EDITORIAL

The first issue of *Nyame Akuma*, published in October 1972, was edited by Peter Shinnie, who, having served as midwife (if not mother), continued to nurture the periodical for a full decade, at which time he relinquished editorial responsibility to David Lubell. Having just stepped into David's shoes, I want to acknowledge the dedication and effort of my predecessors, as well as the many people who have assisted them and the myriad of contributors. The fact that *Nyame Akuma* has recently celebrated its seventeenth birthday is, of course, a testimonial to its unique place in the periodical literature on African archaeology. But it is no less a tribute to the industry and commitment of those who have labored to create and sustain it. On behalf of everyone who benefits from the existence of *Nyame Akuma*, warmest thanks to my predecessors and those who worked with them.

Uncomfortable though it is to enter a parade out of step, I am afraid that this issue of *Nyame Akuma* will reach its subscribers a bit late. For that, my apologies; the reasons include my inexperience in editing this periodical and a nine-month delay in my obtaining the institutional support mentioned in David Lubell's last editorial. I shall try to adhere more closely to the publication schedule in future issues.

It will help if contributors would prepare their manuscripts with the same care and attention to detail that would be expected in a submission to a refereed journal. Although the "Instructions for Contributors" (opposite) are imprecise and editorial standards for *Nyame Akuma* have traditionally been somewhat elastic, certain generally held, minimal criteria for manuscript preparation really should be honored. For example, *all* "hard copy" versions of manuscripts, including those accompanied by disks, should be double-spaced original typescripts or copies of comparable quality on 8 ½" x 11" (215 mm x 278 mm) sheets. In addition, care should be taken to insure that all citations in text actually appear in the list of references and that the form of the bibliography corresponds to the style evident in recent issues of *Nyame Akuma*, a slightly modified version of the bibliographic style for *American Antiquity*. Speaking of style, I would like to take this opportunity to solicit suggestions for improving either the appearance or the content of *Nyame Akuma*.

As regards content, let me underscore the breadth of our net; we really do welcome contributions on "all aspects of African archaeology," with the exception of articles on Pharaonic Egypt or Classical North Africa. The exclusion of historical material from North Africa, for which there are numerous publication outlets, does not extend to sub-Saharan Africa. Thus, contributions on the historic period are, indeed, welcome from any part of sub-Saharan Africa, as is evident in the contributions from, for example, Tanzania in this issue.

I plan to attend the biennial SAfA meetings in Gainesville (see under "Meetings") and will be happy to hear comments, criticisms, etc. from anyone present at the conference.

John Bower

ARTICLES

Predynastic Settlement Patterns in the Hiw-Semaineh Region, Upper Egypt

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An expedition to locate and investigate the status of Predynastic sites in the Hiw-Semaineh region was conducted in May–June, 1989, by the author of this contribution. The project was planned and coordinated with the assistance of Farouk El-Baz, Director of Boston University's Center for Remote Sensing, and Fekri A. Hassan, Washington State University. Funds for the project were provided by the National Geographic Society.

Field work consisted of a reconnaissance archeological survey, systematic survey of selected areas, geoarcheological investigations, and a study of the setting and characteristics of two sites. Field work began by relocating the archeological sites mentioned by Sir Flinders Petrie (1901).

Cemeteries of Abadiyeh and Hiw

The Hiw-Semaineh region was the focus of field work by Sir Flinders Petrie in 1898–99. In one field season Petrie excavated five Predynastic cemeteries, none cemeteries dating to pharaonic times, and two Roman-period cemeteries along a 16 km strip from Hiw to Semaineh (Petrie 1901). Petrie also recorded evidence of Predynastic villages between Abadiyeh and Semaineh, but he did not excavate them. Investigations of a 1986 Landsat Thematic mapper image of the Nag Hammadi-Qena region indicated that much of the area above the floodplain from Abadiyeh to Semaineh was not presently under cultivation, and Predynastic sites might still be preserved there.

Reconnaissance in 1989 showed that several Predynastic sites of Petrie's had been destroyed. Cemetery U, east of the large Muslim cemetery of Hu, is now the site of a gravel quarry. Cemetery R was located in the housing area for the Mag Hammadi Aluminum Factory, and has been destroyed by bulldozing.

At Abidiyeh we relocated the remains of a Predynastic village which Petrie recorded as "entirely plundered." Situated on a spur south of the floodplain, most of the area encompassing this Predynastic village was cultivated from 1955 to 1965. Part of the village to the southeast was recently bulldozed. This site was named HG after the modern village of Halfieh Gibli, on the western edge of the Predynastic site (Fig. 1).

Halfieh Gibli

From the northern edge of the spur on which the Halfieh Gibli (HG) site is situated, the site extends south for 180 m to the edge of presently cultivated land. The site was gridded and a 20% surface collection was randomly selected and collected. Tests pits of 1 x 1 m were excavated in 10% of the grid units.

Site HG was covered with the sherds of typical Predynastic wares, black-topped red ware (BTRW) and rough-ware (R-ware), but no architecture was visible on the surface. The area of the heaviest concentration of artifacts was in the southeastern quadrant of the site where four large limestone blocks located. Although much of the site had been previously disturbed by cultivation, a test pit in the area of the four limestone blocks was done in a stratified midden. Charcoal samples taken from test pits are now being processed for radiocarbon dating.

Lithic artifacts collected from site HG include retouched flakes and blades, and several bifacial blades. A few scrapers were collected and several fragments of

sickle blades were found in test pit deposits. No projectile points were found in the sieved test pit deposits, but a large stone for grinding grain was collected on the surface. Other stone tools include pounding and polishing stones for stoneworking, possible for the stone vessels that have been found in elite Predynastic graves.

Abadiyeh Cemeteries

East of site HG we relocated Petrie's Cemetery A, which he dated to the Old Kingdom. The mastaba which he described there has now been partially eroded away on the north slope of the spur. Petrie's Predynastic Cemeteries B and C extend to the south and east of Cemetery A and appear to have been thoroughly excavated by him.

At the eastern end of Abadiyeh we relocated a stretch about 1 km long where Petrie noted Predynastic villages (his F sites). This area is now covered with houses and threshing floors, and Predynastic sherds occur on the surface.

Semaineh Cemeteries

At the eastern end of Petrie's survey near the modern village of Semaineh, we relocated Petrie's Cemetery H. which dates mainly to the Terminal Predynastic period or Nagada III. On the spur to the north and east of Cemetery H are the remains of a Predynastic village not mentioned by Petrie, which we called site SH (Fig. 1). Site SH extends about 80 m across the northern end of the spur and for about 50–60 m north-south.

Site SH was gridded and a 10% surface collection was randomly selected and collected. Typical Predynastic sherds of BTRW were found here but in much smaller quantities than at site HG. The predominant ware collected on the surface of SH was R-ware. A few rims of Meydum ware were also collected on the surface, suggesting an Old Kingdom component at the site as well. Test pits of 1 x 1 m indicated that deposits of the Predynastic village are thin. However, in the northern end of the site, where fragments of mud-bricks were found on the surface, the

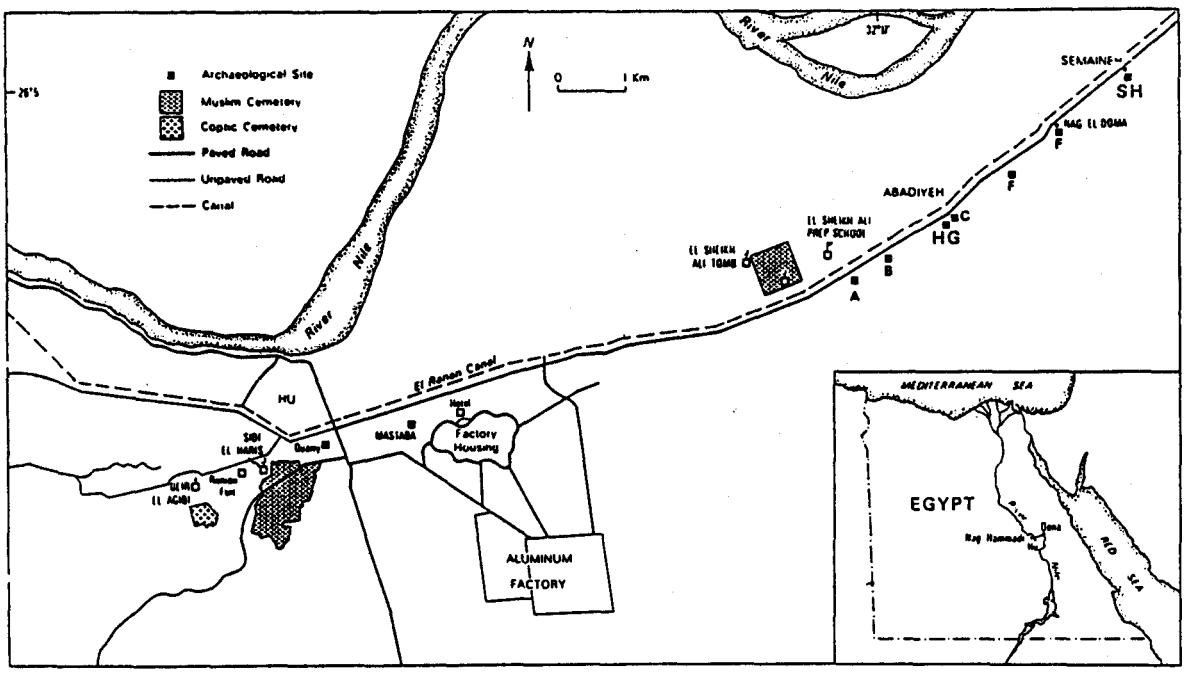

Fig. 1. Map of the survey area.

remains of mud-brick were seen in a test pit below 10 cm.

At site SH there was evidence of ground stoneworking, as at site HG. Tools for stoneworking included polishers and multifaceted grinding stones of quartzite and a dark red igneous rock, perhaps a metavolcanic from the Wadi Hammamat. The polishing stones are too large to have been used to polish pots. Analysis of thin sections from several of these tools now being done. Hammerstones and large chips from the stoneworking were also found. It can perhaps be suggested from the surface evidence that the Hiw region was a center for stone vessel manufacture in Predynastic times and the raw materials for these vessels were imported from the Wadi Hammamat.

Because of its proximity to the Terminal Predynastic cemetery H and its thin deposits, which are indicative of a more short-term occupation, site SH almost certainly dates to this period. Charcoal samples from site SH are currently being processed for radiocarbon dating, and it is hoped that dates from these samples will help resolve the controversy of the beginning of the First Dynasty and the starting date for the Egyptian chronology.

Although there is an established Predynastic sequence of artifact types based on burials (Petrie 1901; Kaiser 1957; Kemp 1982), the wares and relative quantities of these from the two Predynastic settlement sites at Abadiyeh and Semaineh were different from those known for Predynastic burials. From our surface collection, BTRW was used at settlements throughout the Predynastic sequence, whereas in burials this ware disappears by the Terminal Predynastic. R-ware was the most common ware found at sites HG and SH, and included some sherds 2.0 cm or more thick, which may have come from large storage units. Decorated-ware sherds were not found at the two settlement sites, and this ware may have been primarily used for Predynastic grave goods. No burnished Badarian ware was found at either site, indicating a later date of occupation in the Predynastic sequence.

Test pits indicated that two loci within site SH may have been threshing floors, but the site was not previously excavated or cultivated. There is some evidence of stratified remains at both sites HG and SH, which is extremely rare for Predynastic settlements. It is hoped that site SH, which is of Terminal Predynastic date, will provide missing information for the period when the Early Dynastic state was formed in Egypt. Both of these sites are threatened by irrigation projects which will reclaim 17,000 acres of land. It is imperative that the sites excavated as soon as possible before the information and the sites are lost forever.

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The Mandara Archaeological Project 1988–89

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A first report on the progress of this long-term archaeological and ethnoarchaeological project appeared in *Nyame Akuma* 29 (1987): 2–8.

Fieldwork in Cameroon

In 1989 the authors spent May through August in the field, accompanied for part of the time by Dr. David Killick, Manager of the Archaeometry Laboratory, Peabody Museum, Harvard University. Scott MacEachern, a Ph.D. candidate at Calgary, was also in the field for about a month before being evacuated on account of an unrelenting case of giardia combined with amoebic dysentery.

The main emphasis of this almost entirely ethnoarchaeological field season was on the twin technologies of iron metallurgy and pottery manufacture, and on native perceptions of these technologies. In particular we were interested in following up an idea of Nigel Barley's, who had suggested that in this part of Africa, social processes such as maturation may be perceived through a 'potting model'. To what extent, we wondered, were socio-cultural, political and even natural processes, apprehended through technological lenses? In the event we discovered that, far from the above, indigenous conceptions of the technologies are to a large extent based upon physiological models. Thus, for example, the processes of smelting and of eating, digestion, and excretion are seen as comparable. Such beliefs structure the technology, including its magical aspects, and its transmission, and more generally underpin artifact production.

During Killick's five weeks in the field we arranged for the reenactment of two traditional smelts. The first, by Dokwaza, a Mafa, was of particular interest as its results were markedly different from those of a smelt by the same iron master that we had recorded in 1986. In that year he had produced quantities of cast iron besides steel and iron (David et al. 1989), but in 1989 mostly low-carbon flake iron. A portion of the product was nonetheless successfully fined and forged into an axhead. A second smelt, this one by a Plata Kapa smelter living on a rocky plateau 12 km south of Mora, had been arranged by MacEachern before his unscheduled departure. The Plata speak a dialect of the language spoken by the 'Vame-Mbreme', but live in Uldeme canton and are becoming more and more integrated into Uldeme society. Plata Kapa furnaces are much smaller than those of the Mafa, but, like others in this region, work in a similar way, air being blown down into the shaft through a vertical tuyere. The smelt was not entirely successful but did produce some iron. An attempt by a Plata smith—amongst these people the roles of smelter and smith are distinct—to fine some older blooms was a failure.

In addition to the two smelts we also obtained much more information on smelting and its products among the Mafa, Bulahay, Mabass, Hide, Plata and Molkwo (the last-named by courtesy of ORSTOM colleagues), which we are beginning to be able to synthesize into a general account of ethnic variations in this technology. The very different results achieved by Dokwaza in 1986 and 1989 are a salutary warning against the temptation to consider traditional technologies as monolithic and unvarying.

As a complement to traditional recording techniques, we made video recordings of both smelts and indeed of much of the work carried out by David and Killick and by Sterner. These are of particular value in the documentation of complex technological processes and social occasions during which the actors are too occupied to be able to explain what they are doing. By showing tapes made in 1986

to smelters, smiths, and potters, some of whom had never seen a television programme, we secured enthusiastic cooperation and information that would otherwise have taken much longer to obtain. Such technological innovations are of course only useful where informants already have confidence in the anthropologists.

In collaboration with the Cameroonian Institute of Human Sciences we gave public showings of the video *Dokwaza: le dernier maître de fer africain* (David and Le Bléis 1988) to large audiences in Garoua, Maroua and Mokolo. Dokwaza and his family were present on two of these occasions. In answer to questions, the iron master vigourously expounded his claim to have received the technology intact from his forefathers and to have changed nothing. We believe that the showing of the video had a considerable impact, supporting a justifiable pride in traditional technological achievements, perhaps especially among younger and more educated members of non-Muslim societies whose social position is conducive to ambivalence towards much of traditional culture.

MacEachern worked intensively with Plata smiths and accumulated a body of information on their practices and productivity that will significantly modify without invalidating the conclusions reached by David and Robertson (in press) regarding the likely retreat of the traditional highland school of smithing in the face of competition from better organized and supplied Muslim smiths.

During a brief visit to the large Iron Age site of Mehe (MAP 523), test excavated in 1984, Killick found sufficient evidence on the surface of several of the mounds to be able to infer the practice of smelting at the site, though not necessarily on an industrial scale.

While the men were concentrating their research on metallurgy, Sterner focussed on ceramics, continuing her work among the Bulahay of Sirak on the study of domestic and sacred pottery and its integration into all aspects of Sirak life. This enquiry necessarily extends into village history and clan origins; major ceremonies (two of which were attended); life histories of *ngwazla* (the smith, smelter, potter, undertaker caste) families; and the collection of myths about the origins of iron, pottery, millet, and *ngwazla*. A study of abandonment was begun, stimulated initially by the realisation that abandoned compounds are among the best places to observe sacred pots (see Sterner 1989a).

Since 1986 portions of two Sirak quarters have been abandoned, primarily due to lack of water. Eight compounds had been abandoned less than six months prior to our visit. These were sketched and records kept on what was taken and left behind, what will continue to be used there, and what eventually will be moved. Visits were made to several of the same families in their new locations. The new compounds were also sketched and more details recorded of materials moved from one to the other. More information on the locations and ultimate discard of pottery, as well as other classes of material culture, was obtained and is contributing to further analyses of the complex links and processes relating objects and the culture that generates them.

While the ritual aspects of smelting/forging have often been described, little has been said about the ritual essential to the potters' craft. Discussions with Sirak and Mafa potters revealed that potters too make offerings and sacrifices to protect their processes and products. Furthermore, the nature and details of these rituals have parallels in those of smelting/forging and the husbandry of millet.

David also had the good fortune to be present at parts of the *Skala sla* ceremony of the Hide. This festival, of which the high point is the release and recapture of a bull that has been stall-fed for a year or more, is in its various forms the central rite among several of the peoples of this region. We hypothesize that the release of the bull from its stall, its recapture and return, constitute a paradigm for human manipulation of nature through the invocation and temporary control of spirits of God,

natural forces, and ancestors. These are induced to reside for a while in pots. The Hide version of the bull festival is obviously derived from that of the Mafa. David filmed both the Hide ceremony and a Hide funeral and burial.

David and Sterner are planning to make a second video, tentatively entitled *Vessels of the Spirit*, on the place of pottery in the lives of the Mafa, Bulahay, and Hide.

Laboratory and Other Studies

During 1988 and 1989 work has continued on various aspects of our data. David Killick, Robert Heimann, a ceramicist at the Alberta Research Council, and Michael Wayman, Professor of Metallurgy at the University of Alberta, joined forces to study the technical aspects of the data from Dokwaza's smelt. Their results are given in David et al. (1989), fully referenced below. A full technical account is planned for *Archeomaterials*.

Sterner is also investigating the temporal and spatial distribution of a technique of pottery manufacture, largely restricted to northern Cameroon and Nigeria, that makes use of a concave wooden 'anvil-mould' and a ceramic tamper in the production of the base and a major portion of the upper part of the pot. The Mafa and some of their neighbours use this technique to form only the pot base, continuing with broad 'coils' that are pulled up to form the upper pot body. Dale Walde, a Ph.D. student in archaeology at Calgary, has investigated these techniques making use—following preliminary experimentation by Patrick Carmichael, a Calgary Research Associate—of methods developed by Owen Rye that utilize radiography to assist in the study of techniques of manufacture. In unpublished papers Carmichael and Walde have confirmed Rye's interpretations of the radiographic consequences of specific manufacturing techniques and extended them to the Cameroonian materials. Walde took pots of known manufacturing technique together with large sherds from the test excavations at Mehe and from surface collections obtained during the 1984 survey. He has shown that it is possible to discriminate radiographically between the 'pounded' pot technique, combined pounding plus coils, and other techniques. Radiography also shows considerable promise in studies of variations in temper. Work on both these aspects will be continued.

Two accelerator dates have been run by IsoTrace on samples from the Neolithic site of Blabli (MAP 506A) tested in 1984. This site had previously given an unsatisfactory set of three thermoluminescence determinations ranging from 1940 ± 190 BP to 640 ± 70 BP. The new dates, both run on ovicaprine bone fragments from the main occupation horizon, are as follows:

TO-1127 4,390 ± 220 BP

TO-1128 6,960 ± 200 BP

Since we have inferred that the occupation represents a camp occupied during a single phase, and most probably quite briefly at some time between about 2,000 and 4,000 BP, we are uncertain how to react to these dates.

Ph.D. dissertations by K. Gavua and S. MacEachern (University of Calgary) and D. Lyons (Simon Fraser University) are nearing completion.

D. Mueller (1989) and E. W. Wahome (1989) have completed their Master's theses on MAP materials. Their abstracts are given below.

D. Mueller. *Bone preservation in West-Central Africa.*

This thesis focuses on the preservation of bone collagen and the potential for stable isotope analyses of samples from two Northern Cameroonian sites, one Iron Age site (MAP 523) and one Neolithic site (MAP 506A). Two similar collagen extraction techniques were compared, one of which includes a step to eliminate base-soluble humate contaminants through a soak in a basic (NaOH) solution. This comparison involved several variables, including extractable yields of carbon and nitrogen, and ratios between the stable isotopes of these two elements.

The comparison of techniques suggests that humates artificially inflate extractable yields. Elimination of these contaminants produced lower collagen yields, but higher yields of carbon and nitrogen and more negative $\delta^{13}C$ values. It was concluded that, while a certain amount of collagen may be lost during humate removal, the elimination of these contaminants is a necessary step for an acceptable analysis using stable isotopes.

Samples from the Iron Age site generally produced higher yields of collagen, carbon, and nitrogen when compared to the Neolithic site. Within the Iron Age site, bones from the lower levels produced higher yields compared to bones from the upper levels. It was concluded that past environmental conditions (i.e., increased groundwater flow), in concert with human activities, have influenced the degree of bone preservation at the two sites. The few acceptable stable isotope values indicate that humans, cattle, and sheep were primarily feeding on C4 vegetation while goats included some C3 vegetation in their diets.

The potential use of stable isotope analysis in West Africa is discussed and it is concluded that this technique can provide additional information to prehistorians. Recommendations for future research in stable isotope analysis are put forth.

E. W. Wahome. *Ceramics and history in the Iron Age of North Cameroon.*

This study is based on the Iron Age ceramics of North Cameroon and northeastern Nigeria dating from the first to sixteenth century A.D. This is an area generally believed to have gone through myriad political, social, and economic changes during the Iron Age.

However, I have demonstrated an extraordinary degree of continuity in the ceramics of the North Cameroonian part of the study area that contrasts with the variability that might be expected on the basis of the historical record for the zone lying a short distance to the north. I also for the first time established precise comparisons between the ceramics of the study area and the nearest well-documented materials from Daima in Nigerian Borno.

Acknowledgments

This work was supported by grants (410-88-0361 and 410-89-0871) awarded David and Sterner by the Social Science and Humanities Research Council of Canada, and by grants from the University of Calgary Vice-President's (Research) Fund for metallurgical analyses and archaeological mapping. The video was sponsored by the United Steel Workers of America, Canadian National Bureau.

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Recent Archaeological Research in the Western Accra Plains: Ghana

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At the time of independence, a construction boom hit the Accra metropolitan area that has been on the increase ever since. The city is bursting out beyond the suburbs as housing development increases. The Weija dam has created a vast reservoir for irrigation. Power and sewerage lines, as well as modern

highways, stretch to the horizon. Agricultural development has not only increased the acreage placed under the plow, but has also placed the plow deeper into the ground. These developments have impacted many archaeological sites in the area. To the historian and the archaeologist all this is appalling to contemplate. The complexity of the problem has gradually become apparent and in recognition of the archaeological values which might be endangered by these construction activities, the present writer initiated the Accra Plains Cultural Resource Management Project in 1988. The principal objectives of the project are:

- to call attention of scholars and scientists in government, the Universities, the National Museums, and traditional rulers to wanton destruction of our cultural resources;
- to identify and register all archaeological resources; and
- to focus staff and student personnel problems in the area.

Summary of Current Research

Ayawaso (Great Accra)

Previous archaeological work at Ayawaso (5°40'N,0°17'W) was primarily concerned with excavations concentrated mainly on mounds in the Obutu quarter. As part of the teaching programme of the Department of Archaeology, Legon five B.A. final year students and one M.Phil. student were exposed to ten days of field training at the site in April, 1988. Survey information, utilizing a transect interval sampling method, with lines radiating from a central datum ever 45 degrees, indicated that the Ayawaso township was very extensive. The transect survey also confirmed the evidence of oral history indicating that the town had five quarters of different ages: Obutu, Obutu market, Okaikoi, Akotia, and Ayawaso (brass bowl shrine) quarters. The Obutu quarter accommodated the indigenous segment of the population and was the centre of farming and smithing. The Okaikoi quarter was the seat of the Ga chief. The Ayawaso (brass bowl shrine) quarter and the Obutu market quarters were central and had a mixed population. The Akotia quarter, an eighteenth–nineteenth-century middle class enclave founded by Nee Akotia Owosika, was the centre of trade in European wares obtained through coastal warehouses at Christiansborg (Danish) and English and Dutch Accra. The surface survey produced large quantities of local and European artifacts which are currently being studied by the present writer.

