

EXCAVATION AT OBIMO IRON SMELTING SITE IN NSUKKA LOCAL GOVERNMENT AREA OF SOUTH-EASTERN NIGERIA – A PRELIMINARY REPORT

Abstract

“Every excavation according to scholars in the field of archaeology is destruction”. Once a site is excavated, the sequence of events in that area had been tampered with. No further excavation in that area can give a vivid account and chronology of that area than the first excavation. Hence, any excavation in any area must be carefully and systematically recorded in order to give how ever accurate, an account of that area. It then becomes incumbent on all archaeologists not only to take the excavated materials home, clean them, sort them and analyze them and not dump them in the museums, but write an accurate and concise report on the site based on the excavated materials. If this is not done, the history of the area which the field work sought to reconstruct is seriously tampered with and their posterity maybe in danger. But once the report is put down in the pages of papers, the aims and objectives of the excavation are assumed to have been achieved. It is based on the above discussion that the present writers decided to make an attempt to writing a report of an excavation of an iron smelting site in Obimo – Nsukka located in the Northern part of Igboland, Eastern Nigeria.

Introduction

The issue of iron working not only in Africa, but in Europe had been an age long discussion amongst scholars of early iron technology in the world. Due to this, archaeologists working in both Western Europe and in Africa are making frantic efforts towards the understanding of early iron working technology especially the techniques and apparatus used towards the production of iron. Generally, the production of iron through a highly technological process called smelting involves many techniques starting from the mining of iron ore, to the building of the furnace wall and the tuyere, to the procurement of charcoal and other raw materials used for the blooming or roasting of the ore to produce the bloom which in turn, through the process of smiting, the final product –

metallic tools and implements – used for agricultural and other purposes are produced.

The iron smelting site at Obiomo was one among the various iron smelting sites discovered within the vicinity of Nsukka culture area. Among others are Lejja, Umudu, Orba, Opi, Aku, Ekwegbe, Onyobor, Owere-Elu and Idoha (Fig.1) A thorough investigation into this site showed that the activities there were carried out at the same period with the other aforementioned sites within Nsukka. The only difference may occur in the technique of production as some contain only cylindrical slags, while others contain both the cylindrical and the aggregate slags. A further discussion on this topic would help us to understand the contextual set up of the area under discussion, both socio-culturally, economically and politically. This work does not in detail emphasise the processes or the techniques of iron smelting, but rather, is reporting on the excavation carried out at Ama-Eha Elugwu Obiomo Iron smelting site in 2006 by a team of staff and students of the department of Archaeology and Tourism, University of Nigeria, Nsukka.

Before the invention of iron, man was. The invention of iron only enhanced human existence in the precarious environment he found himself. Man prior to the invention/production of iron has been procuring his living apart from gathering of wild fruits and tubers through the use of stones and woods for defence and hunting of animals. The change from hunting/gathering to sedentary and age of agriculture was a gradual one. The same is applicable to the change from Stone Age to Iron Age. Both were gradual and evolutionary rather than spontaneous and revolutionary.

Conventionally, the period from 1000 BC – 1, 500 BC was referred to as the “Iron Age” or the age of iron as distinguished from the Stone Age. The Iron Age is characterised by many factors of which the most distinguishing are the smelting of iron, production of pottery, domestication of plants and/or animals and some times setting up semi-permanent structures (Semiyu Wandibba, 1998).

Though there was no sharp cut as to when the Stone Age ended, the transition from Stone Age was followed by the Iron Age. The early

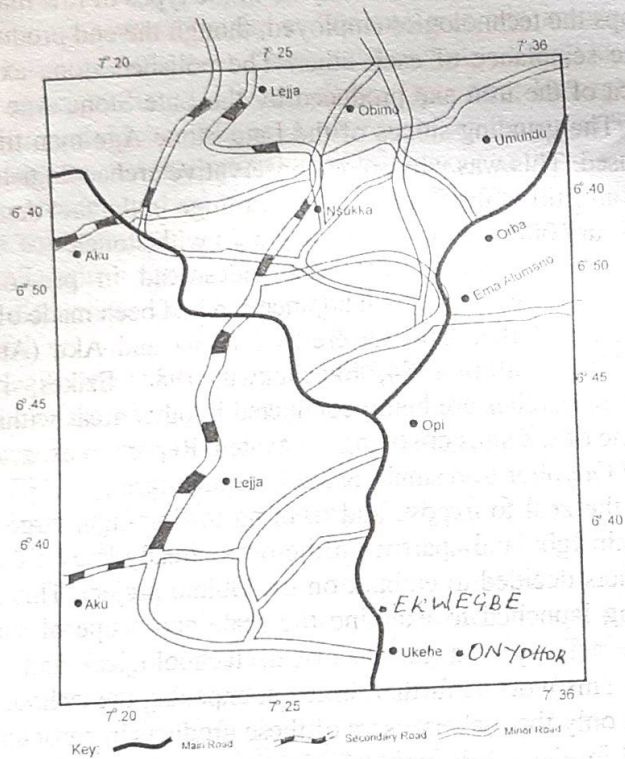
Iron Age is not easily distinguishable from the African Late Stone Age as both are interwoven. The distinction may lie in the types of raw materials used and perhaps the technologies employed, though the end productions may bear some semblance of each other. The polished stone axe was clearly a replica of the iron axe produced by the Late Stone Age /early Iron Age man. The grinding stones of the Late Stone Age man till date are still being used. This was why some conservative archaeologists who believe that we are still in the Stone Age, take refuge in the fact that most of our contemporary buildings are still being built with stones.

Large scale iron-production was widespread in pre-colonial Igboland. Within the Northern Igbo land, mention had been made of sites like Lejja, Umundu, Orba, Opi, Owere-Elu, Idoha and Aku (Anozie, 1979, 1977, 1980, Okafor; 1984, Ekechukwu; 1988, Ezikes; 1998). Currently, more researches are being conducted in other areas within the vicinity and some of the sites are being excavated. Report on excavations at Ekwegbe and Onyobor iron smelting sites are in progress.

It is in the zeal to expose and to bring to lime-light large scale iron-production in Igboland apart from the ones already known that the present researchers decided to embark on the Obimo project. This major research is being launched to examine the scale and scope of such an industrial scale activity and its historical, technological and socio-cultural setting. This work is further aimed at exposing the technological ingenuity of not only the makers/users of these products in particular, but that of Igboland in general. It would further, to some extent throw more light on the technical processes as exposed by the excavation, involved in the production of bloomery slags.

