

DEKPASSANWARE

Early Iron Age Site

in the Bassar Region

of Northern Togo

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This presentation is largely the result of research from January to July 2002 in the Bassare Region of Northern Togo. It was funded by a generous Fulbright Grant from the Council for the International Exchange of Scholars (CIES) through its Regional African Research Program. Bassar is located 230 miles from the coast, about 55 km northwest of the large commercial town of Sokode. The core of the Bassar region consists of four towns arranged in a quadrilateral: the towns of Bassar (SE), Kabu (NE), Bandjeli (NW), and Bitchabe (SW). At contact, Bassar and Kabu were chiefdoms. Regional specialization occurred in the western region: Bandjeli (smelting), Bitchabe (smithing), and to the south of Bitchabe, Dimuri (charcoal making). Smelting and smithing villages were also associated with the two chiefdoms in the eastern region.

**IRON MOUNTAIN (Djowul) ABOVE BANDJELI
(facing northeast)**



Bandjeli was the principal iron production center in the Bassar Region during the Later Iron Age (post-1300 A.D.) and is located about 30 km northwest of Bassar. The west side of Djowul Mountain is made up of almost pure hematite (69% iron). Miners simply dug out the ore in the form of rocks and boulders from the hillside. Women did much of the mining in Bandjeli using metal picks with wooden handles.

2+ m Tall Bandjeli Furnace

Note Tuyere Holes at Base



This is an example of the natural draft furnaces used in the Bassar Region during the Later Iron Age. The technology probably diffused from the north where such furnaces go back earlier in time, such as in Burkina Faso. The tuyere vents for controlling air flow are visible at the base. The furnace was loaded from the top via the ladder. The furnaces at Bandjeli averaged between 2 to 2.5 m in height. When the iron bloom was produced at the end of the smelting process, which took about 2 days, the bloom was removed from the base of the furnace via a hole that was sealed up during the smelt. Wood charcoal fuel was used to smelt the iron ore which was broken up into pea to nut-sized fragments prior to being placed in the furnace for smelting.

Large Slag Mounds of Later Iron Age (16th -18th c.)



Bassar became one of the major centers of iron production in West Africa during the Later Iron Age. At least 80,000 cubic meters of slag are present in the region, and at least 14,000 cubic meters are at the one site of Tchogma (north of Bandjeli) which has 180 slag mounds. At least 20 of the mounds average 30 m in length, 20 m in width, and 5 m or more in height, as shown in this photo. Slag was not recycled in the smelting process so the volume of slag mounds can be used to estimate production (see de Barros 1986 in the journal *Africa*).

Tall Furnaces Near Bassar

(note tuyere holes near base)



The natural draft furnaces in the eastern part of the Bassar region were much larger than at Bandjeli. They ranged between 3.5 and 4 m in height. The larger furnaces were apparently necessary to produce the same sized iron bloom as at Bandjeli (which weighed about 30 kg) using a much inferior iron ore that was only 35-45% rich in iron. It also took at least 3 days for the smelt. Many of these large furnaces are still present in the vicinity of Nangbani about 3 km northeast of Bassar. Ten of them were recently provided some protection from the elements through a grant from the American Embassy to preserve cultural monuments in Africa. A cement ring was constructed around the base of the 10 best preserved furnaces and a termite-treated, wood frame shelter was erected with an aluminum roof.

Traditional Smithing Workshop at Bitchabe



This is a reconstruction of a blacksmith's workshop like the one the famous Nakpane from Bitchabe used well into the 1970s. The quartzite stone anvil is implanted deep into the ground. The stone is quarried from the nearby mountains. The bellows are made from animal skins set upon a wooden frame. Air is compressed through a clay-mixed-with-straw tuyere that projects into the interior of the smithy.

Use of Stone Hammer and Anvil

Blacksmith Djato from Bidjobebe



A smithing team consisted of three individuals: 1) the master smith who positioned the metal being worked and gave directions to the one using the stone hammer (like the man on the left); 2) the hammer man using the large quartzite stone hammers as shown here; and, 3) a young man operating the bellows (like the man on the right). Djato from Bidjobebe first guided the author to visit slag mounds in 1981. Here he demonstrates in 2002 how he used to wield the large hammers when he was part of a blacksmith team. The fellow on the left is Koku Tagareb, a friend and widely respected man from Bandjeli, who has offered valuable assistance to the author since 1981.