In March, 1989, Bredwa Mensah completed a reconnaissance survey and excavation of the Okaikoi quarter as a partial fulfillment for the M.Phil. degree programme. In view of its location on a hill (Kplagon) overlooking Accra from the north, the Okaikoi quarter is currently being threatened by urban expansion and commercial farming activities, and the pace of research needs to be doubled.

Wodoku Hill

The Wodoku site (5°38'N,0°11'W) lies to the north of the Kotaka International Airport. The recent installation of an aircraft navigational device for the airport and the construction of urban dwelling houses have seriously impacted the site.

The potential for archaeological research at Wodoku was recognized in the 1930s by Margaret Field, an anthropologist who was interested in Ga social organization. In the 1960s Oliver Davies and Paul Ozanne completed limited surface surveys at the site. In 1965 Dr. John Alexander completed the first scientific excavation, but the entire assemblage of later Iron Age cultural material was exported to Cambridge and his observations have not yet been published.

A recent survey by Tawiah (1988) utilizing the radial transect sampling method sampling method has demonstrated that the site stretched over an area of approximately 21 hectares. The Civil Aviation Authority had destroyed 5 hectares and the other 17 hectares are threatened by new housing projects.

Test Excavation, WO-89 Locality 1

Test excavations reported here took place July 4–14, 1989, under the Department of Archaeology Field School programme directed by the present writer. Participants in the programme were B.A. Final Year students: Samuel Odame, Reverend Kwasi Quarm, Henry Nensah, Teye Narh, and a number of student volunteers from the B.A. First Year. Funding for the project was provided by a Department of Archaeology Research vote. The site measured about 60 x 45 m and four units of varying shapes and dimensions ranging ranging from 8 m^2 to 10 m^2 were excavated by 20 cm arbitrary levels. Cultural material was largely concentrated between 20 and 60 cm deep, and the site was underlain by a sterile clay layer below 80 cm. One unit, K-69, and two trenches, T-1 and 2, revealed deep depressions cut into the sterile clay later, possibly for clay mining. The depressions were later filled with domestic rubbish. The rarity of refuse mounds at Ayawaso perhaps can be explained by this mode of refuse disposal in the past. Only two refuse mounds have been recorded.

Physical observation and microscopic examination of the potsherds showed that the entire assemblage (n=6,010) approx. can be divided into the following categories: Ware A (97%); Ware B—Shai Classic (2%); and a Miscellaneous Group (1%).

Ware A complete vessels were rare (n=2). The ware is characterized by paste composed of quarts grains, iron oxide nodules, and feldspar and occasionally shows minute specks of mica and hornblende derived from the underlying Togo-Dahomeyan basement rocks. The pottery, while not yet studied in detail, is thin, well fired, and shows resemblances to earthenwares from ancient Ga settlements of Ayawaso, Opah, Medea (Salem) and Ajenkotoku located west of Wodoku. Diagnostic decorative motifs include (1) multiple incised and grooved lines on the inner surface of everted rims, (2) scoring (striations) achieved by wiping or raking, and (3) modelled or appliqued fillet on the shoulder of vessels. Vessels' shapes are simple, globular-bodied jars with everted and vertical rims (49%), shallow open bowls (43%), and pedestalled vessels.

Ware B was found to contain quartz, feldspar, garnet, and hornblende. The fabric occasionally shows mica flakes (white) but this is minimal compared to Ladoku ware. The garnet and hornblende are metamorphic minerals probably derived from the metamorphic rocks of the Shai hills and the surrounding countryside. Garnet seems to have a wide distribution in the area south of the Shai hills, and it has been recognized in soils and clays by the writer at Bundase near (Ladoku) and at Tema (Dombrowski 1977: 32). The sun-ray decorative motif identified by Anquandah (1982: 16) as one of the diagnostic elements of this ware is represented. Shai Classic Ware had been identified as a dominant import at Ladoku from the sixteenth to the eighteenth century A.D. (Anquandah, personal communication).

A large amount of fauna was recorded, including bones of sheep/goat, antelope, grasscutters, domestic fowl, and cattle. An examination of the bones revealed that most of them were crushed. Also transverse breakage is prevalent, possibly resulting from narrow extraction. The mollusca and fish remains indicate a heavy emphasis on the exploitation of marine and lagoon resources with less emphasis on hunting. Carbonised remains of oil palm nuts recovered may indicate contacts with the Akwapim ridge along an ancient footpath which according to oral history connected coastal settlements of Nungua and Labadi through Wodoku and the Sassabi plains (Oyibi) at the foothills of the ridge.

Levels below 80 cm produced types 1a and the upper levels types 2b of Ozanne's (1965) smoking pipe type series, which are dated relatively to ca. 1640–70. These dates correspond fairly well with Reindorf's estimates of 1660–80 for the foundation and destruction of several

Nungua and Labadi settlements east of Accra (1966: 36–44). Microscopic examination of the pipes indicate that type 2b is of Shai origin and type 1a is probably local. Three charcoal samples were collected from Levels 40–60 cm; 60–80 cm and 140–60 cm of Unit K–69 for C14 determination.

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Protohistoric Archaeology in the Banda Area, Ghana

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Over the course of the last four years I have been engaged in a study of continuity and change during the last several centuries in the Banda area of west-central Ghana. The Banda Traditional Area is situated south of the Black Volta bend and lies immediately north of the contemporary forest boundary (Fig. 1). The area is characterized by a range of high hills that rise dramatically out of an otherwise low-rolling topography. In the period from the eighteenth century, this small, multi-ethnic area was incorporated initially into Asante and later British imperial networks.

My research is directed toward an exploration of the following related issues: identifying the timing and processes that linked Banda to external networks; the temporal and regional variability of participation in global networks; and the implications of the colonial period for our understanding of a traditional African society. Archival research conducted in the Public Records Office, London and the Ghana National Archives, Kumasi (1987–89) provided insight into the character of colonial administration of Banda and has led to the identification of changes in ethnic identity and ethnic style during periods of social, political, and economic dislocation that characterized the Volta region during the nineteenth century (Stahl 1989). The archaeological component of this research is directed toward understanding the impact of changes at the local level.

I returned to Banda in the summer of 1989 to undertake archaeological excavation at a late nineteenth-century site in the Banda area with the goal of identifying protohistoric patterns of subsistence, settlement, and craft specialization. These patterns will provide important comparative material for understanding the character and timing of subsistence changes (i.e., in the adoption of New World crops), the nature of precolonial settlement patterns, and assessing patterns of continuity or change in craft specialization prior to incorporation into the colonial market economy. Analysis of the 1989 excavation materials is ongoing; however, preliminary results of the excavations are reported here.

Archival and Ethnohistoric Background to Excavations at Makala Kataa

Excavations were undertaken at the site of Makala Kataa during the months of June and July 1989. Makala Kataa (8°8'15"N; 2°23'15"W) is a protohistoric site located adjacent to the contemporary village of Makala in the Banda Traditional Area of the Brong-Ahafo Region, Ghana. The site lies to the southwest of the present settlement and is situated on a low-lying, northeast-southwest trending ridge. The seasonally active Selloo River, which drains southward into the perennial Tombe River, marks the eastern edge of the Makala ridge. The Tombe, which would have provided a reliable source of water for the settlement at Makala Kataa, lies approximately half a kilometer south of the site.

Former traces of occupation are scattered in a linear fashion along the Makala ridge and cover an area approximately 300 m. (northeast-southwest) by 50 m. (northwest-southeast; Fig. 2). Vegetation on the site consists of continuous grass cover associated with a variety of savanna woodland trees; there is no evidence of recent cultivation. Baobabs, typically found clustered on both contemporary and ancient occupation sites, dot the site. Wall stubs of former structures (to a maximum of ca. 1 m) are visible in the area of the site adjacent to the contemporary village. Standing wall stubs cease to be visible to the southwest, away from the contemporary village (Fig. 2). Here, the site is characterized by a series of low mounds that appear to be the remains of collapsed compounds. The mounds are separated from one another by low-lying areas.

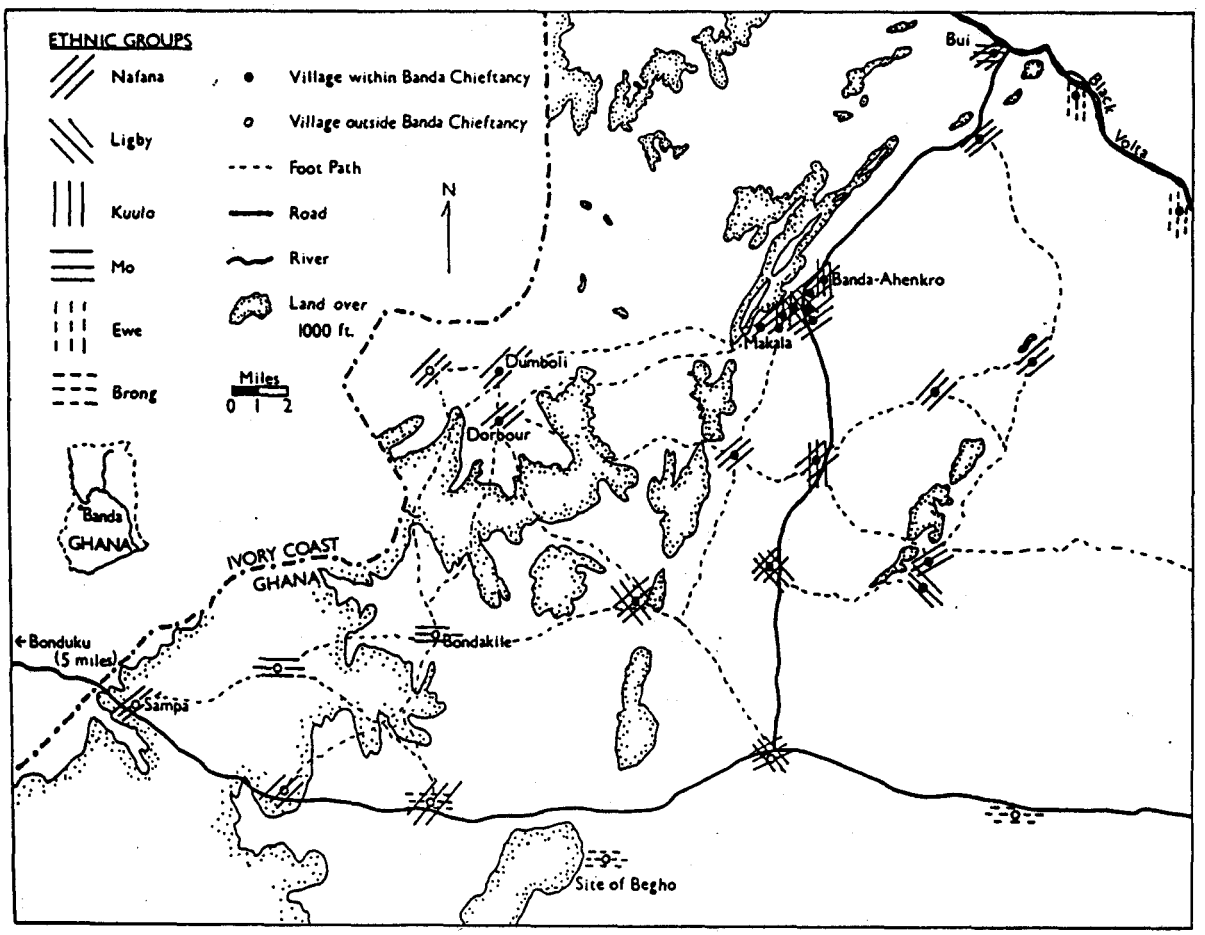

Fig. 1. Location of the Banda Traditional Area.

Oral traditions collected from Nafaanra-speaking peoples identify Makala Kataa as a site of former Nafana occupation. This should not be taken as an indication that the ancient settlement of Makala was occupied by a single ethnic-linguistic group, for the Banda area is characterized by considerable ethnic-linguistic diversity today. Moreover, there is considerable ethnic diversity that is today subsumed within the Nafana identify, and there have been substantial alterations in the ethnic style or content of Nafana identity (Stahl 1989) over the course of the last century. Nevertheless, the oral traditions collected from Nafaanra-speaking people provide insight into the context of occupation. Traditions collected from the Royal Family (Sielongo Katoo) identify Makala Kataa as the initial site of Nafana occupation following their migration from the ancestral settlement of Kakala in the contemporary Côte d'Ivoire (Ameyaw 1965: 1, Stahl and Anane 1989: 7). Traditions collected by Ameyaw (1965: 8–9) relate that Makala was abandoned during periods of upheaval when the Nafana relocated to the north of the Black Volta River. By the end of the nineteenth century, the Nafana had returned to the area south of the Black Volta and occupied the site of Bui (York 1965), located adjacent to the contemporary village of Bui. This was the period during which the mounted troups of the Imam Samori were active in the hinterland of the Gold Coast (Ameyaw 1965: 12–13). British troops were garrisoned at Bui (Lawra) during the early months of 1897 (e.g., Maxwell 1897a, b). British and French intervention resulted in the cessation of slaving and warfare in the Black Volta region during the final years of the nineteenth century. Traditions indicate that it was during this period that the Nafana reestablished villages at formerly occupied sites, including Makala.

More detailed information collected during the 1989 field season suggests that there are several loci of occupation subsumed under the Nafaanra label "Makala Kataa." The site of initial Nafana occupation is reportedly located to the northeast of the occupation areas described in this report, and lies adjacent to the contemporary Kuulo village of Dumpofie. A knowledgeable elder of Makala village indicated that the occupation of loci adjacent to the contemporary village of Makala occurred at a later period. Settlement occurred initially in the extreme southwest of these loci, and occupation was concentrated in the area immediately west of the contemporary village. The elder reported that he was born and spent his youth living in this area of Makala Kataa. The site was abandoned when a white representative of the colonial government, known as the "breaker of walls," visited the area and told the inhabitants of Makala to relocate their settlement. He cited the close spacing of the houses as a fire hazard, and instructed the Nafana to reestablish their village according to a grid plan that incorporated wide alley ways between compounds. This is consistent with archival documentation that attests to the concerted effort by the colonial government to establish new native settlements that were in accord with British planning concepts. Virtually all contemporary settlements in the Banda area are associated with an adjacent *kataa* or site that was abandoned during the colonial period (probably after 1930). Archival sources place these local changes into broader perspective. Annual Departmental Reports issued by the colonial government in the Gold Coast highlight the government's concerns with implementing changes in village layouts that were thought to promote sanitation.

Preliminary Results of 1989 Investigations at Makala Kataa

Activities during the 1989 season included preliminary mapping of the site, controlled surface collection, subsurface soil augering, and excavation. Surface collection, augering, and excavation concentrated on the apparently earlier occupation areas at the southwestern end of the site (Survey Stations 6–8; Fig. 2). Surface collection and augering suggest that the mounds may be differentiated into

middens and former occupation contexts (i.e., collapsed compounds). Midden mounds were characterized by high densities of surface material and dark soils; occupation mounds yielded low densities of surface material and generally lighter soils.

Excavation was undertaken in contiguous 2-m^2 units and focused on an occupation mound and an adjacent low-lying area separating mounds (Fig. 2). A total of 32 m^2 (8 units) of deposit was excavated to a depth of approximately one meter, the point at which gravelly subsoil was encountered. All deposits were screened (¼-inch mesh) and flotation samples collected from each 10-cm level.

Excavation of the mound deposits yielded evidence of primary occupation contexts. One unit revealed areas of compacted gravel (3–5 cm thick) that appear to be the remains of house floors. Adjacent units yielded concentrations of food-processing equipment (grinding stones) in association with hearth features. Hearths were distinguished by the presence of in situ hearth stones (laterite blocks) associated with thick concentrations of burned sediment. Surrounding the hearths were a number of ceramic vessels of a variety of shapes (bowls, jars) and sizes. A number of these vessels were intact; other ceramic concentrations appear to be the remains of vessels crushed in situ. In some instances, vessels appear to have been stacked one on top of the other. Concentrations of carbonized grain, including sorghum, were recovered from associated deposits.

Two units (8 m^2 total) were excavated in a low-lying area adjacent to the mound. The upper 20–30 cm of these units yielded abundant, fragmented ceramics associated with a very dark soil suggestive of a high organic matter content. At approximately 25 cm below surface three concentrations of gravelly clay were encountered that were thought to represent wall stubs. The

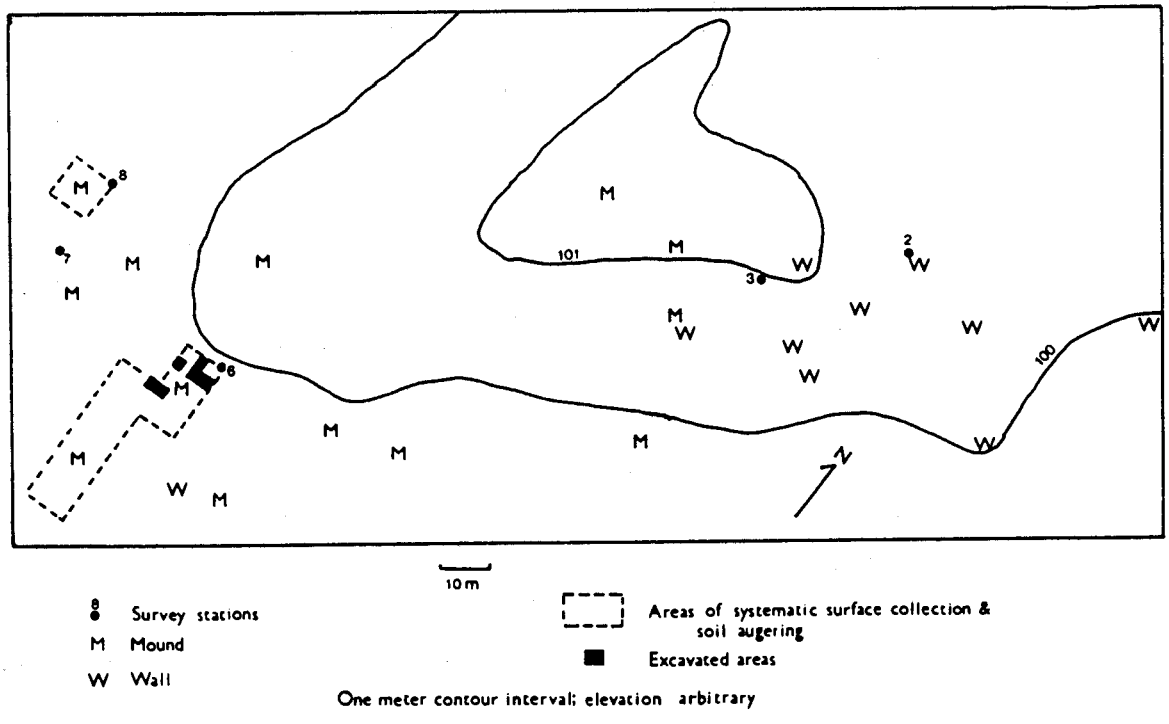

Fig. 2. The protohistoric site of Makala Kataa.

boundaries of these concentrations were linear (ca. 40 cm across) and were readily definable. Sectioning of two of the three concentrations on the last day of excavations, revealed that they were burial pits, both of which were partially excavated. Burial 1 was an extended inhumation of a subadult. No grave goods were encountered. The bone was highly friable and began to disintegrate upon exposure. Only the cranium of Burial 2 was exposed. Although exposure of the burials was cursory, the comparative information on orientation and burial context provides useful insight into precolonial patterns of burial.

Preservation of faunal material was reasonably good. The fauna has been identified by Peter Stahl using comparative collections at the American Museum of Natural History in New York. Small quantities of domestic fauna were recovered and include *Bos* (cattle), ovicaprids (sheep/goat) and guinea fowl (*Numida*). A range of wild species are represented, including several large ground-dwelling rodents (ground squirrel, giant rat and grass cutter), in addition to tortoise and duiker. Observation of butchery marks is suggestive of species-specific patterns of butchery.

Flotation yielded large quantities of carbonized macrobotanical material. Samples are currently being processed, but preliminary sorting suggests an abundance of sorgham. This, combined with the ubiquity of grindstones, points to the possibility of subsistence changes since the nineteenth century. Major crops grown in the Banda area today include yams, and the New World domesticates maize and manioc (cassava). Manioc and maize are relied upon during the rainy season when yams are unavailable. Up until the recent introduction of diesel-powered grinding machines to the Banda area in 1986, maize was processed by pounding in wooden mortars. Sorghum is grown in limited quantities and is used primarily in the production of sorghum beer (*pito*). Nineteenth-century occupants of Makala Kataa clearly possessed maize, as is evidenced by the abundance of maize cob roulette impressions on ceramics; however, the ubiquity of sorghum and grindstones in nineteenth-century archaeological contexts is suggestive of changing patterns of reliance on indigenous vs. introduced staple crops and changes in associated processing technology.

Ceramics recovered from the 1989 excavations show elements of continuity with contemporary ceramics manufactured in the Banda area today (see Crossland and Posnansky 1978). Analysis is, however, suggestive of certain differences. Archaeological ceramics from Makala Kataa appear to represent a wider variety of vessel forms than are currently made. Combinations of decorative motifs on pots exhibit greater heterogeneity than is the case among contemporary ceramics. Also, there appears to be some stratigraphic differentiation in the ceramic assemblage. Levels from the base of the mound, which were originally thought to represent sterile deposits, yielded ceramics made from distinctive pastes and included painted pottery. Although maize cob roulette occurs in virtually all excavation levels, cord roulette is more common in the basal levels of all units and is virtually nonexistent in the upper levels. Thus, ongoing analysis promises to reveal stratigraphic/temporal trends in ceramics.

A surprising feature of the 1989 excavations was the dearth of imported goods. Small quantities of beads and limited numbers of European pipes are the only imported items identified in the collections to date. This provides an interesting contrast to York's excavations at the roughly coeval site of Buli (York 1965) in which imports were apparently abundant. Similarly, Posnansky's excavations of eighteenth-century contexts at Begho have yielded large quantities of imported godos, most notably pipes (Posnansky 1979). This is suggestive of intraregional (Bui) and temporal (Begho) variability in the connections of the Banda area with external exchange networks.

It is my goal to undertake further excavations at Makala Kataa during the summer of 1990. Additional mounds in the vicinity of Stations 6–8 will be sampled

and excavation will be expanded to include areas adjacent to the contemporary village that were abandoned in the early twentieth century. These excavations will provide a comparative sequence covering the period of the mid to late nineteenth century through the early twentieth century that, when combined with the archival and ethnohistoric data, promises to provide insight into patterns of change and continuity over the past two centuries.

Acknowledgments

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Preliminary Report on Excavations at Okai Koi Hill Site (Ayawaso), Western Accra Plains of Ghana

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From February–December, 1988, an archaeological research was carried out at Okai Koi Hill Site (Ayawaso) to provide a corpus of Ga cultural material for the reconstruction of the early history of the Ga, who today inhabit the western Accra Plains of Ghana.

Ayawaso (5°40'N,0°18'W) was the settlement early European writers referred to as Great Accra, the traditional capital of the Ga located 21 km north of modern Accra (Wilks 1957; Berry 1958). This settlement was destroyed by the Akwamu in 1677.

Some amount of archaeological research has been carried out in the area before (e.g., Ozanne 1962, Anquandah 1978). These researches were, however, limited in scope. All the excavations were restricted to one particular rubbish mound located in the Obutu (Awutu) Quarter and described as "the largest on the site" (Ozanne 1962), Anquandah 1982). The present knowledge of the culture history of the area is thus very limited. This study employed archaeological and nonarchaeological tools to provide data that will allow a broader and more detailed understanding of the history of the western Accra Plains during the Iron Age.

