

Late Paleolithic Warfare in Nubia: The Evidence and Causes

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Abstract. *The earliest known evidence for organized, sustained warfare comes from a Late Paleolithic graveyard located about three km. north of the old town of Wadi Halfa in northern Sudan. Now deeply buried under Lake Nasser, the graveyard contained 58 burials, including men, women and children, of whom at least half died violently. A single radiocarbon measurement on a human bone places the graveyard at around 13,740 bp (uncalibrated). This paper explores the causes of this earliest known warfare, and concludes that there were two major factors involved: the unique Late Pleistocene environment of the Nile Valley and the adjacent desert, and the probable emergence of social groups larger than residential units that were competing for limited resources.*

Introduction

Conflict and fighting over food, mates or territory is perhaps normal human behavior. At least it occurs among many animals, and it should be expected among humans. Ethnographic studies confirm this, they record that conflict between social groups is found among almost all but a very few modern societies, and it occurs regardless of size of the group or level of organization (Otterbein 1989; Ross 1983). Those rare societies where conflict or warfare does not occur are usually isolated and lack nearby neighbors, and have very small populations (Keeley 1996: 25-39). It is also evident that there is a continuum in the degree and intensity of conflict with, at one extreme, the organized, repetitive conflict designed to eliminate or exterminate a competing group, and at the other end, those conflicts where a man or small group attacks a person or family for revenge or theft. To many, the latter is conflict, but not warfare, and might be called feuding, raiding or murder.

In the archaeological record, the evidence for conflict is extremely rare in pre-Mesolithic and pre-Neolithic contexts, al-

though violent death is indicated for several Upper Paleolithic burials in Western Europe, dated between 35,000 and 24,000 years ago. Some of these were individual skeletons with points embedded in the bones, while others were multiple graves suggesting a mass killing or evidence of epidemics (Keeley 1996: 37). The paucity of such finds have led some archaeologists to suggest that the first true warfare, defined as armed conflict between societies, began around 10,000 years ago, and was the result of competition for the limited land suitable for cultivation. According to this view, the first warfare occurred after the beginning of agriculture and settled villages were established (Kelly 2000: 1).

There is, however, persuasive evidence that vicious, prolonged and organized warfare was present much earlier in the Nile Valley, by around 15,000-15,500 years ago, and possibly as early as 22-24,000 years ago (based on calibrated radiocarbon age determinations). The evidence comes from two Late Paleolithic sites, one at Jebel Sahaba near Wadi Halfa in northern Sudan (Wendorf 1968a), the other at Wadi Kubbania near Aswan in southern Egypt (Wendorf et al. 1986). This Final Pleistocene warfare along

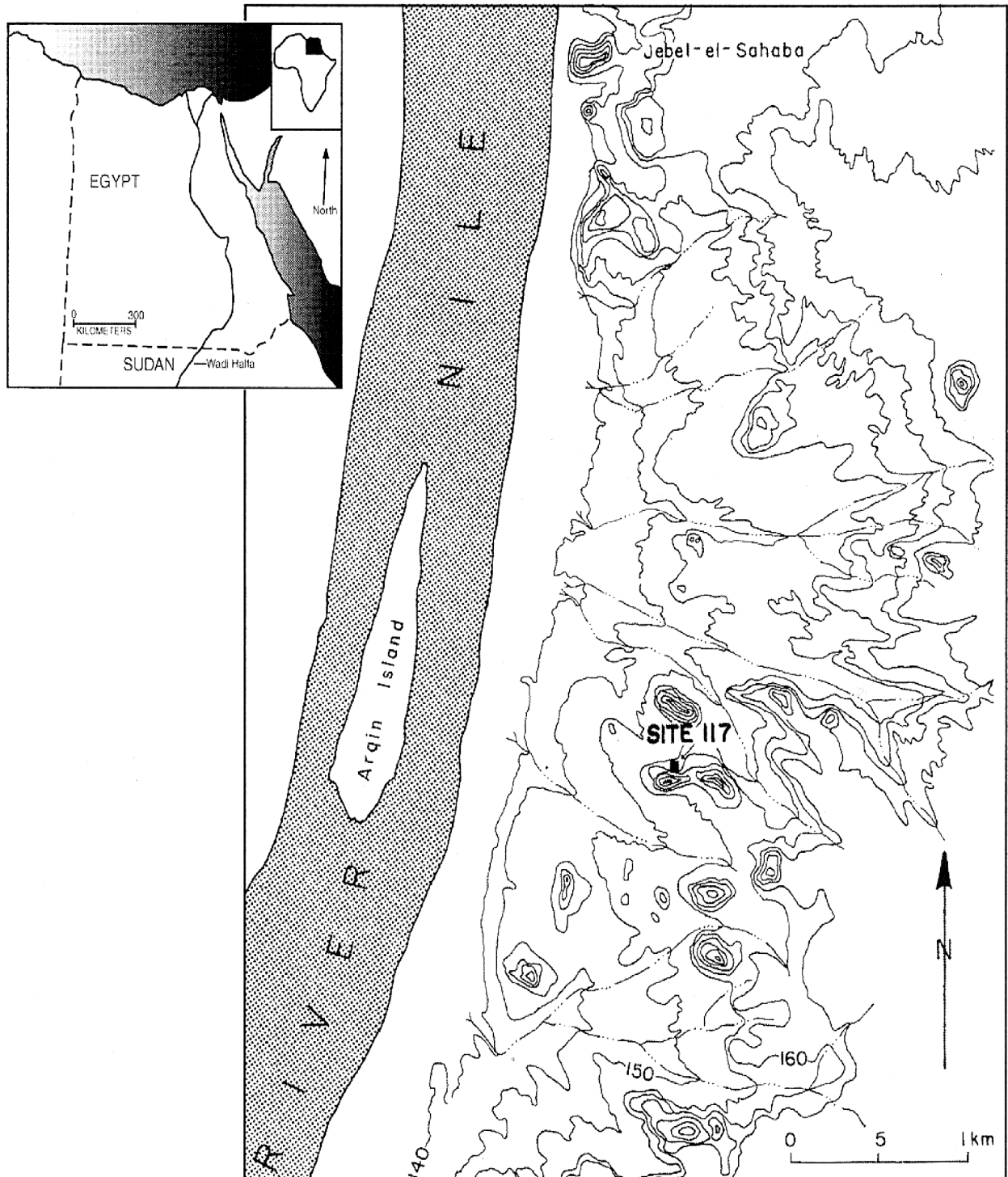


Fig. 1. Map of Egypt and Sudan showing locations of Site 117, a Late Paleolithic graveyard near Jebel Sahaba, Sudan (modified from Wendorf 1968a, p. 955).

