1969–71, 349, pl. 197. 27.

[106] Pearlman 1985, 171–3, fig. 2. 2, pl. xxii. 2.

[107] Merrillees 1974, figs. 29. 8, 36.

[108] W. M. F. Petrie, *Ancient Gaza III. Tell el Ajjul* (London, 1933), pl. xxxix. 68 r; Johnson (n. 3), 52, fig. 8. C17; Åström 1972*c*, 225; Stewart (n. 4), 91, fig. 2. 30. The items are also in Bergoffen 1989 (n. 23), nos. 343–8.

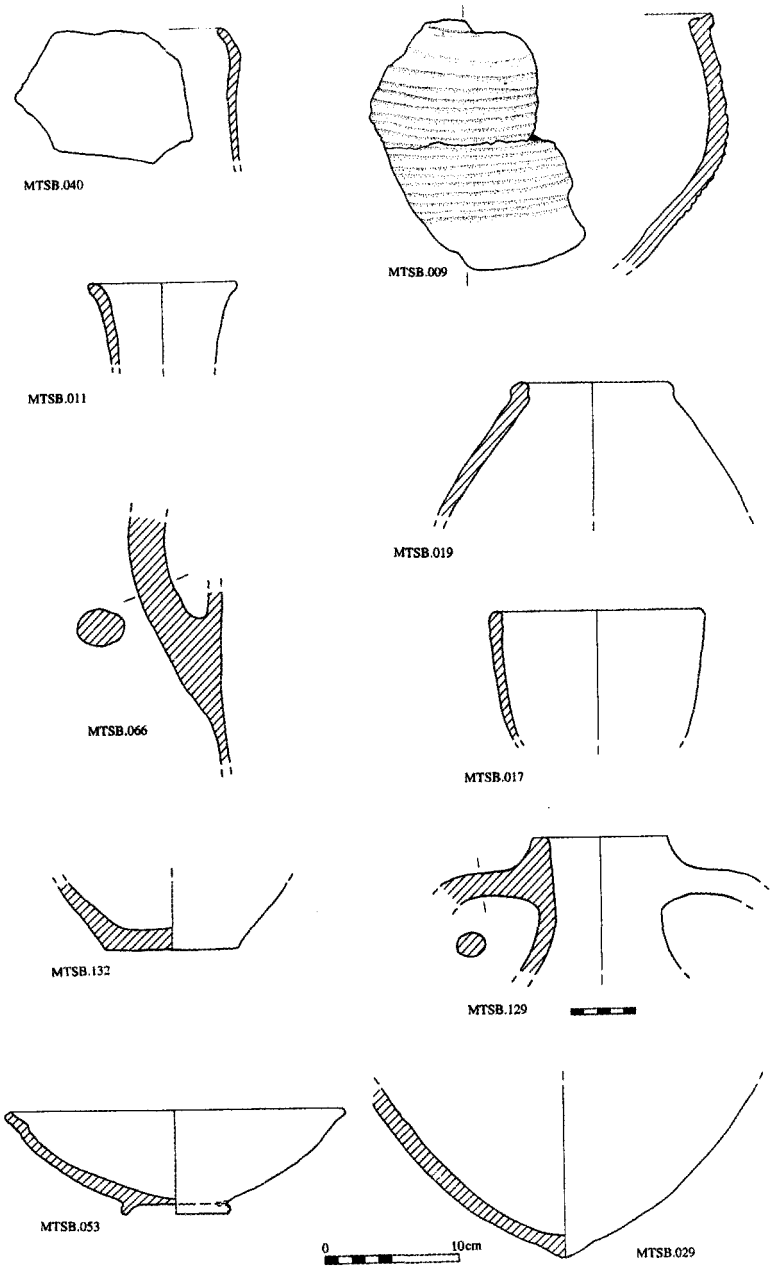


FIG. 22. Post Bronze Age ceramics from MTSB Site 1. MTSB.009, 011, 017, 019, 029, 040, 053, 066, 129. Bronze Age Canaanite Jar base, MTSB.132.

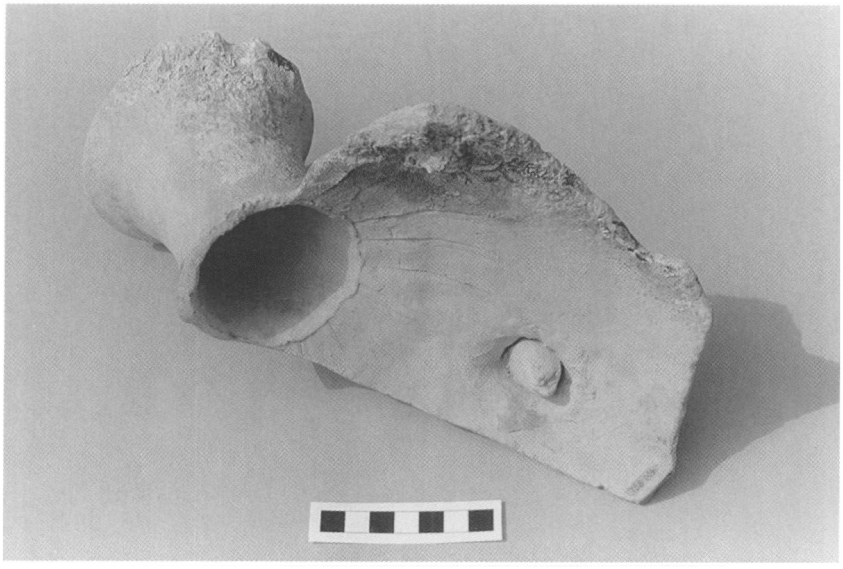

FIG. 23. MTSB.004. Black Slip Handmade jug interior construction.

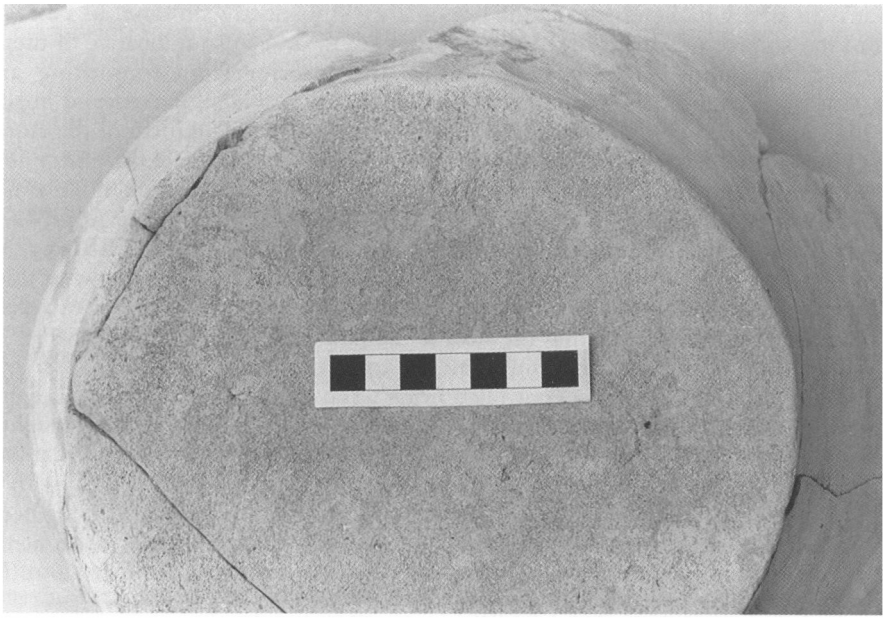

FIG. 24. MTSB.121. Plain White Handmade storage jar base bottom.

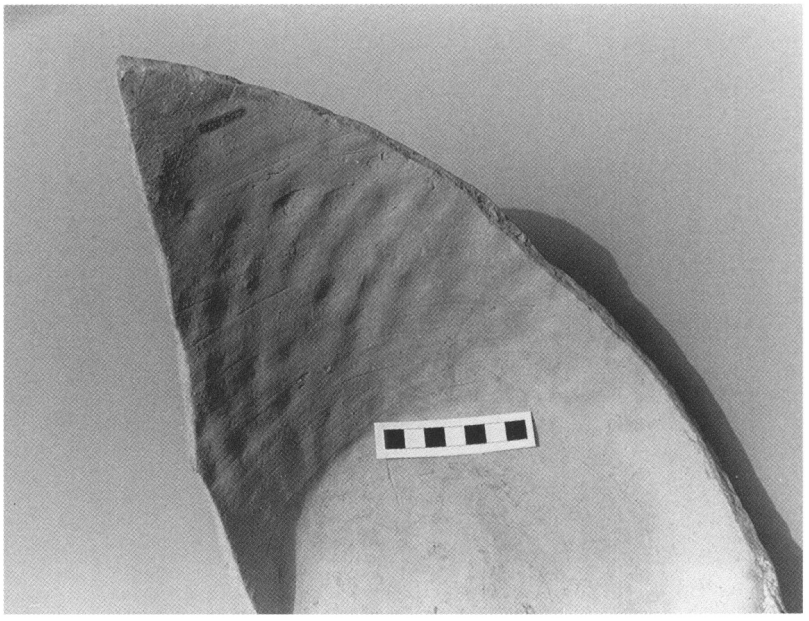

FIG. 25. MTSB.027. Plain White Handmade storage jar base interior.

PLAIN WHITE HANDMADE WARE

Plain White Handmade ware (PWHM) is the most plentiful fabric represented in the seabed deposit. All classifiable fragments come from large handleless storage vessels, sometimes referred to as 'pithoi'. At least nine separate vessels are represented among the finds. They have flat bases, generally unarticulated (**MTSB.027, 121**, FIG. 19; **MTSB.028** may have been slightly articulated), and are very thin walled for their size. Characteristically the bottoms are embedded with sand (**MTSB.121**, FIG. 24), picked up from the surface on which they were built (or set to dry). Also indicative of their method of manufacture are the many finger impressions on the interior from smoothing and shaping (**MTSB.027**, FIG. 25); scraping and smoothing marks are clearly visible on the exterior in addition.

Necks are high and wide, with a clear articulation at the neckline. The form of the storage jar rims varies widely, from slightly everted to completely rolled over and tucked under (e.g. FIG. 20: **MTSB.006**, **007**, **008**, **062**, **122**, **134**, **150**). Rims are often irregular: one part of the rim may have a different profile from another part on the same vessel. Normal wall thickness is approximately 1 cm, quite thin for such large pots. A few examples (**MTSB.073** shown in FIG. 19, **MTSB.033**, **MTSB.028**, including the body sherds with finger-impressed relief band decoration) are somewhat thicker walled. No vessel was sufficiently restorable to provide evidence for total height, but the rim diameters that could be estimated (26–30 cm) suggest that the sizes of the jars were quite uniform.[109]

While the fabric of the jars is extremely consistent, it varies considerably in colour, often over the same vessel, primarily owing to lack of a fully controlled firing atmosphere. Most common is light red-brown clay with grey core, the surface ranging from very light yellow-brown, light brown or light red-brown, with small white and grey inclusions; occasionally (e.g. base **MTSB.121**, FIG. 19) a substantial amount of fine organic temper was used as well. The thicker-walled jars use a variant fabric with more white inclusions and a mostly grey core. Several sherds from the deposit showed signs of having been burnt.

Frequently (although not always) the vessels were decorated with an incised band at the neckline, composed of crudely executed short diagonal lines, sometimes crossing in two directions (**MTSB.122**,

[109] A similar but better preserved jar from Kalopsidha, no. 1030, was 74 cm high: Åström 1966, 43.

FIG. 26. **MTSB.122**. Plain White Handmade storage jar with incised band at neckline.

**134**, **150**, FIG. 20; **MTSB.122**, FIG. 26).[110] Occasionally there is a very low relief band at the neckline (e.g. jar **MTSB.008**, FIG. 20), which may be incised in a similar fashion. The alternative thicker walled fabric is decorated with a finger impressed relief-band.

PWHM storage jars of this type, with similar fabric and decoration and the same highly varied rim profile, are very common in eastern Cyprus in late Middle Cypriot and/or initial Late Cypriot settlement contexts, known primarily at Kalopsidha.[111] They also occur at Enkomi in Level I,[112] where there are close parallels to the decoration on **MTSB.122** (FIGS. 20, 26) and **MTSB.134** (FIG. 20).[113] They are also found at Nitovikla, of a somewhat later date (LC I B), with a more articulated base.[114] The occurrence of closely similar PWHM ware at Tell el-Dabᶜa appears to be the first time such vessels have been identified abroad.[115]

### 'CANAANITE' JARS

The so-called Canaanite jar (Cj) was the multi-purpose container for a variety of commodities used for exchange among Eastern Mediterranean cultures.[116] At least four separate Canaanite jars are represented among the sherds from the seabed deposit. There are three complete bases (e.g.

[110] **MTSB.122**, with the incomplete continuation of the cross lines, demonstrates well the carelessness of this decoration: perhaps its purpose was less decorative than signatory, in the manner of potmarks.

[111] Åström 1972*c*, fig. ii A. 1–3, 5–6, 9–11; Åström 1966, 42 no. 1027, pl. 13, figs 29 *a–b*; cf. D. Pilides, 'Storage jars as evidence of the economy of Cyprus in the Late Bronze Age', in V. Karageorghis and D. Michaelides (eds), *The Development of the Cypriot Economy from the Prehistoric Period to the Present Day* (Nicosia, 1996), 107–24, at 108–10.

[112] Dikaios 1969–71, 228–9, pl. 58. 19–25; pl. 119. 1–9.

[113] Ibid., pl. 119. 1, 6.

[114] Hult 1992, 60, figs. 38. 1–3.

[115] Maguire 1995 (n. 15), pl. 5. 4.

[116] A. Leonard Jr., '"Canaanite jars" and the Late Bronze Age Aegeo-Levantine wine trade', in P. E. McGovern, S. J. Fleming, and S. H. Katz (eds), *The Origins and Ancient History of Wine* (New York, 1996), 233–54; P. Åström, 'Canaanite Jars from Hala Sultan Tekke', in N. H. Gale (ed.), *Bronze Age Trade in the Mediterranean. Papers Presented at the Conference Held at Rewley House, Oxford, in December 1989* (SIMA 90; Jonsered, 1991), 149–51; id., 'Problems of definition of local and imported fabrics of Late Cypriot "Canaanite" ware', in J. Barlow, D. Bolger and B. Kling (eds), *Cypriot Ceramics: Reading the Prehistoric Record* (University Museum Monograph 74/University Museum Symposium Series, 2; Philadelphia, 1991), 67–72. That at least some 'Canaanite' jars actually came to Cyprus from Canaan, at least by LC II, has been demonstrated in one case by neutron activation analysis (J. Gunneweg, I. Perlman, and F. Asaro, 'A Canaanite Jar from Enkomi', *IEJ* 37 (1987), 168–72), but others are known to be locally made in Cyprus: Åström 'Problems' (n. 116), with references.

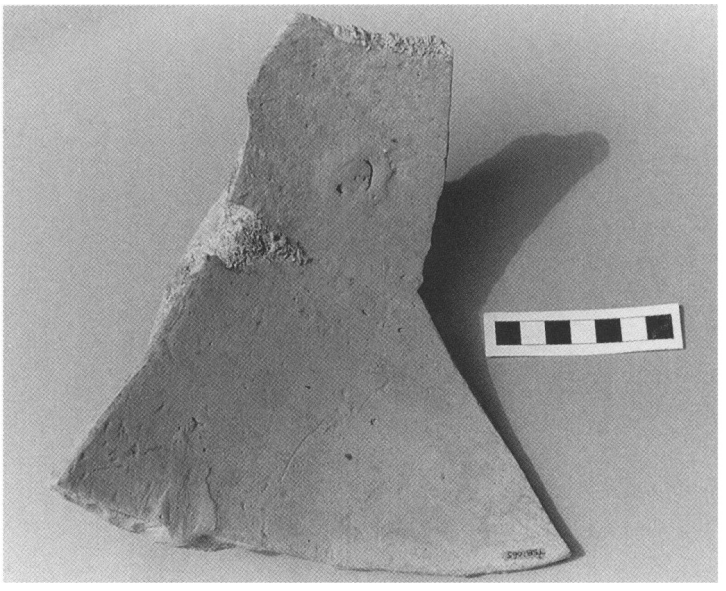

FIG. 27. **MTSB.065**. Plain White Wheelmade storage jar vessel interior, showing technique of handle attachment.

