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# Lithic development in the Kubbaniyan (Upper Egypt)

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## Introduction

Wadi Kubbaniya is one of the major wadis draining from the Eastern Sahara to the Nile Valley, and reaches the Nile some 25 km north of Aswan. In 1978 and 1981 - 1984, it was the focus of a major research programme by the Combined Prehistoric Expedition, which is jointly sponsored by Southern Methodist University, the Polish Academy of Sciences and the Geological Survey of Egypt. Twenty-six Palaeolithic sites in the wadi were studied as part of this programme. Most sites were occupied several times, some were occupied many times and they range in age from the Middle Palaeolithic (> 50,000 years ago) to *ca* 12,000 B.P. The sites and their various occupations are assigned to a wide variety of archaeological industries. This paper will be concerned only with some of the sites which are called Kubbaniyan.

The Kubbaniyan industry is closely related to the Halfan (Marks 1968; Close 1980a: 252 - 257) and is known to occur outside Wadi Kubbaniya (at Site E71K13 near Isna; Phillips 1973). It remains, however, best represented at and best known from Wadi Kubbaniya itself (Wendorf *et al.* 1980). Twelve Kubbaniyan sites have been investigated in the wadi, of which nine are included in this study (Tables 1 and 2); two are excluded because the artefact-samples are very limited (E-78-5 and E-78-8) and one (E-82-1) is a specialised quarry-site for the manufacture of grinding-stones.

## Kubbaniyan settlement and seasonality

The Kubbaniyan sites occur in three different micro-environmental settings in the wadi (Wendorf and Schild 1980) and are grouped accordingly in Tables 1 and 2. The first group, the dune sites, lie 3 - 4 km from the wadi mouth, on and in the Late Pleistocene dunefield, which was invading the wadi from the North during the period

of Kubbanian occupation. The three sites listed were all reoccupied many times, the occupations of Site E-78-3 being particularly intense, as is apparent from the sample-sizes (Table 1). The occupation-layers of E-78-4 (unpublished data from the 1981 - 1984 excavations are here included by kind permission of Dr. Hanna Więckowska) were less rich in artefacts, and those at E-81-1, while numerous, seem to represent only brief and relatively poor occupations. Since the three sites occur in the same dunefield, it has been possible to establish a relative stratigraphy for them. The units of study are listed in Tables 1 and 2 in the correct stratigraphical order, from E-78-3, Layers 1-10, the oldest, to E-78-4, Levels a-b, the youngest. In addition, Table 1 gives an estimated age (in radiocarbon years) for each unit, based on the long series of radiocarbon dates for the sites (Close 1980b; 1984). The entire series of units from the dune sites covers a period from *ca* 18,600 B.P. to *ca* 17,300 B.P., which is almost the whole duration of the Kubbanian industry. The dune sites are believed to have been seasonally (but not necessarily annually) occupied, perhaps at and immediately after the maximum flood of the Nile (late August or September if the Nilotic regimen was the same as that of today). The presence of winter birds in the sites suggests that occupation extended to, or was repeated in, the winter months. All of the sites have yielded very similar assemblages both of faunal remains (heavily dominated by Nile catfish) and of floral remains (principally of species still indigenous to the Nile Valley in modern times), and all seem to represent the same types of occupation and of subsistence-strategy.

The second group of sites are those from the sandy swales in the floodplain adjacent to the dunefield. The sites lie within a few hundred metres of the dunes and are, again, 3 - 4 km from the wadi mouth. Unfortunately, there are no clear stratigraphical relationships between these sites so their relative ages are unknown. The ages given in Table 1 are based on radiocarbon dates of  $17,850 \pm 200$  B.P. (SMU 592) for E-78-7, Trench 7, and  $16,660 \pm 370$  B.P. (SMU 1221) for E-83-2. (both on charcoal). The sites represent multiple occupations and, since they are in the floodplain, must have been occupied later in the year than the dune sites, after the level of the Nile had fallen considerably. The faunas are similar to those of the dune sites, with a predominance of catfish, but there were no floral remains nor any indirect indication of extensive plant-processing, such as grinding-stones. The data for E-78-7 are from the 1978 excavation (Wendorf and Close 1980); the unpublished data from Sites E-83-1, E-83-2 and E-83-3 are here included by kind permission of Ms. Brenda Scoggins.

The third group of sites are those in the floodplain near the mouth of the wadi, here represented by Sites E-78-5 and E-78-9. Permission to use the unpublished data from both sites was kindly given by Dr. Michał Kobusiewicz. Again, there is no direct stratigraphical relationship between the two sites and the estimated age in Table 1 is based on a radiocarbon date of  $18,230$  B.P.  $\pm 200$  years (SMU 1226) on *Unio* shell from E-78-9. The wadi mouth sites could have been occupied only during the low-water phase of the Nile, and the faunal assemblages differ from those of

the sites farther up the wadi in that fish are much less important; there is no evidence for the processing of plant-foods. Again, both sites result from many reoccupations of a single, favoured spot.