This research in Obimo is an embryonic one and should be seen as such. There is much hope that it would contribute its own quota towards the reconstruction of the cultural history of Obimo people in particular and Northern Igboland (Nsukka) in general.

Fig 1: Map of some iron working sites in old Nsukka division



Source: Adapted from Okafor (1984) but with some Modifications.

Geographical location, climate, vegetation and relief

There is no argument in the fact that the history of an area is best written and studied in its geography. To have a clearer glimpse of an area, one should first and foremost try to have an understanding of the environmental setting of that area. Through the study, one would be able to infer the interactions which must have occurred between the inhabitants and the environment and how the people must have adapted

to such environmental changes through time. In the same token, one would be able to establish the socio-cultural, economic and political impacts the environment must have had on the people.

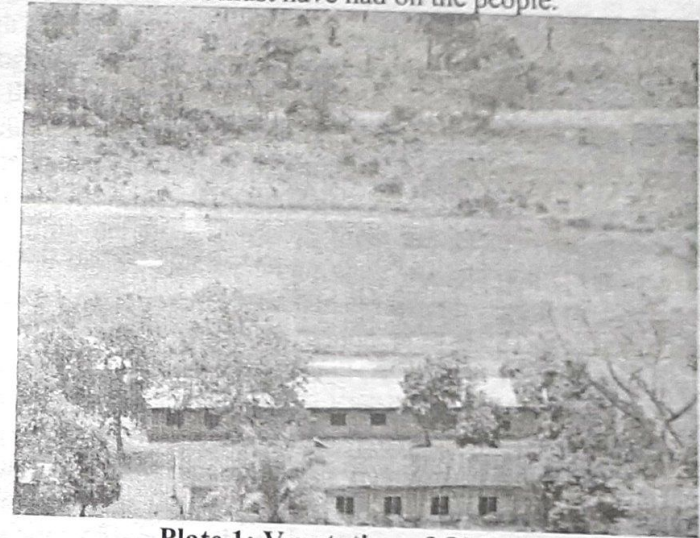
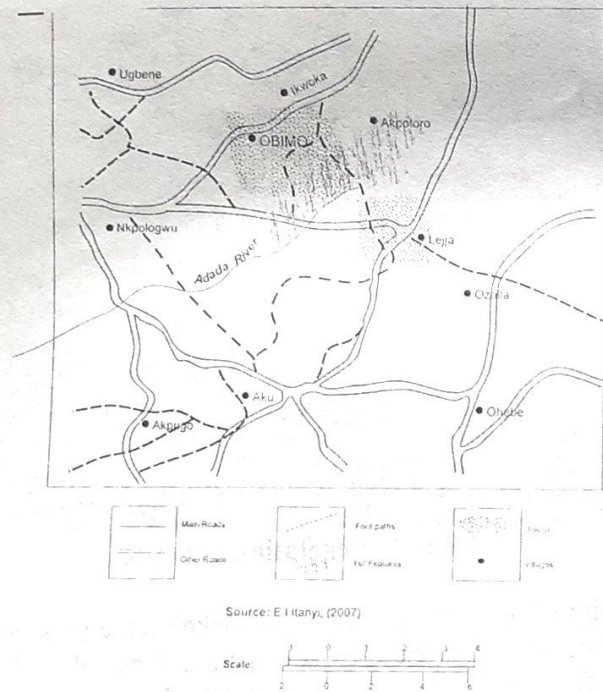


Plate 1: Vegetation of Obimo

Obimo is one of the towns that make up the present day Nsukka L.G.A of Enugu State. The area is surrounded by hills which form the main relief feature of the town. While most of the people live within the valley, others live on top of hills. The area excavated is located within the footh of one of the hills and hence the name of the village – Ama-Eha-Ama-Elugwu. The town is bounded in the North by Ozi-Edm, Nrobo and Abi, in the east by Nsukka urban, in the south by Lejja, Aku and Akpugo and finally in the west by Nkpologwu and Ugbene in Uzo-Uwani L.G.A. The area is about 15km from Nsukka towards Nkpologwu and Adani (figure 2).

Fig 2: Map of Obimo and surrounding towns



Climatically, we have two main seasons in the area. These are the dry and the rainy or wet seasons. The dry season lasts from November to April while the rainy season lasts from April to October. The highest amount of rain fall is recorded in the town between June and July. The end of rainy season when the North-east trade wind begins to set in is marked by heavy thunder storms and lightening. There is usually a dry spell in August commonly called 'August break'. For more information on the climate of Obimo and Nsukka area, see Ofomata (1977).

Vegetationally, Obimo like most parts of Eastern Nigeria that were formally within the tropical rain forest, now lies within what many scholars of geography and environmental studies referred to as "derived savannah". This may have been brought about by both natural and anthropogenic factors. Natural factors include, conflagration, erosion through flooding etc. The main anthropogenic factors are caused by man. This occurs through human exploitative tendencies like hunting, clearing of forests and/or bushes for agricultural and other purposes etc. These activities mainly lead to deforestation.

Within our area of study, there are patches of groves mainly sacred areas which still maintain their natural vegetative cover and within these groves we find certain trees and wild or protected tree crops of economic importance which still give us clues about the beginnings of agriculture in our study area and her environs.. Among them are wild yam (*Dioscorea spp.*), Iroko tree *Chlorophora exilisa*; oil bean tree - *Pentaclethra mychrophila*; kola nut tree - *Cola nitida*; African bread fruit *Treculia Africana*; native mango-*Irvingia gabonensis*; Utazi leaves *Gongronema latifolia*; Okazi leaves - *Gnitum spp.*; star apple - *Chrysophyhim Africana*; achi tree - *Brachystegia spp.*; utu - *Landelphia edulis*, etc. There are also grasses and shrubs of economic importance that grow on top and at the base/foot of the hills. Examples can be given with spear grass, Achara, grass-*Imperra cylindrical*; Ata - *Loudetia spp.*, *Vossia spp.* and *Pennisetum spp.* Most of these grasses are used in roofing their thatched houses.



Plate 2: Traditional architectural building in Obimo showing the roof thatched with grasses

In terms of relief and drainage systems, the town is surrounded by hills and have some rivers and springs that act as their main sources of water for all domestic chores. Being a town in Nsukka, Obimo shares the same relief and drainage attributes. The area is developed over relatively simple geographical formations, ranging from the Awgu – Nadean shale's of lower Eocene (Palaeocene). The area has a high control zone which lies generally over 65 metres above sea level (Ofomata, 1978).