**MTSB.051/052**, **095**, FIG. 19; **MTSB.132**, FIG. 22); of the five handles (cf. **MTSB.023**, **024**, **025**, **090**, FIG. 19), two could possibly belong to a single vessel, as could the one preserved neck. Several additional body sherds may come from the same vessels as handles **MTSB.024** and **MTSB.023**.

In general, the fabric of the jars is dark brown with a black core or interior, a lighter brown surface, and a large number of white and grey inclusions. Very thin areas (such as the jar neck **MTSB.003**, FIG. 19) are sometimes better oxidized, without a pronounced black core. The vessels are frequently very worn, exposing the black core beneath the original dark brown surfaces. Some of the pieces have a pitted appearance resulting from the disappearance of the inclusions. Marks of their wheelmade manufacture are usually clear on the vessels' interior. A shallow groove around the interior base of **MTSB.095** (FIG. 19) suggests that the base was first formed round and then flattened. Handles **MTSB.024** and **MTSB.025** (FIG. 19) are very irregular; handle **MTSB.090** (FIG. 19) is very similar in shape and fabric but somewhat more regular.

The Canaanite jars from the *Tsaroukkas* seabed are of common late Middle Bronze II and LB I types, with short neck, rounded ovoid body and flattened base.[117] The preserved bases all differ in size, varying from about 9 cm to 14 cm in diameter; the largest (**MTSB.051/052**, FIG. 19) is the most worn. While clearly flattened, all the bases remain slightly convex, in contrast to the wide flat nature of the bases of the PWHM storage jars. The bodies are very thin walled: none of the preserved sherds shows any indication of a shoulder carination. The only preserved neck (**MTSB.003**, FIG. 19) is short, quite wide, and has a sharp horizontal ridge at its mid-point. The preserved handles have a variety of shapes. Number **MTSB.023**, perhaps the earliest, with the closest MB II parallels, is the most rounded—a near circular loop—and appears to have been attached to a very rounded body. Other handles form

[117] Cf. A. Raban, 'The Commercial Jar in the Ancient Near East: Its Evidence for Interconnections Amongst the Biblical Lands' (Ph.D. diss., Hebrew University, 1980), 4–5; A. Zemer, *Storage Jars in Ancient Sea Trade* (Haifa, 1977), 7, pl. 1. 1; R. Amiran, *Ancient Pottery of the Holy Land* (New Brunswick, 1970), pls. 31. 4, 43. 1; V. R. Grace, 'The Canaanite jar', in S. S. Weinberg (ed.), *The Aegean and the Near East: Studies Presented to Hetty Goldman on the Occasion of Her Seventy-Fifth Birthday* (Locust Valley, 1956), 80–109, earliest type: fig. 5.1; Leonard (n. 116), 239; D. P. Cole, *Shechem I: The Middle Bronze IIB Pottery* (Winona Lake, 1984), 73; Pearlman 1985, 171.

more ovoid loops, like those known in LB I, with the incomplete example **MTSB.o66** (FIG. 22) seemingly the most extended, and perhaps of post-Bronze Age date (placed as post-Bronze Age in the catalogue below—though it may also be late LBA).

A similar jar with ridge on the neck was found in Megiddo Tomb 43.[118] At Megiddo, both rounded and flattened bases appear on jars during the later MB and the LB I periods.[119] During LB I several tombs at Megiddo (e.g. 77, 855, 1100) with such storage jars also contained Cypriot imports. Other examples of similar jars, with flat base and neck ridge, have been found at Tell el-ᶜAjjul (in Tomb 303B and other contexts),[120] Shechem,[121] and Tell Farᶜa.[122]

Closely similar storage vessels—with short ridged neck and probable flat base—constitute the earliest type of storage jar at Tyre, where they were found in a grave (along with a Cypriot WP VI animal vessel) in Stratum XVIII, which represents the reoccupation of the site after a long abandonment.[123] At Sarepta, 22 km to the north of Tyre and reflecting a comparable occupation pattern, the storage jar with ridged neck and flat base is the most common type in the earliest stratum (Stratum L) at the site, where it is found along with Cypriot pottery.[124] Farther north, several Canaanite jars, all with flat bases and full ovoid bodies, were found in MB II Tomb LIV at Ras Shamra, where they were associated with several types of LC I ceramics.[125] To the south, quite similar jars, with flat base and short ridged neck, dated to MB II B, are known from Tell el-Dabᶜa.[126] In the west, on the other hand, the Canaanite jars from Akrotiri on Thera have quite different rims, although their bases are flat.[127]

Canaanite jars have been considered uncommon in Cyprus, although it is possible that they have not always been recognized among coarse ware sherds.[128] Examples known from Cyprus that are approximately contemporary with the *Tsaroukkas* seabed finds include ones from the nearby sites of Arpera *Mosphilos*, Tomb 1A, dated late in MC III[129] and Kalavasos, Tomb 51, dated LC I B.[130] What may be the base of a Canaanite jar was also found in Room 2 of Trench 3 at Kalopsidha, along with PWHM storage vessels and large Black Slip jugs.[131] Two ridged necks, also from Kalopsidha Trench 3, may represent Canaanite jars as well (nos. 1060 and 1052).[132] A recent re-examination of sherds from the earliest excavated levels at Hala Sultan Tekke has revealed that Canaanite jars were also present there.[133] The apparent concentration of these early jars in south-eastern Cyprus, at sites not far from Maroni, should probably be considered significant evidence for the emergence of Cypriot trade with the Levant.[134]

[118] P. L. O. Guy, *Megiddo Tombs* (Chicago, 1938), pl. 24, T. 43: 7.

[119] Cf. Guy (n. 118), pl. 24, T. 44: 6, T. 51: 19; pl. 27, T. 253: 4; pls. 41, T. 77: 26; pl. 44, T. 855: 4; pl. 47, T. 1100: 5–6; pl. 49, T. 1141: 6; pl. 50, T. 1145A: 2; pl. 52, T. 1145B: 2.

[120] Cf. W. M. F. Petrie, *Ancient Gaza I. Tell el Ajjul* (London, 1931), pl. xlvi (lower right); Petrie (n. 108), pl. xxxvii (lower left); Grace (n. 117), fig. 5. 1.

[121] Cole (n. 117), 73–6, pl. 35. Type J1 of MB II B date had round or flattened bases and various rim profiles.

[122] Williams (n. 93), 106–8, fig. 75. 3.

[123] Bikai (n. 79), 6, 43, pl. lii. 13, 15, 19.

[124] W. P. Anderson, *Sarepta I: The Late Bronze Age and Iron Age Strata of Area II, Y. The University Museum of the University of Pennsylvania Excavations at Sarafand, Lebanon* (Beirut, 1988), 367–9, pls. 20. 13–14, 21. 5 and 7.

[125] Schaeffer (n. 80), 213–22, figs. 17, 19–22; cf. Epstein (n. 81), 121–4.

[126] P. E. McGovern and G. Harbottle, '"Hyksos" trade connections between Tell el Dabᶜa (Avaris) and the Levant: a neutron activation study of the Canaanite jar', in E. D. Oren (ed.), *The Hyksos: New Historical and Archaeological Perspectives* (Philadelphia, 1997), 141–57, fig. 5. 1.

[127] C. Doumas, 'Ανασκαφή Ακρωτηριού Θήρας', *PAE* 1994, 155–66, pls. 83 *β*, 84 *β*; id., 'Aegeans in the Levant: myth and reality', in S. Gitin, A. Mazar, and E. Stern (eds), *Mediterranean Peoples in Transition: Thirteenth to Early Tenth Centuries BCE* (Jerusalem, 1998), 129–37, figs. 1–2; S. Marinatos, *Excavations at Thera VII* (Athens, 1976), pl. 49 *b*.

[128] Åström 'Problems' (n. 116); cf. id., 'A handle stamped with the Cartouche of Seti I from Hala Sultan Tekke', *Op. Ath.* 5 (1964), 115–21, 120.

[129] Åström (n. 128), 120, figs. 3–4; Merrillees 1974, 47, 75, figs. 29. 5, 35.

[130] Pearlman 1985. A Cj from Enkomi in the Bichrome technique, apparently from a tomb, had no other objects associated with it, but is of the early type (although the rim is not preserved): Courtois (n. 103), 37, fig. 15. 3.

[131] Åström 1966, 43, no. 1028.

[132] Ibid., 44, fig. 31 row 5. 1–2. Gjerstad (n. 98), 36 reported 'great quantities of Syrian ware', including Canaanite jars, from this excavation of a house at Kalopsidha; for additional occurrences at the site, cf. Åström 1966, 9, 76, 139.

[133] Most notably in Trench 15, F3019, where Cj sherds were associated with PWS ware, Composite ware, and a BSHM II jug handle like **MTSB.004**; cf. Åström 1989 (n. 10), 49, 59–60, fig. 111.

[134] Cf. Pilides (n. 111), 109 for discussion of the connection between trade and the distribution of PWHM storage jars concentrated in the eastern part of the island in late MC III and LC I.

While Pearlman considered the jar from Kalavasos Tomb 51 to be definitely of foreign origin,[135] its fabric is quite different from that of the *Tsaroukkas* seabed jars and more closely resembles the local Plain White Wheelmade ware (cf. **MTSB.005**, FIG. 21). The wide flat base of this vessel is also more typically Cypriot (for example, as occurs on the PWHM storage jars), rather than the somewhat smaller, flattened, but still slightly rounded bases of the Canaanite jars from *Tsaroukkas* and the one from Arpera. The fabric of the Arpera jar too is close to that of Cypriot PWWM ware, and the form of its rim resembles that of **MTSB.005**. So until further analysis is carried out, it is possible that the Kalavasos jar, and perhaps even the Arpera one, are actually local imitations, an occurrence already attested in Cyprus (below).

The finds from the *Tsaroukkas* seabed include several examples of what can be considered local imitations of Canaanite jars.[136] These include both handmade and wheelmade vessels: **MTSB.123** (RSHM, FIG. 21) and **MTSB.049** (RSHM, FIG. 21), **MTSB.005** and **MTSB.065** (PWWM, FIG. 21), and possibly **MTSB.047** (coarse PWWM, FIG. 21).

Cypriot imitations of Canaanite jars in other indigenous fabrics have been recognized at other sites. A fragmentary PWHM jar (no. 114) from Dhenia T. 6 was considered by the excavators to be 'perhaps a Cypriote imitation of a Syrian jar or an import';[137] they compared its shape to 'the earliest class of MB storage jars, which continued to the end of MB'.[138] The tomb also contained a BS (Reserved Slip) jug, PWS, and PBR wares.

Several imitations in WP V ware are known, including an unpublished example from Galinoporni Tomb 2 on display in the Cyprus Museum,[139] an incomplete jar without provenience,[140] and a fragmentary example from Kalopsidha.[141] The same type of amphora has also been found at Tel Mevorakh in Israel.[142] The Galinoporni and Tell Mevorakh vessels have a flat base, while the necks of these 'imitations' are of the short plain type, without ridge.[143]

Also to be connected with these 'imitation Canaanite' jars is the small amphora from MC III Stephania tomb 10,[144] the only example of a shape *other than* the widely traded large jug in the Black Slip (Reserved Slip) technique (for which see above). While considerably smaller than a storage vessel, the distinctive vertical loop handles set on the shoulders of this amphora—an extremely unusual arrangement for MC ceramics, on which the handles usually attach to the neck—seem to connect the vessel with 'Canaanite' prototypes.[145] Other examples of this rare handle arrangement occur on large PWHM vessels.[146] If an unprovenienced example now in Birmingham is indeed from Cyprus, then it too might be added to this group: it is small, with flat base and neck ridge, and added red and black painted bands.[147]

### PLAIN WHITE WHEELMADE WARE

The examples of Plain White Wheelmade ware (PWWM) ware from the seabed deposit form a heterogeneous group, probably indicative of the early, still somewhat experimental nature of this ware.[148] The Cypriot wheelmade ware is still a very small proportion of the corpus: most indigenous pottery in the seabed deposit is still handmade. The principal fabric represented, best seen in 'imitation Canaanite' jar neck **MTSB.005** (see above, FIG. 21), has a dark core and is very similar to the usual PWHM fabric, although thinner walled and perhaps with somewhat more inclusions. The surface

[135] Pearlman 1985, 170–1.

[136] The Cypriots were not alone: local Egyptian imitations of Canaanite jars are known as early as the MBA: Leonard (n. 116), 254 n. 11. M. Hadjicosti, R. E. Jones, and S. J. Vaughan, 'Appendix IV. "Canaanite" Jars from Maa-*Palaeokastro*', in V. Karageorghis and M. Demas, *Excavations at Maa-Palaeokastro 1979–1986* (Nicosia, 1988), 340–98, at 341, however, consider the early examples in Cyprus to be imported.

[137] In the opinion of EH, the fabric appears Cypriot.

[138] Åström and Wright (n. 85), 270.

[139] Cf. Åström 1972*c*, 223; Åström (n. 128), 120.

[140] Åström 1972*c*, fig. 18. 10.

[141] No. 1073: Åström 1966, 45, fig. 30.

[142] Cf. Johnson (n. 3), 60, fig. 5. O3.

[143] For genuine Canaanite jars with this neck type, see e.g. Amiran (n. 117), pl. 43. 1; Åström 1966, fig. 31, row 5. 2.

[144] Åström 1972*c*, fig. 23. 7; Hennessy (n. 8), 28, pl. xlvi. 1.

[145] Such as Guy (n. 118), pl. 48. 7 of similar small scale.

[146] Cf. Åström 1972*c*, fig. 39. 7. 8.

[147] E. J. Peltenburg, *A Catalogue of Cypriot Antiquities in Birmingham Museum and Art Gallery* (Birmingham, 1981), 32.

[148] Åström 1972*d*, 232.

colour varies from light red-orange to light yellow-brown, with many small white and some black and grey inclusions. There are also examples of a coarser fabric, seen in handle **MTSB.047** (FIG. 21) and body sherds **MTSB.088** and **MTSB.098**.

Jar handle **MTSB.065** (FIG. 21) provides evidence for the traditional Cypriot method of attachment, both ends having been inserted through the vessel wall and then smoothed down on the interior (**MTSB.065**, FIG. 27); clay was then added as reinforcement around the exterior. While jar neck **MTSB.005** was extremely well preserved, it displayed clear indications of wear on its rim and interior. Finally, it should be noted that the one example of a potmark in this deposit was on jar handle **MTSB.065**.

### RED SLIP HANDMADE WARE

Red Slip Handmade ware (RSHM) is closely related to BSHM II ware, distinguished mainly by its firing technique which produces a red rather than a black surface.[149] The fabric found in the seabed deposit is red-orange, sometimes with a grey core, and with many small white and sometimes grey inclusions; it frequently has a spongy appearance due to the heavy use of fine organic temper (cf. BSHM ware above). The fabric of the jar **MTSB.049** (FIG. 21) has a layered effect within the pot wall: a dark red-orange core sandwiched between thin dark grey layers, and a light red-brown surface (5 YR 7/6). In a few places the core is all black. The slip is poorly preserved, but it appears to originally have been thick (now crackled) and dark red.

These examples of RSHM are very thin-walled. The neck **MTSB.123** (FIG. 21) imitates a Cj shape, as also may **MTSB.049**, although the handle is more rectangular in section than the Cj original. The handle **MTSB.075** (FIG. 21) appears to be the same type as **MTSB.049**. Signs of manufacturing methods are visible on all these pieces. The interior of **MTSB.049** is depressed where the upper handle was pressed for attachment. The lower end of handle **MTSB.075** was probably pushed through the pot wall. The neck **MTSB.123** is very irregular, with finger impressions from the attachment process remaining on the interior of the body below the neck.

