

THE OCCUPATIONAL HISTORY OF THE BRONZE AGE HARBOUR CITY OF HALA SULTAN TEKKE, CYPRUS

Peter M. Fischer*

Abstract: The present paper is a synthesis of nine seasons of excavations supported by geophysical surveys at the Late Bronze Age harbour city of Hala Sultan Tekke near Larnaca on the southern littoral of Cyprus. Conclusions and hypotheses dealing with the origin, the heydays and the decline of this eastern Mediterranean trade metropolis are presented in addition to a summary of the previous field reports. A summary of the results from excavations in the recently discovered extramural cemetery with numerous rich tombs, offering pits and wells is included. The city's vast intercultural relationships, which are based on trade, and chronological and terminological issues are particularly considered. Special attention is devoted to the final decades of the life cycle of this city which fall into the period of years of a widespread crisis at the waning Bronze Age, characterised by the 'Sea Peoples Phenomenon.'

Keywords: *Hala Sultan Tekke, Cyprus, Bronze Age, Harbour, Trade, Intercultural connections, Chronology, Sea Peoples*

1. Introduction

Hala Sultan Tekke on the south-eastern coast of Cyprus is an ancient harbour city which flourished mainly in the Late Cypriot/Late Bronze Age period (henceforth abbreviated LC; Figs. 1, 2). It is situated west-south-west of the Larnaca Salt Lake near the airport in an area known by the modern name of Dromolaxia *Vizatzia*. Today's Larnaca Salt Lake, which is isolated from the open sea, was a protected bay of the Mediterranean in the Late Bronze Age and, thus, provided a convenient anchorage. The name of the ancient city, which is used today, can be traced back to the nearby famous homonymous mosque of Ottoman date. The mosque has its roots in the 7th century A.D.

and was built on the spot where, according to a local tradition, Umm Haram, a possible relative or the wet nurse of the prophet Mohammed, died. The architectural layout of the mosque has been changed several times, most likely also reusing ashlar blocks from the nearby Bronze Age city.

The current Swedish project under the direction of the author from the University of Gothenburg, Sweden, began in 2010.¹ The results of nine seasons of excavations and geophysical surveys are presented with an emphasis on the origin of the city, its heyday and violent end. Other topics presented include the rationale why it became one of the most important trade centres in the Mediterranean with far-reaching cultural connections during a span of roughly 500 years. Although for initiated readers of the current paper, who have followed the results throughout the years, it may appear repetitive, basic information on various find contexts will be recapitulated in order to facilitate the understanding of the interpretations and conclusions presented without the need to consult all previous publications.²

2. Excavations prior to 2010

2.1. Tombs

The information on archaeological and non-professional excavations in the area surrounding the mosque will be presented in a summarized form. Additional information can be found elsewhere (e.g. ÅSTRÖM 1976b, V–VII; FISCHER 2012).

The earliest recorded digs in the area are from 1894 when J.L. Myres opened a number of trenches west of the Salt Lake without finding any cultural layers except for stray sherds. He continued at the east end of the road, which passes east of the Larnaca Salt Lake, where Luigi de Cesnola had

* University of Gothenburg, Sweden.

¹ The author has participated in the excavations at the site as a PhD and postdoc student in the 1970s and 1980s.

² There are eight comprehensive preliminary reports: FISCHER (2011, 2012a); FISCHER and BÜRGE (2013, 2014, 2015, 2016, 2017c, 2018b, 2019), in addition to FISCHER (2017); FISCHER and BÜRGE (2017b, 2018c); and other relevant papers (see Bibliography).

dug previously without leaving any usable records. Neither ‘excavation’ revealed any stratified cultural remains.

The ‘excavations’ of the British Museum at Hala Sultan Tekke in 1897 and 1898 are described by the late D. BAILEY (1976, 1–32). Bailey obviously collected all evidence of this endeavour, including old notes and finds which are stored in the British Museum, and published them in the first issue of the Hala Sultan Tekke series (ÅSTRÖM 1976a). These excavations were of low scientific standard even considering the period in which they took place (cf. FISCHER 2012, 74): the main objective of these diggings was to find rich tombs to supply European museums with spectacular finds. These campaigns started under the direction of H.B. Walters, assistant at the British Museum. He moved from Maroni, with which he was ‘very much disappointed’, to Hala Sultan Tekke. However, his team met with competition from the villagers of Dromolaxia, who heard of their coming and started illicit digging on a large scale. Walters dug there for seven days and found several tombs. The contents of ten of the tombs were listed by Walters and reported by Bailey.³ The material of Walters’ Tombs I–X belongs mainly to the LC II period, but there are also objects from the transitional Middle/LC period.

In the next year, Walter was followed by J.W. Crowfoot, a student at the British School at Athens, who excavated at Hala Sultan Tekke for eight days. His notes are marginally better than Walter’s and they were obviously made at the time of the excavations. In a very short period of time he reopened 50–60 (!) previously looted tombs, but notes were only made for 11 of them (Tombs 1–11). It appears from the material in the British Museum that Crowfoot’s looted tombs can be dated to LC I–III.

Professional excavations at Hala Sultan Tekke started in the 1960s. The Cypriot Department of Antiquities has been engaged there, particularly in 1968, when V. Karageorghis excavated two, partly looted, rich Late Bronze Age tombs: Tombs 1 and 2 in Area A just to the west of the mosque (Figs. 1, 13; KARAGEORGHIS 1976, 71–89). During this rescue excavation, Karageorghis was informed by local workers that objects of precious metals and pottery had been found already in 1952 when they dug an irrigation channel between the mosque and Area A,⁴ but the Department of Antiquities was not

informed about these finds. Karageorghis’ excavations in Tomb 1 contained mainly LC IIB and IIC material, whereas Tomb 2 was in use from the end of LC I, with material from the 15th century, and continuously used during LC II. In addition to exceptionally wealthy tomb gifts, which included numerous objects of gold, precious stones and ivory, another important observation was made, namely, the considerable number of imported objects. The Late Helladic pottery dominates the imports, but there are also objects from the Levant, Egypt, Crete and probably Anatolia. In the same area, the then-director of the Swedish mission, P. Åström, made a survey in June 1971 prior to the regular excavations in the nearby settlement. He opened three test trenches without finding any additional tombs.

A further five, four of them were looted, labelled Tombs 20–24, were excavated by the Swedish mission (ÅSTRÖM 2007). The looted Tombs 20–22 contained material mainly from LC IIC and IIIA (ÅSTRÖM 1983b, 145–168). Another tomb, Tomb 23 (in Fig. 1, Area 8), which represents an extremely rich shaft tomb from LC IIIA, was discovered in 1979 by the author assisted by electromagnetic prospecting devices and excavated the same year (FISCHER 1980a, 16–18, 41; see also NIKLASSON 1983, 169–185). Tomb 24, another looted tomb south-west of Area 8, may have been dug in LC IB and was used in LC II and possibly at the beginning of LC III (ÅSTRÖM and NYS 2007, 7–30).

In 1983, one more looted tomb, T.1, MLA 1173, was found accidentally when the asphalt road immediately west of the mosque was constructed (SAMAES and NYS 2010). The tomb was used from LC IIA to IIIA with most of its contents from LC IIB–C.

Prior to the renewed excavations under the direction of the author, the minimum total number of tombs which had been (re)excavated was 69, of which notes exist for 21 and more comprehensive reports for nine.

2.2. Settlement

Prior to the start of regular excavations under the direction of P. Åström, stray finds of mainly LC and imported material were made over a large area in the period following the British excavations. These finds were spread over some 50 hectares west of the mosque (ÅSTRÖM 1976a, 35–70).

³ It seems that Walter’s notes were recorded after the excavations.

⁴ This channel is just to the west of the modern street passing the mosque.

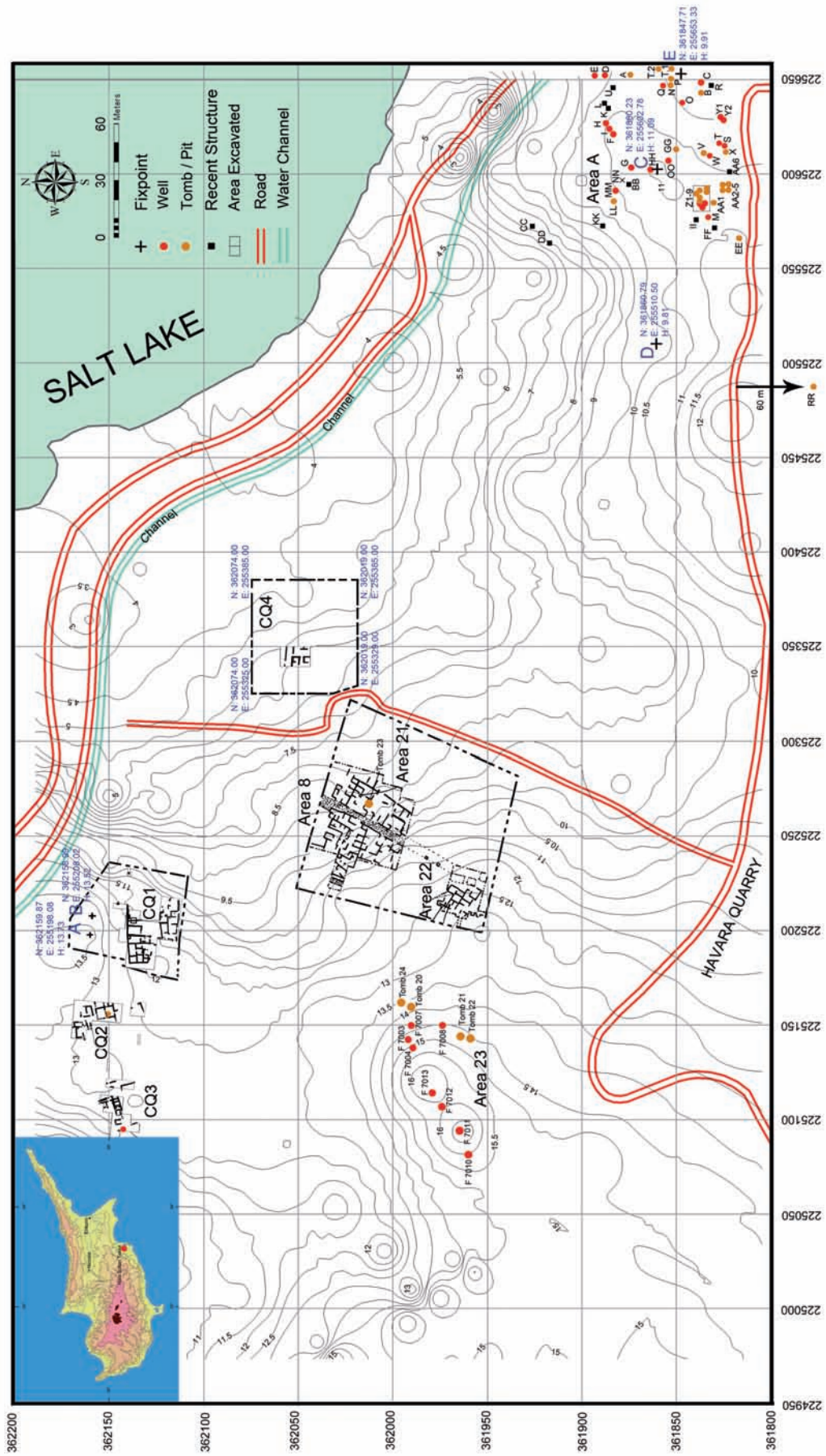


Fig. 1 City quarters and areas of Hala Sultan Tekke



Fig. 2a Air photograph of city quarters and areas of Hala Sultan Tekke.

Fig. 2b Magnetometer map including the area shown in Fig. 2a. The magnetic data are presented in dynamic ranges of ± 8 nT.

Guided by magnetometer measurements, excavations in the city of Hala Sultan Tekke started in the 1970s and continued until 2005, mainly in Area 8, intermittently excavated for more than three decades. Åström exposed numerous stone structures, some of them constructed of ashlar blocks, intersected by streets (Areas 8, 21 and 22; Fig. 1). Most of the structures could be dated from LC IIC to LC IIIA. Selected results from the excavations were published as preliminary reports together with several specialized studies (ÅSTRÖM et al. 1976a–2007). The latest report appeared just before the demise of Åström in 2008 (ÅSTRÖM and NYS 2007).

There are some soundings in City Quarter 1 (henceforth, CQ1 which corresponds to the former Area 6) from Åström's field work at Hala Sultan Tekke which are relevant to the current project (see 'Aims' below). Trial trenches were dug by E. Åström in the northern part of CQ1, just inside the northern fence, in 1972 and by A. Hatziantoniou in 1976 and 1977 (ÅSTRÖM 1983a, 59–144; see map in ÅSTRÖM 1989, Fig. 2). The trial soundings produced interesting small finds but hardly any interpretable structures (see also ÅSTRÖM and HERSCHER-BROWN 1989, 49–67 *passim*).

In 1999, an additional trial trench was dug in the northern part of CQ1 in order to find proof of an older occupation (ÅSTRÖM and NYS 2001, 57–61). Stratified Middle Cypriot (MC) layers were not recognized, but there was evidence in the sherd material which points to a settlement from the transitional MC III/LC IA period somewhere in this area. Amongst the earliest wares were White Painted Pendant Line Style, Proto White Slip, Monochrome, Bichrome Wheel-made, White Painted V-VI, Red-on-Red and Red-on-Black. Later wares included Late Helladic (LH) IIIA2 and Plain White Wheel-made. Nevertheless, no substantial architectural structures were discovered and the area was abandoned until 2010 when the new project started.

3. The new project

3.1. Current aims

The present aims of the project are, to some degree, modified in comparison with the original aims of the resumed excavations (FISCHER and BÜRGE 2018c). These adapted objectives are the

result of the enormous amount of new information from the past nine seasons from 2010 to 2018.

a. Determination of the complete occupational sequence of the site

This objective includes – in addition to the continued investigation of LC II and LC III levels (FISCHER and BÜRGE 2018c) – the localisation and investigation of pre-14th century BCE occupation. Finds from the old and new excavations clearly indicate the presence of a settlement from the first half of the LC period at Hala Sultan Tekke, maybe even from the latest phase of the MC period. This situation is also supported by finds from the recently discovered cemetery (Area A), which can be dated to at least the beginning of the LC period (FISCHER and BÜRGE 2017b).

b. Determination of the total extent of the city and cemetery by means of geophysical prospecting

As soon as the total extent of the city is recorded, protective measures will be carried out in order to prevent continued destruction by modern farming, of which the site suffers to a considerable extent.⁵ As of today (spring 2019), around 25 hectares have been surveyed, mainly using magnetometers and, to some extent, ground-penetrating radar (GPR). Man-made structures were found everywhere in the area hitherto surveyed. Based on surface finds, there are good reasons to believe that the total extent of the city is even larger. Geophysical prospecting and the results from excavations point to a cemetery covering approximately two hectares west of the mosque and at some distance from the settled area.⁶

c. The amalgamation of relative and absolute chronology

Finds from the period, which covers roughly 1650–1450 BCE, are of specific interest because of their likely impact on the ongoing intense chronological discussion on the date of the Minoan eruption of the Thera volcano, on which a consensus does not exist.⁷ The Thera eruption is of importance to the synchronisation of cultures, therefore, the intercultural synchronisation guided by key Cypriot ceramic wares and the study of radiocar-

⁵ The Department of Antiquities is informed and steps to protect the entire city have been launched.

⁶ Numerous tombs and offering pits have been discovered in this restricted area which motivate its designation as a cemetery.

bon dates from essential contexts are amongst the main undertakings.

d. The investigation and dating of the ‘Sea Peoples Phenomenon’

It became evident in the course of the field work that Hala Sultan Tekke was destroyed twice in the period from around 1200 BCE to the first half of the 12th century BCE (FISCHER and BÜRGE 2018c). This dating is in accord with the ceramic evidence and relative and absolute cross-dating with other areas and cultures, supported, or at least not contradicted, by our recent radiocarbon data (HÖFLMAYER et al. 2018). Nevertheless, because of the history of natural radiocarbon variations represented in the radiocarbon calibration curve, radiocarbon dating of eastern Mediterranean contexts around 1200 BCE, i.e. the end of LC IIC, and most of LC IIIA in the 12th century BCE, which roughly corresponds to the period from the end of LH IIIB2 to the LH IIIC developed, is difficult (e.g. MANNING et al. 2016). This period is contemporaneous with the s.c. ‘Crisis Years’ and the ‘Sea Peoples Phenomenon’, resulting in the decline and even collapse of many Late Bronze Age societies (FISCHER and BÜRGE 2017a). One solution to this chronological dilemma could be to carry out numerous sequence analyses, viz. the contribution of stratigraphical sequences from the 13th–12th centuries BCE to series of radiocarbon data of short-lived samples from secure contexts.

