The Nile Delta as a centre of cultural interactions between Upper Egypt and the Southern Levant in the 4th millennium BC
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Interregional exchange: the evidence from Kafr Hassan Dawood, East Delta

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Introduction

With the focus of the Poznan meeting on the Nile Delta as a centre for cultural interactions, this presented the opportunity to review the evidence from Kafr Hassan Dawood (KHD) for imported materials at the site (in worked form), which might suggest that KHD was involved in regional as well as interregional exchange. This contribution therefore focuses on two types of evidence – objects of stone and of copper – materials that are not local to the Wadi Tumilat, but which are prevalent in the cemetery. There is no settlement evidence to allow for much more than pure speculation as to whether or not these materials could have arrived in their raw form at the site and been worked there, although this is considered. Therefore, what follows focuses predominantly on presenting the types and quantities of stone and copper objects known from the KHD burial assemblages and taking into consideration changes in their distribution over time. It will also look at some of the comparative evidence from other sites, and will consider, finally, how the distribution of the stone and copper objects can contribute towards an understanding as to the reasons for founding the site in this particular location, and the role that the community played within the exchange and movement of materials in between the Nile Valley and the Delta, within the Delta and between the Delta and the Southern Levant. The ideas and discussions are preliminary, ahead of a re-evaluation of the data (Rowland *in press*).

The Wadi Tumilat (Tassie & van Wetering 2013: fig. 1) is considered as an important communications, exchange and trade route throughout the Pharaonic era; however, the archaeological evidence suggests that it might have been regularly traversed at a much earlier date. The cemetery at KHD, situated on the southern bank of the Wadi, was in use from at least the Late Predynastic period onwards to the late 1st-early 2nd dynasty, based

on the ceramic chronology, which will be presented in Rowland (*in press*) and Hassan *et al.* (*in press*) (Tassie *et al.* 2008: 202). Not completely excavated until present, KHD is the largest Predynastic-Early Dynastic cemetery thus far located in the Delta. There are 752 Predynastic-Early Dynastic burials at KHD, with a tentative earliest dating of Naqada IID1 (KHD IIa) through until the end of Naqada IIID (KHD VII).[1] Only 233 graves have been dated up until now, and the process continues as the archival data from the earlier SCA investigations is revisited. Of the 752 graves, only 11 graves are considered to pre-date Naqada IIIB (KHD IV) and only four are believed to post-date the beginning of Naqada IIID (KHD VI). The main phases in which burials are clustered are: KHD IV (Naqada IIIB) with 54 graves, KHD Va (Naqada IIIC1) with 59 graves, KHD Vb (Naqada IIIC2) with 68, and KHD VI (Naqada IIIC3-D) with 37 burials. As will be seen below, it is between KHD IV-VI that the highest numbers of stone and copper objects cluster. The results discussed are still preliminary, although the broad patterns that will be seen are very much present. At the time of writing, a review of the data has been started by the author, and this will be presented in the coming year together with a more comprehensive analysis of the mortuary evidence from KHD as well as a view of the community within its intraregional and interregional contexts (Rowland *in press*).

It would not be surprising if the Wadi Tumilat had been a well-used route within communications and exchange networks from the time of the inhabitation of the Maadi settlement, albeit not in its later form as the 'Canal of the Pharaohs' (Redmount 1995). It also has to be considered that KHD was not the only site along the Wadi Tumilat at this time, and other sites have yielded some evidence for early occupation: Tell el-Niweiri (possibly Neolithic/Lower Egyptian cultural complex), Tell Nishabe (Predynastic-Protodynastic), Shaqafiya (Protodynastic-Early Dynastic) and Tell Samud (Early Dynastic) (Schott *et al.* 1932; Tassie & van Wetering 2013). One of the reasons for considering the Wadi Tumilat as an active route from the Predynastic period onwards is due to the involvement of individuals and groups from Maadi within the exchange networks that leave the well-known evidence for copper at Maadi, as well as sites across and up to the Southern Levant (Rizkana & Seeher 1989: 13-17; Pfeiffer 2009). At certain times of year, this route might have been a quicker and more preferable way to travel between the various sites involved within the networks, both possibly to the actual mining areas, as well as to other sites where the evidence suggests processes within the chaîne opératoire from mining through to the final object (Pfeiffer 2009: tab. 2). It is by Naqada IIIB (c. 3200 BC), at least some 200 years after the habitation at Maadi (Rizkana & Seeher 1989: 80-85) appears to cease, that copper is in evidence in considerable quantities within burials in the KHD cemetery, at least relatively when considered alongside the amount from other sites known currently, as discussed during the meeting

[1] The northern part of the site has not been fully excavated, although test trenches carried out in 1999 located the floodplain and the northern extent of the site, including ceramic vessels (left *in situ*) that were thought to date to Naqada IIB/C (G.J. Tassie *pers. comm.*). Within Naqada IIID, there is an earlier part represented at KHD that is KHD phase IV and a later, phase V. For a discussion of the possibilities of internal division within Naqada IIID at specific sites, see Köhler 2004.

in Poznan in June 2013. In addition to frequent copper objects, stone objects are found distributed throughout burials at KHD over a comparable time period, primarily from Naqada IIIB-IIID, c. 3200 until the time of the last burials in the cemetery. There is no strict temporal-spatial trend in the placement of burials at KHD. The locations of earlier burials (mid-northern areas of the site) are re-visited and additional areas come into use over time. Through test trenches, there appear to be no further burials to the area south of the excavations, but an area with additional burials has been identified directly north of the excavated area. The latest date for the site would currently appear to be the end of Naqada IIID, but it is not currently possible to confirm the date of the earliest burials (Hassan *et al.* 2003: 44). It will, therefore, be interesting if the possibility arises for future excavation at KHD, to ascertain whether the site is founded at around the time that Maadi appears to have fallen out of use, and if so, whether there will be evidence for copper this early (Rowland *in press*). Unfortunately the location where the settlement is thought to be (as explored through coring), is under a lake, which is growing as the cultivation in the area expands (Hamden & Hassan 2003; Hassan *et al.* 2003: 28).

Therefore, some of the key questions of interest here include whether imported materials increased or decreased, or even remained at an even amount over time, or whether the specific material types change. Was KHD founded specifically to take advantage of links with the exchange routes through the Delta, up to the Southern Levant and upstream through the Nile Valley, while being in an agriculturally productive landscape, and how was the site integrated within regional and wider exchange and communications networks, and in what directions did these communications flow? Given that KHD has such a comparatively large distribution of copper objects, the question of where these were made, as well as the original source of the raw copper is of importance. If the settlement at KHD were to be excavated, it is of course not impossible that the objects were made locally, but as this cannot (at least yet) be substantiated, it will remain but one of many possibilities.

Chronological note

The Naqada cultural phases are referred to in the following article to facilitate comparison of the data between sites throughout Egypt, given that this terminology is still used widely; no material culture of the, or rather one of the, Lower Egyptian Cultural Complexes (Maadi-Buto/Buto-Maadi) has been found thus far at KHD. It is recognised that the Naqada terminology is not wholly appropriate and that to better understand the sequence of events occurring at sites throughout Egypt and the wider Near East, the use of chronometric dates is far preferable. Given that there are, however, still significantly fewer dates for Lower Egyptian than there are for Upper Egyptian contexts, this remains problematic; it is nonetheless hoped that this situation stands to be rectified in future years. A recently completed project (Dee *et al.* 2013) was unable to add new chronometric dates from Delta contexts for the Predynastic-Early Dynastic period, although it was successful in adding seven new chronometric dates for Tell es-Sakan in the Southern

Levant, which is a positive move in terms of working towards an absolute chronology that will help inform regarding the timing of interregional relations. There are also other series of dates available for the Southern Levant, including Tall Hujayrāt al-Ghuzlān (Klimscha 2009; Pfeiffer 2009). The reliance on a ceramic chronology regardless of

Table 1. A Provisional New Chronology for KHD (prepared by G.J. Tassie).