A parallel for an imitation Canaanite jar in RSHM ware, such as represented by **MTSB.123** and **MTSB.049** and possibly **MTSB.075**, may be the RSHM 'pithos' fragment found in Kalopsidha Trench 3.[150] While **MTSB.075** appears to be the same Canaanite jar type of handle, it could alternatively be the handle to a jug like **MTSB.004** (in BSHM ware). This type of jug is attested in a red slip firing variation as well as black slip, especially at Kalopsidha. Particularly notable are two from the floor of Room 1 in Kalopsidha, Trench 3, where they were found with two PWHM storage vessels.[151]

### GENERAL DISCUSSION

Several of the pieces of pottery from the seabed (**MTSB.057**, **MTSB.080**, **MTSB.134**, **MTSB.055, MTSB.077**) appeared to display evidence for having been burned, although their long immersion in sea water may have affected the condition of all the ceramics recovered.

Only one potmark—below the handle of **MTSB.065** (FIG. 21, a PWWM imitation Canaanite jar?)—was found on the sherds. Canaanite jars found elsewhere frequently have potmarks,[152] as do BSHM jugs similar to **MTSB.004**.[153]

Typologically and chronologically this group of pottery is extremely homogeneous: it is clearly not due to coincidence that so many pieces from what is a relatively short and little-known period in Cyprus were found together. Parallels are found especially in contexts dating to the end of MC III or the very beginning of the LC I, such as Gjerstad's strata 1–2 at Kalopsidha and the 'storage rooms' in Åström's Trench 3 at Kalopsidha.[154] These contexts

[149] Cf. Åström 1972*c*, 84–8.

[150] Åström 1966, 44.

[151] Ibid., 42, fig. 31, row 6. 1 and 2.

[152] Cf. e.g. Grace (n. 117), 88; Guy (n. 118), pl. 27, T. 253. 4; Merrillees 1974, 47, fig. 29.5.

[153] Åström 1972*c*, 170; Åström 1966, 43; Pearlman 1985, 168, fig. 2.

[154] Respectively, Åström 1972*c*, 170–1; and Åström 1966, 40–7.

also have a similar mixture of a very small amount of wheelmade ware within a predominantly handmade corpus. The building in Trench 3 was probably contemporary with Stratum 2 of Gjerstad's house at Kalopsidha Site C, which was burnt.[155] Sherds of Monochrome ware and a WP VI Soft Triglyphic style jug probably come from Gjerstad's Stratum 1 or 2,[156] indication along with significant amounts of wheelmade wares, that the occupation in this area extended into LC. The floors in Trench 3 also probably date to LC I, since wheelmade wares were well represented in the fill: the lack of typical LC I fine wares here is likely due to the building's utilitarian function.

The area of Kalopsidha Trench 9 was first settled at about this time (levels 72–71), probably the same time as the reoccupation/final occupation (Stratum 1) of Gjerstad's house.[157] Layer 71 is clearly well into LC I, with the occurrence of BR I, Monochrome, and several wheelmade wares (Plain White, Red Slip, Black Lustrous), but still no White Slip. The preceding Layer 72 contained no distinctly LC wares, but, as usual in the east of Cyprus (see above), they may have been slow to appear here (no PWS was found anywhere on the site), and PWWM is already present. The end of MC III or the very beginning of LC I is the probable time of the founding of Enkomi,[158] Hala Sultan Tekke,[159] the Nitovikla settlement,[160] as well as the LBA centre at Maroni.[161]

The distribution of the pottery from the *Tsaroukkas* seabed deposit also has close parallels at Kalopsidha, notably in the occurrence of PWHM storage vessels, RSHM, BSHM jugs, degenerate WP ware, a little Red-on-Black, and probably some Canaanite jars. This similarity is particularly close in regard to Åström's 'storerooms' in Trench 3.[162] On the floor of Room 1 were two RSHM jugs, two PWHM pithoi, and a WP IV–V small bowl. The seven objects on the floor of Room 2 included two BSHM jugs (one of Reserved Slip style), three PWHM pithoi, and a 'Syrian' jar base. These rooms produced mostly closed vessels and few bowls; there was a substantial amount of WPHM (mostly WP V), along with a small amount of Red-on-Black and Composite wares. The *Tsaroukkas* seabed deposit produced even a smaller proportion of bowls and fine ware (especially WP) than did the Kalopsidha storerooms. A similar context appears to have existed in the house excavated by Gjerstad at the same site. He identified three of the house's rooms as 'storerooms,' mentioned the presence of 'great quantities of Syrian ware,' and described one storeroom (no. 9) as being 'crowded with large broken storage vessels'.[163] Gjerstad's house also contained large BSHM jugs, large Composite bowls, and Tell el-Yahudiyeh ware.[164]

This pattern contrasts with that in Kalopsidha trench 9, levels 72–71,[165] which were interpreted as a dump from a settlement. The date is similar, but the distribution of types of material is very different. Trench 9 produced much BSHM and RSHM, but with bowls heavily predominating. Again PWHM is the most common ware, but the shapes are mostly bowls and juglets, with very few storage vessels. A 'Syrian WM jar' was found in the surface layers.

[155] Ibid., 47.

[156] Ibid., 10.

[157] Ibid., 49–52, 139–40, and n. 7.

[158] Åström 1972*c*, 164, 195; Dikaios 1969–71, 441–2.

[159] Åström (n. 128), 119; Åström 1989 (n. 10), 49–50, 57–67.

[160] Hult 1992, 22.

[161] Herscher 1984, 25–7; Cadogan (n. 44); Cadogan et al. (n. 10). This is also the same time as the reoccupation of Tyre and Sarepta, where in the earliest levels, dated to MB IIC–LB I, 'Canaanite jars' comparable to those from the Maroni seabed were found in association with Late Cypriot I pottery: Bikai (n. 79), 6; Anderson (n. 124), 369.

[162] Åström 1966, 40–7, fig. 21.

[163] Gjerstad (n. 98), 34–6. The economic and political significance of storage vessels, including PWHM jars, has recently been discussed by Pilides (n. 111).

[164] Åström 1972*c*, 170–1.

[165] Åström 1966, 48–110.

Like the *Tsaroukkas* seabed material, Myrtou *Pighades* Period III also contained an association of Black Slip II (Reserved Slip) ware, a Canaanite jar with rounded body, and PWHM storage vessels with a wide variety of rims.[166] Period III dated to LC II A, but because of the levelling of the area, about half the sherds in this level are from earlier occupation.[167]

Also somewhat similar in character is material from the pre-fortress settlement at Nitovikla, the function of which is not clearly understood.[168] The fill under the first floor there, dating to LC I A 1, contained high proportions of PWHM storage vessels and BSHM II (including Reserve Slip) ware, although it included some Bichrome Wheelmade ware and more Red-on-Black and wheelmade wares than found on the *Tsaroukkas* seabed (consistent with its north-east Cyprus area), and no PWS.

In Arpera *Mosphilos* Tomb 1 a Canaanite jar and a single jug similar to **MTSB.004** were found in association;[169] a similar jar and jug were found together in Kalavasos Tomb 51.[170] Both sites lie in close proximity to Maroni, and thus raise the question of whether there might be some functional or symbolic reason for these two types of vessels to be paired as burial offerings.

The special character of the *Tsaroukkas* seabed deposit is also indicated by the apparent lack of the several other wares so typical of the LC I A period elsewhere on the island, particularly in tombs: Bichrome Wheelmade ware, Black Slip III and Tell el-Yahudiyeh ware, and (apart from a single small sherd) of Red-on-Black. This distribution also contrasts with the contemporary tombs found at Maroni *Kapsaloudhia*, which contained a wide variety of fine wares and types of vessels.[171]

The occurrence of Canaanite jars along with WP VI in the seabed ceramics complements deposits in the Levant containing comparable storage vessels along with Cypriot imports (commonly WP VI, and also BR I). Further evidence for this early Cypriot–Levantine trade is seen in the Arpera tomb, in which there were three early Tell el-Yahudiyeh juglets along with the Cj,[172] and in the also nearby Dromolaxia *Trypes* Tomb 2, which contained a Syrian cylinder seal and at least three imported juglets, of similar LC I A date.[173]

However, most Cypriot WP ware found abroad (often in tombs) consists of juglets with narrow necks,[174] clearly containers for some commodity (of relevance to funerary practice). The WP vessels from the *Tsaroukkas* seabed (at least **MTSB.002**, **MTSB.096**, and **MTSB.072**) are of different types: larger vessels (**MTSB.096** and **MTSB.072**) and with wider necks (**MTSB.002** and **MTSB.096**).[175] This may suggest that they, along with the Composite ware bowl **MTSB.071** (and possibly **MTSB.125**), either were not part of a ship's cargo, but were in use by its crew, or represent types of WP containers (and contents) not employed in funerals.

## MTSB POTTERY CATALOGUE

### *Proto White Slip Ware*

**MTSB.070** (FIGS. 13, 18) Bowl rim. Plain rim of small bowl. Red-brown clay with many small black inclusions, thick very light grey slip, decorated with thick dark orange-brown paint: lattice bands with diagonal cross lines, a horizontal one below rim and a pendent vertical one preserved; cross-hatched square, traces of wavy band below rim; very worn. D. indeterminate.

[166] J. du Plat Taylor, *Myrtou Pighades: A Late Bronze Age Sanctuary in Cyprus* (Oxford, 1957), figs. 14. 48, 23. 319, 24. 336–40.

[167] Åström 1972*d*, 683.

[168] Hult 1992, 22–3, tables 9, 10.

[169] Merrillees 1974, figs. 29. 8, 5.

[170] Pearlman 1985, fig. 2.

[171] Herscher 1984, 25–7, figs. 3–4, pl. vii.

[172] Merrillees 1974, 75.

[173] Admiraal (n. 69).

[174] Epstein (n. 81), 126; e.g. Maguire 1995 (n. 15), fig. 12; Johnson (n. 3).

[175] Although WPHM juglets with a broad neck and pinched rim are not totally unattested abroad: cf. e.g. Bietak (n. 18), pl. 26 *a*; Merrillees (n. 7), 121.

*Base-ring Ware*

**MTSB.160** Body sherd, probably of Base-ring I ware. Very fine thin red-brown (5 YR 5/4) clay, reduced to very dark grey on some areas of the surface; a very few very small white inclusions; very worn. Dim. max. (pres.) 4.5 cm; Th. 0.2–0.3 cm.

*White Painted (Handmade) Ware*

**MTSB.002** (FIG. 18) Juglet. About half preserved; round base, globular body, short wide cylindrical neck, pinched rim; no handle preserved; very worn, no paint preserved but the 'shadow' of the decoration is visible, consisting of groups of horizontal and vertical parallel lines. H. *c.* 17 cm.

**MTSB.096** (FIG. 18) Jug neck. Wide cylindrical neck, trefoil mouth, handle attachment not preserved but would have been at rim; traces of paint: one or two horizontal bands below rim, band around rim interior. H. (pres.) 12.5 cm.

**MTSB.072** (FIG. 18) Body sherd from large closed vessel. Thin-walled (*c.* 0.5 cm); surface smoothed, decorated with thick matt dark red-brown to brown paint: groups of vertical (?) parallel bands. Dim. max. (pres.) 24 cm.

**MTSB.057** (FIG. 18) Body sherd from small thin walled closed vessel. From just below neckline of vessel; burned; decoration: two(?) wide horizontal lines below neckline, group of four vertical lines below. Possibly similar to **MTSB.002**. Dim. max. (pres.) 8.7 cm.

*Composite Ware*

**MTSB.071** (FIG. 18) Bowl fragment. Large shallow bowl with plain rounded rim, round base; no handle or spout preserved; black slip on exterior, interior decorated with very dark brown paint: horizontal bands and zigzags below rim, groups of narrow lines and zigzags in bowl centre. D. *c.* 30 cm.[176]

**MTSB.125** (FIG. 18) Rim of large bowl with large vertical lug handle. Handle crude and irregularly shaped; trace of slip preserved on interior, traces of paint in a scallop motif on rim exterior.

*Red-on-Black Ware*

**MTSB.034** Body sherd from (probable) closed vessel. Light red-brown (7.5 YR 6/4) clay with grey interior, a few small black, white and some red inclusions, fine organic temper; very worn, no slip or surface preserved. Dim. max. (pres.) *c.* 11 cm.

*Black Slip Handmade Ware*

**MTSB.004** (FIGS. 18, 23) Jug neck and handle. Slightly concave neck, flaring irregular rim; vertical handle, rounded rectangle in section, from mid-neck to upper body. H. (neck) 12 cm; D. (rim) *c.* 10 cm.[177]

**MTSB.046** Jug rim sherd. Shape of mouth indeterminate, probably similar to **MTSB.096**; heavily worn and concreted. H. (pres.) 6 cm.

**MTSB.080** (FIG. 20) Sherd from jug neck. Less than half of wide cylindrical neck with some neckline articulation; no rim preserved. Burnt (thus ware identification is somewhat uncertain) to a very dark grey-brown colour with a small dark red-brown area; surface flaking due to fire damage. H. (pres.) *c.* 10 cm.

**MTSB.041** Body sherd from closed vessel, small. Dim. max. (pres.) 6 cm.

*Plain White Handmade Ware*

**MTSB.122** (FIGS. 20, 26) Rim and neck of large storage jar. About half preserved; wide cylindrical neck, narrow downward everted rim; very irregular incised decoration at neckline: diagonal lines crossing in two directions on most of preserved fragment, continuing in one direction only near one edge. H. (neck) *c.* 16 cm; D. (rim) *c.* 26 cm.

**MTSB.134** (FIG. 20) Neck and rim fragment of large storage jar. Wide rim, rolled down to neck; incised decoration below neckline: crude irregular diagonal lines crossing in two directions (cf. **MTSB.122**); some blackening on surface. H. (neck) 14 cm; D. (rim) est. 30 cm.

**MTSB.150** (FIG. 20) Rim and neck of large storage jar. About half preserved; wide cylindrical neck, irregular thick rolled rim; incised decoration: crude irregular diagonal lines at neckline. H. (neck) *c.* 15 cm; D. (rim) *c.* 28 cm.

**MTSB.008** (FIG. 20) Rim and neck fragment of large storage jar. Rim folded down against neck; relief band at neckline, possibly incised; heavily concreted. H. (neck) 16 cm; D. (rim) *c.* 26 cm.

**MTSB.007** (FIG. 20) Rim sherd of large storage jar. Thick downward everted rim. D. (rim) *c.* 32 cm.

[176] Cf. Åström 1972*c*, fig. 37. 6.

[177] Cf. ibid., fig. 23. 6; Åström 1966, fig. 31 row 2. 2.

**MTSB.006** (FIG. 20) Rim sherd from large storage jar. Wide irregular downward everted rim. D. (rim) est. 30 cm.
**MTSB.050** Rim sherd. Rim folded down against neck (cf. **MTSB.006**); heavily concreted; may be same vessel as **MTSB.033** and **MTSB.028**. D. indeterminate.
**MTSB.062** (FIG. 20) Rim sherd. Flat everted rim. D. (rim) *c.* 30.
**MTSB.073** (FIG. 19) Body sherd of storage jar. Includes articulation to neck; horizontal finger-impressed relief band below articulation; orange surface, dark core. Dim. max. (pres.) 23 cm; Th. (wall) 1.2–1.5 cm. Cf. **MTSB.033**.
**MTSB.033** Body sherd of large storage jar. Large fragment including neckline; finger impressed horizontal relief band at neckline; may be same vessel as **MTSB.050** and **MTSB.028**. Th. (pot wall) *c.* 1.5 cm.
**MTSB.027** (FIGS. 19, 25) Base of large storage jar. Flat base; sand embedded in the bottom, many finger impressions on interior. D. (base) *c.* 20 cm.
**MTSB.121** (FIGS. 19, 24) Base of large storage jar. Flat base; sand embedded in the bottom, marks of scraping and smoothing on exterior, finger smoothing on interior. D: *c.* 21 cm (irregular).
**MTSB.124** Base and part of lower body of large storage jar. Flat, slightly articulated base (only very small part preserved), with sand embedded in bottom; finger marks on the interior of body. D. (base) indeterminate.
**MTSB.026** Body sherd of large storage jar. From just below neckline, undecorated. Dim. max. (pres.) 27 cm.
**MTSB.028** Body sherd of large storage jar. Thicker-walled type, as **MTSB.033**. Dim. max. (pres.) *c.* 34 cm. Possibly same vessel as **MTSB.050** and **MTSB.033**.
**MTSB.031** Body sherd from large vessel. Thin-walled, heavily concreted. Dim. max. (pres.) 24 cm.
**MTSB.043** Body sherd of large thin-walled vessel; very worn and concreted. Dim. max. (pres.) 21 cm.
**MTSB.077** Body sherd. Very worn, concreted, blackened by fire. Dim. max. (pres.) 26 cm.
**MTSB.093** Body sherd. Very worn and concreted. Dim. max. (pres.) *c.* 17 cm.
**MTSB.118** Body sherd of large storage jar. Thin-walled. Dim. max. (pres.) 24 cm.
**MTSB.126** Body sherd of large storage jar. Thin-walled. Dim. max. (pres.) *c.* 39 cm.
**MTSB.133** Body sherd of large storage jar.

