



EDITORIAL

One of the more important events in African archaeology during the last few months was surely the biennial conference of the Society of Africanist Archaeologists, held at the University of Florida, March 22–25, 1990. The academic and business content of the plenary sessions is extensively reviewed in Clark's excellent summary of the conference (see pages 40), but I would like to single out for special comment a few items from the business session that pertain directly to *Nyame Akuma*. First, as you have probably observed on the cover of this issue, it was decided to relabel the journal, from newsletter to bulletin. The new designation is not only more appropriate but also likely to be more palatable to libraries that may wish to subscribe to *Nyame Akuma*. Librarians tend to regard newsletters as highly ephemeral publications whose contents are limited to news of publications, conferences, etc. and do not include research articles. (This seems a suitable place to add that *Nyame Akuma's* subscription list suffers from a dearth of library subscriptions, which are the "bread-and-butter" of most professional journals. If your library does not subscribe, please encourage it to consider adding *Nyame Akuma* to its periodical catalogue. We are one of a very limited roster of journals dedicated exclusively to African archaeology.)

It was also agreed in the business session that contributions to *Nyame Akuma* should generally be limited in length to 2500 words—approximately ten typewritten, double-spaced pages of text, not counting author's address, illustrations, or references. While there is, of course, editorial leeway in applying this limitation, contributors to future issues are asked to make every effort to confine their articles to the 2500-word limit.

Finally, it was agreed that *Nyame Akuma* should publish book reviews, rather than the summary descriptions of new publications that have previously been offered. However, a ceiling of 10% of a

given issue was placed on the book review section in order to preclude evolving into a review periodical. In connection with book reviews, I would like to urge readers interested in reviewing to so inform me, including a brief description of your range of topical interests.

As a postscript to the review of editorial policy decisions that emanated from the SAfA conference, I would like to call your attention to the Forum section of this issue. It has been introduced to accommodate articles that are consistent with *Nyame Akuma's* mission, but do not pertain to any specific country. While the new section represents an ad hoc response to initiatives by the authors whose papers appear in it, I believe there is room for such material on a continuing basis and encourage all readers to consider submitting Forum contributions for future issues.

In concluding this editorial, I wish to call attention to the SAfA by-laws, included at the end of the report on the 1990 conference (see page 49). Although the version of the by-laws printed here was generally accepted by those who attended the business session, several people expressed particular reservations and urged more extensive discussion of certain provisions. However, because of the pressing need to establish SAfA as a legally constituted entity, such reservations were deferred until the next SAfA conference (UCLA, 1992) when amendments to the by-laws can be considered. Meanwhile, suggestions for revision may be sent to Dr. Steve Brandt, SAfA secretary (address opposite).

John Bower



ARTICLES

■ CAMEROON

Recherches Archéologiques Dans le Nord-Ouest (Cameroun): Le Site Métallurgique de BA

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Dans le cadre des recherches sur la céramique par une approche ethno-archéologique, une prospection fut aussi menée pour identifier si possible les anciens sites liés à la fabrication de la céramique.

La méthode de travail a été de prospecter tout autour du village par la lecture des paysages, l'observation des formations pédologiques et les enquêtes orales auprès des anciens. La simple curiosité a aussi guidé la détection des sites. En effet, le paysage se caractérise par une différence du couvert végétal au niveau de la hauteur des végétaux d'une part et d'autre part par la densité de sa répartition et la coloration pas toujours verte des feuilles. Ainsi le milieu déficient a fait l'objet d'une observation minutieuse. Les formations pédologiques elles se caractérisent par l'irrégularité de la surface du sol à certains endroits du village. Ce qui indiquait des formations anthropiques. Ces observations couplées par les informations des anciens ont permis de repérer le site archéologique de BA.

Ce site métallurgique se localise à l'environnement immédiat du quartier du même nom. Il se situe sur la route Bamenda-Ndop, dans le village de Bamessing à 20 km de Bamenda, à l'est. C'est un site qui a des vestiges témoins

d'une activité ancienne de métallurgie de fer. Il se compose de deux buttes: une butte A et une butte B. Elles sont séparées de 45 m. La structure spatiale des buttes se caractérise pour la butte A, par un diamètre de 30 m et est entourée par trois habitats isolés. L'élargissement de la piste a permis de faire apparaître cette structure. La coloration des sédiments est noire. L'épaisseur de la couche anthropique est de 3 m. Les vestiges parsemés sur la butte sont de trois natures: on distingue des centaines de morceaux de tuyères circulaires, des scories et des tessons de tuyères cassées. La hauteur de l'accumulation de vestige est de 3 m. La butte B qui semble la plus récente a une hauteur de près de 3 m. Les vestiges se composent de centaines de tuyères, de plusieurs scories et de quatre pipes en céramique.

La découverte du site de BA a un grand intérêt et ouvre des perspectives nouvelles. En effet elle vient renforcer les études déjà commencées sur la métallurgie de fer dans le Nord-Ouest par Dr. Warnier et Dr. Asombang. Elle permet d'envisager positivement des recherches et des études puis des fouilles sur le terrain afin d'éclairer la question de la métallurgie ancienne dans le Nord-Ouest. Mais déjà se pose des problèmes: de la chronologie des deux buttes, les échantillons de charbon prélevés peuvent donner des dates intéressantes. De plus quel était le fonctionnement du système de fonderie, et quel était par conséquent le sens de l'occupation du quartier de "BA" et de l'espace? Aussi se pose le problème du ravitaillement en combustible et en eau compte tenu de leur rareté à proximité du site. Les quatre pipes en céramique relancent la question des pipes archéologiques dans l'histoire africaine. Une étude devra être faite dans ce sens. Plusieurs questions restent à soulever. Mais les fouilles archéologiques doivent être complétées par des recherches et des enquêtes ethnoarchéologiques sur la métallurgie traditionnelle que l'on pratique encore aujourd'hui à Babungo, non loin de là.

■ EGYPT

New Evidence from the Early To Mid-Holocene in Dakhleh Oasis, South-Central Egypt, Bearing on the Evolution of Cattle Pastoralism

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One of the debates emerging from recent studies of the late prehistory of the desert areas of Northeast Africa concerns when cattle pastoralism began in the Western Desert of Egypt. Members of the Combined Prehistoric Expedition, working in Southern Egypt, argue for an early date (Wendorf, Schild, and Close 1984). On the basis of ecological evidence and some faunal material, they suggest cattle were being herded in the Nabta Playa and Bir Kiseiba areas between 8000 and 9000 b.p. A. B. Smith (1986), on the other hand, citing environmental considerations and concerns about sample sizes of the early osteological material, argues for a later date, suggesting the switch to cattle herding may have occurred during a dry interval between 7000 and 6500 b.p.

Dakhleh Oasis, the largest oasis in the Western Desert, might be expected to yield data to help settle the issue. There is, in fact, as yet no firm answer to the question from Dakhleh. New evidence from the southeastern corner of the oasis is, however, shedding some light on the topic, and promises to yield a clearer picture of the domestication sequence for Dakhleh Oasis. Evidence includes site locations and site types, artifact assemblages, associated rock art, faunal remains, and radiocarbon dates. The Dakhleh Oasis Project's winter 1990 field season has yielded important new information, particularly concerning stone-built structures and features. This article is a review of the evidence from Dakhleh

bearing on the question of early pastoralism, including several new radiocarbon dates.

Of the three late prehistoric cultural units identified in Dakhleh Oasis (McDonald in press b; McDonald 1986), two, the Masara and the Bashendi units, are of concern here. The earliest or Masara unit resembles Epipalaeolithic or Terminal Palaeolithic material elsewhere in North Africa. Blades and bladelets predominate in the chipped stone industry, while tools include notches and denticulates, Ounan points, backed elements, and geometric microliths. A localized variant features a high proportion of burins fashioned on reworked Middle Stone Age material. Some sites yield grinding material—slabs and various handstones—or ostrich eggshell beads.

In the younger or Bashendi unit, chipped stone tools are made largely on flakes rather than blades, or on grey tabular chert. Toolkits feature knives, foliates, drills, side-blow flakes and a great variety of arrowheads, as well as notches, denticulates, and retouched pieces. Sites yield numerous grinding slabs and handstones, various small ground stone items, numerous ostrich eggshell beads, and, in some cases, a little pottery.

As for chronology, five radiocarbon dates, all of ostrich eggshell from surface scatters, are available for the Masara unit. Uncalibrated, they fall within the ninth millennium, ranging from 8830 to 8110 b.p. (Brookes 1989). For the Bashendi, eleven dates have been published. These dates, uncalibrated, range from 7690 to 5130 b.p. with eight of the eleven falling within the sixth millennium b.p. (Brookes 1989).

The two units, Masara and Bashendi, differ considerably in site distribution. Masara sites describe quite a restricted pattern. A number have been found in various locations atop the plateau to the north of Dakhleh. The few oasis floor sites located prior to 1989, however, aside from one workshop site, are all located within one area in East Central Dakhleh, well to the south of the cultivation associated with the modern town of Ismant (McDonald 1986). Bashendi sites, on the other hand, are distributed widely throughout the oasis,

atop the northern plateau, and far into the desert to the south (McDonald in press b).

An unusually rich area of Bashendi settlement, in fact, is the "Southeast Basin" (McDonald in press a), a sprawling feature up to 10 km long, located several kilometers south of any modern cultivation, at the east end of the oasis (Fig. 1). We began systematically exploring this locality within the last two to three years, upon obtaining air photos for the area, and have recorded several important Bashendi sites within the basin. Then in 1989 and 1990, we found new Masara sites as well, within the southernmost branches of the basin, and on the higher ground just to the southeast of it. The basin floor sites, like Masara sites elsewhere, are simply surface scatters; all associated Early Holocene deposits have been completely scoured away. In the uplands just to the east, however, we found Masara material in better context—that is,

associated with hut circles and other stone-built features. In the 2.5-km-wide strip just west of the main road, we recorded numerous groups of hut circles—clusters of two or three huts nestled in shallow hollows, and, in several cases, much larger groupings. Site 264, for example, boasted roughly 20 units in an area 50 x 25 m (Fig. 2).

The circles themselves are not elaborate, usually consisting of a single tier of vertical slabs, although these may stand three or four slabs thick in places. Huts average 3 to 4 m in diameter, and are round, oval, or sometimes bilobed. occasionally a smaller ring about 1 m in diameter occurs in a corner or the center of a hut. One feature (Site 267) was much larger—a ring measuring 47 x 37 m, open to the east.

In all cases, associated artifacts are Masara. Two controlled lithic samples from Site 264 include trapezes and triangles, microburins, small ouanan points, drills and

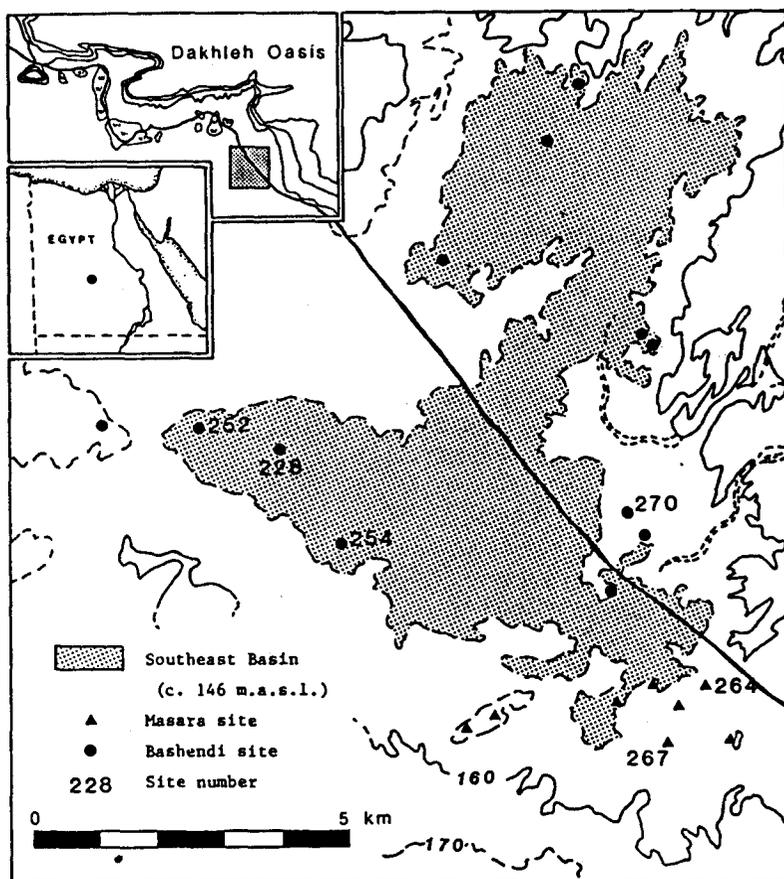


Fig. 1. The Southeast Basin, Dakhleh Oasis: location of some Masara and Bashendi sites.

other piercers, and notches and denticulates. Notable in the collections are numerous end scrapers fashioned on worn Middle Stone Age flakes. Otherwise, sites yield many grinding slabs, handstones and pounders, some eggshell beads, and, in a few cases, animal bone.

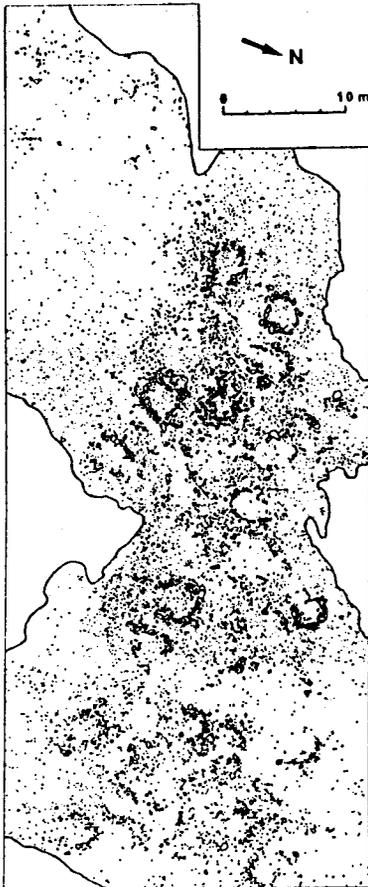


Fig. 2. Massara Site # 264.

The question at issue here then is whether these are the sites of pastoralists. While it is difficult to say on current evidence, they may yet yield the answer. As likely ninth-millennium sites, they are of the right age according to members of the Combined Prehistoric Expedition, but too old according to Smith. Some of the hut circles could have served as animal enclosures. The large ring, Site 267, might have served as a kraal for herds, or as a trap for wild animals. Toolkits likewise are equivocal on the question, featuring for example both scrapers and arrowheads. The few scraps of bone identified so far are of

probable wild animals—hartebeest and gazelle (C. S. Churcher, personal communication). To date we have conducted only one small test excavation, but there appears to be some material *in situ*, and so a chance of obtaining more definitive answers to these questions.

With the Bashendi Unit, we seem to be on firmer ground in postulating domesticated animals. All parties agree that pastoralism was practised in the Western Desert, at least in the latter part of the Bashendi sequence. Bovid bones, while not numerous, have been recovered from several Bashendi sites. It has been suggested (McDonald in press b) that the Bashendi were not full-time oasis-dwellers, but rather the local version of nomadic pastoralists whose campsites have been found by Gabriel and others (e.g., Gabriel 1987) scattered across the Eastern Sahara. They would have ranged part of the year through the desert, which in the mid-Holocene would have been somewhat wetter than it is now, and then aggregated in Dakhleh, possibly during the dry season.

A number of features on the Southeast Basin Bashendi sites suggest they might be aggregation sites: the "standardized," probably "curated" tools such as knives and side-blow flakes in exotic material (Binford 1979), odd stones that might be ritual paraphernalia, and evidence for the manufacture of ostrich eggshell beads and arrowheads, activities characteristic of the aggregation camps of the San of Southern Africa (Wadley 1987). Aggregation, where dispersed small groups come together regularly for feasting, ritual, courtship, and so on, is a process found commonly among hunter-gatherers, but also among herders. S. E. Smith (1980), for example, records aggregation amongst the pastoral Kel Tamasheq in the West African Sahel.

Another kind of evidence bearing on the question of domestication in Dakhleh is a corpus of incised rock art. Some of it, stylistically distinguishable from material of Old Kingdom date, shows cattle, giraffes, antelope, and so on, often in conjunction with human stick figures (Winkler 1939). While such material is notoriously hard to date, its frequent co-occurrence with

Bashendi sites suggests some of it is attributable to that unit (McDonald in press a). This material is being studied by L. Krzyzaniak of the Archaeological Museum in Poznan, who is interested in the evolution of man-animal relationships as revealed in the art (Krzyzaniak and Kroeper 1985).

Finally, according to the radiocarbon dates, the Bashendi occupies a period of over 2,500 years. Not surprisingly, there is evidence of cultural evolution within that span, and this, in turn, may reflect changes in adaptive patterns including pastoralism. These changes—in site location, artifact assemblages, and so on—are evident at Site 228 and neighbouring sites in the western lobe of the Southeast Basin (Fig. 3). At Site 228, on the basin floor, there are heavy, dense artifact scatters such as that at Stake Hollow (S.H.), which measures approximately 90 x 70 m. Excavation shows that the cultural material at Stake Hollow sandwiches a layer of silt up to 40 cm thick. Lithic toolkits here are dominated by arrowheads and drills. Eggshell beads at various stages of manufacture are abundant, but no pottery has been found.