Period	Date	Upper Egypt	Lower Egypt
Early Dynastic Period	**3,050 – 2,613 BC**		
Dynasty III	2,686–2,613		Buto VI, Mendes Unit 1, Tell el-Farkha
Early Bronze Age III			VII, Tell Ibrahim Awad 3
Dynasty II	2,800–2,686	Naqada IIID	Buto V, KHD VII, MAO IV, Mendes
Early Bronze Age II			Unit 1, Tell el-Farkha VI, Tell el-Iswid (Phase C), Tell Ibrahim Awad 4
Dynasty I	3,060-2,800		Buto IV, KHD VI, MAO IV, Mendes
Late		Naqada $IIIC_3$/D	Unit 1, Tell el-Farkha VI, Tell el-Iswid
Semerkhet to Qa'a			(Phase C), Tell Ibrahim Awad 5a
Middle		Naqada $IIIC_2$	Buto IV, KHD Va-b, MAO IIIc,
Den to Anedjib			Mendes Unit 1, Saïs III, Tell el-Farkha
Early		Naqada $IIIC_1$	V-VI, Tell el-Iswid (Phase C), Tell
Narmer to Merneith/Den			Ibrahim Awad 5b
Protodynastic Period	**3,300 – 3,060 BC**		
Early Bronze Age 1	3,200–3,060	Naqada $IIIB/C_1$	
		Naqada IIIB	Buto IIIf, KeK 3, KHD IV, MAO IIIb, Mendes Unit 2, Saïs III, Tell el-Farkha IV-V, Tell el-Iswid (Phase B), Tell Ibrahim Awad 6
	3,300–3,200	Naqada $IIIA_1$-A_2	Buto IIIb-e, KHD III, MAO IIIa, Mendes Unit 2, Saïs III, Tell el-Farkha III-IV, Tell el-Iswid strata VII (Phase B), Tell Ibrahim Awad 6
Predynastic Period	**3,900 – 3,300 BC**		
Late Chalcolithic	3,350–3,300	Naqada IID_2	Buto IIIa, KHD IIb, MAO II, Mendes Unit 3, Saïs III, Tell el-Farkha II
	3,400–3,350	Naqada IID_1	Buto IIIa, KHD IIa, MAO Ib, Saïs III, Tell el-Farkha I, Tell el-Iswid strata IV-VI (Phase A)
	3,500-3,400	Naqada IIC	Buto IIb, KeK 2, KHD I?, MAO Ia, Saïs III, Tell el-Farkha I, Tell el-Iswid strata I-III (Phase A), Tell Ibrahim Awad 7
	3,600–3,500	Naqada IIB	Buto IIa, Saïs III
Early Chalcolithic	3,700–3,600	Naqada IIA	Late Maadi, Buto I-IIa, Digla II, Heliopolis, Kek 1, Saïs III
	3,800-3,700	Naqada IC Naqada IB	Early Maadi, Buto Ib, Digla I
	3,900–3,800	Naqada IA	Buto Ia

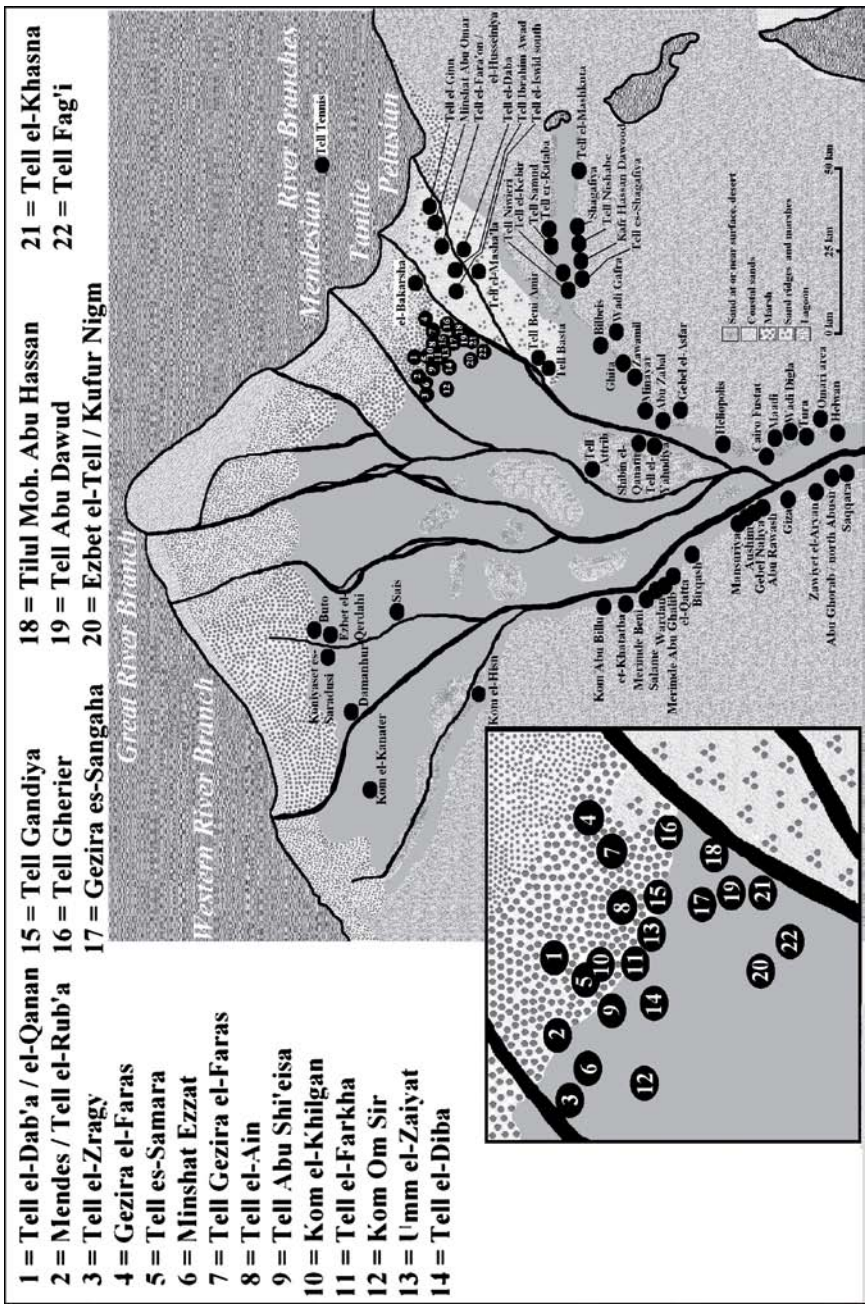

Figure 1. The sites of Lower Egypt (VAN WETERING & TASSIE 2006).

location whether in southern or northern Egypt, or the Southern Levant, is problematic, especially when those chronometric dates for Delta contexts have very infrequently been taken on short-lived plant remains (Rowland 2009; 2013: 239-240). For the present, Table 1 serves to estimate the relative chronological phasing of KHD alongside a number of sites within the Delta during the Predynastic and Early Dynastic. For the purpose of this contribution, the date has been assigned on the basis of the ceramics from KHD[2], compared with the evidence from other sites in the Delta and the Nile Valley (Petrie 1901; 1920; 1921; Wilkinson 1996; Köhler & Smythe 2004; Jucha 2005).

Location and ancient environment

As the crow flies, the sites of the northeastern and eastern Delta (Fig. 1; van Wetering & Tassie 2006) appear relatively close together geographically. Crucial to their foundation, however, and also amongst the reasons for their later abandonment, was their location in relation to local waterways, and also with access to high land, *e.g.* the geziras, in addition to their relative proximity to neighbouring sites (Butzer 1960; 1976; Andres & Wunderlich 1991; 1992; Kroeper & Wildung 1994: XIV; Kroeper 1996: 70; Hassan *et al.* 2003: 38, 40; Pawlikowski & Wasilewski 2012). It might be considered that smaller clusters of these sites were part of discrete regional pockets/networks, that might be expected to exhibit quite different characteristics through the material culture, due to sites and groups being to greater and lesser degrees, connected with different groups of sites in the Delta, Nile Valley and further afield. KHD is in quite a different regional pocket to large numbers of the sites in the north-eastern Delta. Previous and ongoing research by the author (Rowland 2003; 2005a; 2005b; 2006; 2007; *in press*) has already highlighted a number of apparently distinct mortuary traits at KHD when compared with other sites, including Kufur Nigm (KN), Minshat Abu Omar (MAO) and Tell Ibrahim Awad (TIA). Dissimilarities include the complete absence of mud-brick architecture in the burials at KHD, architecture that is found at MAO (Kroeper 1992), TIA (van den Brink 1992: 50-55; van Haarlem 1998), at KN (Bakr 1988; 1993; 2003) and at Tell el-Farkha (TF; Dębowska-Ludwin 2012). Considering that the youngest burials at KHD are considered to have been located, it is unlikely that mud-brick tombs are yet to be uncovered. Also dissimilar to other Delta sites, including TF, Tell el-Murra[3], MAO and TIA are the oval and round ceramic coffins that are found in burials at KHD (Fig. 2; Hassan *et al.* 2003: fig. 5). It is, therefore, not just differences between the Nile Valley and Delta that should be commented upon, but regional differences within all areas. Recent research by scholars, notably Köhler (2008; *this volume*) has shown that there was both a far greater similarity in terms of some types of ceramics, including coarse wares, than previously acknowledged, as well as a larger degree of heterogeneity within regions, suggesting that former theories as to the spread of the material culture, and by association, peoples, need to be re-assessed (*e.g.* Kaiser 1964; 1987; 1990).