Additional small body sherds (mostly worn, some concreted) **MTSB.042, 060, 087, 100, 103, 110.**

*Canaanite Jars*

**MTSB.003** (FIG. 19) Neck. Short, wide cylindrical neck with plain rounded slightly flaring rim, horizontal ridge at mid-neck. H. (neck) 5 cm; D. (rim) 13 cm.[178]
**MTSB.051/052** (FIG. 19) Base. Flat base; heavily concreted. D. (base) *c.* 13.5 cm.
**MTSB.132** (FIG. 22) Canaanite jar base. H. max. (pres.) 4.8 cm, Base D. 9.8 cm, Th. (max.) 1.3 cm.
**MTSB.095** (FIG. 19) Flat base. Shallow horizontal groove around the base interior, result of attachment technique; surface very worn and pitted. D. (base) 9 cm.
**MTSB.024** (FIG. 19) Handle. Thin oval in section, attached to thin walled vessel; very irregular. L. (handle) 12 cm; W. 3 cm.
**MTSB.025** (FIG. 19) Handle. Very similar to **MTSB.024**; very irregular, heavily concreted. L. (handle) *c.* 12 cm; W. *c.* 3 cm.
**MTSB.023** (FIG. 19) Handle. Oval in section, attached to large body sherd. L. (handle) 11.5 cm; W. 3.5 cm.
**MTSB.090** (FIG. 19) Handle. Vertical handle, oval in section; attached to very thin-walled vessel (surface much eroded). L. *c.* 14 cm.
**MTSB.037** Body sherd. Dim. max. (pres.) 22.5 cm.
**MTSB.061** Body sherd. Dim. max. (pres.) 11 cm.
**MTSB.063** Body sherd. Worn, concreted. Dim. max. (pres.) 19 cm.
**MTSB.101** Body sherd. Very worn. Dim. max. (pres.) 16 cm.
**MTSB.116** Body sherd. Worn and very concreted. Dim. max. (pres.) *c.* 18 cm.
**MTSB.117** Body sherd. Fabric like **MTSB.090**, could possibly be same vessel. Max. pres. dim. *c.* 16 cm.

Additional small body sherds (most worn, some concreted): **MTSB.079, 084, 091, 092, 102, 114, 120.**

*Plain White Wheelmade*

**MTSB.005** (FIG. 21) Jar neck. Complete, including much of shoulder; short neck, plain vertical rim, shoulder sloping downward; very thin-walled, very well preserved, rim worn on edge and interior.

[178] Cf. ibid., row 5. 2; Amiran (n. 117), pl. 31. 4.

**MTSB.065** (FIGS. 21, 27) Jar handle. Oval in section, attached to large thin-walled vessel; attached by pushing both ends through pot wall and then smoothing the interior. Potmark: two shallow impressed lines, one horizontal at lower join of handle and body (L. 4.1 cm), the other vertical, above and to the right of the first (L. 1.6 cm). L. (handle) 15 cm.
**MTSB.047** (FIG. 21) Handle. Large vertical handle, thick oval in section, from large jar; very coarse fabric.
**MTSB.055** Three body sherds of large fairly thin walled vessel. Burnt.
**MTSB.012** Body sherd. Small and very worn.
**MTSB.014** Body sherd. Small and very worn.
**MTSB.088** Body sherd. Coarse, very worn.
**MTSB.098** Body sherd. Coarse, worn.
**MTSB.131** Body sherd from jar.

*Red Slip Handmade Ware*

**MTSB.123** (FIG. 21) Neck of very thin walled jar. Short wide cylindrical neck, everted rim; rim very irregular, finger impressions on body interior below neck; traces of red slip, almost none preserved. H. (neck) 6.5 cm; D. (rim) 11.5 cm.
**MTSB.049** (FIG. 21) Handle. Vertical handle, rounded rectangle in section, attached to large thin-walled vessel; interior wall was pushed inward from attachment. L. (handle) *c.* 14 cm; W. 3 cm.
**MTSB.075** (FIG. 21) Handle. Vertical handle, rounded rectangle in section; grey fabric with brown core; traces of smeary red slip preserved, surface mostly worn; apparently blackened by fire. L. (pres.) *c.* 8 cm. Cf. **MTSB.049**.

*Post Bronze Age pottery*

**MTSB.009** (FIG. 22) Byzantine rim and body sherds (two joining). L. (max.) 18.9 cm, W. (max.) 12.7 cm, Th. (max.) 1.4 cm. Decorated with rilling on exterior surface.
**MTSB.011** (FIG. 22) Roman amphora neck. D. (rim) 10.8 cm, Th. (max.) (wall) 0.9 cm.
**MTSB.017** (FIG. 22) Byzantine jar rim. H. max. (pres.) 9.6 cm, D. (rim) 15.5 cm, Th. (max.) 1.0 cm.
**MTSB.019** (FIG. 22) Roman jar rim. H. max. (pres.) 10.0 cm, D. (rim) 11.0 cm, Th. (max.) 1.3 cm.
**MTSB.029** (FIG. 22) Canaanite jar base. H. max. (pres.) 12.5 cm, Th. (max.) (wall) 1.4 cm.
**MTSB.040** (FIG. 22) Byzantine rim? sherd, vessel type unknown. L. (max.) 9.8 cm, W. (max.) 13.5 cm, Th. (max.) 0.8 cm.
**MTSB.053** (FIG. 22) Ottoman bowl. H. (max.) 7.8 cm, D. (base) 8.0 cm, (rim) 24.5 cm, Th. (max.) 1.2 cm.
**MTSB.066** (FIG. 22) Canaanite jar handle. H. max. (pres.) 3.5 cm, Th. (max.) 0.9 cm.
**MTSB.129** (FIG. 22) Roman amphora neck and handle. H. (max.) 2.0 cm, D. (rim) 10.0 cm, Th. (max.) 1.3 cm.

## VIII. OTHER FINDS AT MTSB SITES 1, 2, AND 3

### ARCHITECTURE

A number of possible architectural elements have been observed on the seabed, TSBS.016 from MTSB Site 1 forming the best example. This large squared block dominates its surrounding area and was often used during the underwater survey as a point of reference. It may have been lost while being transported to the ashlar building at *Vournes*, since it is proximate and the block is of a similar size and shape to those at *Vournes*.[179] The tile fragment, TSBT.001, found at MTSB Site 3, is of the classic imbrex type found in the valley, notably at Late Roman Maroni *Petrera*, and most probably also occurring at Maroni *Vrysoudhia*.

### MISCELLANEOUS STONE

A range of other stone objects were also recovered or observed, the majority of which are thought to have represented ballast which was unloaded or dumped off the coast. A large

[179] See G. Cadogan and M. Domurad, 'Maroni V', *RDAC* 1980, 77–81, pl. vii for *in situ* ashlar blocks at *Vournes*. Of course, similar ashlars were also employed at other periods, and instances in the Maroni Valley are known from Late Roman sites, for example.

stone basin was recorded, although impossible to date, along with a large saddle quern (TSBS.010) which could be assigned to the LBA. A vesicular basalt mortar (TSBS.052) is of particular interest and is thought to represent a traded item. The mortar is of a type widely held to be indicative of sea trading routes.[180] Vesicular basalt is not native to Cyprus and is thought to have come from somewhere in the Levant. A couple of other mortars made from the same raw material have been found during both MVASP survey of the *Tsaroukkas* area, and the excavations at *Tsaroukkas*.[181] The trade in basalt objects is confirmed by twenty other examples of coarse vesicular basalt objects from the *Tsaroukkas* excavation, mainly querns and rubbers. This trade continues through time, since basalt objects, such as a Pompeian type rotary millstone, were found during the survey of the Late Roman site of Maroni *Petrera*.[182] TSBS.053 is a marble breast/mastoid weight which was found at MTSB Site 3. It has a rectangular base, measuring 17 × 9 cm and 8 cm deep, with two slightly conical protuberances sitting on top, and is made of white marble. Comparison with a similar example from the Petrie collection[183] suggests that our example has been heavily worn.

TABLE 4. Likely architectural elements from the seabed (measurements in cm)

| | *Description* | *Length* | *Width* | *Depth* |
|---|---|---|---|---|
| TSBS015 | Stone block | unknown | unknown | unknown |
| TSBS016 | Ashlar? block | 135 | 75 | 33 |
| TSBS019 | Stone block | unknown | unknown | unknown |
| TSBS020 | Stone block | unknown | unknown | unknown |
| TSBT001 | Roman Tile | 14 | 8.5 | 4 |

TABLE 5. Other stone objects from the seabed (measurements in cm)

| | *Description* | *Length* | *Width* | *Depth* |
|---|---|---|---|---|
| TSBS010 | Saddle quern | 70.00 | 40.00 | 16.00 |
| TSBS052 | Footed mortar | 30 | 23 | 14 |
| TSBS053 | Marble weight | 17.3 | 9.1 | 8.3 |

[180] On the mortar types, see H.-G. Buchholz, 'Steinerne Dreifußschalen des ägäischen Kulturkreises und ihre Beziehungen zum Osten', *JdI* 78 (1963), 1–77; id., 'Some observations concerning Thera's contacts overseas during the Bronze Age', in C. Doumas (ed.), *Thera and the Aegean World*, ii (London, 1980), 227–40, at 228–9. For the provenance of the vesicular basalt, see O. Williams-Thorpe, R. S. Thorpe, C. Elliot, and C. Xenophontos, 'Archaeology, geochemistry, and trade of igneous rock millstones in Cyprus during the Late Bronze Age to Roman periods', *Geoarchaeology*, 6 (1991), 27–60.

[181] Examples of other mortars from the terrestrial excavations at *Tsaroukkas* include: MT.601, which is a fragment of a small basalt tripod mortar; and MT.365, which is an olivine vesicular basalt pestle which comes from Building 1. A decorated, footed, mortar was recovered during the British Museum excavations at *Tsaroukkas* in 1897: Johnson 1980, 24, pl. 26, Tomb 17 no. 137.

[182] *Manning and Conwell* (n. 39), pl. 93. 3; *Manning et al.* (n. 46), MVASP. 189.

[183] A very similar example is among the finds in the Petrie collection (catalogue no. 4385), now held by the Science Museum, London. The object is labelled a 200-beqa weight and is believed to have been excavated by Petrie in Egypt in the 1930s. The weight has a slightly larger base, with two conical breasts and nipples preserved on top. It is also made of white marble. We thank Kevin Johnson, associate curator of astronomy and mathematics at the Science Museum, for this information. Such weights are best known from the Roman period: B. Forsén, 'Marmorne Gewichtsteine aus Thera', *Op. Ath.* 20 (1994), 43–9.

# IX. LC I A Cypriot Ceramic Regionalism, Thera, And Absolute Chronology

## 1. RELATIVE ARCHAEOLOGICAL EVIDENCE AND CHRONOLOGY

LC I Cypriot ceramic exports have recently come to play a critical role in current debates concerning second-millennium BC Aegean–east Mediterranean chronology. Certain finds of Cypriot products abroad, and especially at Tell el-Dabᶜa in Egypt, have been held to define key chronological horizons. In particular, it has been argued that such finds disprove the so-called 'high' Aegean-Cypriot chronology. Recent publications bear titles such as 'The Late Cypriot White Slip I-Ware as an obstacle of the high Aegean chronology';[184] 'The context of White Slip Wares in the Stratigraphy of Tell el-Dabᶜa and some Conclusions on Aegean Chronology';[185] and 'The White Slip I of Tell el-Dabᶜa and Thera: critical challenge for the Aegean long chronology'.[186]

But the nature of relative chronology on Cyprus—see partial summary in Section II above—does not always appear to have been properly appreciated in such discussions. This is a fundamental issue. A correct appreciation in fact *permits*—and perhaps even supports—the opposite conclusion.

The brief statement by Manfred Bietak two years ago in these pages particularly encapsulates and highlights the problem. Bietak wrote:

> The new publication by S. W. Manning, *A Test of Time* (Oxford, 2000), which I consulted only on the internet, offers no convincing evidence for an occurrence of WS I ware 100 years earlier in northern Cyprus than in the south-east. Nowhere has WS I been found within a typical Middle Cypriot contexts [*sic*], e.g. together with WP III–IV wares.[187]

In writing this, Bietak largely refuses to recognize the nature of the Cypriot archaeological record at this time, and the partly separate situations in LC I A when one contrasts north-western and eastern Cyprus—what Åström calls 'the regional peculiarities of western and eastern Cyprus'.[188] Let us start with Bietak's concluding sentence: 'Nowhere has WS I been found within a typical Middle Cypriot contexts [*sic*], e.g. together with WP III–IV wares'. This sentence contains two statements—which, importantly, rather contradict each other. First, Bietak states that: 'Nowhere has WS I been found within a typical Middle Cypriot contexts [*sic*]'. This is correct. WS I is part of the definition of the LC I period, and the WS I style does not appear until the beginning of the second sub-phase, LC I A 2, of LC I A.[189] Second, Bietak believes that he can illustrate or prove his first point by stating that WS I is not found 'together with WP III–IV wares'. However, this is both an incorrect or inappropriate test, *and* quite possibly also an incorrect statement on the basis of evidence.

Why? The very point of the west–east split on Cyprus in the LC I A period, first and best described and documented in overall terms by Merrillees, is that this specified juxtaposition is

[184] Bietak (n. 17).

[185] Bietak and Hein 2001.

[186] M. H. Wiener, 'The White Slip I of Tell el-Dabᶜa and Thera: critical challenge for the Aegean long chronology,' in Karageorghis 2001, 195–202.

[187] Bietak 2000, 187 n. 3 towards end.

[188] Åström 1972*b*, 765.