3.2. The geophysical surveys

In 1980, the first ever GPR survey in the Mediterranean was carried out by the author, supported by the University of Technology, Lund, Sweden, in the north-eastern part of Area 8 indicating man-made structures just below the surface (FISCHER 1980b).⁸ Thirty years later, in 2010, encouraged by the obvious potential of GPR, another geophysical survey using this method was carried out by I. Trinks prior to the excavations in an area which was later termed CQ1. The GPR anomalies expressed most clearly, which were interpreted as stone-built structures arranged in a rectangular

pattern, were concentrated in the south-western part of CQ1. Two additional GPR surveys (2012 and 2014) revealed two more city quarters, viz. CQ2 and CQ3, both to the west of CQ1, with substantial remains of large building compounds of stone consisting of numerous connected rooms but also isolated structures.

In 2017, a magnetometer survey of 23 hectares was carried out, which indicated numerous man-made structures including another city quarter, CQ4, situated between CQ1 and Area A (FISCHER and BÜRGE 2019; see overview in Fig. 2b). The magnetometer map of CQ4 shows regularly arranged stone-built compounds of imposing dimensions intersected by streets. The subsequent excavations verified the indications from the magnetometer survey.

Parts of CQ4 which had been surveyed with magnetometers were surveyed again with GPR to compare the two geophysical methods. However, it turned out that the results of the GPR survey were of very limited value regarding structures deeper than 0.5 m below the surface. Due to the clay-rich soil, the strong radar attenuation did not allow electromagnetic waves to penetrate deeper than a few decimetres from the surface. This depth corresponds to the most recent Stratum 1, but deeper strata were not indicated.⁹ One example of this drawback can be observed in the southern part of CQ1: where GPR did not indicate any man-made structures, excavations exposed substantial occupational remains below Stratum 1. The same phenomenon could be demonstrated in CQ4: clearly delineated stone structures and streets on the magnetometer map were barely visibly (Stratum 1) – or not at all – in the GPR map. Similarly, in the cemetery (Area A) ‘pits’, viz. tombs, offering pits and wells, were indicated by magnetometers but not by GPR.

3.3. The city: CQ1–4, Strata 4–1

The presentation of the phases of occupation will concentrate on CQ1 and 2, which are most extensively excavated. Features and finds from CQ3 and 4, where limited excavations have been carried out, will be described only briefly.

⁷ See SCIAM 2000, The Synchronisation of Civilisations in the Eastern Mediterranean in the Second Millennium BC which ran from 1999 to 2011 and in which the author participated.

⁸ This GPR survey was carried out by the author in co-operation with S. Follin and P. Ulriksen.

⁹ ‘Stratum’ is a stratigraphically well-defined phase of occupation.

*Strata 4 and 3 in CQ1*¹⁰

In 2018, only the top of Stratum 4 had been reached in the southern part of CQ1.¹¹ This is the only city quarter so far where we have indications of an additional phase of occupation below Stratum 3.

Stratum 3 is best preserved in the southern portion of CQ1 (state of excavation, March 2019). Consequently, the evidence from this part of the city will be presented (Figs. 3a, b). Evidence has been found in many other parts of CQ1 that the people of the two most recent strata swept away earlier remains leaving only a few intact ‘islands’, viz. bits and pieces of Stratum 3 (and older) structures, in a sort of horizontal stratigraphy.

The excavations of 2016–2018 in the southern part of CQ1 exposed five rooms/spaces belonging to Stratum 3 (Rooms 67–70 and 83). Several structures with walls whose dimensions exceed those of the later strata are exceptionally well-preserved. The Stratum 3 walls employ a different building technique than those encountered in the following

Stratum 2, viz. they are more substantial and composed of larger stones, including blocks of conglomerate. There is evidence of extensive urban copper production, viz. primary production and secondary smelting at the site: furnace bases, pieces of furnaces and tuyeres, a lot of ash and hundreds of kilograms of slag but also copper ore (Fig. 4; for further information, see FISCHER 2018).

Next to the copper workshop is a roofed space, which was used for the processing and storage of liquids, vegetables and possibly flax (Fig. 3b). The presence of quite luxurious items, such as the three faience bowls (Fig. 5:2–4), two animal ‘figurines’ – one is actually the protome of a jug(let) – and a pilgrim flask imported from the Levant (Fig. 5:1) may come as a surprise considering the nature of the area directly to the east of the copper workshop, but this may be explained by the important status of the people living and working there. At one time, the room was affected by fire, which may have struck the entire compound. Although it is difficult to distinguish between the spread of ash

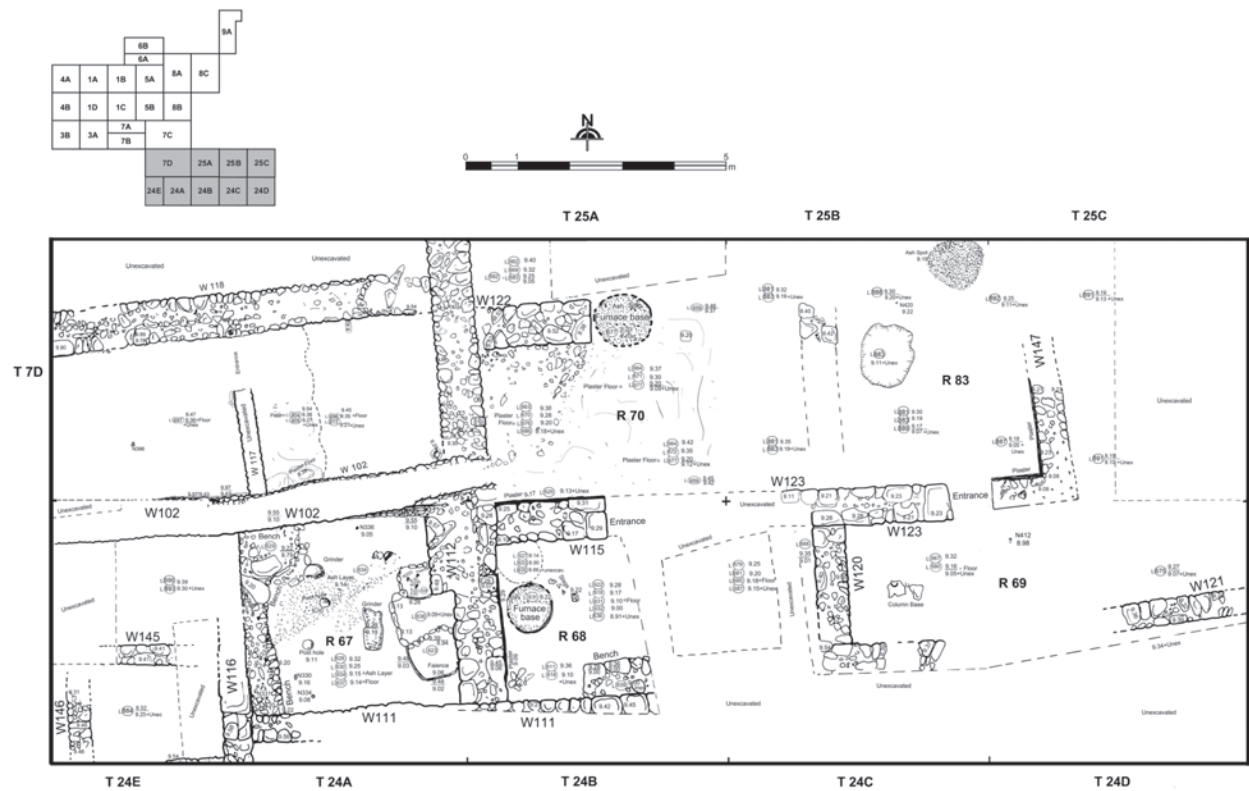


Fig. 3a Stratum 3 in southern part of CQ1

¹⁰ See the plan in FISCHER and BÜRGE (2018c, 23, Fig. 2.13).

¹¹ Stratum 4 was further exposed in May 2019, after the submission of the manuscript. Clear evidence of even older strata came to light below Stratum 4.



Fig. 3b Stratum 3 in southern part of CQ1 looking east; storage area in foreground; room with furnace in background



Fig. 4 Slag and ore from southern part of CQ1

from the activities in the workshop and a fire which went out of control, it seems that the entire compound was affected by a conflagration.

*‘Stratum 3’ in CQ2*¹²

The occupants of Stratum 2 cleared most of the contents of an older circular feature which represents an intramural tomb. Amongst the remaining

finds were 22 loom weights and a spindle whorl, in addition to White Slip II and Base-ring I vessels together with Late Helladic imports, mainly LH IIIA-B. There were also two cylinder seals (Fig. 6). One is of Egyptian Blue (paste/composition) and depicts three bearded figures which are armed. The second is of white faience showing a kneeling figure with a headdress, maybe a feathered crown, a tree and a running gazelle.

¹² See plan in FISCHER and BÜRGE (2018c, 129, Fig. 2.87).

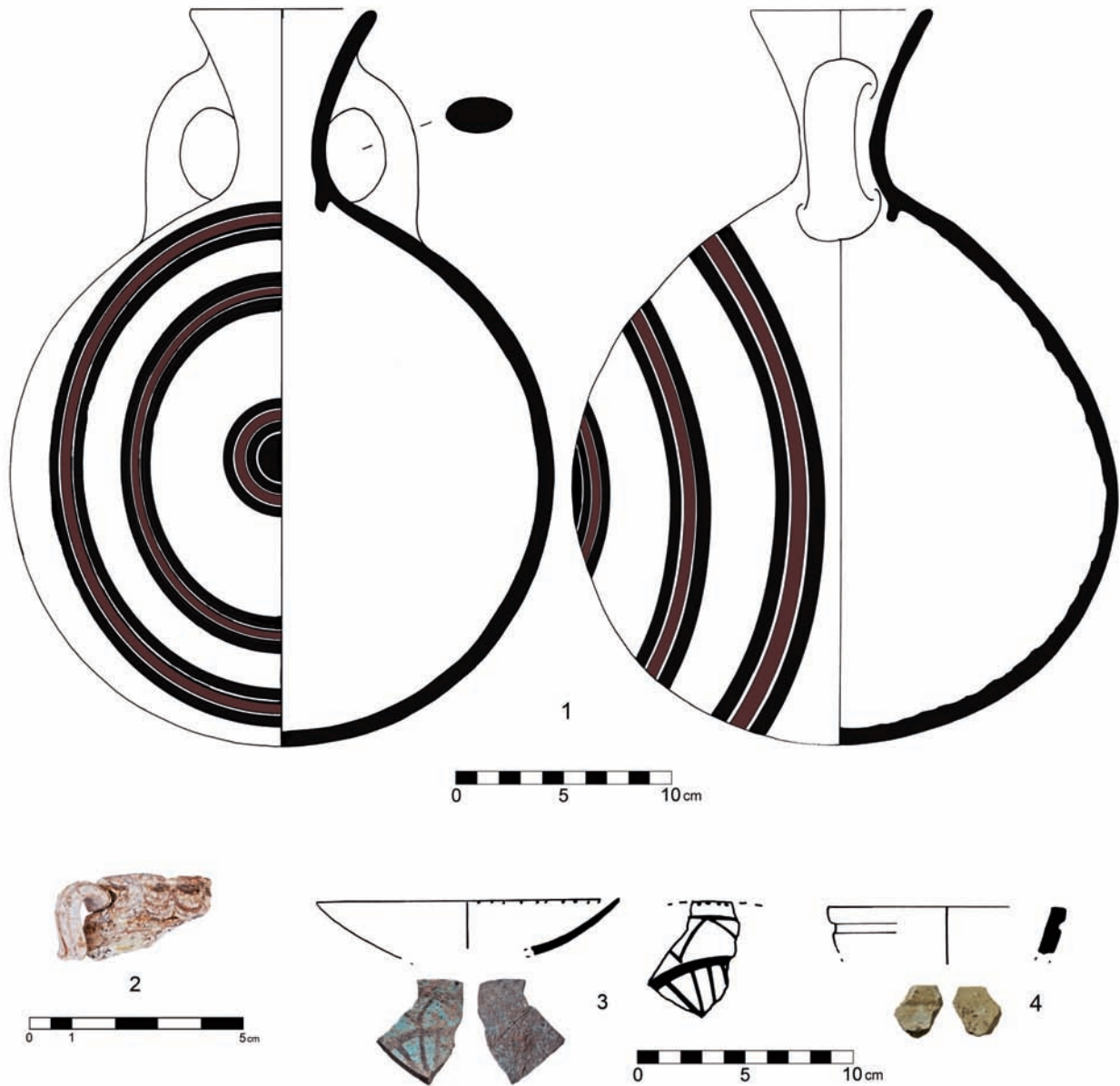


Fig. 5 1. Levantine imported pilgrim flask; 2.–4. Bowls of faience (Egyptian?)

The chronology of Stratum 3¹³

The tomb in CQ2 cannot be associated with stratified remains, but it is older than Stratum 2.¹⁴ In relative terms, the material from Stratum 3 in CQ1 dates to LC IIC. This date is supported by pottery of White Slip II, Base-ring I and II, and LH IIIA2–IIIB types mainly imported from the Greek mainland according to style, fabric and neutron activation analyses (NAA). Regarding absolute

dates, 20 radiocarbon dated samples from all three strata were presented (HÖFLMAYER et al. 2018) in the publication dealing with the outcomes of the excavations from 2010 to 2017 (FISCHER and BÜRGE 2018c). The unfavourable shape of the calibration curve, which displays a ‘plateau’ between the last quarter of the 13th and the last quarter of the 12th centuries – this corresponds to the latest part of LC IIC and most of LC IIIA – made it necessary to utilise Bayesian statistics. Two dating

¹³ See the detailed discussion on relative and absolute chronology and terminology below (4. Chronology and terminology scrutinised).

¹⁴ It may be contemporaneous with Stratum 3 or an even older phase of occupation.



Fig. 6 Cylinder seals from intramural tomb in CQ2

models suggest that the transition of Stratum 2 to 1 occurred most likely sometime during the second half of the 13th century BCE and, at the latest, in the first quarter of the 12th century BCE (FISCHER and BÜRGE 2018c, 603–605; HÖFLMAYER et al. 2018). This means that Stratum 3 should be placed in the 13th century BCE. It is followed directly by Stratum 2, since there seems to be no temporal lacuna between these two phases of occupation. However, at present, we do not know when Stratum 3 begins.¹⁵

Stratum 2 in CQ1–3

CQ1¹⁶

There are three portions in CQ1 with Stratum 2 remains. They are represented by 20 rooms or (partly) walled spaces of domestic and small- to medium-scale industrial nature. We have evidence for the production of pottery and spinning and weaving. One structure represents a water cistern,

and at least one of the pits is most probably a looted tomb. Textile production is evidenced by numerous spindle whorls and loom weights (SABATINI 2018, 440, Fig. 4:11). There is a large open courtyard with a plastered basin. It is suggested that the basin was originally used in connection with the dyeing of textiles and, subsequently, that this manufacture was substituted with the production of clay sling bullets just before Stratum 2 was destroyed. It may be that the sling bullets were used during the defence of the city.

One space, Room 18, is interpreted as a sacral room with a house altar built of ashlar blocks, and, close to it, the ‘Creature Krater’ of White Painted Wheel-made Pictorial Style. The painted motifs form a metope pattern and include cattle, birds, fishes, a carnivore and symbols for the sun, the moon and a tree together with numerous geometric patterns (volume 19.6 litres; Fig. 7:1). It is most probable that the krater was placed upon the altar and fell down when Stratum 2 was destroyed. The

¹⁵ There are, for instance, Late Helladic – most likely residual – sherds which should be dated to the 14th century (LH IIIA1-2).

¹⁶ See plans in FISCHER and BÜRGE (2018c, 38–41, Figs. 2.26a–d).