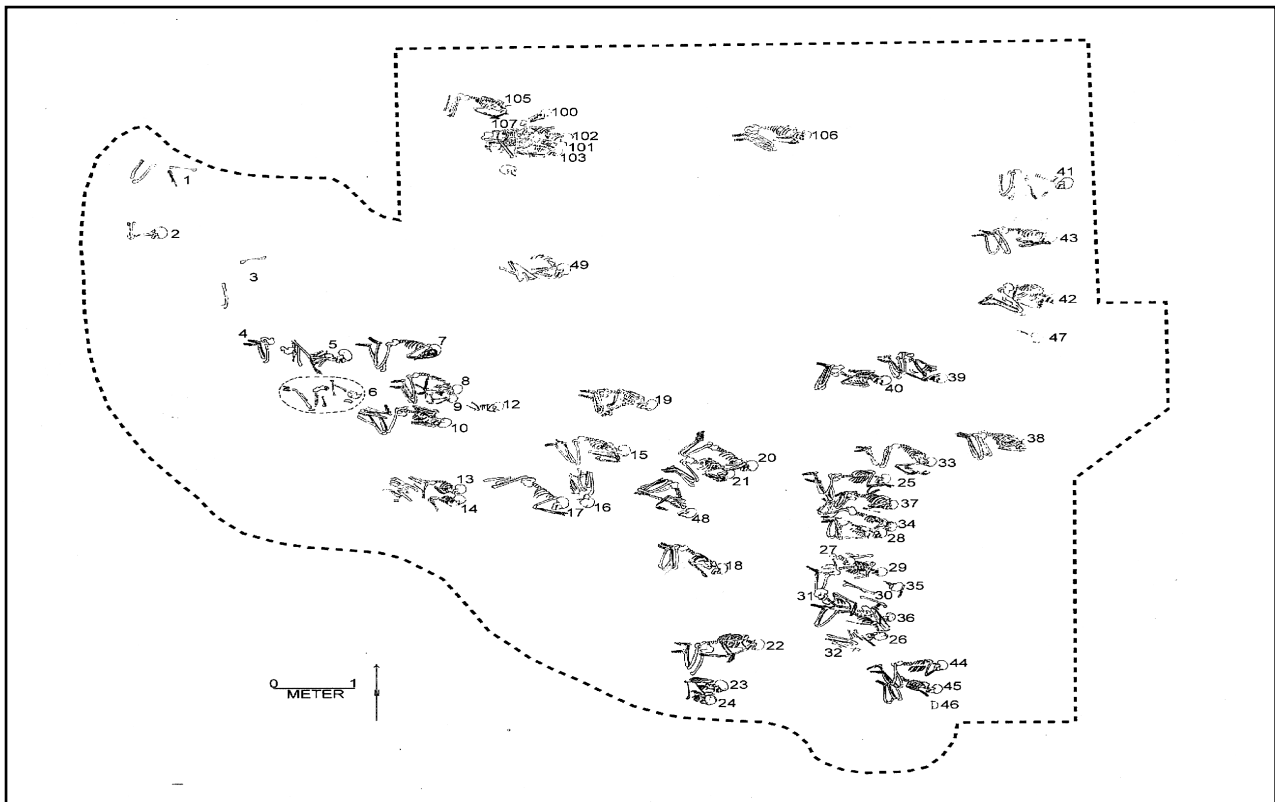


Fig. 2. Map of Jebel Sahaba graveyard showing locations and positions of excavated skeletons (modified from Wendorf 1968a, p. 956).

the Nile had nothing to do with settled villages or agriculture, but the factors that caused this warfare have not been well understood. When these two sites were first studied and published, our knowledge of both the archaeology and paleoenvironment of this area was at an early stage. This is no longer so, and there is now strong evidence to suggest that the combination of environmental and social phenomena coincided to become the major elements involved in the emergence of warfare during the Final Pleistocene in the Nile Valley.

The Jebel Sahaba Graveyard

The Jebel Sahaba graveyard is perhaps the best evidence that warfare existed along the Nile during the Final Pleistocene. The grave-

yard was located in northern Sudan, about 3 km north of the now submerged town of Wadi Halfa, and about a km east of the Nile (Figs.1 and 2). Here, there is a small valley, open on the west, but bound on the north by a prominent hill known as Jebel Sahaba, and enclosed on the east and south by a series of smaller inselbergs. The graveyard, identified as Site 117, was located in and on the almost flat pediment at the foot of one of those small jebels.

When first seen, a few scraps of human bone and numerous thin sandstone slabs were visible on the surface. The graveyard was first noted in 1962, and a small test excavation at that time yielded the partial skeletons of three individuals, two adults and a small child (Burials C-1, C-2, and C-3). No further work was done until 1965, when most of the



Figure 3. View of excavations at Site 117, a late Paleolithic graveyard near Jebel Sahaba. Two group burials being cleared.



Figure 4. View of excavations at Site 117, a Late Paleolithic graveyard near Jebel Sahaba.

rest of the graveyard was cleared and 48 complete and partial skeletons were recovered (Figs. 3 and 4). The last study at the site was in 1966, when eight more burials were excavated, just before the rising water of Lake Nasser covered the area. The individual burials, the skeletal material, and the associated artifacts were described in detail in the published reports on the graveyard (Anderson 1968; Wendorf 1968a).

In their general morphology, the Jebel Sahaba skeletons are fully modern *Homo sapiens*. They closely resemble those of the so-called Cro-Magnon type in Europe and the Mechta variety from the Maghreb in northwest Africa (Figs. 5 and 6). All of these groups share robust skeletal frames, long crania, short faces with broad zygomatic arches, well developed supraorbital ridges, and low rectangular orbits (Fig. 7). The Sahaba mandibles, however, are distinctive in their large

size and their pronounced gonial eversion (Figs. 8 and 9), particularly in the males (Anderson 1968). Recent comparison of genetic landmarks on the dentition of the Sahaba material indicates that while they are superficially similar, they are very different from the Mechtoids of northwest Africa, and have a close resemblance to modern African Sub-Saharan populations (Irish and Turner 1990).