Problem Focus

The objective of the research was to reconstruct the early history of the Ga as revealed by their material culture. Within this context, the research set itself to resolve some specific questions:

- Was there a pre-sixteenth-century settlement and, if any, what does the archaeological data reveal about it?
- Did the Ayawaso settlement end abruptly or declined gradually after the late seventeenth-century Akwamu invasion?
- What was the economic pattern of the peoples who inhabited the research area and in what ways was it related to the neighboring ethnic groups?

Research Approach and Results

The nature of the archaeological problems outlined above demanded that an interdisciplinary approach be adopted. The research therefore looked beyond archaeology for help from sources such as ethnography, oral traditions, ethnobotany, and linguistics to provide information that will assist in the analysis and interpretation of the archaeological data.

The research was carried out in three phases: (February–April) involved data gathering on the human and economic geography of the research area. The area's contemporary traditional modes of life—farming, fishing, hunting and gathering, and local craft industries—were studied.

This period was also used to document oral traditions on Ga origins and the Ga-Akwamu conflict of the late seventeenth century A.D. that led to the defeat of the Ga and their subsequent movement to their present settlement of Accra on the coast.

During (May), an intensive ground reconnaissance survey of the Ayawaso area was carried out. This was done to gain a general impression of the research area. With a team of six undergraduate students, a foot survey using the Spoked Wheel Model of radial transects was carried out to locate, identify, and record the distribution of archaeological sites against the natural geographical and environmental background and to surface collect artifacts within sample units along the transect lines.

The survey yielded fruitful results. Four sites were discovered within the Ayawaso settlement: Okai Koi Hill, Obutu (Awatu) Quarter, Nii Akotia, and Ayawaso Central. These sites together constitute the entire Ayawaso settlement.

The results have been confirmed by the elders of Ga Mashie (modern Accra).

During (November–December), archaeological excavations were conducted at Okai Koi Hill Site (Ayawaso) by the writer, assisted by a team from the Department of Archaeology. The site is straddled on top of a hill named after one of the early kings of Ga. The hill, 118 m a.s.l. is part of a discontinuous chain of hills that mark the southern limits of the Akuapem Range. The Accra-Nsawam asphalt-surfaced road and the railway line lie at the foot of this hill.

Four pits each 3 x 3 m were excavated. One of the pits dug on a rubbish mound yielded the greatest number of finds. This pit revealed a stratigraphic series from 0 to 540 cm. The three others dug on level ground revealed almost uniform profiles from 0 to 180 cm.

Over 10,000 potsherds were recovered from the dig. Classification is still going on, but the pottery is not different from what Ozanne and Anquandah obtained from their excavations at the Obutu (Awutu) Quarter. There are two basic pottery forms—bowls and jars. The bowls are of shallow and deep forms with either inturned mouths or with everted rims. The jars also have globular bodies with wide and very sharply everted rims. They are hard and fired to either light-brown or black colours. Most of the vessels have cylindrical pedestals with everted foot rings.

Over fifty pieces of locally made smoking pipes turned up in the excavations. Ozanne (1962) has proposed a relative evolutionary typological sequence of smoking pipes from the area. He distinguished three types: Type I, II, and III with two varieties of each and a range of absolute dates deduced from the association of the pipes with datable European sgraffito plate. When a detailed study of thee pipes recovered from the excavations is made, it will be possible to see whether Ozanne's typology is valid.

A large number of invertebrate shells representing two types of land snails and over a dozen species of aquatic molluscs were obtained. The land snails were *Achatina achitana* and *Archachatina*. Of the aquatic shell-fish, the following appeared to be the most commonly exploited: *Arca senilis, Pecten, Donax acutangulus, Tympanctus fuscata,* and *Natica maronchiensis.*

Bones of wild and domestic animals (mainly bovida) were also recovered from the excavations. A detailed report is expected from the Zoology Department, Legon.

A number of locally made beads were excavated, mainly made of two types of rock (quartz and bauxite) and marine shells. Iron and copper/brass objects in fairly good condition were also recovered during the dig. A small number of intricately worked ivory objects were found, including a small comb, a broken knife handle, two broken bangles, and what seems to be a broken comb handle. One phalange bone and four animal teeth (incisors) were found with holes bored in them. They had been polished to various shapes. These might have been worn as pendants.

A number of European imports attesting to the trans-Atlantic sea trade with the Accra coastland turned up in the excavations. They include three pieces of smoking pipes, ten pieces of wheel-made pottery, and over twenty beads.

Acknowledgment

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A New Furnace Type from the North of Igboland

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Archaeological survey work was carried out at Idoha in Igbo-Etiti Local Government Area of Anambra State of Nigeria. This represents a continuation of an ongoing research aimed at throwing some light on the nature of early iron technology in Igboland. During the survey of the town, two types of iron-smelting sites were found. The first type consisted of sites located in circular depressions, each having a crescentic mound of slag heaped above the depression. This is quite similar to what was observed at Umundu, an iron-smelting site located about 10 km northeast of Nsukka in Anambra State of Nigeria (Anozie 1979). Fragments of baked clay, probably furnace wall debris, were also found in and above the circular depressions at Idoha. The second type, represented by only one site, was located on a flat terrain. On this site, two similar structures of baked clay also suspected to be furnace remains were observed. When this site was later excavated, it revealed the presence of a dome furnace, a rather uncommon phenomenon in this part of Nigeria.

The furnace was built with prepared clay, the type usually prepared in the traditional way for building houses and compound walls in most parts of Igboland. It is dome-shaped and has a diameter of about 100 cm close to its base and a wall thickness of about 10 cm. It is estimated that about one-third of the furnace chamber is located inside the ground, and the chamber has a clay lining. The furnace has two funnel-shaped openings located near the base; each has a maximum diameter of 55 cm. These openings were probably used for admitting tuyeres into the furnace or for off-loading the contents of the furnace after smelting. They could equally have served as channels for introducing fire into the chamber before smelting. The chamber contained ash up to about 50 cm deep. Some unburnt ore mixed with slag was found adhering to the furnace wall, and one such ore/slag block weighed 2.70 kg.

The furnace has a platform on the outside made from prepared clay. This platform, or fortification, about 40 cm high, could have been made after the furnace was built and used in consolidating it at the base. This practice of consolidating mud walls at the base is very common among Igbo traditional house builders, who use it to protect the base of houses from damage by rainwater dripping from the roof. Since the upper part of the furnace above the ground surface had collapsed, a reconstruction of its original height was attempted, producing a height of about 1.2 m.

None of the elders still alive in Idoha today has any idea when smelting started and ended in the area. Oral traditions gathered from them, however, claim that those who engaged in the practice of iron smelting were their parents and grandparents, who simply narrated to them how smelting was carried out in the past. Since none of the elders witnessed smelting, it seems the practice was pre-European in the area. Some charcoal samples from the excavation have been sent for C14 dating in order to help determine the age of the site. By this discovery at Idoha, it seems that at least three forms of iron-smelting furnaces

were traditionally used in parts of Igboland: the pit, the dome, and the shaft furnace.

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Traditional Iron-Smelting Methods by the Berom of Plateau State, Nigeria

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Presently, this writer is conducting field research on the subject of traditional methods of iron smelting in parts of the Northern States of Nigeria. Already some data on the subject have been collected from parts of Plateau, Bauchi, Sokoto, Katsina, Borno, and Kaduna States. It is already apparent from these preliminary field investigations that the types of smelting furnaces, and therefore the methods of smelting, differ considerably from area to area. It is hoped that these differences may help in tracing the origins and former distribution of the many different peoples of Nigeria. It would be of great interest, therefore, if as a first step we could assemble records of all the sites where furnaces are known to exist. In certain areas there are some old men still living who have done the smelting themselves and have a near-accurate memory of the process. It is obviously a matter of urgency that their knowledge should be recorded.

Iron has been made and used in Africa for a very long time. Archaeologists have shown that it was coming into general use in Egypt some 2,500 years ago and by 100 A.D. it was evidenced in many other parts of the continent, including Nigeria (Pearce 1960, Fagg 1969, Shaw 1969, Tyelecote 1975). Nowadays iron is so plentiful that it requires an effort of the imagination to think how people lived before there was any iron for their tools and weapons. What is new of course is the virtually unlimited supply of the metal which comes to Africa from Europe. Until some eighty years ago, the Nigerian people, using incredibly uneconomic processes, toiled to produce almost all the iron which they needed. Certain ethnic groups used to specialise in smelting the local ores to make iron hoes, knives, spears, and useful tools and ornaments. The locally smelted iron was very tough and it is claimed that a hoe made from it would last at least three times as long as one made with ordinary European mass-produced iron; and, if it were not such a labour to do the smelting, hoes would still be forged from locally produced metal (Magajin Dodo Nok, personal communication).

The Berom

The Berom are the largest single ethnic group on the Jos Plateau, occupying some eighty villages within the present Jos and Barakin Ladi Local Government Areas with an estimated population of about 687,828 people. This estimate is based on the 1963 census at the growth rate of 2.5% per annum. They live in an area of about 3,652 km^2 centered on the intersection of latitude 10°N and longitude 9°E. They can be divided into three geographical regions:

East	Fan, Forom, Heipang, Du, Ropp
West	Gyel, Kuru, Vwang, Riyom
South	Bachit, Gashish

The various Berom groups have different traditions of origin. According to Gunn (1952) they came from the forest country somewhere to the south, perhaps from the area once referred to as the Jema's Federation (now known as Southern Kaduna State), moved north on to the Plateau at Ashono in Bachit village area before founding Riyom from where they spread over the southern half of the Jos Plateau Platform in three groups. It is said that one of the groups settled on the Naraguta Hills

where they joined others, probably the Jarawa. The second branch, the Anaguta group, moved towards Kwoi, while the third became the Gana Wuri.

Davies is of the opinion that the Berom are composed of peoples from the northeast, merged with a later immigration of Jukun from the south (Davies 1949). On the other hand, some of the Berom themselves (from Forom) argued that they originated just there on the Forom Mountain among the rocks. It should be stated, however, that all traces of the migration process of the Berom are based on hypothesis and mythology as not much investigation has been made on the question of their origins and migration into the Plateau Highlands.

Berom Iron-Smelting Methods

The Berom were once great smelters and workers of iron. It is said that the largest trade or industry the Berom have probably ever known was iron smelting, which is now extinct though the holes for smelting furnaces can still be seen over most of the Berom area today.

The origin of iron smelting among the Berom is not known. The Nok culture, best known for its remarkable terracotta figurines and iron smelting from about 500 B.C. to 600 A.D. (Fagg 1959, Jemkur 1986) is situated directly southwest of the present Berom land. The Berom could have been part of, or come into contact with, the Nok culture. It is interesting to note that recent investigations on traditional iron smelting by this writer on the Berom on the Jos Plateau and the Jaba and Ikulu people within the Nok culture area show that the ironworking apparatus and techniques are similar in both areas. For example, the use of pulsaters, skin bellows, and charcoal are common to both groups. In addition, both usually have their furnaces built on stream banks (Jemkur, 1989).

Until the 1940s, when cheaper and better imported European iron replaced the locally smelted iron, the Berom had a flourishing iron-smelting industry. It was the locally produced metal ingots (wrought iron) that were worked by the village blacksmith into hand hoes for farming, arrowheads, anklets, bracelets, bells that were attached to horse harness, and smaller bells for adorning girls. The ingots were also traded with neighbours to the south.

Available information describing the processes of Berom iron smelting are scanty. The following was obtained by the writer from interviews with some Berom old men from Forum and Du areas who claimed to have participated in the smelt as youths and could vividly remember the process.

Iron-bearing rocks were first collected. Trees were then cut for the making of charcoal and the furnaces were then built along stream banks. The furnace was usually given a preliminary heating by burning charcoal under blast. When the furnace had been sufficiently preheated, charcoal and hematite ore were fed into the open mouth at the top of the structure. The run that produced the regulus of mixed nodules of ore and slag started at daybreak (preliminary heating) and continued until about 3 P.M. when the first runoff took place. After partial cooling this regulus was broken to remove as much slag as possible, then remelting was carried out to produce a cleaner and larger ingot of metal. If necessary, this was continued until an ingot clean enough for blacksmithing was obtained. The operations sometimes lasted well into the night. When the furnace was tapped the runoff flowed into moulds which were prepared near the front of the furnace in a bed of clay laid there for the purpose. The bellows consisted of two bladders, made of goat skin which had been removed whole (without any split) from the goat, with straight wooden handles fixed to the tops and wooden tubes reaching from the bladder bottoms into the mouth of the clayed oven channel built at the side of the gully and leading into the furnace, a small distance above the lower blow hole. Blast was created by the handles being pumped up and down at a very rapid rate (4–5 strokes per second) by one man. As one manipulator got tired, he was relieved by another, his relief taking over the movement in such a way that there was little or no interference with the

rhythm, thus avoiding any serious drop in the airflow (Fig. 1).

One of my informants (Choji Pam) gave the following description of how the Berom obtained iron:

> To be able to produce iron for making a hoe, one must be physically strong, for it entails a lot of hard work. Trees must be cut down and burnt to make charcoal, which is a form of carbon, for the production of iron is a reduction process, with charcoal as the reducing agent.
>
> When enough charcoal has been obtained, a temporary blacksmith's workshop, called a *fwam* (furnace), is made, preferably near a stream. When this has been done, the iron ore, which is a gravel in the form of a hard rock, is dug and broken into small pieces. The iron ore can be found today in the neighbourhood of Ray field, Vom and Jos Aerodrome. Some of the charcoal is ignited in the *fwam*. A little of the ore is added to this glowing charcoal. After an interval of about ten minutes, more charcoal is added, and more iron ore. This process is continued from morning till night, when it is left to cool.
>
> The following morning the resultant product, in the form of little specks of iron stuck here and there in the lump of charcoal, is removed from the *fwam*, ground, and winnowed. What is left then is specially treated with mud and straw and moulded into spheres. When these spheres are dry, they are taken to a proper blacksmith's workshop and put again into glowing charcoal. When white-hot the spheres are taken out of the furnace and beaten into the shape required.
>
> This is how iron was made by my people, the Berom, long before the Europeans ever thought of coming to Africa for legitimate trade.

From the foregoing account it is clear that there are still some old men living who had learnt the art of iron smelting as youths and still remember accurately the whole process as it used to be carried out in the past.

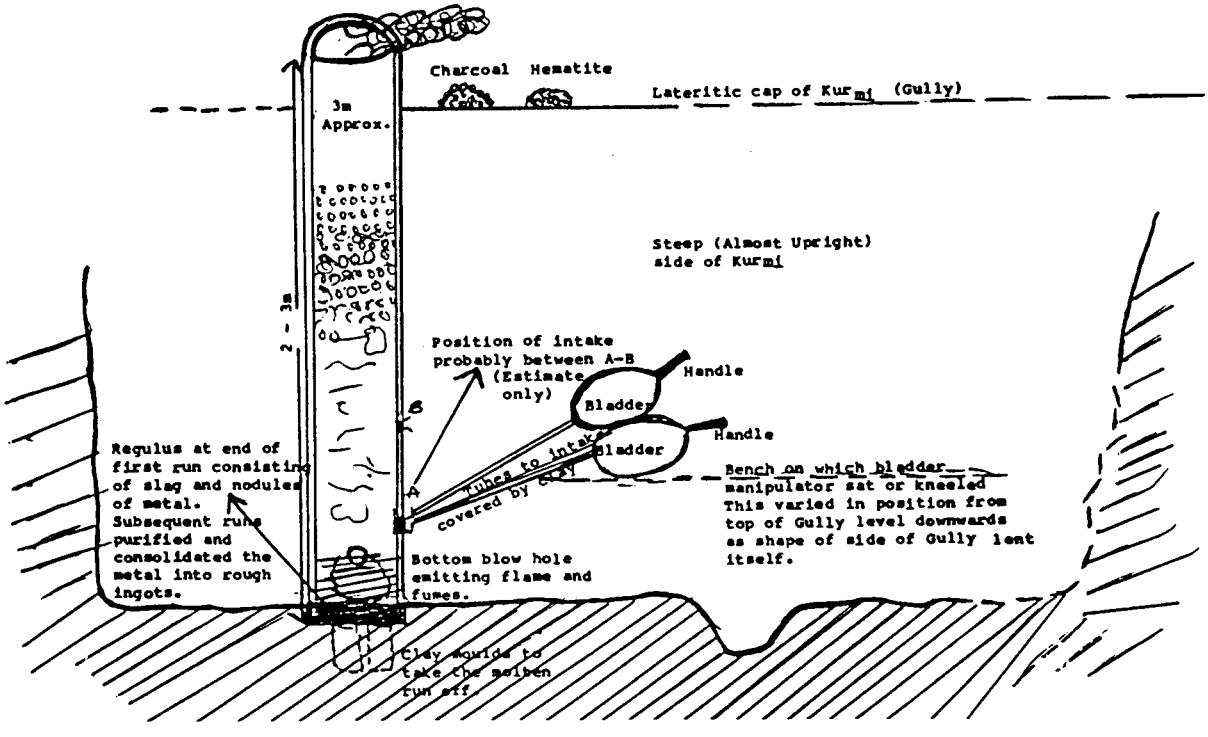

Fig. 1. Schematic arrangement of the Berom iron-smelting furnace, 1912–14.

Our preliminary investigations have confirmed that traditional ironworking is not only widespread in the northern states but in most parts of Nigeria. There is therefore opportunity to understand the development of this technology in Nigeria. This would involve investigation into the nature of the industry and the dynamics of change in it, the society that gave rise to it and consequences for that society of this development. This would have important implications in view of the growing understanding that Iron Age Studies are more relevant in reconstructing the material culture foundations of specific African societies (Schmidt 1985). Already research is in progress in the other parts of the country in this direction (Anozie 1979). It is hoped that when the data are assembled we could be in a position to present a better picture of this once important industry in Nigeria.

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Eguru Amube Amalla Orba: Blacksmith Clan among the Orba

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According to Ojiba (1980) and Ngwu (1983) Orba people are well known for their blacksmithing. Ngwu was even more specific in asserting that the blacksmith trade was done only by the Amube clan in Amalla village and not all Orba people. Investigations conducted by this writer confirmed that Amube clan was and is the only clan in Orba that engages in smithing, and they are known by other Orba people as *Eguru,* meaning ironworkers. The fact that it is only within the Amube clan

settlement space that one observes thatched blacksmithing workshops in all of Orba further confirms the above.

There are two basic traditions that account for the origin of the Amube clan of ironworkers. One tradition holds that the founding fathers of Amube blacksmiths migrated from somewhere and settled in their present location. Another account claims that the clan was autochthonous in the area. Those who support the migration account differ on where the founding fathers came from.

For instance, according to some accounts they migrated from Lejja in Old Nsukka Division. This migration was said to be as a result of scarcity of water in Lejja. Another account claims that they migrated from Amube Enugu Ezike in Igbo Eze Local Government Area of Anambra State. It is possible that the cause of this migration is connected with the Igala raid in northern parts of Nsukka during the nineteenth century (Oguagha 1981). There is also a tradition which claims that the Amube Eguru migrated from from Ekoi Ukpabi, but the reason for this migration is unknown.

One possible conclusion regarding these traditions is that the immigrants that founded Amube did not come from the same place nor did they settle at their present location at the same time. Indeed, there are traditions which suggest that these blacksmiths consist of people who came to settle one after another. Investigations revealed that the towns mentioned above—Lejja, Enugu Ezike, and Ekoi Ukpabi—as the possible places of origin of Amube blacksmiths are ironworking areas, or were in the past. This strengthens the claim of Amube blacksmiths that they did not learn their their craft from other people. They claim that the art of blacksmithing came to their forefathers from nature and because of that it is inherited only by the male issue of the clan.

Blacksmithing is considered to be as old as the Amube clan and, since it was bequeathed to them by their forefathers, every Amube male is supposed to be a blacksmith. This apparently held true in the past but now most Amube men have abandoned this trade. Today, the Amube number about 800 people (S. N. Ngwu, personal communication) and out of this number only 49 are practising blacksmiths. Most Amube males have taken to other professions—trading, motor driving, teaching, and other government jobs. It is almost certain that, as the present crop of blacksmiths grow old and retire from the trade, very few people will be left to carry on with it and so it will die out soon. The future of this profession appears more uncertain given the fact that Amube blacksmiths constitute a closed caste. Non-Amube people are not permitted entry.

A survey of most of the Amube smithing workshops, techniques, and apparatus, reveal few differences among the blacksmiths. Consequently, a limited sample is representative of the group; three were selected for detailed study in 1984. This selection was based on their ages, since this was the only criterion that distinguished them especially in terms of production. The first person selected, Mr. Cletus Eze, 32 years old, was the only blacksmith that has an apprentice, Master Meletus Okanya, 15 years old. Cletus took up the trade at the death of his father a few years ago, having learnt the art from his late father and grandfather. The next person was a middle-aged man, Mr. Ugwuaguru Isiwu, 46 years old. He had been in the trade for over twenty years. The third person was Namichi Okwo, 56 years old. Mr. Okwo has been in the trade for over thirty years.

The smithing workshops are thatched rectangular huts with all four sides open to allow free ventilation. The buildings measured between 3.5 m and 4.0 m long and between 3.0 m and 3.5 m wide. Most of these workshops were oriented in north-south directions and are in most cases located close to the living houses. The floors of these shops were characteristically rough, sandy, and dusty. Scattered tools, raw materials, and products of the blacksmiths are present on these rough floors. Almost at the centre of the workshops were the anvils, *ihuama*, fixed in their wooden stands. The forges, which are circular depressions on the floors, are located towards the southern ends of the

workshops. The forge is always filled with charcoal, lighted or unlighted. Into these depressions are inserted cylindrical clay tuyeres, which are made by the blacksmiths.

The tuyeres average 34 cm long, their internal diameters ranging between 2.5 and 3.0 cm and their external diameters ranging between 7.6 and 8.2 cm at the terminal ends. Into these tuyeres are inserted twin bellows (*eko*), which are made of hollowed wood covered at the wider ends with goat or sheep skin tied to wooden sticks. These sticks are handles used in pumping air through the tuyere into the forge. Most of the workshops have bench planks or wooden logs behind the bellows where the blacksmith sits while operating the bellows. Other apparatus used by these blacksmiths are various types of hammers (*otutu*), scissors (*mkpa*), and pincers (*nyo*). The pincer is used for removing heated iron from the forge and positioning it for hammering on the anvil. Other tools are a flat iron anvil, a chisel, a container for a red clay solution and a brush (*nte aja*) made from the fig tree. The containers were said to have been clay vessels in the past, but nowadays discarded metal containers are used, except that Mr. Isiwu uses hollowed stone. The red clay solution is smeared on pieces of iron before they are heated; when the pieces are red-hot and hammered on the anvil, the clay flakes off leaving shining surfaces. The clay is thought to produce high temperatures that soften the metal.

Also present are baskets usually placed by the sides of the workshops. These baskets contain charcoal, which is the fuel for the smithing. The charcoal is produced by the blacksmiths or bought from other people if the blacksmith lacks time to prepare it himself. There are three types of hard wood used to make charcoal: the oil bean tree (*Pentaclethra macrophlla*), the locust bean tree (*Parke clappertoniana*) and the Ahaba (*Acioa barteri*).

Most of the blacksmiths disclose that they use at least eight baskets of charcoal every week. A basketful of charcoal weighed seventeen kilograms; every week about 136 kg of charcoal was used by a blacksmith working full time. It was not possible to estimate the number of trees that could provide a basketful of charcoal since different trees were used and not all parts of a tree were burnt; for example, the smaller branches were usually not used. But it was affirmed that smithing consumes a lot of wood and this has led to the decimation of hardwood in the area. The smiths now travel far into the bush (*agu*) to fetch fuel.

Schmidt's (1977) study of ironworking in Tanzania included estimates of the amount of wood required to produce a kilogram of charcoal. In Tanzania, as in Orba, the charcoal was burned in the open. Thus, if Schmidt's findings applied to Amube charcoal production, one would estimate that 1,460 kg of hardwood was harvested per week to produce 136 kg of charcoal. If this number is multiplied by the number of Amube blacksmiths, the figure will be staggering.