The Obimo hills belong to what geographers and others in related disciplines have referred to as the Nsukka – Udi-Okigwe cuesta (Ofomata, 1978). Among the hills in Obimo are Ugwuezugwu, - the most respected and revered in the town, Ola and Adoh hills – found in the boundary between Nrobu and Ugbene Ajima. Within the town, there are many dry valleys most of which are found within the Ugwuezugwu hills and Iyikutu spring hill that supplies them with drinking water up till the time of writing this report. The dry valleys during the rainy season are filled up with swamps, “Nwangene” spring.

With regards to drainage systems, we have the Adada River which has its source from Lejja in the Southern part of Obimo. There is also the Iyikutu spring which is their main source of drinking water. The spring is situated at the hill behind Girl's Secondary School Obimo.

During the colonial days, a reservoir was constructed right from the mouth (source) of the spring and a pipe laid from the top of the hill down to the valley to ease the task of climbing the hills to collect water.

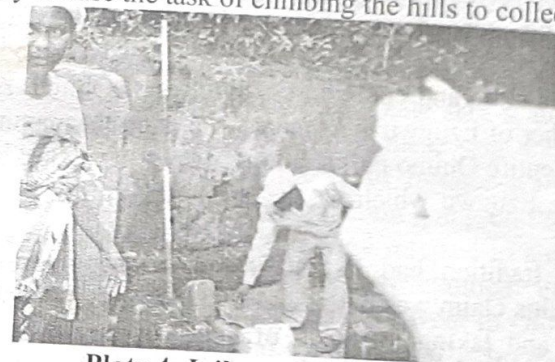


Plate 4: Iyikutu Spring in Obimo.

BACKGROUND INFORMATION

There are many versions concerning the origin and early settlement of the Obimo people. Most of these versions came from oral tradition. Historians had already noted that oral tradition are embedded in myths and legends and are prone to distortion due to long usage as they are usually being translated by words of mouth from one generation to another.

There are two main versions in the case of the early history of the people. The first version was referred to as the migratory version while the second is the independent/indigenous or autochthonous version. According to the first version, the founders of Obimo migrated from two main areas. One traces it from (Nshi) Nri in Anambra state while the second group traces it from Igala in the present day Kogi state of Nigeria. The Nshi/Nri tradition maintains that the people of Obimo came from Nri. They migrated from Nri/Nshi as special representatives of Eze Nri charged with the responsibility of carrying part of the venom killed in hunt in any year after an annual sacrifice to Eze-Nri. They are referred to as the 'Aka Nri' or 'Ada Nshi' (dwarf men and women) of not more than 4ft (120 cm) in height.

The Igala version asserts that the original founders of Obimo were hunters from Igala. This assertion may be based on the close contact and interactions between the Igala people and the entire Northern Igboland. The second version – the independent/indigenous or autochthonous version referred to ‘Asebere’ a woman and Ezugwu – a man as the putative and eponymous founders of Obimo. Asebere is the putative mother of Ezugwu – Asebere, who later became the eponymous father of the entire Obimo community. Today, the highest oracle/deity in Obimo is the Ezugwu which has its shrine and hill at the centre of the town.

Oral tradition had it that Obimo is the oldest settlement in Nsukka and this claim was buttressed by the fact that they have the right of breaking and taking the head of kola nut in any gathering of all Nsukka towns. Further claims showed that both Asebere and Ezugwu were hunters and must have migrated earlier from Idah in Igala and settled in Obimo. Obimo – Asebere had three sons – Ukpata, Ekeabo and Ezi that later formed the progenitors of the entire Obimo town. The town was well organised, maintaining the position of the elders which includes the Onyishi, Umunna, Okpara, Oha council of elders, Umuada and the guild of age grades.

Economically, they are mainly farmers producing crops like yams - *Dioscorea spp*, cocoyams - *Xanthosoma spp*, cassava- *Manihot exculanta*, maize *Zea mays* and other vegetable crops. They also engage in the production of palm produce as they have plenty of palm trees- *Elaise guineensis* growing within the town. They also engage in both local and regional trade. Prior to the European penetration into the area, there were iron smelters and blacksmiths as evidenced from the abundance of iron slag in all forms and shapes discovered during our reconnaissance. There were other iron working material relics like pieces of broken furnace wall or baked clay and broken tuyere nozzle found in the area of study.

Socio-religiously, they were mainly traditional religionists observing all the socio-cultural and religious rites of the area until the introduction of Christianity.

Site discovery and reconnaissance

Most archaeological site discoveries are accidental. The iron smelting site discovered in Obimo was not accidental, but through a deliberate archaeological reconnaissance conducted by the writers. In course of this initial reconnaissance, we visited a ward/village in Obimo called Ikwoka where we found lots of aggregate slag scattered along a path way into the village. The exposure of these slag and baked clay pieces which was suspected to be pieces of furnace wall and tuyere debris was as a result of local road construction going on there. Through inquiries, and interviews conducted we were referred to another village called Ama-eha-Amaelugwu, where it was claimed that the last blacksmith in Obimo stayed. Sequel to this, we went to Otobo Amaeha-Amaelugwu village where we found thousands of cylindrical slag that were replicas of those from Lejja, Opi, Umundu, Ekwegbe and Onyohor. There were also heaps of flow slags with ropy or smooth surfaces. Most of them were aggregate in shape.

Interviews were conducted with the elders of the village and from these, it was discovered that they have no idea of smelting and the smelting processes carried out there. When asked what slag is, Mr. Mathew Okolo, the eldest man in the village told us that it is ‘Ahuru’ and that it grows or sprouts out from the soil. Most of the people interviewed were of the same view and could not distinguish between the ore and the slag. We did our studies in that area and left.

The next field reconnaissance conducted in that area was done with the company of Dr. A. M. Ibeanu of the Department of Archaeology and Tourism, University of Nigeria, Nsukka in 2006. This was done in preparation for the students of Archaeology and Tourism 2006 Final Year Field Work. Sequel to this, the iron smelting site at Ama-eha-Amaelugwu was picked up for the 2006 final year field work. Other colleagues in the team were Dr. F. N. Anozie of the blessed memory (that was the last archaeological research/field work he participated in); Dr. Mrs. P. I. Eze-Uzomaka, and Miss C. Nze.