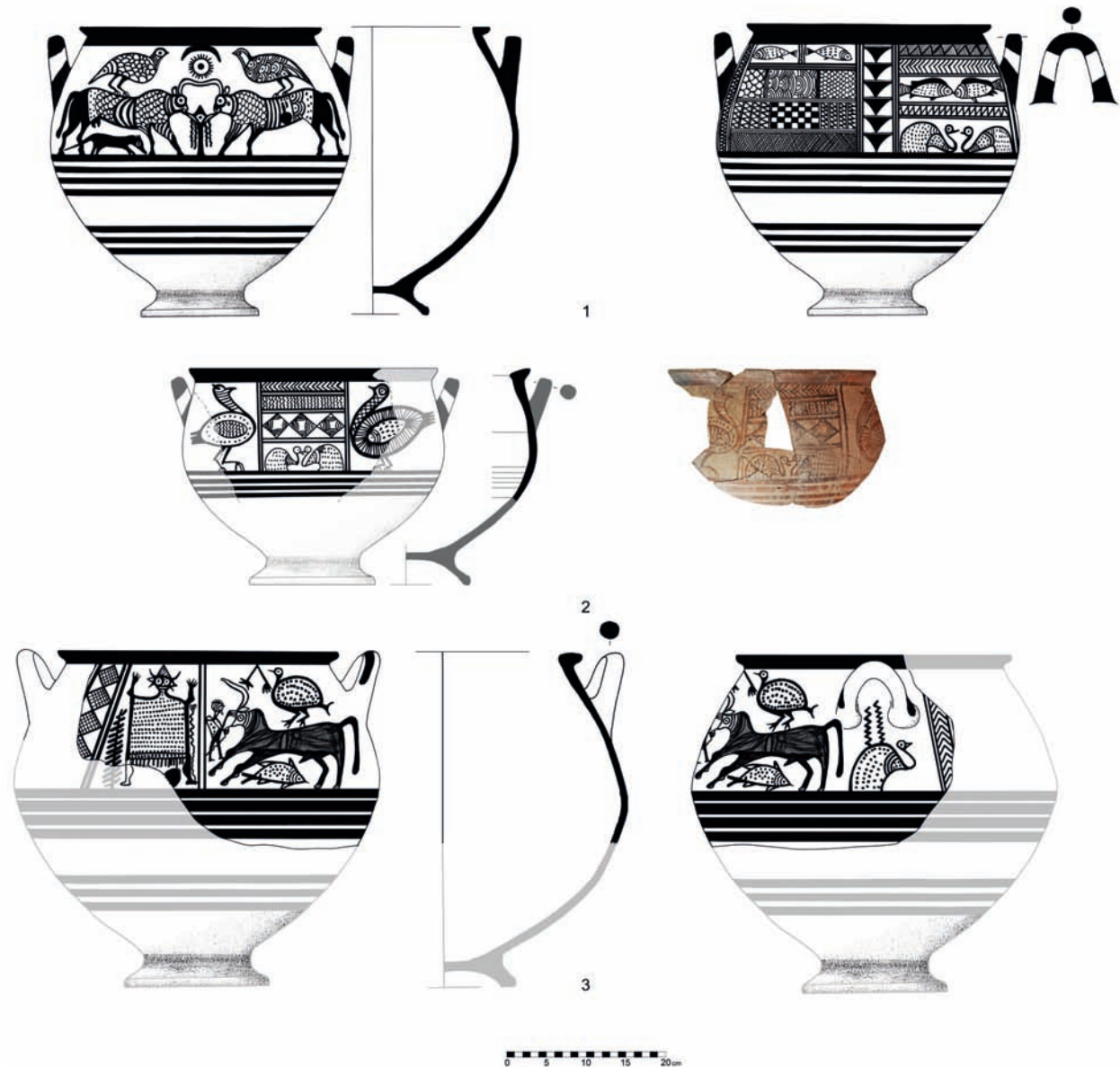


Fig. 7 White Painted Wheel-made Pictorial Style (WPPS) from Stratum 2: 1. Creature Krater and 2. Bird Krater from CQ1; 3. Horned God Krater from CQ2

incompletely preserved ‘Bird Krater’ of White Painted Wheel-made Pictorial style was found in one of the pits (Fig. 7:2). This krater, depicting two large and two smaller birds and geometric decoration, resembles the ‘Creature Krater’ in style.

Other rooms show evidence of copper production also in this phase. Another furnace base surrounded by an up to 0.7 m thick layer of ash intermingled with fired clay and slag points to the refinement of copper ore and slag which was obviously carried out over quite a long period. There

are imported objects from the Mycenaean sphere of culture and Egypt.

CQ2¹⁷

In CQ2, 12 rooms are ascribed to Stratum 2. The northern portion of CQ2 contains a domestic room where traces of a conflagration are visible. Several pieces of jewellery were found in this room (Fig. 8): a silver amulet, a bead of a disc-shaped black stone, a gold earring with an attached pro-

¹⁷ See plans in FISCHER and BÜRGE (2018c, 134–136, Figs. 93a–c).



Fig. 8 Jewellery of silver and gold from conflagration layer of Stratum 2 in CQ2

filed plate of gold with a possible representation of a bull, a bronze ring, a silver earring with a gold pendant and a sheet of silver which was attached to the item, two gold earrings and a molten lump of silver where another gold ring was embedded. It is clear from the condition of the gold and silver jewellery that the area was exposed to a conflagration which caused high temperatures: the silver jewellery was partly molten, whereas the gold jewellery, which was alloyed with silver according to our X-ray fluorescence analyses, was virtually intact. Numerous spindle whorls and loom weights point to textile production (SABATINI 2018: 450, Fig. 4:18).

The 'Horned God Krater' of White Painted Wheel-made Pictorial Style (reconstructed volume 36 litres; Fig. 7:3) derives from Room 35. In addition to representations of a fish, birds and a charging bull which is tied to a human figure, there is a very unusual anthropomorphic figure, portrayed *en face*: it has a pointed horned helmet on the head and stands broad-legged with uplifted arms between an abstract tree and a snake with three

heads. The ware and the style of the representations are similar to the 'Creature Krater', which may lead to the conclusion that they have been locally produced by a 'Hala Sultan Tekke painter', but further proof is needed. It cannot be excluded that Room 35 also had a sacral function, but other indications which could confirm this hypothesis are not present.

Evidence of metallurgy was also found in CQ2. Hundreds of kilograms of remains from copper-working, including tapped slag, furnace walls, fragments of at least five torches/tuyeres, crucible fragments, copper/bronze fragments and pieces of raw copper, were found in a pit and the area surrounding it. The tapped slag with matte inclusions can be assigned to the primary copper-smelting processes (FISCHER 2018). The raw copper fragments are the final results of these smelting activities. Raw copper usually contains inconvenient inclusions, for instance slag and/or a certain amount of iron. It has to be remelted several times to remove these impurities before it can be cast or alloyed.

A doughnut-shaped ingot of tin-bronze weighing 1.5 kg, which corresponds roughly to three minas, was in another pit nearby. It is either the final product from refining copper ore and alloying, or it represents raw material for the production of bronze objects in moulds.

After considering all the evidence, we suggest that the Stratum 2 compound of CQ2 was inhabited by a wealthy guild of craftsmen, who specialised in copper/bronze and textile production. They both lived and worked there.

CQ3¹⁸

The finds from just one season of excavation¹⁹ include a 2.1 × 2.7 m large basin built of a chalky, dense, material. A suggested function of the basin is the dyeing of textiles. There is a concentration of sling bullets of lead on two spots of Stratum 2: one is in the eastern part of Room 51, at the entrance to the room in W70; the other is to the southwest, in the open space west of W93. In addition, the ash layer, which covered large portions of Stratum 2, points to a catastrophic event, maybe a hostile attack.

The Chronology of Stratum 2

The absolute chronology of Stratum 2 is based on radiocarbon and the relative chronology exclusively on pottery. There is LC IIC material which points to a date in the 13th century BCE but which may be considered residual, for instance, the fragmentary Late Helladic pottery and mature/normal White Slip II bowls. There is also material which, according to earlier chronological tables (ÅSTRÖM 1972b, 700–701) would best fit in LC IIIA1, for instance, wheel-made Bucchero ware. In any case, it seems that Strata 2 and 1 are close in time, according to the stratigraphical evidence. As a result, this phase of occupation can be dated to the transition from LC IIC to LC IIIA²⁰ or possibly early LC IIIA, i.e. around 1200 BCE.

Stratum 1 in CQ1–4

CQ1²¹

Stratum 1 is just below the colluvial soil; it is the last phase of occupation before the city was abandoned, with the exception of a short-lived and lim-



Fig. 9 Air photograph of CQ1 (state April 2019)

¹⁸ See plan in FISCHER and BÜRGE (2016, 43, Fig. 11).

¹⁹ Test trenches were opened previously.

²⁰ See the discussion on the transition from LC IIC to IIIA in FISCHER (2017, 197–200); FISCHER and BÜRGE (2018c, 603–607).

²¹ See plans in FISCHER and BÜRGE (2018c, 73–82, Figs. 2.56a–k).

ited occupation by squatters or seasonal visitors (see the same situation, for example, in CQ2).

There are 19 walled spaces in CQ1 (Fig. 9 upper part). The nature of the structures and finds suggests that we exposed a domestic and industrial building of roughly 40 x 35 m, the remains of which provided plenty of information on the last years of the LC city of Hala Sultan Tekke. Several rooms contained implements for the production of textiles, i.e. spindle whorls and loom weights (SABATINI 2018, 441, Fig. 4:12). Others point to small-scale production of pottery and metal melting and working. Tools for hunting and fishing are also represented. There is a foundation deposit – a spearhead which was covered by a large flat stone close to the threshold to R2 – which seems to have had a symbolic function, perhaps protection. Several other rooms were used for the preparation of food and storage. There is a stone-built water cistern. It was originally built in Stratum 2, protected by upright ashlar blocks. Water channels of hewn blocks of limestone were found nearby. These channels were used to lead rainwater from, for instance, the roof to the cistern. It seems that this structure was still used as a cistern in Stratum 1 but eventually became a rubbish container during the latter part of this phase of occupation since the upper half of the cistern was filled with a large number of animal bones and other waste. The change of use of such a structure, which certainly took considerable effort to build, is interesting. It might have been the case that a long period without precipitation made its original use superfluous.

A circular stone structure, which is interpreted as a grain silo or a storage facility for other food-stuff, was exposed in a test trench (Trench 2) 30 m to the east of the compound. A bronze weight in the shape of a bull's head was inside this structure.

CQ2²²

The evidence from 14 walled spaces point to the production and dyeing of textiles. There is a large amount of crushed murex shells and a basin where textiles were dyed purple. The basin showed stains of purple on and in the soil surrounding its mud-brick structure. There is also evidence of spinning and weaving (SABATINI 2018, 451, Fig. 4:19).

A mould for a ring points to the production of jewellery. A large fibula comes from the destruc-



Fig. 10 Bronze Fibula from Stratum 1 in CQ2

tion layer of Stratum 1, just before the city was abandoned. It is one of the largest violin bow fibulae from Cyprus (Fig. 10; see also BÜRGE 2014, 95–96). The closest parallel comes from Campes-trin in northern Italy. While the parallels from Italy and some related fibulae from Greece seem to be locally produced and their similarity can be explained by intense mutual contacts and an exchange of ideas, it is, by contrast, likely that the fibula from Hala Sultan Tekke is an import.

A lot of evidence points to a severe destruction followed by the abandonment of the city: there are layers of ash and complete objects which were left behind.

CQ3²³

The limited exposed area contains several walled spaces of domestic and industrial nature. One structure is wider than most other walls. It has been suggested that this wall represents part of a (second line?) defence system which faces the ancient harbour (FISCHER and BÜRGE 2016, 40, 53). However, according to the magnetometer map of 2017, there is a broad structure surrounding a much larger part of the occupied area of the city, including the entire CQ3. This structure may, in fact, represent the city wall.

²² See plans in FISCHER and BÜRGE (2018c, 153–157, Figs. 2.103a–e).

²³ See plans in FISCHER and BÜRGE (2016, 40, Fig. 8).



Fig. 11 Air photograph of Stratum 1 in CQ4; bathroom with ashlar blocks in centre left; storage corridor with numerous vessels to the north (state April 2019)

CQ4²⁴

This city quarter is between CQ1 and Area A. The magnetometer map shows numerous structures of stone intersected by streets. Two seasons of excavations (2018 and 2019) exposed well-built walls, some are covered by ashlar blocks, which distinguishes this quarter from the industrial and domestic CQ1–3.

In 2018, a small area (15 × 10 m), which corresponds to Stratum 1 in the other quarters, was exposed (Fig. 11).²⁵ One of the spaces is a bathroom (Room 85) which is coated with ashlar blocks (both the walls and the floor) demonstrating an advanced hydro-technical construction (Fig. 12): there is a water inlet, which is built of ashlar blocks, at the base of the southern wall. Opposite is a drain also built of ashlar blocks. The floor, which slopes towards the drain, is partly paved by ashlar blocks together with a thick layer of plaster. Outside the room to the south of the inlet is a water channel, which might have been used to transport water to the room. From the old excavations in Area 8 stems another bathroom (Room 1) which was also constructed of ashlar blocks (HULT 1977, 1978; FISCHER 1980a, 28–32).

A ‘corridor’, at least 20 m long and 3 m wide, which contained numerous pithoi and smaller ves-



Fig. 12 Bathroom of Stratum 1 in CQ4

²⁴ See plan in FISCHER and BÜRGE 2019.

²⁵ There is no stratigraphical connection between CQ4 and the other city quarters. However, the pottery from Stratum 1 in CQ4 corresponds to that from the same phase of occupation in CQ1–3.



Fig. 13 Area A with tombs, offering pits and wells (state April 2019)

sels, is to the north of the bathroom. This corridor represents a storage area for liquids and foodstuff. The storage area could be reached from the north via steps built of ashlar blocks. A double gate, which is indicated by two door sockets, was in front of the steps. Just to the east of the gate is a stone installation with a thick layer of crushed murex shells. It is most likely that this installation represents a primary context where purple dye was extracted. Burned mudbrick and ash confirmed earlier observations from CQ1–3 that this phase ended in a violent destruction, after which the city was abandoned.

The extension of the compounds and the nature of the stone structures in CQ4 give the impression of an area related to trade, perhaps the economic centre of the city considering this quarter's proximity to the ancient harbour.

The Chronology of Stratum 1

On the basis of the ceramic evidence and supported or at least not contradicted by radiocarbon, Stratum 1 can be dated to the LC IIIA2 or roughly the mid-12th century BCE.

3.4. *The evidence from the cemetery: Area A*

The mosque Hala Sultan Tekke/Umm Haram is about 500 m east-south-east of CQ1 on the southwestern shore of the Salt Lake. Area A is just to the west of the mosque, west of the street which passes the mosque along the shore of the Salt Lake (Figs. 1, 13). It covers approximately two hectares on a somewhat raised plateau at about 10 m above sea-level. Excavations have been carried out in this area since 2013. Geophysical surveys by magnetometer²⁶ indicated more than a hundred roughly

²⁶ GPR, which also was used, was of little assistance for indicating 'pits'.



Fig. 14 Jewellery from Chamber Tomb X in Area A

circular anomalies. These turned out to represent LC tombs, offering pits and wells. Only a few of the magnetic anomalies are of modern date.

Tombs

Three tomb types can be observed based on their shape:

1. Chamber tomb
2. Shaft tomb
3. Recycled well

The chamber tombs and the shaft tombs generally contained burials with numerous valuable²⁷ tomb gifts, whereas the recycled wells contained poor burials without any tomb gifts and just a few personal belongings, viz. it seems that the deceased were deprived of all valuables before they were buried or only associated with personal items which may just have been overlooked before the individuals were entombed.

Chamber Tomb X

This undisturbed²⁸ tomb lies in the southern part of Area A just to the south of Offering Pits V and GG (BÜRGE 2017, 2018a; FISCHER and BÜRGE 2017b). Despite the relatively simple architectural design of this tomb with two chambers in the shape of a recumbent “8”, which could be approached from a single shaft, the number and quality of the finds point to individuals of high rank who might have belonged to the ruling class of the city. The sequence of the seventeen individuals buried (eight infants and nine adults) could not be fully established, because the remains of previously buried individuals were swept aside before each new interment. However, the position of a number of finds along the periphery of the tomb enabled us to present a model of the sequence of the burial goods deposited with an early, medium and late period (see Periods 1–3 in FISCHER and BÜRGE 2017b, 175). The question whether Tomb X was used for related individuals – which is our hypothesis – may be answered by the ongoing aDNA project, and their movements

²⁷ It could be remarked that our modern judgement on the value of objects cannot be applied completely regarding an ancient viewpoint. However, a burial with no tomb gifts was certainly considered poor when it took place, and vice versa.