Amube blacksmiths did not produce the iron that they worked. Their elders informed the writer that before the introduction of European iron, they brought *aga* (iron bloom) produced by Amaoba iron smelters. This *aga* was usually in bits and when the smiths wanted to fashion tools, they would prepare their forge and light it. Then a quantity of bloom enough for the tool they wanted to make was placed on the lighted charcoal in the forge. This was covered with another layer of charcoal. Draught was supplied and, when the *aga* became tacky, it was lifted from the forge with pincer and placed on the anvil for hammering; while the hammering was going on, flakes of slag fell off. After the hammering, the bloom was returned to the forge and heated to white-hot, then it was brought out and shaped into the desired tool. The change from the forge to the anvil was done several times until the tool was properly fashioned. Amube elders maintain that tools made of *aga* were harder and longer lasting than tools made from European imported metal.

The *aga* continued to be the Amube smith's only raw material until early decades of this century, when European imported metal (*akpaka igwe*) and motor

scraps, mostly motor chassis, rims and frames, became very abundant, and the iron smelters stopped producing *aga*.

Whatever their raw materials were, the common tools produced by Amube blacksmiths included agricultural tools such as the hoe, the knife, the weeding knife, the sickle; domestic and aesthetic objects like the ax, the razor, the finger ring; hunting tools like the spear, the arrow, the metal trap; and ceremonial objects like the gong and the cannon. Such objects are produced all year round and are sold at Orie Orba Market by the smiths in their own market stall.

Most ironworking communities in West Africa would seem to have traits that distinguish them from the rest of their communities (Nadel 1942, Griaule 1963, Goody 1967, Pole 1982). Amube blacksmiths also possess characteristics that set them apart from the rest of Orba community. For example, they perform all rites of cleansing or purification in cases where defilement or desecration of the land has occurred. Moreover, in the past, and even sometimes nowadays, Amube smiths are responsible for burying the victims of certain diseases, such as smallpox. Apart from this, the Amube blacksmiths are the only people in Orba who can make *arua* or *ofo*, the sacred staff of office held by the oldest man in every family or village, and it is the privilege of the smiths to eat the first fruits of the farm every year. No Orba man eats new yam until Amube blacksmiths have performed their *Ekwensu Uzu* festival, during which the first fruits of the farm are offered to Uzu, the god and creator of farm tools. Furthermore, only smiths can bury a dead blacksmith, and no woman married to a smith will sit on the same chair with any other man.

The blacksmiths start their annual leave immediately after the *Ekwensu Uzu* festival is over. In the past, no smithing was done for one full month after the feast, but this leave period is now one week. That is because families that do not have have other means of livelihood suffer when production is stopped for one month since the smiths who work full time rarely have time to combine their smithing trade with any other business. The only extra job they manage to do is minimal farming, which does not even reach the subsistence level.

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An Archaeological Survey of the Proposed Baardheere Reservoir, Upper Jubba River, Southern Somalia

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[This report is drawn from the comprehensive report on the survey, which is entitled JESS Report on Cultural Heritage Survey of Proposed Baardheere Reservoir. *Copies of the report can be obtained by writing to Steven A. Brandt.]*

This report summarizes the results of an intensive archaeological survey of the proposed Baardheere Reservoir, upper Jubba River basin, southern Somalia (Fig. 1). The survey, undertaken over a 42-day period during September and October, 1987, represents one component of the Jubba Environmental and Socioeconomic Studies, a three-year cooperative program of river basin investigations conducted by Associates in Rural Development of the United States Agency for International Development and the Government of the Somali Democratic Republic.

The main objectives of the survey were to locate and describe prehistoric and historic sites in the proposed reservoir basin and to formulate a plan for minimizing damage and/or loss of the archaeological data resulting from reservoir construction and impoundment. The survey team consisted of the authors as team leaders, seven additional American archaeologists and eight Somali counterparts.

In 1986 a brief archaeological reconnaissance of the 420 km^2 study area by the authors identified three major physiographic zones:

- a southern section, characterized by narrow gorges extending from the dam site north to just below Buurdhuubo, a distance of about 80 km;
- a generally flat, open central section proposed as the main reservoir and extending some 33 linear km from just south of Buurdhuubo north to Durole; and
- a northern section, 80 linear km of narrow gorges and open terrain stretching from a few kilometers above Durole to Luug.

The 1987 survey personnel were divided into three crews: two crews surveyed the northern and southern sections, one on each side of the river, and the third crew surveyed the central section. The crews in the remote southern and northern sections used camels for transport, while vehicles were used in the central section. All survey was conducted on foot. We estimate that about 90% of the southern section was examined. In the central section, a 5% systematic stratified survey coupled with a survey of all major *togga* (*wadis*) resulted in 15% coverage. In the northern section, several strategies were employed to provide an estimated 50% coverage.

The survey discovered 686 sites, comprised of six site types. The first and most common are *open-air lithic scatters*, which account for 394 sites distributed throughout the reservoir area. The lithic scatters were classified as dating to the Middle Stone Age (MSA) and/or the Later Stone Age (LSA). Based on typological and morphological analyses of artifact types, three subdivisions of both the MSA (Big MSA, Little MSA, Undifferentiated MSA) and LSA (Blade LSA, Micro LSA, Undifferentiated LSA) were established.

The second site type is *open-air ceramic scatters*. Usually found in direct association with stone artifacts of varying ages, there were 100 such sites scattered throughout the reservoir area. In most cases the stone artifacts and ceramics are not contemporary, as most of the ceramics appear to be relatively recent in age

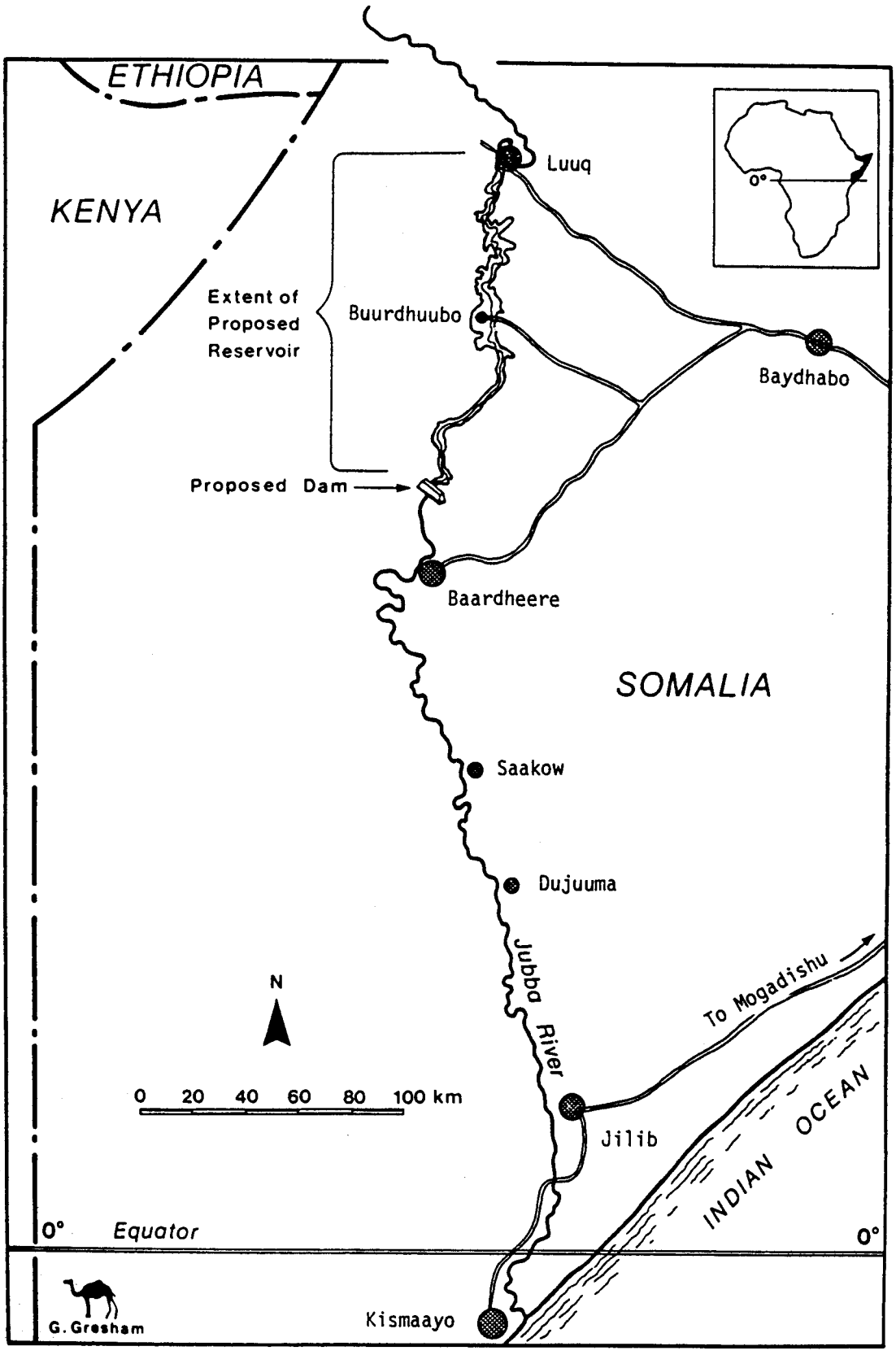

Fig. 1. Location of project area.

(perhaps only the last few hundred years). However, it is possible that some sites represent LSA and/or Pastoral Neolithic encampments.

The third type is *caves and rockshelters*. These are restricted entirely to the southern gorge section, where 23 inhabitable caves and shelters were recorded. Artifacts were observed in five of the caves and rock art in nine. Caves varied in width from 3 to 20 m and several were more than 20 m deep.

Rock art comprises the fourth type. Ten of the eleven sites occur in the southern section and one in the northern section. Nine of the sites are caves where monochromatic and polychromatic paintings of highly stylized patterns of dots and a few line drawings adorn the walls. The paintings are in a style unique for Somalia and much, if not all, of Africa. Two sites, one in the north and the other in the south, consist of scratches and engravings on boulders. All the rock art remains undated.

The fifth site type is represented by *stone cairns*. These are scattered through out the reservoir but are most common in the north where 78% of the 160 sites were identified. Cairns usually occurred singly but were also found in pairs or small groups. They varied in size and quality of construction. While some may be graves, their origins and functions remain essentially unknown.

Cemeteries, the sixth and last site type, were also found throughout the reservoir but were most numerous in the northern section where 64% of the 195 cemeteries were recorded. The vast majority are relatively recent Islamic cemeteries, but some may be non- or pre-Islamic.

Based on the results of the survey, we recommended that a three-phase program of archaeological research be implemented. This survey represents completion of the first phase (site location and description) of such a program. The second phase, geared primarily toward determining the significance of sites, was completed by us between September and December, 1988. Funded by the World Bank and the Somali Ministry of Juba Valley Development, the results of the Phase 2 program—which included additional survey, systematic collections of specific sites, test excavations of other sites, and comprehensive documentation of the rock art, and geomorphological investigations—will be reported in a future issue of *Nyame Akuma*. The third phase should involve full-scale excavations of sites found to be archaeologically significant by Phase 2 investigations.

Implications of Dating the Lockshoek Industry from the Interior Plateau of Southern Africa

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Many years ago Sampson (1974) proposed that the Lockshoek Industry, first called the Smithfield A by van Riet Lowe (Goodwin and van Riet Lowe 1929) and characterized by large flakes and a variety of large scrapers made of hornfels, was a regional expression of the Oakhurst Complex in the Interior Plateau of southern Africa. From the southern coast to Zimbabwe, many assemblages attributable to this complex have been excavated in sealed contexts and a number are now dated between 12,000 and 8,000 B.P. (Cable et al. 1980, Chubb et al. 1934, Cooke 1963, H. Deacon 1976, J. Deacon 1972 and 1984, Klein 1974, Louw 1960, Opperman 1978 and 1987, Schweitzer and Wilson 1982, Thackeray 1981, Wendt 1976). However, as is well known, Sampson never obtained a radiocarbon date for the Lockshoek Industry, and recently this has spurred a reinterpretation about its position in the culture chronology of southern Africa and its adaptive significance.

Parkington (1984) has proposed an ingenious model to explain why large scrapers, made of hornfels and similar in morphology to those dominating Lockshoek tool assemblages, occur rarely in Robberg assemblages, which normally lack large scrapers (J. Deacon 1984). The Robberg Industry, characterized artifactually by bladelets and low frequencies of microlithic backed tools made on quartz, was first recognized from a series of caves and rockshelters excavated in the Cape Folded Belt range by Richard Klein (1974) and Hilary Deacon (1976). These consistently occur stratified below Oakhurst Complex assemblages (the coastal expression of the Oakhurst Complex is known as the Albany Industry), and they are consistently dated older by radiocarbon than the Oakhurst Complex. The generally accepted scenario is that each industry, Albany and Robberg, represents a distinctive adaptation to different environmental conditions and available resources that existed during the time when the respective groups occur (J. Deacon 1984; although see Mitchell 1988 for an alternative interpretation).

It has long been thought that in the Late Pleistocene extremely mobile hunter-gatherers focused on exploiting large grazing ungulates (H. Deacon 1976). Parkington (1984: 128-131) suggests that some Late Pleistocene groups ranged across major lithic raw material boundaries, and that it was "inevitable" that the technological and typological responses of a single group to drastically different resources resulted in different assemblages. Parkington suggests that the undated Lockshoek Industry is not coeval with other morphologically similar Oakhurst Complex assemblages in the remainder of southern Africa. Rather the Lockshoek Industry is the Interior Plateau equivalent of the Robberg Industry, and the extremely rare large scrapers in Robberg assemblages provide evidence of the link. Recent research has demonstrated that Lockshoek sites in the Interior Plateau are more common than Robberg sites in the coastal or mountainous regions (Sampson 1985, Mitchell 1988), and Parkington, apparently taking notice of this pattern and advantage of the lack of Lockshoek dates, has suggested that Robberg occupations can be viewed as movements into marginal environments by Lockshoek groups on the periphery of their range. At a minimum, as Parkington (1984: 129) notes, this model requires that the Lockshoek Industry must be coeval with the Robberg Industry (ca. 20,000–12,000 BP) and not with the Oakhurst Complex (ca. 12,000–8,000 BP). Also, as Mitchell (1988: 276) argues, the presence of a Late Pleistocene microlithic/bladelet assemblage in the Interior Plateau would also refute Parkington's hypothesis. The refutation would be especially strong if an Interior Plateau microlithic/bladelet assemblage were found stratified below a Lockshoek assemblage at the same site.

In 1985, research was renewed at Blydefontein Rockshelter (Sampson 1970) in the Interior Plateau of the Cape Province. A series of artifact-bearing strata was excavated and the lowest major stratum (CY) had two distinct lithic artifact assemblages that could be distinguished by a minor stratigraphic break. Raw materials in both assemblages are dominated by hornfels. Only one assemblage was dated by radiocarbon. The lowest assemblage consists of bladelets and rare backed microlithic tools (Fig. 1). This is similar to assemblages recovered at Sehonghong in Lesotho (Carter, et al. 1988) and tentatively seems to correspond to Mitchell's (1988) Early Microlithic Complex of assemblages from Lesotho and the Drakensberg Range. Unfortunately, the Blydefontein Early Microlithic assemblage had no associated charcoal, and it has not been dated by radiocarbon. However, the faunal remains associated with this assemblage are well preserved, and the bone may lend itself to radiocarbon dating. Stratified above this microlithic/bladelet assemblage is an assemblage characterized by large flakes and large scrapers (Fig. 1). This is a Lockshoek assemblage. Charcoal associated with this assemblage has been dated, and the corrected date is 8541 ± 417 BP (SMU-1823). Even though this is only a single radiocarbon date, it is in stratigraphic sequence within the

rockshelter deposits and it is the first reliable date for the Lockshoek Industry. In addition it clearly is not coeval with any dated Early Microlithic assemblage in southern Africa, and in fact falls toward the recent end of the known temporal range of the Oakhurst Complex.

Early Microlithic surface sites in the Interior Plateau could be fairly common. The only systematic site survey in the region is the Zeekoe (Seacow) Valley Survey, but Early Microlithic sites were not recognized there (Sampson 1985: 51). A number of bladelet dominated assemblages were documented in the valley, but it was assumed that these were all more recent Interior Wilton flaking scatters and workshops (Sampson 1985: 75). Bladelet production is high in mid-Holocene Interior Wilton assemblages from nearby Blydefontein Rockshelter. This makes distinguishing between mid-Holocene Interior Wilton and Early Microlithic Complex surface sites very difficult in many cases, if not impossible. Thus some of the bladelet dominated surface sites discovered in the Zeekoe Valley may be of Late Pleistocene age, and they might be as dense on the ground in the Interior Plateau as they are in the mountains and coastal regions. Thus the seemingly greater density of Early Microlithic sites in the mountains and coastal regions may be more apparent than real.

The above discussion strongly implies that the limitations imposed by differences in lithic raw materials are not so strong as to control the major technological choices

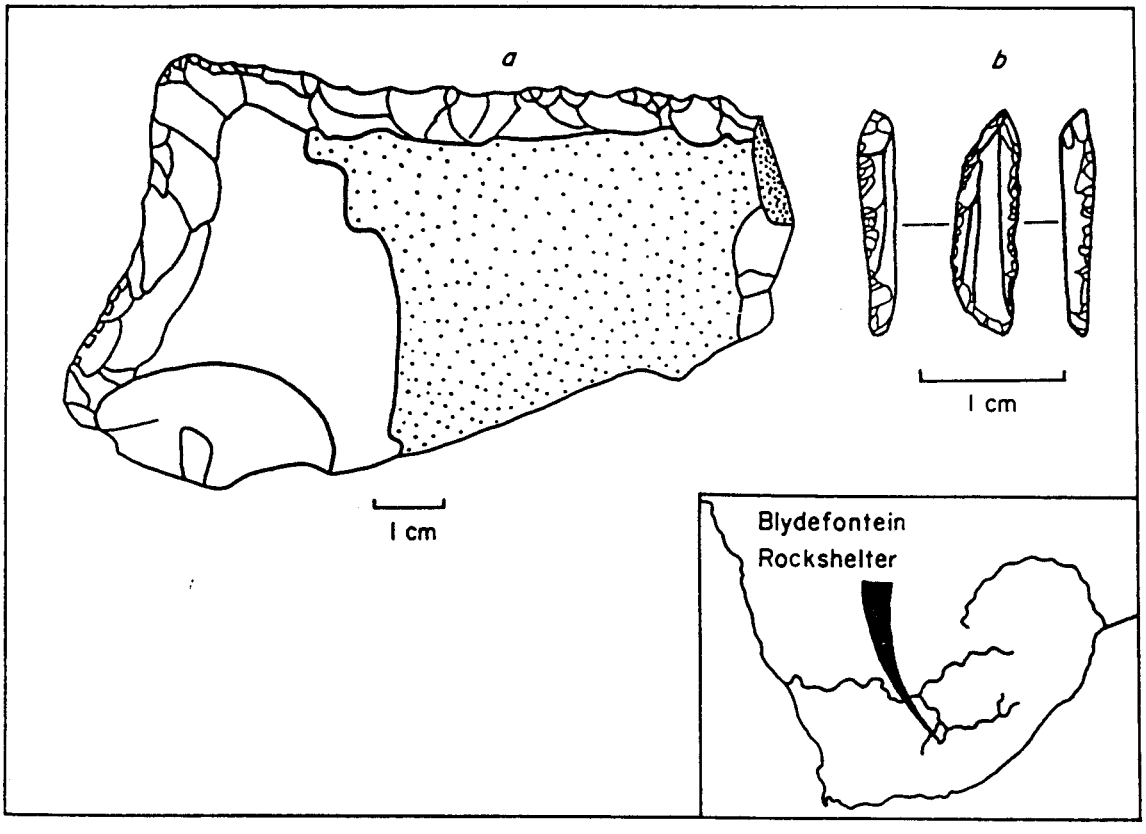

Fig. 1. Lockshoek Industry scraper (a) and Early Microlithic Complex double backed crescent (b) from Blydefontein Rockshelter. Microlithic crescent is illustrated at twice the size of the Lockshoek scraper. Scales equal 1 cm.

made by Late Pleistocene and Early Holocene hunter-gatherers throughout southern Africa, and that Parkington's model is not correct. Thus the Blydefontein results substantiate the Lockshoek Industry as an Interior Plateau variant of the Oakhurst Complex. This supports the placement of the Lockshoek Industry in the broad culture chronology proposed by Sampson (1974) and more recently elaborated and refined by J. Deacon (1984). However, various important aspects of late southern African prehistory remain unexplained (e.g., shifts from microlithic to macrolithic and back to microlithic assemblages). Mitchell (1988: 247–50) suggested that the essential differences between the Early Microlithic assemblages and the Oakhurst Complex are due to the introduction of the bow and arrow in the latter, but this does not help to explain the return to microlithic tools in Wilton assemblages. Clearly a more comprehensive model for Later Stone Age culture change in southern Africa is needed.

Acknowledgments

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Eleventh Season of Excavations at Kadero

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The season took place in February, 1989. Both the Neolithic settlement and cemetery were tested. The settlement was tested by a 2 x 4 m pit in the northern midden; it was excavated to virgin soil at a depth of 50 cm. Besides typical settlement waste, the pit produced a sample of charred botanical remains obtained by wet flotation.

The Neolithic cemetery was tested by a pit with a total surface area of 800 m^2 excavated to a depth of 1 m. The pit was established in the central part of the mound and constituted an expansion of the cemetery excavations in previous seasons. Altogether, twenty-five inhumations were found in this pit; four more graves were found and explored on the heavily eroded surface of the mound outside the pit. Following the pattern found in previous seasons, two groups of graves can be differentiated in the 1989 pit: inhumations without or with only marginal grave furnishings concentrated at the southern end of the excavated part of the mound, and rich, much less numerous graves occurring in its northern part. It seems that both groups of graves contained the remains of adults of both sexes as well as children. The rich graves had their pits—reaching a depth of 95 cm—intensively discolored by red ochre. Their furnishing consisted of lithic mace-heads, fine pottery vessels, personal adornments (beads of marine shells and carnelian, lumps of ochre and malachite/amezonite, ivory bracelets), and cosmetic pallets. In two instances the remains of what seem to be composite tools were found. They consisted of regular rows of quartz lunates with the remains of mastic preserved on their backs. It seems that they were the cutting parts of knifelike tools originally mounted in

handles made of perishable material, such as wood or bone. Human remains in both groups of graves were found in different degrees of concentration.

Two other inhumations found without any furnishing on the heavily eroded surface of the mound, outside the pit, seem to be a part of the local burial ground discovered in previous seasons.

Preliminary Report: Excavations and Survey at Pujini, A Fortress on Pemba Island, Tanzania

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Field work was conducted in June and July, 1989, at the site of Pujini, a fifteenth–sixteenth-century Swahili fortification on the eastern coast of Pemba Island, Tanzania. The site is dominated by ruins of rectangular dressed stone and earthen ramparts enclosing an area of over a hectare and a half. Features inside the ramparts include the remnants of three large building complexes, and two unusual features: a subterranean room (Ingrams 1931) that appears to be connected to the ramparts by a tunnel, and a rock-cut subterranean shrine whose walls bear plaster bas reliefs of common Swahili motifs (Pearce 1920, Horton et al. 1986). Deposits from a mud and thatch residential area fill part of the southern half of the enclosure, and continue outside the ramparts. A moat encircling the fortress connects to a silted-in channel that once led out through mangrove swamp to the Indian Ocean.

The fortification of Pujini appears to have flourished during the height of Swahili civilization and the Indian Ocean trade, in the fifteenth and sixteenth centuries. It has long drawn attention as the only known fortress on the East African coast of Swahili, rather than Portuguese, affinity (cf. Gillman 1943). In fact, Portuguese historical sources note that in 1520, in the only Portuguese land operation known from Pemba, a fortified "treasury" on the island's east coast was sacked—very probably Pujini. There is evidence from surface collections of pottery that village occupation did not end with the abandonment of the fort, or perhaps was resumed at a later time and continued until the nineteenth century. The following is a brief summary of the work accomplished and plans for the next stage of research.