Iron Bloom Crushing Mortars (near Bitchabe)



Iron bloom crushing mortars. In the Bitchabe region, a major center that specialized in smithing, there are numerous sites like this one that were used intensively during the Later Iron Age to crush iron bloom to separate out the remaining slag from the iron pellets in the bloom. This was often done by the smith's wife.

Stone Bloom Crusher and Mortar



A large, roughly spherical, quartzite stone was used to crush the larger pieces of iron bloom, creating the large holes seen in this and the previous slide. The smaller holes were the result of using small hand-held hammers to break up smaller pieces of bloom

Quartzite Stone Hammers



Examples of the quartzite hammers used to do the roughout work in smithing, particularly during hoe production. There were actually four different types of stone hammers that had different end shapes for different stages of the roughout work.

**Hoe, Hoe Preform (*lukopile*), Iron Hammer
Poker (*n'lo*) and Handler (*kebao*)**



The upper row shows a roughly finished metal hoe disk, an iron preform (*lukopile*) from which hoes and other tools can be manufactured, and a metal hammer used for finishing work on hoes and other metal tools. Below that, from above to below, are a poker (*n'lo*) and two views of the tongs (*kebao*) used to grasp the iron preform or tool during smithing.

View of Mt. Bassar From Dekpassanware [facing south]



The site of Dekpassanware is located 12 km slightly northwest of Bassar. The mountain to the right is Nafi, a major source of quartzite stone for the smiths of Binaparba, a smithing village that is part of the urban agglomeration of Bassar town. The site of Dekpassanware is about 70 acres in size based on the distribution of ceramics associated with its period of occupation, i.e., ca. 800 B.C. to A.D. 150. Ironworking shows up between 400-200 B.C. The archaeological deposits typically range between 6 and 7 feet in depth in the heart of the site.

Excavation Crew Dekpassanware 2002



1 x .5 km Grid of Surface Pottery Collections



A total of 116 ceramic surface collections spaced 50 to 100 m apart were collected to help assess the boundaries of the site of Dekpassanware. The pottery was collected from circular areas. The types and proportions of pottery types were determined as well as surface sherd densities.

GPS Data Points Using Local Base Station



The team used Trimble GPS Dataloggers to record the field locations of major footpaths, ceramic surface collections, and significant surface artifacts. The data from the rover unit seen here was then differentially corrected in Pathfinder software using data from a base station set up at our home base. This base station was tied into a German survey point in Bassar. A laser total station was used to shoot in excavation units and to map the topography of the site and vicinity. Using walkie talkies we were able to shoot points as far away as 400 m. The total station data was tied into a permanent cement datum created on site and the GPS data and total station data were later combined to provide an overall site map.

Aladji's Iron Bracelet

Bracelet No. 1



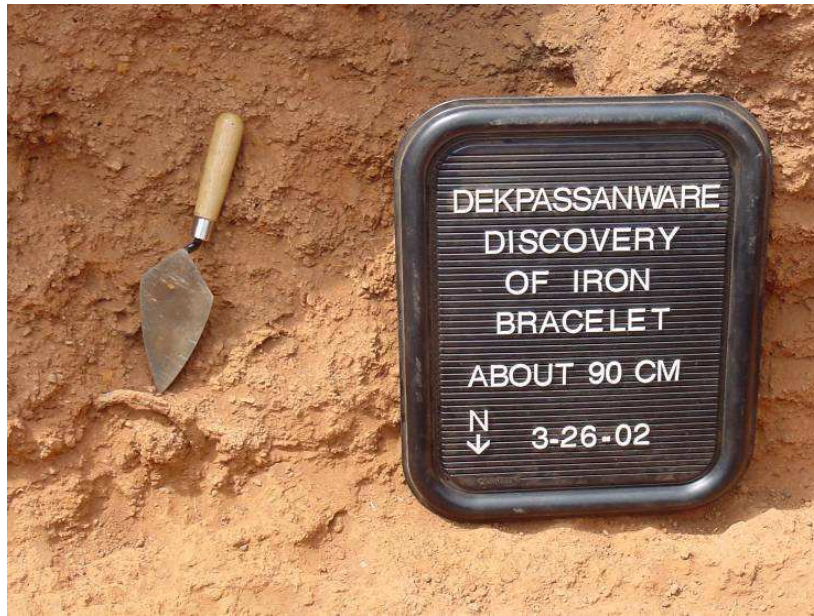
Early on, this bracelet was presented to the project team by Mr. Aladji. He found this bracelet while digging up soil for house construction.