There is a complication concerning the number of burials excavated at Jebel Sahaba. One of the burials (No. 107), an old female, was complete except for the skull, but nearby was a skull without a body (No. 104). It is highly likely that the two go together, and they are combined as one burial in this discussion, resulting in a total of 58. The Sahaba burials include 11 infants and children, and 47 adults, of whom 20 are females, 20 are males, and 7 whose sex could not be deter-

mined. Eight are young adults (4 female, 3 male, and 1 unknown), 19 are "middle adults" (10 female, 8 male, 1 unknown), and eight are old adults (3 female, 5 male). The age of 12 of the adults is unknown (all fragmentary skeletons). The distribution by age and sex in this skeletal assemblage probably does not mirror the population from which it was drawn, because the age distribution seems skewed, with too few children, adolescents and young adults.

Located above the highest flood levels of the Late Pleistocene Nile, there was no strong stratigraphic evidence to indicate the age of the graveyard. There is, however, a single radiocarbon age determination of 13,740 bp + 600 years (Pta-116) on collagen extracted from Burial 43. The calibrated age would be between 15,000-15,500 BP. Another indication of a Final Pleistocene age for the burials



Figure 5. Front view of male skull from Site 117 near Jebel Sahaba.



Figure 6. View of right side of male skull from Site 117 near Jebel Sahaba.



Fig. 7. Two mandibles from Site 117 near Jebel Sahaba. Left, female; right, male. Note pronounced gonial eversion on male.



Figure 8. Two skulls from Jebel Sahaba graveyard (right, male; center, female) with recent Nubian skull (left).



Fig. 9. Site 117, Jebel Sahaba, Burial 17, adult male. Note pronounced mid-facial prognathism.

is the associated artifacts. These are closely similar to those recovered from sites assigned to an entity named Qadan, and known from many localities in the vicinity of the Second Cataract (Shiner 1968), and northward from there to Wadi Kubbania (Banks 1980). The Qadan is not well dated, but there are several associated radiocarbon dates ranging from 16,500 to 14,000 cal. BP, with most dates (and the stratigraphic evidence) suggesting that many of the Qadan occupations were near the more recent end of that range (Wendorf and Schild 1989: 814-816).

One of the most interesting features of the Sahaba graveyard is the evidence that many of the burials are individuals who died violently (Table 1). There were 116 flaked stone artifacts in direct association with 24 of the



Figure 10. Burials 20 (on left) and 21 at Jebel Sahaba graveyard. Points of pencils mark positions of associated artifacts.

Group	Total in Group	No. with Artifacts	% of Sex-Age Group
Children	11	4	36.4
Female, adult	20	9	45.0
Male, adult	20	10	50.0
Adult, sex unknown	7	1	14.3
Total	58	24	41.4

Table 1. Jebel Sahaba Graveyard: Distribution of Artifacts by Age and Sex Groups (from Wendorf 1968: 993)

burials and in probable association with two others (Figs 10 and 11). The associated artifacts also include six stone chips that were found embedded in the bones of five of the skeletons. In addition, 73 similar lithic artifacts were recovered from the fill around the skeletons. Many of these probably had been with the skeletons, but were not found until the screening of the back dirt. Although their direct association could not be confirmed, it is significant that there is no evidence of a nearby settlement from which these artifacts

could have been derived.

A variety of tool types are represented among the artifacts recovered with the skeletons. They include burins, notched pieces, truncated pieces, backed pieces, pieces with continuous retouch, scrapers, points, cores, and unidentified retouched fragments. Some of these may not have been weapons, as for example, the scrapers and cores. Also, some of the burins may be fortuitous. One "burin" was found embedded in the acetabulum and was definitely a weapon point. It might have



Figure 11. Jebel Sahaba graveyard. Knife points to stone artifact between lumbar vertebra.

Burial No	Est. Age	Associated Artifacts	Other Trauma
2	11 years	-----	-----
9	3-5 years	-----	-----
12	7 years	-----	-----
13	12 years	Two, one at base of skull	
14	7 years	Three, one at base of skull- one at back of mouth, one inside skull	cut marks on left femur
24	10 years	one, with cervical vertebra	
27	infant	-----	-----
47	6 years	One inside skull	-----
C-2	6 years	-----	-----
100	7 years	-----	-----
101	5 years	-----	-----

Table 2. Jebel Sahaba Graveyard: Infants and Children

been classified as a "truncated piece," since the burin spall may have been accidental. Most of the remaining artifacts, however, must be regarded as weapons, in spite of the variety of tool "classes" represented. Obviously, the system of descriptive classification employed has very little reality in terms of probable use.

None of these were "grave goods" in the sense of materials left with the deceased for use in after life, but were parts of projectiles and other weapons that, at least in most instances, were directly responsible for the death of the individual. Most (81 percent) of the artifacts were made on chert, with petrified wood and quartz distant second and third among the preferred raw materials. Almost half of the associated artifacts were unretouched flakes and chips, some of them naturally pointed, but most were only small pieces with sharp edges. In a normal assemblage all of these flakes and chips would be classified as debitage or debris, and none would be con-

sidered tools. Yet many of these pieces were recovered in positions where their use as parts of weapons is irrefutable. They were found embedded in several bones, inside skulls, and in many positions where any other explanation seems unreasonable.

Apparently, violence was a common event in Nubia at this time, or at least among this group. There appears to be no significant distinction between males, females and children (Table 1). There were eleven children in the group (infant to 12 years age; Table 2). Four of the children (36.4 percent) had artifacts directly associated, and of these three had pieces embedded between the skull and the cervical vertebra, "assassination style" (Burials 13, 14 and 24). The fourth (Burial 47) had a flake inside the skullcap. Two of the assassinated children were buried together, and both had additional associated pieces, including Burial 14, which had a piece at the back of the mouth, and a chip inside the skull. The same child also had cut

marks on the proximal end of the left femur (were the cut marks from sexual mutilation?). The frequency of violent death among the children was probably even higher, because among the seven remaining burials without associated artifacts, three (Burials 2, 27, and C-2) were poorly preserved clusters of bone scraps. If these three were omitted from the total, the frequency of violent death among children would rise to 50.0 percent.