The goals of the short 1989 field season were to produce a topographic map of the site, to establish a ceramic sequence, to determine the basic stratigraphy within the enclosure, and to photograph all structures and features visible on the surface. All of this was accomplished. Clearing of the heavy brush that covered the site resulted in the exposure of all remaining foundations within the enclosure, and a clear picture of the ramparts themselves. A selection of photographs is being prepared to send to Chake Chake, Pemba, for public exhibition, at the request of the Ministry of Information, Culture, and Tourism, Zanzibar. The Ministry wishes to develop Pujini as an educational monument, and it is hoped that this research will provide interpretive information that can lead to the realization of long-term development plans for this extraordinary site.

Four excavation units were dug within the ramparts. All began as 2.0 x 2.0 m units, but were reduced to 1.0 x 2.0 m when cultural material stopped or obstructions were encountered. Unit 1 was located near standing pillars in the northern part of the site, in an area dubbed by Pearce (1920) as the "reception hall." Cultural deposits in this unit extended to only 0.4 m below the surface, before we encountered natural limestone gravel mixed with clay and then limestone bedrock. This appears to have been an outdoor public area, with only a few local and imported sherds (Islamic earthenware) found.

Unit 2 was dug in the south central part of the site amid a dense surface scatter of large daub chunks bearing thick pole impressions. Cultural deposits continued to a depth of 1.4 m, and revealed what appears to be a circular (probably domed) pole-and-mud bread oven and a number of related pits. Stratigraphy here was the most complex we encountered. A large amount of locally made pottery was recovered, mostly undecorated. One small fragment of imported clear-glazed earthenware was found. Two charcoal samples were taken for radiocarbon dating.

Unit 3 was placed within one of the standing buildings in the center of the enclosure, in a room bearing a rectangular niche in its eastern wall. The unit went to a depth of 1.2 m below surface before reaching natural clay and sand. The deposits included limestone and plaster rubble from possibly two fallen walls and/or a ceiling. An uneven plaster floor was also found at approximately 0.8 m depth, placing the wall niche at about 1 m above the floor. Deposits above and below the floor included domestic animal bone, local pottery, and a blue glass bead.

Unit 4, dug to natural soil at 1.3 m, was located inside a room that formed part of the eastern rampart wall, near what may be a formal entrance. The deposits were laden with wall rubble in the upper levels, and contained local and European sherds, a teardrop-shaped ceramic oil lamp, and bits of metal. Two charcoal samples were taken for radiocarbon dating.

All stone structures at the site were planned, and a topographic map was produced of the ramparts and surrounding area. A number of hitherto unknown features were revealed during the mapping project, including a series of rooms within the east, south, and west rampart wall structures; marked variation in thickness of the ramparts; possible formal entrances on the east and west sides; an apparent relationship between the subterranean chamber in the northwest corner of the site and structures within the nearby rampart wall; and a third wall niche in a room by the eastern rampart. It is hoped that the intricacies of the rampart architecture may lead to identification of comparable structures in the Indian Ocean sphere or beyond, for parallels have not been found in East Africa.

In addition to the work done inside the ramparts, we dug a series of 0.5 x 0.5 m shovel test pits at approximately 50 m intervals, along four transects radiating outward from the center of each of the rampart walls, to determine the nature and extent of any deposits continuing outside the recorded site. Deposits extend beyond the stone site in all four cardinal directions. They are limited on the east and north by mangrove, but extend for several hundred meters to the west and south. Some, but not all, of these deposits appear to be contemporary with the site enclosed by the rampart. Additionally, systematic surface collections in thirteen plowed fields to the west, south, and east of the fortress yielded numerous local and imported potsherds and other artifacts, and will help to provide a temporal framework for the finds within the ramparts.

Three shovel test pits were dug around the Ukutani mosque, 200 m west of the ramparts, which is said to be at least several hundred years old and has been renovated recently. The mosque sits within the limestone foundations of an older, ruined mosque. Two of the three test pits revealed sherds of the Tana tradition at approximately 0.9 m depth, the first such sherds to be found in a stratified context on Pemba. Sherds of this tradition, found on Zanzibar, along the East African coast from Somalia to Mozambique, and at an increasing number of inland sites, usually date to between the eighth and eleventh centuries, and are found at many sites which later became identified with Swahili culture (Horton 1984).

The majority of locally made ceramics found in and around the site are undecorated or red-burnished pottery with a series of simple folded and rolled rims. Imported ceramics found inside the ramparts consist primarily of fifteenth–sixteenth-century Chinese blue and white porcelains, Islamic earthenwares and other glazed utilitarian wares, and nineteenth-century European wares. These last may

have found their way onto the site either as a result of a known "picnicking" phenomenon or possibly a nineteenth-century reoccupation of parts of the fortification. Uncommon ceramic types occurring in low frequencies include blue and white glaze over red paste, and a thin, yellow-green, clear-glazed earthenware. It is hoped that identification of these ceramic types may reveal more about the affinities of the site. A wider variety of imported sherds came from deposits outside the ramparts, indicating intermittent or continuous presence of a mud and thatch settlement from possibly as early as the eleventh century until the nineteenth century.

Two other sites near Pujini were recorded, one of which had Tana tradition sherds on the ground surface. This site, Bandari ya Fareji, lies approximately 2 km south of the ramparts and less than 150 m from the present shoreline of the Indian Ocean, on the edge of a mangrove swamp. Shovel test pits unfortunately did not reveal intact deposits. The second site, lying between the ramparts and the coastline to the southwest, appears to date to the nineteenth and twentieth centuries based on numerous surface finds of imported European ceramics. We were informed of many other sites in the area with foundations of stone houses intact, but were unable to record them in our limited field time. It will be a priority in the next field season to record all known sites in the area, as well as to survey for others.

The work completed in June–July, 1989 built upon excavations conducted in the early part of the century (Pearce 1920, Ingrams 1931) and recent work during a survey of all known ruins on Pemba and Zanzibar (Horton et al. 1986). Archaeological research on the Swahili coast is broadening to encompass not only the more typical Swahili towns centered around stone mosques, houses, and tombs, but the villages that formed the foundations of later stone towns, the mud and thatch sectors of such towns, contemporary villages lacking stone, and sites with evidence of specialization. Research at Pujini is part of this broadening effort. The goals of continued work at and around this site seek to address the history of Pujini in light of the wider Indian Ocean influences that shaped it, while at the same time grounding it in the local Swahili context from which it arose. A second field season is planned, the priorities of which will be to excavate specific structures within the ramparts (including the underground passage, several rooms of above-ground structures, and a section through the rampart wall); excavation of the area around the Ukutani mosque; and a 20 km survey of the coast flanking Pujini north and south, in order to place the site in a broader, regional context emphasizing non-stone sites.

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The Coast and the Hinterland: University of Dar es Salaam Archaeological Field Schools, 1987–88

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The University of Dar es Salaam's Archaeology Unit (Department of History) was founded in 1985 along with the establishment of a B.A. degree in that subject, to produce a body of Tanzanian archaeologists in a nation with one of the richest archaeological records in the world. Each year the unit conducts a field school for the first- and second-year students enrolled in the archaeology major. In April and May of 1987 the field school participants located and worked at a number of Iron Age sites in the vicinity of Mkiu (Karoma et al. 1989) in Kisarawe district, Tanzania, an area where virtually no archaeological reconnaissance had ever been carried out (Fig. 1). In the following year, an eighth–tenth-century A.D. site discovered at a construction site in the center of Dar es Salaam was excavated, and a survey was conducted along stretches of a 200 m wide strip of coastline between Dar es Salaam and Bagamoyo, a total of 37 km (Fig. 1). The following is a summary of the results of these field seasons.

1987 Field School

Twenty-three km^2 were examined through interviewing, surface survey, shovel tests, and augering (Fig. 1). Eleven sites bearing Iron Age deposits with varying amounts of ironworking debris, locally made pottery, microliths, and daub were found (and one scatter with lithic debris that is probably the result of road-cutting activity—Fig. 2). Lower density scatters of Iron Age and recent artifacts were recorded as localities and are discussed elsewhere (Karoma et al. 1989). Controlled surface collections, magnetometer surveys, shovel testing, and soil augering supplemented the excavation of 1 x 1 m and 1 x 2 m units in arbitrary 10 cm levels, usually to a depth of 1 m. All deposits were dry sieved by hand through 5 mm or 7 mm wire mesh. The two most important sites are KI/MA 1 and KI/NY 9, described below.

Misasa I: KI/MA 1 (UTM EB 2195/728)

Soil augering and shovel tests revealed cultural remains over 600 m^2 in Locus A and 400 m^2 in Locus B, 53 m to the north. Most artifacts occurred between 0.5 and 0.7 m depth in the loose sandy deposits. From the six units excavated we recovered numerous sherds resembling so-called Tana tradition pottery of the eighth–tenth-century A.D. (Horton 1984), as well as brass and iron objects, iron slag and smelting furnace tuyeres, two blue glass beads, other glass fragments, burned clay, bits of gum copal, a few quartz lithics, and some charcoal (Table 1).

We submitted three charcoal samples for radiocarbon dating: Beta-24619 from Unit 1, 0.6–0.7 m depth was dated to 600 ± 100 B.C. (see Appendix, Karoma et al. 1989 for calibration and fractionation details for all of the dates); Beta-24620 from Unit 1, 0.7–0.8 m depth was dated to 1115 ± 126

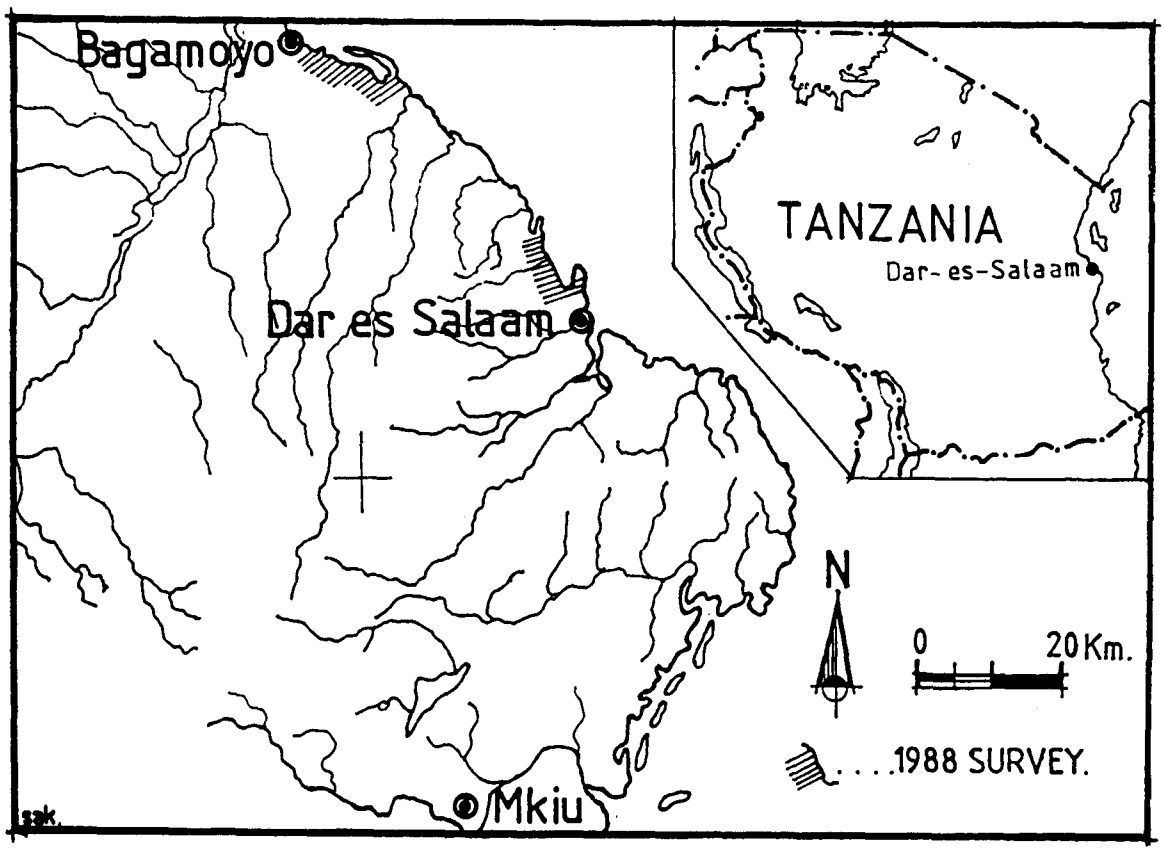

Fig. 1. Location map for Mkiu and 1988 survey.

B.C.; and Beta-24621 from Unit 2, 0.5–0.6 m depth was dated to A.D. 35 ± 95. Their range (1236 B.C.–A.D. 130) is one to two millennia too old for known dates of Tana tradition pottery. None of the dates overlap even at the 2-sigma level. The dates from KI/MA 1 overlap those from KI/NY 9 (below), and are reasonable dates for association with Kwale or Urewe ware. If the KI/MA 1 dates are correct, then the site is uniquely early. Thermoluminescence dates on potsherds from Mkiu sites are being sought to clarify the situation.

Mtyeke I: KI/MA 3 (UTM EB 2195/7675)

Contemporary activities exposed artifacts over 50 m^2. Two shovel test pits and two 1 x 2 m units excavated to a depth of 0.8 m yielded sherds, iron slag, daub, and burnt clay (Table 1). Three potsherds resemble Kwale or Urewe wares of the Early Iron Age (EIA), similar to those from site KI/NY 9.

Mtyeke II: KI/MA 4 (UTM EB 220/7655)

A globular pot, resembling Kwale ware, was found on the surface of a field in 100 m^2 of artifact scatter. Two shovel tests and two 1 x 2 m units were excavated to a depth of 0.5 m with few additional artifacts recovered (Table 1). This may be an EIA site if the globular pot is contemporary with the excavated artifacts.

Old Mkiu: KI/NY 5 (UTM EB 143/757)

Two 0.5–0.75m deep shovel tests were dug into 50 m^2 of cultural deposits at this site, with few artifacts recovered (Table 1). The sherds appear to date to the Later Iron Age (LIA).

KI/MA 6 (UTM EB 2455/7625)

A 500 m^2 sherd scatter was investigated by excavating two shovel test

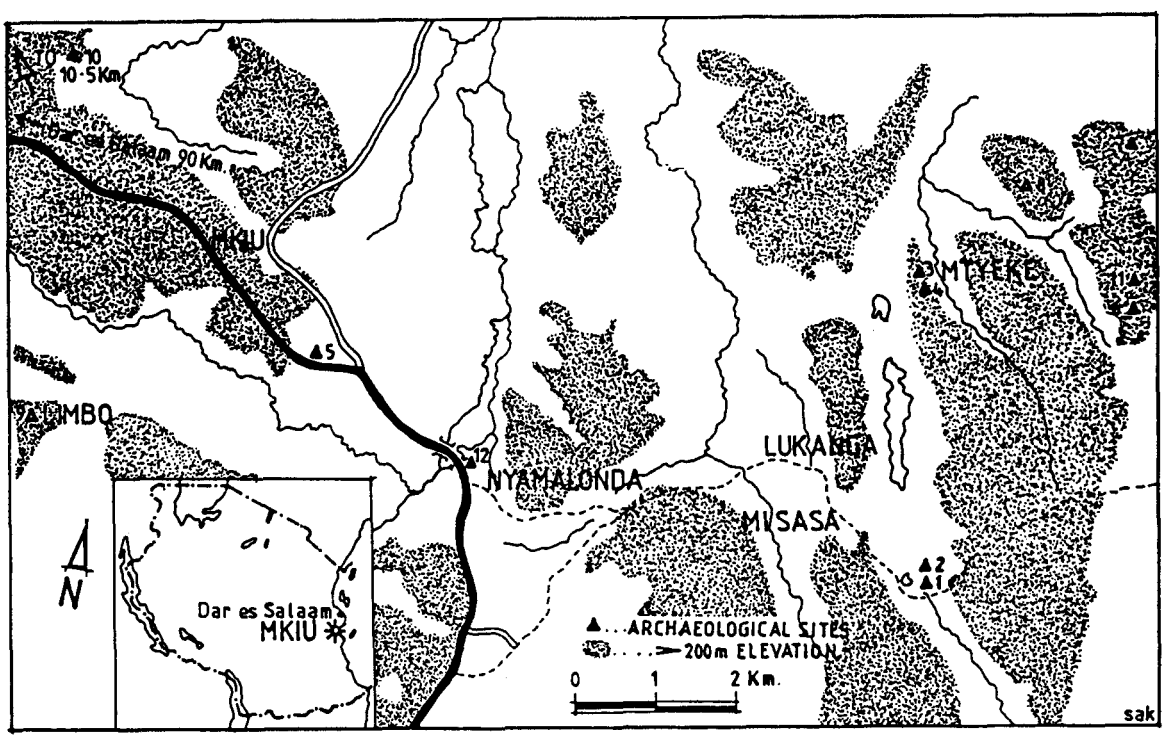

Fig. 2. Archaeological sites around Mkiu.

Table 1. Density of Artifacts and Debris at Mkiu Sites

A. Early Iron Age sites (A.D. 200–300): number of artifacts per m^3

	total				——smelting——									
	m^3	%	#	#	(#	#	#	#	#)	#	#	#	#	exc
Site	site	sh+	sh+	sh–	sl	lt	tu	bc	mt	li	cp	gl	gb	m^3
KI/MA 3	50	0	0	62	2	0	0	350	0	0	4	0	0	1.9
KI/MA 4	50	7	3	42	0	0	0	26	0	0	0	0	0	1.7
KI/NY 9	3300	5	21	437	5464	155	7	147	0	0	<1	0	0	3.4

B. Sites with Tana tradition pottery (A.D. 800–1,000): number of artifacts per m^3

	total				——smelting——									
	m^3	%	#	#	(#	#	#	#	#)	#	#	#	#	exc
Site	site	sh+	sh+	sh–	sl	lt	tu	bc	mt	li	cp	gl	gb	m^3
KI/MA 1	160	20	40	165	8	3	1	1	2	19	<1	<1	<1	7.9
KI/MA 2	60	—	—	—	—	—	—	—	—	—	—	—	—	0.0
KI/MA 6	250	1	5	522	1	0	0	74	0	6	0	0	0	1.0

C. Later Iron Age sites (post-A.D. 1000, probably post-1600): number of artifacts per m^3

	total				——smelting——									
	m^3	%	#	#	(#	#	#	#	#)	#	#	#	#	exc
Site	site	sh+	sh+	sh–	sl	lt	tu	bc	mt	li	cp	gl	gb	m^3
KI/NY 5	25	0	0	30	0	0	0	5	0	0	0	0	0	0.2
KI/MA 7	100	—	—	—	—	—	—	—	—	—	—	—	—	0.0
KI/MA 8	250	—	—	—	—	—	—	—	—	—	—	—	—	0.0
KI/MA 10	30	0	0	21	0	0	0	11	0	0	0	0	0	1.0
KI/MA 11	60	—	—	—	—	—	—	—	—	—	—	—	—	0.0

KEY

mt	Metal	#	Count
li	Lithics	cp	Gum copal
sh+	Sherds with decoration	gl	Glass, other than beads
sh-	Sherds without decoration	gb	Glass bead
sl	Slag	exc	Excavated
lt	Laterite	<	Less than
tu	Tuyere fragments	—	Not available
bc	Burnt clay/daub		

Table 2. Summary of 1988 site survey.

Number	Name	UTM	E1	Area	Thk	Cent	C	T	Date	Remains 1234567890	Ty
DAIL1	New Africa	37EC532392468	5	6000	15	8–10	1	1	0904	1101000000	5
DAIL2	Dar Inter	37EC533092466	8	14300	30	16–19	1	1	2504	1101000000	4
DAIL3	Mzizima	37EC532792476	2	500000	100	9–19	1	1	2904	1100001000	1
DAIL4	Magogoni	37EC532692468	10	200	30	19	0	0	2704	0000000100	8
DAKI1	Msasani	37EC529892533	10	30000	30	18–19	1	1	0305	0101000101	2
DAKI2	Kunduchi	37EC523792641	8	80000	40	9, 15–	1	1	0505	0101001101	1
DAKI3	Bahari	37EC521792669	10	50000	15	20	1	1	0505	0100000000	6
BAMA1	Bagamoyo	37EC489992884	5	400000	50	18–20	1	0	1005	1111111111	1
BAMA2		37EC490992874	25	400	10	11–15	1	1	1005	1100000000	5
BAMA3	Bomgwa	37EC493192864	10	12000	50	19	1	0	1005	1100000000	4
BAMA4		37EC491692869	20	400	30	20	1	1	1005	0100000000	7
BAMA5A		37EC495292857	3	800	10	91	1	0	1105	1100000000	5
BAMA5B		37EC495392857	5	100	10	19	1	0	1105	1100000000	5
BAMA6		37EC494592857	10	2010	80	9–14	1	1	1105	1101000000	5
BAMA7A	Kaole (old)	37EC494592859	15	150	100	13–18	1	1	1005	1111011101	1
BAMA7B	Kaole (new)	37EC493892859	20	50000	30	19–20	1	0	1005	1101111101	2
BAMA8		37EC494192857	30	1050	30	19	1	0	1205	1100000000	5
BAMA9		37EC494392856	10	40000	50	9–14	1	1	1205	1101100010	3
BAMA10		37EC494992854	10	600	30	19	1	0	1205	0100000000	7
BAMA11		37EC494892853	10	225	30	19	1	0	1205	0100000000	7
BAMA12		37EC494792853	10	3600	30	19–20	1	0	1205	0100000000	7
BAMA13		37EC495392853	15	50000	10	19–20	0	1	1205	0000000000	6
BAMA14		37EC497492845	15	200	20	16–18	1	1	1305	1100000000	5
BAMA15		37EC497892844	10	1500	30	16–18	1	1	1305	1100000000	5
BAMA16	Kasiki	37EC498092844	10	6000	30	15–16	1	0	1305	1100000000	5
BAMA17		37EC498292842	10	1500	30	15–16	1	1	1305	0101000000	7
BAMA18A		37EC498492842	15	900	30	18–19	1	0	1305	1100000010	5
BAMA18B		37EC498592842	15	3600	30	18–19	1	0	1305	1110000010	5
BAMA19	Dunda	37EC498592838	20	30000	30	19–20	0	0	1305	1101100010	3
BAMA20		37EC499392844	15	1250	30	20	1	0	1605	0100000000	7
BAMA21		37EC499492844	15	1500	30	19–20	1	0	1605	0100000000	7
BAMA22		37EC499592844	10	1250	30	19	1	0	1605	0000000000	7
BAMA23	Mlingotini	37EC500092840	15	300000	30	19–20	1	0	1605	1101100111	3?
BAMA24	Kilege	37EC501292831	5	2000	30	19	1	0	1605	1110000000	5
BAMA25		37EC401292829	15	7000	30	19–20	1	0	1605	1100000100	5
BAMA26	Gwazo I	37EC502392823	13	40000	30	20	1	1	1605	1100000000	4
BAMA27	Gwazo II	37EC502492823	5	40000	50	19	1	0	1705	1100000100	4
BAMA28	Gwazo III	37EC503392819	10	450	20	18	1	0	1705	0100000000	7
BAMA29A		37EC503492818	10	2000	20	18	1	0	1705	1101000000	5
BAMA29B		37EC503492818	10	16000	20	18	1	0	1805	1101000000	5
BAMA30		37EC504292811	10	2400	10	18	1	0	1805	0100000000	7

KEY

Number	Site Number	Two-letter district and ward abbreviations followed by sequential site numbers
Name	Site Name	
UTM	UTM Location	Zone (37), Sector (EC), 4-digit East and 5-digit North coordinates
E1	Elevation	In meters above mean sea level
Area	Site Area	Area of cultural deposits in square meters
Thk	Thickness	In centimeters of the cultural deposits
Cent	Century	Estimated centuries in which site was inhabitated/used
C	Surface Collection	1 = present, 0 = absent/no collection
T	Shovel Test Pit	1 = present, 0 = absent/no STP
Date	Date Site Found/Recorded	day, month (two digits each)
Remains		1 = present, 0 = absent; coded in the following order: 1 = Daub, 2 = Shell, 3 = Slag, 4 = Charcoal, 5 = Dump/midden, 6 = Hearth, 7 = Stone buildings, 8 = Tomb/grave, 9 = Postholes, 0 = Stone mosque
Ty	Site Type	1 = Large stone and mud town (> 4 ha), 2 = Small stone and mud town (≤ 4 ha), 3 = Large mud town, 4 = Small mud town, 5 = Homestead (smal sherd scatter with daub or posthole(s), 6 = Extensive sherd scatter (>1 ha), 7 = Small sherd scatter, 8 = Isolated tomb(s)

pits and two 1 m squares to a depth of 0.6 m. The only decorated sherd bore punctate decoration, and resembles eighth–tenth-century A.D. Tana tradition. This age estimate agrees with a radiocarbon date (Beta-24622) on charcoal from Unit 4, 0.4–0.5 m depth, of A.D. 1020 ± 70.