Up on the edges of the basin, however,

at Sites 252 and 254, scatters are less dense and are clustered around hearth mounds. The cultural material here is associated with sand sheet deposits rather than silts. These basin-edge scatters yield pottery, and numbers of knives, side-blow flakes, and foliates, but lack the many, varied arrowheads and eggshell beads found on the basin floor.

A new series of radiocarbon dates for material from both basin-floor and basin-edge sites has just been provided by the Radiocarbon Laboratory, Institute of Physics, Silesian Technical University, in Gliwice, Poland. These dates, uncalibrated, along with those for ostrich eggshell unadjusted for isotopic fractionation, are presented in Table 1. They suggest that the basin-floor sites associated with the silts are a millennium older than the scattered hearth-mounds on the basin edge.

Just at the end of the 1990 season, we discovered a new type of Bashendi site. As with the Masara, these new sites consist of clusters of hut circles and other stone-built features. These Bashendi sites are located on highlands just to the east, rather than the south, of the southeast Basin. One large site, 270, occupying a small bilobed basin,



Fig. 3. Sites 228, 252, and 254, west lobe, Southeast Basin, Dakhleh Oasis.

consists of at least 150 huts. There are round, oval, and bilobed huts, as well as rectangular ones 5 m in length. In addition, there are larger rings. One, located 500 m from Site 270, measures 30 x 20 m, and consists of thick stone walls with gaps on all four sides. Another is an arc of stones built against a hillslope, with internal measurements of 11 x 4.5 m. While work on this material is in its early stages, associated artifact assemblages suggest these stone structures may fall toward the latter part of the Bashendi sequence.

In short, there are changes within the Bashendi span—changes in site location, in

site types, in artifact assemblages—which may in turn reflect changes in adaptive patterns, including pastoral patterns, within a varying Mid-Holocene environment.

One promising element in the pursuit of these studies in Dakhleh, then, are the newly discovered hut circles and other stone-built features. These, with their rich contextual information and probable *in situ* material, provide a welcome supplement to the information available from the usual Western Desert, late prehistoric deflated surface scatters. Hut circles can be found in various parts of the Western Desert (Hester and Hobler 1969), and probably date from

Table 1. Radiocarbon dates from Bashendi sites in Southeast Basin, Dakhleh.

Site No.	Sample No. ¹	Material, Context	Lab No.	Sample Age b.p.
228	89/5	CH (wood charcoal) from S.H. (Stake Hollow), K17b; cultural layer 40 cm below surface, sealed by silts	Gd6169	7320 ± 120
228	89/6	CH from S.H., J18a; hearth just under surface	Gd-6170	7360 ± 90
228	89/7	CH from S.H., M18b; hearth just under surface	Gd-5654	6990 ± 70
228	89/8	CH from S.H., K17; hearth 35 cm below surface, sealed by silts	Gd-4993	8340 ± 150 ²
254	89/3	CH from Cluster f hearth mound, just below surface	Gd-6168	6300 ± 110
254	89/2	OES (ostrich eggshell) surface scatter around Cl. f hearth mound of sample no. 89/3 above	Gd-5646	5830 ± 70
252	89/10	CH from Cluster 1 hearth mound, just below surface	Gd-4495	6120 ± 250
252	89/9	OES surface scatter around Cl. 1 hearth mound of sample no. 89/10 above	Gd-6545	5930 ± 60 ³

¹Sample No. 89/1 is a charcoal sample from site 244, a rock shelter of the "Sheikh Muftah" cultural unit (McDonald in press a). Lab. No.: Gd-4492; Sample Age b.p. 4310±80.

²Small sample—undersized, diluted.

³Very small sample—undersized, diluted.

many different periods. In Dakhleh, for instance, there are examples of hilltop hut circles of Old Kingdom age. Usually, however, these circles yield little or no dating evidence (e.g., the "Libyan Culture" slab structures of Dungul Oasis reported in Hester and Hobler 1969: 56-57). We are fortunate in Dakhleh to have clusters of hut circles clearly dating to two crucial late prehistoric cultural units.

Acknowledgments

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■ MADAGASCAR

Recent Publications on the Archaeology of Madagascar and the Comoros Islands

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The island of Madagascar has a prehistory and early history that fascinates many but that is also difficult for archaeologists specializing in other areas to learn about. In part, this is because the scholarly literature on Madagascar's archaeology is scattered, in several languages, and frequently in journals of limited distribution. We have often been asked for guideposts to this literature, which certainly deserves to be better known. At the suggestion of David Killick and David Lubell, we have prepared the following short bibliography as a tool for other archaeologists and historians who are looking for an introduction to this fascinating island.

Any brief bibliography will be incomplete. We have limited our citations in two major ways. First, as a result of the dynamic research programs of the Musée de l'Université (formerly the Musée d'Art et d'Archéologie), and the Centre d'Archéologie of the Université d'Antananarivo [formerly the Université de Madagascar],

there has been a large amount of recent archaeological research on the island. Unfortunately, much of this research is presented in student theses or is as yet unpublished, and photocopying is very expensive in Madagascar. We have decided therefore to limit our citations to published articles and books. Second, there is a large, older literature on Madagascar much of which is either out of date or, sometimes, misleading. Given the rapid expansion in what is known, scholars are probably best served by starting with more recent reviews, which can serve as critical bibliographic tools. We have selected as an arbitrary starting date for our bibliography the year 1975. This year saw the publication, albeit in a sadly limited press run, of Vérin's *Doctorat d'État* (1975), which in some ways marks the beginning of the modern era in Malagasy archaeology. We have included some references to recent environmental change on Madagascar, as well as some references to recent, important research on the Comoros Islands, much of whose prehistory seems closely connected to the prehistory of northern Madagascar.

A great deal of the literature on Madagascar is published in journals of limited distribution. These serials are difficult though not impossible to obtain in North America. The most important are the following:

Taloha—Revue du Musée d'Art et d'Archéologie, Université de Madagascar, Antananarivo, Madagascar.

Omaly sy Anio (Hier et Aujourd'hui), Unité d'Enseignement et de Recherche d'Histoire, Université de Madagascar, Antananarivo, Madagascar.

Études Océan Indien—Institut des Langues et Civilisations Orientales, Paris, France.

In order to make this list as useful as possible, we have annotated those citations whose titles do not make it obvious with some basic information about the time period and the region with which they are concerned. Our chronological divisions are simple: Early (pre-fourteenth century) and

Late (fourteenth century and latter) or All Periods (not temporally limited). We distinguish the following regions: Comoros Islands, and for Madagascar the North, East Coast, Central Highlands, West, and South.

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■ SOUTH AFRICA

Driekoppen: A Middle Stone Age Rockshelter

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Driekoppen is located in the Seacow (or Zeekoe) Valley in South Africa (Fig. 1). Situated on the north face of a dolerite dike, the rockshelter (DRI 2) looks out over the valley floor approximately 50 m below. It is the largest rockshelter in the region and contains numerous rock paintings. Smithfield artifacts litter the floor but only a small number of Middle Stone Age artifacts can be found on the slope of the dike below the entrance to the shelter. However, a large Orangian surface site (DRI 1) is located at the base of the dike. It covers an area of approximately four hectares and is characterized by an unusually dense accumulation of lithics.

The site was originally recorded by members of the Zeekoe Valley Archaeological Project (ZVAP) under the direction of Garth Sampson (1985) and was excavated in 1987 by a ZVAP team investigating Smithfield rockshelters. The group was surprised not only by the presence but by the extent of the Middle Stone Age deposit underlying the Smithfield levels.

The break between the Later Stone Age and Middle Stone Age occupation levels is easily distinguished. Middle Stone Age artifacts begin appearing in a very hard, dense pavement of sediment and artifacts. Many of the artifacts are found lying on their edges. This layer is so hard and so difficult to excavate that a geological hammer is needed to break off manageable chunks. Fortunately, the layer is relatively thin (i.e., approximately 10 cm thick).

Ten 1 x 1 m squares were dug in spits (levels) between 2 cm and 5 cm thick. Each

square was subdivided into sixteen 25 cm² blocks, and each block was dug as a discrete unit. The depth of each spit was measured using a dumpy level and a stadia rod. Sixteen depth measurements were made along the outside of the square at 25 cm intervals. These procedures provided three dimensional provenience of artifacts accurate enough for statistical analysis of spatial patterning without point plotting (H. Hietala, personal communication).

Screening of the matrix using $\frac{1}{4}$ -inch and $\frac{1}{8}$ -inch mesh resulted in the recovery of very small pieces, including retouch flakes and platform preparation flakes. Approximately 25,000 lithic pieces were excavated. However, no bone or ostrich eggshell was located. Charcoal was present in very small amounts, and enough closely associated fragments were recovered to submit to the Radiocarbon Laboratory at Southern Methodist University for dating.

Two sediment samples taken from the top of the MSA levels (one from the north wall of Square G and one from the south wall of Square CC) were sent to the Instytut

Historii Kultury Materialnej PAN in Warsaw for thermoluminescence dating. The date from Square G (GdTI 204) is 39.7 \pm 4.3 ka while the sample from Square CC (GdTI 203) is 26.3 \pm 3.0 ka. Other sediment samples have been sent to Dr. T. Partridge for chemical analysis.

DRI 1 was surface collected using a stratified random sample in the area of greatest artifact density. The twenty-five 1 x 1 m units produced approximately 50,000 pieces of lithic material. Several of these artifacts have been submitted to the University of California-Davis to test the feasibility of magnetic dating. Research presently being undertaken by paleomagnetists at UC Davis has resulted in the refinement of magnetic dating of desert varnish (Clayton et al. 1990). According to the report, the magnetic reading found within the centre of some rocks differs from that in the varnish, and this difference can be used to determine the age of the varnish. The Driekoppen lithics are being analyzed to determine if the material is suitable for paleomagnetic dating.

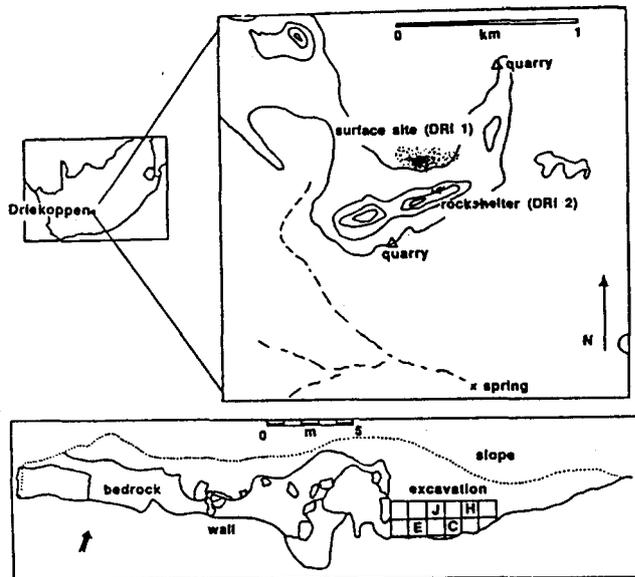


Fig. 1. Maps showing location of Driekoppen sites.

The lithics from two squares, A and B, have been analyzed. All of the artifacts are made exclusively from locally abundant hornfels. Only about 1% of the pieces are retouched with most pieces classified as endscrapers or sidescrapers. Blades make up approximately 10% of the total assemblage. Only a small number of exhausted cores have been identified; they are unusually small and all but one come from the lower levels of the site. Very few of the artifacts retain traces of cortex and, when compared to the materials known from the Orange River (Sampson 1968, 1974), are relatively small.

Replicative work by Bruce Bradley of the Crow Canyon Archaeological Center has provided some insight into possible reasons for some of the characteristics mentioned above. It appears that a large percentage of nodules found in any given quarry in the area are unacceptable for flaking—most have major flaws and many of the “good” nodules are relatively small. Furthermore, the texture of the raw material varies greatly even within a single quarry. These factors suggest that nodule selection was a relatively lengthy process involving the initial reduction of numerous pieces prior to transport to the rockshelter. It is also likely that when a high quality nodule was located, it was used until nothing more could be flaked from it. This would explain the relative absence of cortex pieces in the site, the size of the flakes and blades found in the deposit and the small size and “used up” condition of the recovered cores.

Preliminary results of the analysis suggest that the assemblage is made up of two distinct components. A plot of the average length of flakes or blades in each spit against the depth of the spit indicates that the assemblage can be easily divided into “early and late” phases. This agrees with Sampson’s (1974: 165) observations on the Orangian.

It is hoped that, as the analysis progresses, more diachronic changes in the assemblage will become apparent and that these changes will be distinct enough to be recognizable in the surface collection. If we are able to distinguish between “early and late” stages in the Driekoppen assemblage,

we might be able to develop a relative chronology of MSA surface sites in the vicinity and look at settlement patterns on a modest scale. If the desert varnish dating technique can be used on hornfels and produces reasonable dates for the surface sites, we may be able to provide even more solid data on MSA settlement patterns in the Seacow Valley. Presently, however, this is all conjecture and we will have to wait for further results.

Acknowledgements

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Sorghum sp. while Late Kassala Phase pottery revealed remains of a cf. *Echinochloa* sp. and a Gramineae sp. (grass). We are now examining reference specimens of wild and domesticated African millets and sorghum in an attempt to further refine these identifications.

■ **SUDAN**

Plant Remains Preserved in Kassala Phase Ceramics, Eastern Sudan

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This research note reports on the preliminary identification of plant remains preserved in pottery excavated from three Kassala Phase (3350–1000 B.C.) archaeological sites located in the southern Atbai region of eastern Sudan. Sites KG-23C and KG-7A (Butana Group) date to the Early Kassala Phase (2800–2500 B.C.) and Site KG-96A dates to the Late Kassala Phase (±1,000 B.C.).

The remains of carbonised caryopses and silicified lemma and palea fragments were extracted by gently breaking down the potsherds with pliers. The preservation of these remains in the matrix of the ceramics may be the result of low temperature firing in antiquity and a very dry depositional environment. Samples were initially selected under a binocular microscope and then studied with an SEM (Scanning Electron Microscope) at the Salvage Archaeology Laboratory, University of Hokkaido, Sapporo, Japan.

Early Kassala Phase ceramics produced the remains of a large cf. *Echinochloa* sp., *Setaria* sp. (two types of millet) and a cf.

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Gash Delta Archaeological Project: 1988–89 Field Seasons

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The Italian Archaeological Mission to the Sudan (Kassala) of the Istituto Universitario Orientale, Naples, has carried out the ninth and tenth field seasons in the Gash Delta (Kassala Province, Sudan) respectively in January–February 1988 and January–February 1989, as part of the Gash Delta Archaeological Project in progress since 1980.

In these seasons the mission has continued the systematic excavation of the protohistorical site at Mahal Teglinos, near Kassala. The mission was supported by funds from the National Research Council (CNR), the Ministry of Foreign Affairs (MAE), and the Ministry of Education (MPI) (research funds 40% and 60%), Rome. In both seasons the field work has been carried out under the direction of the author of this report.

In 1988, the only other member of the research team in the field was Mahmud El Sheik el Tayeb, Inspector for Archaeology, Sudanese Antiquities Services (S.A.S.), Kartoum, as surface surveyor and assistant archaeologist.

In 1989, the research team in the field included: Mauro Cremaschi, geomorphologist; Livio Crescezi, surface surveyor; Cinzia Perlingieri, assistant archaeologist, ceramic analyst and illustrator; Maria Teresa Preziosi, assistant archaeologist; Donatella Usai, assistant archaeologist and lithic analyst; Abdallah Mohamed Abdallah, Inspector for Archaeology, S.A.S., assistant archaeologist.

Excavations

In the 1988 and 1989 seasons the mission has continued to investigate the area between the settlement made evident in 1981, 1984, and 1987 and the cemetery with stone structures and megalithic stelae discovered in 1985 in the central sector of the site. The purpose of the excavation was to link these different functional areas in the stratigraphical sequence and to clarify their correlation. On the whole, 31 squares, 2 x 2 m in size, have been opened, covering a surface of 124 m², between the southern edge of the 1987 trench in the settlement and the northern one of the funerary area excavated in 1985.

The excavation has been carried out in conformity with the AAAA grid system, adopted by the mission in 1985. The site has been divided into a grid of squares with decreasing size of 250 m, 50 m, 10 m and 2 m. Each square has been marked with a letter from A to Y, following the order from west to east and from north to south. The following squares have been opened in these seasons: BSPC, BSPD, BSPH, BSPI, BSPJ, BSPM, BSPN, BSPO, BSPR, BSPS, BSPT, BSPW, BSPX, BSPY; BSQA, BSQF, BSQK, BSQK, BSQM, BSQP, BSQQ, BSQR, BSQU, BSQV, BSQW; BSUD, BSUE; BSVB, BSVC.

The squares have been excavated following natural strata in order to define as best as possible stratification of the site. Moreover, the excavation has been carried out with a step pattern, going down to a

deeper level in the central squares of the investigated area to make evident the spatial organization of the features over a quite wide surface, as well as their stratigraphic relationships.