[2] Analysed thus far by G.J. Tassie, Ashraf El-Senussi, and the author.

[3] *Pers. comm.* Mariusz Jucha; the only ceramic coffin types at Tell el-Murra are rectangular and rectangular with rounded corners and those that can be dated are Naqada III.

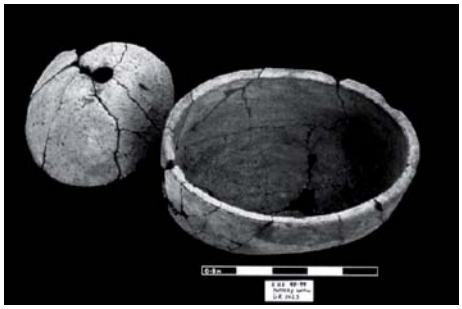

Figure 2. KHD-502 The pottery coffin from Grave 1025 (photo by Ken Walton; courtesy of the MSA/UCL KHD mission).

There are, of course, also similarities in terms of the majority of what might be regarded as common (non-elite) burials between KHD and other cemeteries in the area, in that most of the burials are interred in simple oval pits in a flexed position, with few or no grave goods; these are mainly (although not exclusively) ceramics where they occur (Rowland 2003; 2005a; 2005b; 2006; 2007). Another area in which similarities across the region are detected is in the use and type of potmarks (Tassie *et al.* 2008).

The evidence from the cemetery

The focus of this contribution is upon materials located in the burials at KHD that do not come from local sources, as a means by which to think about how the community at KHD might have interacted with other Delta communities as well as those in the Nile Valley, and across to the wider Near East. The focal date range is from Naqada IIIA, although predominantly from Naqada IIIB-IIID, the period over which non-local stone and copper materials are found within burials. There are only six recorded imported ceramic vessels, which will not be discussed here.

Stone: materials and objects

Firstly, to look at the different types of stones represented in the burial assemblages at KHD over time. The stone objects/fragments are of a variety of types of stone: Egyptian alabaster, siltstone, porphyry, basalt, metasediment, metaconglomerate, carnelian, diorite, limonite, granite, andesite porphyry, red jasper, agate, sandstone, quartzite, garnet, and other unspecified semi-precious stones. They have their origins at various locations, as close as modern day Cairo, the Faiyum, the Eastern Desert and various locations along the Nile Valley, with some material types needing to be actively quarried, whereas other types could be collected from surface deposits. The stone types and issues with their terminology will be addressed in a forthcoming volume (Rowland *in press*). There are also stone tools, including pressure-flaked knives of chert within the burials, however, these are not discussed further here (Rowland 2007).

The most common stone object types found within burials throughout Egypt during the Predynastic and Early Dynastic include: vessels, palettes, bangles and beads. Some of the stone types listed above are only represented as stone sherds at KHD, including a single incidence of basalt that is, unfortunately, contextually unsound.

The vessel types represented at KHD are: beakers (tall cylindrical, short cylindrical, convex-sided, with recurved sides), bowls (convex-sided, convex to straight sided, small convex-sided flat-bottomed, straight sided, small straight-sided flat bottomed, incurved with rounded projecting rim, restricted deep, small round flat-bottomed), dishes (straight-sided, convex-sided flat-bottomed, animal-shaped), plates (round-bottomed, large round-bottomed, convex-sided, straight-sided), and jars (globular to squat shouldered, globular to squat-shouldered in two halves, symmetrical squat hanging, tall shouldered, footed shouldered). In the instances of two vessels which are made of diorite and Egyptian alabaster and of diorite and siltstone, these have been counted once under each material type, which slightly inflates the number of vessels, but the initial examination of stone types presented here is focussed on what material types are, or are not, used at certain times.

Beads are the most common object type made of stone, apart from stone vessels. The stone types used are: agate, carnelian, diorite, garnet, haematite, limestone, siltstone, steatite and other unspecified semi-precious stones. There are also bracelets of siltstone and schist. Other objects include siltstone palettes, and one example in granite, and a quartzite grindstone fragment and a sandstone quern fragment. For statistical purposes in this article, beads are not counted individually for a single context, but rather just counted as 'one' to suggest a complete object. However, for the purposes of the analysis carried out here relating to stone types over time, where beads of different stone types are found together, they have been counted as one for each stone type to allow for the occurrence of all different stone types to be represented.

Copper objects

The copper objects present at KHD are predominantly tools/utilitarian objects: adzes, awls, chisels, fishhooks, harpoons, knives and spears. There is also an amulet, bangle, bowl, dishes, a mirror, rods and wire. In order to try to provenance copper, scientific analysis needs to be carried out. Certain amounts of information can be obtained through use of an XRF, but for more precise analysis Neutron Activation Analysis would be preferred. This can have a great application for use on museum objects, but if not possible to obtain samples, an XRF, or handheld (portable) XRF can obtain data. The possible sources of ore are discussed by Golden (2002: 232-234), and will be addressed again in Rowland (*in press*). It is possible to say, however, of the copper at KHD, that at least one example includes arsenical copper.[4]

Analyses

For the analyses herein, the presence of certain material types over time is the focus, and not the individual presence of objects and material types within specific graves for purposes of trying to ascertain possible social status, as attempted elsewhere (Rowland 2003; 2005a; 2005b; 2006; 2007). The distribution of the typology of the vessels through time is also not under discussion; these aspects will be revisited in Rowland (*in press*).

[4] *Pers. comm.* Thilo Rehren and Ernst Pernicka.

The interest here is with the changing material types over time, and general observations regarding the broader categories of objects. There follows analysis on four key groups: stone vessels, other stone objects, all stone objects together, and finally copper objects. For each group, the bullet points list the frequency distributions that have been examined, of which only a selection of charts are shown here. Some comparisons in terms of distribution will be drawn from the analysis carried out by Kopp, who investigates stone vessels from Naqada, Matmar, Mostagedda, Hierakonpolis, Tarkhan, Elkab and Tura (Kopp 2007: 197, tab. 1).

1) Stone vessel material types
    a. Grouped for all periods
    b. Material types over time
        i. Grouped by time
        ii. Grouped by material

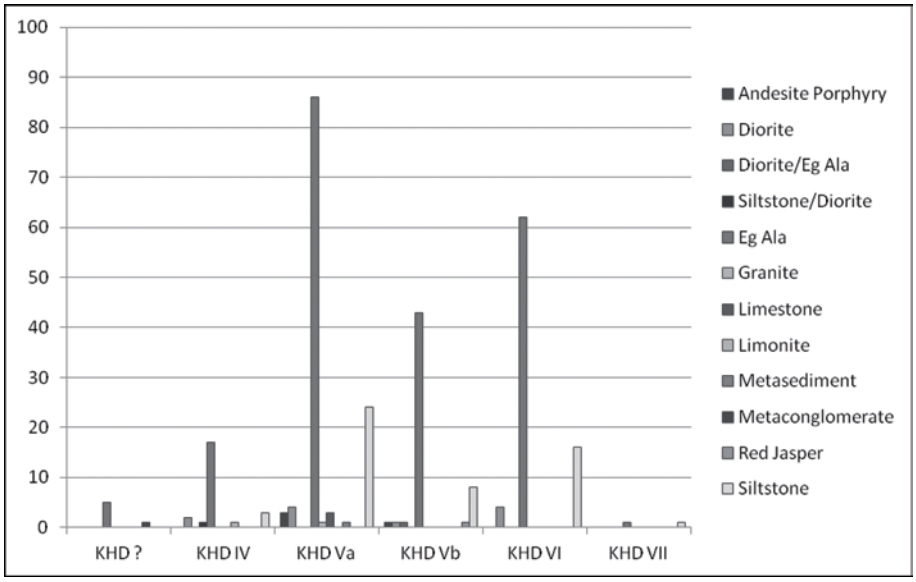

Figure 3. (1bi) Frequency distribution showing stone types used for vessels, organised by time phases.