Among the adult burials, several skeletons display clear evidence of vicious fighting. An example is a group of four individuals buried together (Burials 26, 27, 29, and 31), two old males (Fig. 12), an adult female, and an infant. They had a total of 30 associated lithic pieces, five with the female, and 8 and 17 with the two males. Only the



Fig. 12. Burial 29 at Jebel Sahaba graveyard placed on top of a group burial of from 4 to 8 individuals.

infant had no associated artifacts. The full intensity of the fighting is evident from the position data for the 17 artifacts associated with Burial 31: a) retouched microlithic point inside right chest cavity, adjacent to vertebra; b) retouched microlithic flake inside left orbit; c) unretouched microlithic flake in joint of right scapula and humerus; d) J-shaped geometric resting on left ilium; e) backed microlithic flake in right chest cavity; f) unretouched chip next to proximal end of left humerus; g) backed microlithic flake between left tibia and fibula; h) backed flake on right ilium; i) backed flake on right ilium; j) arch backed fragment (lunate?) on right ilium; k) unretouched chip on right side of thoracic vertebra; l) retouched flake on left side of thoracic vertebra; m) backed and truncated flake in lumbar vertebra just above pelvis, entered from front; n) unretouched flake in lower part of left rib cage, next to vertebra; o) fragment of backed flake against right side of thoracic vertebra; p) chip embedded in thoracic vertebra; and q) chip embedded in right pubic symphysis, entered from left side (Wendorf 1968a: 973-974). Clearly, they intended to kill him, but possibly not too quickly, and the pelvic area seems to have been a favorite target (Figs. 13-15).

The group of four noted above was not exceptional (Table 3). Burials 20 and 21 were a group of two middle age males with a total of 27 pieces either embedded or abutting against the bones. Burial 21, with 19 associated artifacts, was also repeatedly cut on both upper legs and upper left arm. Another pair, Burials 23 and 24, an adult female and a child, both had associated pieces, the child had a flake in the cervical vertebra, and the adult had three chips, one embedded in a lumbar vertebra, and two in the upper chest.

Burial No.	Est. Age	Sex	Associated Artifacts	Other trauma
6	Unkn.	M	-----	Cut marks on rt. femur
8	Old	F	-----	Healed parry fracures, left and right ulna
10	middle	M	-----	Recent healed parry fractures left ulna & radius
15	middle	?	-----	Cut marks, left femur
17	middle	M	One	-----
20	middle	M	Six	Healed fracture, right humerus
21	middle	M	Nineteen, two embedded in pelvis, left and rt. ilium	Cut marks, left and rt. femur, left humerus
23	middle	F	Three, one embedded in lumbar vertebra	-----
25	Old	M	One (probable) near leg	-----
26	Middle	F	Five	Healed parry fracures, left & ulna; trauma in thoracic area
28	Middle	F	One, inside skull	-----
29	Old	M	Seven	Cut marks, left femur
31	Old	M	Sevnteen, two embedded one in public symphysis, one in vertebra	Green fracture, left humerus
33	Middle	F	Eight	Notches, right ulna & radius, where point passed through
34	Young	F	Two	Healed parry fracture, right ulna
35	Unkn.	?	Six	-----
37	Middle	F	One	Cut marks, right femur
38	Middle	M	One	-----
42	Middle	M	One	-----
44	Young	F	Twenty-one	Healed fracture, left clavicle
45	Unkn.	F	One	-----
102	Middle	F	One	-----
103	Young	?	Two, one embedded in thoracic vertebra	-----
106	Young	M	One	-----

Table 3. Jebel Sahaba Graveyard: Adults with Artifacts or Other Trauma.



Figure 13. Healed "parry fracture" of left ulna, Burial 8 at Jebel Sahaba graveyard.

There appears to be no significant distinction between males, females and children in their exposure to violent death, evidently all members of the group were involved in conflict, not just the adult males (Table 1). The actual frequency of violent death among the burials in this graveyard is probably even higher, because eight of the burials with no associated artifacts (Nos. 1, 3, 4, 11, 30, 32, 46, and C-

1) all consisted of a few disarticulated bones or a skullcap, and either had been disturbed by later graves, or were partial bundle/secondary burials (Table 4). If these fragmentary burials were removed from the adult totals, the frequency of skeletons with associated artifacts would approach or exceed 50 percent among both adult males and females. An even higher frequency for violent deaths would result if the totals were further adjusted to include those burials where no associated artifacts were found, but where there were cut marks on the upper part of a femur (Burials 6 and 15). In addition, several of the skeletons (Burials 8, 10, 20 and 43), only one of which (no. 20) had associated stone artifacts, displayed prominent dark areas that were identified as blood stains from old hemorrhages and were the result of the breakdown of hemoglobin (Race 1968).

While there is no way to determine if the Sahaba graveyard records intra-group conflict between units of the Qadan community, or if the fighting was with some other entity (such as the Sebilian, which was partly contemporary and also occurred locally), we do know that Sahaba was not the only graveyard associated with the Qadan entity. Across the river, on the west bank opposite



Figure 14. Chip embedded in the ilium of right pelvis, Burial 21, Jebel Sahaba graveyard.



Figure 15. Chip embedded in left pubic symphysis of Burial 31, Jebel Sahaba graveyard.

Burial No.	Age	Sex	Comments
1	Unkn.	?	Fragments of skeleton, most removed by erosion
3	Unkn.	?	Only femur and humerus present
4	Middle	F	Central section removed by erosion
5	Middle	M	-----
7	Middle	F	-----
11	Unkn.	M	Disarticulated long bones only (bundle? or disturbed by Burials 13 and 14?)
16	Old	F	-----
18	Old	M	-----
19	Old	M	-----
22	Middle	F	-----
30	Unkn.	?	Disarticulated femurs and fibula, possibly disturbed by later group burial.
32	Unkn.	?	Disarticulated leg bones ongy, disturbed by Burial 26
36	Young	F	-----
39	Middle	M	-----
40	Young	M	-----
41	Young	M	-----
43	Unkn.	F	-----
46	Unkn.	?	Fragment of skull ongy
36	Unkn.	M	Position f hand suggests right wrist possibly broken
36	Unkn.	M	Artifacts found in fill, possibly associated
36	Unkn.	?	Only fragments of bone
36	Unkn.	F	Cranium only, probably belongs to Burial 107
36	Young	F	Cranium missing, probably Burial to 104 cranium

Table 4. Jebel Sahaba Graveyard: Adults Without Associated Artifacts or Other Evidence of Trauma.