Stratigraphy

The following strata of soil have been identified in the area investigated in these seasons:

- S 1: Very hard brown soil (compact soil A)—superficial stratum; average thickness, ca. 0.15 m (not completely excavated).
- S 2: Very soft light brown soil of eolian origin, covering most of the surface of the site, very rich in artefacts; superficial stratum; average thickness 0.25–0.30 m.
- S 3': Harder light brown soil with soft texture; superficial stratum, squares BSPT, BSPY, BSQK, BSQP, BSQU; underlying S 2, squares BSPE, BSPN, BSPO, BSQK, BSQM, BSPS, BSPW, BSPX, BSQW, BSUE, BSVA, BSVC; average thickness 0.20–0.25 m.
- S 3'': Harder light brown soil with granular texture; superficial stratum, square BSQF; underlying S 3', squares BSPN, BSQK, BSQK, BSPT, BSQP, BSPY, BSQU, BSQV, BSUE, BSVA; average thickness 0.30 m.
- S 4: Very soft reddish sand, very rich in artefacts; superficial stratum; average thickness 0.15 m.
- S 5: Hard light reddish brown soil, with granular texture; underlying S 3', squares BSPO, BSPS, BSQM; underlying S 3'', squares BSPN, BSQK, BSQK, BSPT, BSQP, BSQQ, BSPY, BSQU, BSUE; average thickness 0.15–0.20 m.
- S 6: Reddish yellow burnt soil, forming circular spots, with average diameter of 1.50–2.00 m; included in S 3'', S 3''/S 5 and S 5 in the area of the stelae; thickness ranging between 0.04 and 0.28 m.

- S7: Hard dark brown soil with uniform texture; underlying S 5, average thickness 0.41 m (not completely excavated).
- S8: Very hard light brown soil (compact soil B); underlying S 5 and S 7 (only observed at the base of the excavation).

On the whole, the strata 2, 3', and 3" show a general slope from SW to NW with a difference in height of about 0.25 m. Stratum 5 shows a slope from NW to SE with a difference in height of 0.10 m and stratum 7 shows a slope from E to W with a difference in height of about 0.15 m.

The analysis of the absolute quantity of artefacts in the various strata and in each stratum in the different squares point to:

- ◆ a progressive decrease of the artefacts from the surface to the base of each square, as it was observed in the previous seasons;
- ◆ a major concentration of artefacts in the strata S 2 and S 3', containing 60% of the materials, with a clear decrease in the stratum S 3" and a major decrease in the lower strata;
- ◆ a nonuniform distribution of artefacts in most individual strata.

In particular, we can observe:

- ◆ a major concentration of materials from strata 2 and 3' in the central squares (namely BSPS and BSPQ) of the excavated area, corresponding to the cemetery;
- ◆ a major concentration of materials in the southern squares for the stratum 3", progressively decreasing to the north;
- ◆ a uniform distribution of materials in stratum 5.

As regards the relative concentrations of artifacts among strata, strata 1 and 2 have a high density of materials, strata 3' and 3" have a middle density of materials, and strata 5, 5', and 7 have a low density of materials. The ground stones, in particular, have a very high density in the squares corresponding to the funerary area. This situation, most likely, reflects their re-use to

fill and/or cover the stone cairns over the burials.

Funerary Monuments and Burials

In the 1988 and 1989 seasons 14 stone structures, 78 stelae and 30 burials have been discovered in the funerary area.

Stone Structures

Five different stone structures have been identified: (i) circles, (ii) square structures, (iii) round arrangements of stones, (iv) irregular cairns, and (v) tumuli. They were mostly connected with burials. The circles are round or oval arrangement of big stones, sometimes filled with pebbles and/or fragments of lower and upper grinding stones. These structures range between 0.90 x 0.50 m and 1.50 x 1.10 m in size. The square structures are small cairns made with slabs fixed in the ground and filled or covered with small pebbles or fragments of grinding stones. They range between 0.60 x 0.60 m and 0.90 x 0.90 m in size. Three small round arrangements of stones have been found. They are formed by stones arranged concentrically. Two irregular cairns, covering very badly distributed burials, were found in the superficial layers of two squares. A few other cairns, associated with the stelae, were found at a deeper level. A tumulus, about 2 m in diameter, was found on the surface of two squares. It covered a late burial.

Stelae

The stelae belong to the same types describes in 1985: (i) flat stones; (ii) pointed stones; and (iii) small pillars. They have an average height of 100 cm.

Most stelae are directly fixed in the soil or exhibit a stone circle as a reinforcement of the base. Only stela 94 was fixed in a stone cairn covering a pit without any evidence of burial.

Burials

Burials 25 through 54 have been found in the 1988 and 1989 seasons. So far, six levels of funerary monuments and burials

can be described in the cemetery excavated in 1988 and 1989:

- Level I (superficial): tumulus, burial 43.
- Level II (S 2, 3'): stone circles, square structures, circular cairns, irregular cairns; burials 38, 39, 44, 45, 27, 41, 26, 25, 46, 47.
- Level III (S 3'"): stone circles, circular or irregular stone cairns; stelae 43, 44, 45, 46, 47, 48, 49, 52, 53, 54, 66, 68, 69, 70, 72, 73, 74, 75, 76, 77, 90, 111, 112, 113, 114; burials 30, 31, 34, 52, 54.
- Level IV (S 5): stelae 71, 83, 84, 85, 86, 98, 99, 100, 107, 108, 109, 110; burials 28, 32, 42, 53.
- Level V (S 5'): stelae 105, 106 (?); burial 37, two unexcavated graves in BSPJ, BSPO (burials not directly associated with the stelae).
- Level VI (S 7): no evidence of funerary remains.

Cultural Sequence

The detailed analysis of the artefacts collected in the 1988 and 1989 field seasons is still in progress.

At present, the preliminary study of the pottery by Miss Cinzia Perlingieri has made evident 44 basic decorative patterns and 31 combined patterns, which have been provisionally used as diagnostic indicators to outline the cultural sequence of the strata and monuments with burials, so far observed in the investigated area.

The stratigraphic sequence of these decorative patterns suggests that

- ◆ all strata belong to the same cultural horizon;
- ◆ each stratum can be regarded as an independent culture stratigraphic unit, being characterized by specific sets of decorative patterns on the pottery;
- ◆ the strata 2 and 3' might represent one archaeological level (level 1);

- ◆ the stratum 3" seems to be a transitional archaeological level (level 2);
- ◆ the strata 5, 5', and 7 might be regarded as another archaeological level (level 3).

On the basis of the pottery evidence, we can safely state that the whole assemblage belongs to the Gash Group cultural unit, as was recognized in previous seasons.

Chronology

The three archaeological levels observed in the assemblage excavated in 1988 and 1989 are directly comparable with the archaeological levels I, II, III, in the 1987 BSKP/BSKQ trench, representing the reference sequence in the settlement area. The levels in the 1987 trench are presently dated on the basis of pottery cross-dating and some C14 dates, as follows: 1500–1800 B.C. (Level I), 1800–1900 B.C. (Level II), and 1900–2300 B.C. (Level III). Therefore, we can quite safely date the 1989 evidence to the late third–early second millennium B.C.

Conclusions

The present evidence enables us to distinguish four phases in the development of the Gash Group burial habits.

The earliest phase documented in the excavated area is characterized by burials in simple pits, not associated with any kind of funerary monument (stratum 5'). Up to now, all excavated bodies from this phase were buried in a straight posture. Moreover, it seems that in this phase the burials—at least in some cases—were located within the settlement area, maybe close to the huts.

The second phase is characterized by burials associated only with the stelae (stratum 5). In this phase, the bodies were still usually buried in a straight posture on the back or on the side.

The third phase can be regarded as transitional, the burials being associated with stelae and/or stone cairns (stratum 3"). The bodies were usually buried lying on their backs with the legs flexed.

The fourth phase is characterized by burials associated only with stone cairns of different type (strata 2, 3'). The bodies are usually lying in a contracted posture on the side.

Interestingly, such phases of burial rituals basically correspond to the archaeological levels recognized in the area.

■ TANZANIA

Preliminary Report on an Archaeological Survey of the Ndotu Beds, Olduvai Gorge, Tanzania

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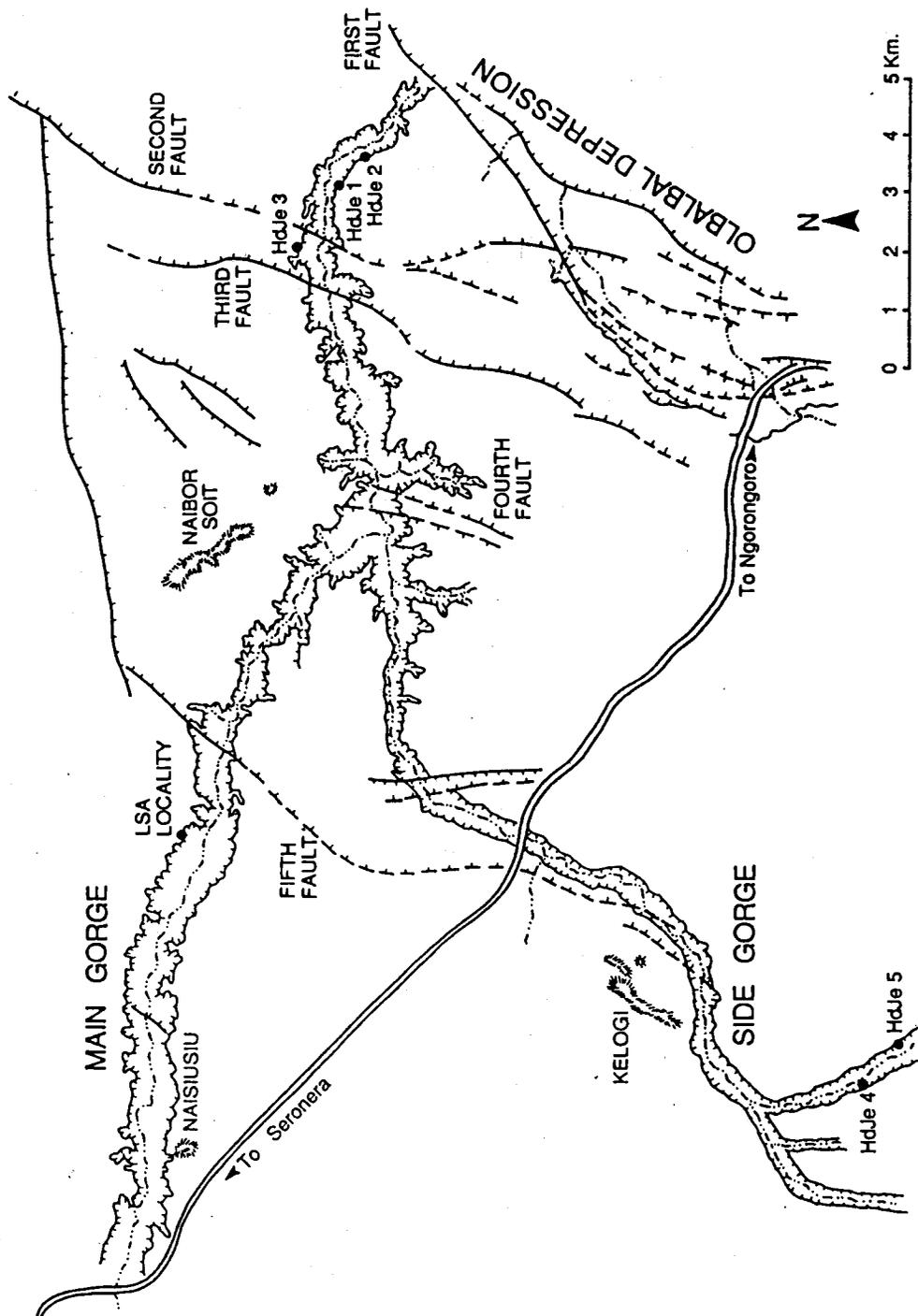
In recent years, scientific interest has focused on Africa as the continent where anatomically modern humans (*Homo sapiens sapiens*) may have first evolved (see Brauer 1984a, 1984b, 1989; Clark 1989; Gould 1987; Klein 1989; Mehlman 1988; Rightmire 1984, 1986, 1988, 1989; Simons 1989). Research on both nuclear and mitochondrial DNA also points to an exclusively African individual or population(s) as being ancestral to all modern humans (Cann et al. 1987; Wainscoat et al. 1986; see also Gould 1987). Although this has major implications for understanding the worldwide origins of humanity, the fossil, archaeological, and chronological evidence necessary for testing various hypotheses concerning late Quaternary biocultural evolution in Africa remains fragmentary and inconclusive.

In the 1970s many archaeologists thought that there was a simple correlation between African cultural stages and hominid groups, contending that *Homo habilis* was the maker of the Oldowan, *Homo erectus* was the maker of the Acheulian techno-complex, archaic *Homo sapiens* were

associated with Middle Stone Age assemblages, and anatomically modern humans with the Later Stone Age toolkit (Clark 1970). Recent studies suggest that the situation is more complex, with archaic *Homo sapiens* associated with Middle Stone Age *and/or* Acheulian tools, and anatomically modern humans associated with Middle Stone Age *and/or* Later Stone Age assemblages (Clark 1988). This means that the behavioral patterns of individual hominid species are much more difficult to decipher. This in part stems from the relatively few sites that contain both hominid and archaeological remains that can be chronometrically dated with precision.

Olduvai Gorge, in Tanzania, is one of the few known sites in Africa with the potential of providing a range of data needed for a more precise assessment of where, when, and how anatomically modern humans evolved in Africa. This report presents the results of an archaeological survey of the Ndotu Beds, at Olduvai Gorge, and deposits 6 to 7 km south of Kelogi Hills. The survey was conducted during July and August 1989. The main objective was to locate archaeological sites in context with faunal and stone artifact remains that could contribute to a better understanding of the patterns of biocultural change during the late Middle to Upper Pleistocene. Although only a fraction of the Gorge could be examined over the 20 days of survey, we located five Middle Stone Age (MSA) sites; three in the main Gorge and two in the Side Gorge (Map 1). These sites, when completely excavated, will provide more evidence to support or refute the interpretation of an African center of origin for anatomically modern humans from the fossil and molecular data. They will also provide a range of data necessary to confirm the general composition and variability of MSA industries, the possible beginning of regional identity in sub-Saharan Africa (Clark 1988), and the relationship between biological change and cultural change.

From July 10th to July 25th we concentrated our efforts on surveying Ndotu exposures within the Main Gorge. Three sites were located. From July 31st we shifted our efforts to examine Ndotu



Map 1. Outline Map of the Olduvai Main and Side Gorges showing faults, nearby topographic features, and 1989 archeological sites. (Extracted from R. L. Hay, *Geology of Olduvai Gorge*, 1976)

exposures south of Kelogi Hills within the Side Gorge. Here we located two sites. All sites were numbered according to the standardized site enumeration system for the continent of Africa (S.A.S.E.S. Nelson 1971).

Field Methods and Site Description

My survey team was composed of six crew members: B. J. Kimati and H. M. Hamza, archaeology students from the University of Dar es Salaam; S. O. Minazi, Conservation Assistant from the Antiquities Department; Magige, archaeologist graduated in April 1988 from the University of Dar es Salaam; S. M. Uvuruge, driver; and myself. Our survey strategies depended on the overall exposure of the Ndotu Beds. Since time was a factor, we surveyed only those areas that were easily accessible. Walk-overs were done in parallel transects at 3-meter intervals. Within each of these areas, we undertook a 100% reconnaissance. Any locality that yielded stone artifacts was defined as an archaeological site. Sites were numbered in series starting with 1, the first site to be found (e.g., HdJe1). We completed a total collection of surface artifacts at all sites except site 5. In order to map the surface patterns and distribution of stone artifacts and bone remains, we established north-south base lines by using a compass (hand-held) at sites 1, 2 and 3. A 30 m fiberglass tape was then extended in a north-south direction to cover the entire site. A datum point was defined either at the northern or southern end of the base line. Artifacts were then collected in reference to the datum point, and two distance measurements of each artifact (north-south and east or west, depending on the position of the artifact relative to the base line) were taken before the artifacts were collected. Artifacts were catalogued in series starting with number 1, the first artifact to be collected for each site. At sites 4 and 5a transit was employed to plot surface artifacts. The distance, angle, and the elevation of each artifact were taken in reference to the datum point.

Main Gorge

HdJe 1

Extensive exposures of the Ndotu Beds are found at the southern end of the Main Gorge, and about 1 km east of the Second Fault, on the south side of the gorge. The Ndotu Beds, which overlie the Masek Beds in the Olduvai sequence, are divided into two stratigraphic units (Hay 1976). The Upper unit is a single massive horizontal bed of eolian tuff probably of Upper Pleistocene age and beyond the range of radiocarbon. The Lower unit is largely conglomerates and sandstones, probably of late Middle to Upper Pleistocene age. A vitric marker tuff in the Lower unit has been correlated with the Ngaloba Bed claystone at Laetoli estimated to be $120,000 \pm 30,000$ b.p., which has yielded a nearly complete fossil skull of a "late archaic *Homo sapiens*" (LH 18: Brauer 1989; Day et al. 1980).

At this site, the two units are clearly visible. The Lower Ndotu with conglomerates lies above the Masek Beds, while the Upper Ndotu lies above the marker tuff. Two areas within the Lower unit have concentrations of MSA artifacts and bone fragments in direct association. The artifacts were eroding into the gorge. We collected all surface artifacts. The dominant raw material here is quartz and quartzite.