Figure 3 (1bi) illustrates the distribution of stone types used specifically for different varieties of vessels over time. In total there are 288 complete stone vessels that have been found in the cemetery at KHD. Of the vessels, 214 are Egyptian alabaster vessels and only 13 of these are in undated graves. There is a marked increase in Egyptian alabaster vessels between phases KHD IV and KHD Va and a reduction only after KHD VI. Kopp (2007: 209) records that between Naqada IIIC1 and 2 there is a jump from 500 vessels to 1608 vessels made of 'Calcite-Alabaster', although he notes that this period also shows the start of a decline in the percentage of Egyptian alabaster when related to other

stones used in vessel production. This pattern is likewise seen when we look at the stone vessels at KHD, although other stone types start, albeit in small quantities, to appear in burials from KHD IV onwards. In terms, therefore, of the general distribution of stone vessel finds, the pattern seems similar at KHD. However, does there seem to be more accessibility to stone in general through time? Kopp (2007) notes that from Naqada IIIB and later, there are higher amounts of vessels within individual elite tombs, rather than the increase in Egyptian alabaster vessels reflecting a general increase in accessibility/distribution of a) the material and b) the finished product. When looking by comparison at TF, for example, it is notable that the majority of the hard stone vessels were found on the Western and Central Koms, but that those found in graves were of softer stones: travertine, limestone and sandstone, in addition to instances of agate and also basalt (Pryc 2012: 297, 299). Some burials of Naqada IIIB-IIIC1 date contain stone vessels at TF, but in Naqada IIIC2-IIID there is an increase which coincides with the occurrence of wealthier tombs at the site (Pryc 2012: 299-303). This rise roughly corresponds with KHD, although there are only a very few burials dating to Naqada IIID at KHD.

When turning to look at the other stone types, Kopp (2007: tab. 3) notes the percentages as well as numbers of vessels. During Naqada IIIC2 Egyptian alabaster vessels account for some 68.2% overall, and the only other stone type that has more than 3% of the overall total is listed as siltstone/greywacke with 19% (Kopp 2007: tab. 3). Dolomite has 3% and white limestone 2%, but all other stones only 1% or fewer (Kopp 2007: tab. 3). It is only from Naqada IIIA2 onwards that Egyptian alabaster appear to be the most common overall stone type in the cemeteries discussed by Kopp, and only in Naqada IIIC1 that the range of stone types broadens (Kopp 2007: tab. 3).

Unsurprisingly, Egyptian alabaster is most strongly represented over time, with the peak for the highest number of vessels during KHD Va (Naqada IIIC1). There is a different pattern suggested by the group of sites examined by Kopp (2007), whose data shows the peak during Naqada IIIC2. Siltstone vessels are the second most commonly featured, although in minimal quantities before Naqada IIIC1. Furthermore, in Kopp's overview of the siltstone vessels, only 32 are shown for Naqada IIIC1, whereas at KHD alone there are 23 at that time (Kopp 2007: tab. 3). In general, it is during KHD Va that other stone types are best represented, although these are always in low numbers. Stone vessels are found in large graves, for example 913 and 970, which will be discussed again below, and also smaller tombs; for example 873 with three different types of stone vessels, Egyptian alabaster, siltstone and diorite, six vessels in total.

2) Other objects fashioned from stone
    a. Grouped for all periods
    b. Object/materials over time
        i. All stone objects (not including vessels)
        ii. Stone beads and bracelets (adornment items)
        iii. Stone palettes

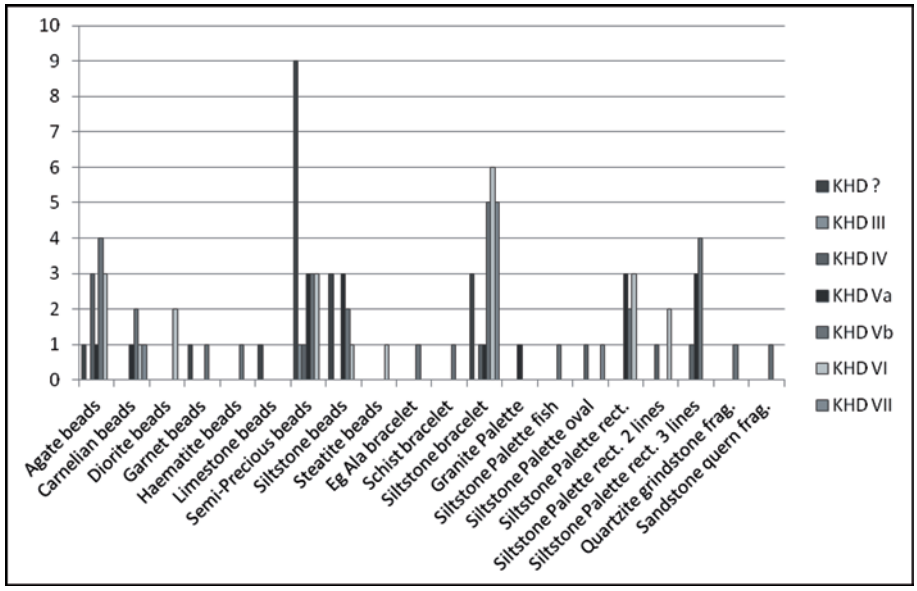

Figure 4. (2a) Frequency distribution of stone artefact types (less stone vessels) grouped by object type.

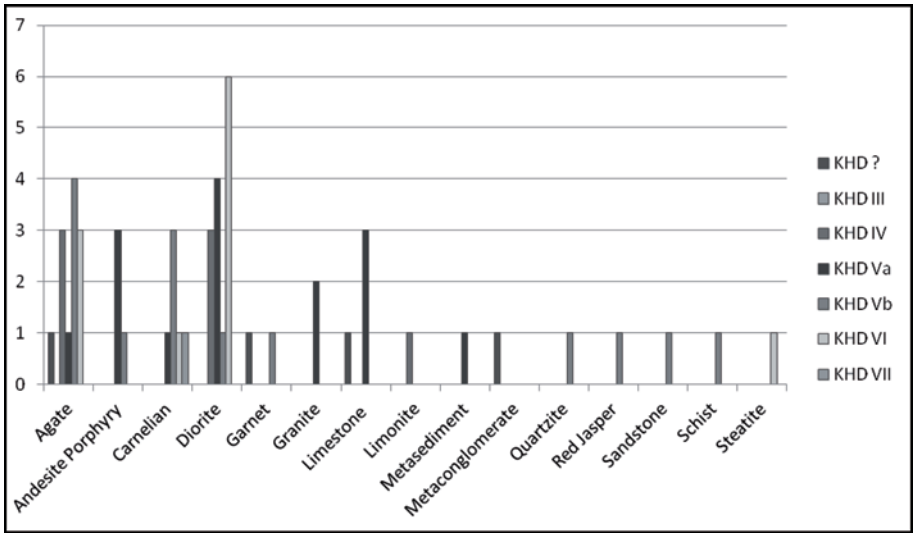

Figure 5. (3b) Frequency of stone types excluding Egyptian alabaster and Siltstone (vessels/all objects), with changing distribution by time grouped by material/object type.

We can also look to the use of stone for other groups of stone objects over time (Fig. 4). The highest distribution shown in Figure 4 is perhaps misleading, given that these are beads of 'other', currently unidentified, semi-precious stones. It is interesting that carnelian is not the most commonly found bead stone type at KHD, but rather agate, and siltstone; for bracelets, however, presumably due to the properties of the stone, including simple practical issues, such as obtaining larger pieces of this type of stone, siltstone is best represented. Finally, to look at the distribution of stone palettes, all but one of the palettes at KHD is made of siltstone (as is most common in general at this time), the remaining one being made of granite (Fig. 5). The plain rectangular palettes and those with three incised lines are jointly most common overall at KHD, however, the former do not appear before Naqada IIIC1/KHD Va. Interestingly, in KHD IV and VII there are two oval palettes – the only known ones at KHD (SD79, Petrie 1921: pl. LIX 99H), there are also rectangular palettes with incised lines (two or three) around the edges, of SD78-81 (Petrie 1921: pl. LIX 96-97). The plain palette corresponds to SD80 (Petrie 1921: pl. LIX 94-95).