Aladji's Bracelet Found Digging Borrow Pit



Yakubu is standing in the partially filled in borrow pit Aladji created when digging up soil for house construction. The bracelet was found in the left hand side of this pit.

Close-up of First Bracelet Find



Based on where Aladji indicated, we dug a trench attempting to relocate the zone where Aladji had found the bracelet. At a depth of 90 cm, we hit another bracelet as indicated by the pointed end of the trowel.

Discovery of Child Pot Burial



The initial trench (where the woman's feet are located) was expanded into a 2 x 2 m unit. Here the team discovers the top of a pot (below trowel) that turned out to be a pot burial at a depth of 77 cm.

Present-Day Konkomba Pot Burial

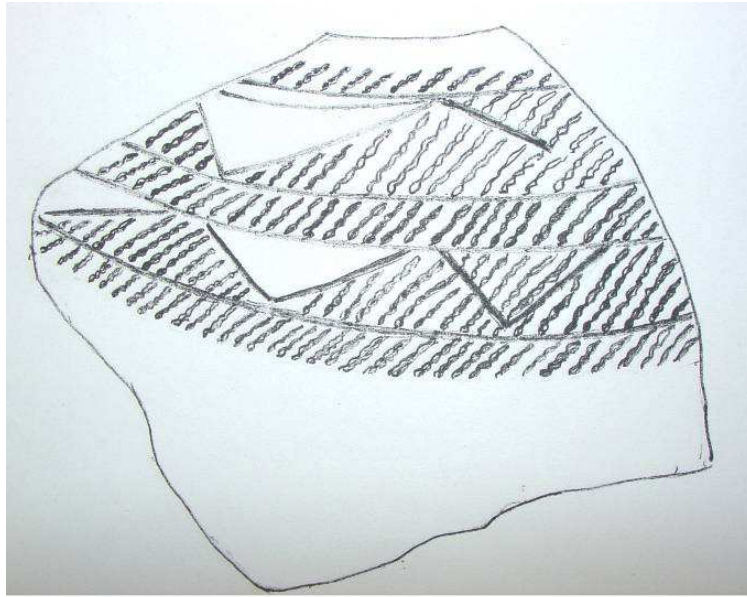


Juvenile Remains Under Pot



When the “pot” was removed, it turned out to be a large sherd from a large pot with the cranial remains of a possible juvenile underneath. Most of the cranial remains were missing and they were in very bad shape. They were consolidated with toluene to allow their removal.

Pot Burial Sherd Decoration



The basic decoration styles on this large olla consist of roulette decoration outlined by incised patterns.

Disturbed Burial with Iron Anklet



Below the first bracelet encountered in the trench, a second bracelet, or rather anklet, was found just below that on the leg of a burial. These bones were encountered about 10-15 cm below the level of the top of the pot burial which was found at 70 cm further to the west.

Child's Anklet



About 25 cm beneath the pot burial (77 cm) were additional bones with a small bracelet or anklet on what is probably a child.

Overview of Communal Tomb



This overview shows the larger and small anklets. The pot burial has been removed. In the lower left is a skull that was accidentally damaged during excavation (see below).

Discovery of Skull in Unit 20



The original trench is in the center. While excavating to expand the unit to the north a skull was unexpectedly encountered at a depth of 70 cm. It may have been buried in a sitting position.