HdJe 2

This site is also within the Main Gorge about 500 meters southeast of HdJe 1. We found good exposures of the Ndotu Beds with stone artifacts and bone remains in direct association. All of the stone artifacts lying on the surface are of MSA affinity. A sample of artifacts was collected from the surface. After an examination by Dr. Richard Hay, this site was determined to be locality 26 where he recovered MSA material in 1969.

HdJe 3

This site is located in the northern part of the Main Gorge, west of the second fault. Most of the stone artifacts and bone remains

collected from this site were found in slope wash and it was difficult to establish their context. Many of the artifacts exhibit adhering matrix from the Mašek Beds. The Ndotu Beds here are very hard limestone and it is unlikely that the MSA stone artifacts are coming from these beds.

Later Stone Age site

This occurrence was not officially recorded as a site, but deserves mention in this report. This is survey area number 9 and is located west of the fifth fault, 273 degrees southwest of the shifting sand, and 37 meters from the northern edge of the Main Gorge. The area has a surface concentration of obsidian, chert, and quartz microliths in direct association with pottery. The context of these artifacts is in unconsolidated sand, which is expectable for Later Stone Age materials. The area is a Later Stone Age/Pastoral Neolithic site and warrants further investigation.

Side Gorge

HdJe 4

Site HdJe 4 is located 6 km south of the Kelogi Hills, within the Side Gorge. The site has two localities, Loc. 1 and Loc. 2, which are about 100 meters apart. The exposures are on the east side of the Side Gorge, and MSA artifacts were scattered throughout the site. Typical Levallois cores and flakes, as well as disc cores, were collected from the surface. No cultural materials were found *in situ*. Paul Manega (University of Colorado) and B. Walter (Institute of Human Origins) have tentatively correlated the deposits from which the artifacts are eroding with the Ngaloba Beds at Laetoli.

HdJe 5

HdJe 5 is a series of sites located 1 km south of HdJe 4. The exposures here are very extensive. A large concentration of bone remains was found *in situ* in the upper soft layers. This upper layer is likely the Naisiusiu Beds. The Naisiusiu Beds were deposited by wind after faulting had stopped and the gorge eroded to nearly its

present depth (R. Hay personal communication; Leakey et al. 1972). Microlithic tools are eroding from this upper layer.

Below this wind-deposited layer is a clay layer that appears to be the Ngaloba Beds (R. Hay, P. Manega, and B. Walter, personal communication). This is a layer of fluvial sediments interstratified with tuffs and biotite. It is probably of the same age as the Ndotu Beds (R. Hay personal communication). Typical MSA stone artifacts are eroding from this lower layer. Most of them are shaped tools. The deposits at HdJe 5, with microlithic implements eroding from the upper layer and MSA assemblages eroding from the lower layer, most likely marks the transition from MSA to Later Stone Age. If this is the case, then this is a very significant finding because the emergence of an entity known as "Proto-LSA" is not well documented in sub-Saharan Africa. In almost all of the South African sites where both MSA and LSA assemblages are represented, there is a marked stratigraphic hiatus between them (Klein 1977; Deacon and Brooker 1976). In Eastern Africa, Post-MSA or "Proto-LSA" assemblages have been found at both Nasera and Mumba, but also with stratigraphic breaks (Mehlman 1989).

Unlike sites in the Main Gorge, where the dominant raw materials are quartz and quartzite coming from Naibor Soit Hills in the north, the dominant raw material at sites in the Side Gorge is basalt from the nearby Lemagrut Hills. The preservation of bone in the upper layer is good, and many fossilized bones were exposed in the lower layer. All bone remains were left undisturbed, and a sample of stone artifacts was collected from the surface. One sample of ostrich egg shell was collected by B. Walter and P. Manega from the upper layer for racemization dating of protein amino acids.

Clearly, the Ndotu Beds hold great promise for making important contributions to the better understanding of biocultural change of modern humans. The deposits span the crucial period of ca. 300,000–40,000 years and encompass archaeological sites with MSA artifacts and fossil bone in stratigraphic context. Even more importantly, the sites have the potential of

being tied into a detailed absolute chronology by using the new Potassium/Argon laser techniques of obtaining ages from samples of relatively recent volcanic layers such as those stratified throughout the late Middle to Upper Pleistocene deposits at Olduvai Gorge, and racemization dating of ostrich eggshell protein amino acids. (B. Walter personal communication). Steven Brandt of the University of Florida has submitted a research proposal to the University for funding so that we can return to Olduvai Gorge in the summer of 1990 to conduct test excavations at the sites discovered during the 1989 survey. Our objectives are to determine the precise geological and archaeological context of the sites; to determine their dimensions, how the sites were formed, the quantity, quality and variety of fossil animal (and hopefully human) bones, the degree of stone artifact variability, and so forth (Brandt and Mabulla 1989). We will also conduct an additional site survey of the late Middle to Upper Pleistocene deposits within the Side Gorge from Kelogi Hills to near Laetoli.

Acknowledgements

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■ UGANDA

Ntusi and Its Hinterland: Further Investigations of The Later Iron Age and Pastoral Ecology in Southern Uganda

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The background to the new initiative investigating the interlacustrine Later Iron Age, principally in Uganda, was described by Dr. J. E. G. Sutton (NA 29). This previous report also described the first season of excavation at the site of Ntusi. Subsequently, two more excavation seasons have been conducted at Ntusi under the direction of the author.

Previous work in Uganda was characterised by the recording of isolated sites recognised by colonial administrators and local enthusiasts. Naturally this produced a dispersed pattern of sites scattered across central Uganda. These were recognised because of their high visibility, as they usually involved some form of earthwork. Thus the two most significant works on site recognition in the later Iron Age are those by Wayland (1934) and Lanning (1953). In recent decades, few new sites have been recorded.

In addition to the two seasons of excavation mentioned above, an added dimension to the examination of the Later Iron Age was the successful completion of a survey of the Ntusi area (roughly corresponding to the present Ntusi sub-county), conveniently including the sites of Bigo, Kagago (known locally as Bigaga) and Kasonko. A systematic, controlled survey had not previously been attempted in Uganda though the potential of such work had been recognised. For the first time it proved possible to view these large sites

within their setting in the overall archaeological record. The survey was also essential to the examination of the pastoral element in the area. An exclusive, stratified pastoralist society has been the most popular explanation for the presence of the large earthwork sites, but attempts to prove the existence of either a separate pastoralist community or social stratification have met with little success. This consideration of pastoralism in the survey is complemented by the work being conducted on present pastoralist practice in Mawogola by Ephraim Kamuhangire of the Department of Antiquities and Museums, Kampala. Important information has been gained on the herd structures and herd management currently employed in the area.

Over 50 sites were located in the survey. The sites are generally between 50 m and 200 m in diameter. They are usually located near the top of the slope on which they are situated and in close proximity to major valleys with perennial water resources. Low mounds, characteristically present towards the lower end of these sites, are comparable to the *orubungo* (dungheap) found in Bahima kraals, suggesting deposition episodes consistent with pastoralism. The composition and location of these sites thus suggests that most of them were occupied by pastoralists. No evidence was discovered for occupation of the area earlier than the Later Iron Age. Excavation at three sites located in the survey, Kakinga, Kasebwongera, and Buteraniro, revealed an overwhelming dominance of cattle amongst the faunal remains. Occasional evidence for iron working was found on the surface of some sites.

The faunal assemblage from the 1987 excavations at Ntusi indicates a similar pattern. It would appear that the ancient occupants of the region were as dependant upon cattle as are the present inhabitants. Among the features excavated in 1987 was one of two mounds, that known as "Ntusi female." In 1988 excavation at the other, the "male" mound, sought to compare the archaeological record in a different part of the site. This mound is around 50 m in length and up to 30 m across. The excavation revealed that the mound was

over 4 m in depth and that it had undergone several changes in shape.

A series of radiocarbon tests, run on charcoal samples collected at intervals in the "male" mound, date the total accumulation to between the eleventh and thirteenth centuries a.d. (uncalibrated). This is close to the dating of the "female" mound (see Robertshaw, NA 30), and suggests that these two big mounds belong at the earlier phase of the activity both at Ntusi itself and in the district.

The most immediately interesting finds from the mound were several small ornaments including glass and cowrie shell beads from the upper layers. These indicate a limited form of contact between the interlacustrine region and coastal trade by around the thirteenth century. Ostrich eggshell beads and pieces of largely unworked ivory were also discovered. Much pottery and bone and occasional iron were recovered. Once again most of the bones were cattle, with occasional sheep/goat and a few varied bird bones.

Both the "male" and "female" mounds are highly visible features but are currently surrounded by cultivation, which makes investigation of the surrounding areas difficult. In 1989 a new area was examined on the hillside to the north of the main hill occupied at Ntusi. This hillside includes several low mounds. One of these was excavated whilst a series of test squares was dug in the surrounding area. The mound produced the usual large quantities of pottery and bone, the latter again predominantly that of cattle. Most interesting amongst the small finds was a quantity of ivory, ranging from unworked pieces through to finished beads, indicating that this was an ivory-working site. In the immediate vicinity of the mound several circular slots, 3–5 m in diameter and 0.2 m deep, were recorded which may be the foundations of huts. Also in this location two glass beads were recovered.

Further up the slope one more slot was noted in association with a number of possible postholes. Several large pits were found in this area, measuring up to 2 m in width and depth and frequently containing large broken pots. Although this work

confirms the problem of locating structures in the archaeology of this region, these test excavations do reveal that area excavation can provide informative results.

Excavation at Ntusi has now fairly thoroughly examined mounds and their role in the site. Future work will have to address far more directly the actual nature of its occupation. On a site of this size, there are several different functions that may have been fulfilled (town, dispersed, or shifting village, capital, etc.). It has been shown that there is an important pastoralist contribution at Ntusi and its surrounds. There is also, however, evidence for the existence of agriculture in the regular occurrence of quernstones across the site. The scale and the nature of the interplay between these two economic activities are likely to be debated for a long time. Several contrasting archaeological patterns throughout the site may also become apparent. It is still uncertain how much of the vast area (over 100 ha) was occupied at any one time and how dense this occupation was. Closer dating is obviously needed. Radiocarbon dates are being sought to check the contemporaneity of the various different areas most recently excavated at Ntusi.

The problems associated with radiocarbon dating, particularly the margin of error, become exaggerated with the short time scale involved in considering the Later Iron Age. A possible alternative strategy to define broad chronological differentiation is through the study of pottery assemblages. Detailed analysis of the recently excavated material from Mubende and Ntusi by Jeremy Meredith recognises the broadly unified tradition of the local Later Iron Age. Within this, however, there are subtle changes and variations with which it may well be possible to identify a ceramic seriation. The local Later Iron Age tradition, as so far examined, suggests some technological and stylistic continuity from the Early Iron Age.

This work at Ntusi, along with that of Dr. Peter Robertshaw at Mubende Hill and Munsa and Professor Graham Connah at Kibiro and other sites, will hopefully establish the study of the archaeology of the Later Iron Age in Uganda. Thus provided

with a more solid archaeological base, archaeologists and historians will be able to return to the problems of attempting to correlate information from archaeology and from oral traditions. The archaeological evidence will be able to offer fresh insight into the changes that took place in society before the emergence of the later interlacustrine kingdoms. Further work in and around Ntusi will be designed to investigate the relationship between Ntusi, Bigo, and their surrounding small sites.

Acknowledgements

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■ ZAIRE

Preliminary Report on Research into Traditional Ironworking at Lopanzo, Equateur Province, Zaïre

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In the early decades of this century the large village of Lopanzo, situated to the southeast of Lac Tumba in the Zaïre Basin, was the scene of an active iron smelting and smithing industry. The purpose of our mission was to document that industry as fully as possible and to carry out a reconstruction of the smelting process if that was still possible, given that sixty years had elapsed since it was regularly carried out. In fact, although much about the technology had clearly been forgotten, local artisans were able to produce what appears to be a small amount of bloom which, together with other samples, will be analysed by David Killick, Harvard University.

The present site of Lopanzo was chosen because of the abundance of easily exploited iron ores. Pits are still visible near the town as are slags from sites of earlier smelting, but archaeological prospection of the area is difficult because of the forest growth. Nevertheless, there seems little doubt that ironworking has long been established in the region and that iron goods played a central role in bridewealth transactions and in status systems, as well as in the more utilitarian sphere.

Work and ritual roles in iron smelting reflect the close symbiosis of Baoto and Batoa in the forest region. Formerly Batoa

appear to have provided much of the manual labor, and they are still entrusted with the preparation of the charcoal used in smelting. Ore is dug in shallow pits and carried to the foundry site where it is roasted over a wood fire, then pounded into small bits and sorted. Contrary to Célis' account (1987), the ore was only roasted a single time in this reconstruction.

The smelting furnace was constructed on the very day of the smelt. It consisted of a shallow bowl, connected by a small tunnel to a much larger and deeper observation pit. The *tuyère* was also modelled just before the smelt, using clay mixed with fronds and the fiber of palm kernels and spread over a lattice basket-like frame. The two-chambered bellows were hollowed out of wood, with covers fashioned of leaves that were operated with wooden sticks. These are the same types of bellows used in smithing. Initially, two pairs were active; then a third was added during the smelt. What was curious, however, was the manner in which the bellows were inserted into the *tuyère*: a large air gap surrounded their nozzles, which made it surprising that they could produce the blast necessary.

The smelt itself was preceded by sacrifices of a goat, dog, and cock, and there was a liberal use of medicines before and during the process. In this case both the technical and ritual operations were supervised by a *féticheur* from a neighboring village. His participation caused considerable grumbling among local people, but was accepted, probably because of doubts whether they could carry it off without him.

The bowl of the furnace was filled with charcoal. Ore was piled on top of it, on either side of the *tuyère* opening, and only gradually covered with charcoal. It was difficult to monitor temperatures by means of thermocouples set at fixed points because the smelter periodically used wooden paddles to mound up the charge and redistribute it in the bowl. Nevertheless, we were able to follow a very rapid rise in temperature during the first hour and a half of the smelt. It reached about 1125°C before the *tuyère* became blocked. Once it was unblocked it took some time to regain the former levels. Then, approximately four

and a half hours into the smelt, the temperature skyrocketed to 1320°C but fell back to 1250–60° where it stayed until the smelt was halted about a half hour later when it seemed unlikely that anything more would be produced. Our own observation led us to believe that the high temperatures had resulted simply from an enormous concentration of charcoal, whereas very little of the prepared ore was actually used and may not have been arranged to take advantage of the heat in a properly reducing atmosphere.

However, the *féticheur* was convinced that iron had been reduced, and, indeed, identified a small bloom in the bowl which he left to cool until the next morning. While we must await a full analysis, the bloom certainly showed a strong concentration of iron to judge by the attraction of a magnet. This unexpected turn pleased all of us.

While this report summarizes primarily the technology used, we also conducted interviews to reconstruct genealogies of smelting and smithing families in the area, the role of iron in the economy, and the relation of rituals and beliefs associated with ironworking to those affecting reproduction, hunting, and other primary activities. These will be dealt with at more length in future publications. We hope also to edit the video documentation of the process eventually and to make it available to other researchers.

Acknowledgements

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■ ZAMBIA

**Later Iron Age Ceramics
From the Western
Copperbelt, Zambia**

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Archaeological reports on the Zambian Iron Age have, with the notable exception of Southern and Central Provinces, tended to concentrate on the Early Iron Age (EIA), with assemblages dating to later than 1000 A.D. being infrequently described or illustrated. This is particularly true of the Zambian Copperbelt, where research has had an almost exclusively EIA focus (Phillipson 1972). This report illustrates samples of Later Iron Age (LIA) ceramics from the vicinity of the Luano Hot Spring, Chingola, Zambia, and discusses some of

the characteristics of LIA sites in this region that make their precise chronology difficult to determine. A full report on the Luano survey and excavations is in preparation.

Study Area, Site Characteristics, Dating

Intensive reconnaissance along the Luano Stream (12 32'S, 27 55'E), a small tributary of the Kafue River east of Chingola, Zambia, revealed the presence of Early, Middle, and Later IA villages, with the greatest concentration of occupation being found at the south end of a large dambo and hot spring (Fig. 1). The largest site ("Luano Main") was multi-component and periodically occupied during the entire IA period. The nearby "Spring Site" was a large EIA village overlain by what is probably a recent LIA hamlet. Directly south of the Main Site, across the Kapisha tributary to the Luano is a small LIA hamlet, the "South Site," with no other evidence of IA presence. Because there is no chance of mixing with earlier materials, the South Site ceramics will be described in detail and compared to the stratified LIA sequence of the Main Site.