3) All stone objects (including vessels) over time

a. Including Egyptian alabaster

b. Excluding Egyptian alabaster

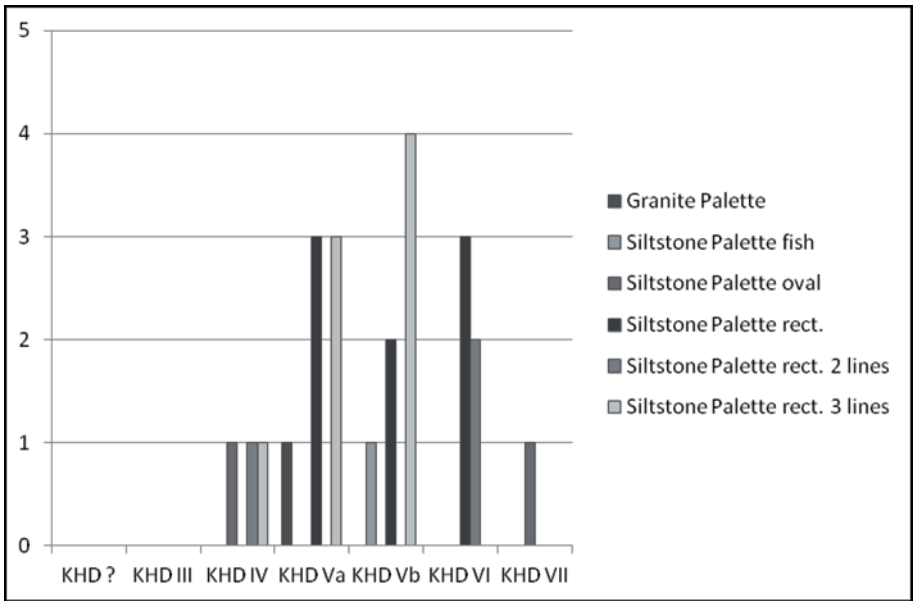

Figure 6. (2biii) Frequency of palettes grouped by time periods.

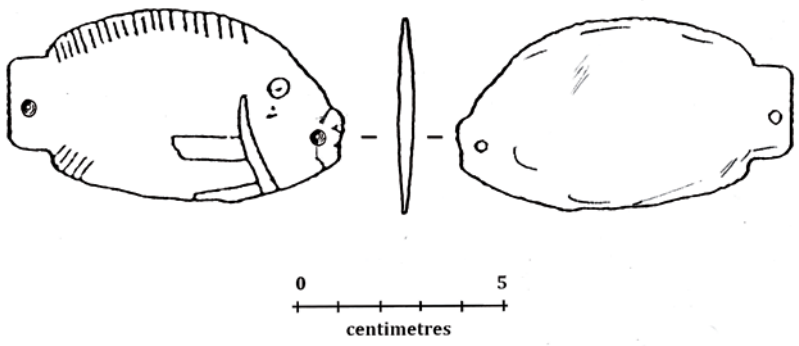

Figure 7. KHD3099 A siltstone fish palette from Grave 705 KHD Vb (drawn by Subhadra Das; courtesy of the MSA/UCL KHD mission).

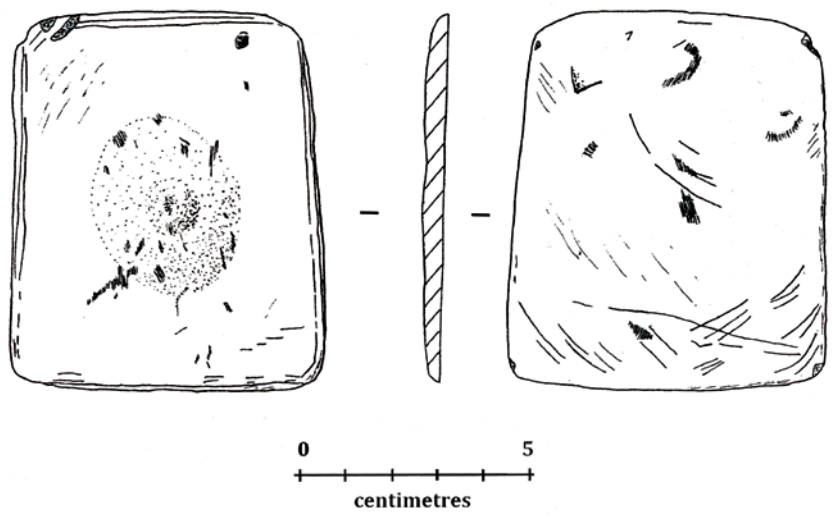

Figure 8. KHD3002 siltstone make-up palette with incised lines from Grave 1008 KHD IV (drawn by Aloisia De Trafford; courtesy of the MSA/UCL KHD mission).

It is also possible to look at stone objects, including vessels, grouped all together over time to consider whether in general there seems to be less or more access to certain material types. There might be different patterns clear for vessels, or for beads, for example. When all stone objects, regardless of type of object are grouped by period, the pattern already seen in the first group of analyses, for stone vessels, is clearly represented again. It is perhaps clearer to temporarily omit Egyptian alabaster objects in order to get a better idea of how the other stone types are represented by time, as seen in Figure 6.

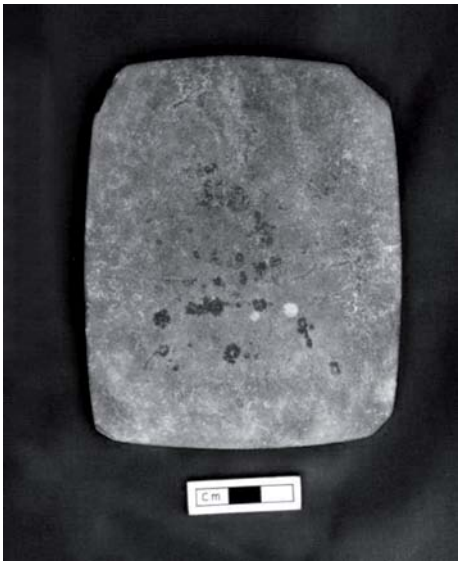

Figure 9. KHD3068 A siltstone palette from Grave 1037 KHD VI (photo by Ken Walton; courtesy of the MSA/UCL KHD mission).

It is interesting to consider KHD in comparison with TF, given that the stone vessels present in the cemetery at TF are predominantly made of travertine (not Egyptian alabaster), limestone and sandstone, whereas for KHD it is predominantly Egyptian alabaster, followed by siltstone (Pryc 2012: 297). Looking at other stone objects, for example the palettes (Figs. 7-9), some comparisons can be made with other sites in the north-eastern Delta. At MAO, for example, 37 palettes, or fragments thereof, were found in the cemetery, a cemetery which probably slightly predates the main occupation at KHD as well as being contemporary with it during MAO phases III and IV. The zoomorphic palettes from MAO are all assigned to MAO I burials, and these number five; by comparison there is only one fish palette at KHD (Fig. 7), which is in a burial assigned to KHD Vb (Naqada IIIC2), which is very similar to the Naqada III fish palette from the recent 'Dawn of Egyptian Art' Exhibition at the Metropolitan Museum of Art in New York (Cat. 9, New York, Rogers Fund 1935 35.71; Patch 2011: 25-6). All of the zoomorphic palettes at TF are dated from layers of Naqada IIIA, although the contexts are not secure, so this might put them partly alongside the MAO I (Naqada IIC-D) evidence and the date could be Naqada IID for TF (Buszek 2012: 315). Otherwise, there are two oval palettes at KHD, of which one is KHD IV (Naqada IIIB) and the other KHD VII, the latest phase of the site at Naqada IIID. The KHD incised line palettes (*e.g.* Fig. 8) are of the type most commonly represented at MAO in MAO III (Kroeper 1996: fig. 8). The rectangular palettes at MAO are predominantly MAO IV, when they occur without incised lines, with the exception of one example in MAO III (Kroeper 1996: fig. 8). The rectangular palettes correspond for MAO IV with Hendrickx's Naqada IIIC1-2, whereas the MAO III examples are Naqada IIIA1-IIIB. At KHD these are KHD Va-VI which corresponds with Naqada IIIC1-early IIID (Fig. 9). The single compartment palette from KHD dates to KHD VI, which is Naqada IIIC3-early IIID, and is similar in style to the example with four compartments from MAO IV (Kroeper 1996). Kroeper (1996: 81) interestingly notes that the highest number of palettes for MAO is during MAO III, a period at which she notes that palettes are, in more general terms, declining in numbers. It is also noteworthy that the MAO palettes, as with the KHD examples, are all found in graves, but not so at TF (Buszek 2012: 315-7). At TF, the rectangular, or 'geometric' palettes first date to Naqada IID contexts,

but mainly in Naqada III, and these include oval 'geometric' palettes as well (Buszek 2012: 318-21). In terms of the material type at TF, Buszek (2012: 315) comments on the use at TF of greywacke and also slate.