Fig. 15 Cylinder seals of haematite and steatite from Tomb X

during their lifetime and/or possible immigration by $87\text{Sr}/86\text{Sr}$ analyses.²⁹

Finds which were imported from a vast area, including mainland Greece, Crete, Egypt, the Levant and most likely Anatolia, are among the tomb gifts. These imports include jewellery of gold: earrings and scarabs, one with the cartouche of Thutmose III, precious stones of carnelian, turquoise and amethyst, and glass (Fig. 14); five cylinder seals of haematite and steatite (Fig. 15); one of the earliest imports from the Mycenaean sphere

²⁸ ‘Undisturbed’ refers to modern times. The contents of older burials were disturbed when new LC interments took place in the same tomb.

²⁹ These analyses are presently being carried out at the University of Copenhagen in connection with a major research project supervised by the author and financed by the Swedish Research Council.



Fig. 16 Tomb X: 1. Earliest Late Helladic import (LH IIA); 2. LH IIIB import



Fig. 17 Tomb X: Base-ring I vessels

of culture, a LH IIA³⁰ beaked jug with a foliate band (FM 64), papyrus (FM 11) decoration and a potmark (Fig. 16:1) and other Late Helladic vessels (e.g. Fig. 16:2). Other finds are a large variety of Cypriot produced wares: White Painted VI, Base-ring I (Fig. 17) and II, White Slip II, Bucchero and White Shaved. There are also numerous Red Lustrous Wheel-made vessels (both spindle bottles and a platter; Fig. 18).³¹

³⁰ According to NAA, this vessel was produced at Berbati in mainland Greece.

³¹ They might have been produced in Cyprus, but a southern Anatolian provenance cannot be excluded according to our petrographical analyses.

According to local and imported pottery, Tomb X was in use from roughly 1550 to 1200 BCE, viz. from LC IB to IIC. This has been confirmed, to some extent, by radiocarbon: one sample from the medium-period, Period 2, of the tomb dates to 1450–1270 BCE(2 σ).³² The possible relationship between Tomb X and Offering Pit V to the north will be discussed in connection with the presentation of the latter.

³² The report on numerous radiocarbon dates, which were processed by E.M. Wild, VERA, University of Vienna, is forthcoming.



Fig. 18 Tomb X: Red Lustrous Wheel-made pottery

Chamber Tomb RR

The roughly 8-shape of this magnetic anomaly resembles that of Offering Pit V and Tomb X. A tomb marker represented by the remains of large Minoan and Mycenaean vessels is almost precisely above the centre of this feature, which turned out to be a chamber tomb. The Mycenaean vessel has a painted decoration in the shape of an octopus.

The tomb consists of two interconnected chambers and contained at least 40 skeletons.³³ The tomb had been left undisturbed after the last burial (Fig. 19). It was used for several interments, since some of the skeletons were swept aside in order to provide space for additional burials.

Numerous tomb gifts consist of locally produced wares (Fig. 20), and Mycenaean (Fig. 21),

³³ State at the end of the 2019 season of excavations. The tomb was backfilled, fenced and will be reopened in 2020

in order to trace the original margins of the tomb for which there was no time in 2019.



Fig. 19 Chamber Tomb RR: Skeleton 5 with ivory button on left chest; large Base-ring I jug near cranium

Minoan and probably Egyptian (Fig. 21:6) imports. Amongst the most striking finds is a unique large complete LH IIIA/B chariot krater, named the ‘Swordbearer Krater’ (Fig. 22) – to the best of the author’s knowledge, the only complete vessel of this type known. It depicts two chariots drawn by two pairs of horses and ten individuals, several of whom bear swords. There were also skull fragments of cattle with horns, fish bones including those of Nile perch, plant seeds and pieces of ochre in the tomb. The animal remains and ochre point to offering rituals in connection with burials.

Shaft Tomb LL

Tomb LL is a shaft tomb. It contained the partly burnt skeletal remains of several disarticulated human skeletons, none of which are complete, together with a rich array of tomb gifts (FISCHER and BÜRGE 2018b). The estimation of the number and age of the skeletons is based on the teeth alone, since the osteological remains do not permit reliable estimations. The maximum number includes eleven infants/juveniles, their ages being 1–14, and eight adults of 20–c. 40 years old. The minimum number of individuals is five infants/juveniles and four adults. There are indications that some but not all of the teeth and bones were exposed to high temperatures. The only possible explanation for the situation in this tomb is that the individuals were incompletely burnt somewhere else and their partly burned remains were (incom-

pletely) collected and buried in the tomb together with a rich array of gifts, many of which were complete and even intact.

Non-ceramic finds include a diadem of gold leaf, amethyst jewellery and nine sphendonoid-shaped balance weights of haematite together with a whetstone of hornblende (Fig. 23). The whetstone was used to grind down the sphendonoids to their desired masses. They are in decreasing order of weight in grams: 28.3, 19.5, 7.4, 5.6, 4.0, 2.9, 2.1, 1.8 and 1.0, which allow for an assessment of the weight system used (FISCHER and BÜRGE 2018b, 61, 62).

There are numerous complete ceramic vessels. One is quite unique in Cyprus: a LM II/IIIA medium-sized piriform jar with excellently executed black/reddish-brown motifs of birds and floral representations (Fig. 24). The best parallel comes from the Palace of Knossos and the nearby cemeteries (CROUWEL and MORRIS 1995) and, as far the decoration is concerned, from Mochlos (SMITH and BANOU 2010). It is important to highlight that there was not a single Late Helladic-imported vessel in Tomb LL. Local wares of chronological significance include Base-ring I, White Slip I (undecorated!) and II, Bichrome Wheel-made (Fig. 25), Monochrome, Grey and Red Lustrous Wheel-made (the latter in Fig. 26) and White Shaved.

According to the pottery, which is of LC IB–II date, the tomb contained material which can be dated roughly to 1450–1350 BCE.



Fig. 20 Tomb RR: Locally produced pottery (Base-ring I and II, White Slip II)

Recycled well: Tomb A

This well had been reused for the burials of six individuals³⁴ who were buried or rather thrown into the well.³⁵ Skeleton 6, the first individual buried, is a young female around 20 years of age with

an artificially deformed cranium and a poor state of health. She was buried together with a rather large dog (Skeleton 7). Skeleton 5, one metre above the former, is also a female in her 20s. Skeleton 4, half a metre above Skeleton 5, is also a female around 40 years of age. Skeleton 3 is an

³⁴ The skeletons are numbered from 1 to 7 with 1 being the most recent.

³⁵ Cf. STOLLE 2016.



Fig. 21 Tomb RR: 1.–5 Late Helladic imports; 6. Decorated ivory button from Skeleton 5



Fig. 22 Tomb RR: Swordbearer Krater (LH IIIA/B)

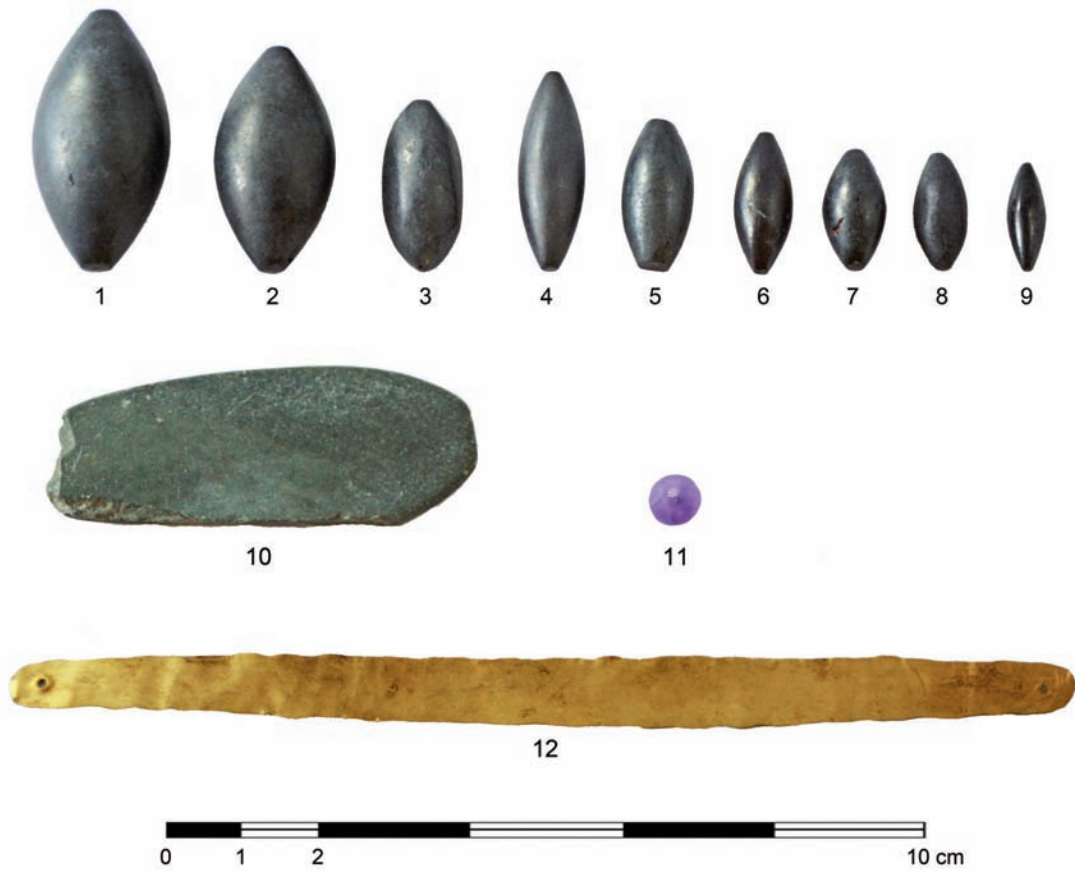


Fig. 23 Shaft Tomb LL: 1—9. Weights of haematite; 10. Whetstone of hornblende; 11. Bead of amethyst; 12. Diadem of gold

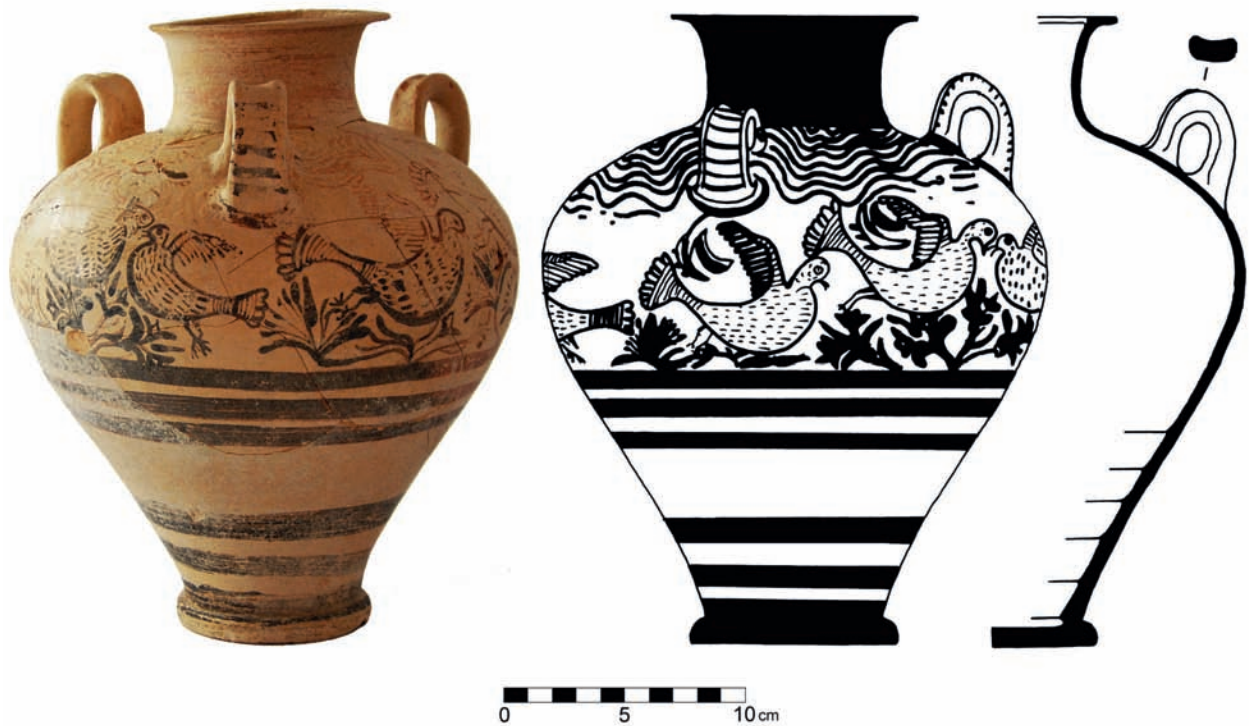


Fig. 24 Tomb LL: LM II/IIIA piriform jar

8–9-year-old child close to Skeleton 4. Skeleton 2, half a metre above the former, is an adult of undefinable sex around 20 years of age. The scanty remains of Skeleton 1, 0.7 m above the former, are of a possible, roughly 20-year-old, female.

Most of the finds which were associated with the individuals buried are a few personal belong-

ings and include faience beads, silver jewellery, including an earring and a small plate, and a bronze finger ring still attached to the finger phalange. There are only three more or less complete ceramic vessels – two White Painted Wheel-made Geometric Style deep bowls and a White Shaved juglet.



Fig. 25 Tomb LL: Bichrome Wheel-made ware



Fig. 26 Tomb LL: Red Lustrous Wheel-made jug of an early type

As far as chronology is concerned, the pottery offers quite a narrow period for the burials: there is a White Painted Wheel-made Geometric Style deep bowl and a White Shaved juglet in connection with the earliest burial (Skeleton 6), and another White Painted Wheel-made Geometric Style deep bowl between Skeletons 1 and 2. These findings date the burials entirely to the LC IIIA period and most probably to its first half. The burials might have taken place within a relatively short period, maybe even on one single occasion.

The excavations of Tomb A, which started at 10.18 m above sea-level, were stopped at a depth of 4.71 m from the surface for safety reasons.

Recycled well: Tomb Z9

The feature Z9 was built originally as a well. After the well was abandoned, it was later reused for the burials of five individuals: two adults and three children.³⁶ The skeletons are *in situ* and the individuals might have been buried at a single event.

Most of the pottery was highly fragmented and, thus, represents part of the backfill and not tomb gifts. The most recent pottery can be dated

³⁶ Cf. the almost identical situation in Well/Tomb A (see above and FISCHER and SATRAKI 2014, 86–88).

to the LC IIIA period, i.e. the 12th century BCE (cf. Tomb A above).

Offering Pits

These, so far, two features have different shapes and varying contents but have one common element: they contain no skeletal remains but an abundance of finds of high quality, many of which are complete. Amongst the finds were both locally made and imported tableware, the latter including several LH chariot kraters. These offering pits certainly had a ritual function in connection with burials. Each of them was related to a specific tomb or even several tombs (cf. BÜRGE 2017). According to a rough classification based on the shape of these pits, three types can be discerned:

1. *The recumbent “8”-type*, for instance, Offering Pits V, containing several chariot kraters (see two in Fig. 27; FISCHER and BÜRGE 2017b), and GG (FISCHER and BÜRGE 2018b), each with two interconnected chambers resembling the 8-shaped Tombs X and RR (see above).
2. *Round-shaft type* which resembles a well but is much shallower,³⁷ for instance, Offering Pits B (FISCHER and BÜRGE 2015, 45–46) and P (FISCHER and BÜRGE 2016, 51, 52).
3. *Recycled wells* where the lower part of the well contains backfill and the upper part was used for the deposition of objects, for instance, Offering Pits Z6 and Z7 (FISCHER and BÜRGE 2018b).

Nevertheless, this classification will be refined by taking the varying contents in the three types into consideration.

Wells

There are so far 22 wells in Area A. It has been suggested that several well fillings contain the remains of feasting (cf. BÜRGE 2017). These feasts might have taken place in connection with burials or to commemorate the earlier deceased. According to the backfill of the wells, it seems that they were built and used somewhat later than the tombs and the offering pits but chronological overlap occurs. Consequently, the chronology of the contents of the wells is integrated in the chronological sequence of the tombs and the offering pits.

³⁷ Between roughly 1–3 m from the surface down to virgin soil.