Before settling down here for excavation, further reconnaissance was conducted round the town which lead to the discovery of other

archaeological sites and features of archaeological importance within the vicinity. Among them were, rock overhang within the upper part of the Iyikutu spring (plate 5) and a rock shelter/cave which the people referred to as "Ogba" in the village of Akachele and within the hill boundary between Obimo town and Nkpologwu in Uzo-Uwani Local Government Area.

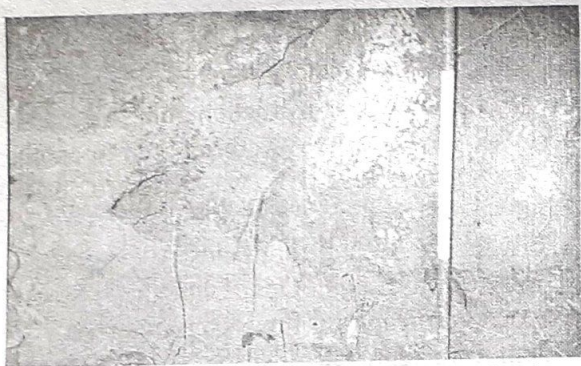


Plate 5: A Rock Overhang behind the Iyikutu Spring Excavation

The area chosen for excavation was the compound of Mr. Richard Ugwuoke in Ama-Eha-Amaelugw village. Here we saw series of concentric debris/remains of burnt or backed clay suspected to be remains of furnace wall. Also found were heaps of cylindrical and aggregate slags in-situ. The most fascinating object here was an exposed broken tuyere nozzle, measuring about 5-8cm in length and about 14cm in diameter with an opening at the centre. This tuyere was found very close to one of the broken furnace walls surrounded by three (3) in-situ cylindrical slag. Excavation of the site started on the 24th April 2006 with the clearing, sweeping and general tidying up of the furnace surfaces to be excavated. This was followed by the mapping and gridding of the site.

A pit of 4 metres square was set up. This was grided into 1m squares. The tripod stand was set up and from there, the position of the North was located and from there, we took a measurement of 21.10 metres to the tomb of Mr. Asadu Ugwuoke which we used as our datum

point. From the tripod stand, we measured 2.60 metres to the northern pole of the excavated site. (Table 1 and 2).

The rectangles designated as A², A³, A⁴, B², B³, B⁴ were excavated. Having laid the grids and photographs taken, digging started, after removing the overburden, at 10cm arbitrary spit levels. At the end of spit 1, many objects were excavated. These include: broken pieces of furnace walls, tuyere nozzle debris, slag both cylindrical and aggregate, pieces of iron ore, charcoals, and body potsherds. At the end, this spit was cleared and photographed. Then followed spit 2 which ran from 10-20cm arbitrarily. On this spit, materials excavated include slag, furnace wall and tuyere nozzle debris, lumps of charcoal, pieces of wood and potsherds.

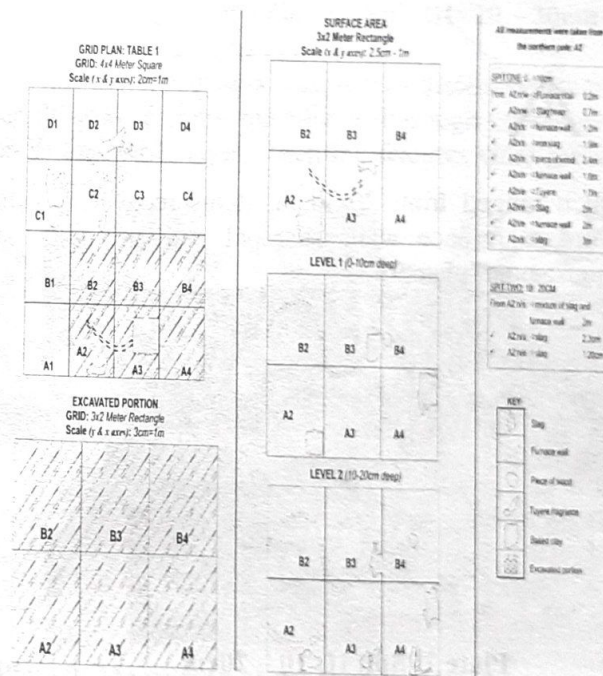
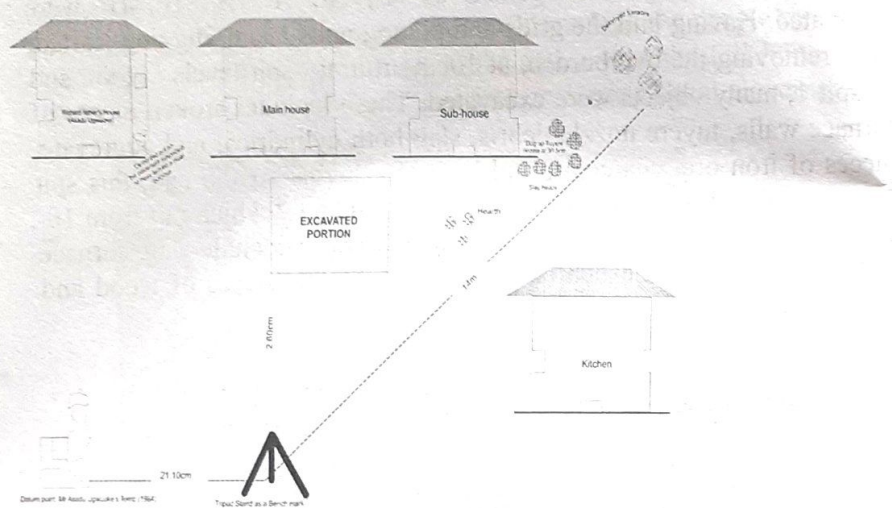


Table 1: Obimo 2007 Grid Plan

TABLE 2: LOCATION OF FEATURES



In the 3rd spit which ranged from 20-30cm, items recovered include, potsherds, slag, broken furnace wall, charcoal and an in-site stick suspected to be a house post (plate 9).