Skull & Necklet Ready for Removal



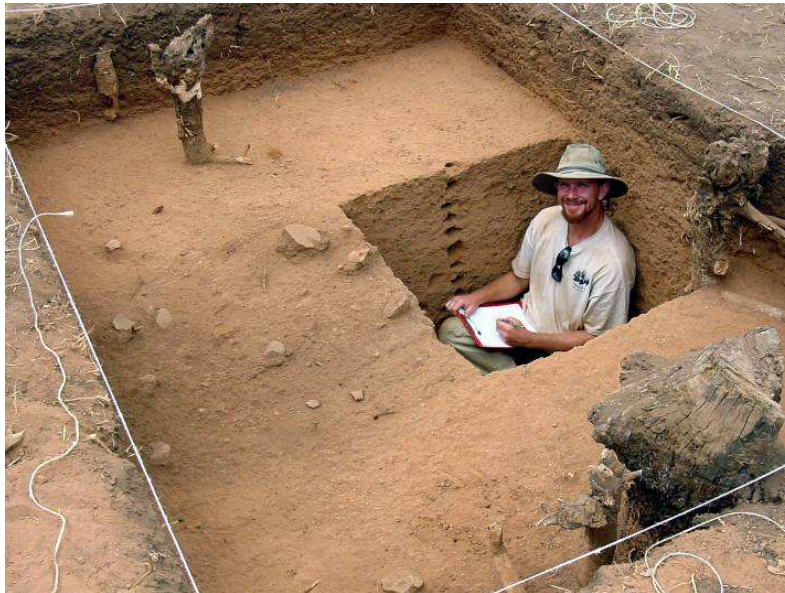
The skull was covered up for excavation at a later time. Unfortunately, a mouse decided to make a nest out of the skull and ate away at the original whole expanding it greatly. The smaller hole below the large mouse hole may be the result of trauma experienced while the individual was alive. The face and teeth were in a very fragile condition and were left in their matrix to prevent further damage.

Close-up of Necklet



Burial Block

Chris Brandt Taking Munsell Soil Samples



In another area of the site, Unit 13 was excavated and came down on a human femur at a depth of 130 cm. It was then decided to excavated a 3 x 2 m block to see what was present in this area. Here the excavation is down to about 50 cm. One can see where the tomb was excavated by the darker backfill material that contains large rocks as well. Chris Brandt is taking Munsell soil color samples at 10 cm levels in Unit 13 before further excavation is conducted.

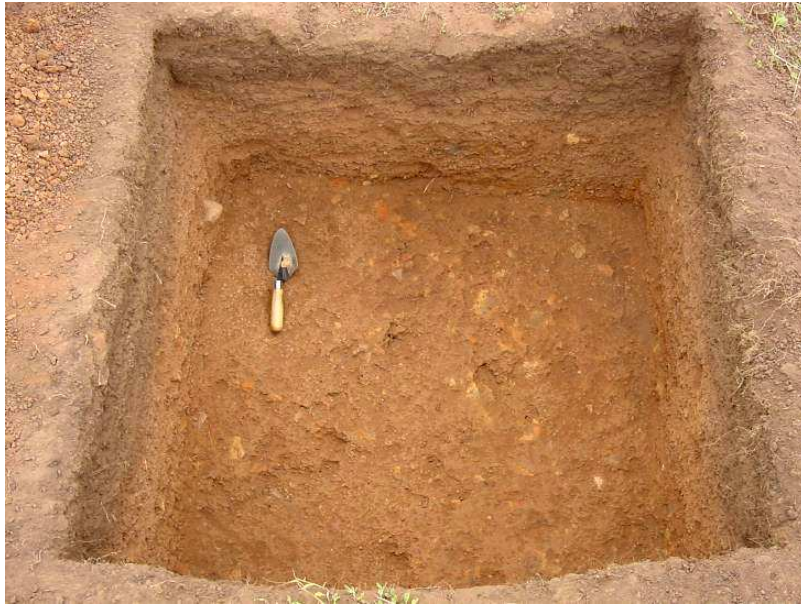
Burial Block was a Bust

Most of Skeleton Missing



In the end, the entire 3 x 2 m unit yielded only a collection of seven leg bones. The original femur, partially damaged during excavation, is on top. No grave goods of any kind were found.