KI/MA 7 (UTM EB 237/784)

The site consists of six sherd scatters extending over 1000 m^2. Three auger tests were made as well as a surface collection. One decorated and six plain body sherds were collected, along with one lithic artifact, daub fragments, and twelve pieces of iron slag (Table 1). KI/MA 7 probably dates from the LIA.

KI/MA 8 (UTM EB 232/7785)

Three scatters of undecorated potsherds extend over less than 250 m^2 were found along a dirt road. Two auger tests adjacent to the road bore no cultural remains. The surface finds probably date from the LIA.

Limbo: KI/NY 9 (UTM EB 107/751)

This 3000 m^2 EIA site is an iron smelting center, brought to our attention by the owner, who had found an enormous amount of slag on the surface of his fields. Shovel tests were excavated every 50 m along six transects within four contiguous 250 x 250 m blocks. Shovel tests 1 and 2 were expanded into two 1 x 2 m units. Cultural remains were found throughout the 1.1 m of excavated deposits. The excavations recovered large amounts of slag, charcoal, Kwale ware sherds, burnt earth, and tuyeres, most from 0.8–0.9 m depth (Table 1). Most of the artifacts appear to be EIA.

Two magnetic anomalies were detected in a magnetometer survey of 484 m^2 of the site. Further excavations (Unit 3) in June–July, 1987, after the field school, verified the existence of smelting-related features at both anomalies (Chami 1988).

Four charcoal samples were taken from Unit 3 for radiocarbon dating: Beta-24623 from 0.7–0.8 m depth dated to A.D. 265 ± 95; Beta-24624 from 1.3–1.4 m depth dated to A.D. 20 ± 105; Beta-24625 from 1.7–1.8 m depth dated to A.D. 415 ± 85; and Beta-24626 from 1.4–1.6 m depth dated to A.D. 25 ± 95. If any of these dates are anomalous it is the third sample, which is younger than those from deeper levels. All of the dates are within the range of 2-sigma of one another, and overlap between A.D. 220–60. Their ages are comparable to other radiocarbon dates from Early Iron Age settlements with Kwale or Urewe ceramics (Collett 1985).

Miasa II: KI/MA 2 (UTM EB 2195/730)

Refuse extended over 100 m^2 and was 0.6 m thick. The sherds resemble those from KI/MA 1, with affinities to eighth–tenth-century Tana tradition pottery.

KI/NY 10 (UTM EB 0715/8845)

This scatter of potsherds and burnt clay or daub extended over 242 m^2. Few artifacts were found during the excavation of three shovel tests (Table 1), and most of them probably date from the Later Iron Age.

KI/MA 11 (UTM EB 246/766)

This small (150 m^2) site was exposed during the excavation by the land owner of a 1.3 m deep trench. Eighty-one potsherds and some burnt clay were collected from the trench at depths of 0.4–0.8 m. The one decorated sherd may date from the Later Iron Age.

KI/MA 12 (UTM EB 162/744)

At six localities a total of 19 quartz flakes were collected from 1.5–4.3 m depth. Many of the flakes were produced by heavy machinery during the road construction. The area covered 1000 m^2, and was probably not a site. If it is a site, it is the only one without ceramics.

Conclusions

Although the scale of the 1987 field school was limited, we feel that a number of tentative conclusions can be made concerning the archaeology of the Mkiu area. All of the excavated sites at Mkiu

are midden deposits associated with Iron Age villages, for in no case were houses or any other domestic features found. The presence of daub at some of the sites may indicate that nearby structures were missed in our excavations.

Occupation of the settlements span at least a millennium and a half, but sites never grew beyond the size of small villages. This suggests that whatever sociopolitical changes might have been taking place on the coast, especially as coastal towns were established, they were not manifesting themselves in the settlement hierarchy of Mkiu, only 20 km inland.

Indeed, the nature of the relationship between the Mkiu area and the coast is not clear based on the evidence obtained from our excavations. A few glass beads and bits of copper or copper alloys were the only indications of trading activity with Swahili settlements such as Kisiju. Evidence for what might have been traded by Mkiu is scant—the gum copal might be an indication of such a relationship. Trade in perishable goods to the coast is a possibility, in exchange for imported perishables such as cloth. Iron may have been traded, although coastal sites were also producing iron. We found little of the archaeological evidence that might be expected if an active trade had existed, but this could be due to the limited scope of our investigations.

Whether or not there was a vital trade going on between Mkiu and the coast, there was much activity in the area itself. The overwhelming evidence for early iron smelting at the Limbo site, associated with Kwale/Urewe ware, indicates craft specialization in the first centuries A.D. The finding of pottery combining characteristics of Urewe and Kwale wares (Chami 1988) agrees with Soper's (1982) predictions. The evidence for smelting declines in the later periods, until there is none at all in the sites that date to the present millennium (Table 1). We suggest that iron smelting underwent changes in the area: possibly, it ceased to be important to the economy there after the Early Iron Age, or alternatively that it remained active but became less visible in the archaeological record we sampled due to changes in the location of production or the disposal of debris.

Interestingly, the presence of certain lithic artifacts at Mkiu is limited to those sites with Tana tradition pottery, with the largest number of lithics (n=19) coming from site KI/MA 1. This might indicate the presence of hunter/gatherer groups moving into this area in the early second millennium A.D., or alternatively a falling back on lithic technology during a period when iron is barely visible in the archaeological deposits. The evidence for lithic artifacts in general is scant, but its peaking in this period deserves note.

Among the sites with Early Iron Age pottery, the proportion of decorated to undecorated sherds is relatively small (0–7%). This jumps to 20% during the centuries marked by the presence of Tana tradition wares, and drops to virtually no decoration in the post-A.D. 1000 settlements. The decorative tradition from c. A.D. 800–1,000 in the Mkiu area corresponds to the appearance of similar design motifs on pottery throughout vast stretches of the East African coast and hinterland, appearing with heightened coastal/inland trading activity. Hall (1987) suggests that uniformity in ceramics over far-flung geographical areas may signify membership in an extensive network of reciprocal relations. Whether this is true in this case is still unclear, but the Mkiu area can now be added to the growing number of inland sites with pottery bearing these distinctive decorations, but lacking the rest of the characteristics of early Swahili society.

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Kibiro Revisited: An Archaeological Reconnaissance in Southwestern Uganda

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The cultural antecedents and formative period of complex societies in southwestern Uganda comprise one of the more important research problems in later African prehistory. Their location deep in the interior of Africa suggests a completely indigenous origin for these Interlacustrine states, without the possibility of those external influences that have so often been accorded a causative role in such developments in other parts of the continent. Yet documentary history commences only in the middle of the nineteenth century A.D. and the abundant oral traditions of the area are limited in time depth and difficult to interpret for the earlier periods. In such circumstances, archaeology ought to be able to make a significant contribution and, indeed, research during the 1950s and 1960s made some progress in this direction, although the troubled years of the 1970s and early 1980s led to a cessation of such activity. Since 1986, however, the British Institute in Eastern Africa, based in Nairobi, working in collaboration with the Ugandan Department of Antiquities and Museums, based in Kampala, has been able to organize new archaeological field research which promises to increase substantially our understanding of later prehistory in southwestern Uganda and which has been previously reported in *Nyame Akuma* (Sutton 1987, Robertshaw 1988). In addition to more general field surveys, excavations have been conducted at Ntusi, at Mubende Hill, and at Munsa.

The archaeological reconnaissance discussed here was carried out by the writer

as part of this general research programme and with the writer as a guest both of the British Institute in Eastern Africa and of the Ugandan Department of Antiquities and Museums. These organizations provided facilities, personnel, and equipment, and the reconnaissance was funded by the Australian Research Council. The project was approved by the Ugandan National Research Council and by the Office of the President of Uganda.

The work occupied the months of January and February, 1989. Its general objectives were, first, to enable the writer to familiarize himself with relevant aspects of the archaeology of an area in which he had not previously worked and, second, to provide a basis for more

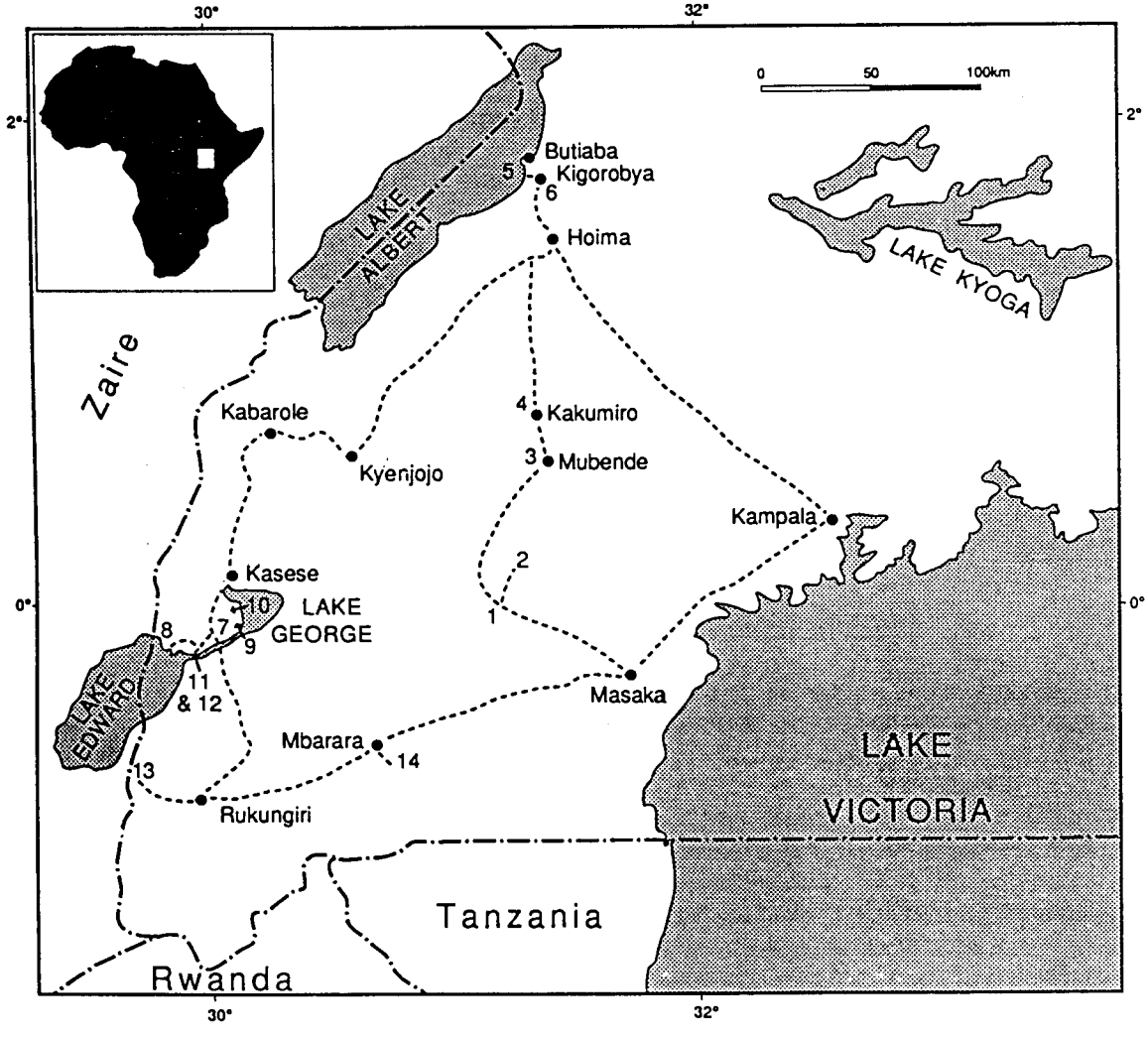

Fig. 1. Southwestern Uganda showing the route travelled during the archaeological reconnaissance and the location of sites discussed in this paper. Numbers are as follows: 1 = Ntusi and related sites, 2 = Bigo, 3 = Mubende Hill, 4 = Munsa, 5 = Kibiro, 6 = Site 1 (Kigorobya), 7 = Site 2 (Lake Bunyampaka), 8 = Site 3 (Katwe), 9 = Site 4 (Kasenyi, 10 = Site 5 (Kasenyi), 11 = Site 6 (Mweya), 12 = Site 7 (Mweya), 13 = Site 8 (Ishasha), 14 = Bweyorere.

substantial research over a longer period in 1990. The detailed objectives of the reconnaissance were (1) to examine a selection of known archaeological sites as part of a familiarization programme but in specific instances also in order to assess their suitability for reinvestigation; (2) to search for and locate previously unrecognized archaeological sites, this to be done in selected areas; (3) to investigate by test excavation one selected site, with a view to its suitability for future more extensive excavation, and concentrating on samples for radiocarbon dating, material culture content, depth of deposit, character of deposit, and indicators of subsistence economy.

Following preparations in both Nairobi and Kampala, the field work lasted from 19 January to 16 February inclusive and involved a team consisting of five people: the writer, Andrew Piper (postgraduate student in archaeology from the University of New England), Ephraim Kamuhangire (Senior Conservator, Department of Antiquities and Museums, Kampala), Peter Bisaso (Assistant Conservator, Department of Antiquities and Museums, Kampala), and Thaddayo Owuora (Driver/Mechanic, British Institute in Eastern Africa, Nairobi). The team was provided with a long-wheel-base Land Rover and field survey equipment, excavation equipment and camping equipment. The route travelled during the field work is shown on Fig. 1, along with the location of the sites discussed below. Following the field work, the Department of Antiquities and Museums in Kampala provided storage for the excavated and surface-collected archaeological materials, the analysis of which will be conducted in 1990.

Of the known sites that were examined, Ntusi has recently been the subject of archaeological investigation (including excavation) by John Sutton, Andrew Reid, and Jeremy Meredith. Mubende Hill and Munsa have been excavated in recent years by Peter Robertshaw. Yet it was useful to examine these sites in order to gain an understanding of their character. Particularly was this the case with three minor sites that were also visited in the Ntusi area. They consisted of relatively slight scatters of potsherds and other cultural material and demonstrated the relatively low visibility of some archaeological phenomena in southwestern Uganda. This factor, together with the heavy vegetation that covers most of the eastern and central parts of this area, and with the relatively intensive cultivation and other human activity found in some parts, will inevitably mean that many archaeological sites will be difficult to find and difficult to investigate once they are found. It seems likely, for instance, that such sites will only have an appreciable depth of deposit on rare occasions and will, therefore, have only limited value for establishing a chronological sequence. It is this problem that makes the recent excavation of the mounds at Ntusi so important. Even with the sites of Mubende Hill and Munsa, human activity in modern times appears to have caused substantial site modification.

Three of the known sites were visited in order to assess their suitability for reinvestigation. One of these, Kibiro, was thought highly suitable and will be discussed below. The other two, Bigo and Bweyorere, have been treated in the literature as sites of major significance and deserve some remarks here.

Bigo is an extensive site that is covered in thorny scrub, trees, and grass. At present, one can get a four-wheel-drive vehicle to 3 km from the site but must walk the rest of the distance. The site consists of a complex series of ditches and banks, choked with scrub and trees, and of two central mounds that are now difficult to locate with certainty. There is little or no cultural material on the surface and from previous excavations it is known that there is little depth of deposit within the enclosed areas. Any new excavations here would probably consist of sectioning ditches and banks and of undertaking area excavations of the central mounds and perhaps other places. The site would justify further excavation to work out the probably complex chronology of its earthworks and to investigate more fully the large structure found by Peter Shinnie (1960) over thirty years ago

beneath the largest of the central mounds. However, such excavation would be expensive of time, labour, equipment, and money. Merrick Posnansky (1969: 125) called Bigo 'Uganda's largest and most important ancient monument,' and recommended further excavation along the general lines indicated above. The present writer agrees that Bigo merits further excavation, but the possibility of obtaining only a short and late sequence could mean that even extensive excavation and numerous radiocarbon dates might not give us very clear chronological information. Similar amounts of archaeological effort elsewhere might be more rewarding.

Bweyorere is easily reached by a four-wheel-drive vehicle and is largely under grass, although thorn bushes and anthills are damaging parts of it. The earthworks are clearly visible and the surface of the site has recently been reexamined by Andrew Reid and Peter Robertshaw (1987: 86–87). Further excavation might include: first, numerous bank sections, in order to use radiocarbon dating to test the contemporaneity or otherwise of the various features; second, areas to the south and southeast of the earthworks, where there are substantial numbers of sherds and bones eroding from the surface, in order to test whether the occupation of the site was more extensive than the distribution of the earthworks would suggest; and third, the total or near-total excavation of the 'palace' building that Posnansky (1968) found beneath one of the earthworks, in an attempt to provide information on social and economic aspects, as well as on building methods. Again, however, this site is likely to have little depth of deposit other than within the banks themselves and a limited chronological sequence. Consequently, further excavation would seem inappropriate at this time.

During the reconnaissance, eight previously unrecorded sites were located, of which three would justify further surface investigation and limited excavation. The eight sites were:

Site 1. A thin sherd and bone scatter 2.7 km due east of Kigorobya, eroding from a road surface for about 100 m and extending north and south of the road.

Site 2. A thin sherd scatter eroding from a black greasy soil on the eastern and southern edges of Lake Bunyampaka, a crater lake near Kasenyi. The sherds were fragmented and weathered but roulette decoration could be observed on the few diagnostic ones present. It is likely that this material was associated with salt-making in the past, an activity for which the lake is still used.

Site 3. Sherd scatters, mostly thin, at four main localities in and on the edges of the modern settlement of Katwe. At all these places the depth of deposit appears to be limited and the natural rock or clay is near the surface. In addition, the presence of the modern settlement makes it impossible to separate modern and archaeological material in most cases.

Site 4. Medium sherd scatter plus items of iron, glass, rubber, etc. and five East African pre-independence copper coins dated from 1923 to 1959, with one illegible. This site is situated about 300 m east of the crater rim of the Lake Bunyampaka crater, on its outer slope. It clearly dates from the first half of the twentieth century and could be the site of the salt-making village observed by Roscoe (1924: 156–58) in 1919–20.

Site 5. Medium to dense sherd scatter to the north of Kasenyi, on the north side of a peninsula that extends to the east into Lake George, about 0.5 km from the abandoned Tufmac fish factory. The site is about 0.75 square km in extent and might have 20–40 cm depth of deposit, where not eroded. Fishbones amongst the sherd scatter suggest that this is the site of a fishing settlement. Recent materials are absent and the extent and richness of the site make it a candidate for further investigation.

Site 6. Medium to dense sherd scatter on the top and southeast slopes of the Mweya Peninsula, extending about 1 km to the northeast of the narrowest part of the Peninsula. Perhaps 25–50 cm depth of deposit are possible. Fragments of grindstones and grinders are present but

recent materials are absent. There are also a few quartz artefacts but these are presumed to be residual from an earlier occupation. Again, the extent and richness of the site make it a candidate for further investigation and its location suggests that it could have played an important role in the Katwe-Ankole salt trade.

Site 7. Thin sherd scatter at the western end of the airstrip at Mweya, just to the south of the Institute of Ecology Hostel.

Site 8. Thin to dense sherd scatter, spread discontinuously over 2 km on grassland adjacent to (and east of) the edge of the gallery forest marking the Ishasha River. The site extends from 1 km south of Ishasha Camp (Ugandan National Parks) to 3 km south of the camp. To the north are small low mounds, then eroded sand surfaces, and then, to the south, several heavily eroded larger mounds of sandy matrix 1–2 m in height; sherds occur in all these contexts. Fragments of grindstones and grinders are present and also a few quartz artefacts but these are presumed to be residual from an earlier occupation. The sherds include twisted and knotted string roulette decoration but are mainly plain and in some cases of unusually thick fabric. Recent materials are not present. The extent of the site makes it a candidate for further investigation.

Of all the sites looked at during this reconnaissance, it was Kibiro that seemed to the writer to have the greatest archaeological potential. Kibiro is a sizeable village subsisting on salt-making by the women, from deposits saturated by a hot stream, and on fishing by the men. Cattle and other livestock are kept but there seems to be little or no cultivation. The village lies on a narrow plain about 0.75 km wide between the eastern shore of Lake Albert and a steep and rocky escarpment of about 300 m in height. The only way down or up the escarpment is by walking; there is no motorable track, although such a track does reach the head of the escarpment from Kigorobya. The salt is obtained by filtering water through salt-impregnated earth and then boiling the filtrate and forming the resulting salt into cones of about 2 kg in weight. Batches of these are then head-loaded by the Kibiro women, twice a week, up the escarpment and 7 km to the market at Kigorobya. At the same time, men carry loads of fish to market along the same route. The market is reached in the morning, having left Kibiro at first light, the salt and fish are sold, and the women buy loads of vegetables which they carry back to Kibiro, descending the escarpment in the late afternoon. Other than the track down the escarpment, the only approaches to Kibiro would be by boat or by footpath along the narrow lakeside plain. North and south of Kibiro the escarpment is even higher and more precipitous. Thus the village of Kibiro is rather a special case, by reason of its salt production, its location, and its economic dependence on its hinterland. The first historical record of Kibiro salt seems to have been by the explorer James Grant in 1862 (Grant 1864: 296) and oral traditions mention it as far back as they recall. Archaeologically, it would appear that salt-making has concentrated human activity at this place to such an extent and for so long a period that an irregular but extensive settlement mound has grown up. The whole village is littered with sherds, some of average size, some broken small, lying on a grey sandy dust that comprises the upper matrix of archaeological deposits of variable depth, that extend over a kilometre from north to south. Hiernaux and Maquet (1968) excavated two small cuttings here in 1957 and got a stratified pottery sequence from a deposit of 3 m depth in the highest area of build-up and of 80 cm depth near to the shore of Lake Albert. One radiocarbon date from the base of each cutting indicated a date of A.D. 1800 + 250 for the deeper and A.D. 1440 + 200 for the shallower but in an otherwise excellent report the excavators did not provide any drawn sections.

Kibiro offers an opportunity to attempt to provide a chronological key in the form of a dated pottery sequence, a key that could probably be applied to the adjacent area at the top of the escarpment and further afield in the region that formerly constituted the Bunyoro state. This is

because the specialist nature of salt production, and the wide distribution of the resultant product, probably meant that the residents of Kibiro obtained pottery by trade from outside of their immediate area. The Kibiro deposits also have the potential to inform us about the history of a vital trade commodity, that must have contributed importantly to the economy that supported the rise of the Bunyoro state.

With these things in mind, eight days of the reconnaissance reported on here were devoted to excavating a 1.5-m^2 test hole into the Kibiro deposits. Bearing in mind that Hiernaux and Maquet got their earliest (but shallowest) deposits near the lake and their latest (but deepest) away from the lake, the 1989 cutting was located in an area of lower deposits between the two. The aim was to get a greater depth of deposit (and therefore a longer sequence) than 80 cm but earlier deposits than they had at the bottom of their 3 m cutting. This, of course, is assuming that the late date for the base of their deeper cutting is correct. Here was another good reason for new excavation: to get a good series of charcoal samples that could be used to clarify the radiocarbon chronology of the site.

In the event, Cutting I (as the 1989 excavation was designated) failed to reach the bottom of the archaeological deposits, although it went down 3 m (Fig. 2). Clearly, the area of the lower deposits selected was either over a much deeper natural than the highest deposits or Hiernaux and Maquet were not at the bottom of the highest deposits when they reached 3 m depth. In our case, the limited stability of the deposits necessitated battering the cutting and some (probably termite) cavities low in the cutting required that the cutting be stepped in. As a result, it was physically impossible to excavate below 3 m, there was just not enough room to work in. In addition, in so narrow a cutting the safety risks could not be ignored by the time 3 m was reached.