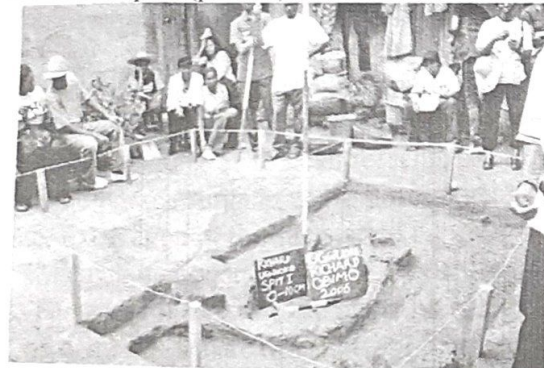


Plate 7: Spit II: 10 – 20cm

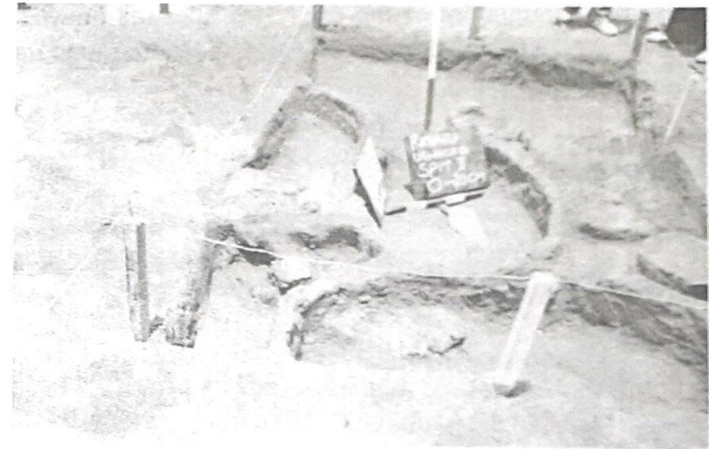


Plate 8: Spit III: 20 – 30cm

At the end of this spit, it was discovered that no more cultural materials were coming up after a thorough cleaning and hence it was taken as the sterile layer. Then the features were measured and mapped into the graph.

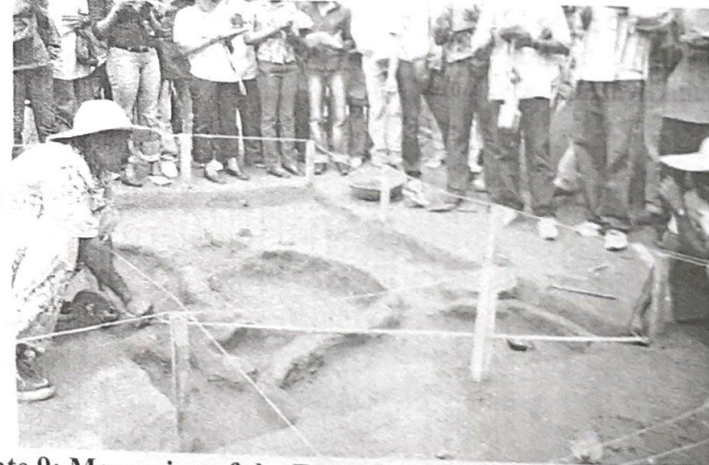


Plate 9: Measuring of the Features inside the Pit after Excavation

Finally, the stratigraphy of the excavated site was drawn. The southern wall of the trench was chosen, cleared and its stratigraphy drawn (see table 3, and plate 10).



Plate 10: Stratigraphy of the Southern Wall (Spit III: 20-30cm)

Adjacent to the excavated area is an exposed broken tuyere nozzle of about 5-8cm in length and measuring 14cm in diameter (see plate 11) very close to broken furnace wall surrounded by three *in-situ* cylindrical slag (see plate 12). This was carefully unearthed, cleaned and taken to the departmental laboratory/museum for analysis. Sketch drawings of some of the excavated materials are also shown here (figs 3 & 4).

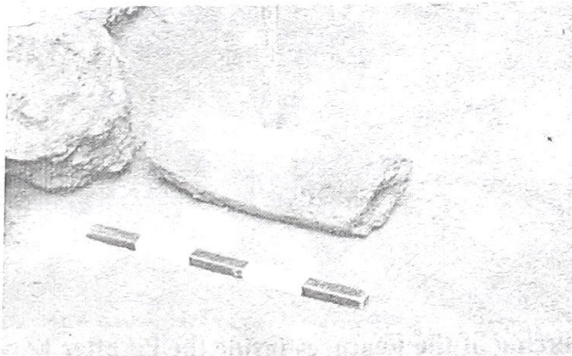


Plate 11: Excavated Tuyere Nozzle from a Broken Furnace



Plate 12: Destroyed Furnaces with *in-situ* Cylindrical Slag at the Compound of Mr. Ugwuoke Richard

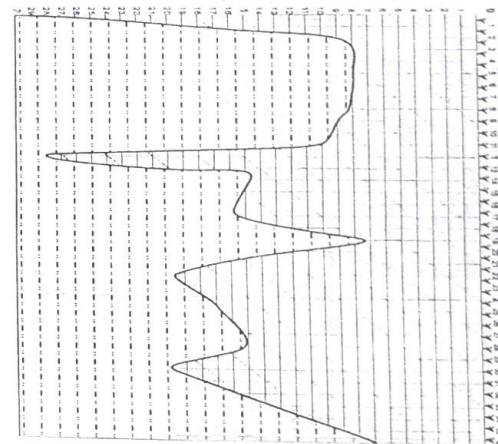


TABLE 3: STRATIGRAPHY OF THE SOUTHERN WALL
The multi layers were produced using the changes in the soil colour and texture from the 2 spits
Scale: 1/2" = 1' vert. 1/4" = 1' hor.

Reading for drawing the Stratigraphy
 At 2' the soil was
 at 3' the soil was
 at 4' the soil was
 at 5' the soil was
 at 6' the soil was
 at 7' the soil was
 at 8' the soil was
 at 9' the soil was
 at 10' the soil was
 at 11' the soil was
 at 12' the soil was
 at 13' the soil was
 at 14' the soil was
 at 15' the soil was
 at 16' the soil was
 at 17' the soil was
 at 18' the soil was
 at 19' the soil was
 at 20' the soil was
 at 21' the soil was
 at 22' the soil was
 at 23' the soil was

Key
 O = Reddish
 Spt 1
 Spt 2

These represent the colours of the various layers of the wall profile.

DATA ANALYSIS

At the end of the excavation, and with the infilling of the pit excavated, all the excavated materials were taken to the department of Archaeology and Tourism, U.N.N. for washing/cleaning, sorting and analysis.

These processes were done spit by spit; according to the spit they were recovered. They were then sorted according to their material make up. By this, artefacts made of stone, clay, charcoal, pottery, slags, wood, tuyere and furnace walls were sorted out according to the spit in which they were recovered. The table below represents a summary of the excavated and analysed cultural materials.