Burnt Daub Remains in Unit 36



Unit 36 was excavated toward the very end of the field season in an area containing a high density of small pottery sherds suggesting a midden area. At a depth of about 50 cm a dense layer of burnt daub was encountered.

Close-up of Burnt Daub



Overview of Unit 36 Showing Ash and Cow Mandibles



Basin Metate and Jar Rim in Unit 36



Unit 36 Soil Column – Base Depth 170 cm Note Ash Lens



Unit 36 was one of two trash dumps that provided a series of radiocarbon dates indicating Dekpassanware was occupied from ca. 800 B.C. to ca 150 A.D. with ironworking showing up between between 400 and 200 B.C. Flotation of charred plant remains revealed the presence of domesticated millett and cowpea.

Unit 23 North Wall Thick Ash Lens



Units 12 and 23, in another part of the site, also encountered what appeared to be a trash dump with abundant ash, fragmented cow bones, pottery sherds, and other artifacts. No burnt daub was encountered here. Radiocarbon dates from Unit 23 and from Unit 36 provided roughly identical sequences of radiocarbon dates indicating occupation between 800 B.C. and 150 A.D. with evidence for ironworking (tuyeres, ore, slag) beginning between 400-200 B.C. Most of the bones were those of domesticated cattle and goat/sheep.

Uncovering the Lukomandjole Iron Bloom Crushing Mortar Site



Earlier, we saw iron bloom crushing mortars dating to the 17-20th centuries near Bitchabe, about 12 km south of Bandjeli and 20 km west of Bassar. These sites are known as *lukomandjole*. This lukomandjole is associated abundant slag and tuyeres and at least one smithing anvil associated with hammer scales and microspatter. These mortars were entirely buried when the site was first discovered. Some digging in 1982 uncovered four mortars. A more extensive removal of surface dirt in 2002 revealed five more, including the two hemispherical ones at each end of the metric tape laid out in the photo.

Close-up of the Mortars Discovered in 1982



Close-up of Mortar Discovered in 2002



Smithing Anvil



Note what seems to be a pitted surface in the right central portion of this anvil stone. A study of soil samples near this anvil produced abundant hammer scales and microspatter. The anvil is just north of the lukomandjole shown in previous photographs.

Closer View of Pitted Anvil



Possible Portable Anvil



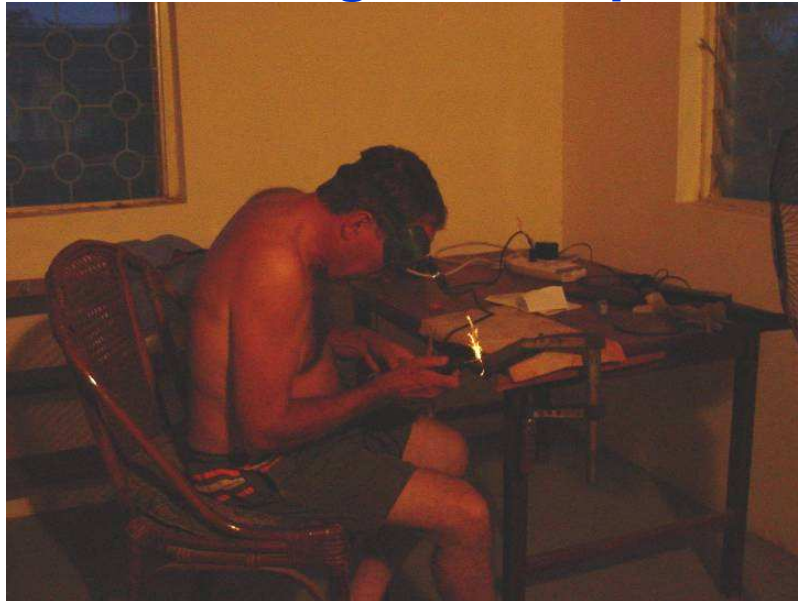
It is hypothesized that portable anvils may have been used at Dekpassanware as well. Attempts to find hammers scales and microspatter were only mildly successful in the vicinity of these stones. A major problem is that farmers have often moved them from their original location.