Wadi Halfa, was a graveyard with 39 skeletons of probable Qadan association (Armelagos et al. 1965), and farther down stream at Tushka, north of Abu Simbel, was another graveyard with 19 Qadan burials (Wendorf 1968b). Except for one skeleton with an associated lithic artifact in the west bank Halfa

graveyard, none of these show evidence of violence.

Most of the Sahaba burials were interred on the left side, head to the east, facing south, hands to the face, and knees flexed with heels to or near buttocks. There were, however, a variety of exceptions. One was

placed on the right side; four were on their backs, one of which had the head to the northwest, facing southeast. One old adult male (Burial 29, Fig. 12) was on the stomach, head to the east, and face down. Nine burials had their heads to the southeast, and one head was to the northeast. There does not appear to be any correlation between burial position and age, sex or signs of trauma. Burial 29, the one on his stomach, had seven associated pieces. Two of the burials with the highest number of associated artifacts (Burials 21, a middle age male with 19 pieces, and 44, a young adult female with 21 pieces) were both placed like the majority, on left side, head to east, facing south. The burial with the next highest number of associated artifacts (Burial 31 with 17 pieces), an old adult male, was placed on his back, head to the northwest, and facing southeast.

The fact that there are large graveyards is of interest, because all earlier (pre Qadan) burials in Nubia occur as an individual or a group of two or three skeletons. Since Qadan sites are not significantly larger than those of earlier entities, why then, did they start burying their dead in large graveyards? A reasonable explanation is that the shift to large burial areas reflects a change in organization toward a social unit larger than the residential band. If this is true, the Sahaba graveyard probably was used by several different residential groups. Furthermore, that only one of the three large graveyards had significant evidence of violence supports the possibility that all of the burials at Jebel Sahaba were individuals who died violently, and that the associated artifacts in the non-violent burials at Sahaba were missed during the excavations. If so, group survival was not threatened by the high frequency violent deaths, because the Sahaba skeletons were drawn from a population larger than that evident at

the Sahaba graveyard.

If Sahaba was not a graveyard restricted to individuals who died violently, then the high incidence of conflict would undoubtedly represent an abnormal situation that no group could long endure. It seems likely that a mortality rate of this extent, involving both the children and productive females, would lead to the extinction of the group if continued for more than a few generations. Normal mortality rates for hunting and gathering groups range from 12 percent to 20 percent for adolescents, and from 35 to 70 percent for young adults (Saxe 1966).

There are several lines of evidence to indicate that the violent deaths at Jebel Sahaba did not occur in a single battle, but represented many conflicts over a considerable period of time. This is well illustrated by the stratigraphic positions of the burials, several of which were clearly disturbed by pits dug for the placement of later burials. Also, the disturbed articulation of the earlier burials indicates that enough time had passed for decay to occur before the older body was disturbed.

Additional evidence of sustained violence may be indicated by the healed or almost healed "parry" fractures of the ulna and/or radius on six burials (Nos. 8, 10, 20, 26, 29, 34; Fig. 13). While parry fractures can occur accidentally with a bad fall or during "stick fighting," in this context it seems more likely that they occurred while blocking a blow during a fight. Two of these (Burials 8 and 10) did not have associated artifacts. These suggest that conflict was not a rare event, but may have been a routine, perhaps continuous, part of life during the period the Sahaba graveyard was in use.

The Kubbaniya Skeleton

A very interesting, nearly complete skele-

ton found near the mouth of Wadi Kubbaniya, about 10 km north of Aswan, adds another dimension to our discussion of conflict and warfare among Late Paleolithic groups in the Nubian Nile Valley (Wendorf et al. 1986). When first seen, the skull and the lower limbs of the Kubbaniya skeleton were exposed on the surface, but the rest of the skeleton was embedded in a rock-hard, carbonate cemented block of sediment eroding from a high remnant of the Middle Paleolithic Valley Fill (Schild and Wendorf 1986). At an elevation of ca. 105 m asl, and some 15 m above the modern floodplain, the eroded remnant of these upper Middle Paleolithic silts record an interval of silt accumulation that is believed to have begun after the Last Interglacial, perhaps between 70,000 and 65,000 years ago, and ended between 50,000 and 40,000 years ago. Several late Middle Paleolithic sites of that age occur in these silts near the burial. The outline of a burial pit or trench was noted when the skeleton was first discovered, but largely because of the firmly cemented sediments in the pit, it was thought that the skeleton might be of Middle Paleolithic age. That idea was rejected, however, when during cleaning of the skeleton in the laboratory two lightly re-touched opposed platform bladelets were discovered inside the abdominal cavity, against the lumbar vertebra.

It was concluded that the skeleton was resting in a pit that had been dug into the eroded top of the Middle Paleolithic silts, and that carbonate brought in by seasonal flooding during the early Late Paleolithic had cemented the sediments of the pit. There are no associated radiocarbon dates, but during the work at Wadi Kubbaniya, the Late Paleolithic sedimentary sequence in the Wadi was studied in minute detail, and dated with a large suite of radiocarbon measure-

ments. This dated stratigraphy and the typology of the bladelets suggest that the burial occurred after 30,000 and before 20,000 years ago, and was probably between 24,000 and 22,000 calibrated radiocarbon years old (Schild and Wendorf 1986; Wendorf and Schild 1986: 73-74).

Apparently an isolated occurrence, there is no evidence for a nearby contemporary settlement, however, the area between the burial and the river had been so extensively eroded that any traces of such an occupation would have been destroyed. The skeleton was a strong, young adult male, between 20 and 25 years old, that had been placed in the pit, extended on its stomach, face down, with the head to the east and arms to the side. The position of the legs is not known, but the proximal portion of the right femur suggests that the legs were extended. A face-down extended position is not common among Late Paleolithic burials, but is not unknown. It was used on Burial 29 at Jebel Sahaba (although one leg of that burial was semi-flexed). The early Upper Paleolithic skeleton at Nazlet Khater was extended, but face up (Vermeersch et al. 1984: 283), as were also three of the Wadi Halfa skeletons (Saxe 1966: 6). At Jebel Sahaba the strongly preferred position was on the left side with head to the east.

Either of the two bladelets found in the abdominal cavity could have caused fatal hemorrhage. Both of the bladelets were on the left side, one between the ribs and the lumbar vertebra at the abdominal aorta, and the other near the left kidney and aorta (Angel and Kelley 1986: 62). Both bladelets had apparently entered the body from the back.