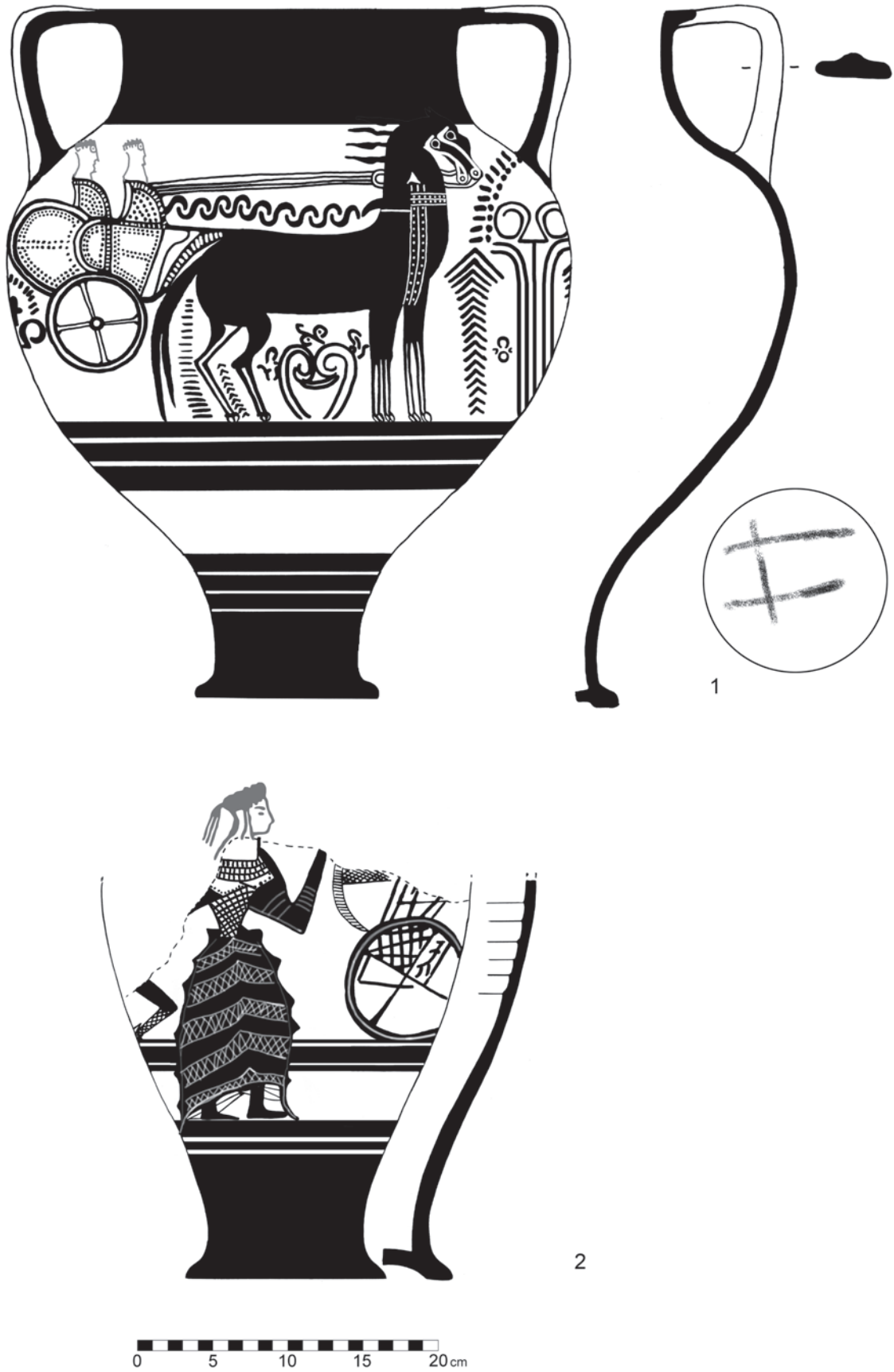


Fig. 27 Offering Pit V: Selection of chariot kraters

The chronology of tombs, offering pits and wells

Only a brief chronological overview will be presented here since all tombs, offering pits and wells have previously been published in detailed preliminary reports and specialised studies.

In relative terms, the oldest Cypriot-produced remains from the cemetery in Area A are from LC IA, for example, White Painted VI (Tomb X) and Proto White Slip (together with White Slip I and Base-ring I in Offering Pit P), whereas the most recent material can be placed in LC IIIA (the recycled wells Tombs A and Z9), for instance, White Painted Wheel-made Geometric Style resembling Late Helladic vessels (FISCHER 2012b). One of the oldest imports is a LH IIA beaked jug (Tomb X) and amongst the most recent imports are Late Helladic vessels dating to the later part of LH IIIB but, so far, no indisputable LH IIIC imports.

The definition of the absolute dates is a dilemma considering the differing views on the beginning of LC I: the author suggested the second half of the 17th century BCE (FISCHER and BÜRGE 2018a, 603–605) as the start of this period in a recent publication, whereas the conventional chronology uses 1600 BCE (ÅSTRÖM 1972a, 700, 701). In any case, the oldest locally produced vessels from Area A should not necessarily be dated to the beginning of LC I because they were certainly produced during several decades into this period. Consequently, in a cautious approach to absolute chronology, a date in the first half of the 16th century is suggested for the (until now) oldest remains from Area A, and the mid-12th century BCE for the most recent. This corresponds to a time span of at least 400 years.

4. Chronology and terminology scrutinised

4.1. Relative chronology and terminology

Topics dealing mainly with the LC IIC and IIIA occupation are discussed in the recently published volume by FISCHER and BÜRGE (2018c). However, the entire period of occupation at Hala Sultan Tekke, i.e. from MC III/LC IA to LC IIIA, is relevant for the discussion on the chronology and terminology in the present paper, since there are indisputable finds dating to the earliest part of this period.

The relative chronological scheme of the LC period which is used in this paper largely follows ÅSTRÖM'S scheme (1972a, 700, 701). ÅSTRÖM'S relative chronology is based on a combination of dia-

chronic sequences of local pottery, for instance, Proto White Slip, Proto Base-ring, White Slip I and Base-ring I, adaption of the Cypriot pottery to the sequence of the Helladic wares and, to some extent, historical events. When ÅSTRÖM wrote his important volume, he had to rely on the evidence available from tombs and a very few stratified excavations. He provided each (sub-)period with absolute dates. Since there are no radiocarbon dates in his chronological scheme, ÅSTRÖM'S dates are based mainly on the synchronisation with other cultures, primarily the Egyptian and the Aegean, supported by the Levantine, which increases the risk of circular argumentation.

According to ÅSTRÖM'S definition, the LC IA period is divided into LC IA1 and IA2, based on the appearance of Proto White Slip and (probably) Proto Base-ring in LC IA1, whereas White Slip I and Base-ring I do not appear before LC IA2. This division is sustained in the present paper. The period that follows, LC IB, was dominated by the reigns of Hatshepsut and Thutmose III in Egypt. The production of White Slip I mature/normal falls in this period and it was exported to Egypt and the Levant, among other regions, where it is represented, for instance, at Tell el-Ajjul in Gaza (FISCHER 2003, 264, Table 1; 274, Fig. 4). The production of White Slip II seemed to start at the end of this period.

The usefulness of ÅSTRÖM'S division of the first half of LC II, which he links firmly to the chronology of Late Helladic pottery, can be questioned (ÅSTRÖM 1972b, 760). He divides LC II into LC IIA1 = LH IIIA1, LC IIA2 = LH IIIA2a and LC IIB = LH IIIA2b. In my opinion this division is too tightly connected to the Late Helladic pottery and does not seem to reflect the development of Cypriot pottery in this roughly 100-year long period. In the absence of imported pottery, the more precise dating of specific LC IIA–B contexts based on Cypriot-produced wares alone seems to be very difficult or even impossible (at least at present). According to ÅSTRÖM, the most characteristic pottery of LC II is White Slip II, Base-ring II and Plain White Wheel-made II. To some extent, the long lifespan of the White Slip II and Base-ring II wares diminishes their value as more precise chronological indicators of the LC II period. Admittedly, at least as White Slip II is concerned, the 'early', 'mature/normal' and 'late' types reflect diachronic changes, but they have to be better defined based on firm stratigraphic evidence from Cyprus itself in order to serve as more precise

chronological markers (see, however, the development of White Slip II at Tell ʿAjjul in FISCHER 2003: 277, Fig. 5). An even more serious problem is the diachronic development of Plain White Wheel-made. According to Åström, Plain White Wheel-made I was produced from LC IA1 to LC IIC1 (and probably even later) and Plain White Wheel-made II from LC IIA2 to LC IIIB2, viz. there is an overlap in production from LC IIA2 to LC IIC1. The problematic classification criteria of this ware, the long lifespan and production overlap make Plain White Wheel-made a poor chronological marker. Until we have better defined ceramic evidence which is linked to more exact radiocarbon dates, I suggest keeping – at least at present – the existing terminology as a single chronological unit, i.e. LC IIA-B, in order not to confuse users of the conventional relative chronological scheme.

Åström's division of the following period into an earlier (LC IIC1) and later (LC IIC2) sub-period is based mainly on the division of LH IIIB into 1 and 2 ('... more or less contemporary ...', see ÅSTRÖM 1972a, 689–693, 760). Our Stratum 3 seems to fit best into LC IIC2 but since we have not yet exposed the preceding Stratum 4 in CQ1, we are on insecure ground regarding the length of Stratum 3. However, the conventional division can be kept, considering problems in trade connections followed by waning Late Helladic imports at the end of LC IIC and the advent of the 'Sea Peoples phenomenon'. This is clearly reflected in our ceramic material: Stratum 3 in CQ1, which is dated to LC IIC(2?), still has LH IIIB2 (late) imports but the manufacture of locally produced Aegean-type pottery increases and culminates in Strata 2 and 1. This locally produced Aegean-type pottery seems to replace not only the Aegean imported wares, which are missing in Strata 2 and 1,³⁸ but also handmade locally produced fine wares, such as White Slip II and Base-ring II. The few, fairly worn, sherds which have been preliminarily classified as 'possibly LH/LM IIIC' are extremely dubious evidence of continued imports from the Mycenaean sphere of culture.

The disruption of trade networks in combination with recorded historical events makes the division between LC IIC and LC IIIA reasonable. However, I would like to put forward some caveats

concerning the definition of the transition from LC IIC to IIIA. It becomes obvious when studying excavation reports and syntheses dealing with this transitional period that various excavators – very justifiably – are fairly vague in their definitions of events at their sites which happened in the period covered by the outgoing LC IIC and the start of LC IIIA. Destructions, rebuilding and abandonments are dated to the 'later part of the LC IIC', the 'end of the LC IIC', the 'transition of LC IIC/IIIA', the 'outgoing 13th century BC', the 'beginning of the 12th century BCE', 'around 1200 BCE', and so on. From these equivocal dating attempts, we can draw the following conclusions:

- *These events were not necessarily contemporary across the whole island.*
- *These episodes did not point to events but rather periods of time of varying lengths at various sites.*
- *The classification and interpretation of the material culture from the outgoing LC IIC and the start of LC IIIA vary between different excavators.*

A synopsis of the events at 14 selected coastal or near coastal Cypriot sites (double-sites included) from LC IIC1–IIIB2 is presented in two recent publications by FISCHER (2017, 197–200) and FISCHER and BÜRGE (2018c, 606, 607, Table 10.2). It includes sites which produced material evidence which would allow a dating at the end of LC IIC or the beginning of LC IIIA. There is only one site, *Toumba tou Skourou*, which seems to have been abandoned without any plausible explanations as early as LC IIC1 (or possibly LC IIC2).³⁹ The remaining sites were occupied in LC IIC2. Three sites were abandoned at the end of LC IIC, viz. Maroni *Vournes*, Maroni *Tsaroukkas* and, possibly, Pyla *Kokkinokremos*.⁴⁰ The remainder, including those sites with ambiguous occupation, were settled in the transitional LC IIC/IIIA period and in LC IIIA1. At the end of LC IIIA1, Kalavassos *Ayios Dhimitrios* had already been abandoned, but all the others remained settled. Of the remaining sites, Maa *Palaeokastro*, Hala Sultan Tekke and Sinda were abandoned around mid-LC IIIA and Alassa *Pano Mantilaris/Paliotaverna* at the end of LC IIIA2. Enkomi and Kition survived into

³⁸ There are sherds of LH IIIB vessels in Strata 2 and 1, but they are considered residual.

³⁹ Parts of the site have been bulldozed, which might have removed more recent remains (FISCHER 2017, 198–199).

⁴⁰ There may be LC IIIA material at the site (BRETSCHNEIDER et al. 2015).

LC IIIB1 and 2, perhaps also Palaepaphos and Kourion *Bamboula*. Accordingly, both major and limited destructions occurred at several sites in this transitional LC IIC/IIIA period. However, we are in no position to decide if these events happened at the same time at all sites. This ambiguity depends very much on how we classify and date the material culture, mainly the ceramics, subjectively, how we look at the absence and presence (residual?) of certain wares including imported pottery, and how we individually use the formal definition of these periods.

At Hala Sultan Tekke, there is a cultural continuity from LC IIC to LC IIIA, but it is limited. In the latter period, Late Helladic imports are missing and the production of wheel-made pottery increases. Åström's subdivision of LC IIIA into the very short LC IIIA1 and the quite long LC IIIA2 seems to be linked to the 'Sea Peoples Phenomenon' which he relates to the 'invasion of Sea Peoples' as shown in the reliefs of the mortuary temple of Ramesses III⁴¹ and the destruction of Northern Levantine sites, for instance, Ugarit, but more evidence is needed to support this division based on the material cultural remains. As far the latter is concerned, the classification of the painted pottery from this 'blanket period' LC IIIA is a matter of recurrent discussion, including the use of varying terminologies.

The Furumark terms Mycenaean IIIC:1a and 1b have generally been abandoned by most scholars, but it seems that the term for the corresponding ware, White Painted Wheel-made III, is still in use by some scholars. However, this term is obsolete, since not even its 'inventor' (Åström) has been able to distinguish between representatives of the three sub-groups I–III in many cases (FISCHER 2012b, 76–79). Therefore, I proposed that decorated White Painted Wheel-made III should be divided into two main groups: 'White Painted Wheel-made Geometric Style (WPGS)' and 'White Painted Wheel-made Pictorial Style (WPPS)'.⁴² The former includes vessels with downright, often simple, geometric patterns in the style of their Late Helladic counterparts, whereas the latter indicates vessels with pictorial representations which are depicted together with often very complicated pat-

terns of a new Cypriot style but certainly influenced by various foreign sources (see Fig. 7).

MOUNTJOY rightly states in her *magnum opus* on LC IIIA (her 'Cypriot IIIC') and Philistine (her 'Philistine IIIC') painted pottery that '...the 12th century BCE pottery development on Cyprus is independent of that of Mycenaean Greece, but there are influences and parallels ...' (2018, 23). Therefore, one could find it surprising that she proposed (and used) the terms 'Cypriot IIIC' and 'Late Cypriot IIIC' ('Cyp IIIC'). Unfortunately, this term is confusing, since it intuitively associates to a period which – according to the established terminology of LC sub-periods – does not exist but is meant to be applied to pottery phases. She motivates her 'Cyp IIIC' terminology by stating that '

... it has seemed best to refer to the phases with the Helladic term IIIC for the period (= LC IIIA-B, my remark), but substituting Cyp for LH in order to emphasise that the Cypriot pottery is independent of the Helladic pottery, but can be related to it chronologically, and then to refine the terminology according to the Cypriot pottery development...' (MOUNTJOY 2018: 23)

If Cypriot pottery is independent of Helladic pottery, why apply the Helladic term? The fact that – after the LC IIC – LH IIIC imports to Cyprus are largely missing or not existent, for instance, at Hala Sultan Tekke (see above), should also be kept in mind. It is of course possible that immigrants from the Aegean brought LH IIIC vessels to Cyprus and, in addition, produced copies from local clay which are related to the pottery tradition of their homeland.

4.2. Absolute chronology

In addition to sherds of late MC and early LC dates, the recently finished field work (May 2019) confirmed strata which belong to the first half of the LC period.⁴³ These discoveries highlight the potential of Hala Sultan Tekke to contribute to the discussion of these early periods. Therefore, the following discussion on absolute chronology is extended to include the early LC period, which is in line with the original objectives of the project.

⁴¹ Åström dates LC IIIA1 to 1190–1175 BCE and LC IIIA2 to 1175–1125/1100 BCE.