Table 4: Tabulation of Excavated Materials

Artefacts Types	Total No. In Each Spit	Total No. From All The Spit
Slag	Spit one = 48 Spit two = 28 Spit three = 31	107
Furnace wall	Spit one = 23 Spit two = 16 Spit three = 7	46
Stone	Spit one = 20 Spit two = 3 Spit three = ---	23
Tuyere fragments	Spit one = 31 Spit two = 15 Spit three = 30	76
Potsherd	Spit one = 11 Spit two = 12 Spit three = 5	

		28
Charcoal pieces	Spit one = 10 Spit two = 9 Spit three = 13	32
Pieces of wood	Spit one = --- Spit two = 5 Spit three = ---	5

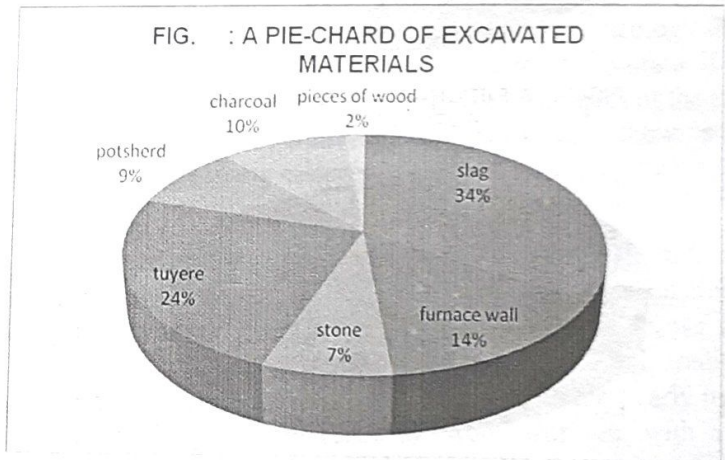


FIG. : A PIE-CHARD OF EXCAVATED SLAGS

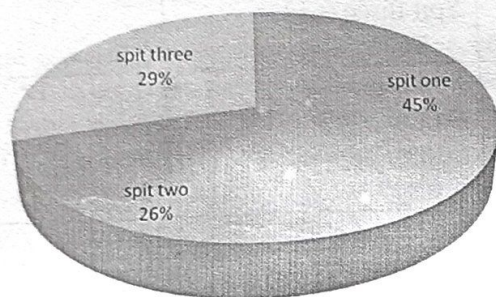
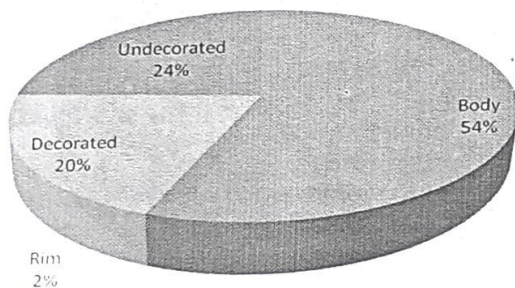


FIG. : A PIE-CHARD OF EXCAVATED POTSHERDS



Analysis of potsherds/pottery:

The discovery of material remains such as potsherds/pottery on an archaeological site is a discovery of great importance; since, a great wealth of information can be gained from its study. By examining the method of manufacture, an archaeologist is able to reveal the technological development of the group of people from which the pottery came. The contents of a pot abandoned for over thousands of years ago can be revealed by examining on a microscope the residue left in or on the pottery. Ethnographic analogy can also be made through typology of

pottery about the creation of a potsherd, which can be further applied to the site itself where the pottery was excavated

Put differently, continuous model depends upon situations in which the living ethnographic societies can be shown to be historically continuous with the pre-historic cultures being excavated in the same area. Here, the motifs of decorations on the potsherds excavated (net impression, maize impression, rope impression, burnished, unburnished, etc.) and the motifs of decorations of the pottery in-use among the people under investigation reveals a historical continuity thus, it could be argued that there is a direct historical connection between the living cultures of the area and the past cultures being investigated archaeologically. More so, the date of pottery production can be more accurate if there is decoration on such potsherds. The decorative techniques of the excavated potsherds (impressed, burnishing, etc) therefore show a cultural continuum with the living cultures of the area.

Interpretation and Conclusion

From the onset of this research, many issues were called to mind. The main aim of this work is to seek a means of reconstructing the cultural history of Obimo people. For this to be possible, we went into discussing not only their early history through oral tradition, but conducting an in-depth archaeological research on their early indigenous technology with special reference to "iron" working, with a view to deciphering their general way of life – socially, economically, politically and culturally.

In addition, this work aimed at verifying the processes involved in this technology taking into cognisance the fact that various methods and techniques were involved in ancient iron smelting technology. As for the date when this technology was carried out many charcoal samples which can be carbon C14 dated were collected.

Presently, this could not be dated due to paucity of well equipped laboratory for chronometric dating of materials in sub-Saharan Africa. However, from dates already obtained from some sites within Nsukka area, the Obimo industrial iron smelting site belongs to the second phase

of Nsukka iron smelting. This age according to Okafor (1993:95) lies between 2000 BC and 1450 AD. However, this date has to be taken with care since it has not been finally proved. The first phase according to him is dated to 765BC and is mainly identified with purely cylindrical slags. The second phase is mainly identified with tapped slags which are flat with ropy surfaces. The third phase according to him is identified with aggregate slags which are pulled out from shaft furnace and separated. They are mainly found in Umundu, Orba, Enugu-Ezike and Isi-Uzo iron smelting sites. All the aforementioned phases made use of the shaft furnace. The question arises as to what type of furnace(s) were used in the production of the cylindrical slag found in almost all the iron smelting sites in Nsukka area like Lejja, Opi, Orba, Onyobor, Idoha, Aku, Ekwegbe and Obimo. This problem is compounded by the fact that in all these sites, we found two main types of slag, viz, the cylindrical and the aggregate slag. If both slag occur, how justified is one to conclude that these site belong to the second or first phase of Nsukka iron smelting or that there is no demarcation as to where the first phase stopped and the second phase started.