This individual had been in at least two other likely conflict situations, each separated from the others by at least several months,

if not longer. There was a healed parry fracture of the right ulna, and a more recent event represented by a small chip of stone embedded in the left humerus and partially healed. This, together with the evidence of prolonged if not continuous hostility at Jebel Sahaba, suggests that sustained conflict also may have existed at Wadi Kubbania several thousand years prior to that recorded at Jebel Sahaba. What were the factors that contributed to this conflict? Were they the same for both Kubbania and Sahaba?

Why Did the Conflict Occur?

We propose that two factors were the primary causes of the sustained conflict seen during the Late Paleolithic in the Nile Valley: a very restricted environment that confined the people in an area with limited resources; and packing of the area by a variety of cultural entities. Unable to move when other groups encroach, because of the deserts on both sides of the river, and the packing in the best areas by other groups both upstream and down, their only option was to fight.

The Environmental Setting. During Oxygen Isotope Stages 2, 3 and 4, from about 65,000 to 12,000 years ago, northeastern Africa was hyperarid. This included the Nile Valley and the adjacent deserts of northern Sudan and Egypt (Wendorf et al. 1993). The Eastern Sahara during this period appears to have been devoid of life, there is no evidence of vegetation, animals or people.

It was also drier in the headwaters area of the Nile, and many of the lakes in Central and East Africa contained little or no water (Gillespie, et al. 1980; Kutzbach and Street-Perrott 1985; Street-Perrott and Roberts 1983). The prolonged drought in East and Central Africa must have had a profound ef-

fect on the people living there. As a consequence, some groups might have moved to the Nile where permanent water was available, forcing those who were already there to move farther north, to be repeated again and again in a chain-like sequence moving downstream to Nubia in northern Sudan and southern Egypt.

With less rainfall, the Nile was much smaller, perhaps around 20 percent of today, and flowed as a braiding and aggrading stream rather than the massive river of today (Schild and Wendorf 1989; Wendorf and Schild 1989). It was also a period of colder temperatures, of glacial advance in the higher latitudes of Europe and North America, and in the mountains of East and Central Africa. Because of the colder temperatures, the tree line was lower, there was less vegetation, and more frost action than today. Despite the general aridity, there were seasonal rains, probably in the summer as today. As a consequence of the frost action and the limited plant cover, the runoff water from these seasonal rains carried a heavy sediment load, which was deposited downstream in Sudan and Egypt where the Valley was filled with silt, to an elevation of 30+ m (at Wadi Halfa) and 20+ m (at Aswan and Wadi Kubbania) above the modern floodplain.

During this long period of hyperarid climate, with lifeless deserts bounding this smaller Nile on both sides, the only place where people could live was in and along the Nile floodplain. Beyond the edge of the then floodplain there was only desert, lacking water and devoid of life. Not surprisingly, there are no traces of human settlement anywhere in the desert during this entire interval, although there are numerous sites on the floodplain that were occupied at this time. Despite the presence of numerous human settle-

ments, however, even the floodplain in Nubia had a limited carrying capacity, as is indicated by the paucity of animal species present, the kinds of food that were eaten by the Paleolithic people, and the concentration of their sites in a few favorable localities.

Details of the food economy of some of the groups who lived in this area are known in considerable detail, thanks to the preservation at the sites excavated in Wadi Kubbania (Hillman et al. 1989). The major game animals were wild cattle, hartebeest, and gazelle, and occasionally, hippo. Crowded to the edge of the floodplain by the rising water, the cattle, hartebeest, and gazelle were heavily hunted during the seasonal flood (Wendorf et al. 1997). For the rest of the year they were occasionally taken, but there is no evidence that large animals were an important source of food at Kubbania.

In the embayment of Wadi Kubbania fishing was a major economic activity, particularly during the spawn that occurred in the early phase of the flood (Gautier and Van Neer 1989). Fishing was also important at the cutoff pools during and immediately after the retreat of the flood. During both periods fish were taken in large numbers, some had their heads removed and the remainder of the fish taken elsewhere, and some appear to have been smoked for later consumption. Good fishing areas, however, were limited to embayments, where the spawning fish would congregate, leave their eggs, and later the hatchlings could feed on the then submerged vegetation of the floodplain.

In the late fall, after the floodplain fishing was over, the Kubbania people turned to wetland tubers as the major food resource. These tubers, however, required considerable effort to collect and process for human consumption. Nut grass tubers grew abundantly

on the floodplain flats, and typha occurred in the numerous ponds after the flood. Both plants were collected in large quantities, and when mature both also had to be processed before they could be eaten. This consisted of roasting to remove the toxins, and grinding to break the fibers. The tubers, however, were abundant in only a few localities, and today the numerous grinding stones in most of the sites that occur there identify these areas.

In the fall and winter they also took large numbers of ducks and geese. Near the end of winter and through the spring, however, food resources must have been very limited. The major sources for food at that time were limited to some fishing in the main channel, and collecting dom palm nuts and shellfish, neither of which were very abundant or rich sources of energy.

It is suggested that the inhospitable deserts that sharply bounded the Valley on both the east and west sides were a contributing factor in the emergence in warfare during the Late Paleolithic along the Nile. Because of the deserts, the people were sharply circumscribed on both the east and west sides of the floodplain, and by their neighbors both upstream and down. Food was abundant in the embayments during the summer, fall and early winter, and during these periods there is good evidence that groups sharing a similar lifeway congregated in these favored areas. From late winter until the onset of the summer flood, however, there was much less food, and during that period it seems likely that the groups dispersed to exploit whatever resources were available. There may have been serious competition for food, and this competition may have led to the conflict documented by the burials at Jebel Sahaba and Wadi Kubba-