[189] Following the standard definitions: Åström 1972*b*; Åström 1972*d*. The very beginning of the WS I style ('early style' WS I), which emerges from a transition phase from PWS (of the LC I A 1 period) may, of course, in its very first appearances even creep over the border into the previous period. Following such logic, Bergoffen 2001, 155 has recently mooted the idea that the 'early-style' of WS I began in late LC I A 1.

not especially likely to be found in practice. But, nonetheless, in temporal terms, late eastern Cypriot WP III–IV, e.g. WP Pendent Line Style (i.e. LC I A in date, when WP PLS is dwindling against WP IV–VI Cross Line Style and the other WP V Styles), *does* in fact probably overlap in temporal terms with the first 'early-style' WS I in the north-west of Cyprus in the LC I A period. This was made clear thirty years ago by Åström in his famous chart showing the distribution of the Cypriot fabrics in the different Late Cypriot periods.[190] This shows the temporal conjunction of WP III–IV and WS I in LC I A 2. And, although the contexts are by no means perfect and entirely free from minor contamination (but of course perfection is rather rare in field archaeology), three key sites in eastern Cyprus offer evidence—as published—supporting this view and potentially contradicting Bietak:

(i) Kalopsidha. Åström discusses the nature of the well-known and much cited dump area he excavated, and argues that 'only the lowest layers can . . . be used to show the development of pottery styles at Kalopsidha'.[191] These lowest levels offer data, as published, and notwithstanding the possible caveats expressed above, in support of the above position. The initial sherd of WS I makes its appearance in Kalopsidha North Pit Trench 9 in the third deepest level, level 70 (dated LC I), with, among other things, 161 sherds of WP III–IV PLS. BR I and some other LC types appear from the previous level, level 71, also with WP III–IV PLS. PBR and PWS are absent; we are already LC I A 2 to start LC I B in date. On the Kalopsidha data, this seems a time towards the end of the currency of WP PLS at the site, when WP PLS is declining in popularity or presence against WP CLS. In the next level in this area of the trench, level 68, thirteen sherds of WS I (and for that matter fifteen sherds of WS II, which appears in this layer) occur with twenty-six sherds of WP III–IV PLS and the last major concentration of WP CLS (2,417 sherds); here we are perhaps moving past the above active (versus residual) overlap. Layer 68, an unusually thick level at *c.* 16 cm versus previous and subsequent levels of 6 cm, 8 cm, 3 cm and 1 cm (etc.), and so thus quite likely to have heterogeneity, is LC I to II A. In the middle part of Trench 9 WP III–IV PLS and WS I overlap in the second deepest level, level 67A, and then continue to overlap in each of six subsequent levels (60, 57C, 57B, 57A, and 55B—the last where WS II also appears and we are undoubtedly beyond the active WP PLS–WS I overlap). BR I occurs from the very earliest level, level 67B. Level 67A is dated LC I A, and level 69 to late LC I A and possibly the beginning of LC I B. In the southern part of Trench 9 the stratigraphic sequence is more confused. Åström only trusts the single deepest layer. Otherwise, WS II occurs as early as the second-deepest level, level 64 (A–)B, overlapping with among other things WP PLS. For what it is worth, WS I overlaps with WP PLS in the third-deepest level, level 50 (with a late overlap in level 40 undoubtedly irrelevant), while BR I overlaps in the second-deepest level, level 64(A–)B. In Squares A–J 31–40 WS I, BR, and WP PLS overlap in the deepest level, level 15.[192]

(ii) Nitovikla. The second burial period of Tomb 2 is dated LC I A 2 by Åström. The contents are '10 Red-on-Black, 3 Red-on-Red, 1 Black Slip IV, 4 Base-ring I, 1 White Painted unclassifiable, 1 White Painted III–IV Pendent Line Style, 1 White Painted III–IV Wavy Line Stye'.[193] Thus here is clear evidence of a LC I A 2 and BR I overlap or co-occurrence with WP

[190] Åström 1972*b*, 700–1. Two interrelated issues are involved. First, there are the important regional trends: see Merrillees 1971. Second, there is the key point that the defined Cypriot ceramic wares and fabrics are *independent* of the broader stratigraphic and chronological periods. Thus, for example, there is no such thing as MC wares and fabrics: nearly all the ceramic wares and fabrics typical of late MC contexts continue throughout LC I A, but with differing regional patterns (see also Merrillees n. 66, 2). And various new wares/fabrics appear: in broad, general terms, in LC I the BR–WS–Monochrome tradition develops in or from the west, while the Bichrome Wheelmade, and perhaps PW, WP Wheelmade, and BS–RS Wheelmade traditions develop in the east.

[191] Åström 1966, 56.

[192] Ibid., 50–7.

[193] Åström 1972*b*, 678.

III–IV. While it may be argued that BR I perhaps appears a little earlier than WS I at some sites in eastern and south-eastern Cyprus, the same cannot be said for the north-west. Similarly the absence or scarcity of WS I in the north-east in LC I A exemplifies the strongly regional nature of ceramic assemblages at this time on the island.

(iii) Enkomi. WS I, BR I, and WP III–IV PLS co-occur in Enkomi Area III, Level I.[194] The majority of the WP is WP V (as to be expected in LC I A), so we may assume WP III–IV PLS was in decline or ending, but some was nonetheless still current. Dikaios speculates briefly about whether the MC-style sherds (like the WP III–IV PLS) were made in LC I A, or may have been residual from earlier MC occupation.[195] The logic of the Merrillees regional-temporal synthesis—based on a much wider set of sites and overall island patterns—leads us to the former conclusion for at least some, if not all, of this material.[196] Hence the evidence from Enkomi may represent a co-occurrence of WP III–IV PLS and WS I and BR I. A possible—but unprovable—association of LC I A WP IV–VI CLS with 'early-style' WS I might also be represented in Enkomi Swedish Tomb 19. The majority of the tomb contents are post LC I A, but one small group of objects is early. It includes one of the relatively few known 'early-style' WS I bowls found in the east of Cyprus[197]—a bowl compared to the Thera 'early-style' WS I bowl.[198] One of the few other early, i.e. LC I A, items in the tomb is a WP IV–VI CLS vessel.[199] The two vessels are possibly contemporary from the initial use of the tomb.

Given the recent focus in scholarship on Tell el-Dabᶜa, it is worth adding that the juxtaposition sought by Bietak is not especially likely to be found in Egypt. Almost all of the MC–LC I Cypriot exports at Tell el-Dabᶜa (and Egypt in general) come from eastern (north-eastern, eastern, to south-eastern) Cyprus (see n. 15). This area was not the home of 'early-style' WS I production, and only received limited examples in LC I A (see the Appendix). 'Early-style' WS I is thus not a likely earlier LC I A export from the east of Cyprus, *and* Egypt is not the likely recipient of such open, versus closed, shapes. The corollary is that Tell el-Dabᶜa cannot act as the arbiter of the chronology of Cyprus as a whole;[200] its Cypriot imports at best offer a partial guide to the east of Cyprus. In LC I A north-west Cyprus was producing 'early-style' WS I, but no or very little WP III–IV.[201] A couple of 'early-style' WS I sherds may

[194] Dikaios 1969–71, 226 and 224 respectively and also see pp. 442–3, where WS I is found from the time of the Level I buildings of LC I A (and not before). The specific WP III–IV PLS sherds cited come from Area III Level I A (pl. 53/7, Inv. 2392/1, see p. 548 for context) of LC I A date, and Area I, Level I B (pl. 53/27, Inv. 2157/2, see p. 545 for context) of LC I B date. WS I sherds of Level I A and I B date from Areas I and III are shown in pl. 56. Instances of WS I from Area III, Level I A, coeval with the first WP sherd above are: pl. 56. 35 and p. 553 Inv. 4670/1, pl. 56. 21 and p. 547 Inv. 2303/4, and pl. 56. 26 and p. 551 Inv. 3781/1. Instances from Area I, Level I B date coeval with the second WP sherd are: pl. 56. 16 and p. 545 Inv. 2134/1, pl. 56. 17 and p. 545 Inv. 2162/1, pl. 56. 15 and p. 546 Inv. 2205/1. The overlap of WP V with (mature) WS I is not an issue, and is also nicely shown in the earliest layer in Tomb 10: pp. 358–60, 389–91.

[195] Ibid., 223–4, 442–4. See also 420 and n. 314: 'MC pottery types persist in LC I and even II . . . Their persistence has also been observed in our tombs and especially in the stratified deposit in our Areas I and III'.

[196] Merrillees 1971. Re-study of the Enkomi LC I assemblage and contextual data by Lindy Crewe, as part of her Edinburgh University Ph.D. project, will provide important new evidence and interpretation in due course.

[197] Gjerstad et al. (n. 10), pl. 114 no. E19. 146 = Popham 1972, fig. 80. 6.

[198] Merrillees 2001, 93 with refs.

[199] Gjerstad et al. (n. 10), pl. 91 row 10 six in from left, pl. 109. 3; Åström 1972*c*, 64.

[200] *Pace* arguments of, e.g., Bietak and Hein 2001, 172, 174.

[201] The general pattern in the NW is that in late MC contexts there is local WP III–IV (including PLS), e.g. *Toumba tou Skourou* Tomb V: *TTS* 294 T V. 40 P 979 Ch. 1. 40; p. 301 T V. 101 P 1020 Ch. 2. 49; T V. 109 P 1026 Ch. 2. 57, and some co-occurs with PWS in initial LC I A, e.g. Pendayia *Mandres* Tomb 1: V. Karageorghis, *Nouveaux Documents pour l'étude du Bronze Récent à Chypre* (Études Chypriotes 3; Paris, 1965), pp. 47–8, 49–51, but during LC I A it is becoming rarer or absent, replaced by both the regional versions of WP V and VI, and especially by the new PWS–WS I, PBR–BR I and Monochrome family wares, e.g. the other, later, tombs at *Toumba tou Skourou*, or Tomb 1 at Akhera: Karageorghis (n. 200), 80–111. Some of this initial NW PWS shows close affinities to WP forms and decoration, e.g. ibid., 50, fig. 11

have made it directly or indirectly to Tell el-Dabᶜa,[202] but these candidates so far come from residual contexts; it is not impossible (and is perhaps even likely) that they originally arrived during the SIP, contemporary both with MB III period imports of 'early-style' WS I from north-west Cyprus at Tell el-ᶜAjjul,[203] the late MC-style imports of LC I A date to Tell el-Dabᶜa from east Cyprus and the LCI PWS imports found at SIP (only, securely) Tell el-Dabᶜa.

The statement of Bietak's quoted above began by affirming that there was: '. . . no convincing evidence for an occurrence of WS I ware 100 years earlier in northern Cyprus than in the south-east.' One is reminded of the unfortunate 'gap' of 100 years, subsequently reduced to 50 years, that Schaeffer considered existed at Enkomi between the end of the MC and the start of the LC, but for which there is little evidence.[204] The reality or existence of Bietak's claimed problematic gap has been undermined or disproved above, but readers may wonder what was the origin of the 100 years? Bietak calculates the figure from two different criteria external to Cyprus: (i) WS I on pre-eruption Thera, which on the 'high' Aegean-Cypriot chronology means that it exists there no later than *c.* 1650/1630 BC;[205] and (ii) Bietak argues that the first secure WS I at Tell el-Dabᶜa is not until after Ahmose's conquest, which he places at *c.* 1530 BC.[206] Hence *his* 100 (+) years. *But* the WS I Bietak refers to from secure earlier 18th Dynasty contexts at Tell el-Dabᶜa[207] already includes typically mature WS I of LC I B date.[208] Bowl 7949 is a good example: found 'in a good 18th Dynasty context'[209] and clearly LC I B in stylistic date.[210] It is thus clear, at a total minimum, that all of the LC I A period lies earlier (and quite possibly some part of LC I B). The all-important WS I vessel from Thera is notably of an 'early-style' from the start of LC I A 2 (or LC I A 1/2 transition); indeed Bergoffen even considers it possible that this 'early-style' of WS I began in late LC I A 1.[211] It seems that some other Levantine MB III period exports of such 'early-style' WS I went also to Tell el-ᶜAjjul.[212] Thus the real chronological position is that the LC I A 1/2 transition, with the very first 'early-style' WS I of an almost transitional nature between PWS and WS I, occurs shortly before the eruption of Thera, let us say around 1650/1630 BC on the 'high' chronology. This 'early-style' WS I is a north-western invention and,[213] like the rest of the LC ceramic package, is only gradually taken up in the east of Cyprus through the period, and only fully from LC I B. With the LC I B period, what are by then the mature forms of WS I, BR I and Monochrome are *then* typical and most common in the east—although the types did not originate here.[214] LC I A 2 (starting with the LC I A 1/2 transition)

nos. 21, 54, 72, fig. 12 = Popham 1972, fig. 47. 7, indicative of the regional fusion that created the new 'LC' wares. For 'early-style' WS I, see the Appendix. The earlier material in Kazaphani *Ayios Andronikos* Tomb 2A covers this period, and either shows the progressive change, or perhaps the final occurrences of local WP III–IV (nos. 191, 299 and 300), just continuing long enough to co-occur with the onset of the new 'LC' types: Nicolaou and Nicolaou (n. 8). However, in a significant contrast, in the east of Cyprus the new PWS–WS I, PBR–BR I, and Monochrome wares are relatively rare until LC I B, and instead the eastern WP traditions continue and predominate in LC I A: Merrillees 1971.

[202] Bietak and Hein 2001, nos. 8894 E [correcting 'F' in Manning 1999, 163], 8205 M, 8441 R.

[203] Bergoffen 2001.

[204] Dikaios 1969–71, 419–20.

[205] For the 'high' chronology in general, see Manning 1999. For the details of the 1650–1630 BC date range, see the main text below in this section.

[206] Bietak 2000, 190.

[207] Bietak and Hein 2001.

[208] Manning 1999, 161–4.

[209] Bietak and Hein 2001, 179.

[210] Manning 1999, 162; Bergoffen 2001, 150; Bergoffen 2002 (n. 18), 29; Eriksson (n. 65), 60.

[211] Bergoffen 2001, 155.

[212] Bergoffen 2001; ead., 2002 (n. 18).

[213] In the NW there is also local variation. No PWS or 'early-style' WS I was found in the tombs at Stephania published by Hennessy (n. 8), although they span the close of the MC through early LC periods. The earlier LC I tombs, such as Tomb 12, dated LC I A 2–I B 1 by Åström 1972*b*, 831; LC I A by Hennessy (n. 8), 52, have Black Slip III, WP V, WP Wheel-made, PBR, BR I and already classic, mature, WS I. The PWS and then PWS–WS I transition/'early-style' WS I phases have occurred elsewhere, between Stephania Tomb 10 of either latest MC date or LC I A 1 date (for dating, see Åström 1972*c*, 191; Åström 1972*b*, 676 n. 7; Merrillees 1971), and Tomb 12.

[214] Åström 1972*b*, 765.

thus runs from *c.* 1650/1630 BC through to the mid–later sixteenth century BC, i.e. largely within the MB III period in the Levant, the LC I A 2 to LC I B transition itself being not a fixed time-line on Cyprus, but a process over a period.[215] There is thus no hundred-year gap or problem; merely a complex and real pattern of differing regional ceramic production and distribution on Cyprus in LC I A, in turn reflected in export finds of Cypriot ceramics outside Cyprus. These largely illustrate Merrillees's observation that 'the data from Egypt precisely reflect the ceramic history in eastern Cyprus'.[216] Here 'L.C. I A was marked by the continuance of the W.P. pottery industry and L.C. I B saw the take-over by B.R. and W.S. at [an] . . . advanced stage of development.'

How does this picture correlate with the sequence at Tell el-Dab$^{c}$a? On the basis of current publications, the answer is of course 'with difficulty', since the Tell el-Dab$^{c}$a sequence is constructed around a low-chronology framework. However, the following might be suggested:[217]

*WP III–IV PLS and CLS.* These wares first occur in late Stratum G and end during Stratum D/3. The floruit is Stratum E/1,[218] and the few examples from D/3 'could already be considered . . . as residual sherds'.[219] On Cyprus, WP PLS first occurs in late MC II–III and WP CLS in MC III,[220] and both then occur through to the end of LC I A.[221] The later part of the occurrences of these wares is often somewhat ignored by some scholars. So the later part of the range of the Tell el-Dab$^{c}$a occurrences might well be LC I A. If the few D/3 occurrences are perhaps already residual, this requires the Stratum E/1 imports to represent the last phase of production and export, and probably be dated LC I A. The transition of MC III to LC I A might therefore be placed during Stratum E/2, with Strata F to E/3 (or to during E/2) then representing MC III production and exports. Late Stratum G would mark the MC II–III transition and the first appearance of WP PLS. Bietak starts Stratum D/3 at 1600/1590 BC, based seemingly entirely on his original estimate of thirty years per stratum back from the close of the D/2 Stratum in *c.* 1530 BC, hence D/2 starts 1560 BC, and D/3 starts at 1590 BC.[222] There is, however, *no* evidence specifically to support or require the *c.* 1590 BC date. Dever has instead posited *c.* 1625 BC, and Manning *c.* 1640 BC.[223] The E/1 Stratum is before this point. LC I A is thus variously left starting before *c.* 1600/1590 BC, 1625 BC or 1640 BC, some time in the earlier to mid-seventeenth century BC. Other evidence clarifies this range of suggestions in favour of an earlier chronological position (see below, this section).

This WP III–IV sequence implies that PWS will have already existed on Cyprus from during Stratum E/2, but is not so far represented at Tell el-Dab$^{c}$a (where there are in fact only

[215] Cf. Merrillees 1971; Åström 1972*b*, 679–80, 763–7; 1972*a*.