⁴² Another group of White Painted Wheel-made is just monochrome painted.

⁴³ Processing of the finds from CQ1 are presently being carried out. Therefore, a detailed presentation has to await future results.

Supporters of both the ‘high’ and ‘low’ chronologies accept that the beginning of LC IA1 falls into the Hyksos period (see e.g. MANNING 2014; MANNING et al. 2014; BIETAK 2016). The well-known, perpetual dispute about the date of the eruption of the volcano of Thera (Santorini) will not be dealt with here in detail and only a summary is presented. Radiocarbon dates covering the Hyksos period and the beginning of the New Kingdom (e.g. KUTSCHERA et al. 2012) are generally much higher (>100 years) than those based on the historical chronology, i.e. the Egyptian genealogy focused mainly on the stratigraphy of the crucial site of Tell el-Dab‘a. In addition, radiocarbon dates of the eruption of the Thera volcano are linked to the Hyksos period and not placed at the beginning of the New Kingdom. However, a recently published paper dealing with annual resolution radiocarbon time series (PEARSON et al. 2018) challenges the high chronology which is based on the calibration curve IntCal13.⁴⁴

In a recent paper, McANENEY and BAILLIE (2019) revised the Greenland ice core chronologies and compared them with absolute tree-ring dates and the appearance of a frost ring in the bristlecone pine record in relation to the radiocarbon dated eruptions of the Thera and Aniakchak II (Alaska) volcanos. They forwarded interesting dating hypothesis – supporting both the high and low chronologies – but no solution to the present dilemma to date the Thera eruption exactly. There are still a number of problems to solve. One is whether Thera really caused a frost ring in the bristlecone pine record, and another does not exclude the possibility that Thera and Aniakchak II could have erupted in roughly the same year.

FISCHER and WHITEHOUSE (unpublished paper)⁴⁵ analysed a sample from the GRIP ice core (1340-6) and a sample from the actual eruption layer on Thera (SAT5, NAA results by BICHLER et al. 2003) using a Cameca IMS1270 geological SIMS. According to HAMMER et al. (2003), this sample, which they dated to 1645±4 BCE, was supposed to contain tephra from Thera. However, our results exclude Thera as the mineralogical source of the particles in the GRIP 1340-6 sample.

The author’s excavations at Tell el-‘Ajjul (FISCHER 2003, 2009) contributed to the discussion on relative chronology and, to some extent, on absolute dates with a focus on the appearance of pumice from the second millennium eruption of Thera at the site. The identification of Theran pumice from Tell el-‘Ajjul is based on NAA of 48 samples (46 from the settlement, 2 from tombs, FISCHER 2003, 265–271).⁴⁶ The results from field work and NAA verified the sudden appearance of Theran pumice in the occupational layer (Horizon) H5B, from where, together with the more recent H5A, the bulk of samples (23) derives. By contrast, Theran pumice is completely absent in the preceding layer H6. It should be highlighted that there is no occupational gap between H6 and H5B based on the stratigraphical evidence. This suggests an eruption date prior to (or possibly in) H5B. Phase H5B produced early White Slip I material, whereas this ware is missing in H6 (*ibid.*, 274, fig. 4). If the high radiocarbon dates for the Theran eruption are correct, i.e. Thera erupted before or around 1600 BCE, then early White Slip I was already being produced when Thera erupted. This moves the beginning of LC IA2 back to around 1600 BCE and the transition MC III/LC IA1 to around 1650 BC, which is supported by radiocarbon (cf. 1680/1650 BCE in MANNING 2013, 521, Table A2). Recently modelled radiocarbon dates from the author’s excavations at Tell el-‘Ajjul itself are equivocal and would allow for two possible periods for the transition from H6 to H5B: one around 1600 BCE, which is in favour of the conventional radiocarbon-based chronology, and the other around 1550 BCE, which, to some extent, would support the historical chronology (see also FISCHER 2009).⁴⁷

There is a consensus or at least acceptable correlation between the historical and radiocarbon-based dates from the period of the New Kingdom reigns of Hatshepsut/Tuthmosis III to Ramesses II (see, however, several revisions in ASTON 2012, 289, and notes, suggesting a somewhat higher chronology than the established historical one), i.e. mainly the period covered by LC IB to LC IIC1. Serious absolute dating problems depending on a

⁴⁴ This is in contrast to the internationally agreed radiocarbon calibration curve (IntCal13), which is based on the dating of consecutive decadal and semi-decadal blocks of tree rings of known age.

⁴⁵ Since no additional (younger) samples were provided by Hammer, the (ready) paper was not published.

⁴⁶ The NAA analyses were thankfully carried out by M. Bichler at the Atomic Institute, University of Vienna.

⁴⁷ Personal communication F. Höflmayer, December 2017.

plateau in the calibration curve start in LC IIC2 and last for roughly a century into LC IIIA, i.e. the last decades of the 13th until the second half of the 12th century BCE. A possible solution of this dilemma could be the use of sequence analysis, i.e. the combination of the stratigraphical evidence with several radiocarbon dates from well-defined layers from various sites, which, to the best of the author's knowledge, does not yet exist. However, the occupational sequence of Hala Sultan Tekke covers exactly this period and we hope that the dating of new sequential samples will contribute to solving this dilemma.

5. Synthesis and discussion

5.1. *The foundation of Hala Sultan Tekke*

Considering the combined evidence from the settlement and the cemetery, there are strong indications that the city was founded sometime in the period covering the end of the MC and the beginning of the LC period. This time span is based on the evidence from CQ1, where the earliest wares include White Painted Pendant Line Style, Proto White Slip, Monochrome, Bichrome Wheel-made, White Painted V-VI, Red-on-Red and Red-on-Black. This means that Hala Sultan Tekke was settled in this period somewhere in the area covering roughly 50 hectares. Other indicators for the foundation period suggested above are various features in the cemetery which produced such 'early' wares as early Bichrome Wheel-made and Proto White Slip, which are both in accordance with the earliest material from the city.

It has been proposed that the foundation of the city may be connected with the site of *Trypes*, which is roughly 1 km to the west of the assumed centre of Hala Sultan Tekke (FISCHER and BÜRGE 2018c, 606–611). The extension of the settlement of *Trypes* can no longer be reconstructed due to modern activities.⁴⁸ Considering the ceramic evidence available from the tombs at *Trypes*, the site existed from MC III to LC IIC (cf. also LUBSEN ADMIRAAL 1982). *Trypes* was obviously a rural village at some distance from the Mediterranean and, consequently, not so exposed to attacks from hostile seaborne people. The economy of *Trypes* rested on farming and cattle breeding, as is the situation today, the

surplus of which allowed the inhabitants to acquire coveted goods, such as various metals, ivory and appealing ceramics, which all were found in the fairly rich tombs. When the inhabitants of *Trypes* recognized the opportunities which one of Cyprus' best protected Late Bronze Age natural harbours offered, groups of people may have moved closer to the Mediterranean and established what later became Hala Sultan Tekke. *Trypes*, which presumably continued to serve as a supplier of products from husbandry and domesticated and hunted animals, was not abandoned and the two sites existed side by side at approximately 1650–1200 BCE. It is not unlikely that the two sites were possibly centrally administrated and that this synergism was beneficial to both. There was undoubtedly no difference regarding the mutual economic advantages if the two sites had separate rules due to responsive inter-neighbour trade. Hala Sultan Tekke had a monopoly in long-distance maritime and regional trade based on the control of the harbour and, consequently, access to coveted goods for exchange; and *Trypes* functioned as a 'granary' and 'slaughterhouse' until the end of LC IIC.

There is another possibility to explain the foundation of Hala Sultan Tekke. It could be that *Trypes* gradually grew towards the east, eventually including the area which later became Hala Sultan Tekke. This would give the settled area quite large dimensions: in the east–west direction, the distance from the eastern margins of Hala Sultan Tekke to *Trypes* (the area of the former hillock which until recently was used as a sand quarry) is some 1.5 km, and the so far known north–south extension of the city of Hala Sultan Tekke is roughly 300–400 m, suggesting some 60 hectares if the entire area was inhabited.

5.2. *Becoming an important trade centre*

The location of the Late Bronze Age city of Hala Sultan Tekke contributed to a considerable extent to its importance as a centre for intercultural trade owing to its proximity to one of the best protected harbours on the island. The NAA of Cypriot pottery mainly from the Southern Levant has proved that Hala Sultan Tekke (and Kition) was a prime actor in the exportation of goods, much more so than Enkomi (MOUNTJOY 2018, 22),⁴⁹ which might

⁴⁸ In the 1970s, soil was taken from *Trypes* for the construction of the runway of the nearby Larnaca International Airport.

⁴⁹ The NAA was carried out by H. Mommsen.

have provided the Northern Levant with Cypriot pottery. This stated, there is no doubt that trade was the backbone of the economy of the city. The enormous amount of imported material raises the questions of how trade was organised and administered. It is certainly not wrong to assume that the administrative centre of such an important city should be found in a larger compound, for instance, a palace or a temple. However, no such buildings have yet been exposed neither by Åström's nor by the current excavations. Nevertheless, there are extremely interesting results from our recent large-scale magnetometer survey in June 2017 covering 23 hectares. The magnetometer map shows the outlines of the current largest identified walled structures at the site (CQ4). The regularly arranged stone-built compounds of imposing dimensions in CQ4 are intersected by streets, according to the magnetometer survey. The subsequent excavations in 2018 exposed well-constructed walls covered by ashlar blocks. This distinguishes CQ4 from the industrial and domestic quarters CQ1–3 and – with some reservations – the general architectural layout resembles that of the regular town plan of Enkomi. It cannot be ruled out that CQ4 represents an area associated with trade activities considering its proximity to the ancient harbour. There are also indications of a possible city wall with a moat enclosing all opened-up areas from both the new and the old excavations (see Fig. 2b).

Which locally produced goods were delivered in exchange for the acquisition of raw material and other coveted goods, including objects of luxury, from other sites and cultures? Regarding to the products from husbandry we have so far, with the exception of the storage corridor in CQ4, no evidence of other large storage facilities as we know them, for instance, from Kalavassos *Ayios Dhimitrios* (Building X, SOUTH 1988, 1995, 2002; FISCHER 2014, 192–195) or Alassa *Paliotaverna* (Building II, HADJISAVVAS 2017, 130–131, Fig. 4.3; 138–255), which would imply that surplus was used to trade other products. Finds of fishing equipment, exemplified by lead net weights and bronze fishing hooks, are not very frequent at the site. It seems that seafood acquired by the inhabitants of the city was only consumed locally and not meant for export – unless there was a city quarter or nearby satellite villages where fishermen dwelled. This assumption is supported by finds, for instance, of Nile perch (*lates niloticus*) and blue tilapia (*oreochromis niloticus niloticus*), both of which must

have been imported – dried or salted – from Egypt in order to satisfy local demands. In addition, it cannot be ruled out that Egyptian traders brought these fish and consumed them there.

Any facilities which would point to the slaughtering of domesticated and wild animals on a larger scale have not been found. Consequently, it seems that Hala Sultan Tekke itself did not contribute to a surplus from farming and cattle breeding, which could have been used for the exchange of goods. Nevertheless, the nearby *Trypes* – either a satellite settlement of Hala Sultan Tekke or under separate rule, although certainly controlled by Hala Sultan Tekke – could have functioned as the supplier of products from husbandry and animal breeding which were locally consumed but also traded.

In contrast to the (so far) limited evidence of agriculture and husbandry, there is plentiful evidence of workshops and the manufacture of specialised products: they include the refinement of copper, the production of objects of lead, bronze, silver and gold (FISCHER 2018), plain (SABATINI 2018) and purple-dyed textiles, and pottery. The extent of local pottery production is difficult to assess (cf. FISCHER and BÜRGE 2018c, 57, Figs 2.32, 2.33), although there is evidence of locally produced wares according to our preliminary petrographical and NAA results.

We have undisputable evidence of urban metallurgy in Strata 3 and 2 judging from almost a ton of slag and raw copper, and a few bronze objects prepared for recycling from quite a limited area (FISCHER 2018). There are remains from at least three furnaces from these two strata and complete and fragmented tuyeres. A bun- or rather doughnut-shaped bronze ingot (FISCHER and BÜRGE 2018c, 150, Fig. 2.101.1), crucibles and moulds prove the production of bronze objects. Amongst the moulds of mainly limestone and steatite are those for the production of arrow heads, various tools and jewellery, for instance, the mould for a ring from Stratum 1 in CQ2 (FISCHER and BÜRGE 2018c, 177, Fig 2.114 and 482, Fig. 4.34:8). The majority of the material related to metal production and working derives from the southern part of CQ1 and the western part of CQ2. Objects of luxury, such as silver and gold jewellery and vessels and other objects of faience (e.g. FISCHER and BÜRGE 2018c, 614, Fig. 10.5), which are associated with the workshops, point to the elevated status of the people working and living there (see e.g. FISCHER and BÜRGE 2018c, 142, Fig. 2.94).

Interestingly, there are no clear-cut contexts in Stratum 1 where metal working could be demonstrated. The pieces of slag which were found in Stratum 1 were most probably dug up by the occupants of this phase and are, therefore, residual. This phenomenon – the likely absence of metal production in Stratum 1 – runs parallel with the ceased import of Aegean pottery, which rarely occurs in Stratum 2.⁵⁰ Apparently, Levantine and Egyptian pottery still continued to be imported.

Judging from the findings in CQ1 and CQ2 alone, one can conclude that textile production had a considerable role in the economy of the city. Since permanent installations are missing, textile manufacture in Strata 2 and 1 was characterized by household production. SABATINI (2018) discusses the extent of textile production at the site and whether such production was meant for local consumption and/or export. She states that there do not seem to be any specifically designated spaces for this production and that it was most likely of a seasonal nature. All evidence taken together indicates that there was an extensive domestic textile production at Hala Sultan Tekke in all periods. The finds from CQ1–3 confirm previous hypotheses and imply that such specialized activities occurred in distinct parts of the settlement but not necessarily in permanent workshops. The bone weaving tools, which probably hint at kilim or tapestry manufacture, are common in CQ1 and have not been found in CQ2, suggesting that this kind of production was probably not practised there. The tomb from Stratum 3 in CQ2 with its numerous burial gifts which are related mainly to textile production suggests convincingly that specialized craftspeople worked at the site and enjoyed an elevated social status (see the cylinder seals together with the numerous textile production-related tools from the tomb of a possible overseer of textile production in BÜRGE 2018b; FISCHER and BÜRGE 2018c).

Evidence of purple dyeing comes from Strata 2 and 1 in all city quarters. There are heaps of murex shells and basins of a limy material in CQ1–3, all of which point to purple dyeing. One of these basins even shows the remains of the actual purple colour (FISCHER and BÜRGE 2018c, 169, Fig. 2.107. 172, Fig. 2.109). Different types of fibres

were used including flax and wool. Linen and other vegetable fibres are generally very difficult to dye, therefore, wool should have been the preferred fibre for dyeing. This suggestion is supported by the fact that sheep and goats represent the most substantial part of the local animal populations (REESE 2018). Purple-dyed textiles were amongst the most valued goods in the Bronze Age considering the time- and labour-extensive processes which were involved in their production. Consequently, it is suggested that the production of purple-dyed textiles contributed to a significant extent to the economy of Hala Sultan Tekke as a much-valued medium for exchange.

Apart from numerous stone anchors (FISCHER and BÜRGE 2018c, 58, Fig. 2.34) there is no further evidence of seafaring vessels. We should, however, anticipate that ships were built at Hala Sultan Tekke or at least in its vicinity, for instance, in the hinterland of the city – perhaps in the rural area of *Trypes*, where access to forests might have been more straightforward.

As of today, our knowledge about LC I at Hala Sultan Tekke is limited. Admittedly, there are splendid finds from this period, including excellently executed Cypriot-produced fine wares, for instance, Bichrome Wheel-made, White Slip I and Base-ring I, in addition to roughly contemporaneous imports from the Aegean, for example, the LH IIA beaked jug from around 1500 BCE or even earlier and, with some reservations, the gold-mounted scarabs from Egypt, of which one has the cartouche of Thutmosis III.⁵¹ In any case, far-reaching trade relationships started in the second half of the 16th century or around 1500 BCE at the latest.