The cutting was excavated in arbitrary spits of 20 cm but roughly horizontal stratified deposits of settlement material were revealed. The stratification was sufficiently difficult to see, however, for stratigraphic excavation to be impractical in such a narrow test hole and in the limited time available. Several small pits were encountered in the course of excavation but in most cases it was possible to excavate their fillings as discrete stratigraphic entities. Overall, the cutting produced a very large number of sherds, at some levels broken so small as to constitute a sherd gravel, and there did seem to be changes in the pottery through time. There were also both mammal bones and fishbones in much of the deposit and freshwater shell was generally present. The latter had in rare cases been worked, occasionally into beads. A grindstone, a grinder, and a pounder were also recovered and several small fragments of smoking pipes, although the latter not from an early context. Small fragments of iron were also found. The only indications of structures were lumps of mud daub that had been burnt, presumably unintentionally. Probably because of salt-boiling activities in the past, wood charcoal was scattered throughout the deposits, although much of it was in only small fragments. At the end of the excavation, the cutting was completely backfilled.

Since the excavation, eleven radiocarbon dates have been obtained for samples of wood charcoal from Kibiro Cutting I. Ten of the dates were provided by Beta Analytic Inc. of Coral Gables, Florida, in the United States, and are as follows (noncalibrated):

Laboratory Number	Excavation Number	C-14 Age Years b.p.	C13 Adjusted Age b.p.	Date a.d.
Beta-31292	KI/Sp1	0+60	0+60	1950+60
Beta-31293	KI/Sp2	170+80	170+80	1780+80
Beta-31294	KI/Sp3	90+50	—	1860+50
Beta-31295	KI/Sp4	120+50	130+50	1820+50
Beta-31296	KI/Sp6U	250+50	260+50	1690+50
Beta-31297	KI/Sp7	260+60	—	1690+60
Beta-31298	KI/Sp8	770+70	750+70	1200+70
Beta-31299	KI/Sp9	630_90	—	1320+90
Beta-31300	KI/Sp12&13	1340+150	—	610+150
Beta-31301	KI/Sp14	550+90	—	61400+90

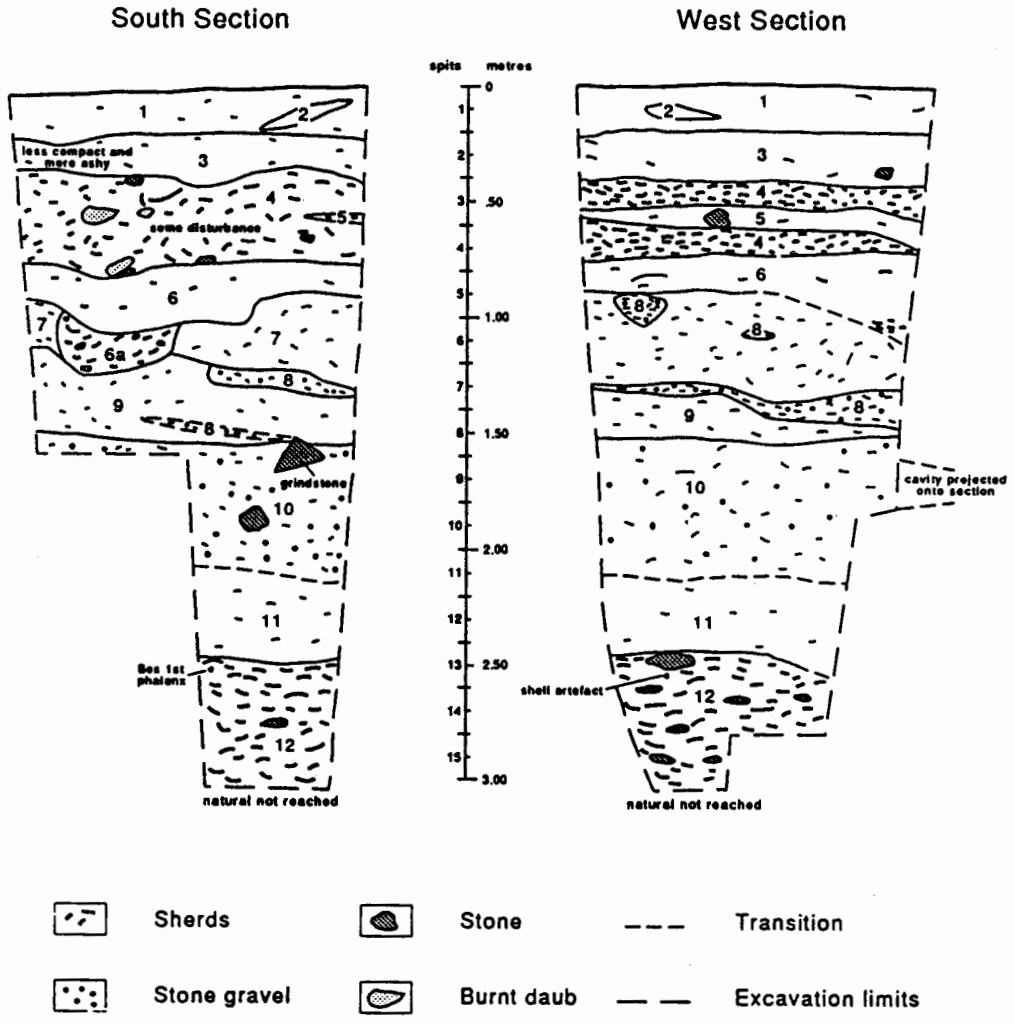

Fig. 1. The stratigraphy of Cutting I at Kibiro.

The wood charcoal sample from Spit 15 was reduced to only 0.5 g after cleaning and was therefore sent to the Institute of Nuclear Science in Wellington, New Zealand, for Accelerator Mass Spectrometry dating. The laboratory code was R11778 NZA 580 and the C-14 age in years B.P. was 519 + 81, which gives a date of A.D. 1431 + 81.

The radiocarbon dates given above are for samples of wood charcoal, made up of fragments scattered through each of the spits indicated in the Excavation Numbers. Thus, each sample refers to 20 cm of deposit, except for Beta-31296, which came from the upper 10 cm of Spit 6, and Beta-31300, which consisted of fragments from both Spits 12 and 13 and therefore refers to 40 cm of deposit. This last circumstance would suggest that the Beta-31300 date need not be taken too seriously. If it is excluded from consideration, then the other dates provide a chronological sequence that is in general agreement with the stratigraphic sequence (Fig. 2). Spits 7–2 (inclusive) seem to belong to the eighteenth and nineteenth centuries A.D., and a modern date for Spit 1 should not surprise us on a site that is still occupied by a substantial number of people. Spits 15–8 (inclusive), however, seem to belong to the thirteenth, fourteenth and fifteenth centuries A.D., suggesting that there is a break in the deposition somewhere around the base of Spit 7. Some support for this idea comes from the presence of smoking pipe fragments in the upper group of spits but their absence from the lower group. Further comments on these dates should be postponed until they have been examined statistically. In addition, the analysis of the excavated evidence from Kibiro I has not yet been undertaken, and it is hoped to do it in Kampala in 1990. Finally, the failure to reach the bottom of the archaeological deposits would suggest that earlier dates might be obtained as a result of further excavation.

In conclusion, the archaeological reconnaissance discussed in this paper has demonstrated the possibility of locating previously unrecognized later prehistoric sites in southwestern Uganda. The areas around Lakes George and Edward and along the Ishasha River would probably reveal more sites if subjected to a more intensive survey and three of the sites found in 1989 would be worthy of further surface investigation and limited excavation. In addition, many areas not examined would almost certainly repay a search for sites. Of the sites already known, however, three might merit further excavation: Bigo, Bweyorere, and Kibiro. Of these, only Kibiro promises a long chronological sequence and offers deep deposits of settlement debris that could throw light on the activities of its occupants over some centuries. In particular, Kibiro could provide an archaeological clock of pottery changes that could help to place other sites in a chronological context. For these reasons, it is intended that more extensive excavations will be undertaken at Kibiro in 1990, probably in conjunction with a further search for sites, this time along the eastern shore of Lake Albert from Butiaba to the Semliki Delta. By such means, it is hoped that it will be possible to make a small contribution to our understanding of the origins of complex societies in southwestern Uganda.

Acknowledgments

The help, cooperation, and friendship of many people must be acknowledged. It is impossible to mention everyone but the following are the most significant: Mr. P. M. Wamala, Chief Conservator of Antiquities and Museums, Uganda; Mr. E. R. Kamuhangire, Senior Conservator, Department of Antiquities and Museums, Uganda; Mr P. Bisaso, Assistant Conservator, Department of Antiquities and Museums, Uganda; Mr. J. Ssebanduka, of the Uganda Museum; Dr. X. K. Ovon, Mr Medaea, and Mr. D. Mwesigwa, of the National Research Council, Uganda; Mr. Mwongyere, of the President's Office, Uganda; Mr. L. R. K. Balijuka, Chief of Kigorobya; Mr. E. Bitaagase, Chairman, Resistance Committee, Kibiro; Mr. Y. Kimulya, of the Katwe/Kasenyi Salt Industry; Mr. A. Reid; Mr. J. Meredith; Mr A. Bamford; Mr A. Piper; Dr. J. E. G. Sutton and the staff of the British Institute in Eastern Africa, Nairobi, particularly Mr.

T. O. Owuora, who drove us so far and so safely. Lastly, one cannot forget the hospitality and friendliness of the staff of the Namirembe Guesthouse of the Church of Uganda, and of the J. & B. Bar and Restaurant, both in Mengo, Kampala.

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Iron and Stone Age Research in Shaba Province, Zaire: An Interdisciplinary and International Effort

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Considerable archaeological work has been done over the last thirty years in the Upemba Depression of southeastern Zaire, now occupied by the Luba people. Excavations were primarily conducted in Iron Age cemeteries situated along several lake shores (Nenquin 1963, Hiernaux et al. 1971, de Maret 1985). The burials date between the eighth and eighteenth centuries A.D. The typically well-preserved skeletons, accompanied by a variety of burial goods, have yielded insights into changes in burial ritual and ceramic production. They also have led to the development of hypotheses concerned with stability or change in social status and hierarchy, economics relating to trade and craft specialization, and population density (de Maret 1977, 1978, 1979, 1985).

Beneath the Iron Age stratum at the Sanga site, the excavators found evidence of a lithic technology, based primarily on flaking quartz materials. A descriptive analysis of these lithics was conducted by Muya wa Bitanko in his recent dissertation (1986). He concluded that more controlled excavations designed specifically to understand the Stone Age component of prehistoric occupation was necessary.

There is still a wealth of information to be tapped from the area and from previous excavations. Over the last three years, all of the authors (three archaeologists and an art historian) have been involved in continued research on the prehistory, history and ethnography of the Upemba Depression. We present the goals, methods, and preliminary results of this work in two sections, one on the Iron Age and the other on the Stone Age.

The Iron Age

One intriguing aspect of the archaeology that has been well documented, but not analyzed to its full potential, involves metal: objects of iron and copper buried with the deceased. There is abundant literature on the importance of iron and the iron producer in African societies. This relates particularly to primary strategies of subsistence (e.g., hoes for agriculture, axes for clearing forests), the development of trade networks (e.g., iron and copper "currency"), and the development and maintenance of political power and control (e.g., the control over iron ore resources as a means to acquiring economic and political power; symbols of political legitimacy made of iron; investiture ceremonies of "kings" involving ironmaking procedures). The variation among African iron-smelting furnaces and the accompanying technological and ritual practices are also abundantly described in the literature. The significance of copper production and use, although important (Herbert 1984), is much less well known and documented. Significantly, there are very few attempts to investigate the manufacture and meaning of both iron and copper within one culture area.

A new project, therefore, was instigated in 1987 focusing on the numerous iron and copper artifacts excavated from five sites in the Upemba Depression by Pierre de Maret. The most basic goal of this study was to compare the technological production (how an object was made, the material it was made of, the potential sources of ores), the social function, and the symbolism of the diverse object types made of the two metals. Since the burials and their accoutrements spanned approximately one thousand years, until the rise of the Luba state, another goal was to examine the function, meaning and manufacture of metal objects in the rise of a complex sociopolitical system.

Perhaps the most straightforward aspect of the project was an investigation of the iron and copper production technologies over time. Questions regarding the kinds of metals produced (wrought iron, steel, cast iron, unalloyed copper, bronze, etc.), the techniques used by the smith (hammer forging, welding, casting, etc.), and nature of the choices available during the manufacturing process can be addressed by metallographic and chemical analysis. De Maret generously allowed Childs to sample a wide variety of excavated objects (axes, adzes, knives, spears, nails, harpoons, fishhooks, hoes, bracelets, rings, anklets, bells, pendants, sheet metal, wire, and copper crosses) for such analyses. To date, approximately 55 of 100 iron objects and 55 of 100 copper objects have been examined metallographically and 150 copper objects have been subjected to chemical analysis by atomic absorption.

The primary means to investigate the function and meaning of these metals, on the other hand, involved ethnographic analogy. Such a methodology is appropriate in this case due to the longevity of continuous occupation along the lakes during the Iron Age. Some behavioral continuities found between the ancient peoples and the Luba and strong similarities in the types and shapes of many object types, including those of metal, used over time are other reasons. We pursued several different research avenues with this strategy in mind.

First, we examined the numerous ethnographic reports for more information on Luba metallurgical practices, the specific functions of metal objects in both utilitarian and ritualistic contexts, and who used these objects. Luba oral traditions, including their genesis myths, were scrutinized to see what roles metal producers, various metal objects and metallurgical practices played in the advent and continuation of Luba society and leadership.

A second tactic involved an investigation of Luba metal arts. Luba figurative sculpture, such as carved wooden figurines and stools, are believed to have played a key role in the expansion of the Luba state (Nooter 1984). Similar figurative carvings of great skill are found on the handles of Luba axes, spears, and knives. It is the presence of these same object types, but lacking the handles due to poor preservation, that often distinguishes some of the ancient burials from others. Dewey made a thorough search of European and U.S. museums for examples of such metalwork and was well rewarded for his efforts.

Finally, we conducted three months of fieldwork in the Upemba Depression during 1988. This involved both archaeological and ethnographic research. Excavations were continued at the site of Sanga with the intent of recovering metal objects from time periods that were sparsely represented. We also hoped that the burials and the accompanying objects would act as mnemonics to elicit comment by the Luba on the practices and objects of their predecessors. Simultaneously, we conducted interviews with chiefs, their titleholders, spirit mediums, elite members of secret societies, and villagers concerning what kinds, in what contexts, and by whom iron and copper objects were used. Blacksmiths were also interviewed about the manufacturing processes and rituals they, their fathers, and grandfathers use(d). Additionally, we were fortunate on several occasions to acquire old pieces of metal work that older relatives had made or used, presumably of bloomery iron. These objects were examined metallographically for direct comparison with the prehistoric samples.

Our results are many, yet preliminary. Some threads of investigation remain to be followed through more completely. Clearly, too, we have only begun to scratch the surface of a broad topic that needs considerably more research investment.

The investigation into the production technologies of the two metals over time shows remarkable consistency in terms of the techniques used and the forms made. The ironsmiths were highly skilled at hammer forging, involving extensive folding and welding, and knew how to discriminate and work a wide range of materials. These range from wrought iron to cast iron. When making an object for a particular function, the smiths often chose a material for its physical properties. For example, knives or axes requiring a sharp edge were usually made of high quality steel, while objects requiring resistance to impact were made of low-carbon steel or wrought iron. Ceremonial objects tended to be made from a wider variety of materials and with less care than utilitarian objects. There is also evidence that cast iron was produced with greater frequency in more recent times, probably since the rise of the Luba state.

The copper used in the Upemba Depression is very pure, agreeing with Bisson's findings in Zambia (1976, 1978). Preliminary chemical evidence indicates differences in the elemental make-ups of the objects, however. These differences may relate to the source of the ore, aspects of the manufacturing process, or both, and are being pursued in greater detail. Many aspects of the manufacturing process of copper production are clearer. The metal was cast in bar or cross shapes and then cut into pieces from which objects were made by hammer forging or wire drawing. Some of the large bracelets from the earliest period, the Ancient Kisalian, were merely refined by directly hammering out the cast form.

We have evidence to support the hypothesis that the smithing technology developed for iron was essentially transferred to the production of copper

items. Although this will make logical sense to many Africanists, specialists in the materials sciences exclaim their disbelief. They say that techniques such as welding cannot be performed on pure copper except under "high-tech," highly controlled conditions.

Our findings from the archaeological, ethnographic and art historic fieldwork reveal that some underpinnings of the complex Luba political and religious system were in place by the ninth–tenth century A.D. Iron and copper played instrumental symbolic roles in the operation of this system. The same object types that figure prominently in Luba political and religious ritual are found in some of the ancient burials. The most important of these is the ceremonial ax. Among the Luba, only chiefs and their primary titleholders can carry such axes at any time in public. Public display of these axes by spirit mediums is only allowed when they are with spirit, while the leaders of the *Bambudye* secret society can only use them when performing for the *Mulopwe* or king. No one else is permitted to own such axes on pain of death.

Several ceremonial axes, identified by the way they were made, their unusual shapes, and their decorative additions, were recovered from burials dating to the Ancient and Classic Kisalian periods. One such ax was found in 1988 in the grave of a child dating to the Kisalian period. Its form is directly comparable to an ax discovered in a museum collection of Luba art. The only difference is that the ancient one was miniaturized for use by the child. It is most likely that these axes symbolized and embodied the power held by their owners. The actual sphere of political or religious influence, however, may not have reached much beyond the lake shores along which the influential person was buried.

Other evidence suggesting that iron and copper served important symbolic functions well into antiquity is the association of ancient ceremonial axes and knives with metal nails. These nails decorated the handles of the ceremonial items. Although de Maret noted similar use of these nails on Luba ax handles (1985), Dewey's work in the museums revealed their occurrence on a much wider range of ceremonial objects central to Luba politics and religion. Such items include: the wooden staffs, spears, and bowstands of chiefs; *mboko* or wooden bowls key to the work of spirit mediums and associated with royalty; and *lukasa* or memory boards used to recount the political history of the Luba.

Another unusual but important location in which these nails are found is the elaborate coiffures of carved figurines. That the significance of these nail/hair ornaments extends beyond mere decoration was reinforced during our excavations in 1988. We found a skeleton whose coiffure had been embellished with six clusters of nails, both of iron and copper. Several informants told our colleague, Polly Nooter, that such nails were placed in the hair of spirit mediums to hold in the spirit with whom they communicated (personal communication). The placement of such nails in either the coiffures of carved figurines or in less specific places on objects of political and religious importance may have served to hold in guiding ancestral spirits and their power essential to rule on earth.

A final feature important to this discussion is the presence of decoration on the metal among many of the objects used by the Luba elite.

Particularly prevalent are incised motifs and patterns created by altering the thickness of a blade. Decoration by punctation was found on a few prehistoric objects that were properly conserved. Our Luba informants continually told us that such decoration, called *tapo*, served to beautify the metal objects that were owned by the elite. *Tapo* also refers to the cicatrix marks that Luba women receive during female initiation, as they enter adulthood. These markings are considered signs of beauty and serve to symbolize a transformative process: one of becoming socialized, enculturated, and civilized. We hypothesize that a similar transformative process is symbolized by the markings on the ceremonial objects. Iron, with the properties of strength and durability yet most frequently used for utilitarian

purposes, is transformed or made *civilized* by the application of *tapo*. Once transformed, they enter the domain of the Luba elite who are the most *civilized* and powerful in the society.

As far as we can tell from scanty evidence, a primary function of copper was as a further means to transform or beautify objects into those appropriate for the elite. Copper wire, ribbon, sheeting, and nails decorate many objects of iron or wood that functioned in important Luba political and religious contexts. Bracelets, necklaces, and anklets adorned the bodies of the wealthiest and most significant people. A considerable amount of the prehistoric copper was used in the same manner.

The Stone Age

Although the previous excavations focusing on Iron Age occupation revealed the occurrence of a Stone Age component in the Upemba Depression, the contextual details of this material and its range of variation were poorly known. The presence of Stone Age material was identified at the site of Sanga, but its stratigraphic context and the site boundaries of the Stone Age component were undocumented. We also did not know to what degree previous excavators had selectively recorded and kept the lithic artifacts, and if there were clear associations of formal lithic types or raw material types with the stratigraphy.

We decided to coordinate our research efforts at the site of Sanga with Muya wa Bitanko supervising the excavation of the Stone Age material. This involved continuing to excavate down to bedrock once the Iron Age material was removed. Several test pits were also excavated farther away from the lake so as to determine the horizontal extent of the Stone Age component. The work proceeded in 20 cm., arbitrary levels except when a clear natural division in the soil was observed. The stratigraphy was mapped and photographed and initial sorting of the artifacts was conducted in the field. Unfortunately, no features with well-associated charcoal were discovered for dating purposes.

The stratigraphy at Sanga is somewhat complicated by the intrusion of Iron Age burials into the upper layers of the Stone Age near the lake shore and by agricultural disturbance farther away from the lake. Bedrock of laterite was usually reached between 120 and 200 cm. below ground surface, the shallower pits being those closer to the lake shore.

Analysis of the lithics is currently being conducted in Zaire. Preliminary observations suggest that the majority of artifacts are quartz flakes, and very few stone tools were found. Flaked artifacts of other materials were recovered, such as chert, while only a few grindstones were found. A description of the artifact types and the stratigraphy, as well as frequency distributions of the lithics associated with the strata, will be prepared in the near future.

Acknowledgments

We wish to thank the J. P. Getty Foundation for their generous financial support to Childs and Dewey; also the Université Libre de Bruxelles and the Belgian Corporation for their generous support of de Maret and Muya wa Bitanko. Many European and American museums kindly opened their doors to Dewey for which we are grateful. We wish to thank the Government of Zaire for its cooperation and aid while we were in the field. Many of the villagers of Sanga and Kinkondja were particularly helpful, especially Ngoy Wakyoni, Ngoy Kinkoba, Musambilwa, and Dibwe. Finally, Genevieve Thiry, Pierre Petit, and Isabella di Carpegna, students at the Université Libre de Bruxelles, worked tirelessly in the field.

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A New Early Iron Age Pottery Tradition from South-Central Africa

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I wish to add to Bisson's recent comments (1989) concerning the Early Iron Age (EIA) pottery from the south-central African sites of Kansanshi and Kapushi located in Northern Zambia. Mike Bisson is the principal investigator of the Kansanshi site, and I had the good fortune to work with him during salvage excavations at the site in 1979. The Kansanshi EIA pottery represents a unique and distinctive tradition not known from other parts of Africa.

It is a commonly held belief that all the EIA pottery in south-central Africa is so homogeneous that it represents a single pottery tradition containing two streams reflective of the Great Bantu migration. This migration is said to have introduced the EIA into the area (Phillipson 1968; 1977: 102–4). Recently, Phillipson (1985: 171) has argued that "Bantu" Africa is so homogeneous that the EIA should now be called the Chifumbaze Complex. I disagree that EIA pottery is homogeneous. The Kansanshi pottery is an excellent example of one of the many separate pottery traditions that make up the EIA in south-central Africa.

As with all sub-Saharan pottery, the pottery decorations at Kansanshi were made by altering the smooth surface of the vessels. The two basic methods of decoration are by incision (dragging a tool through the clay) and by impression. These two techniques are not mutually exclusive as many an "incised" line may actually have been produced by impressing a tool (a wood or gourd spatula, for example) into the leather hard clay vessel.

As Bisson reports, the Kansanshi EIA Phase 1 pottery, dating to the seventh

century A.D., was decorated with a number of different motifs including guilloche. The Phase 2 pottery dating to the ninth century was uniform: 70% of the sherds were decorated with a guilloche motif. A majority of the Phase 1 pottery that we recovered in the 1979 excavations came from a filled-in well. Fig. 1 and 2 give a good impression of the variety of pottery motifs, including the guilloche, that occurred during Phase 1.