### Trends in raw material usage

In Table 1 are given the percentage-frequencies of the raw material groups in the debitage from the Kubbanian units under study. The chert group is composed of fine-grained, homogeneous rocks, including chert, agate, jasper, chalcedony and petrified wood. These are all good quality raw materials and are locally available in the form of rather small pebbles. The sandstone group includes a variety of coarse-grained rocks — all locally available — mostly sandstones with rare occurrences of granite and basalt. Egyptian flint is the finest raw material in quality and is the only one which was not locally available. During the Kubbanian period, when hyper-aridity closed the Eastern Sahara to human use, the nearest accessible sources of flint were in the area of Idfu and Isna, 100 - 150 km down the Nile Valley, where it occurs as large nodules in the wadis. Quartz is a locally available, but low quality, raw material, which was never much favoured by the makers of the Kubbanian industry; it is included here for the sake of completeness.

If one considers first only the data from the dune sites, which are in chronological order, three consistent, diachronic trends are immediately apparent and statistically significant ( $p=0.05$ ): the frequency of the chert group decreases through time ( $r=-0.91$ , for the correlation between time and the frequency of cherts); the frequency of the sandstone group increases through time ( $r=0.87$ ); the frequency of flint also increases through time ( $r=0.90$ ). Since the frequencies are expressed as percentages, which are mutually dependent, when one increases, another must decrease. What seems to be happening in this case is that the sandstones and flint both become more important through time, leading to a consequent decrease in the importance of the chert group.

There is no evidence of the Levallois technique in the earliest unit (E-78-3, Layers 1 - 10). Thereafter it is always present, although remaining rare. Its frequency does not vary with time.

The swale sites and the wadi mouth sites are all very rich in cherts, very poor in sandstones and poor, or very poor, in flint (Table 1). Such a combination in the dune sites would be an indication of placement in the early part of the Kubbanian sequence. The wadi mouth sites may be quite early, although the date for E-78-9 indicates that that site, at least, is not very early. Of the swale sites, however, we know on the basis of the radiocarbon dates that E-78-7 is quite late and that E-83-2 is very late; there are typological reasons (the presence of scaled pieces — see below) why E-83-1 and E-83-3 may be rather late in the Kubbanian. It would appear, therefore, that whatever were the factors operating to bring about consistent, dia-

**Table 1**  
**Percentage frequencies of principal raw material in the debitage of Kubbaniyan sites**

|                         | Age<br>(B.P.) | Chert<br>Group | Sandstone<br>Group | Egyptian<br>Flint | Quartz | Sample<br>Size | Levallois<br>Technique |
|-------------------------|---------------|----------------|--------------------|-------------------|--------|----------------|------------------------|
| <b>Dune Sites</b>       |               |                |                    |                   |        |                |                        |
| E-78-4, Levels a-b      | 17,500        | 71.9           | 6.5                | 19.1              | 2.5    | 5,349          | +                      |
| E-78-4, Levels b/c-h/i  | 17,700        | 69.5           | 5.6                | 21.7              | 5.2    | 7,420          | +                      |
| E-81-1                  | 17,800        | 68.8           | 7.7                | 18.4              | 5.1    | 5,813          | +                      |
| E-78-5, Layers 23-24    | 18,100        | 78.5           | 4.6                | 16.1              | 0.9    | 1,449          | +                      |
| E-78-5, Layer 22/25     | 18,200        | 83.4           | 3.1                | 13.5              | 0.2    | 5,190          | +                      |
| E-78-5, Layer 20-22     | 18,400        | 88.3           | 5.3                | 8.4               | +      | 34,086         | +                      |
| E-78-5, Layer 18 (s.1.) | 18,500        | 89.9           | 2.5                | 7.4               | 0.2    | 13,607         | +                      |
| E-78-5, Layers 1-10     | 18,600        | 96.2           | 0.5                | 2.8               | 0.7    | 5,319          | -                      |
| <b>Swale Sites</b>      |               |                |                    |                   |        |                |                        |
| E-78-7, Trenches 7 & 9  | 17,900        | 98.0           | 0.1                | 1.3               | 0.5    | 11,420         | +                      |
| E-83-1                  | ?             | 90.1           | 2.1                | 6.1               | 1.1    | 7,304          | -                      |
| E-83-2                  | 16,700        | 94.1           | 0.7                | 4.5               | 0.8    | 8,982          | -                      |
| E-83-5                  | ?             | 93.7           | 0.6                | 4.9               | 0.8    | 5,901          | +                      |
| <b>Wadi Mouth Sites</b> |               |                |                    |                   |        |                |                        |
| E-78-5                  | ?             | 91.1           | 0.4                | 8.0               | 0.5    | 16,704         | -                      |
| E-78-9                  | 18,200        | 98.0           | 0.2                | 1.7               | 0.1    | 22,987         | -                      |

chronic change in the dune sites, either they did not affect sites elsewhere in the wadi or else they operated differently there.