Bright Mica Ware Sherds



In the 1980s, the author developed a ceramic sequence for the Bassar region. Unless the ethnic affiliation was clear for a particular ware (usually recent wares), they were simply described as they appeared. This ware was tentatively named Bright Mica Ware as it has considerable muscovite mica in the paste and on the surface. It is the dominant ware throughout the occupation sequence from 800 B.C. through A.D. 150. Petrographic thin sections show this pottery was not made in the Bassar region, but rather to the east in territory now occupied by the Kabiye (Togo).

Using Rotary Drill to Obtain Metallurgical Samples



One of the objectives of the research was to collect ore, slag, iron tool and bloom samples from Dekpassanware and from late 19th –early 20th century contexts in Bitchabe so the samples could be compared for differences in metallurgical techniques. The Later Iron Age used natural draft furnaces, whereas it is clear from the paucity of furnace remains in the slag deposits that they did not do during the Early Iron Age at Dekpassanware. They probably used small, bellow-driven furnaces. Here the author is using a rotary drill to obtain samples from tools and bloom that had to be returned to their owners.

Close-up of Bracelet No. 4 (Near Units 21 and 22)



During the first week at Dekpassanware, several farmers brought iron bracelets to show me that they had recovered while farming over the years. This one was the most complex with differential treatment of each arm of the bracelet. All of the numbered bracelets that follow were recovered in this way and offered to the project team in exchange for some millet beer.

Bracelet No. 3

(one of a pair)



Bracelets from Bitchabe

20th Century



Quartz Vegetable Processor

About 6 cm Long



This object was recovered from Unit 12 dug into one of the major trash pits that provided radiocarbon dates for the site.

Bird Effigy Made from Tuff? Found in Small Pot by Farmer



Unfortunately, this “ceremonial” object was not found in situ by archaeologists. A local farmer, Isaaka, encountered it while farming.

Another View of Bird Effigy



Tuyere Frag from Slag Mound from Unit 35 in Industrial Area 2

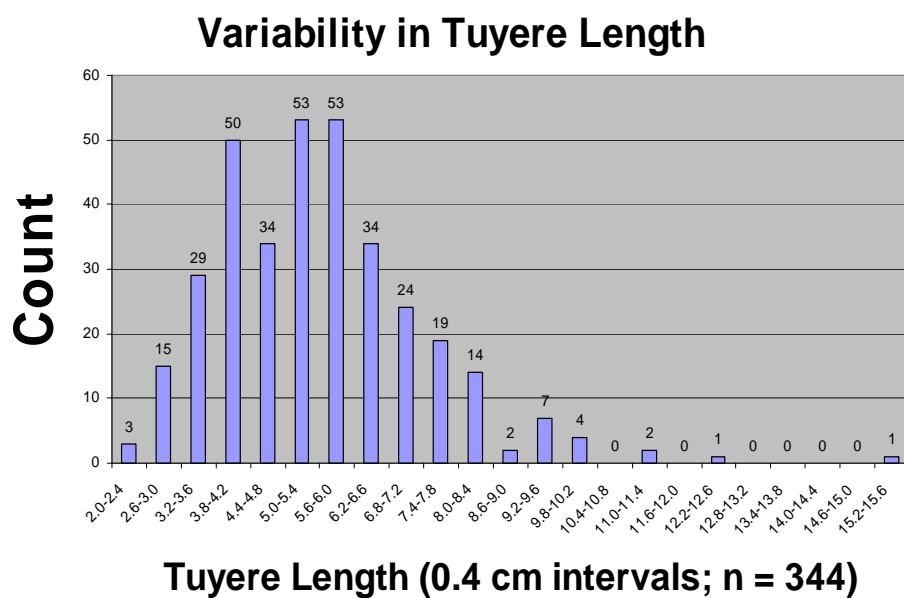


Dekpassanware includes four industrial areas that form part of the larger site and two other such areas a couple of hundred yards away. Tuyeres were probably used for both smelting and smithing.