[216] Merrillees 1971, 74.

[217] Based, unless noted otherwise, on the sequence in Bietak 2000, fig. 1; and Bietak and Hein 2001.

[218] Maguire 1995 (n. 15), 55.

[219] Bietak and Hein 2001, 171.

[220] Åström 1972*c*, 163–99, 276–7.

[221] Åström 1972*b*, 700–1. The situation is well summarized and illustrated by Merrillees in Karageorghis 2001, 217–8: '. . . nearly all of the fabrics of MC III continue throughout LC I A. All of the White Painted Cross Line Style, Pendent Line Style, White Painted V, Red-on-Black, Black Slip (Reserved Slip) wares, indeed all of the characteristic and diagnostic ceramic features of MC III, continue almost unceasingly throughout the whole of LC I A and only begin to die out in LC I B. . . . If you then try to say that Middle Cypriote fabrics never occur with PWS, that is, of course, in terms of the Cypriot relative chronology, a nonsense, because PWS in Cyprus occurs very irregularly in many contexts in LC I A and the overwhelming masses of pottery in both stratigraphic and funerary contexts are all what is called Middle Cypriote . . .' (see also Merrillees n. 66, 2).

[222] M. Bietak, 'Die Chronologie ägyptens und der Beginn der Mittleren Bronzezeit-Kultur', *Ägypten und Levante* 3 (1992), 29–37; id., 'Avaris, capital of the Hyksos kingdom: new results of excavations', in E. D. Oren (ed.), *The Hyksos: New Historical and Archaeological Perspectives* (Philadelphia, 1997), 87–139. The start of D/3 is shown as just before 1590 BC in Bietak 2000, fig. 1, which we regard as 1600/1590 BC.

[223] W. G. Dever, 'Settlement patterns and chronology of Palestine in the Middle Bronze Age', in Oren (n. 222), 285–301, at 295 fig. 9. 4; Manning 1999, 86–8, 328, figs. 36 and 62.

a very few finds, ten in total, from a huge site)—this is probably to be explained in terms of the site receiving exports almost exclusively from eastern Cyprus (see n. 15), an area where PWS was not first produced (typified by the absence of a clear pre-WS I horizon for PWS at Enkomi and instead its first appearance with already mature WS I[224]) and was not particularly common. No later than Stratum E/1, 'early-style' WS I will have been produced in north-west Cyprus. Again its lack of presence in Tell el-Dab$^{c}$a at this time reflects the eastern Cypriot origin of the Cypriot ceramics imported to the site (and of course a few of the residual PWS and earlier WS I sherds found redeposited in later, 18th Dynasty, contexts may date from earlier, original, import to the site).

*Red on Black and Red Slip.* The occasional find is noted in Stratum E/1. On Cyprus, each ware occurs both in MC through to LC I A (LC I A 1 or LC I B 1 depending on type of Red Slip—not stated).[225] The reality of LC I occurrences of Red on Black was stressed by Åström and subsequently Baurain.[226] By themselves they might most likely suggest a MC III date, but, given that the distribution of WP III–IV across the Strata points to Stratum E/1 as LC I A (see above), they are also perfectly consistent with such a date.

*WP V.* WP V was stated as occurring in Tell el-Dab$^{c}$a Stratum E/1 by Irene Forstner-Müller and Karin Kopetzky at the SCIEM 2000 EUROconference, Schloß Haindorf 2–7 May 2001. Previously it was first dated to Stratum D/3.[227] Maguire in the past had indicated that this ware may have appeared earlier.[228] It then continues to occur through to the end of the D/2 Stratum. On Cyprus, WP V appears no earlier than the MC II–III transition, and is generally seen as a new ware appearing in MC III.[229] It is typical of MC III, and then continues to be found commonly through to the end of LC I A 2. It is very much thus also typical of LC I A. There is clearly something of a discrepancy between the ranges of WP III–IV PLS and CLS and WP V at Tell el-Dab$^{c}$a. There ought to be more overlap. Given MC III WP PLS and CLS from late Stratum G onwards, and either MC III Red on Black and Red Slip *or* LC I A Red on Black and Red Slip in Stratum E/1, it is difficult not to conclude that Tell el-Dab$^{c}$a largely lacks MC III production WP V at present. The sherds from Stratum E/1 could be this, but the finds in Stratum D/3 and D/2 must be LC I A products and exports (given discussions above, and, for D/2, because WP VI, PWS and Bichrome ware appear: see below). WP V co-occurs with WS I (including mature styles) on Cyprus.

*PWS, WP VI and Bichrome Wheelmade ware.* The appearance of PWS, WP VI and Bichrome Wheelmade ware, all likely eastern Cypriot products at Tell el-Dab$^{c}$a (see n. 15), by the start of the D/2 Stratum merely shows that LC I A exports continued to the site (they do not have to date the start of the LC I A period on Cyprus—and the evidence of the WP III–IV PLS and CLS indicates otherwise), and, indeed PWS, WP VI and Bichrome Wheelmade ware also continue into LC I B on Cyprus.[230] Furthermore, since imported likely LC I B products from eastern Cyprus (WS I, BR I, Red Lustrous Wheelmade ware) are found deposited from the start of the 18th Dynasty horizon at Tell el-Dab$^{c}$a (Stratum D/1 and then Stratum C), it is evident that the LC I B period *on Cyprus* began before this point: i.e. before *c.* 1540/1530 BC.[231]

[224] Dikaios 1969–71, 225–6; Eriksson (n. 65), 56.

[225] Åström 1972*c*, 163–99, 276–7; 1972*b*, 700.

[226] Ibid., 163; Baurain (n. 4), 54–8, 79.

[227] Bietak 2000, fig. 1, or maybe even about one line's worth before the start of Stratum D/3 if the figure is closely examined.

[228] Maguire 1992 (n. 15), fig. 2.

[229] Åström 1972*c*, 277.

[230] Åström 1972*b*, 700.

[231] In an interesting revision to past statements, Bietak 2000, fig. 1, carefully shows PWS, WP VI, and Bichrome Wheelmade ware as first appearing just before the end of Stratum D/3, rather than with the start of Stratum D/2.

To conclude this discussion, we might briefly outline approximate absolute dates for the Cypriot relative sequence discussed above with regard to the dating of the eruption of the Thera volcano:[232]

*c.* 1675–1650 BC: Start of LC I (LC I A 1). In north-west Cyprus the package of PWS, PBR and early Monochrome appears alongside regional WP V, and, by the close of this time range, 'early-style' WS I appears. In east Cyprus (i.e. east Mesoria) WP III–IV PLS continues but is now overtaken in popularity by WP IV–VI CLS, the other eastern WP V–VI styles mature and flourish, Bichrome is invented, and although not common, some PWS, and PBR occur. (We overlook the differing patterns in the Karpass, the south-east coast, and other areas of Cyprus in this outline summary as relevant to Tell el-Dabᶜa and Thera.)

*c.* 1660–1630 BC: An 'early-style' WS I bowl probably from north-west Cyprus (LC I A 1/2 transition to early LC I A 2), perhaps from the Toumba tou Skourou area, is exported to mature Late Minoan I A Thera. In reverse, Toumba tou Skourou receives imports of contemporary Late Minoan I A and Late Cycladic I exports, including two vessels with clear links to pre-eruption Thera.[233] Exports from about this date through the early sixteenth century BC of 'early-style' WS I and related products go to MB III Tell el-ᶜAjjul from north-west Cyprus. Over the same time period, dwindling LC I A WP III–IV PLS, and increasing WP V–VI, Bichrome, some PWS, and so on, are exported to Egypt and the Levant from east and south-east Cyprus.

*c.* 1650/1645/1628 BC: Thera eruption. (Dates above reflect this 1650/1645/1628 BC range, see discussion below.)

First half sixteenth century BC: BR I export is deposited at SIP Memphis (see n. 24).

Earlier to mid-sixteenth century BC: Transition from LC I A 2 to LC I B on Cyprus (probably a regionally-varied process).

From *c.* 1540/1530 BC: Deposit of mature LC I B products (WS I, BR I, Red Lustrous Wheelmade ware) from or via eastern or south-eastern Cyprus in Egyptian contexts of earlier 18th Dynasty date following the expulsion of the Hyksos.[234] Deposit of classic Late Helladic II A and later Late Minoan I B objects in Egyptian contexts of earlier 18th Dynasty date, down to about the beginning of the reign of Tuthmosis III. Note that Tomb NE 1 near the Teti Pyramid at Saqqara shows that classic LH II A (at the earliest) is no later (at the latest) than Tuthmosis I.[235]

[232] This follows, but slightly modifies, S. W. Manning, 'The chronology and foreign connections of the Late Cypriot I period: times they are a-changin' ', in Åström 2001 (n. 9), 69–94, to reflect the increased possibility of a *c.* 1650/1645 BC date for the Thera eruption—see below this section. In particular, revising the discussion p. 71, it seems now unlikely that the ice-core evidence *c.* 1645 BC can be correlated with the tree-ring event attested 1628/1627 BC in various northern hemisphere tree-ring sequences. If the Aegean Bronze–Iron dendrochronology reflects the Thera eruption via the unique growth anomaly starting in relative ring 854, as suggested in previous publications, then the latest evidence and analyses indicate a date of 1650 BC +4/-7 years (and *not* 1628 BC): see S. W. Manning, B. Kromer, P. I. Kuniholm, and M. W. Newton, 'Anatolian tree-rings and a new chronology for the east Mediterranean Bronze-Iron Ages', *Science*, 294 (2001), 2532–5. Alternatively, the eruption is most likely at another date in the mid-later 17th c. BC: see note 245 below.

[233] *TTS* 381–3; G. Cadogan, 'Thera's eruption into our understanding of the Minoans', in D. A. Hardy, C. G. Doumas, J. A. Sakellarakis, and P. M. Warren (eds), *Thera and the Aegean World III*, i: *Archaeology* (London, 1990), 93–7, at 95.

[234] Ahmose acceded *c.* 1550 or 1540 BC after respectively J. von Beckerath, *Chronologie des pharaonischen Ägypten. Die Zeitbestimmung der ägyptischen Geschichte von der Vorzeit bis 332 v. Chr.* (Mainz, 1997); and K. A. Kitchen, 'The historical chronology of ancient Egypt, a current assessment', *Act. A.* 67 (1996), 1–13. The conquest of Avaris = Tell el-Dabᶜa is dated between Ahmose years 7–18: see D. B. Redford, *History and Chronology of the Eighteenth Dynasty of Egypt: Seven Studies* (Toronto, 1967), 48; M. Bietak, 'Egypt and Canaan during the Middle Bronze Age', *BASOR* 281 (1991), 27–72, 48; Bietak 2000, 190 n. 20.

[235] Manning 1999, 204 and n. 972, based on literature cited there, argued that the cup from this deposit was latest LH II A at the earliest. However, C. F. Macdonald, 'Chronologies of the Thera eruption', *AJA* 105 (2001), 527–32 at 530 states (without explanation, or correcting authorities cited by Manning) that the relevant alabastron and cup are both 'classic LH II A, contemporary with LM I B'. I adopt this view as the minimum position. For the Egyptian date, see the references in Manning 1999 cited above. Macdonald notes the new Egyptian context dating, but also says that the book by Warren and Hankey in 1989 offered a different, lower, date and so leaves the matter apparently open. This is inappropriate. Macdonald is ignoring the fact that leading Egyptologists have revised the date for specific reasons since Warren and Hankey wrote, and so retrospective citation is not a sufficient counter.

## 2. SCIENTIFIC EVIDENCE FOR THE ABSOLUTE DATE OF THE THERA ERUPTION

The scientific case in favour of a 'high' or 'early' date for the mature Late Minoan I A eruption of the Thera volcano is steadily growing. We do not propose to review here the large body of existing literature published up to 1999.[236] We merely review very recent indications that further reinforce, perhaps decisively, the likelihood of the 'high' or 'early' date.

(i) Greenland ice-core evidence. Volcanic glass shards said to be chemically consistent with a Thera, Minoan eruption, provenance have been found in the GRIP ice-core in a layer associated with a major volcanic eruption signal. This layer was preliminarily dated *c.* 1636 BC and is correlated with the *c.* 1644 BC volcanic signal in the Dye 3 ice-core.[237] The Dye 3 core is regarded as the best dated ice-core, and thus the date for the GRIP signal and the analysed tephra shards is considered to in fact be *c.* 1644 BC. These data have not been formally published at the time of writing (June 2001)—and readers are advised to consult publications appearing after this date. Hammer mentions the find of the tephra particles (stated as in the 1645 BC layer of the GRIP ice-core), and in a 'Note added in proof' writes after analysis of the tephra that 'the preliminary interpretation strongly suggest the ash particles to be from the Thera eruption'.[238] In an 'Extended abstract for the Haindorf Castle SCIEM Conference April [*sic*] 2001', entitled 'Recent ice core analysis strengthens the arguments for a mid 17th century BC eruption of Thera' by C. U. Hammer, G. Kurat, P. Hoppe and H. B. Clausen, the above position is described in more detail. The 1636 BC GRIP major volcanic signal is said to be identical with the *c.* 1645 BC Dye 3 major volcanic signal and the tephra analysed is stated to be: 'of very similar composition to the Thera pumice and glass. Not only has the tephra the same bulk mineral composition as Thera, but also the REE [Rare Earth Element] composition closely resembles the abundance of rare earth elements in the Thera ash; including an Europium anomaly'. The authors further observe that the volcanic acid deposition of the 1645 BC signal is also consistent with a mid-latitude northern hemisphere eruption (e.g. Thera, and not some other suggested candidates like Aniakchak in Alaska), and that the chemical composition clearly rules out other proposed candidates like Avellino. The case for Thera thus seems strong. The obvious caveat is that the analytical procedures are not known, and the raw data have not yet been published and subjected to scrutiny.[239]

[236] For discussion of literature up to 1999, see Manning 1999.

[237] H. B. Clausen, C. U. Hammer, C. S. Hvidberg, D. Dahl-Jensen, J. P. Steffensen, J. Kipfstuhl, and M. Legrand, 'A comparison of the volcanic records over the past 4000 years from the Greenland Ice Core Project and Dye 3 Greenland ice cores', *Journal of Geophysical Research*, 102 (1997), 26707–23; C. U. Hammer, 'What can Greenland ice core data say about the Thera eruption in the second millennium BC?', in M. Bietak (ed.), *The Synchronisation of Civilisations in the Eastern Mediterranean in the Second Millennium BC. Proceedings of an International Symposium at Schloß Haindorf, 15th–17th of November 1996 and at the Austrian Academy, Vienna, 11th–12th of May 1998* (Contributions to the Chronology of the Eastern Mediterranean, 1; Vienna, 2000), 35–7. For the Dye 3 acid signal, see C. U. Hammer, H. B. Clausen, W. L. Friedrich, and H. Tauber, 'The Minoan eruption of Santorini in Greece dated to 1645 BC?', *Nature*, 328 (1987), 517–19.

[238] Hammer (n. 237), 37. SWM thanks Professor Claus Hammer for information and discussion. Data on the chemical profile of these shards compared to Thera Minoan eruption volcanic glass was shown by Professor Gero Kurat in Vienna on 24 January 2002 after a seminar by Manning at the VERA laboratory. Manning thanks Professor Kurat. Recent work has greatly refined the characterisation of Minoan Bo eruption volcanic glass (e.g. N.J.G. Pearce, W.J. Eastwood, J.A. Westgate, and W.T. Perkins, 'Trace-element composition of single glass shards in distal Minoan tephra from SW Turkey', *Journal of the Geological Society, London*, 159 (2002), 545–56); this should permit tighter comparison of distal tephra found in polar ice versus candidate source eruption. It may also be noted that there is so far no record of a large southern hemisphere volcanic eruption at this time on the basis of Antarctic ice-core records, see J. Cole-Dai, E. Mosley-Thompson, S. P. Wright, and L. G. Thompson, 'A 4100-year record of explosive volcanism from an East Antarctica ice core', *Journal of Geophysical Research*, 105 (2000), 24, 431–42. Thus we must look for a northern hemisphere candidate.