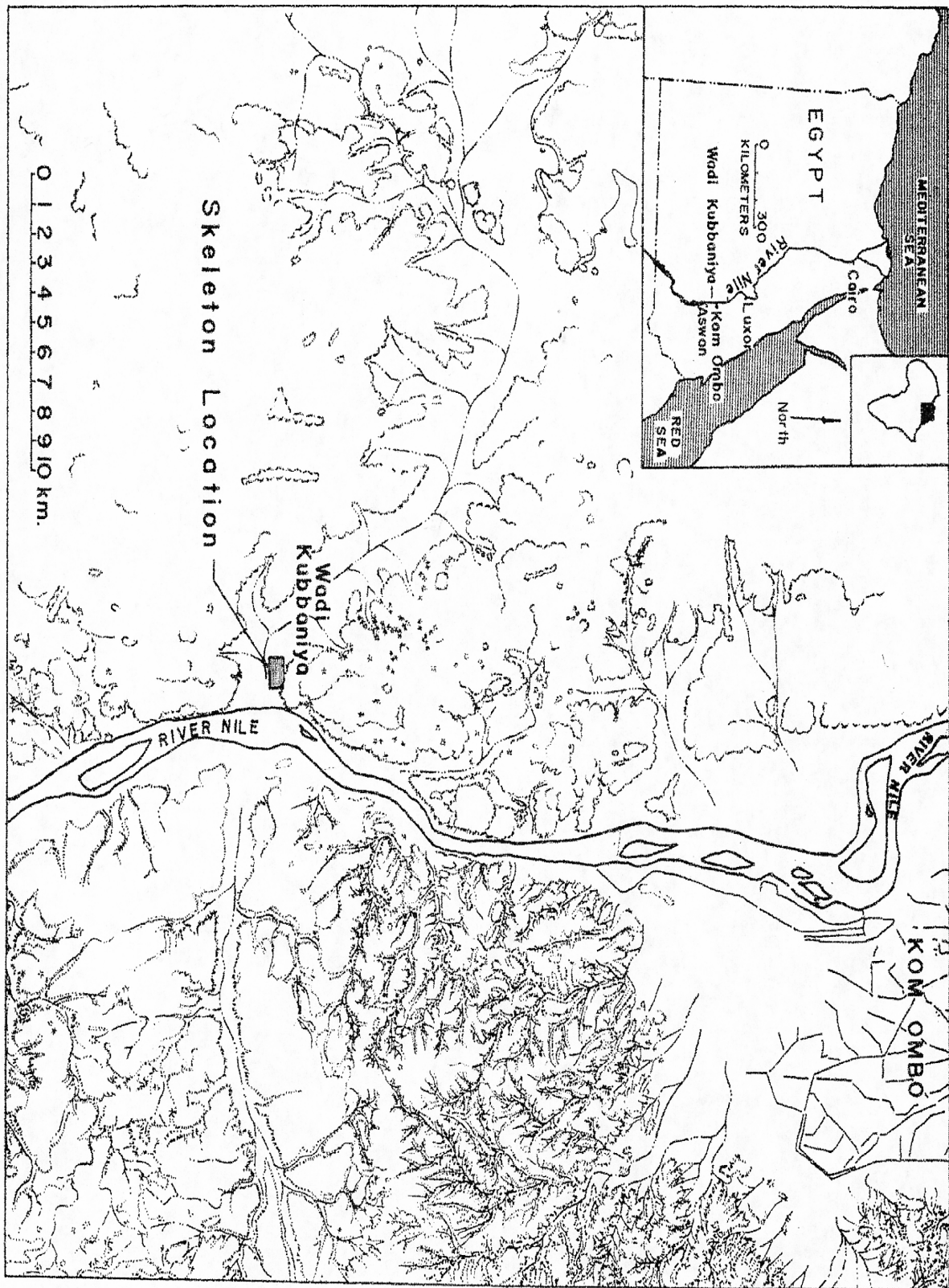


Figure 16. Map of the Nile Valley north of Aswan, showing location of Wadi Kubbaniya.

niya.

The Cultural Setting. The only area in the Nile Valley for which there are detailed studies of the Late Paleolithic is from the Second Cataract on the south to the Qena Bend on the north. Within this stretch of the River numerous archaeological entities have been identified and defined for the interval between around 23,000 and 13,000 calibrated radiocarbon years ago. While some might challenge whether all of these entities represent different social groups, there is, nevertheless, strong evidence to support that conclusion. All of these entities occur within limited time spans, they are found in restricted geographic areas, they are known at more than one site, they are not special activity localities, but living sites, and each entity is distinguished from the others by a distinctive set of lithic tools, and in some instances, by a different technology. It seems likely that each entity reflects a unique lifeway, and represents a group with a distinctive cultural tradition. It is also interesting that there is almost no evidence to suggest a long developmental sequence from one entity into another. The tools that distinguish one entity are rarely found in sites of a later complex.

This plethora of entities, often referred to as "industries," comes as a surprise to those familiar with the archaeology of most other areas, such as Europe or Southwest Asia, where long continuity is the norm in the Late Paleolithic. In those areas cultural developments often can be traced through an extended period of time and over a large area. Not so in the Late Paleolithic of the Nile Valley. Whether it is the Second Cataract/Ballana/Tushka areas on the south (Wendorf 1968), Wadi Kubbania in the center (Wendorf et al. 1989), or Isna/Qena/Dishna to the north (Phillips 1973; Lubell 1974; Wendorf and

Schild 1976; Hassan 1974; Vermeersch 2000), the story is the same: within a period of 9000 to 10,000 years, beginning around 22,000 - 23,000 years ago, each area was occupied by entities representing social units that had very different cultural traditions from those in adjacent areas.

For example, and without going into the details of the typology and technology, the lithic assemblages at Wadi Kubbania during this interval represent seven very different entities. The sequence begins with the Fakhurian as the oldest, then the Kubbanian, followed by the Ballanan-Silsilian, the Afian, the Sebilian, the Isnan, and the Qadan. Some of these may have partially overlapping time ranges, as indicated by their radiocarbon dates (Fakhurian and Kubbanian; Ballanan and Afian), or have both closely similar dates and stratigraphic positions (Sebilian, Isnan and Qadan). While all of these occurred at Kubbania, some of them are known mostly to the south (Qadan), while others are found mostly to the north (Fakhurian and Isnan). In this setting, as elsewhere along the Nubian Nile in Egypt and Sudan, we find different entities with overlapping distributions and time ranges occupying the most productive localities in an area that otherwise had very limited resources.

Was it Warfare?