The decrease in chert in the dune sequence is explicable as a consequence of the increase in other raw materials. The increase in the sandstone group seems to be related to the shaping and reshaping of grinding-stones. There are many large grinding-stones in the dune sites, made for the most part on blocks of sandstone quarried from the wadis edges. The sandstone debitage is of same type of rock, and the traces of grinding-surfaces present on the dorsal faces of numbers of the larger flakes indicate that they were struck from actual grinding-stones. The dune sites also yielded numerous remains of plants, which could well have been ground on the grinding-stones. No grinding-stones have been found in the swale sites or the wadi mouth sites (nor have any plant-remains, although this may reflect the relatively unfavourable conditions for preservation in the silts). The paucity of sandstone debitage in these sites presumably results from the absence of grinding equipment. Conversely, the increase in sandstone in the dune sequence may well indicate the increasing importance of grinding-activity and, thus, of plant-foods.

The frequency of flint indicates the geographical orientation of the Kubbaniyan. The earliest unit (E-78-3, Layers 1 - 10) is similar in typology and technology to the Halfan of Nubia, but the increase in flint thereafter betrays a northward orientation that became more and more important through time. The single Kubbaniyan site known at Isna (Phillips 1973) is indistinguishable from the middle phase at Wadi Kubbaniya (see below), except that almost all the artefacts are flint. This, and the sheer quantity of flint at Kubbaniya, would suggest not merely contact or trade between the two areas, but actual movement of people. The low frequencies of flint at the swale sites, even though one of them, at least, is known to be late in the Kubbaniyan sequence, may be a reflection of seasonal differences. If the flint were brought into Wadi Kubbaniya when people moved onto the dune sites at about the time of the maximum flood, it can be expected to have become much rarer by the time the swale sites were occupied, several months later.

### Typological development

Table 2 gives the percentage frequencies of some of the major tool-groups in the Kubbaniyan, and the proportion of tools made on flint. Backed bladelets are the essence of Kubbaniyan typology. They are usually unpointed, are often made with Ouchtata retouch rather than true backing and are frequently only partially backed. They are always important, sometimes overwhelmingly so (E-78-5), and would presumably, therefore, represent common, everyday activities. In this sense, they form a background against which the fluctuations of other tool-groups may be measured, but without any implication that backed bladelets were ever "unimportant" in the Kubbaniyan (*cf.* Mazel and Parkington 1981: 23).

**Table 2**  
**Percentage frequencies of backed pieces, burins, scaled pieces and flint among retouched tools at Kubbanian sites**

|                         | Backed Pieces | Burins | Scaled Pieces | Egyptian Flint | Sample Size |
|-------------------------|---------------|--------|---------------|----------------|-------------|
| <b>Dune Sites</b>       |               |        |               |                |             |
| E-78-4, Levels a-b      | 36.7          | 2.5    | 47.0          | 19.5           | 215         |
| E-78-4, Levels b/c-h/1  | 58.5          | 1.6    | 22.5          | 23.2           | 314         |
| E-81-1                  | 35.8          | 2.8    | 51.5          | 29.0           | 378         |
| E-78-5, Layers 23-24    | 85.3          | 2.9    | -             | 23.5           | 68          |
| E-78-5, Layer 22/23     | 91.2          | -      | -             | 23.9           | 115         |
| E-78-5, Layer 20-22     | 85.9          | 2.3    | -             | 25.7           | 1,000       |
| E-78-5, Layer 18 (s.l.) | 83.9          | 1.5    | -             | 25.9           | 409         |
| E-78-5, Layers 1-10     | 72.2          | -      | -             | 0.9            | 108         |
| <b>Swale Sites</b>      |               |        |               |                |             |
| E-78-7, Trenches 7 & 9  | 60.3          | 0.4    | 0.9           | 4.8            | 458         |
| E-83-1                  | 66.7          | 1.1    | 1.1           | 17.8           | 90          |
| E-83-2                  | 32.9          | -      | -             | 17.1           | 152         |
| E-83-5                  | 38.9          | 0.9    | 1.9           | 9.5            | 108         |
| <b>Wadi Mouth Sites</b> |               |        |               |                |             |
| E-78-5                  | 96.2          | 2.0    | -             | 15.3           | 345         |
| E-78-9                  | 91.9          | 6.1    | -             | 10.8           | 148         |

On the basis of the stratified sequence in the dune sites, the Kubbanian may be informally divided into three developmental phases. The first of these includes only the earliest unit E-78-3, Layers 1-10 (Tables 1 and 2). Here, there is almost no use of flint for the manufacture of tools (neither was flint very common in the debitage), there are no scaled pieces, there are no burins and, significantly, there is no evidence of the Levallois technique.