Tuyere End Sealed with Slag



This tuyere was more than likely used in the smelting process given that its opening is completely closed by slag.



The bimodal distribution of tuyere length may relate to differences between smelting and smithing tuyeres, but more data are needed, especially many of the tuyeres were fragmentary.

Bracelet From Unit 19 Communal Tomb



Child's Anklet from Unit 19 (Communal Tomb)



Bracelet from Unit 38 (Human Remains Present)



Finger Ring from Unit 38



1 of 2 Quartz Beads from Communal Tomb (100 F CFA Coin)



The communal tomb at the site contained the remains of at least five individuals along with iron anklet, bracelet and necklet grave goods. A pair of quartz beads found during the excavation of the tomb may also be grave goods.

Close-up of 2nd Quartz Bead



**Quartz Labret
from Borrow Pit Near Unit 12**



Iron Nail Fragments?



Iron Knife Blade Fragment



Preliminary analysis show that this fragment of an iron knife still contains iron.

Carved Stone Roulette Fragment



This appears to be a fragment of a carved stone roulette tool for decorating pottery.

Large Bright Mica Jar Sherd w/ Incised & Punctate or Cuneiform Decoration

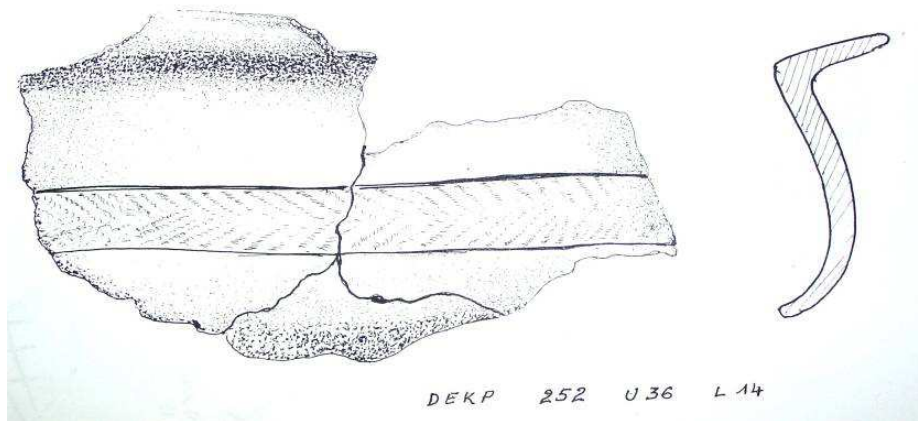


Incised, grooved and roulette decorative motifs were the most common on Bright Mica pottery, but punctate and/or cuneiform decoration is also present on 5-10% of the decorated sherds. This large sherd came from a farmer's borrow pit and led to the excavation of Units 12 and 23 that provided an important series of radiocarbon dates. The next slide shows the probable location of this sherd as part of a large jar.