The question of what is warfare and how to distinguish it from other forms of violence, such as murder and raiding, has been discussed in many books and articles but never really resolved (Ross 1983; Knauff 1987; Otterbein 1989; Keeley 1996; Kelly 2000). It is clear from modern ethnographic studies that the idea of the peaceful, noble savage is a myth. Conflict is a near universal phenomenon among all social groups, except for a few of the smallest and most isolated

societies (Keeley 1996: 3-24). Several studies of the ethnographic literature indicates that there is a continuum of violence that ranges from carefully orchestrated battles designed to result in minimal injuries or deaths, to raids by small groups to gain wealth or women, to full-scale battles with the goal of exterminating or subjugating a competing group (Heider 1991; Chagnon 1997; Flannery and Marcus 2003). To some, any violence between two social entities is warfare (Wilson 1987). Others are more restricted in their identification of what constitutes warfare. Rather than add to that discussion, for our purposes here warfare is defined as armed conflict between societies with the goal of either exterminating the enemy group, driving them away, or subjugating them and acquiring their resources. In this definition, warfare differs from raids and killing of an individual in a conflict that involves only one or two people, or at most a very small sub-unit of a group.

The burials at Jebel Sahaba with two group burials of four, and in one instance possibly with eight individuals interred at the same time and with multiple wounds, suggest an organized conflict that was designed to inflict maximum mortal casualties on an opposing social unit. In addition, if the Sahaba graveyard was not restricted to those who died violently, then the frequency of violent deaths among all age groups and both sexes were so high that the survival of the group was seriously in doubt. This clearly represents vicious, sustained, long-term warfare, as defined above.

The evidence from Wadi Kubbania is not as persuasive as that from Jebel Sahaba. It is clear that there was conflict at Kubbania, that it continued for some period, and that the goal was to kill the enemy. What is miss-

ing is any evidence that it involved more than a small group, or even only another individual. It could have been warfare, but the evidence is weak.

The sequence of injuries to the Kubbania skeleton suggests either that this was a very disagreeable individual who kept picking the wrong enemies, or, more likely, as at Sahaba, that this was also a period of sustained, even continuous conflict at Kubbania. Unlike Sahaba, where there were two very different entities in the Halfa area at about that same time, the Fakhurian is the only entity known to be present at Kubbania at the time of the burial, assuming the age estimate is correct. If it was a few thousand years later, however, then the most recent of the Fakhurian sites, according to the radiocarbon dates, may have overlapped with the earliest Kubbanian, the next later entity recorded in the Wadi. For the period immediately prior to the Fakhurian, there is no information from Wadi Kubbania of any other entity being in the area. That does not say they were not present, only that no sites were found.

Although the simultaneous presence of two different social entities provides an obvious setting for friction, conflict does not require that the combatants be from units with different cultural backgrounds. With a population at or near the maximum that can be supported by the available resources and technology, any decline in those resources will result in tension and probably conflict.

There is still another possible explanation for the conflict evident at Jebel Sahaba. As was noted earlier, several large graveyards attributed to the Qadan entity are known, but prior to the Qadan the known burials are rare, but more important, they consist of single individuals or a group of no more than

three. We infer that the large graveyards indicate the emergence of social units or polities that were composed of several residential groups. We might call these "tribelets," each of which had their own graveyard where they buried their dead. Social units of this type tend to become very competitive with each other, particularly during periods of shortage or stress. Thus it is entirely possible that Jebel Sahaba represents warfare between two or more Qadan tribelets. This would explain why both the obvious weapon artifacts and those other pieces, such as cores and endscrapers thought to have been accidentally associated with the skeletons, were Qadan types.

What were the causes of this warfare? We favor a materialist explanation, based on a specific set of causes that in many ways was unique to the Nile Valley during the Late and Final Pleistocene. The resources available to the Late Paleolithic groups in the Nile Valley were sharply limited in its availability, were highly seasonal, and at least for the marshland tubers, required extensive preparation. For most of its length between the Batn el Hajar in northern Sudan and the Qena Bend in Upper Egypt, the river flowed through a narrow canyon with high, near vertical cliffs on both sides, and a very limited floodplain. These canyon areas were not very favorable for fishing or the harvest of marshland plants, and, not surprisingly, for most of this area archaeological sites are rare. The few favorable localities were those where the canyon was broken by the then dry drainages

that entered the Valley from either the east or west sides, such as the Khor Musa at Wadi Halfa, Wadi Tushka and Wadi Kubbaniya in Egyptian Nubia, and Kom Umbo, Idfu, Esna, and Wadi Qena in Upper Egypt. Numerous Late Paleolithic sites containing abundant fish bones and grinding stones for crushing the tubers occur in all of these re-entrants. If people were going to live in the Valley, they would have to spend most of their time in these areas where the floodplain was wider.

Although there are no other well preserved skeletal remains available from the Nile Valley that relate to the period between the Kubbaniya and Sahaba burials, there is strong evidence that the hyperarid conditions continued unbroken in this part of Africa from well before the period of the Kubbaniya burial through the interval when the Sahaba graveyard was in use. Furthermore, the presence of diverse entities throughout this entire period is well documented. It seems reasonable to infer that it was the combination of these two factors that made warfare inevitable for both the people at Kubbaniya and those at Jebel Sahaba. Thus, during all of the Late Paleolithic, and perhaps before, those living in this area faced the same social setting and the same environmental limitations as those confronted by the people who used the graveyard at Jebel Sahaba. One should not be surprised, therefore, if evidence of warfare and conflict are found when other Late Paleolithic skeletal remains are discovered in this area.

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ملخص: إن أقدم الشواهد المعروفة على حالة هذه الحرب المستمرة والمنظمة، أتت من مقبرة تعود إلى العصر الحجري المتأخر، تقع على بُعد ثلاثة كيلومترات شمالي مدينة وادي حلفا القديمة، في شمال السودان. احتوت المقبرة، التي تقع الآن في أعماق بحيرة ناصر، ٥٨ قبراً لرجال ونساء وأطفال، وقد قضى نصف هذا العدد نحبهم نتيجة للعنف. وقد حدّد القياس الإشعاعي الكربوني الوحيد، الذي خضع له عظم بشري، الزمان بحوالي ١٣م ٧٤٠ عاماً قبل الوقت الراهن (قياس غير مدقق). وتستكشف الورقة أسباب هذه الحرب الأولى، لتخلص إلى أن أسبابها تعود إلى عاملين أساسيين، هما: البيئة الفريدة للعصر البليستوسيني المتأخر لوادي النيل والصحراء المتاخمة؛ ثم احتمال ظهور العُصب الاجتماعي، الأكبر مما تحتمله الأماكن المأهولة؛ فكانت تتنافس على المصادر المحدودة.

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