The material from the cemetery provides plenty of information on connections with numerous cultures in the eastern Mediterranean. There is, for instance, the complete excellently decorated LM II/IIIA medium-sized piriform jar from the area of Knossos which is dated around 1400 BCE (Fig. 24). In the course of LC IIA–B, LH IIIA1–2 imports from the Mycenaean sphere of culture increase drastically, exemplified by many vessels, for instance, from Offering Pits V and GG, and Tombs X and RR. Plenty of high-class LH IIIA2–B1 imports continue to appear at Hala Sultan

⁵⁰ The Aegean pottery in Stratum 2 is most likely residual.

⁵¹ The gold-mounted scarab with the cartouche of Thutmosis III might have been produced after the reign of this pharaoh.

Tekke, for instance, the ‘Swordbearer Krater’ from Tomb RR (Fig. 22).⁵² To the best of the author’s knowledge, this krater is the only completely preserved vessel of this type known.

5.3. *Coming to an end*

At the beginning of the period of a general crisis in the eastern Mediterranean and the manifestation of the ‘Sea Peoples Phenomenon’ in LC IIC2, LH IIIB imports seem to appear in sparser numbers (cf. MAZZOTTA and RECHT in FISCHER and BÜRGE 2015, 59–65). Continued imports are represented by Levantine flasks, and Canaanite and Egyptian jars in Strata 3–1 of CQ1 (BÜRGE and FISCHER 2018, 254–255).⁵³ However, complete imported ceramics dating to LH/LM IIIC are missing in LC IIIA. Other imports in the final years of the city, in addition to Canaanite jars and Levantine flasks,⁵⁴ are Egyptian jars (BÜRGE and FISCHER 2018, 224–226), of which a largely complete vessel has recently been found in Stratum 1 of CQ4 (FISCHER and BÜRGE 2019).

The period from around the end of LC IIC and the first part of LC IIIA (and continued) are amongst the most enigmatic periods in the history of Cyprus and the entire eastern Mediterranean and coincide with the ‘Crisis Years’ and the ‘Sea Peoples phenomenon’ in the fading Bronze Age (see e.g. KILLEBREW and LEHMANN 2013; FISCHER and BÜRGE 2017a; JUNG 2017; WIENER 2017). In absolute terms, this period lasted from the last quarter of the 13th century into to the first half of the 12th century BCE (FISCHER 2017, 198–199, Table 1), although it must be highlighted that radiocarbon dates from this time span are equivocal because of the unfortunate calibration plateau which spans quite a considerable period of around 100 years (e.g. MANNING et al. 2017).

Numerous Cypriot sites were destroyed and/or abandoned in this period. No doubt, Hala Sultan Tekke prospered for most of LC IIC and, to some extent, in the first half of LC IIIA. Nevertheless, the city was destroyed twice: one destruction took place at the end of the occupational phase represented by Stratum 2, possibly at the very begin-

ning of LC IIIA (around 1200 BCE; see above). After rebuilding the city, it continued to exist until another destruction struck Hala Sultan Tekke in LC IIIA, around the mid-12th century BCE. After that, the city was abandoned, never to be occupied again by permanent settlers.

In addition to violent destructions, there are other possible causes to consider which might have been (partially) responsible for the abandonment of the city. The silting-up of the harbour has been discussed by some scholars as the main reason for the abandonment of the city (e.g. IACOVOU 2013, 597–599). This phenomenon might have contributed to the abandonment of the city, but we cannot discard the destructive event from which the last residents of Hala Sultan Tekke suffered. It might have been the case that Hala Sultan Tekke was abandoned after the destruction of Stratum 1 because the efforts to build up the city again in combination with the need to maintain the silting-up harbour, which was essential for the economy, were too demanding. A scenario could have been that major parts of the population left or were forced by invaders to leave the city directly after the last destruction. This resulted in insufficient manpower for the necessary repair and maintenance tasks. Consequently, due to the neglect of the maintenance of the harbour and the tectonic uplift which did not stabilise earlier than 3000 BP (DALONGEVILLE et al. 2000, 16–19; DEVILLERS et al. 2015), the harbour became a shrinking lagoon ending with the Larnaca Salt Lake cut off from the open sea and, therefore, useless for direct anchorage, which had serious trade-related consequences. Thus, rebuilding the city after the last destruction was not motivated, and later reoccupation was not encouraged because of the efforts and costs arising from the inconvenient anchorage.

In addition, economic factors, i.e. the impact of the collapse of palatial economies in the Aegean, altered conditions in the Levant, and Egypt certainly had an effect on a city like Hala Sultan Tekke, which, to a large extent, was dependent on the economy and exchanges of goods with the entire eastern Mediterranean.

⁵² Although there are a few LH IIIB1 traits, the overall appearance places this vessel preferably in LH IIIA2. My thanks go to L. Recht and C. Morris for complementary information.

⁵³ There are also Minoan transport stirrup jars in Strata 3 and 2, but in the latter, they may be residual.

⁵⁴ Petrography and NAA are being carried out to trace the provenance of the Canaanite jars. Complete and even intact imported Levantine flasks come from Stratum 1.

Climatological changes have been discussed at length (e.g. (WENINGER and JUNG 2009; KANIEWSKI et al. 2010; KANIEWSKI et al. 2011; DRAKE 2012; KANIEWSKI et al. 2013; KANIEWSKI et al. 2015), but they are of quite limited relevance to the discussion why Hala Sultan Tekke was abandoned, while at the same time and under the same climatological conditions, the nearby major site of Kition survived these years of crisis (see below). However, a number of observations may support the theory of a worsening climate in this period. The climatological change in the eastern Mediterranean, with severe drought around 1200 BCE (observe, however, the problems with precise radiocarbon dates) was identified in coastal Syria at the ancient port of Gibala-Tell Tweini of the Ugarit Kingdom. This ancient port is only a little more than 200 km north-east of Hala Sultan Tekke. A corresponding climate shift was also recorded from Cyprus: a pollen-derived climate proxy from the harbour of Hala Sultan Tekke suggests that the area around the harbour turned into a dry land and the agricultural activities surrounding the site decreased and finally came to a halt. The investigation of additional cores which were drilled in 2016 by the expedition in the dry bed of the Larnaca Salt Lake will certainly increase our knowledge on local climate change.

There is no occupational gap between the destruction of Stratum 2 and the rebuilding and reoccupation in Stratum 1. The question of whether groups of people who dwelled in the city of Stratum 2 left after the destruction – and moved elsewhere, for instance, to Kition and/or the Levant – cannot be answered, since we do not know the total extent of the older city of Stratum 2 in comparison with that of Stratum 1. In any case, the ‘survivors’ of Stratum 2 rebuilt their city and dwelled there for some time.

The dating of the period when Hala Sultan Tekke and Kition, which are 6 km apart, existed side by side is based on the material remains showing their coexistence during LC IIC–IIIA. However, the interpretation of the interaction between the two urban centres before and after 1200 BCE is mainly hypothetical, since there are no functional local written sources. Can the aforementioned hypothesis on the possible relationship between Hala Sultan Tekke and *Trypes* be applied to that between Hala Sultan Tekke and Kition? Could the harbour city of Hala Sultan Tekke which once dominated the area gradually have been reduced to a supplier of goods for the newly

founded and better protected urban centre of Kition during the ‘Crisis Years’? If the harbour of Hala Sultan Tekke was silted up in LC IIIA, for which there is no undisputable proof, land routes to the 6 km apart Kition could have been the preferred alternative regarding trade with mainly locally produced goods, since direct access to imports had been reduced.

What then was the ‘political’ relationship like between the two cities? A friendly relationship in the period covering the end of LC IIC and LC IIIA1 cannot be excluded, but it is, of course, possible that trade-related competition resulted in violent actions eventually resulting in the destruction of Hala Sultan Tekke roughly in mid-12th century BCE. Whatever the reasons behind the abandonment of Hala Sultan Tekke are, one cannot exclude the possibility that groups of people moved from Hala Sultan Tekke to Kition and contributed to the increased power and wealth of the latter. Since – in contrast to Hala Sultan Tekke – major parts of Kition are buried under modern structures and the size of the ancient city is unknown, we, consequently, cannot determine whether Kition expanded in LCIIIA in order to provide dwellings for immigrants from Hala Sultan Tekke.

Several possible theories behind the abandonment of the city have been listed in this discussion but we have no information if we want to explain what exactly happened to its population. It seems quite impossible that Kition could integrate the entire population of Hala Sultan Tekke even if the latter’s population would have been reduced in Stratum 1 in comparison to the previous phase, for which we do not have any proof. In any case, we can assume a population of some thousands considering the estimated size of Hala Sultan Tekke.

Another theory – assuming that Hala Sultan Tekke had parts of its commercial fleet intact after the final blow or that the remainder of the population was able to build new ships if their fleet was destroyed or confiscated during an attack by seaborne people – could be that groups of people left the island on ships. This hypothesis associates with the theory that groups of the Sea Peoples who attacked Egypt originated from Cyprus (FISCHER 2017). Another possibility is that parts of the population were forced to join their attackers during their continued journey south-eastwards, or yet another possibility is that they followed them voluntarily when their city lay in ruins, the well-protected city of Kition was overcrowded, and they had no other place to go.

5.4. The cemetery in Area A: unique contexts

Intramural tombs are well known from various LC settlements including Hala Sultan Tekke (see e.g. FISCHER 1980, NIKLASSON 1983, KESWANI 2004). The discovery of an extramural cemetery at Hala Sultan Tekke adds to our knowledge of burial customs on Cyprus (e.g. FISCHER and BÜRGE 2017b). In addition to the well-known chamber and shaft tombs – both with extraordinary tomb gifts from a large sphere of cultures – the recycled wells, Tombs A and Z9, which contained poor burials, are unique: our burials in abandoned wells are dated to LC IIIA and differ to a large extent from all the other burials. There may be a connection with the period characterised by the Sea Peoples phenomenon and years of a widespread crisis, viz. the end of the 13th and most of the 12th centuries BCE. However, better statistics supported by aDNA and Strontium isotope analyses are necessary to associate these finds to the Sea Peoples phenomenon.

aDNA analyses will possibly provide a hint whether these people belong to the population of Hala Sultan Tekke or if they are immigrants. Sr^{87/86} could give us an idea from where these people immigrated – if they are immigrants. Numerous aDNA and Sr analyses are presently being carried out at the Natural History Museum of Denmark in Copenhagen. We have recently established a Strontium baseline for Cyprus for the first time.⁵⁵

There are currently 12 offering pits in Area A. They were found close to tombs, wells and recycled wells, and contained a huge amount of finds but no skeletons (BÜRGE 2017, 2018a). These finds – mainly pottery – derived from a vast area of the eastern Mediterranean, and also from Sardinia: there are several complete bowls of Nuragic Black ware (BÜRGE and FISCHER this volume), which again highlights the unique find contexts in Area A. Nevertheless, further studies are necessary to establish the relationship between these offering pits and the adjacent tombs.

Bibliography

- ASTON, D.A.
2012 Radiocarbon, Wine Jars and New Kingdom Chronology, *E&L* 22-23, 289–315.
- ÅSTRÖM, E.
1983a *Area 6, Trench ECd–e, 395–9, 59–71*, in: P. ÅSTRÖM, E. ÅSTRÖM, A. HATZIANTONIOU, K. NIKLASSON and U. ÖBRINK (eds.) 1983.
ÅSTRÖM, L. and ÅSTRÖM, P. (eds.)
1972 *The Swedish Cyprus Expedition. Volume IV, Part 1D. The Late Cypriote Bronze Age. Other Arts and Crafts – Relative and Absolute Chronology, Foreign Relations, Historical Conclusions*, Lund.
- ÅSTRÖM, P.
1972a *Relative and Absolute Chronology, Foreign Relations, Historical Conclusions, 675–855*, in: L. ÅSTRÖM and P. ÅSTRÖM (eds.) 1972.
1972b *The Swedish Cyprus Expedition. Volume IV, Part 1C. The Late Cypriote Bronze Age. Architecture and Pottery*, Lund.
1976a *Excavations in 1971: Trench 3, 112–119*, in: P. ÅSTRÖM, D.M. BAILEY and V. KARAGEORGHIS (eds.) 1976.
1976b *Introduction, IV–X*, in: P. ÅSTRÖM, D.M. BAILEY and V. KARAGEORGHIS (eds.) 1976.
- 1983b *Chamber Tombs, 145–168*, in: P. ÅSTRÖM, E. ÅSTRÖM, A. HATZIANTONIOU, K. NIKLASSON and U. ÖBRINK (eds.) 1983.
1989 *Hala Sultan Tekke 9. Trenches 1972–1987 with an Index for Volumes 1–9*, SIMA 45:9, Göteborg.
2001 *Hala Sultan Tekke 11. Trial Trenches at Dromolaxia-Vyzakia Adjacent to Areas 6 and 8*, SIMA 45:11, Jonsered.
2007 *Preface, 5*, in: P. ÅSTRÖM and K. NYS (eds.) 2007.
ÅSTRÖM, P., ÅSTRÖM, E., HATZIANTONIOU, A., NIKLASSON, K. and ÖBRINK, U. (eds.)
1983 *Hala Sultan Tekke 8. Excavations 1971–1979*, SIMA 45:8, Göteborg.
ÅSTRÖM, P., BAILEY, D.M. and KARAGEORGHIS, V. (eds.)
1976 *Hala Sultan Tekke 1. Excavations 1897–1971*, SIMA 45:1, Göteborg.
ÅSTRÖM, P. and HERSCHER-BROWN, E.
1989 *Trenches 7 and 9–21, 48–67*, in: P. ÅSTRÖM (ed.) 1989.
ÅSTRÖM, P., HULT, G. and STRANDBERG OLOFSSON, M. (eds.)
1977 *Hala Sultan Tekke 3. Excavations 1972*, SIMA 45:3, Göteborg.
ÅSTRÖM, P. and NYS, K.
2001 *Trial excavations north of Area 6 in 1999, 57–61*, in: P. ÅSTRÖM (ed.) 2001.
2007 *Hala Sultan Tekke 12. Tomb 24, Stone Anchors, Faunal Remains and Pottery Provenance*, SIMA 45:12, Sävöden.

⁵⁵ The field work and the collecting of samples in order to establish a Strontium baseline has been carried out by P. Ladegaard-Pedersen supported by K. Frei, both from Copenhagen, Denmark.