The second phase comprises the remaining layers of E-78-3. Consistently, about a quarter of all tools are made on flint regardless of the frequency of that raw material in the debitage, there are still no scaled pieces, but the Levallois technique is present as are also burins. Layer 22/23 of E-78-3 did not yield any actual burins, but there were several flint, burin resharpening spalls.

The Kubbanian burins, which appear in this second phase, are distinctive and very characteristic. Typically, they are multiple burins on which each burin-edge has been resharpened several times. They are almost invariably made on flint and, where the type of blank can be identified, specifically on large, Levallois flakes of flint. There is no evidence for the manufacture of these flakes at Wadi Kubbania itself: there are very few Levallois cores, there are no flint cores large enough to have yielded flakes of such a size and there is very little preparatory flint debitage. The large, flint, Levallois flakes seem to have been brought into the wadi already made, although, if one may judge from the number of initial burin spalls, probably not already in the form of burins. This combination of complex, heavily used burins and the Levallois technique is a characteristic of the Kubbanian which appears at the beginning of the second phase. Thereafter, both burins and the Levallois technique are consistently present, although not common, throughout the Kubbanian sequence.

The third phase includes E-81-1 and E-78-4. The proportion of tools made on flint remains relatively unchanged, burins and the Levallois technique continue present, but there are suddenly very large numbers of scaled pieces (none was found at E-78-3). The proportion of scaled pieces fluctuates, but not with time. The sudden importance of this tool-group should suggest the beginning of some equally important, new activity in Kubbanian life. Unfortunately, there is no corresponding change in the faunal or floral collections, and no microscopic traces of use-wear have been detected on the scaled pieces themselves (H. Kenny, pers. comm.). This new activity therefore remains hypothetical and elusive.

When we move away from the dune area into the swale and wadi mouth sites, again, the stratigraphically established dune sequence no longer seems valid. Among the swale sites, E-83-2, lacking burins, the Levallois technique and scaled pieces, should be early but is dated late, while the other three sites have the "late" features of burins and scaled pieces (although scaled pieces are much rarer here than they are in the dunes), but the "early" features of low frequencies of flint in both tools and debitage, no use of the Levallois technique at E-83-1 and a rather early radiocarbon date for E-78-7. It is also worthy of note that the swale sites are all typolo-

gically much more varied than the dune sites: they all include notable quantities of truncations, of notches and denticulates and of pieces with continuous retouch.

At the wadi mouth sites, on the other hand, not many of the tools are made on flint, burins are present, scaled pieces are lacking and almost all of the retouched tools are backed bladelets.

### Conclusions

The stratified sequence of Kubbanian sites in the Late Pleistocene dunefield of Wadi Kubbania enables us to trace a diachronically consistent development of the Kubbanian industry in this particular microniche. The principal features of this development are greater typological complexity through time, more emphasis on grinding equipment – presumably of plant-foods – and an increasingly northward geographical orientation, as reflected in the importance of imported Egyptian flint.

The dunefield pattern of development is, at best, extremely hard to see in Kubbanian sites in other areas of the wadi. It is possible that the two sites at the wadi mouth may both fall within a rather early part of the Kubbanian, probably corresponding to the later layers of E-78-3, or the second phase as defined above. The swale sites, however, seem each to combine features of both the earlier and later parts of the dunefield sequence. It is suggested that this results from micro-environmental differences between the swale area and the dune area. The sites are only a few hundred metres apart, but it is more important that they were occupied during different stages of the annual Nilotic cycle, the dune sites during high flood and perhaps in winter, and the swale sites when the flood had fallen significantly from its maximum. These differences are also reflected in the lack of grinding equipment at the swale sites, and in the evident need there for a more varied range of retouched stone tools. The differences in exploitation between these two adjacent micro-environmental niches seem to have been great enough to mask any similarities in development between sites in the two areas. The diachronically consistent pattern of development in the dunefield is apparent, then, only because there is little or no micro-environmental variation between the sites there. The data from the swale area are, unfortunately, too limited to allow detection of a corresponding sequence for that microniche.

### References

- Close, A. E. 1980a. Stylistic analysis of the Wadi Kubbania assemblages. In: F. Wendorf and R. Schild (assembl.) and A. E. Close (ed.), *Loaves and Fishes: the Prehistory of Wadi Kubbania*: 245 - 257. Dallas: Department of Anthropology, Southern Methodist University.