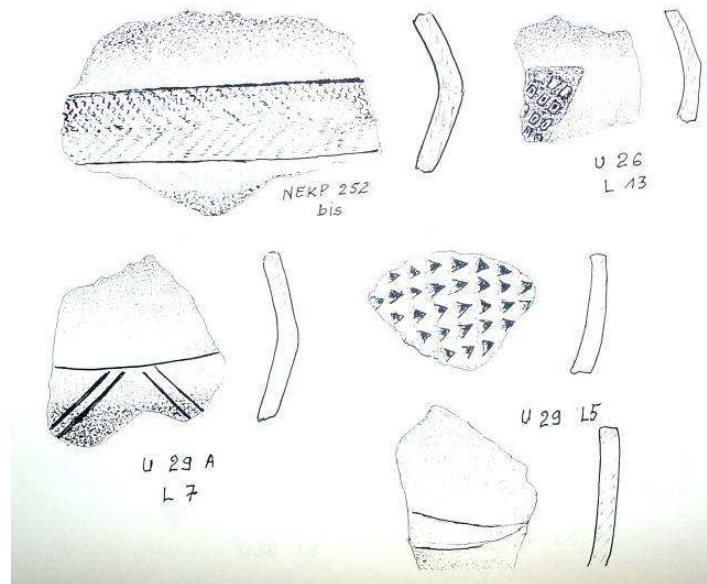
Digging Stick Weight Surface Find



**Bright Mica Jar Sherd w/ Conjoining
Sherds Unit 36 130-140 cm**

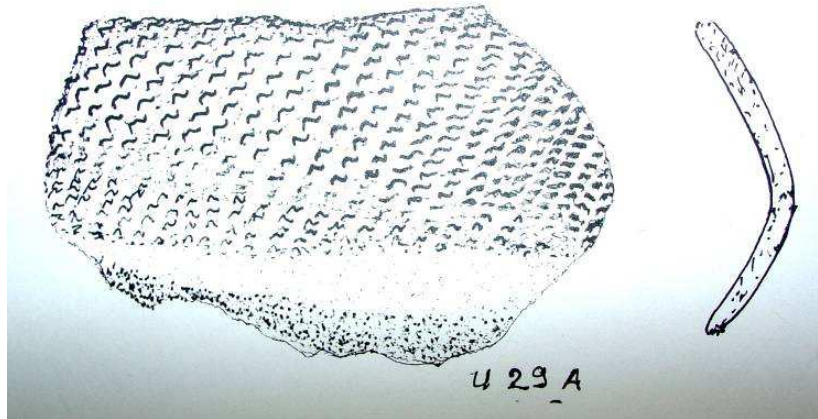


Bright Mica Decorative Styles

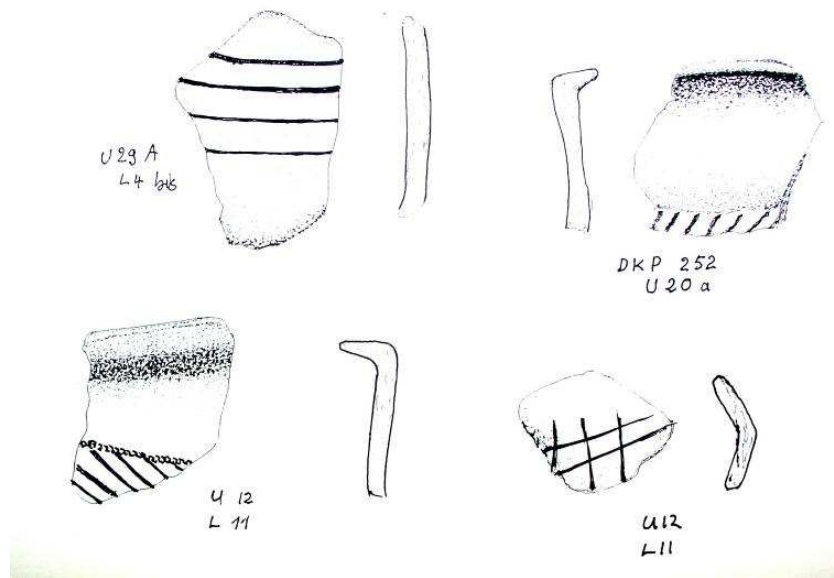


Bright Mica Unit 29A 130-140 cm

L 14



Bright Mica Ware - Various Units



Togolese Archaeology Graduate Students



The following Togolese Archaeology graduate students participated in the excavations at Dekpassanware: Azaratou AWALE, Justin Lehogmba BAKPADA, Kanoga Andre DEFALEOUNA, Sovi KOSSOU, Laurent Bissa BASSASSAGA, Biléghan TIGON, and Kossi N'GIMBE.

M. Gnon-Konde (center)



Professor of Geography, Mr. Gnon-Konde, whom the author has known since 1968, was invaluable in helping with the logistics of this project. His help is very gratefully acknowledged. He is shown here with the Minister of Health, M. Abba and his wife. All are from the Bassar region of Togo.