- BAILEY, D.M.
1976 *The British Museum Excavations at Hala Sultan Tekke in 1897 and 1898. The Material in the British Museum*, 1–32, in: P. ÅSTRÖM, D.M. BAILEY and V. KARAGEORGHIS (eds.) 1976.
- BICHLER, M., EXLER, M., PELTZ, C. and SAMINGER, S.
2003 *Thera Ashes*, 11–21, in: M. BIETAK (ed.) 2003.
- BIETAK, M. (ed.)
2003 *The Synchronisation of Civilisations in the Eastern Mediterranean in the Second Millennium B.C. II. Proceedings of the SCIEEM 2000 – EuroConference, Haindorf, 2–3 May 2001*, Contributions to the Chronology of the Eastern Mediterranean 4, Vienna.
- 2016 Review of: Manning, A Test of Time and A Test of Time Revisited: The Volcano of Thera and the Chronology and History of the Aegean and East Mediterranean in the mid-second Millennium BC. 2nd Edition, 2014, *Bryn Mawr Classical Review*.
- BOURKE, S. and DESCŒUDRES, J.-P. (eds.)
1995 *Trade, Contact, and the Movement of Peoples in the Eastern Mediterranean. Studies in honour of J. Basil Hennessy*, Mediterranean Archaeology Supplement 3, Sydney.
- BOUROGIANNIS, G. and MÜHLENBOCK, C. (eds.)
2016 *Ancient Cyprus Today. Museum Collections and New Research*, SIMA-PB 184, Uppsala.
- BRETSCHNEIDER, J., KANTA A. and DRIESSEN, J.
2015 *Pyla-Kokkinokremos. Preliminary Report on the 2014 Excavations*, *Ugarit-Forschungen* 46, 1–37.
- BÜRGE, T.
2014 Appendix 4: A Violin Bow Fibula from Hala Sultan Tekke 2013. In: P.M. Fischer and T. Bürge, The New Swedish Cyprus Expedition 2013: Excavations at Hala Sultan Tekke. Preliminary Results, *OpAthRom* 7, 95–96.
- 2017 Ritual Depositions versus Garbage Pits: A Re-evaluation of Pottery Deposits and Offering Pits at the Late Bronze Age City of Hala Sultan Tekke, Cyprus, *E&L* 27, 133–150.
- 2018a *Late Bronze Age Offering Pits from Hala Sultan Tekke, Cyprus: Diachronic Perspectives of Activities, Ceremonies and Rituals in a Suburban Area*, 209–220, in: B. HOREJS, C. SCHWALL, V. MÜLLER, M. LUCIANI, M. RITTER, M. GUIDETTI, R.B. SALISBURY, F. HÖFLMAYER and T. BÜRGE (eds.) 2018.
- 2018b *The Cylinder Seals*, 417–420, in: P.M. FISCHER and T. BÜRGE 2018c.
- BÜRGE, T. and FISCHER, P.M.
2018 *The Pottery*, 187–416, in: P.M. FISCHER and T. BÜRGE (eds.) 2018.
- 2019 Nuragic Pottery from Hala Sultan Tekke: The Cypriot-Sardinian Connection, *E&L* in this volume.
- CREEKMORE III, A.T. and FISHER, K.D. (eds.)
2014 *Making Ancient Cities. Space and Place in Early Urban Societies*, Cambridge.
- CROUWEL, J.H. and MORRIS, C.E.
1995 Pictorial Pottery of Late Minoan II–III A2 Early from Knossos, *The Annual of the British School at Athens* 90, 157–182.
- DALONGEVILLE, R., BERNIER, P., PRIEUR, A. and LE CAMPION, T.
2000 Les variations récentes de la ligne de rivage du sud-est de Chypre, *Géomorphologie: relief, processus, environnement* 6, 13–19.
- DEGER-JALKOTZY, S. and BÄCHLE, A.E. (eds.)
2009 *LH III C Chronology and Synchronisms III. LH III C Late and the Transition to the Early Iron Age. Proceedings of the International Workshop held at the Austrian Academy of Sciences at Vienna, 23–24 February 2007*, Veröffentlichungen der Mykenischen Kommission / Österreichische Akademie der Wissenschaften, Philosophisch-Historische Klasse 30, Vienna.
- DEVILLERS, B., BROWN, M. and MORHANGE, C.
2015 Paleo-environmental evolution of the Larnaca Salt Lakes (Cyprus) and the relationship to second millennium BC settlement, *JAS: Reports* 1, 73–80.
- DRAKE, B.L.
2012 The Influence of Climatic Change on the Late Bronze Age Collapse and the Greek Dark Ages, *JAS* 39, 1862–1870.
- FISCHER, P.M.
1980a *Applications of Technical Devices in Archaeology. The Use of X-rays, Microscope, Electrical and Electro-magnetic Devices and Subsurface Interface Radar*, SIMA 63, Göteborg 1980.
- 1980b Geophysical Prospecting at Hala Sultan Tekke, Cyprus, *Journal of Field Archaeology* 7, 479–484.
- 2003 *The Preliminary Chronology of Tell el-ʿAjjul: Results of the Renewed Excavations in 1999 and 2000*, 263–294, in: M. BIETAK (ed.) 2003.
- 2009 *The Chronology of Tell el-ʿAjjul, Gaza: Stratigraphy, Thera, Pumice and Radiocarbon Dating*, 253–265, in: D.A. WARBURTON (ed.) 2009.
- 2011 The New Swedish Cyprus Expedition 2010: Excavations at Dromolaxia Vizatzia/Hala Sultan Tekke. Preliminary Results, *OpAthRom* 4, 69–98.
- 2012a The New Swedish Cyprus Expedition 2011: Excavations at Hala Sultan Tekke. Preliminary Results, *OpAthRom* 5, 89–112.
- 2012b *SIMA and the New Swedish Cyprus Expedition at Hala Sultan Tekke*, 73–80, in: J.M. WEBB and D. FRANKEL (eds.) 2012.
- 2017 *The 12th Century BCE Destructions and the Abandonment of Hala Sultan Tekke, Cyprus*, 177–206, in: P.M. FISCHER and T. BÜRGE (eds.) 2017.

- 2018 *Notes on metal production in CQ1 and CQ2*, 489–492, in: P.M. FISCHER and T. BÜRGE 2018c.
- FISCHER, P.M. and BÜRGE, T.
- 2013 The New Swedish Cyprus Expedition 2012: Excavations at Hala Sultan Tekke. Preliminary Results, *OpAthRom* 6, 45–79.
- 2014 The New Swedish Cyprus Expedition 2013: Excavations at Hala Sultan Tekke. Preliminary Results, *OpAthRom* 7, 61–106.
- 2015 The New Swedish Cyprus Expedition 2014: Excavations at Hala Sultan Tekke. Preliminary Results, *OpAthRom* 8, 27–79.
- 2016 The New Swedish Cyprus Expedition 2015: Excavations at Hala Sultan Tekke. Preliminary Results, *OpAthRom* 9, 33–58.
- 2017a “Sea Peoples” Up-to-Date. New Research on Transformations in the Eastern Mediterranean in the 13th–11th Centuries BCE. Proceedings of the ESF-Workshop held at the Austrian Academy of Sciences, Vienna, 3–4 November 2014, Contributions to the Chronology of the Eastern Mediterranean 35, Vienna.
- 2017b Tombs and Offering Pits at the Late Bronze Age Metropolis of Hala Sultan Tekke, Cyprus, *BASOR* 377, 161–218.
- 2017c The New Swedish Cyprus Expedition 2016: Excavations at Hala Sultan Tekke. Preliminary Results, *OpAthRom* 6, 50–93.
- 2018a *Discussion and Conclusions*, 603–617, in: P.M. FISCHER and T. BÜRGE (eds.) 2018.
- 2018b The New Swedish Cyprus Expedition 2017: Excavations at Hala Sultan Tekke (The Söderberg Expedition). Preliminary results, *OpAthRom* 11, 29–79.
- 2018c *Two Late Cypriot City Quarters at Hala Sultan Tekke: The Söderberg Expedition 2010–2017*, SIMA 147, Uppsala.
- 2019 The New Swedish Cyprus Expedition 2018: Excavations at Hala Sultan Tekke (The Söderberg Expedition). Preliminary results, *OpAthRom* 12, 287–326.
- FISCHER, P.M. and SADEQ, M.
- 2000 Tell el-‘Ajjul 1999. A Joint Palestinian-Swedish Field Project: First Season Preliminary Report, *E&L* 10, 211–226.
- FISCHER, P.M. and SATRAKI, A.
- 2014 Appendix 1: “Tomb” A from Hala Sultan Tekke 2013, *OpAthRom* 7, 86–88.
- FISCHER, P.M. AND WHITEHOUSE, M.J.
- forthcoming Secondary Ion Mass Spectrometry (IMS1270) of Shards from the Greenland Ice Core (GRIP) and Thera.
- FISHER, K.D.
- 2014 *Making the First Cities on Cyprus: Urbanism and Social Change in the Late Bronze Age*, 181–219, in: A.T. CREEKMORE III and K.D. FISHER (eds.) 2014.
- HADJISAVVAS, S. (ed.)
- 2017 *Alassa. Excavations at the Late Bronze Age Sites of Pano Mantilaris and Paliotaverna 1984–2000*, Lefkocia.
- HAMMER, C.U., KURAT, G., HOPPE, P., GRUM, W. and CLAUSEN, H.B.
- 2003 Thera Eruption Date 1645 BC Confirmed by New Ice Core Data, 87–94, in: M. BIETAK (ed.) 2003.
- HOREJS, B., SCHWALL, C., MÜLLER, V., LUCIANI, M., RITTER, M., GUIDETTI, M., SALISBURY, R.B., HÖFLMAYER, F. and BÜRGE, T. (eds.)
- 2018 *Proceedings of the 10th International Congress on the Archaeology of the Ancient Near East*, Wiesbaden.
- HULT, G.
- 1977 *Area 8. Architecture*, 72–91, in: P. ÅSTRÖM, G. HULT and M. STRANDBERG OLOFSSON (eds.) 1977.
- 1978 *Area 8. The 1974 Campaign*, 1–15, in: G. HULT and D. McCASLIN (eds.) 1978.
- HULT, G. and McCASLIN, D. (eds.)
- 1978 *Hala Sultan Tekke 4. Excavations in Area 8 1974–75. The 1977 Underwater Report*, SIMA 45:4, Göteborg.
- HÖFLMAYER, F., BURKE, A.A., DAMIATA, B.N., SOUTHON, J., WILD, E.M., STEIER, P. and FISCHER, P.M.
- 2018 *Radiocarbon*, 595–602, in: P.M. FISCHER and T. BÜRGE (eds.) 2018.
- IACOVOU, M.
- 2013 *Aegean-Style Material Culture in Late Cypriot III: Minimal Evidence, Maximal Interpretation*, 585–618, in: A.E. KILLEBREW and G. LEHMANN (eds.) 2013.
- JUNG, R.
- 2017 *The Sea Peoples after Three Millennia: Possibilities and Limitations of Historical Reconstruction*, 23–42, in: P.M. FISCHER and T. BÜRGE (eds.) 2017.
- KANIEWSKI, D., GUIOT, J. and VAN CAMPO, E.
- 2015 Drought and Societal Collapse 3200 Years Ago in the Eastern Mediterranean: A Review, *WIREs Climate Change* 6, 369–382.
- KANIEWSKI, D., PAULISSEN, E., VAN CAMPO, E., WEISS, H., OTTO, T., BRETSCHNEIDER, J. and VAN LERBERGHE, K.
- 2010 Late Second–Early First Millennium BC Abrupt Climate Changes in Coastal Syria and Their Possible Significance for the History of the Eastern Mediterranean, *Quaternary Research* 74, 207–215.
- KANIEWSKI, D., VAN CAMPO, E., GUIOT, J., LE BUREL, S. and OTTO, T.
- 2013 Environmental Roots of the Late Bronze Age Crisis, *PLoS One* 8, e71004.
- KANIEWSKI, D., VAN CAMPO, E., VAN LERBERGHE, K., BOIY, T., VANSTEENHUYSE, K., JANS, G., NYS, K., WEISS, H., MORHANGE, C., OTTO, T. and BRETSCHNEIDER, J.
- 2011 The Sea Peoples, from Cuneiform Tablets to Carbon Dating, *PLoS One* 6, e20232.

- KARAGEORGHIS, V.
1976 *Two Late Bronze Age Tombs from Hala Sultan Tekke*, 71–89, in: P. ÅSTRÖM, D.M. BAILEY and V. KARAGEORGHIS (eds.) 1976.
- KESWANI, P.S.
2004 *Mortuary Ritual and Society in Bronze Age Cyprus*, Monographs in Mediterranean Archaeology 9, London 2004.
- KILLEBREW, A.E. and LEHMANN, G. (eds.)
2013 *The Philistines and Other “Sea Peoples” in Text and Archaeology*, Archaeology and Biblical Studies 15, Atlanta.
- KNAPP, A.B. (ed.)
2013 *The Archaeology of Cyprus. From Earliest Prehistory through the Bronze Age*, Cambridge World Archaeology, Cambridge, New York.
- KUTSCHERA, W., BIETAK, M., WILD, E.M., BRONK RAMSEY, C., DEE, M.W., GOLSER, R., KOPETZKY, K., STADLER, P., STEIER, P., THANHEISER, U. and WENINGER, F.
2012 The Chronology of Tell el-Daba: A Crucial Meeting Point of ¹⁴C Dating, Archaeology, and Egyptology in the 2nd Millennium BC, *Radiocarbon* 54, 407–422.
- LUBSEN ADMIRAAL, S.
1982 Late Bronze Age Tombs from Dromolaxia, *Report of the Department of Antiquities, Cyprus*, 39–59.
- MCANENEY, J. and BAILLIE M.
2019 Absolute Tree-ring Dates for the Late Bronze Age Eruptions of Aniakchak and Thera in Light of a Proposed Revision of Ice-core Chronologies, *Antiquity* 93, 367, 99–112.
- MANNING, S.W.
2013 *A New Radiocarbon Chronology for Prehistoric and Protohistoric Cyprus, ca. 11,000–1050 cal BC*, 485–533, in: A.B. KNAPP (ed.) 2013.
2014 *A Test of Time and a Test of Time Revisited. The Volcano of Thera and the Chronology and History of the Aegean and East Mediterranean in the Mid-Second Millennium BC*, Oxford, Philadelphia 2014.
- MANNING, S.W., GRIGGS, C.B., LORENTZEN, B., BARJAMOVIC, G., RAMSEY, C.B., KROMER, B. and WILD, E.M.
2016 Integrated Tree-Ring-Radiocarbon High-Resolution Timeframe to Resolve Earlier Second Millennium BCE Mesopotamian Chronology, *PLoS One* 11, e0157144.
- MANNING, S.W., HÖFLMAYER, F., MOELLER, N., DEE, M.W., BRONK RAMSEY, C., FLEITMANN, D., HIGHAM, T., KUTSCHERA, W. and WILD, E.M.
2014 Dating the Thera (Santorini) Eruption: Archaeological and Scientific Evidence Supporting a High Chronology, *Antiquity* 88, 1164–1179.
- MANNING, S.W., KEARNS, C. and LORENTZEN, B.
2017 *Dating the End of the Late Bronze Age with Radiocarbon: Some Observations, Concerns, and Revisiting the Dating of Late Cypriot IIC to IIIA*, 95–110, in: P.M. FISCHER and T. BÜRGE (eds.) 2017.
- MOUNTJOY, P.A.
2018 *Decorated Pottery in Cyprus and Philistia in the 12th Century BC. Cypriot IIIC and Philistine IIIC*, Contributions to the Chronology of the Eastern Mediterranean 36, Vienna 2018.
- NIKLISSON, K.
1983 *Tomb 23: A Shaft-Grave of the Late Cypriote III Period*, 169–213, in: P. ÅSTRÖM, E. ÅSTRÖM, A. HATZIANTONIOU, K. NIKLISSON and U. ÖBRINK (eds.) 1983.
- PEARSON, C.L., BREWER, P.W., BROWN, D., HEATON, T.J., HODGINS, G.W.L., JULL, A.J.T., LANGE, T. and SALZER, M.W.
2018 Annual radiocarbon record indicates 16th century BCE date for the Thera eruption, *Science Advances* August 2018, 4: eaar8241, 1–7.
- REESE, D.S.
2018 *Faunal evidence: catalogues, worked bones, ivory, horn, shells*, 493–563, in: P.M. FISCHER and T. BÜRGE (eds.) 2018.
- SABATINI, S.
2018 *Textile production tools*, 431–456, in: P.M. FISCHER and T. BÜRGE (eds.) 2018.
- SAMAES, M. and NYS, K.
2010 T.1 MLA 1173, An Extra Urban Tomb of the Late Bronze Age Site near Hala Sultan Tekke, *Report of the Department of Antiquities, Cyprus* 2010, 199–228.
- SMITH, R.A.K. (ed.)
2010 *Mochlos IIB. Period IV. The Mycenaean Settlement and Cemetery. The Pottery*, Prehistory Monographs 27, Philadelphia.
- SMITH, R.A.K. and BANOU, E.
2010 *Late Minoan II–III Pottery*, 15–123, in: R.A.K. SMITH (ed.) 2010.
- SOUTH, A.K.
1988 Kalavassos - Ayios Dhimitrios 1987: An Important Ceramic Group from Building X, *Report of the Department of Antiquities, Cyprus* 1988, 223–228.
1995 *Urbanism and Trade in the Vasilikos Valley in the Late Bronze Age*, 187–197, in: S. BOURKE and J.-P. DESCEUDRES (eds.) 1995.
2002 Late Bronze Age Settlement Patterns in Southern Cyprus: The First Kingdoms?, *Cahiers du Centre d’Études Chypriotes* 32, 59–72.
- STOLLE, B.
2016 *The Reuse of a Well as a Deposit for Seven Individuals at Hala Sultan Tekke*, 219–228, in: G. BOUROGLIANIS and C. MÜHLENBOCK (eds.) 2016.
- WARBURTON, D.A. (ed.)
2009 *Time’s Up! Dating the Minoan Eruption of Santorini. Acts of the Minoan Eruption Chronology Workshop, Sandbjerg, November 2007*, Monographs of the Danish Institute at Athens 10, Århus.

WEBB, J.M. and FRANKEL, D. (eds.)

2012 *Studies in Mediterranean Archaeology: Fifty Years On*, SIMA 137, Uppsala.

WENINGER, B. and JUNG, R.

2009 *Absolute Chronology of the End of the Aegean Bronze Age*, 373–416, in: S. DEGER-JALKOTZY and A.E. BÄCHLE (eds.) 2009.

WIENER, M.H.

2017 *Causes of Complex Systems Collapse at the End of the Bronze Age*, 43–74, in: P.M. FISCHER and T. BÜRGE (eds.) 2017.