[239] Some readers may wonder about the GISP2 ice-core: G. A. Zielinski, P. A. Mayewski, L. D. Meeker, S. Whitlow, M. S. Twickler, M. Morrison, D. A. Meese, A. J. Gow, and R. B. Alley, 'Record of volcanism since 7000 BC from the GISP2 Greenland ice core and implications for the volcano-

(ii) Sulphur production of the Minoan eruption of Thera. It was previously argued that the Thera eruption had a relatively low sulphur yield and that it accordingly could not be responsible for the large sulphur-derived acid signal in the Greenland ice at *c.* 1645 BC.[240] New work suggests that the sulphur-production was, or at any rate could have been, much larger than previously thought[241]—hence Thera very well may have left a large sulphur dioxide

climate system', *Science*, 264 (1994), 948–52. This ice-core does *not* offer satisfactory correlation with the replicated Dye 3/GRIP sequence in the mid second millennium BC, and thus has a significant dating uncertainty: see Clausen et al. (n. 237), 26713–14; Hammer (n. 237); and (postscript) now especially the analysis of J. Southon, 'A First Step to Reconciling the GRIP and GISP2 Ice-Core Chronologies, 0–14,500 yr BP', *Quaternary Research*, 57 (2002), 32–7, in which he presents a cogent case that the so-called *c.* 1695 BC volcanic signal in the GISP2 ice-core should be correlated with (and dated by) the 1636 = 1644 BC volcanic signal in the GRIP/Dye 3 ice-cores. Among others, any of the major volcanic signals dated *c.* 1623 BC, *c.* 1669 BC or *c.* 1695 BC in the GISP2 ice-core could be Thera (see esp. Southon, loc. cit.). Moreover, Hammer (n. 237), 36 in fact argues that the GISP2 ice-core simply failed altogether to record the major volcanic signal *c.* 1645 BC in the Dye 3 and GRIP ice-cores (and now North GRIP ice-core). It was of course claimed that the signal *c.* 1623 BC in the GISP2 ice-core was *not* Thera: G. A. Zielinski and M. S. Germani, 'New ice-core evidence challenges the 1620s BC age for the Santorini (Minoan) eruption', *JAS* 25 (1998), 279–89; iid., 'Reply to: Correction. New GISP2 ice-core evidence supports 17th century BC date for the Santorini (Minoan) eruption', *JAS* 25 (1998), 1043–5. Even if a valid claim, this left the 1669 BC and 1695 BC signals as potential and plausible Thera candidates. However, as argued in Manning 1999, 288–300, the papers of Zielinski and Germani do not make a clearcut or sound case. Their characterization data do *not* really rule out a Thera provenance, and, indeed, careful examination would indicate that their characterization data are incorrect and require 'calibration', since their measurements of samples from Thera fail to match other analyses of the Minoan eruption products: see Manning 1999, 291, fig. 54 *b*. It is important to note that this rejection of the claims of Zielinski and Germani is supported by recent research on the subject of the characterization of Theran versus other Aegean volcanic products: C. Peltz, P. Schmid and M. Bichler, 'INAA of Aegaean pumices for the classification of archaeological findings', *Journal of Radioanalytical and Nuclear Chemistry*, 242 (1999), 361–77; and especially P. Schmid, C. Peltz, V. M. F. Hammer, E. Halwax, T. Ntaflos, P. Nagl, and M. Bichler, 'Separation and analysis of Theran volcanic glass by INAA, XRF and EPMA', *Mikrochimica Acta* 133 (2000), 143–9. Schmid et al. simply state (p. 148) of the claim of Zielinski and Germani that 'This suggestion is not supported by the results obtained from the separated glass fraction'. Schmidt et al. make two points very clear: first, within measurement errors, only potassium is slightly different for the volcanic glass shards from the *c.* 1623 BC layer of the GISP2 ice-core when compared with Thera eruption glass; and, second, in rigorous overall terms, the volcanic glass found in the *c.* 1623 BC layer of the GISP2 ice-core cannot be distinguished from Thera eruption volcanic glass. Thus we are left with a less than useful ice-core that does not correlate with the Dye 3 and GRIP records for the mid-second millennium BC, and from which either (i) any of three (or more) volcanic signals could be Thera, or (ii) no signal equals Thera for unexplained reasons: Hammer (n. 237), 36.

[240] H. Sigurdsson, S. Carey and J. D. Devine, 'Assessment of mass, dynamics and environmental effects of the Minoan eruption of Santorini volcano', in D. A. Hardy, J. Keller, V. P. Galanopoulos, N. C. Flemming and T. H. Druitt (eds), *Thera and the Aegean World III*, ii: *Earth Sciences* (London, 1990), 100–12; D. M. Pyle, 'The application of tree-ring and ice-core studies to the dating of the Minoan eruption', in D. A. Hardy and A. C. Renfrew (eds), *Thera and the Aegean World III*, iii: *Chronology* (London, 1990), 167–73.

[241] There is a published case and claim by V. Michaud, R. Clocchiatti, and S. Sbrana, 'The Minoan and post-Minoan eruptions, Santorini (Greece), in the light of melt inclusions: chlorine and sulphur behaviour', *Journal of Volcanology and Geothermal Research*, 99 (2000), 195–214. There is also an as yet unpublished case arguing for a significant increase in eruption scale (and hence sulphur production) based on field observations by Professor R. S. J. Sparks (pers. comms., 2001–2002). But (postscript), perhaps most important of all, is the conclusion drawn from a decade of study prompted by the great 1991 Pinatubo eruption. Here, as at El Chichón in 1982, volatiles ($CO_2$, $H_2O$ and $SO_2$) were present far in excess of saturation and so far in excess of any estimates made by petrologic analyses of the erupted products. These volatiles were in a discrete bubble phase. This bubble phase formed at least 5–10 km below the ground (at depth) and not merely in the top few kilometres of the Earth's crust and contained very large amounts of volatiles. Is this a common phenomenon? In a 10 years on from Pinatubo perspective article C. G. Newhall, J. A. Power, and R. S. Punongbayan, 'To make grow', *Science*, 295 (2002), 1241–2 conclude yes, writing on p. 1241 that 'Work since the Pinatubo eruption suggests that many, perhaps all, large explosive eruptions are of magma that contains a substantial bubble phase at depth'. If so, this should include Thera (and the work of Michaud et al. indicates this). Thus the very small estimates of volatile yield for the Thera eruption made in the 1980s on the basis of petrologic analyses are very likely massive underestimates and totally irrelevant. Instead, the eruption must have produced a significant volatile yield. Within the period *c.* 1700–1450 BC, only the large volcanic acid signal dated *c.* 1644 BC in the Dye 3 ice-core, which equals and better dates the signal at *c.* 1636 BC in the GRIP ice-core, could thus plausibly represent the Thera eruption, see Clausen et al. (n. 237); and Manning (n. 232), fig. 1 (mistakenly printed as fig. 2 on p. 85) with text pp. 73–4 and caption p. 75. For the reasons outlined in n. 239, the GISP2 ice-core is not discussed at present.

derived signal in the arctic ice, and only the 1644 BC = 1636 BC signals in the Dye 3 and GRIP ice-cores can possibly or plausibly now represent Thera.

There are admittedly problems with the Michaud et al. model.[242] They determine a high maximum sulphur yield for the eruption (as much as some 33–49 times previous estimates) from analysis of some mafic material from the eruption, but this material is in fact found only in very small quantities.[243] They argue that this sulphur-rich material indicates there was a large amount of non-erupted sulphur-rich basalt involved in the eruption process, and thus that there was a sulphur-rich vapour phase present in the pre-eruption magma chamber (the mechanism believed to explain large sulphur releases not detected by petrologic analysis for several recent volcanic eruptions, such as Pinatubo[244]). However, while all this is possible, and the mafic material may indeed suggest that a sulphur-rich basalt magma was involved in the formation of the Minoan magma chamber, this process occurred over several thousand years (up to about 17,000 years). It is therefore likely that some, to much, of this sulphur will have leaked out and not have been retained until the eruption. Therefore, the extremely large sulphur yield calculated by Michaud et al. is surely a massive over-estimate. Nonetheless, their data do point clearly to the likelihood of the presence of a pre-eruption sulphur-rich vapour in the magma chamber, and therefore to a larger total sulphur release than the minimum calculated previously solely from the Minoan magma. In turn, the arguments against the correlation of the Minoan eruption of Thera with the significant volcanic sulphur-derived signals in the arctic ice based on a very low sulphur release for Thera no longer apply. Indeed, only the 1644 BC = 1636 BC signals in the Dye 3 and GRIP ice-cores offer plausible associations with a moderate to higher sulphur release.

(iii) Existing radiocarbon evidence supports as most likely a seventeenth century BC date range for the eruption of Thera. Now a new radiocarbon dating programme appears to be producing further, high-quality and better precision, evidence in support of an 'early' or 'high' Aegean Late Minoan I A to I B chronology, and so a likely mid–later seventeenth century BC date for the Thera eruption.[245]

(iv) 1650/1645 BC or 1628 BC? The ice-core evidence in 2 (i) above suggests a date of *c.* 1645 BC for a major volcanic eruption thought to be Thera, give or take an error stated as ± 7 years. New evidence and analyses place the unique growth anomaly in the Aegean Bronze-Iron dendrochronology which has been suggested to reflect the great and proximate eruption of the Thera volcano at *c.* 1650 BC +4/-7 years. These two dates could be the same. Further support for the *c.* 1645 BC ice-core date is claimed from forthcoming analyses of microscopic volcanic glass shards in the Greenland ice. If this date and error are established to be accurate and precise (following full scholarly publication), as Hammer et al. argue strongly that they are,[246] then this likely evidence for the date of the Thera eruption cannot be associated with

[242] Michaud et al. (n. 241).

[243] T. H. Druitt, L. Edwards, R. M. Mellors, D. M. Pyle, R. S. J. Sparks, M. Lanphere, M. Davies, and B. Barreirio, *Santorini Volcano* (Memoir of the Geological Society, 19; London, 1999). The main Minoan erupted magma is low in sulphur as determined in previous studies: e.g. Sigurdsson et al. (n. 240).

[244] T. M. Gerlach, H. R. Westrich, and R. B. Symonds, 'Preeruption vapor in magma of the climactic Mount Pinatubo eruption: source of the giant stratospheric sulphur dioxide cloud', in C. G. Newhall and R. S. Punongbayan (eds), *Fire and Mud: Eruptions and Lahars of Mount Pinatubo, Philippines* (Seattle, 1996), 415–33.

[245] S. W. Manning, C. B. Ramsey, C. Doumas, T. Marketou, G. Cadogan, and C. L. Pearson, 'Evidence for early date of Aegean Late Bronze Age and Thera eruption', *Antiquity*, 76 (2002), 733–44. Further analysis and data are in press and/or progress. See also T. Marketou, Y. Facorellis, and Y. Maniatis, 'New Late Bronze Age chronology from the Ialysos Region, Rhodes', *Mediterranean Archaeology and Archaeometry*, 1 (2001), 19–29.

[246] SWM thanks Professor Claus Hammer for several personal communications on the topic over 1999–2001.

the well-known northern hemisphere tree-ring growth anomaly absolutely dated 1628/1627 BC.[247] In the past, suggestions have been made to 'calibrate' the ice-core dates to the absolute tree-ring dates, including by one of the present authors.[248] But, if Hammer et al. are correct, it may prove that the 1628/1627 BC tree-ring growth anomaly is unrelated—and, if so, this formerly possible or plausible hypothesis will have been disproved by high-quality precise evidence.[249] We shall have to await the detailed publication of the GRIP ice-core data.

At present in the published literature, we therefore have two claims of seventeenth century BC 'Thera' dates:

1. *c.* 1650/1645 BC, from ice-core and Aegean tree-ring evidence, with a definite volcanic cause (for the ice-core evidence) and, it is argued, potential (or better) Thera provenance; and
2. 1628 BC, based on what has always only ever been a suggested possible association between a tree-ring growth anomaly and any, yet alone the Thera, volcanic eruption.

The radiocarbon evidence (existing and new) strongly supports a mid–later seventeenth century BC date, but cannot (yet) resolve between these two precise dates. These two dates are of course *only* 17–22 years apart, and it is important to emphasise that the basic 'early'/'high' chronology case and synthesis[250] is shown to be correct, whichever of these two is the true exact date. The conventional 'low' chronology dating of the Thera eruption *c.* 1520–1500 BC,[251] some 150–108 years later and *outside* the 95% confidence region of the relevant radiocarbon data, is totally disproved in either case.

In the interim, pending full publication and assessment of the new GRIP ice-core data, and also publication of new radiocarbon evidence, it seems best to date the Thera eruption as occurring around the range *c.* 1650/1645 BC to *c.* 1628 BC. The chronological outline offered in

[247] e.g. V. C. LaMarche Jr. and K. K. Hirschboeck, 'Frost rings in trees as records of major volcanic eruptions', *Nature*, 307 (1984), 121–6; M. G. L. Baillie and M. A. R. Munro, 'Irish tree rings, Santorini and volcanic dust veils', *Nature*, 332 (1988), 344–6; M. G. L. Baillie, 'Irish tree rings and an event in 1628 BC', in Hardy and Renfrew (n. 240), 160–6; id., *A Slice Through Time: Dendrochronology and Precision Dating* (London, 1995); H. Grudd, K. R. Briffa, B. E. Gunnarson, and H. W. Linderholm, 'Swedish tree rings provide new evidence in support of a major, widespread environmental disruption in 1628 BC', *Geophysical Research Letters*, 27 (2000), 2957–60. It should be noted that the dramatic tree-ring growth anomaly in the Aegean Dendrochronology, which was previously associated with the 1628 BC event (P. I. Kuniholm, B. Kromer, S. W. Manning, M. Newton, C. E. Latini, and M. J. Bruce, 'Anatolian tree-rings and the absolute chronology of the east Mediterranean 2220–718 BC', *Nature*, 381 (1996), 780–3), is now no longer so dated, see Manning et al. (n. 232).

[248] M. K. Hughes, 'Ice layer dating of the eruption of Santorini', *Nature*, 335 (1988), 211–2; M. G. L. Baillie, 'Extreme environmental events and the linking of the tree-ring and ice-core records', in J. S. Dean, D. M. Meko and T. W. Swetnam (eds), *Tree Rings, Environment and Humanity: Proceedings of the International Conference, Tucson, Arizona, 17–21 May, 1994* (Tucson, 1996), 703–11; Manning 1999; Manning (n. 232).

[249] New evidence indicates that the extraordinary tree-growth anomaly in the Anatolian tree-ring data, which has been argued perhaps to reflect the regional impact of the great Thera eruption (Kuniholm et al. (n. 247); Manning 1999), may offer a possible or potential association with the Dye 3/GRIP ice-core evidence: Manning et al. (n. 232). The date for this unique tree-ring growth anomaly is now placed at *c.* 1650 BC +4/-7 years (at approx. 95% confidence). The ice-core date is *c.* 1645 BC ± 7 years (see n. 237).

[250] Manning 1999.

[251] e.g. P. Warren, 'Aegean Late Bronze 1–2 absolute chronology—some new contributions', in M. S. Balmuth and R. H. Tykot (eds), *Sardinian and Aegean Chronology: Towards the Resolution of Relative and Absolute Dating in the Mediterranean* (Studies in Sardinian Archaeology, 5; Oxford, 1998), 323–31; P. Warren, 'LMIA: Knossos, Thera, Gournia', in P. P. Betancourt, V. Karageorghis, R. Laffineur and W.-D. Niemeier, *Meletemata: Studies in Aegean Archaeology Presented to Malcolm H. Wiener as he enters his 65th Year* (Aegaeum 20; Liège and Austin, 1999), 893–903; id., review of Jan Driessen and Colin MacDonald, *The Troubled Island: Minoan Crete Before and After the Santorini Eruption*: *AJA* 105 (2001), 115–18. Even more impossible is the date range between 1515 and 1460 BC proposed by Bietak 1997 (n. 222), 125.

the first part of this section uses this range and thus modifies previous recent statements by one of the present authors based on a 1628 BC date.