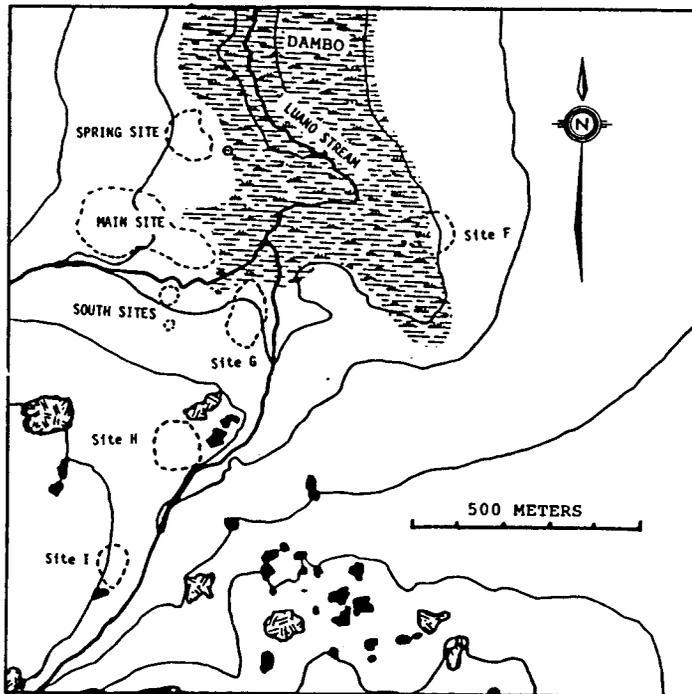


Fig. 1. Map of the central portion of the Luano Stream showing sites mentioned in the text.

Early Iron Age (ca. fourth–ninth centuries A.D.) sites are infrequent and variable in size, ranging from small hamlets with low artifact densities, to spatially extensive villages with higher artifact densities. Middle (ca. 1050 A.D.) and first phase LIA (ca. 1200 A.D.) villages are likewise rare and concentrate near the hot spring, but are larger and marked by much higher densities of sherds. This trend toward increasing village size appears to end abruptly in more recent parts of the LIA, during which a total of 16 different small hamlets were established, many of them along the stream rather than on the dambo inlet and outlet locations favored by earlier villagers. These “LIA Phase 2” villages invariably have lower surface densities of pottery than the earlier sites, and as a result both excavations and surface collections tended to produce very small samples of diagnostic sherds.

Dating the final phase of the LIA at Luano has proved to be a problem. All of the 16 sites identified with this period were surface occurrences and had been entirely disturbed by cultivation. Land clearance along the stream was associated with the growth of Chingola, and the natural mixed Miombo woodland was cut by charcoal burners.

Production of charcoal has been so ubiquitous in this area, that no samples taken from surface or cultivated contexts can be trusted. A date of 1440 ± 170 A.D. was obtained from the upper levels of the Luano Rock Shelter, which contained a few sherds similar to those described here, but the only secure Zambian radiocarbon date associated with similar ceramics is a fourteenth century A.D. date from a prehistoric copper slag dump linked to Kipushi mine near Lubumbashi, Zaire (Bisson 1987).

It is thus probable that all the second phase LIA ceramics described here post-date the fifteenth century A.D.

Later Iron Age Ceramics

The IA sequence at Luano provides evidence of a single evolving ceramic tradition in which decoration begins as complex wide bands of curvilinear motifs,

predominantly variations on pendant loops, which become reduced, simplified, and more angular through time. As summarized in an earlier report, LIA Phase 1 ceramics at the Luano Main Site are decorated with narrow rim bands, with the most frequent motifs being diagonal, cross-hatched, and herringbone lines (Bisson 1989).

Fig. 2 illustrates a sample of the LIA Phase 1 sherds with thickened rims that are decorated with vertical, diagonal, and cross-hatched motifs. These were selected to show the links with later assemblages at Luano and, although common, they are not the most frequent rim and decoration forms in Phase 1.

In the Main Site LIA Phase 2 sample of 41 diagnostic sherds, the trend toward thin-walled pots with narrow designs reverses itself. Wall thicknesses, which had steadily decreased from an average of 8.5 mm in the EIA Phase 1 to 6.8 mm in the LIA Phase 1, increase to 7.6 mm.

Narrow band designs, which were found on less than 20% of decorated sherds at the beginning of the sequence and grew to over 75% of the LIA Phase 1, drop to 63%, with a corresponding increase in multiple and particularly wide band designs. Rim forms are primarily undifferentiated (32.4%) or tapered (24.3%), both a carry over from Phase 1, but external thickening (21.6%) is more common in this assemblage than any other from the Main Site. Decoration occurs as a rim band on nearly 60% of Phase 2 sherds.

One of the features that sets the LIA Phase 2 pottery apart from earlier materials is a pronounced reduction in the number of techniques employed in decoration. Whereas ten different techniques are found in Phase 1, only four occur in Phase 2. Narrow incision is by far the most common (85.7%), with comb stamping, large cord impression, and oval impressions also present. Decoration generally appears crudely executed, monotonous and lacking in variation when compared to earlier assemblages. Counting only the widest designs on each sherd, bands or panels of cross-hatched incision dominate this assemblage (60%), followed by diagonal lines of incision or large cord impressions

(25.7%), zig-zag lines (5.7%), and other simple linear forms.

Luano South Site

The Luano South Site consists of two discrete clusters of highly similar pottery, each distributed around the remains of a single hut, that are separated by about 70 m. Although one hut was excavated and a thorough surface collection made, this locality, which is typical of most of the single component LIA sites at Luano, yielded only 103 sherds of which only 13 were diagnostic. In this collection (Fig. 3), wall thickness averages 7.9 mm, and rim thickness 8.9 mm. Rim forms are highly variable, but nearly half (46%) are thickened.

Decoration is extremely stereotyped, with 10 of 11 cases bearing often crudely executed cross-hatched incision. Large cord impression occurs as a bordering technique on two specimens, but on some other recent LIA sites at Luano is used to make similarly crude cross-hatched designs (Fig. 3: F).

One specimen from this site is noteworthy in that it is obviously exotic (Fig. 3: E). It is a fragment of a very well made shouldered bowl of non-local clay, with a wide band of fine comb-stamped decoration bordered by carefully made horizontal lines. It is identical in form and design to recent Lunda-Lovale pottery of the Lungwebungu Tradition of northwestern Zambia and Angola (Phillipson 1974). The presence of this pot, combined with the absence of any artifacts of European origin, suggests that this site was occupied some time during the past 200–300 years, but predates the arrival of European miners on the Copperbelt at the turn of the century.

Conclusions

Given the trends evident in the Luano ceramic sequence it is clear that even though recent sites are difficult to date absolutely, the frequency of cross-hatched incised or large cord impressed decoration may be used to arrive at a reliable relative

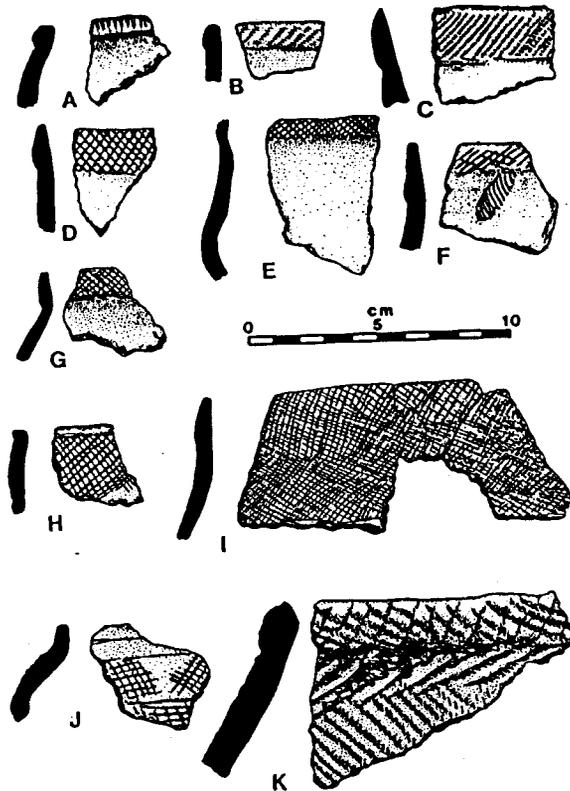


Fig. 2. Later Iron Age pottery from the Luano Main Site. A - G, LIA Phase 1. H - K LIA Phase 2.

chronology, with the most recent collections having the highest proportions of these designs.

Although ethnographic collections of Zambian Copperbelt pottery are not presently available for study, it is most likely that this cross-hatched material was produced by the Lamba people who are indigenous to the area.

Acknowledgements

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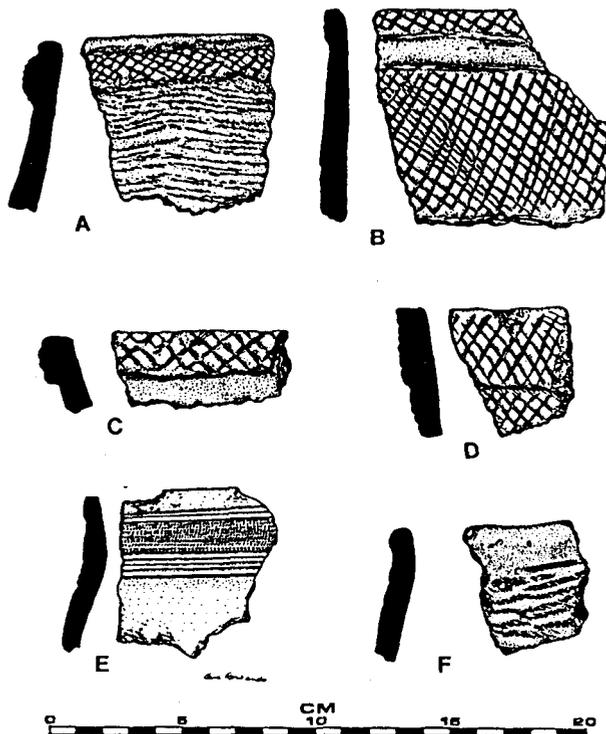


Fig. 3. Later Iron Age pottery from other Luano Stream sites. A-E, South Site. F, Site I.



FORUM

Sharing Computerized Databases

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Personal computers are now available to almost all North American and European archaeologists, and are increasing in frequency in many African universities and antiquities departments. Many of us routinely store raw data derived from the laboratory analysis of ceramics, lithics, and other kinds of artifacts on PC files.

Publication of the analysis of these data usually requires some form of synthesis in which parts of the database or relationships within it that were not essential to the study at hand are necessarily omitted. These hidden relationships (perhaps attribute or spatial associations) may be useful to other researchers.

The cooperative sharing of both published and unpublished data has been an important feature of African archaeology, and is particularly vital given the small number of scholars in the discipline, increasing publication costs, and resistance by editors to the lengthy appendices that are a normal part of many archaeological monographs. Informal discussions with colleagues at the recent SAfA meetings in Gainesville indicated that there is significant interest in finding ways to increase the sharing of raw data that might be useful in quantitative comparisons of assemblages. In the past, exchange of databases was difficult because of cumbersome paperwork or, in the case of computerized files, due to the fact that file storage was on tape or hard disks that could only be accessed by a mainframe. With the advent of networked

PCs and the floppy disk, these practical limitations on data transfer no longer apply. I therefore hope that the members of SAfA make use of these opportunities to exchange more detailed information than can be done in conventional publication format. These exchanges would, of course, be subject to the usual rights of first publication and citation that apply to other kinds of informally circulated information.

An additional point also needs mention here. We are routinely required to leave copies of field records with our collections when they are returned to African institutions for permanent storage. Databases generated by the subsequent analysis of artifacts are certainly as important as the provenance information and basic descriptions that make up the bulk of field records. Analytical data can now be sent to the appropriate institution on a few diskettes that take up virtually no storage space, and can be easily accessed by anyone who is granted permission to work with the collection (particularly new African scholars).

To get the ball rolling, I would like to offer copies of my computerized files on ceramics from five Iron Age components from Luano, Zambia, and on the Early and Later Iron Age components from Kansanshi and Kipushi to anyone interested in the south-central African Iron Age. The files will include a brief description of the provenance, coding system, and attribute list, all in WordPerfect 4.1 (IBM or IBM compatible) format, and the data set or sets as ASCII text files. Exchange of information in this manner should not replace conventional publication, but might be a useful intermediate step in cases like mine, where publication has been delayed or appeared in sources that are not widely available.

Videography There and Back Again: Notes for the Uninitiated

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These notes are intended for the ethno-archaeologist, ethnographer, or archaeologist who is going into the field to conduct research and only secondarily to make video recordings. In other words I assume that the reader will be working on a shoestring, may well be accompanied in the field by a single locally hired assistant, has no significant experience in movie making, but does have time and the commitment to communicate what she or he sees in a way that is probably impossible for a professional videographer lacking anthropological background and in-depth experience of the particular field situation.

Video Advantages and Disadvantages

Under such circumstances video recording has great advantages over film and these are becoming greater. An adaptive radiation of video equipment is taking place characterized by new video formats, smaller camcorders and compact cassettes able to hold two hours or more of tape. Furthermore equipment and expendables for quality field recording of materials that can later be used to make programmes worth marketing are relatively cheap. There is also the advantage of instant playback in the field. You know pretty much what you are getting.

There are disadvantages too. Video is, for the moment at least, much less able to discriminate between different shades of dark and light than film, and far less than the human eye. This lack of sensitivity results in picture quality that is significantly lower than on film, and technical problems in the field that have to be bypassed in one way or another by the camera operator.

This is particularly the case in Africa where the combination of bright sky, black faces, and white robes can result in major fluctuations in the behaviour of the iris (diaphragm) and sequences with wild variations in lighting that render them unusable.

Other disadvantages include the no less than twenty-one different tape formats (VHS, Beta, Super VHS, Video 8, etc.) mostly requiring their own dedicated equipment, and the incompatible international standard coding systems that register pictures magnetically on the tapes. The PAL standard, the best, is used in the UK and Germany; there is SECAM in France and the USSR, and NTSC, the worst, in North America. This reduces one's ability to communicate materials from one part of the world to another since digital transfer coding between standards is an expensive process that can still result in loss of picture quality. Perhaps new digital formats will do away with this stupid incompatibility besides raising quality all around—but will we be able to afford it?

You are now in the field grasping your camcorder in one hot little hand. By the way, these are machines that require to be carefully protected from physical shocks, and as best one can from dust, but which are not bothered by temperatures up to 40°C/105°F if reasonable care is taken to protect them as much as possible from the direct rays of the sun. At higher temperatures we have had on occasion to wrap damp towelling around the viewfinder to retain its imaging capability.

Prerequisites

What are the prerequisites for getting good material? First, you need to know what you are about to see, preferably because you have seen it before, or because you have discussed it in detail with informants beforehand, or if the worst comes to the worst because your informant can keep you alerted as to what is about to happen. Opportunity too often only does knock once. Even if the possibility exists of having the action repeated, this is a solution of last resort and often no solution at all—

skilled and naturally graceful human beings are instantaneously transformed into a bunch of awkward, grinning incompetents. I shot a funeral among the Hide last year that I had stumbled upon without warning, and thanks to two excellent informants came back with good footage and even a few stills—but negligible field notes.

Second, you should have a theme in mind, and if not actually a "storyboard," that is to say a planned sequence of shots, then at least a checklist of scenes needed to treat the theme. Although one may shoot the odd serendipitous sequence, it requires careful planning if one is not to return from the field with a terrific documentaryless three critical shots! Third—as in all ethnographic work, you must have the confidence of the people, achieved through an agreement acceptable to all. Amongst other things, I regularly take stills back into the field, with small albums for the main protagonists, and as a more generalized form of reciprocity have shown my and Yves Le Bléis's first video *Dokwaza: Last of the African Iron Masters* to audiences in three north Cameroonian towns—at two of which showings Dokwaza was himself present and vigorously participated in the question and answer session that followed.

Requirements

Camcorders are changing rapidly and I will not try to be specific here. Go for a good quality compact model; you may be holding it for hours or walking around the countryside with it at the ready. Don't go for frills, fade in, built-in character generator, and so on. They are for the amateur; you will do such things in the studio. I don't know about slow motion. You do want a machine able to film in poor light, preferably well below 15 lux, that is to say by candlelight. Last year I used a Bluet gas lamp, aluminium foil stuck onto cardboard behind it, for shooting scenes in an unlighted kitchen. Results were quite good although the viewfinder was continuously flashing light! light! light! and the hiss of gas is evident on the sound track. A powerful flashlight used in the same way might have been better. I don't know.

All camcorders have automatic focus and iris, but it should be possible to override them. I much regret that I can't hold the iris constant on mine, an otherwise excellent JVC Videomovie. As I zoom out of a tight shot of a pot or whatever, the sky tends to flood the picture with light turning the intended focus of attention into a black smudge. Pan shots across countrysides are hard to do without jerks unless you have a tripod, and even then it has to be one with a pan and tilt head. Similarly, it is just about impossible to hand hold a long distance shot at maximum magnification. On the other hand, tripods are heavy, expensive if any good, and it takes time to fit the camcorder onto them. So I use a monopod with a quick release some of the time, though not for panning, and have found it effective. Much of what I do is handheld.

Costs

Getting into the field is expensive, but you are there anyway on your research budget. The cost of your camcorder and accessories, including the monopod and sufficient heavy duty batteries for a couple of days shooting without recharging, plus the blank tapes, need not be much—perhaps less than US\$2000. But can you afford to go into the field with only one camcorder? Probably not, as no one will be able to repair it till you get home. So add another \$1500 or so; and then another \$500 for a colour monitor or small TV, and there's a total of \$4000. You will need the monitor for working with your informants.

It's once you get home that expenses take off; to do a good job in what is known in the trade as "post-production" you will need access to studios and editing suites and to technicians who, even in a university environment, are charged out at \$50 or so an hour. Dokwaza ran about US\$12,000 in post-production costs even though I ended up doing the main, though not the technical, editing and for that price we were able to produce both French and English versions.

