

Why african metallurgy is important history essay



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Metallurgy is the study of metalworking from all of its aspects. In other words, it is the art of working metals (Darvill 2008, 278). Geologically, Africa is known for its promising supplies of metals. Various kinds of metals, such as copper, iron, gold, tin, uranium, manganese, cobalt, bauxite, and the likes are found almost everywhere throughout the African continent in many different settings geographically (Holl 2000, 1). Generally, the study of African metallurgy is important as metalworking has brought about the greatest significance that some of the African continents have ever experienced in terms of their cultural and social development.

African metallurgy was said to have later given life to the Industrial Revolution around 1, 500 to 2, 000 years ago when the Africans living on the Western shores of Lake Victoria, in Tanzania, produced carbon steel (<http://www.africaresource.com/rasta/sesostris-the-great-the-egyptian-hercules/african-metallurgy-by-nordine-aka-storm/>). In the past, some of the metals in Africa were exploited which then resulted in the rise of some of the most 'impressive indigenous African states, while others have been utilized only recently, as participants in the modernization and industrialization of a handful of countries at the southern end of the continent' (Holl 2000, 1). An example of exploitation in metals found during the pre-colonial times in Africa can be seen in the Shaba province of the Congo where copper belt was intensively worked, and also in 'the adjacent district of Zambia, along with the gold fields of South Africa and Zimbabwe' (Holl 2000, 1). In eastern Cameroon and the western Central African Republic as well as in the Poura region in Burkina-Faso (Kiethega 1983), traditional gold mining was carried out. On the Bauchi plateau, tin mining was set up. Eventually, the renowned

Nok Culture was discovered as a result of the reopening of these mines (Holl 2000, 1). During the periods of Pharaonic, Kushite and later, exploitations were seen at the gold mines from the Red Sea hills and Nubia. In the west at Bure, Galam, Sanakalan, and Bambuk, the gold mines were the key to prosperity of the Ghana and Mali kings. The rise of the Zambebian states in the early second millennium A. D was the result of the early gold mining and trade as well as the 'changing patterns of production in Zimbabwe' (Holl 2000, 1).

Both iron and copper working provided a more widespread evidence of African metallurgy. These particular types of metalworking is suggested to be 'found almost everywhere in the western, central, eastern and southern parts of the continents. Archaeological, historical and ethno-historical information all suggest that the exploitation of these metals was an integral part of the fabric of African societies in the past' (Holl 2000, 1-2).

Archaeological investigations was carried out throughout inter-tropical Africa over the past three decades and it has resulted in the unearthing of 'a varied and extensive evidence of early iron production' (Holl 2000, 2).

The introduction of iron working was said to be an important turning point in Old World history, and this applies specifically in sub-Saharan Africa (Barros 2000, 147). The reason for this was because, in sub-Saharan Africa, iron working (as well as copper working) technology or tools obtained through trade (Miller and van der Merwe 1994, 1) had brought 'many stone-using cultures directly into the "Metal Age"' (Barros 2000, 147). As scholars have suggested, this had led to the increase in 'food production through more efficient bush clearance, weeding and harvesting, causing higher population

densities; larger and more stable village communities; increased specialization, trade, and social differentiation; and the appearance of a settlement hierarchy and more complex forms of political organization' (Barros 2000, 147).

The origins of African iron metallurgy have always been an issue that is often a dispute amongst archaeologists. It was known that the vast scale of the African continents as well as the barriers in the politics and cultures had aroused difficulties in the findings of a good evidence database to dissolve the dispute. Iron was believed to have been the first metal to appear in the archaeological records (Childs and Killick 1993, 320). Radiocarbon dates has shown that the iron smelting furnaces dated ' to the interval 500-1000 cal. BC in Nigeria, Niger, Tanzania and Rwanda (Childs and Killick 1993, 320). However, these dates were known to have created a further debate on the origins of African ironworking.

A few oppositional voices had argued that ironworking has been ' invented independently in sub-Saharan Africa (Andah 1979; Schmidt and Avery 1983)' (Childs et al. 2005, 278). It might be possible as the process had originated from the smelting methods which are already in used in Africa to make copper. Iron oxides were said to have been used as a soldering aid in the process of smelting copper and with some experimentation, the process then accidentally resulted in iron production, which then developed into iron smelting. In some regions, copper was found to have been smelted first but evidence of it appears to be relatively low, where only the remaining slag was found. This may be due to the inefficient methods of production.

Some archaeologists had argued that the iron working techniques might have been brought by the surrounding countries into the continent through diffusion (Okafor 1993, 432). The routes used for this process was suggested to be either running south to west from Meroe on the Nubian Isle (Childs et al. 2005, 278). There are also some which was believed to have come from Egypt and then the methods scattered from the north to the sub-Saharan Africa. Iron production took quite a period of time to spread due to the massive size of the African continent which has an extreme geographical context. This resulted in the suggestions that iron had a various place of birth. The wide distribution of iron ores geologically had meant that the raw materials were readily available resulting in great potential for multiple origins of production. Archaeological evidence, including production methods used in present Africa, it seemed unlikely that the traditions and techniques could be so diversified for it has all began from one place and one technique (Holl 2000, 9). An example can be seen from a site called the Termit Mountains, in eastern Niger. Copper and iron artefacts were found and they dated back to as far as ca. 1500 BC and ' the smelting furnaces dated to ca. 800 BC' (Childs et al. 2005, 278). There is still an ongoing debate on whether these evidences had suggested that the community had imported these objects before producing it themselves, or, it was simply because the earlier furnaces did not survive the archaeological record instead the artefacts did (Childs et al. 2005, 278). It is also important to bring into consideration that iron working techniques were kept closely guarded secrets as this factor may influence the period it took for the Africans to be able to require the technique.