4) Copper objects
   a. Grouped for all periods
   b. Object types over time
   c. Object types within time phases

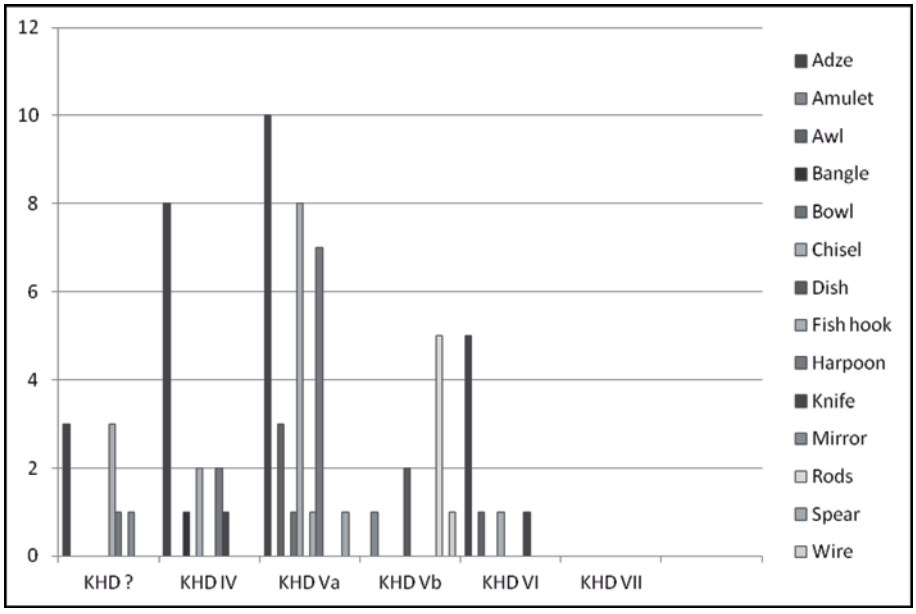

Figure 10. (4c) Frequency of copper objects shown divided into time phases at KHD.

The earliest types of copper objects represented at KHD, in phase IV, are adzes (the most common copper object overall), a bangle, chisels, harpoons and a knife (Figs. 10-15). It is during KHD Va, however, that we see the densest distribution of copper objects, dominated by working tools: adzes, chisels and harpoons. Although KHD Va produces the most copper objects in the archaeological record, there are tools and objects of other types present from KHD IV until VI, with adzes in all phases except for KHD Vb. Where are these objects coming from? Are they manufactured at the site, or are they just a selection of some of the types of object being imported from the Sinai/Southern Levant and en route to other sites in the Nile Valley, and possibly also the Delta, via KHD? There is not really an increase at a certain point, with copper objects present from KHD IV onwards until the end of VI. The peak of copper objects is also, as for stone vessels, in KHD Va. The chart (Fig. 10) illustrates that the most common items over

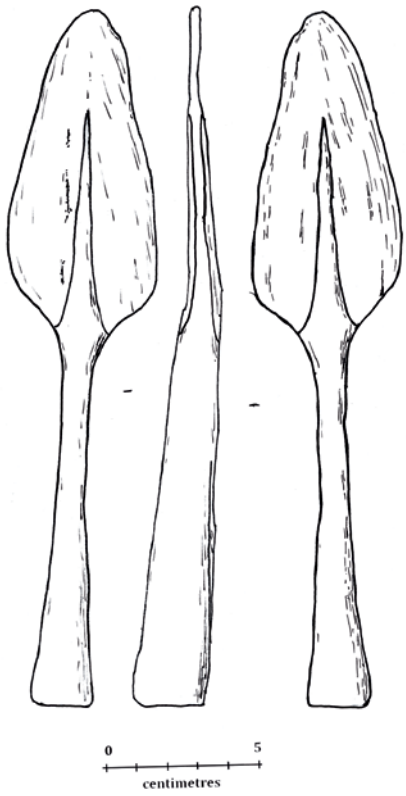

Figure 11. KHD3122 A copper alloy spearhead from Grave 371 KHD Va (drawn by Subhadra Das; courtesy of the MSA/UCL KHD mission).

time are adzes, chisels and harpoons; it could be that these tools related to the professions of the deceased, but there is no particular evidence that can take this argument further at present. However, what is an interesting phenomenon, and what also happens with flint knives at Naga ed-Deir, for example (Savage 2000: 64), is that there are a number of incidences of broken copper adzes being found, that have been quite neatly, lain together, for example graves 1008 and 1041 (only the occlusal end remaining, Fig. 13) at KHD (Rowland 2007: 1637).

Mostly, only single copper objects are found in burials, but there are some multiple occurrences of objects, with up to 20 objects in one single grave at KHD (Grave 371); there is no copper that can be securely dated prior to KHD IV. There is a notable difference in the overall quantities of copper in the burials at KHD and at other sites in the Delta and elsewhere. In order to get a better idea as to the relationship/contact between sites and also technology, it is useful to look at similarities and differences that can be detected between specific types of objects, for example the harpoons and also the adzes. For the adzes, one of the earliest examples from the site is an example from Grave 523 (KHD IV), which has a flared tip, suggesting that it has been worked, rather than the tip of the adze being shaped originally in a particular style (A. Schlickmann *pers. comm.*). Another similarly worked example is shown in Figure 13 from Grave 1041 (KHD Va). It is important to remember that these adzes would have been hafted. There are a wide range of copper adzes at KHD, 26 in total, and there are comparisons with sites in Egypt and elsewhere to be made. Comparisons can be made with Beth Yerah (with KHD3223 in Grave 371, KHD Va) and Tell el-Hesy (with KHD3142 in Grave 300, KHD Va) (c. 3700-3100 BCE), both from earlier and contemporary periods (Miron 1992: pl. 3.41 and 5.73). There are also comparisons to be drawn with adzes from the excavations of Saad at Helwan (KHD3225 in Grave 547, KHD IV) (Saad 1969: pl. 38) and, looking to Upper Egypt, Abydos Cemetery B

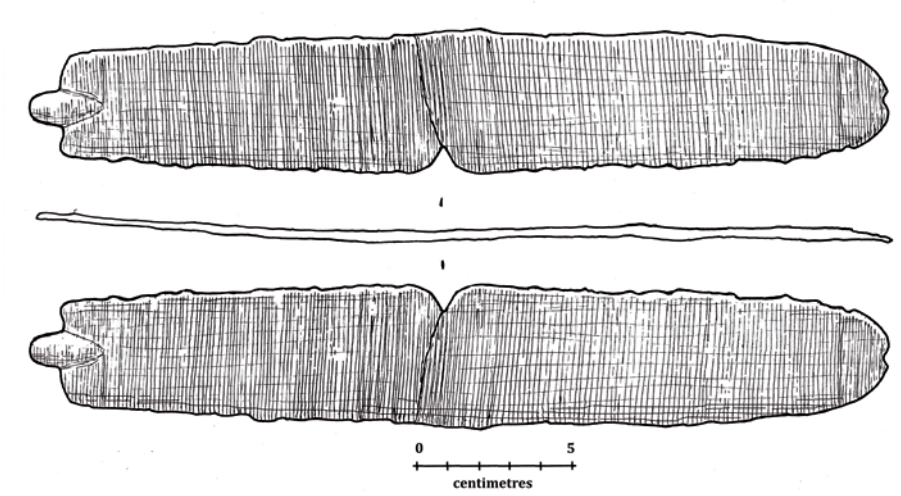

Figure 12. KHD3139 Copper alloy knife from Grave 834 KHD VI (drawn by Subhadra Das; courtesy of the MSA/UCL KHD mission).