To this, the present writers are of the view that the occurrence of these two phases is gradual, transitional and evolutionary rather than spontaneous. The early phase transcended into the second and there is no clear-cut demarcation between the two phases. If the first phase according to Okafor (1993, 95) is frou with cylindrical slags, it then follows that the Nsukka iron smelting which has more of cylindrical slags rather than aggregate slags with the exception of Owere elu should belong to the first phase rather than the second phase. What ever the case may be, it is our contention here that both pit and shaft furnaces must have been used in the production of these slags. It was only in Idoha (Ekechukwu 1988) that the Dome furnace which produces mainly aggregate slags must have been used.

In Ekwegbe for instance, no traces of shaft furnace was found, but the cylindrical slag excavated there in 2002 was found *in-situ* in the pit with baked or burnt clay lining surrounding it. This goes further to buttress the fact that both furnaces may have been used in the production

of bloomery slags in Nsukka area. Research works within Nsukka iron working sites indicate that slag and bloom were tapped into a pit from the shaft furnace and on cooling, knocked off from the slag living the slag in the pit.

This research report is of the view that the cylindrical slags were the products of pit furnaces; thus, the pit was first dug and lined with clay after which the ore and combustibile materials were arranged inside. Fire was then set in. At the melting point of impurities, the slag will flow down and coagulate while the bloom will concentrate at the top. After cooling and solidification, the bloom would be knocked off leaving the slag behind in the pit. From our observations at Obimo, both the shaft and pit furnaces were used. Our research shows that behind every shaft furnace are three openings leading to three pits.

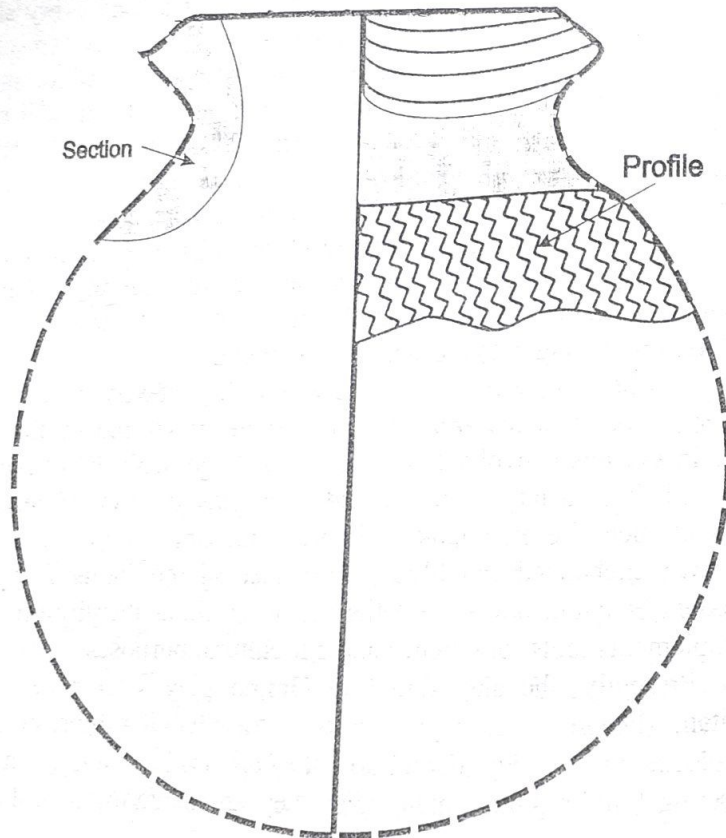
These pits act as 'receptive' tanks for both slag and bloom. At the end of smelting, the slag being less dense than the bloom will melt and flow first into the pit and coagulate. Then follows the bloom which is heavier and coagulates when cooled and solidified on top of the slag. It can then be knocked off for re-smelting when needed leaving the slag behind. It was the pit that gave the slag its roundish or more preferably cylindrical shape. In the same manner some of the aggregate slags are products of the Dome furnace or shaft furnaces without out let openings at the base for tapping both the slag and the blooms.

In what ever way this case could be viewed, it could be deciphered from this research that the people of Obimo or the early settlers in the town involved themselves in large scale industrial iron working. This to a large extent could have played crucial roles in all spheres of their life especially their economic and political life. They must have exchanged the bloom for other scarce items from their neighbours or could have learnt the art of smithing thereby producing iron implements/tools for defence and agricultural purposes.

Presently, the slag found in Obimo play vital roles for the inhabitants. For instance, they are used for the checking of erosion as the area is located in a valley. In addition, they are used as foundation blocks in erecting buildings (see plate 13). They are in addition broken into

smaller pieces and used as bullets with gun powder in hunting. Besides, the aggregate slags are used in road construction. Apart from using the slags for making fences and demarcations, they are used as seats in their village squares "Otoho" (see plate 14). Finally, the cylindrical slags play an important role in their every day activity. They are being used as tripod stand during cooking (see plate 15).