The solution is, I think, not to be discouraged but to go out and get the raw material, and if it is good enough then use its promise to raise the money for post-

production. The United Steelworkers of America, Canadian National Office, generously gave me all I needed in return for sole sponsorship.

Camerawork

I will assume that you are your own camera operator. There are courses that are surely worth taking, but you can learn by practice and above all by the experience of editing your or others' footage, a humbling process during which you become only too aware of what works and what doesn't, and of the various kinds of shots needed to make a well-rounded programme. It is also worthwhile going slowly and analytically through a film on video, in order to learn from its editors.

Acting as camera operator is a full time job, requiring continuous planning and anticipation. You cannot at the same time take good notes or hope to record in any other way what you are observing. Remembering that your unobtrusiveness is proportional to your duration on site and that a perfect shot can happen at any time, you must be ever ready. *You have to be thinking all the time about the final product.* Sequences, if they are not to be boring, require a variety of different shots: middle distance ones to set the scene, closeups of the main action, and, in part for atmosphere and in part for technical reasons, cutaways that show, for example, participant and audience reaction to the main sequence of events. And so on, including scenery and portraits. It is also important if you are accompanied by nonnatives to decide before starting filming whether or not you want to include them in your shots. A video on metallurgy in the field and lab will, for example, need shots of the metallurgist and other team members engaged in fieldwork. Dokwaza, on the other hand, excludes whites except for one shot that has Ian Robertson's knee in the background (no one to my knowledge has ever noticed it).

Camera skills are best learned by practice. Here are a few tips. Keep a neutral filter on your camcorder to protect the lens. Fast forward and rewind all tapes before use to get even tension. Tape is cheap, so shoot

plenty. Don't squeeze the maximum onto your tapes; for technical reasons it may be impossible to use the first and last few seconds in the editing suite. Perhaps start and end each tape with shots of scenery; they may come in useful. Particularly at close range or in poor light the automatic focus may find itself struggling, the shot going infuriatingly in and out of focus. I know I must practice switching to manual focus whenever changing range during a shot is not required. Count to five after you think each shot is finished before stopping filming. Make many more cutaways than you think you will ever need. Vary the lengths of your shots. Cutaways may in the end show for three seconds or even less, but you want some long lazy shots to let the viewer catch his breath, for sound (see below), and ultimately for running under titles and credits. Zooms are tempting, but don't unless there are real reasons for it. And if you do, always make sure that there are three to five seconds before and after each zoom. You can only rarely break into one during editing. Practice panning and do it at different rates. If you can't put the iris on manual, don't suppose that you will get acceptable results with a built-in back light compensator.

Even though you cannot take good notes while operating the camera, it is important to keep an up-to-date catalogue of your tapes and (if at this stage general) records of what is on them. This is even more essential with sound recordings.

Audio

It is obviously important that clean sound be recorded in the field, and this can be obtained even with a directional, camera-mounted microphone, although wind noise (the same as you get by blowing into an open mike) is an often insoluble problem. Remember also that when you are "stop-start" recording, the audio as well as the picture sequence will be discontinuous, with clicks on the sound track that will have later to be edited out even if your storyboard keeps sequential shots in sequence. The camcorder is just that, twinned camera and sound recorder, and it is easy to forget that even when you don't use all or even part of

the sequence of visual images, you may still need the sound. It is common in editing to carry audio over from one shot onto the next, a smooth flow of sound to the ear counteracting the choppiness experienced by the eye. To that end, you should record some longer and continuous sequences of sound, either by letting the camcorder run on for minutes at a time, or by recording on a separate reel-to-reel or cassette recorder, a process known as "wild-track" recording.

Another aspect is "audio perspective"—having the *appropriate* sound with the picture. A wide angle landscape shot with distant people will jar the viewer's sensibilities if accompanied by laughter of nearby but unseen children. Similarly, if the camera is some distance from the object in view and zoomed in to maximum magnification, the sound picked up by the camcorder microphone will be inappropriately faint. While it is nearly always better to record the appropriate sound in the first instance, in the editorial phase such problems can be remedied by relaying sound from "wild-track" recording, or layering several sound recordings. Thus, before you leave the field seek out recordings from other sources, especially local music that can, with the copyright holder's permission, be used in your final product.

Use of Rushes in the Field

By using the monitor you have taken with you and that can be run if necessary from your car battery, you can actually show what you have shot to the people portrayed. This is not only gratifying to them, but of methodological importance as it allows you to ask questions, to go back and forth over a sequence until you thoroughly understand what is going on, who all the actors are, and so on, in a way that is rarely if ever possible during the events themselves, especially if the actors are engaged in a demanding technological or social process, potting or smithing for example, or during a ritual. Our appreciation of the Mafa physiological model of metallurgy and of how processes are initiated and controlled by the iron master come largely from hours spent

watching video with Dokwaza, his wife Demagay, and his children. In the next field season I plan to explore with them through video what happened in a second smelt when things went badly wrong before being wrenched more or less back on track at the last minute.

After Return from the Field

Once you get back from the field, nervous about passing through strong magnetic fields and with tapes clutched to your chest, the work really begins. Assuming that you have enough to make the programme you intended, your original tapes will be copied, probably onto one inch tape, and a time code attached on a separate track. They will then be recopied in whatever format you prefer with the time code rendered visible. Your first and time-consuming task is then to log every shot on every tape, cataloguing it by:

- a sequential shot number;
- a brief description of the action;
- the starting time code (hour: minute:second—but don't bother with frame);
- any notes, e.g., "good sound" or "OK after zoom"; and
- by a rating of its visual quality.

This you can do at home on a normal VCR, although it is much quicker with more sophisticated equipment. The log, with frequent reference to the actual tapes, is the raw material you will work with to make up the storyboard, the sequence of shots that will be assembled to form the programme. At first this will contain lots of *either/ors* and notes of spare shots that can be added, if, for example, an extra cutaway is necessary. Your aim is to minimize the costly time spent in the editing suite.

What about the script? This must exist in embryo in order to produce the storyboard, and it evolves together with the visual element. In the video *Vessels of the Spirits* that I am presently completing, the first draft of the script was written in one mammoth session almost immediately after the first assembly of shots into a rough draft known as the offline edit. It will be

progressively refined in interaction with the visual and the other sound components of the programme. I take a minimalist view of what a good script should be. Above all it should not condescend or insult the audience by telling them what they can see clear as day in the picture. A really good programme is one that communicates effectively over the full range of the two channels available. These are the visual and the aural, the latter usually divisible into three tracks—ambience (what was picked up by the mike at the time of shooting), narration, and a third with music, sound effects and so on—that will be mixed in the final product. Clever editing cunningly blends the visual and the aural, using one to emphasize or provide continuity in the other, and to indicate, for example by a change in music, a new phase in the action.

Editing

Editing is entry into electronic wonderland where you can dis- and reassociate sound and image, carry sound from one shot over another, and where you have access to all sorts of tricks, to change the colour of a shot (within limits), fade in and fade out, do "quad splits," introduce still photographs (better I am told than still frames of video) and so on. It is also true that these electronic marvels sometimes subject one to unlooked for constraints, and that to overcome these may be as difficult as to make the best use of their potential. I passionately enjoy editing, which is after all no more than telling the story as best it can be told, creating the right pace and moods to go with it. This may involve subjecting your audience at first to a mild form of culture shock—what are those wierdos doing?—in scenes whose full meaning will only later be revealed and appreciated, or perhaps keeping two themes running parallel for a while and then bringing them together. I have, on the other hand, no pretensions to mastery of the sophisticated equipment involved, and defer to the professionals whose ability to improve or see a better way of relating a series of shots to achieve the effect desired never ceases to impress.

Unlike film editing where you can cut and paste, video editing is electronic and

sequential. I find this difficult since you don't know whether what you are "laying down" is correctly paced, nor, as changes are constantly being made as you progress, even how long it all is until you reach the end. In the offline edit of *Vessels of the Spirits*, there are several too abrupt changes of subject, more than one place where a shot is too long, breaking a building tension, and others where a viewer unfamiliar with the peoples and techniques really needs a few seconds more for the significance of what they are seeing to sink in. And the awful thing is that as you work longer and longer with your own material, you become progressively less able to criticize it objectively. This is when you need both technical advice from the professionals and some straight criticism from friends, colleagues and, perhaps above all, the students and gentle viewers who, together with a rapidly increasing African and Third World viewing public, are your intended audience.

Although there is much more that could be said about editing, I will add only a word of advice regarding titles and credits, especially the latter since they are a temptation to allow pride to get the upper hand. Titles should be big, legible and in a typeface suitable for the subject matter. Tacky typefaces really turn me off. Credits too should be legible and above all *brief*.

Conclusion

I have nothing of significance to say about marketing, and am a complete beginner in that field. The production of accompanying study guides, leaflets with blurbs by distinguished colleagues, and reviews in the *American Anthropologist* and other top journals, will all help, as will receiving favourable notice in competitions. But the real solution is to find a distributor who is both efficient and doesn't demand too high a proportion of the income from what after all will be a specialized, low volume product.

I hope that I have said enough to convince you that becoming a field videographer is worthwhile from many points of view: the creation of an archive,

the development of an effective tool for ethnographic fieldwork, a means of communicating with a larger public, and last but by no means least making some kind of return to the peoples whose lives or history you are studying. And further that although it is intense, hard intellectual labour, it is also immense fun—and certainly the nearest I will ever get to creating a work of art.

Acknowledgments

My thanks to Henri Aug, cameraman on Dokwaza, for allowing me to learn from his many successes and fewer failures, to Paul Morris, Production Supervisor of the University of Calgary Communications Media Department who initiated me into editing and has been a constant source of advice and encouragement (including writing the first draft of the Audio section above), and to Jack Filuk, Lawrie Edison, Dave Jaeger, and Mike Mattson, the wizards of post-production.

interested in. As a matter of self-preservation, I began documenting the location of specific volumes of all of the serial publications I requested through interlibrary loan. So far this has been extremely helpful in cutting down the interlibrary loan process because I have been able to go to the librarian and give her the exact location of a specific volume.

However, this list is nowhere near being complete. Eventually, I would like to have a relatively extensive inventory of the rarer African journal/serials and their locations but to do this I need assistance from people at other institutions. If you are interested in helping out with this project or have questions, please contact me. I think that the final product will be very useful to graduate students collecting bibliographical information for dissertations and theses, to researchers beginning work in a new area, and to Africanists in general.

For further information, please write to me at the above address or contact me through one of the following means of telecommunication:

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Accelerating Interlibrary Loans

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I am presently collecting titles of African journals and serial publications and compiling a list of libraries in North America which carry these publications. This project began as a result of my frustration with the interlibrary loan system present in most university libraries. I became tired of waiting for publications to arrive from other libraries and found that, in many cases, I had forgotten the purpose of the request when it finally arrived.

When it came time to collect the background information for my dissertation I quickly learned that libraries listed by the Library of Congress as owning a specific title often did not own the volume I was



MEETINGS

Biennial Conference of the Society of Africanist Archaeologists, March 22-25, 1990

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The Biennial Conference of the Society was held at the University of Florida, Gainesville, in the mid-semester break and

was sponsored by the Center for African Studies and the Department of Anthropology, University of Florida. The Conference was most ably organised by the President and Secretary of SAfA, Drs. Peter Schmidt and Steve Brandt, respectively, and their graduate students. This was probably the best attended yet of these conferences with more than 120 participants giving papers, the reason being in part the efficiency of the organisation and, in part, the reorganisation of the society, which is now international and attracts researchers from overseas.

The three days of formal sessions for the presentation of the large number of papers were full, particularly as it had been decided to hold only one session each day which all participants could attend. This was felt to be necessary in order that all who wanted to could hear every paper and not only those in their own particular speciality, thereby emphasising the common interests important to the work of research into Africa's past.

The sessions were held in the spacious Reitz Union Auditorium of the University of Florida, within walking and busing distance of the conference hotels and with seating, acoustics, and projection facilities that were excellent. Because of the large number of papers speakers were restricted—or should have been restricted—to 15 minutes each but, even so, sessions began at 8:00 A.M., with breaks for coffee and lunch, resumed at 1:45 P.M. and finished at 7:00 P.M. Three days of programs such as this is about all that most people can cope with but the sessions were, nevertheless, very well attended and packed with interesting and important presentations on current field research and thinking.

Papers were presented in symposia and general sessions. There were five symposia: "The Evolution of African Pastoralism," organised by A. B. Smith; "Archaeology and Actualistic Studies Bearing on the Behaviour of Early Hominids," organised by J. W. K. Harris and J. D. Clark; "Ecology, Archaeology and Actualistic Studies in Central Africa," organised by A. S. Brooks and J. W. K. Harris; "Archaeology and Environmental Contexts of Early *Homo sapiens*," organised

by S. McBrearty; and "Archaeology, Art and the Art Market," organised by H. J. Drewal and to which was attached a workshop with audience participation, organised by K. Ezra. In addition, there were two general sessions on "Prehistoric Archaeology and Archaeological Methodology," and a Conference Theme Session, "What Is the Future of Archaeology in Africa?" organised by P. R. Schmidt. Participants came not only from the United States and Canada but also from Belgium, Norway, Sweden, the United Kingdom, and the West Indies. Among African countries Ethiopia, Benin, Kenya, Niger, Tanzania, and Zambia were represented by delegates or by graduate students working at universities in the United States: some twelve of these last attended. There was also a Chinese student from Indiana University.

Lack of space does not permit any detailed discussion of the sessions and a brief report cannot attempt to cover the range of time, space, and topics presented. In general, most papers and themes related to East, Central, and Southern Africa although M. A. McDonald's survey of the mid-Holocene evidence for pastoral nomads in Dakleh Oasis in the Western Desert of Egypt demonstrated the great possibilities for landscape archaeology in desert regions. The emphasis this year appears to have been on the Earlier to Middle Palaeolithic and related studies rather than on the Iron Age, as has in recent years been more often the case. Some very exciting new research was reported in the pastoralism symposium amongst which was T. Huffman's paper on the way in which plant phytoliths are now believed to demonstrate the extent to which cattle were kept by early Iron Age farmers even though cattle bones are under-represented in the faunal assemblages. A. B. Smith's report on the first identifiable Khoi pastoral settlement in the Western Cape showed the difference between these arid hunter/gatherer occupation sites and resulted in interesting discussion and disagreement on distinguishing changes that may be seasonal from those that are of longer temporal duration.

Perhaps the most important new regional research is that being undertaken in

Equatorial Africa: in Cameroon by P. de Maret and N. David together with their associates; in Zaire by J. Denbow; and in Gabon by B. Clist and colleagues. De Maret spoke of the Later Stone Age sequence at two important sites in central Cameroon and Denbow of his work along the Congo coast. Until now, the later prehistory of this vast region was almost unknown but the work now being concentrated there and in eastern Zaire among the Efe Pygmy groups is resulting in a better understanding and in more reliable dating. There is now no doubt of the presence of stone- and ceramics-using, cultivating, and herding societies occupying these regions prior to the introduction of metallurgy. These are crucial data for those concerned with the spread of Bantu- and eastern Sudanic-speakers into Equatoria.

The symposia on Early Hominid Behaviour and on the Ecology and Archaeology of the Western Rift comprised papers given by both faculty and students on fieldwork in East and Central Africa. New discoveries, such as those of several later Pliocene assemblages, as from the Semliki at the Sango 5A site, Zaire, by team members; from West Turkana by M. Kibunjia and H. Roche; and from Hadar by S. Semaw, described new Oldowan assemblages and their contexts. Emphasising the need for further field research also was B. Asfaw's report on the Ethiopian government's survey of Plio-Pleistocene sites in the southeastern Afar and the Ethiopian Rifts where significant new discoveries of fossiliferous and cultural localities have been made. Three papers covered the new approach to earlier Pleistocene studies generally known as "landscape archaeology." R. J. Blumenschine and F. T. Masao discussed their initial survey work of tracing a horizon in Bed I at Olduvai Gorge over some 2 km and its implications for distinguishing natural accumulations from hominid activity places. K. Schick described fluvial reporting of an Acheulian assemblage on a temporary horizon at Kalambo Falls and J. W. K. Harris, J. Maiers and O. Orao spoke of continuing the work started by Glynn Isaac on the study at Koobi Fora in northeast

Turkana of changing patterns of early hominid landuse and ranging behaviour.