## X. Conclusions and Discussion

A distinctive LC I A assemblage and deposit has been found within the Maroni *Tsaroukkas* Seabed Site 1 area as delimited by the spread of LBA-type stone anchors. The ceramic material compares well to other LC I A assemblages from storage or warehouse contexts. It may be distinguished from contemporary assemblages from settlement or funerary contexts. This accords well with the view that the material derives from maritime trade, with the pottery coming from a boat(s) moored in the likely anchorage off the *Tsaroukkas* site. Indeed, the restricted nature of the deposit, and its functional and chronological homogeneity, might well argue for its deriving from just one boat, whether entering the sea accidentally, or through dumping, or because the vessel sank for some reason. Five sherds showed evidence of burning, and in no case are they likely cooking vessels. It is possible they hint at a maritime mishap. The Maroni ceramic group conforms to the regional mix seen in this area of the south coast of Cyprus in LC I A, and seems to reflect the horizon of time when several new coastal-trading sites were founded along the eastern to southern coast of Cyprus. The foreign connections of the Maroni deposit, and the LC I A period in general, are, strikingly, with the late MBA/Hyksos period of Egypt and the Levant. As in comparable assemblages from terrestrial contexts, we are in a time period *before* the island-wide occurrence of the mature LC I styles which demarcate the LC I B period, and its connections with the 18th Dynasty of Egypt and the LB I of the Levant.

This brings us to chronology and history (see also Section IX above with further details). Evidence, including from Maroni, shows that the LC I A period was largely contemporary with the Late Minoan I A period in the Aegean, and that the subsequent LC I B period appears to go with the Late Minoan I B period.[252] 'Early-style' WS I probably from north-west Cyprus of the LC I A 1/2 transition or LC I A 2 period appears before, presumably shortly before, the mature Late Minoan I A eruption of the Thera volcano.[253] Thanks to recent finds and analysis of volcanic glass particles from Greenland ice-cores, and new radiocarbon data, it seems that the eruption of the Thera volcano may now probably be placed in the seventeenth century BC, and the debate over the eruption date, and a 'high' versus 'low' Aegean chronology, is close to being resolved at last in favour of the so-called 'high' chronology and its general chronological and historical synthesis for the Aegean, Cyprus and east Mediterranean.[254] The Maroni seabed deposit belongs in the seventeenth century BC somewhere from a little before, to around the time of the Thera eruption. It belongs to, and indeed highlights, the key, but until recently neglected, maritime trading world of the eastern Mediterranean in the seventeenth through earlier sixteenth centuries BC which was driven out of the late MBA Canaanite world of the Levant and Delta Hyksos Egypt. This 'world system' came to incorporate, and probably significantly stimulated, the developing civilization of early

[252] Manning 1999, 116–19, 126–7, 135, 150–92; G. Graziadio, 'Egina, Rodi e Cipro: rapporti inter-insulari agli inizio del Tardo Bronzo?', *SMEA* 36 (1995), 7–27.

[253] Demonstrated by the find on Thera in 1870 of the now infamous, and subsequently lost, WS I bowl: Manning 1999, 150–8 with refs.; Merrillees 2001.

[254] See Manning 1999, subject to the new information outlined in Section IX of the main text above. For post-1999 information, revisions and updates to Manning 1999 see http://www.rdg.ac.uk/~lasmanng/testoftime.html.

LBA Cyprus,[255] and also the then crystallising New Palace civilization of Crete and its Aegean contemporaries. It is a key period, which now requires further attention.

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## APPENDIX: 'EARLY-STYLE' WHITE SLIP I

We define 'early-style' WS I (datable to the LC I A 1/2 to LC I A 2 periods) as including decoration with PWS-style rope lattices (i.e. lattices with slanted lines[256]), ladder lattice pattern, and ladder lattice framed lozenges. It is particularly the 'ladder pattern' style of Popham[257] but includes also the ladder framed lozenge style, noted as a rarer sub-class of the general 'framed lozenge' style.[258] A key feature is that such decoration flows out of PWS decoration, and so, along with the ubiquitous rope lattices and pendants,[259] may exhibit circles or larger blobs versus neat dots,[260] or MC hangovers like chequerboard pattern,[261] but with a 'lean, organized composition', and it might be argued to be an almost transitional style.[262] 'Early-style' WS I includes bichrome examples (a WP origin?); Stewart should be credited for recognizing that bichrome style WS I was early in appearance and was outlasted by the monochrome WS I.[263] However, although we argue that 'early-style' WS I was first produced in the PWS–WS I transitional period (LC I A 1/2 through LC I A 2[264]), perhaps exemplified by the appearance of a sherd of what looks like 'early-style' WS I in Pendayia *Mandres* Tomb 2 with PWS and an assemblage otherwise entirely MC III–LC I A[265]—its production (and undoubtedly deposition) was not necessarily limited solely to this time period. The key point is that 'early-style' WS I may be clearly contrasted with the subsequent classic WS I with its light, linear, decorations, and its movement away from the lattice band (and no rope pattern). This classic WS I is typified by the two-parallel-line (and three-parallel line), and wavy line, styles characteristic of subsequent, LC I B, contexts all over the island.[266] 'Early-style' WS I is in fact relatively rare. As Padgett noted, most known examples come from *Toumba tou Skourou*, and the style may have been developed here (or in this area).[267]

Clear stratigraphic demonstration of the 'early' status of 'early-style' WS I is not possible given the evidence to hand from Cyprus (mainly multi-use tombs), but a good case is nonetheless available.

First, overseas, 'early-style' WS I is found at Tell el-ᶜAjjul in Palestine, and, overall, tends to occur stratigraphically earlier than the developed LC I B styles of WS I.[268] Similarly, whereas an example of the 'early-style' WS I was found in a closed Late Minoan I A context on Thera,[269] no

[255] The sudden emergence of complex society on LC Cyprus appears to be an instance of secondary state formation, with the emergent élite (as typical in such a case) employing elements of the symbolism from the surrounding established state societies in their own ideology.

[256] Cf. Popham 1972, 433.

[257] Ibid., 440.

[258] Ibid., 440.

[259] e.g. ibid., figs. 48. 9 and 10, 80. 6; *TTS*, pl. 162 nos. TI. 105 P61, TI. 295 P223, TIV. 32 P708.

[260] e.g. *TTS* TII. 9 P558, TI. 99 P56, pl. 162 TI. 295 P223; Karageorghis 1990, pl. 18 no. K41 + T. 105/B. 12.

[261] e.g. Popham 1972, fig. 49. 10 = Johnson (n. 31), pl. 52. 209; *TTS* pl. 160 *a* and *b*; Karageorghis 1990, pl. 18 no. K. 40.

[262] e.g. see M. Padgett in *TTS* 373–4 (quotation from p. 373); Manning 1999, 172–3.

[263] Stewart (n. 4), 62. See also Bergoffen 2002 (n. 18), 26–27.

[264] And Bergoffen 2001, 155 recently even speculates that 'early style' WS I was perhaps first produced and exported in LC I A 1 during the 'late PWS phase'.

[265] Manning 1999, 155–6; for sherd, see Karageorghis (n. 201), pl. 14. 1 row 2 third from left.

[266] e.g. Popham 1972, fig. 80. 2–5.

[267] *TTS* 374. See also the further brief discussion in n. 10.

[268] Bergoffen 2001; ead., 2002 (n. 18); Manning 1999, 119–29, 150–87.

[269] Merrillees 2001; Manning 1999, 150–6.

classic style WS I can be demonstrated necessarily to have such an early date, and, instead, where a clear date may be shown, classic WS I correlates with Late Helladic II A or Late Minoan I B.[270]

Second, whereas at *Toumba tou Skourou* the tomb material as a whole shows a development from PWS to 'early-style' WS I to classic WS I,[271] this process is not typically evident at sites in the east of Cyprus (contrast with situation in the west, below). Instead, when WS I first appears at most sites away from the north-west, it is mainly of the classic, LC I B, styles of WS I. A clear PWS to 'early-style' WS I phase is not evident in most cases (i.e. there are a few finds, but they are uncommon, and the first clear horizon with WS is LC I B). To give two examples: (i) Phlamoudhi *Vounari* in the north-east, where the initial appearance of WS I is in the already advanced classic style.[272] PWS and 'early-style' WS I are absent. (ii) Enkomi in the east, where in the settlement most of the WS I from its initial appearance in Level I is already classic, LC I B, style.[273] There is no clear prior PWS to 'early-style' WS I horizon; the PWS examples are from the same horizon as classic WS I and BR I.[274] The tomb material shows the picture clearly. The majority of early tombs either contain solely eastern tradition MC/LC I A items with no PWS, no WS I and no BR I and are LC I A, or they instead are characterized by LC I B items (even if there are some LC I A items present) including classic WS I and BR I and usually also later materials and are LC I B and later.[275] The odd example of PWS, or 'early-style' WS I occurs,[276] but they are exceptions. Further, they occur with classic WS I and BR I (i.e. they seem to be locally later LC I A, and present as hangovers in LC I B contexts), and, as in the settlement evidence, there is no distinct PWS to 'early-style' WS I horizon. Enkomi LC I A is predominantly MC tradition. Although some 'early-style' WS I is known from Hala Sultan Tekke and Maroni *Vournes* (see n. 10), other LC I deposits in the Larnaca district west to Kalavasos often lack it, and either have no PWS as well, or instead present assemblages where PWS occurs with classic style WS I and BR I, with the earlier WS I stage not represented. Examples are: Livadhia *Kokotes*, where the assemblage moves straight from LC I A PBR, PWS and WP V–VI to BR I and classic parallel line style WS I;[277] Dromolaxia *Trypes*, where the assemblage in Tomb 1 has late MC items and then LC I–II items, but no PWS, and no 'early-style' WS I, and instead WS I appears as classic style, and Tomb 2, where there is a mainly later MC assemblage, but the presence of BR I indicates that the material reaches well into LC I yet there is no PWS or 'early-style' WS I present;[278] and Kalavasos *Mavrovouni* Tomb 51, where much of the assemblage is LC I A but the WS I appears as classic style along with BR I.[279] Farther to the west, Episkopi *Bamboula* lacks an LC I A horizon, and WS I appears as the developed classic

[270] e.g. Rhodes: Manning 1999, 162 and refs.; Ayia Irini Tomb 3, where all WS I bowls are of the classic, or mature, WS I style—nos. 24, 37, 38, 61, 107, 110, 126, 127, 128 and 129—and there are also two LH II A imports, nos. 16 and 29: P. E. Pecorella, *Le tombe dell'età' del bronze tardo della necropolis a mare di Ayia Irini 'Paleokastro'* (Biblioteca di antichità cipriote 4.1; Rome, 1977.

[271] *TTS* 371–6.

[272] Al-Radi (n. 9), pl. 33. 4–14, cf. ibid. 44: WS I 'appears towards the end of Late Cypriot I A or the beginning of I B on *Vounari*, whereas it began somewhat earlier in the western part of the island'.

[273] Dikaios 1969–71, pl. 56. 14, 19–24, 26–37.

[274] Ibid., 225–6.

[275] Manning 1999, 179 and refs.; or e.g. J. and É. Lagarce, *Alasia IV. Deux Tombes du Cypriote Récent d'Enkomi (Chypre). Tombes 1851 et 1907* (Mission Archéologique Française d'Alasia Tome VII; Paris, 1985), where there is no PWS and the WSI in classic parallel line and framed wavy line style as characteristic of LCIB. Although Eriksson (n. 65), 56 suggests that C. F. A. Schaeffer, *Missions en Chypre 1932–1935* (Paris, 1936), fig. 33 tomb 4 top row bottom right numbered 1 is PWS, presumably because circles not dots are shown in the decoration, but this vase looks to us much more WS I, with an open, clean and vertical style of linear decorative scheme, and the rest of the tomb contents, see pp. 136–7, suggest a LC I B date for the vessel.

[276] Gjerstad et al. (n. 10), pl. 114 no. E19. 146 = Popham 1972, fig. 80. 6

[277] Åström (n. 7).

[278] Admiraal (n. 69).

[279] Pearlman 1985.

type.[280] The evolution has already occurred (elsewhere in LC I A). The west, as known from the tombs at Palaepaphos *Teratsoudhia*,[281] seems to fall in between the north-west and east. Although mixed assemblages, there are several examples of 'early-style' WS I found alongside classic WS I in these tombs. There is no PWS or clear LC I A 1 horizon in the material—indeed only a couple of PBR objects are known in total and in company with a majority of BR I—so the associated group might well be characterized as LC I A 2 to LC I B. This period might be seen as a time when 'early-style' WS I was still popular (and clearly present in the west) but was being supplanted by the classic styles. Tomb 104 chamber K, one of just two contexts which has an early LC grouping[282] as well as BR I and Monochrome—does notably *only* have 'early-style' WS I[283] and thus might be seen as LC I A (2) rather than LC I B (and as going a little way to showing again the 'early' tendency for 'early-style' WS I). Adjoining Tomb 105 chamber B (and some material has been mixed between the two, viz 'early-style' WS I tankard from Tomb 104 chamber K, part of which was found as Tomb 105 chamber B. 12), the other context with an early LC grouping—including Black Slip (B. 55) and PBR (B. 42, 43), has two WS I bowls decorated in the later or classic parallel line styles (B. 13, B. 52) but also mixed sherds of both 'early-style' and classic WS I.[284] This context thus has some LC I A but is more LC I B. The same may be said for the other contexts where 'early-style' WS I bowls occur with classic style WS I bowls and with otherwise clear LC I B or later material.[285]

Third, if the tomb contexts at *Toumba tou Skourou* are examined in detail,[286] then a general sequence, from 'early-style' WS I to classic WS I, is evident. Tomb VI has an early LC I assemblage and has an 'early-style' WS I bowl and no classic WS I objects. Tomb IV has a predominance of the early-style bowls, but classic WS I appears (TIV. 79 P 755 = TIV. 91 P 767 and TIV. 115 P 780). Tomb I has a mixture, with early through classic styles, reflecting its long use from MC III–LC I B. And Tomb II chambers 2–4 of LC I B (to later for chamber 4) date have no early-style bowls at all. Tomb II indeed illustrates the evolutionary-chronological placement of 'early-style' WS I nicely. Chamber 1 has a number of PBR or equivalent vessels, a few BR I items and one 'early-style' decoration WS I tankard (TII. 9 P 558; note has rope pattern lattices). Thus the contents seem to span LC I A 1 (Proto phase) to LC I A 2 (first proper BR I and WS I). Chambers 2 and 3 have almost no proto wares (the one possible instance, TII. 66 P 584, looks debatable as PBR from the photo), and instead has BR I and classic-style WS I bowls. This is an LC I B assemblage. One WS I tankard (TII. 72 P 590) has elements of 'early-style' WS I, *but* the lattice is with vertical lines and not PWS-style slanting lines (rope pattern) and the looser decorative scheme also includes classic elements like two instances of three parallel line bands. It can be seen as stylistically later (LC I B informed) than the chamber 1 tankard (LC I A).

The evidence *in toto* is, of course, not clear cut, and there are relatively few instances of 'early-style' WS I from all over the island, but, taken as a whole, the character of the data are compelling in suggesting both the earlier date of initial appearance for 'early style' WS I, and a likely north-western Cyprus origin or area of popularity.

S.W.M.
D.A.S.
E.H.

[280] J. L. Benson, 'The White Slip sequence at Bamboula, Kourion', *PEQ* 93 (1961), 61–9, pls. 5. 1–4, 6. 1, 7.

[281] Karageorghis 1990, 3–71.

[282] Including two Black Slip jugs (K. 14 and K. 27) and two possible (?) PBR items (K. 11 and K. 34; cf. Karageorghis 1990, 60 with entries pp. 29 and 30).

[283] K. 40 and K. 41, see Karageorghis 1990, pl. 18.

[284] Karageorghis 1990, pls. vii–viii nos. ii–viii.

[285] e.g. Tomb 104 chamber E, contrasting 'early-style' E. 11 with classic style E. 6 and E. 9.

[286] See *TTS*. References to vessels are to the *TTS* publication.