Grave O31-4 (c. 3100 BCE; KHD3140 in Grave 834, KHD VI) and Grave M13 (c. 3100-2900 BCE; KHD3117 in Grave 823, KHD VI) (Petrie 1902: pl. L.M13; Spencer 1980: pl. 70.622). Interestingly, there are no copper adzes in association with the largest burials at KHD, although that in Grave 1041, already mentioned, is curiously located in an older part of the cemetery (maybe this location was chosen to reinforce a link with ancestors/early settlers at KHD) (Rowland 2007: 1641).

In terms of the harpoons, similarities can be detected with MAO, Grave 173 (126) within MAO III, which can be compared to KHD III-IV (Naqada IIIA1-C1; Kroeper & Wildung 2000: 119 Object 126/21, 126/22) and also at TF Grave 55 (Naqada IIIC2-D; Czarnowicz 2012: fig. 3:8-9). The MAO example has notches and two small barbs at the bottom of the shaft, as do the two examples shown in Figure 14 from KHD, although notably the shape of KHD3124 (Grave 828 KHD Va), dating to Naqada IIIC1 is more similar to the MAO example dated to phase MAO III (Naqada IIIa-c1), especially the

Figure 13. KHD3076 The occlusal end of a broken adze from Grave 1041 KHD Va (photo by Ken Walton; courtesy of the MSA/UCL KHD mission).

barb. The other KHD harpoon shown here (KHD3125 Grave 298 KHD IV) dates to Naqada IIIB. The examples in TF Grave 55, also have two barbs, but only single small barbs at the base of the shaft, although the barb at the head of TF No. 9 is similar to KHD3125 (Czarnowicz 2012: fig. 3:8-9).

What might the original context of the use of the tools – if used at KHD – have been? One possibility may have been for stone working, as discussed in relation to TF (Czarnowicz 2012: 347, 354; Jórdeczka & Mrozek-Wysocka 2012: 291), but also they could have been used for wood-working, given that the Delta would have had a very different environment during the time at which KHD was occu-pied. There are multiple

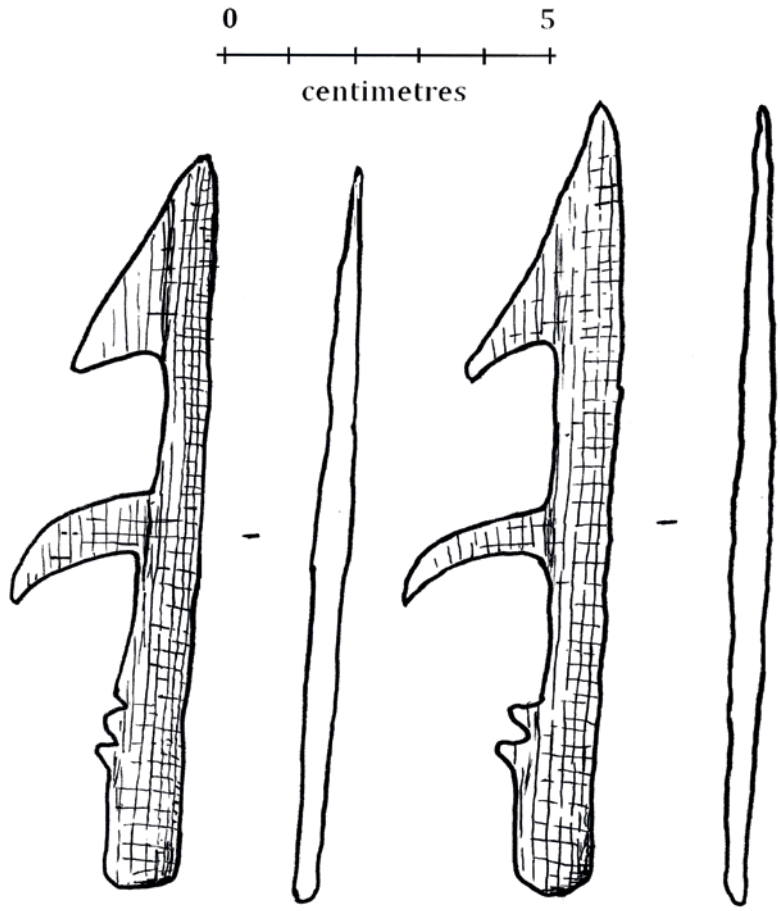

Figure 14. Copper alloy harpoons, KHD3124 from Grave 828 KHD Va and KHD3125 from Grave 298 KHD IV (drawn by Subhadra Das; courtesy of the MSA/UCL KHD mission).

Figure 15. KHD 3089-91 A copper adze, knife and a chisel under a bowl in Grave 142 KHD IV (courtesy of the MSA/UCL KHD mission).

occurrences of working tools within nine burials, such as Grave 142 (Fig. 15), and the 10 harpoons at KHD are distributed between just four burials. The analysis of the human skeletal remains excavated between 1995-2000 by T.L. TUCKER confirmed that the burials that she analysed had been individuals who had eaten a protein rich diet (HASSAN *et al.* 2003: 44-5). The number of potmarks showing fish might refer to Delta communities, and could also express the importance of fishing to meet dietary requirements, and/or for export (KROEPER 2000; 188, 208-9; TASSIE *et al.* 2008: 210-11). The copper rods in Grave 1027 were possibly used as tattooing needles, as discussed by TASSIE (2003).

DISCUSSION

What does this information and analysis bring, however, to the wider understanding of the communities involved in exchange in the late 4th and early 3rd millennium BC, and also to the individuals who lived in the vicinity of KHD from possibly as early as the middle of the 4th millennium BC until the end of the 1st/beginning of the 2nd dynasty? As far as can be ascertained from former analysis, the population reaches its greatest density between Naqada IIIB-IIID and from the burials found to date, it is therefore possibly a maximum of c. 700 people who are represented for this total time period. This will naturally only be a percentage of the overall individuals who originally lived and worked in the community (see a suggested higher estimate of 1300 in TASSIE *et al.* 2008: 202).

By comparison with other sites, KHD is certainly not under-represented in terms of the presence of stone objects, nor copper. In fact, in the arena of the Poznan meeting in June 2013, it was realised that KHD (albeit only currently represented by a cemetery) has a greater number of copper objects (primarily reflected through working tools) than other sites in the Delta and also a number in the Southern Levant (see GOLANI *this volume*).

As has been seen, there is currently very sparse evidence for the earliest periods during the use of the cemetery at KHD, but from the burials dating to KHD IV onwards (Naqada IIIB), it is possible to witness an increase in the range of types of materials present. From a socio-economic as well as ideological study of the site (ROWLAND 2003; 2005a; 2005b; 2007; *in press*), there appears to be increasing cohesion in terms of burial practices at KHD through time, as well as an increase in the range of burial goods and sizes. It is obvious that the individuals who were in graves 913 and 970 were buried in such large and well provisioned tombs for some particular reason. As has been discussed, it is possible that the evidence indicates individuals of high status who were either brought into the site to exploit its access to resources and/or control (to an extent) of exchange and communications coming and going between sites, or these individuals might have been indigenous to KHD and buried in this manner in order to emphasise their status to other communities away from KHD, or even possibly other groups within the community at KHD; certainly a burial mound would have been visible over grave 970 (HASSAN *et al.* 2003: 40). Were the wine jars and stone vessels really solely to meet the rising demands of the elite segment within the population? Or, is it more realistic to consider that they are a reflection of the community's involvement in wider world exchange networks, and that as these diverse objects/materials arrived at the site, a small proportion were retained for the growing elite, with the majority passing through to other sites in the Nile Valley, Delta, the wider Near East and Mediterranean?