Fig 3: A Reconstructed Rim of a Pot Discovered from the Site: 16cm - thickness



POTTERY BODY SHERDS EXCAVATED FROM THE SITE. THICKNESS AND THEIR DECORATIVE MOTIFS

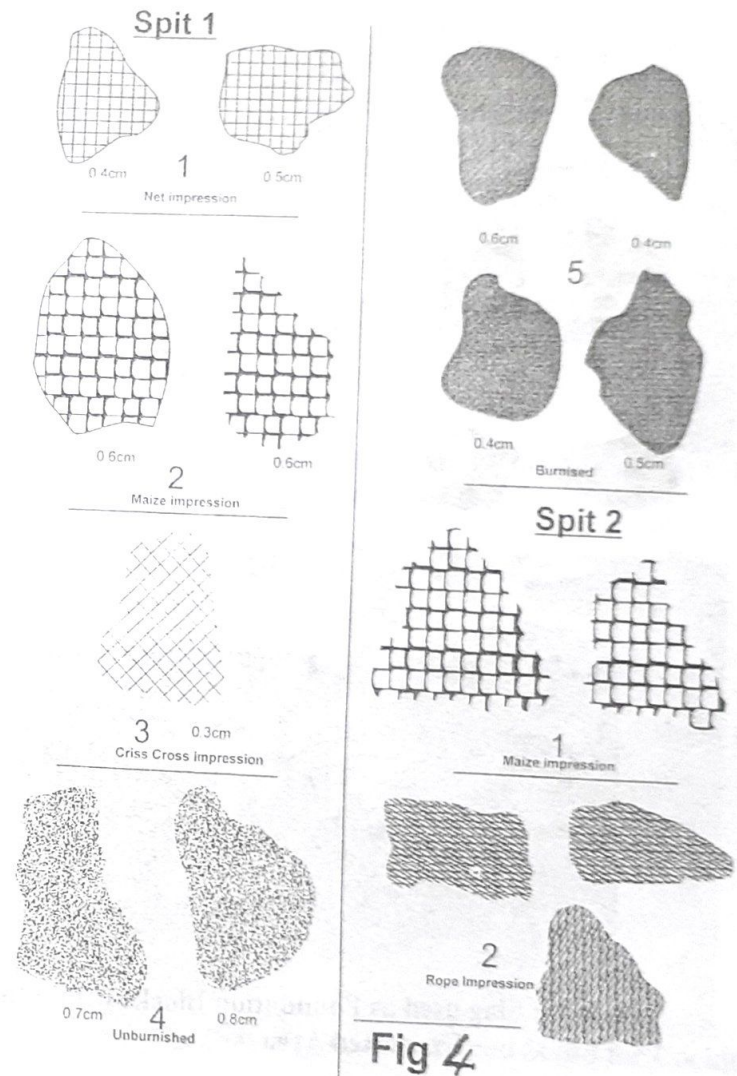


Fig 4

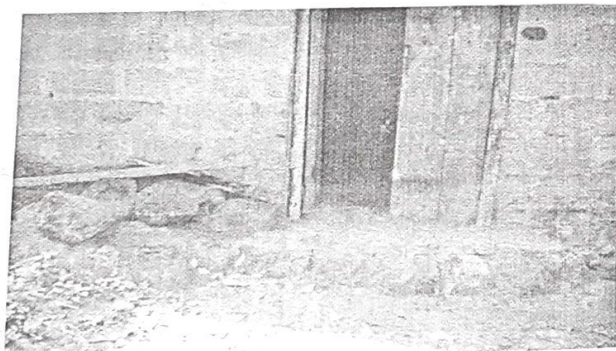
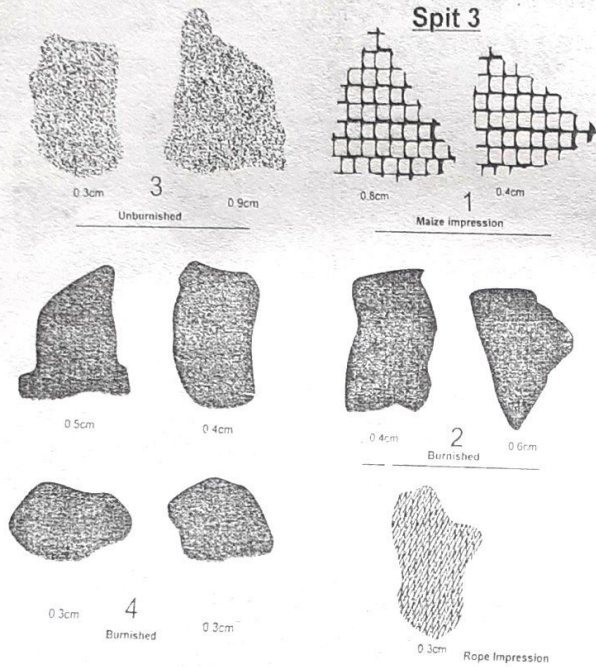


Plate 13: Slag used as Foundation Blocks within the Excavated Area



Plate 14: Heap of Cylindrical Slag at Ootobo Ama-Eha Village Square used as Seats

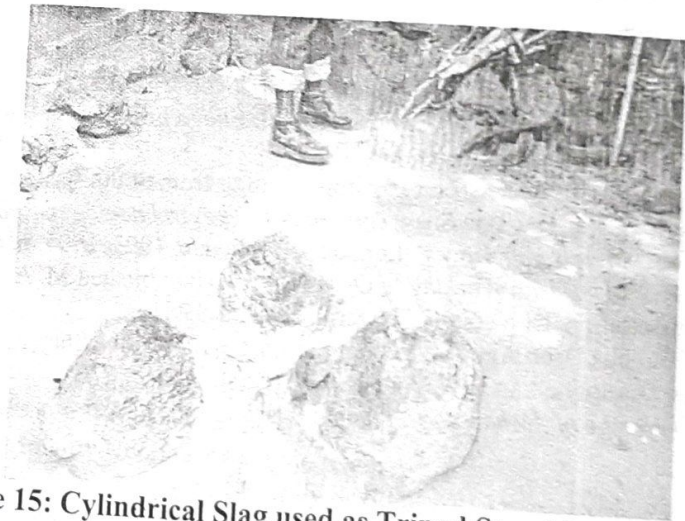


Plate 15: Cylindrical Slag used as Tripod Stand for Cooking

Though more would be required from this research, we cannot conclude without reminding ourselves and our readers that this work has acted as a stepping stone towards exposing the technological ingenuity of the early settlers of Obimo town in particular and that of Igboland and sub-sahara Africa in general. A re-appraisal and rehearsal of this technology would no doubt lead to the enhancement of our indigenous technology and this would in no small measure play a greater role towards our nation's economic growth and development. The establishment of indigenous work shops for arts and crafts especially those related to indigenous iron-working in our museums would play a very big role towards this development.

References

- Anozie, F. N. "Early Iron technology in Igboland". *West African Journal of Archaeology*. Vol. 9, 1979, pp.119-34.
- Ekechukwu, L. C. *Traditional Iron Smelting and Black-Smiting in Idoha*. Unpublished M.A. Dissertation, University of Nigeria, Nsukka, 1988.
- Ezike, J. N. *Ethnoarchaeological Investigations into the Beginnings of Agriculture and Metal Working in the Old Nsukka Division*. Unpublished Ph.D Thesis. University of Nigeria, Nsukka, 1998.
- Ofomata, G. E. K. (ed) *The Nsukka Environment*. Enugu Fourth Dimension Publishers, 1978.
- Okafor E. E. "New Evidences on early iron smelting from South Eastern Nigeria". In Thurstan Shaw *et al.* (eds.). *The Archaeology of Africa: Food, Metals and Towns*. London: Routledge, 1993, 1995, p. 432.
- _____. *A Study of Iron Working in Orba Nsukka*. Unpublished M. A. Dissertation. University of Nigeria, Nsukka, 1984.
- Semiyu Wandibba "Iron Age Archaeology in East Africa: The State of the Discipline". In B.W. Andah *et al.* (eds.). *Africa: The Challenge of Archaeology*. Ibadan: Oyedele Industries Ltd., 1998.