The Phase 2 part of the site is problematic. The area had been cleared by a bulldozer before the workers realized it was a protected archaeological site. It was for this reason the salvage excavations took place. We never discovered a Phase 2 occupation site, but found bits of the Phase 2 pottery exposed by the bulldozer. Most (70%) of this Phase 2 pottery was decorated with the guilloche motif. This motif is so complex and uniform that it is difficult to believe it served as the every-day domestic ware. Since this pottery was found in association with copper-smelting furnaces, there is the possibility the pottery represents a specialized ware for copper workers. Fig. 3 illustrates the complex and beautiful Kansanshi Phase 2 pottery.

This pottery is unique to south-central Africa. Whereas most EIA pottery is fairly thick, the phase 2 pottery is thin, and the clay had been tempered with a large amount of mica. Almost all the sherds we recovered were black, but the mica would sparkle when in the sun. The guilloche motif was produced using a variety of tools, but one of the most common methods was bangle impressed. This tool leaves a series of tiny, horizontal lines in the bottom of the trough. As a neophyte potter, I am able to reproduce incised lines, comb-stamping, triangles etc., but the guilloche is too difficult for me to reproduce at this time. I would be happy to hear from other archaeologists who are also potters wishing to work on replication studies.

The importance of the Kansanshi pottery is that it refutes the common assumption that African EIA pottery is simple. Garlake (1973: 130) considers the guilloche motif on soapstone bowls at Great Zimbabwe as evidence for Arab trade. He maintains the guilloche motif is too difficult of a design for independent development in Africa. Garlake is wrong. The guilloche was independently developed by Africans at Kansanshi at least as early as the seventh century if not earlier. The motif of the sherd illustrated in Fig. 2b is not totally guilloche, it is actually a "broken" guilloche. This sherd is still expertly done, but we can see here, the potter has not achieved a complete guilloche. By the time of Phase 2, all the guilloche motifs are complete guilloches. The guilloche motif was independently developed in south-central Africa.

The EIA pottery throughout south-central Africa is complex. Archaeologists have generally used simple classification systems to describe the pottery, and this has resulted in the false belief that the pottery is homogeneous. The Kansanshi pottery stands as testimony to a high level of design concept and craft adroitness. This pottery is as beautiful as any pottery in the world at that time. Unfortunately, south-central African EIA pottery is not amenable to drawing and photography, but that is no reason not to fully appreciate its uniqueness. African pottery generally, and EIA pottery specifically, has a tactile beauty that does not easily translate to other forms of communication.

Early Iron Age pottery is not homogeneous representing some kind of super tradition. EIA pottery is as diverse as the African cultures of today, and if archaeologists are to come to an understanding of the African past, that diversity must be accounted for and appreciated.

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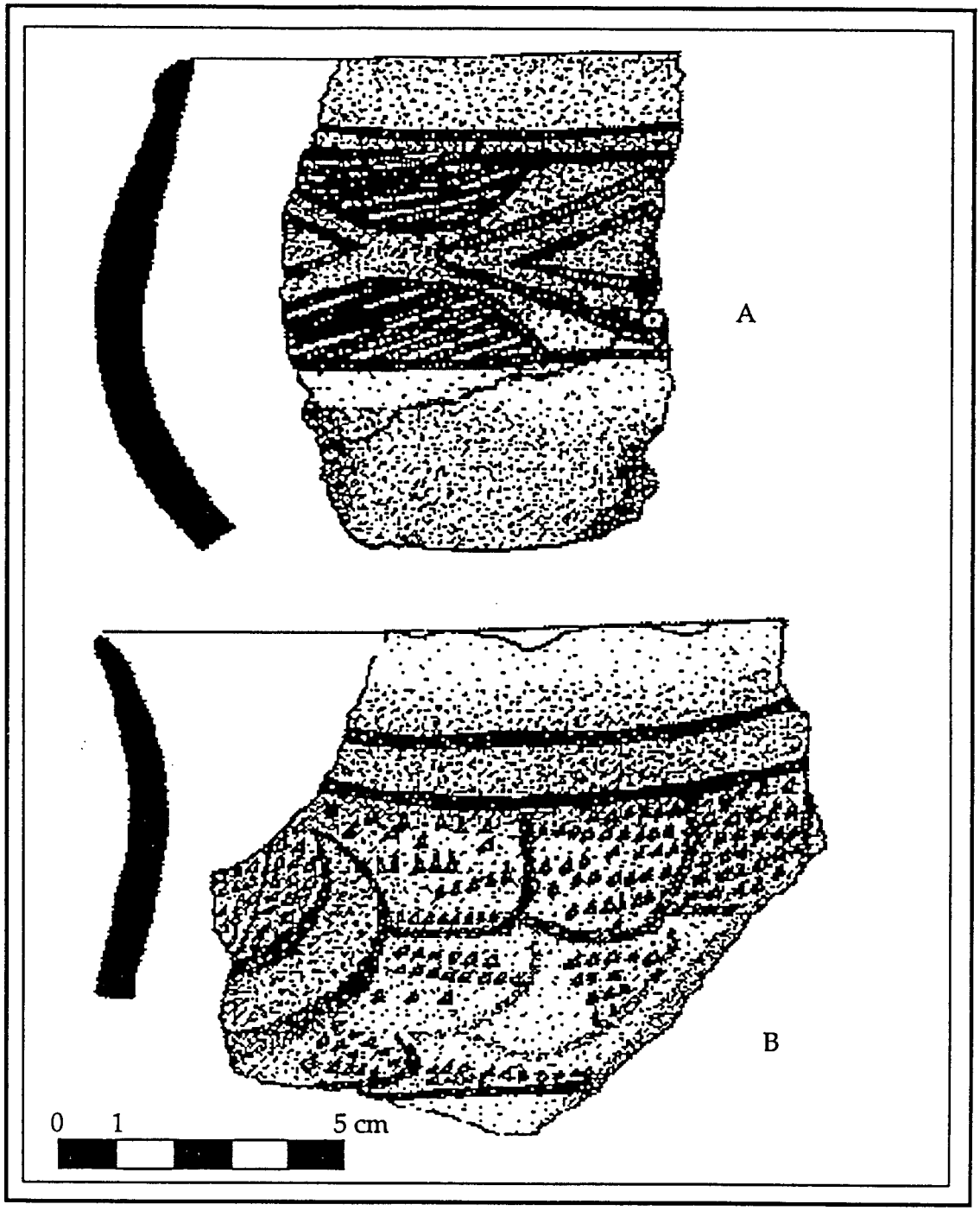

Fig. 1. Kansanshi EIA Phase I Sherds.
A. Bangle impressed borders with pendant loops and triangle zones.
B. Incised borders with incised loops filled with triangle comb-stamping.

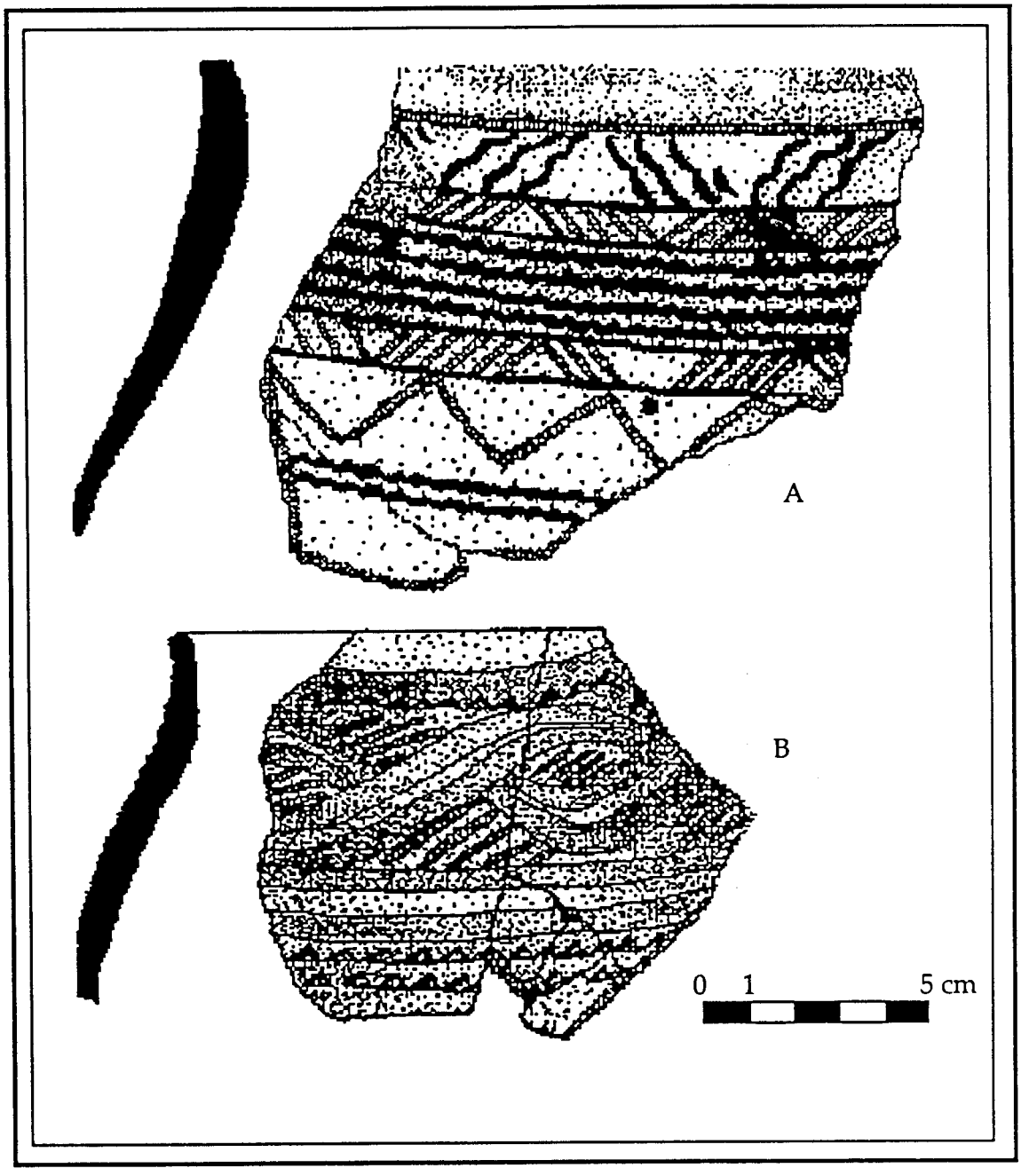

Fig. 2. Kansanshi EIA Phase I Sherds.
A. Wavy line impressed with bangle impressed diagonal lines and zig zag.
B. Bangle impressed guilloche with borders of triangle punctuation.

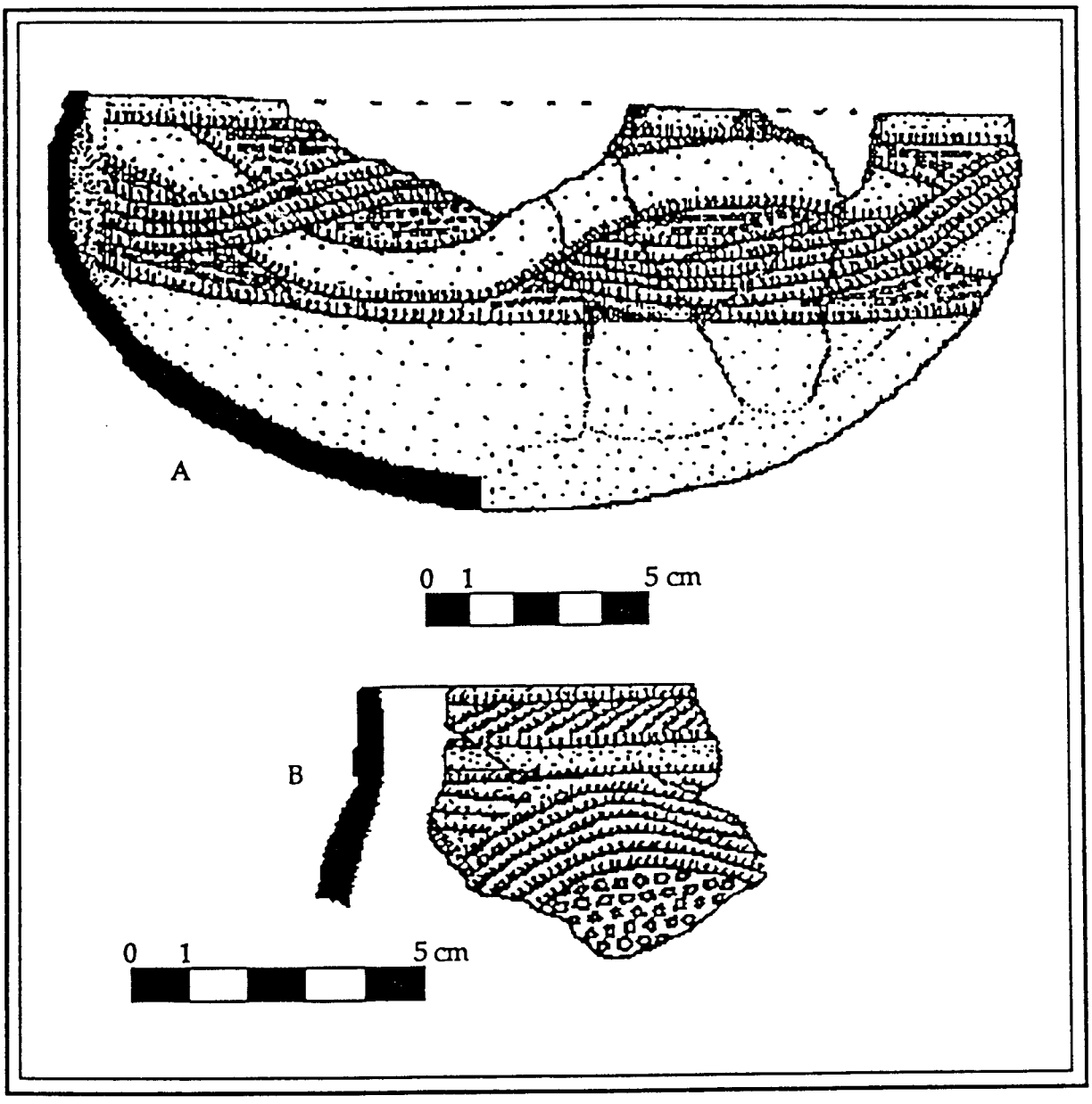

Fig. 3. Kansanshi EIA Phase I Sherds.
A. Bangle impressed borders with bangle impressed guilloche with comb-stamping.
B. Bangle impressed border of diagonal lines, and bangle impressed guilloche with comb-stamping.

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PUBLICATIONS

Items for Review

The following volumes have been received by the editor and are available for review:

Pottery from the Begho-B2 Site, Ghana (1989, L, B, Crossland). Calgary: the University of Calgary Press.

Contribution to the Archaeozoology of Central Africa (1989, W. Van Nees). Tervuren: Royal Museum of Central Africa.

Oura, Ville Perdue (Tchad) (1989, J.-P. Lebeuf et J. H. Immo Kirsch). Paris: Editions Recherches sur les Civilisations.

Please contact the editor if you are interested in reviewing any of these monographs. (Your reward, apart from whatever heaven may bestow upon you, shall be ownership of the book.) Given the nature of this periodical, lengthy reviews are discouraged; 300–500 words will suffice.

MEETINGS

Communique from the International Forum in Honour of Professor Thurstan Shaw

20–23 November, 1989
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Preamble

An international conference in honour of Professor Thurstan Shaw, convened on the occasion of this most distinguished scholar's 75th birthday, was held from Monday, 20 November to Thursday, 23 November, 1989, at the Department of Archaeology and Anthropology, University of Ibadan. Participants, mainly Africanists and Cultural Resource Managers were drawn from several African countries (including Nigeria), Britain, Europe, and the U.S.A.

Objectives

The forum's main objective was to review African cultural resource management disciplines, in particular archaeology, in the light of the work of Thurstan Shaw and to assess their role (actual and potential) in the development of African countries, especially those of West Africa. To this end, the principal subjects and discussions were:

- Review of the progress made in African Cultural Studies over the past fifty years under several subthemes: prehistoric archaeology, ethno-archaeology, ecological archaeology, art, and material culture.
- Review of the relatively new practice of public archaeology and cultural

management in Africa, focussing especially on museums, resource conservation and development, communication of cultural information, and cultural ideology and practice, to determine the core components of Africa's indigenous material culture, especially the technological and economic resource base, and evaluate how these may be utilised for promoting socially healthy development of African peoples today.

Recommendations

Following on the presentations and discussions, the participants in their final session on Thursday, 23 November recommended as follows:

1. That students of African societies and cultural history should emulate Professor Thurstan Shaw's example and style, hallmarks of which were:
   - genuine interest in the people's past;
   - living among the people and identifying fully with them and their aspirations; and
   - total commitment to full and detailed publication of research findings and the utilisation of the results for improving the people's lot.
2. That African governments take concrete steps to properly situate African cultural studies within a resource management context so that such studies can begin to engender a culturally based development vital for Africa's survival.
3. That, following on the above, African governments, guided by and with the active involvement of their cultural resource experts, should formulate and implement cultural policies whose goals include educating African peoples as to the vital importance of preserving, conserving and developing cultural resources, enacting appropriate laws to protect cultural resources and retrieving those artefacts illegally removed overseas in precolonial and colonial times. The blueprints of such cultural policies should be concerned *inter alia* with:
   - The introduction of cultural resource subjects (especially archaeology, ethnography, and material culture) into the social studies curriculum right from the primary and secondary school levels, in such a manner as to enable African peoples to identify themselves culturally, their cultural properties as well as the importance and role of these properties for fostering healthy, socially rounded technological development. To this end, it will also be necessary to introduce photography, surveying, and draughting, all vital to the historical sciences like archaeology, very early on in the school curriculum in such ways as to begin to significantly reverse the present situation where African countries are totally dependent on the developed world, for the training, knowledge, and the hardware equipment for these.
   - The protection of African cultural and natural landscapes from the dangers of environmental degradation through atmospheric and water pollution, toxic waste dumping, and deforestation, and the conservation and proper development of these.
   - The protection of Africa's cultural identity, personalities as well as properties, through the enactment of appropriate laws; the employment of the right calibre of well-trained security personnel; as well as the provision of and/or strengthening of security at the museums, borders, special parks, and reserves (e.g., zoos, gardens, parks, shrines, monuments, forest reserves).
   - The intensification of efforts to contextualize African museums so that they relate meaningful to African peoples' cultural and material environments, reflect their aspirations and help find

answers to a varied range of problems.

- The provision of industrial technological research programmes, derived from and centered around well-designed archaeological and historical research whose prime objectives are the identification and study of the appropriate technological systems achieved at specific times in the African past, to determine how these can best be improved on without disrupting Africa's valued social, cultural, and natural entities.

4. That, where central bodies and agencies are not already existing, such be set up and, where such are already in existence as in Nigeria (e.g., the Raw Materials Research and Development Council of the Ministry of Science and Technology; Federal Environmental Protection Agency of the Works Ministry), those employing the right kinds of personnel drawn from the social, historical and environmental, engineering and technological sciences, be mandated to collaborate with the relevant ministries and institutions (Science, Technology and Social Science); to conceive and execute research programmes in the fields of cultural resource development and environmental impact and vegetational history studies.
5. That for African countries to achieve self-reliance in their development drives they should:
   - Step up efforts to foster strong cooperation and collaboration in cultural resources studies and management between the institutions concerned within the region and subregion—especially in the areas of student and staff exchange, fieldwork, and training programmes;
   - Sponsor and give strong financial support to regionally and subregionally focussed and coordinated material culture research projects, workshops, and seminars;
   - Through their respective ministries of Information and External Affairs, as well as the cultural division of O.A.U. (Organisation of African Unity) and appropriate subregional bodies as well as UNESCO, provide for effective African participation in the meetings of the Pan African Association of Prehistory and Related Studies, related subregional associations like the West African Archaeological Association and the World Archaeological Congress. African countries, and in particular, the Nigerian government, which kindly hosted this forum, are urged to make sure that they are well and effectively represented at the 2nd World Archaeological Congress which is to take place in Columbia in September 1990, so that the anti-aparthied stance that was taken at the first meeting at Southampton in 1986 can be protected and further consolidated;
   - The Nigerian government should, as a matter of priority, be properly and fully briefed about the pending publication of the proceedings of the last Congress of the Pan African Association of Prehistory which was held at Jos in December 1983, so that the government can arrange for its publication and so discharge its responsibility to the international community in this regard.
6. That there is need for Africanists to meet regularly to review progress and chart future lines of work that such meetings should as much as possible take place on the continent.
7. The delegates were particularly impressed at the amount and quality of archaeological research being conducted in many African nations. Finally, the Conference expresses its gratitude to those who have organized and sponsored its work in particular the Federal Government of Nigeria, for its very generous grant which made it

possible for the Conference to take place.

Chairman Local Organizing Committee, for and on behalf of Conference Delegates

Biennial Conference of the Society of Africanist Archaeologists (SAfA)

The Society of Africanist Archaeologists (formerly called the Society of Africanist Archaeologists in America, SAAAM) will hold its biennial meetings at the University of Florida, Gainesville, USA, March 22–25, 1990. Included are four general sessions (Protohistoric and Historic Archaeology, Method and Theory, Middle Stone Age, Later Stone Age, Neolithic and Complex Societies) and seven symposia, as follows:

- Ecology, Archaeology and Actualistic Studies in Central Africa (organized by A. Brooks and J. W. K. Harris)
- Archaeology and Actualistic Studies Bearing on the Behavior of Early Hominids (organized by R. Blumenschine and J. W. K. Harris)
- Archaeological and Environmental Contexts of Early *Homo sapiens* (organized by S. McBrearty)
- The Evolution of African Pastoralism (organized by A. Smith)
- Art, Archaeology and the Art Market (organized by H. Drewal and K. Ezra)
- The Post-Pleistocene Prehistory of Atlantic Central Africa (organized by B. Clist and R. Lanfranchi)
- What is the Future of Archaeology in Africa? (invited symposium and workshop)

Over one hundred participants are scheduled for presentations; all sessions are general (no concurrent sessions). For further information, contact Peter Schmidt or Steven Brandt (organizers), University of Florida, Gainesville, FL 32611, USA.

Human Impact and Abrupt Climatic Changes

A symposium organized by the African Subcommission of the INQUA Holocene Commission
Sfax, Tunisia, March 20–25, 1990

The aim of this symposium is to provide an interdisciplinary approach for reconstructing paleoenvironments of the last 20,000 years on the African continents. It should be focused on the distinction between the effects of abrupt climatic changes and those of human impact. Evidence of fire, deforestation, cultivation, other human activities, and natural changes that are climatically induced should be approached through various methods and techniques, such as archaeology, sedimentology, geochemistry, paleobotany, paleoecology, and hydrology.

For further information, contact:

R. Bonnefille
Directeur de Recherches
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Case 907
13288 Marseille Cedex 9, France

or

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VA 723
Faculté des Sciences
Batiment 504
91405 Orsay Cedex, France

(The above are presidents of the African Subcommission, and they can provide more general information on its activities.)

Annual Meeting of the College Art Association

Washington, DC, USA
February 21–23, 1991

Call for papers: panel on "West Africa BP 10,000 ± 250: The Disciplines Meet"

The scope of the panel would include any body of material culture coinciding or overlapping with the period from 750–1250 A.D. The panel is conceived as a discussion between representatives of various disciplines concerned with prehistoric material culture. Participants in anthropology, archaeology, history, etc. will be invited as guests of the College Art Association, in order to create a dialogue with art historians. The hope is that the perspectives of each discipline will act to enrich and more sharply define those of the others. We will focus on recent projects as well as urgent archaeological needs.

Please send proposals for papers by May 31, 1990 to:

Frederick Lamp, Curator
The Baltimore Museum of Art
Art Museum Drive
Baltimore, MD 21218 USA

Prehistoric Art and Environment of the Sahara: Data and Interpretations

An international colloquium organized by the Center for the Study of African Archaeology and the Museum of Natural History, Milan.

Milan, Italy, October 24–27, 1990.

Registration forms are due by the end of March, 1990.

For more information, please contact:

Françoise Gervasi
Centro Studi Archeologia Africana
Piazza Mirabello 4
20121 Milan, Italy
☎ 02/6572968, Mon.-Fri.,
1500–1900 hours