What commodities were involved in these exchanges? One example is copper, either as ingots, ore or as finished objects possibly coming in from the Sinai and Southern Levant, and one of the objects with which it is being exchanged may be the stone objects coming up from the Nile Valley, Faiyum region and the Eastern Desert. Other more perishable commodities include agricultural produce from the fertile lands around the Wadi Tumilat, and also fish, and possibly wine from Delta vineyards (TASSIE *et al.* 2008: 205, 212). At KHD, there are very few ceramic imports to testify to contents coming through from the southern Levant and wider Near East, however, there may have been considerably more in the settlement, or it may also be the case that commodities within vessels are also passing through the site and therefore far less visible within the archaeological record. From the diversity in terms of materials and objects, not only at KHD, but in the wider Delta, Nile Valley and across to the Sinai and Near East, there is much evidence to support the existence of exchange networks, which may be variably organised or opportunistic, depending on their context in space and time, but they are probably not what would be regarded as trade in modern terms, as discussed by

Hendrickx & Bavay (2002: 75-6) who are strongly against the indiscriminate use of the term 'trade' to describe the patterns of exchange that characterised especially, they note, the late EB I.

On the subject of visibility of imports and exports, here in the case of Maadi, Holmes (1992: 310) comments on the uncertainly as to what was exported out of Lower Egypt. In respect of evidence relating to other types of interaction, Holmes (1992) comments on the lithic traditions and similarities with some objects from Mostagedda, and also the transmission of technology, which is problematic in terms of directionality; she suggests the possibility of technological knowledge coming from the Southern Levant, via Maadi and then down to the Nile Valley. Adams & Friedman (1992: 321) observed that some of the imports of ceramics from the Southern Levant to Hierakonpolis are similar to those found at Maadi. Furthermore, they note that in both the cemeteries and settlements dating from Naqada IIC-D, there are Palestinian ceramics, which they believed to suggest that there were more direct means of accessing the resources/finished goods from the east, maybe because Maadi had gone out of use (Adams & Friedman 1992: 335), whereas, other evidence points to the possibility of KHD being administered centrally – if not originally then later by Naqada IIIC-2. This is taking into consideration with regards the large tombs 913 and 970, including the presence of a *serekh* of Narmer on a vessel in the former (Tassie *et al.* 2008: 205). The individuals for whom these tombs were built may well have commanded some influence both at the site and possibly in/between other regions, but the presence of a *serekh* cannot be assumed to mean any direct contact between the individual and a royal house, even if the produce within the vessel might have come from royal agricultural land (Tassie *et al.* 2008: 206).

Turning again specifically to the community at KHD, and in particular to the presence of copper objects, it can at least be suggested that due to the high number of copper implements within the burials at KHD, it is not impossible that some of the stages of copper production, even if only the final casting of the object, might have been carried out at the site. However, given that there is currently no evidence from the settlement, it might also have been the case that copper objects were brought in from another site, and that the inhabitants of KHD were working with the tools, for example for woodworking, rather than manufacturing the tools; although if individuals were working continuously with copper tools, then presumably there would be some relatively local source of manufacture or at least of re-working these objects when they became worn down. Bearing in mind that the excavations at TF have yielded 38 copper objects from across domestic and mortuary contexts (Czarnowicz 2012: 354), the cemetery alone at KHD – albeit the largest of its kind excavated in the Delta thus far (and not completely so until now) – has yielded 70 copper objects. TF has, however, yielded at least one piece of copper that comes from the Central Kom and which may possibly be waste from copper casting and provide evidence for a copper workshop (Czarnowicz 2012: 353-5). Czarnowicz (2012: 354-55) notes that the copper objects from TF, with the exception of a single knife dating to TF 1, are from phases 3-6, which correspond with KHD IIb-VII, although notably 23 of the 38 copper objects can be dated to phases 4 and or 5, which

correspond with KHD III-Vb. Only seven of the copper objects from TF come from burials and, although it is not prudent to try to compare cemetery and settlement contexts directly, there is a predominance of fishing tools at TF from settlement contexts (three fishhooks and three harpoons and possibly more if the copper pins are also for working with fish nets), and two harpoons in a single grave, with four fishhooks and ten harpoons in the cemetery at KHD; at TF there are far fewer adzes/chisels than are found at KHD (Czarnowicz 2012: 354-5). As to these chisels and adzes at TF, there is evidence for a stone workshop at the site (Jórdeczka & Mrozek-Wysocka 2012; Czarnowicz 2012: 354) and it is also noted that the increase of copper and stone vessels (especially of hard stones) in Naqada II suggests that the use of copper tools allows for progress with regards working with hard stone vessels in particular. That there is copper within burials at KHD and also at TF and MAO, but not in Maadi, may also indicate, in line with (Jórdeczka & Mrozek-Wysocka 2012), that there was an increase in what seems to be the availability of copper and stone and that it was no longer so scarce; it may also relate more directly to changing attitudes towards burial and to increasing social diversity.

Golden (2002: 234-5), in his discussion of the origins of what he calls the 'trade' in metals, notes the rarity of copper in Upper Egyptian burials, and also considers in what form copper reached sites in the southern Egyptian Nile Valley. He supposes that ingots could have been transported and tools made locally, and also directs the reader to Hoffman's (1980: 207) comments concerning Maadi, as a community re-investing its surplus for the benefit of its involvement within networks of exchange, rather than conspicuously showing its wealth through the medium of burials, as Hoffman suggested their 'Upper Egyptian neighbors' did (Golden 2002: 234-5). Research that has taken place largely since Hoffman wrote, suggests that certain individuals within communities throughout Egypt, regardless of geographical location, were given more conspicuously wealthy burials than others, and furthermore that sites in the Delta display, on the one hand, evidence for working with materials such as stone, and possibly copper, but also increasing wealth over time being invested in the burials of at least a few, however archaeologists choose to interpret this. Golden (2002: 235) comments on the increasing demand for copper over time and also on the need to recycle, particularly when supply did not equal demand; for what has always be considered to be a primarily non-elite community at KHD, it remains surprising that so many copper objects would, therefore, have been deposited within burials.

Finally, to return to chronology, and copper production, it is possible to look at the example of the excavations at Tall Hujayrāt al-Ghuzlān one of the sites at which there is evidence for all steps within the chaîne opératoire of copper object production (less the actual mining of copper ore itself), and a site in use at the same time as Maadi (Klimscha 2009; Pfeiffer 2009: tab. 2). Radiocarbon measurements for contexts at Tall Hujarat al-Ghuzlan range in between 4340-3340 BC, whereas for Maadi the ^{14}C measurements range from 3960-3370 BC, with some measurements taken from plant

remains, including short-lived samples (Rizkana & Seeher 1989: 82, Klimscha 2009: 392, 398, tab. 1; Pfeiffer 2009). The dates for Maadi, however, mainly fall between c. 3900-3400 BC (Klimscha 2009: 392). Interestingly, the radiocarbon measurements for Serabit el-Khadim are suggested by Klimscha (2009: 390) as indicating that the site was in use between 4240-3960 BC and Tall Hujarat al-Ghuzlan is suggested as being founded probably between c. 4100-3900 BC with the settlement ceasing in c. 3700-3600 BC (Klimscha 2009: 391-2). In his conclusion, Klimscha (2009: 394-5) comments on the fact that the sites in the area of Ghassul-Beersheba variably go out of use between 4100-3950 BC and then a new series of settlements are founded in the Southern Levant, which then go out of use at c. 3600-3500 BC. This is very interesting, because Klimscha (2009: 395) goes on to suggest the revival of communications between the Southern Levant and Egypt by c. 3400-3300 BC which ties in with the time around which KHD might have been settled, although ongoing ceramic analysis and also further excavations will have to confirm or refute this.

Summary

As a result of this initial analysis, there remain a number of key questions for examination as part of ongoing research:

- Is there a general increase in the flow of copper through KHD from Naqada IIIC1 onwards, or does it reflect the increase in other kinds of production within the settlement – *e.g.* woodworking, stone-working?
- Did individuals (or a group?) not originally from KHD arrive in Naqada IIIC1 possibly to exert control over/benefit from/organise the flow of imported objects/materials?
- Did these individuals act for the centralised administration?

or,

- Does the increase in the size of these graves coupled with the high number of prestigious objects suggest a need for 'original' inhabitants of KHD to ostentatiously display the importance of the heads of their community to other local/non-local/competing groups?

Further consideration of these issues, in the context of a re-examination of the cemetery at KHD, its burials, architecture, grave goods and spatial organisation, within a now more defined chronological structure, will hopefully allow for a clearer understanding of these, as well as the many other points raised here.

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