This and the Western Rift symposia emphasised the need for and the use of actualistic—"middle range," if you like—studies as databases for using artifacts and bone refuse in sealed contexts to reconstruct early hominid behaviour. Some examples presented were J. Sept's study of chimpanzee plant foods; C. Sussman's studies of using quartz and chert artifacts for working wood and for butchery at Olduvai Gorge; R. V. Bellamo's control studies of fire and their implications for hominid behaviour; recognition by C. W. Marean and C. L. Ehrhardt of the modification of bone by sabre-toothed cats. H. T. Bunn described the archaeological implications leading from his studies of hunting, scavenging, and carcass-processing activities by the Hadza of the Lake Eyasi Rift. A valuable new assessment of the FLK Zinj fauna from Bed I at Olduvai Gorge by C. Saanane and R. J. Blumenschine, the result of their own study and comparison with those of other investigators, reaffirmed belief in the hominid origin of this now famous concentration. Actualistic studies of bone-fracturing patterns by M. M. Selvaggio using experiments with captive hyaenas and by S. D. Capaldo distinguishing the results of scavenging by carnivores on hominid simulated fractured bone assemblages provide new ways of understanding sequences of results and agencies represented at Plio-Pleistocene concentrations. Another new method for identifying Holocene and earlier habitat changes was provided by N. E. Sikes and S. H. Ambrose looking at carbon isotopes in soils in the Kenya Rift Valley that provide the means of distinguishing between forest and savanna soils in the past. Other actualistic studies that have important implications were by M. J. Tappan on excavation of a carnivore bone accumulation in the Parc National des Virungu, Zaire, and by G. Haynes on elephant behaviour in Zimbabwe's Hwankie National Park. Several participants reviewed the findings of the Semliki and Lake Edward research team in the Western Rift symposium providing the geological (J. de Heinzelin) and

palaeoenvironmental base (J. Verniers et al.; N. Boaz and P. Paviakis; P. G. Williamson and P. J. Morris). The Pliocene artifact assemblage from Senga 5A was described by T. W. Spang and R. V. Bellamo, while the Middle and Later Pleistocene sites and contents were described by A. S. Brooks, J. Keating and C. C. Smith. An intriguing assemblage from Katanga 9, seemingly Middle Stone Age but also containing bone harpoons, was described by J. E. Yellen.

The Middle Paleolithic attracted a good deal more attention than in the past in view of the molecular evidence indicating an origin for anatomically modern humans in Africa. It seems likely that more will be learned about "Sangoan" behaviour from the new site at Simbi in the Lake Victoria basin in Western Kenya where picks and core-axes occur with fauna (S. McBrearty). Perhaps the longest Late Pleistocene sequence in eastern Africa in the Lake Eyasi Rift was described by M. J. Mehlman, clarified by his excavations in Mumba Cave and correlated with the hominid and early Middle Stone Age horizon with core-axes and Levallois flakes in the adjacent Eyasi Beds. New evidence for Middle Stone Age mining activities was described by P. M. Vermeersch and E. Paulsson from near Esna in Upper Egypt. The flint cobbles mined from open-cast pits in conglomerates were worked into bifacial, ax-like forms which the age of 33,000 b.p. indicates belong with the Middle Stone Age.

A variety of topics was discussed in the session on the future of African archaeology. These ranged from descriptions of projected regional research (e.g., S. Mudenda) and new perspectives for this (C. M. Kushimba); to possible ways of making archaeology more relevant in African countries today; the need for archaeological surveys in connection with large hydro-electric schemes in Africa (S. Brandt); and the interpretation of African regional populations through the analysis of biological and cultural changes related to the shift from foraging to food-production on the Upper Nile (G. Armelagos). Others emphasised the need for more trained professionals (N. J. Karoma) and the need for planning of research programmes by

organisational units seeking funding by means of blocked funds and debt swaps (P. R. Schmidt).

It is clear that lack of funding is the major obstacle to progressive archaeological research in Africa today. For the most part, funding for field research and training comes from overseas universities, foundations, and individuals since local funds are barely adequate to maintain the various internal institutes and organisations (Museums and Antiquities Services). While training, equipment, and collaborative field and laboratory research continue to be provided from overseas sources, there is need for the local professionals themselves to persuade their own governments that, if they are given the financial means of carrying out adequately their duties and public relations, then their activities will be of greatly increased benefit to their own people. Positive results of this kind were presented by M. Posnansky who showed the way in which a local community in Ghana could expand its activities and influence by using the results of the long-term archaeological field programme at Begho. The University of Dar-es-Salaam's archaeology programme of the last two years has greatly increased the numbers of trained archaeologists in Tanzania, but opportunities for research are limited. B. Mapunda discussed what can be done to develop locally funded projects by reaching out to gain the interest of the peoples of Tanzania.

The symposium on Archaeology, Art and the Art Market and the ensuing workshop focussed on conservation of architectural and other archaeological monuments (A. LaViolette; R. J. McIntosh); on the need for closer relationships among archaeologists antiquities services and museums in the matter of preservation, restoration, and presentation of material (M. Posnansky; S. T. Childs; P. Ravenhill) and the urgent need to prevent further deterioration and looting of sites, in particular those with archaeological art objects (P. Ravenhill; B. Gado). There is clearly urgency to put a stop to looting of ceramic figurines and other art works that then appear on the art market, and a

resolution was passed that will, it is hoped, reduce further depredations of this kind.

At the general meeting of SAfA which was well attended, the new President (M. Posnansky) and the Executive Board were elected; the proposed By-Laws (see page 49), which had previously been circulated, were approved with minor amendments and the wish was expressed that the 1994 SAfA meeting should be in Ames, Iowa (the 1992 meeting already having been scheduled for the University of California at Los Angeles), and that the archaeological authorities in Gabon should be asked if they would be able to host the long overdue 10th Pan African Congress on Prehistory and Related Studies in Libreville.

Participants were entertained on an enjoyable evening at a reception, dinner, and guided tour at the Florida Museum of Natural History, University of Florida, displaying a special exhibition of African art and, on the last night, at the house of Peter and Jane Schmidt—a most delightful way to end the meetings.

The sincerest thanks of all must go to the organisers who helped to ensure that the new, revitalised SAfA should get away to such an excellent start and especially was it good to see so many graduate students, particularly a number from Africa, as well as archaeologists from overseas. It augurs well for the meeting at UCLA in 1992.

—J. Desmond Clark

**Society of Africanist Archaeologists
Biennial Conference
March 22–25, 1990
University of Florida
Reitz Union Auditorium**

PROGRAM

Thursday, March 22

- 7:15 A.M. Registration Desk opens
- 8:00 A.M. Opening Address: P. R. Schmidt, SAfA President and Director of the Center for African Studies, University of Florida

[1] Symposium:

The Evolution of African Pastoralism

Organized by A. B. Smith
Chairperson: A. B. Smith
Participants:

- 8:15 A.M. M.A. McDonald; *Adaptations of Mid-Holocene Pastoralists in Dakhleh Oasis, South Central Egypt*
- 8:30 A.M. R. Haaland; *Specialized Pastoralism and the Use of Secondary Products in the Neolithic Sudan*
- 8:45 A.M. P. Robertshaw; *Power in Prehistoric Pastoral Societies in East Africa*
- 9:00 A.M. S. H. Ambrose; *Hunter-Gatherer/Herder Interactions in Highland East Africa*
- 9:15 A.M. T. Huffman; *Broderstroom and the Origins of Cattle-Keeping in Southern Africa*
- 9:30 A.M. A. B. Smith; *The Origin and Development of Pastoralism in the Cape, South Africa*
- 9:45 A.M. Discussion
- 10:00 A.M. Coffee Break

[2] General Session:

Protohistoric and Historic Archaeology

Chairperson: A. B. Stahl

Participants:

- 10:30 A.M. A. B. Stahl; *The Protohistoric Archaeology of Banda, Ghana*
- 10:45 A.M. K. W. Wesler; *The Introduction of Imported Ceramics in Nigeria*
- 11:00 A.M. A. Broberg; *New Aspects on Medieval Mogadishu*
- 11:15 A.M. A. LaViolette; *Archaeology at Pujini: A Swahili Fortification, Pemba Island, Tanzania*
- 11:30 A.M. J. Silsbee; *Voyaging in a Favorable Season*
- 11:45 A.M. C. Schrire; *Excavations at Oudepost I, a Dutch East Indies Company Outpost, Cape, South Africa*
- 12:00 P.M. Discussion
- 12:15 P.M. Lunch

[3] Symposium:

Archaeology and Actualistic Studies Bearing on the Behavior of Early Hominids

Organized by J. W. K. Harris and J. D. Clark

Chairperson: J. W. K. Harris

Participants:

- 1:45 P.M. S. Semaw; *Pliocene Archaeology at Hadar*
- 2:00 P.M. M. Kibunjia and H. Roche; *Pliocene Archaeology West of Lake Turkana, Kenya*
- 2:15 P.M. M. Tappen, P. Morris, P. Williamson, G. Laden, R. Bellomo, T. Spang, and J. W. K. Harris; *A Reassessment of Site Formation Processes at the Senga 5a Site, Zaire*
- 2:30 P.M. R. J. Blumenschine and F. T. Masao; *Littered Landscapes: Preliminary Observations on the Distribution of Hominid Activities Within the Basal Bed II Marshland of Olduvai Gorge, Tanzania*

- 2:45 P.M. C. Saanane and R. J. Blumenschine; *Reevaluation of the FLK Zinj Fauna from Bed I Olduvai Gorge and Its Implications for Early Hominid Behavior*
- 3:00 P.M. J. A. J. Gowlett; *Acheulian Sites in the Central Rift Valley: Questions of Paleogeography, Artifact Transport, and Occupation Density*
- 3:15 P.M. K. Schick; *Site Context and Content in the Acheulian*
- 3:30 P.M. J. W. K. Harris, J. Maiers, and O. O'rao; *Changing Patterns of Early Hominid Land Use and Ranging Patterns in the Koobi Fora Sedimentary Basin*
- 3:45 P.M. S. Kamenya; *Community Ecology and Early Hominid Behavior*
- 4:00 P.M. Discussion
- 4:15 P.M. Coffee Break

[3] Symposium:

Archaeology and Actualistic Studies Bearing on the Behavior of Early Hominids (continued)

Chairperson: J. D. Clark

Participants:

- 4:30 P.M. J. Sept; *Chimpanzee Studies and Their Implications for Understanding Early Hominid Ranging Behavior*
- 4:45 P.M. C. Sussman; *Actualistic Studies Using Quartz and Chert from Olduvai Gorge, Tanzania*
- 5:00 P.M. R. V. Bellomo; *Actualistic Studies of Fire and Their Implications for Reconstructing Early Hominid Behavior*
- 5:15 P.M. K. Stewart; *Fish as Paleoecological Indicators and Their Application to Paleoecological Reconstruction in the Western Rift*
- 5:30 P.M. C. W. Marean and C. L. Ehrhardt; *Paleoecology of Extinct Carnivores and Implications for Actualistic Models*
- 5:45 P.M. N. Isaacson; *The Construction of Gender in Human Origins: A Critical Appraisal*

- 6:00 P.M. H. T. Bunn; *Archaeological Implications of Hadza Hunting, Scavenging, and Carcass Processing*
- 6:15 P.M. M. M. Selvaggio; *Scavenging from Carnivores on the Serengeti: Implications for Early Hominid Behavior*
- 6:30 P.M. S. D. Capaldo; *Differential Treatment of Axial and Appendicular Elements by Scavenging Carnivores at Simulated Archaeological Sites*
- 6:45 P.M. Discussion
- 7:15–
- 9:30 P.M. Reception, dinner, and self-guided tour of exhibits at the Florida Museum of Natural History, University of Florida

Friday, March 23

[4] General Session: Archaeological Methodology and Science

- Chairperson: D. P. Gifford-Gonzales
- Participants:
- 8:00 A.M. C. Bollong; *Intensive Surface Collection of Ruchera Cave: Implications for Cave Taphonomy and the Detection of Cultural Behavior Utilizing Computer-Aided Analysis*
- 8:15 A.M. B. Asfaw; *Paleoanthropological Survey in Ethiopia*
- 8:30 A.M. S. Whitney; *A Data Base for the Analysis of Pottery Use in Somalia*
- 8:45 A.M. N. E. Sikes and S. H. Ambrose; *Soil Carbon Isotope Evidence for Holocene Habitat Change in the Kenya Rift Valley*
- 9:00 A.M. T. S. Dalbey; *Digitizing as an Analytical Tool for Prehistory*
- 9:15 A.M. Discussion
- 9:30 A.M. Coffee Break

**[5] Conference Theme:
What is the Future of
Archaeology in Africa?**

- Chairperson: P.R. Schmidt
- Participants:
- 9:45 A.M. S. Mudenda; *Archaeological Research in the Kafue Basin of Zambia: Its Potential and Problems of Development*
- 10:00 A.M. J. Bower; *Tourism, African Archaeology, and Development*
- 10:15 A.M. S. T. Childs; *Do Archaeological Sciences Have a Future in Africa?*
- 10:30 A.M. N. J. Karoma; *Alternative Strategies for Training Archaeologists in Eastern Africa*
- 10:45 A.M. G. J. Armelagos; *Bioarchaeology and African Prehistory*
- 11:00 A.M. D. Whitley; *Conservation and Management of Southern African Rock Art*
- 11:15 A.M. S. Brandt; *African Reservoir Projects and Cultural Resource Management*
- 11:30 A.M. C. M. Kusimba; *Demystifying the Swahili*
- 11:45 A.M. P. R. Schmidt; *Ideology and the Practice of Archaeology: the Case of Funding for Archaeology in Africa*
- 12:00 P.M. M. Posnansky; *The Archaeologist and the African Community*
- 12:15 P.M. E. N. Wilmsen; *Subjective Politics, Political Realities: The Practice of Ethnoarchaeology in the Kalahari*
- 12:30 P.M. B. Mapunda; *Archaeology is in Our Hands Now: Can We Do It Better?*
- 12:45 P.M. A. B. A. Adande and O. O. Bagodo; *Urgence d'une Archéologie de Sauvetage dans le Golfe du Benin: Cas de la prospection dans les vallées du Mono et de l'Oueme*
- 1:00 P.M. Discussion
- 1:15 P.M. Lunch

**[6] Symposium:
Ecology, Archaeology, and
Actualistic Studies in Central
Africa**

Organized by A. S. Brooks and
J. W. K. Harris

Chairperson: A. S. Brooks

Participants:

- 2:45 P.M. J. Verniers (Vrije Universiteit
Brussel, Belgium), R. Wood
(Cambridge University),
C. Landuyt, C. de Goytor, and
G. Stoops (University of Gent,
Belgium); *State of Research on the
Palaeoenvironment of the Lusso
Beds, Upper Semliki Area, Zaire*
- 3:00 P.M. J. de Heinzelin; *New Data on the
Geological History of Lake Edward
and Upper Semliki Basin*
- 3:15 P.M. N. T. Boaz and P. Pavlakis;
*Paleoecology of the Western Rift
and Implications for Hominid
Evolution*
- 3:30 P.M. P. G. Williamson and P. J.
Morris; *Molluscan Paleocology of
the Plio-Pleistocene Edward-Albert
Rift*
- 3:45 P.M. T. W. Spang and R. V. Bellomo;
*The Nature of the Artifact
Assemblages from the Lusso Beds*
- 4:00 P.M. A. S. Brooks, J. Keating, and
C. C. Smith; *Survey and
Excavation of Middle and Later
Pleistocene Sites in the Semliki
Valley (Zaire)*
- 4:15 P.M. J. E. Yellen; *The Archaeology of
Katanda 9: A Middle Stone Age
Site in the Semliki Valley, Zaire*
- 4:30 P.M. Coffee Break

**[6] Symposium:
Ecology, Archaeology and
Actualistic Studies in Central
Africa (continued)**

Chairperson: J. Yellen

Participants:

- 4:45 P.M. N. Toth and K. Schick; *Recent
Paleolithic Investigations in
Zambia*

- 5:00 P.M. J. D. Clark; *Approaches to
Identifying Behavioral Patterns in
Later Quaternary Central African
Cultural Assemblages*
- 5:15 P.M. M. J. Tappen; *Excavation of a
Bone Accumulation under a Large
Shade Tree in Parc National des
Virunga, Zaire*
- 5:30 P.M. G. T. Laden; *Land-Use and
Ecology of the Efe of the Ituri
Forest, Zaire*
- 5:45 P.M. G. Haynes; *Actualistic Studies of
Elephants in Zimbabwe*
- 6:00 P.M. Discussion
- 6:15-
- 7:15 P.M. **SAFA Business Meeting
Dinner at local restaurants**

Saturday, March 24

**[7] Symposium:
Archaeology and Environmental
Contexts of Early Homo Sapiens**

Organized by S. McBrearty

Chairperson: S. McBrearty

Participants:

- 8:00 A.M. A. Kelly; *A Comparison of Land-
Use and Paleoenvironments in the
Upper Acheulian and Early Middle
Stone Age of Eastern Africa*
- 8:15 A.M. S. McBrearty; *Sangoan
Environment and Technology at
Simbi, Western Kenya*
- 8:30 A.M. M. J. Mehlman; *"Sangoan" and
Later Assemblages at Lake Eyasi:
Some Implications of Their
Contexts*
- 8:45 A.M. T. P. Volman; *Origins of Modern
Humans: The View from Southern
Africa*
- 9:00 A.M. P. R. Willoughby; *The Acheulian-
Middle Stone Age Transition in
East Africa and the Question of
Modern Human Origins*
- 9:15 A.M. A. Z. P. Mabulla; *An
Archaeological Survey of the
Ndutu Beds, Olduvai George,
Tanzania*

- 9:30 A.M. P. M. Vermeersch and E. Paulissen; *Middle Paleolithic Chert Quarrying and Upper Paleolithic Chert Mining in Egypt*
- 9:45 A.M. D. Wallsmith; *Driekoppen: A Middle Stone Age Rockshelter*
- 10:00 A.M. Discussants: A. Brooks and J. Yellen
- 10:15 A.M. Discussion
- 10:30 A.M. **Coffee Break**

**[8] Symposium:
Archaeology, Art, and the Art Market**

Organized by H. J. Drewal

Chairperson: H. J. Drewal

Participants:

- 10:45 A.M. P. Ravenhill; *Surfaced Finds: The International Art Trade and West African Archaeology*
- 11:00 A.M. B. Gado; *Archaeology, Protection of Cultural Heritage, Tourism, and Development in Niger*
- 11:15 A.M. R. J. McIntosh; *This Way Out of Chaos: Prehistorians and Art Historians Look at Each Other Anew*
- 11:30 A.M. Discussion

**[9] Workshop:
Archaeology, Art, and the Art Market**

Organized by K. Ezra

Chairperson: K. Ezra

- 11:45 A.M. Audience Participation and Roundtable Discussion by: M. Posnansky; *Archaeology, Museums, and Conservation In Tropical Africa*; S. T. Childs; *A Cooperative Project in African Art History and Archaeology*; A. LaViolette; *Archaeological Conservation Efforts in Zanzibar and the Tanzanian Mainland*; P. Ravenhill; *The West African Museums Project (WAMP) and Archaeology*
- 12:45 P.M. **Lunch**

**[10] General Session:
Ethnoarchaeology and Visual Anthropology**

Chairperson: S. A. Brandt

Participants:

- 2:15 P.M. N. David; *Videography as a Field Ethnoarchaeological Technique*
- 2:45 P.M. A. S. MacEachern; *Ethnoarchaeology by Argument: The Mandara Archaeological Project*
- 3:00 P.M. J. Sterner; "Montage," *Sacred Pots, and "Symbolic Reservoirs" in the Mandara Highlands of North Cameroon*
- 3:15 P.M. T. Belkin; *The Potters of Buur Heybe, Somalia* (video)
- 3:45 P.M. J. G. Ellison; *An Ethnoarchaeological Reconnaissance at Xawal Dheri, Somalia*
- 4:00 P.M. N. B. Mbae; *Pastoral Masai Site Types, Function, and Refuse Organization*
- 4:15 P.M. S. Kent; *Seasonal Changes in a Recently Sedentary Kalahari Community and Implications for Archaeology*
- 4:30 P.M. E. K. Agorsah; *Objectivity in the Ethnoarchaeology of Africa*
- 4:45 P.M. Discussion
- 5:00 P.M. **Coffee Break**

**[11] General Session:
The Later Stone Age, Pre-Dynastic, and Iron Age**

Chairperson: M. Posnansky

Participants:

- 5:15 P.M. L. Robbins; *1989 Fieldwork at the White Paintings Rockshelter, Tsodilo Hills, Botswana*
- 5:30 P.M. J. O. Mills; *Predynastic Astronomy at Hierakonpolis*
- 5:45 P.M. C. L. Awasom; *The State and Future of Archaeology in the Ndop Plain of the Cameroon Grassfields*
- 6:00 P.M. M. S. Bisson; *A Reevaluation of the Origins of Pottery Found in*

- Late Stone Age Sites on the
Zambian Copperbelt*
- 6:15 P.M. P. de Maret and O. Goddelain
(University of Brussels) *Later
Stone Age in West Central Africa:
An Overview of the Latest Research*
- 6:30 P.M. J. Denbow; *The Early Iron Age
along the Congo Coast: New Data
from Reconnaissances and
Excavations*
- 6:45 P.M. D. A. Kuevi; *Recherches
Archéologiques Récentes dans le
Sud-Ouest de la République
Togolaise*
- 7:00 P.M. Discussion
- 7:15 P.M. Closing Conference Remarks
- 7:30 P.M. Dinner and dance at the home
of Peter and Jane Schmidt
(Transport provided)

Sunday, March 25

- 8:00 A.M.—
- 4:00 P.M. Optional excursion to St.
Augustine

**By-Laws of the Society of
Africanist Archaeologists**

Article I—Name and Location

Section 1—Name. The name of this organization shall be the Society of Africanist Archaeologists, a nonprofit corporation.

Section 2—Offices. Offices of the Society shall be located in a locality as may be determined by the Executive Board.

Article II—Objectives

The objectives of this Society shall be:

1. To promote and to stimulate interest and research in the archaeology of the African continent.

2. To advocate and to aid in the conservation of archaeological resources.
3. To encourage public access to and appreciation of the aims, accomplishments, and limitations of archaeological research.
4. To serve as a bond among those interested in African Archaeology, both professionals and non-professionals, and to aid in directing their efforts into scientific activities.
5. To publish and to encourage the publication of archaeological research.
6. To discourage commercialism in archaeology and to work for its elimination.

In the pursuit of its objectives, the Society shall promote and support all legislative, regulatory, and voluntary programs that forbid and discourage all activities that result in the loss of scientific knowledge and of access to sites and artifacts. Such activities include, but are not limited to, the irresponsible excavation, collecting, hoarding, exchanging, buying, or selling of archaeological materials. Conduct that results in such losses is declared contrary to the ideals and objectives of the Society.

Article III—Structure

The Society shall be composed of members. It shall have: (1) an Executive Board which, in addition to such duties as may be prescribed in these By-Laws, shall act as the policy-making and administrative body; (2) Committees of the Society; and (3) Such officers and employees as are necessary to accomplish its purposes.

The Executive Board may approve establishing relationships with other archaeological societies and associations.

Article IV—Membership

Section 1—Membership Basis. Membership is open to any person who subscribes to the objectives of the Society, without regard to sex, race, religion, or nationality.

Section 2—Classes of Members. The membership shall consist of the following classes:

- a. Member
- b. Student Member
- c. Retired Member
- d. Joint Member
- e. Affiliate Member
- f. Life Member

Section 3—Member. Any person who is engaged in archaeology or any related aspect thereof or any other person who supports the objectives of the Society shall be eligible to become a Member.

Section 4—Student Member. Any person matriculating in an educational institution pursuing candidacy for a degree (Associate or higher) in a field of study related to some aspect of archaeology shall be eligible for membership as a Student Member (1/2 Dues).

Section 5—Retired Member. Any Member who has retired from professional life in a remunerative capacity and is age 65 or over shall be eligible for Retirement membership. Individuals in a Retired status shall retain all rights and privileges previously held (1/2 Dues).

Section 6—Joint Member. Any person who is a spouse of a Member and who supports the objectives of the Society shall be eligible to become a Joint Member.

Section 7—Affiliate Member. Any Member who resides in a country where foreign exchange restrictions prevent payment of membership fees. Such membership must be renewed annually by special petition to the Treasurer. Voting rights will be conferred to those who have renewed their affiliate status for two or more successive years.

Section 8—Life Member. An amount to be set by the Executive Board for life membership; funds will be invested in an endowment, the proceeds of which will be used to support the Society's activities.

Section 9—Privileges

- a. All classes of members shall enjoy the privileges of the Society except where certain privileges are specifically

restricted to a specific class of member in these By-Laws.

- b. Joint Members and their spouses shall be eligible to receive one copy of all Society mailings, which is sent to the member, except for election material, which is sent to both.

Section 10—Membership Application. The following membership procedures shall be followed:

- a. Applications for membership shall be submitted to the Executive Board in such form and accompanied by such supporting documents as the Executive Board may determine.
- b. The Executive Board may assign a committee and/or staff to assist the Executive Board in the processing of membership applications, and in the overall appraisal, ruling or interpretation of questions and inquiries relating to membership.

Section 11—Suspension for Non-Payment of Dues. Any member whose dues are 90 days past due shall be suspended and all privileges of membership discontinued. Members suspended for non-payment of dues may be reinstated at any time upon payment of the current year's dues.

Section 12—Termination of Membership

- a. The Executive Board may, by three-quarters vote of the members present and voting, remove from the membership rolls any member whose acts are contrary to the ideals, objectives, and accepted standards of the Society as set forth in these By-Laws or who otherwise makes improper use of membership in the Society. The action of the Executive Board may be subject to any appeal to the Society at its Business Meeting.
- b. The membership of those members who are under suspension for nonpayment of dues at the close of a membership year shall be terminated.

Article V—Dues and Charges

Section 1—Annual Dues.

- a. The annual dues, payable in United States funds, shall be fixed annually by the Executive Board.
- b. The rates for annual dues may differ by membership class and/or by other criteria determined by the Executive Board.
- c. The annual dues for members shall include a subscription to one or more publications of the Society as determined by the Executive Board.

Article VI—Executive Board

Section 1—Authority and Responsibility. The governing body of this Society shall be the Executive Board. The Executive Board shall have supervision, control, and direction of the affairs of the Society, its committees, and publications; shall determine its policies or changes therein; shall actively pursue its objectives and supervise the disbursement of its funds. The Executive Board may adopt such rules and regulations for the conduct of its business as shall be deemed advisable.

Section 2—Composition. The Executive Board shall be composed of a President, Treasurer, Secretary, and two Executive Board members at large. The Editor of the bulletin shall be an ex-officio member of the Executive Board. The Executive Board may appoint other ex-officio members of the board without voting rights.

Section 3—Duration of Office.

- a. The two Executive Board members at large shall serve for a term of two years. The term of the Executive Board members at large shall begin at the close of the Business Meeting of the Society following their election.
- b. A member of the Executive Board may resign upon presenting a written resignation to the President of the Society, and the resignation shall become effective upon acceptance by the Executive Board.

Section 4—Quorum and Voting.

- a. At any meeting of the Executive Board, a majority of the voting members of the Board shall constitute a quorum for the transaction of the business of the Society.
- b. Unless otherwise specifically provided by these By-Laws, a majority vote shall govern. No member shall vote by proxy.
- c. The President may request action by the Executive Board between meetings of the Board by the mail ballot or telephone vote. Action taken by mail ballot or telephone by a majority of all voting members of the Executive Board shall constitute a ballot action and shall be reported at the next meeting of the Executive Board.

Section 5—Vacancies. Vacancies on the Executive Board that occur between the biennial Business Meeting of the Society shall be filled by appointment by the Executive Board. Such appointment shall be effective only until the next Meeting of the Society, at which time the vacancy shall be filled by the newly elected member.

Article VII—Officers

Section 1—Elected Officers. The elected officers of the Society shall be President, a Secretary, and a Treasurer. All officers are elected by the membership of the Society. The officers shall automatically succeed to their designated offices at the completion of the incumbents' term of office.

Section 2—Qualification for Officer. Any individual who is a voting member of the Society in good standing shall be eligible for nomination and election as an officer.

Section 3—Term of Office. Each elected officer shall take office immediately upon the conclusion of the Business Meeting of the Society and shall serve for a term of two years from the close of one Biennial Business Meeting to the close of the next Biennial Business meeting.

Section 4—Removal. Any officer of the Society may be removed by a three-quarters vote of the Executive Board present and voting whenever in its judgment the best

interests of the Society would be served thereby.

Section 5—Vacancies. If there is a vacancy for any reason in any office which cannot be filled by the provisions for succession to office, the Executive Board may appoint from its own membership an officer pro tempore to perform the duties of the vacated office until the office is filled by an election by the membership.

Section 6—President. The President shall be the presiding officer of the Society and Chairperson of the Executive Board. The President shall also serve as an ex-officio member of all committees.

Section 7—Secretary. The Secretary shall oversee the proper recording of proceedings of meetings of the Society and the Executive Board, shall insure that accurate records are kept of the corporation and all members, that appropriate archival procedures are used, and such other duties as from time to time may be assigned to the office by the President or the Executive Board.

Section 8—Treasurer. The Treasurer shall oversee the Society's funds and records; the collection of members' dues; the establishment of proper accounting procedures for the handling of the Society's funds; the performance of an annual audit by a Certified Public Accountant; and, further, shall report on the financial condition of the Society at all meetings of the Executive Board, at the Business Meeting, and at other times as called upon by the President.

Article VIII—Meetings and Voting

Section 1—Business Meeting of the Society. The Business meeting of the Society shall be held at such a time and place as the Executive Board shall determine. Notice of said meeting shall be given to all members not less than 60 days prior to the date thereof.

Section 2—Special Meetings. Special meetings of the Society may be called by the Executive Board at any time, or shall be called by the President upon receipt of a written request by ten percent of the paid voting membership as listed in the current membership list, specifying the purpose of such meeting. At such special meeting, no

business shall be transacted except as specified in a notice to members. Written notice of such meeting shall be given to all members not less than 60 days prior to the date thereof.

Section 3—Joint or Regional Meetings. Joint or regional meetings for the purpose of discussing archaeological problems, symposia, and matters of mutual interest among members and/or other related parties may be called by the President upon approval of the Executive Board.

Section 4—Voting. At any meeting of the Society, only voting members shall have the right to vote, which vote shall be cast in person only at the Biennial Business Meeting. Voting by proxy shall not be permitted.

Section 5—Quorum of Members. Upon the convening of any Business Meeting or special meeting of members, a quorum shall consist of 50 percent of those voting members registered for said meeting, provided that no fewer than 20 voting members are present.

Section 6—Rules of Order. The rules contained in the current edition of Robert's Rules of Order shall govern the conduct of meetings of the Society in all cases to which they are applicable and in which they are not inconsistent with these By-Laws and any special rules the Society or the Executive Board may adopt.

Article IX—Publications

Section 1—Journal and Other Communications.

- a. The Society shall publish a Bulletin to be known as *Nyame Akuma* and other publications approved by the Executive Board.
- b. Each class of member shall receive such publications as the Executive Board may designate.

Section 2—Editorial responsibilities.

- a. The Editor of each publication of the Society shall be appointed by the Executive Board for a term to be determined by the Executive Board, and shall be subject to such editorial policy

as may be adopted by the Executive Board.

- b. Each Editor may, subject to review by the Executive Board, appoint such associate and assistant editors as may be required, in addition to clerical and editorial assistance subject to authorization and budget approval by the Executive Board.

Article X—Committees

Section 1—Committee Formation and Operation. The Executive Board shall create and dissolve each committee, designate charges, and establish policy with regard to budget, size, type of membership, and term. The President, with approval by the Executive Board, shall appoint members to the committees of the Society except where the By-Laws specifically state the formation and operation of a committee.

- a. The President, to the extent possible, shall assign a member of the Executive Board to provide liaison with each committee.
- b. Each committee shall submit written reports of its activities and recommendations to each regular meeting of the Executive Board.

Article XI—Fiscal and Legal Procedures

Section 1—Fiscal Year. The fiscal year of the Society shall be set by the Executive Board.

Section 2—Fiscal Authority. The Executive Board may receive by devise, bequests, donations, or otherwise, either real or personal property or both, and hold the same absolutely or in trust, and invest, reinvest, and manage the same, and apply said property and the income arising therefrom to the purposes of the Society except where restricted by these By-Laws.

Section 3—Working fund. The income from annual dues and from investment and other sources shall constitute the Working Fund, available for operating, publications, and other current expenses consistent with the objectives of the Society as the Executive Board may direct.

Section 4—Annual Budget. The Treasurer shall present a budget to the Executive Board to approve.

Section 5—Non-Compensation. No member of the Executive Board acting in the capacity as an officer or Executive Board member-at-large shall receive compensation for services rendered. Travel expenses personally incurred by the Executive Board members attending to the business of the Society shall be paid by the Society in accordance with rules and procedures adopted by the Executive Board.

Section 6—Annual Financial Report and Audit.

- a. The Treasurer shall provide to the Executive Board at each regular meeting a report of all receipts and disbursements of Society funds.
- b. The Executive Board shall appoint an independent Certified Public Accountant to audit the financial records of the Society and submit an annual audit report.

Section 7—Legal Counsel. The Executive Board may appoint legal counsel to act as general legal counsel and to advise in the legal affairs of the Society.

Section 8—Indemnification. Every officer, Executive Board member, employee of the Society, and such others as specified from time to time by the Executive Board, shall be indemnified by the Society against all expenses and liabilities, including counsel fees, reasonably incurred or imposed upon them in connection with any proceeding to which they may be made a party or in which they may become involved, by reason of being or having been an officer, Executive member, or employee of the Society, or any settlement thereof, whether the person is an officer, Executive Board member, or employee at the time such expenses are incurred, except in such cases wherein the officer, Executive Board member, or employee is adjudged guilty of willful misfeasance or malfeasance in the performance of duties. The foregoing right of indemnification shall be in addition to, and not exclusive of, all other rights to which the indemnified may be entitled.

Article XII—Affiliated Units

Section 1—Authorization. There shall be affiliated units of the Society when, in the opinion of the Executive Board, such affiliations are in the best interests of African archaeology, the Society, and the affiliated units involved as a means of encouraging and promoting more effective cooperation and coordination of activity between the Society and such organizations. Such affiliated units shall be and remain completely autonomous and independent of the Society.

Article XIII—Dissolution

The Society shall use its funds only to accomplish the objectives specified in these By-Laws, and no part of said funds shall inure, or be distributed, to the members of the Society. On dissolution of the Society, any funds remaining shall be distributed to one or more regularly organized and qualified charitable, educational, scientific, or philanthropic organizations to be selected by the Executive Board.

Article XIV—Amendments

Section 1—Originating Proposed Amendments. Amendments to these By-Laws may be proposed by the Executive Board on its own initiative or upon petition by any 30 voting members of the Society. Such amendments shall be submitted to the Executive Board for review and for preparation of a recommendation to the Membership.

Section 2—Approval of By-Laws. Amendments to these By-Laws shall be approved by a two thirds affirmative vote of the members present and voting at any Business Meeting or special meeting of the Society duly called, provided written notice of proposed changes have been sent to the members 60 days before such meetings or by a 60 day mail ballot.