Iron artefacts found in the field are often the basic evidence of iron production in the archaeological records. These artefacts are often in a corroded condition and at times could be unidentifiable. It is often unreliable to base the origin of the context to that of the artefact as where it has been made might be completely different from where it was made, a possibility that it might be imported. Concrete evidence which are often found for iron production are the used bowl of furnaces, and tuyeres and slag from the furnace or forging processes. Bloom and bellows are rare finds. Traces of mining and beneficiation of iron ore can also be used as archaeological evidence. However, these evidence could only be used if after the beneficiation, the ore has proceed to the next production level; and mining evidence are often lost as a result of recent iron ore mining. Slag analysis and radiocarbon dating the charcoal which were used to fire up the furnace was used for dating. Metallography and petrographic analysis are carried out on slag and charcoal samples in order to help understand the processes within the furnace (Kense and Okoro 1993, 449-450). Reconstruction of the iron smelting technology has been made by archaeologists as part of an important process in understanding the running of the ancient technology and to stimulate confidence that their impression of the methods used are correct.

Apart from iron, copper and brass were the other metals which were widely utilized in Africa. The more widespread of iron over both copper and brass must have meant that iron had more favourable properties for different uses. The durability of iron over copper had meant that it was used to make various tools for farming pieces to weaponry. It was also used for

enhancement in jewellery, instruments and impressive pieces of artwork. Coins and currencies of multiple forms were made out of iron, such as the Kisi pennies, a traditional form of iron currency used in West Africa for trading. Kisi pennies are twisted iron rods which range from 30cm to 2m in length. They are suggested to be used in various forms of either marital transactions or simply conveniently shaped for transportation, melting down and reshaping it into another desired object. Africa has many different kinds of iron currencies, often regionally with varying shapes and values. In terms of quantity of use and production, iron had achieved a significantly high figure by comparison to other metals, but, it did not replace other materials such as stone and wooden tools.

Figure 1 shows a 20th century iron West African Kisi Penny excavated from Kenema, Sierra Leone

(Source: <http://www.bmagic.org.uk/objects/1995C107>)

Iron production was recognized as having a great influence over Africa in great regional variation both culturally in trade and expansion, and socially in beliefs and rituals. Evidence for the cultural significance can be seen today as it is still carried out by the present varying African cultures.

Ethnographical information has been most useful in the reconstruction of the past events surrounding iron production, but these reconstructions maybe become altered overtime and further influenced by anthropology.

In Africa, the Iron Age was mainly based around the agricultural revolution which was driven by the use of iron tools. These iron tools had resulted in high efficient productions on a much larger scales. Fishing hooks, arrow

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heads and spears were used for hunting. Iron weapons also post effects on warfare. The productions of these items in line with the other iron goods had helped in stimulating economic activities, and led to the rise of both chiefdoms and states. The processes of producing iron were often controlled by the ironworkers personally, or a “ central power” in larger societies such as states or kingdoms (Barros 2000, 154). Individuals in some societies had resulted as smelters or smiths, who specialize in just one particular skill from the many necessary to the production processes as a result of the demands for iron trade. This may also be possible to have resulted in some tradesmen specializing in iron transportation and trade (Barros 2000, 152). However, the iron production industries did not benefited every African region as some have suffered from environmental problems due to the massive deforestation needed for supplying charcoal for fuelling the smelting furnaces (Muhammed 1993, 466). An example of this can be seen from the ecological crisis of the Mema Region (Holl 2000, 48).

Different social status distributes amongst iron smelters and smiths depending on their culture (Radimilahy 1993, 478-483). Some were having low status in the society as a result of the aspects of manual labour and associations with witchcrafts. These can be seen in the Maasai and Tuareg (Childs et al. 2005, 288). Whereas in other cultures, the skills are often hierarchical in the families and these individuals often held higher social status in the community. The communities often depended on these produced materials due to their powerful knowledge of iron working. They were believed to have strong supernatural powers in some communities as they were seen as highly as the king of chief. An example can be seen from

the excavation in Great Lakes, Eastern Africa at the royal tomb of King Rugira, where two iron anvils were placed at his head, suggesting importance and powerful significance (Childs et al. 2005, 288). According to some cultures, there are myths built up around the iron smelter who emphasized their god-like significance.

As iron production developed widely across the African continent, it had significantly influenced the social rites in terms of beliefs and, particularly, rituals. The process of smelting was often done in isolation, away from the rest of the community. Ironworkers were ritually experts in encouraging good productions and to ward off bad spirits with songs and prayers, giving medicines as well as making sacrifices. The latter are often put in or buried underneath the furnace. An example of this can be seen during the early Iron Age in Tanzania and Rwanda (Schmidt 1997).

Some cultures had used iron production as sexual symbolism. Smelting is suggested to be integrated with the fertility of the society, similar to the natural reproduction, production of bloom represented birth and conception. Many strict taboos were known to surround the process. Smelting processes were entirely carried out away from the village by the men. As for the women, any activities of touching of the materials or simply just being present could risk successful production. Having the men away from the fertile women had been suggested to have reduced the temptations which could otherwise depreciate the smelt's productivity. The furnaces are often exaggeratedly decorated to represent an image of a woman, or the mother of the bloom (Collett 1993, 507).

According to the late C. S. Smith (Smith 1981), the founder of historical metallurgy, has always insisted on the fact that metallurgy 'is above all an intellectual and social activity' (Childs and Killick 1993, 33). The African community had used metals and various other materials such as glass, cloth and wood 'to express their views of the structure of nature and society, in ways as complex and diverse as the beliefs themselves; even the technology of smelting, constrained as it is by the invariant laws of thermodynamics, offers ample scope for the expression of beliefs about the order of things' (Childs and Killick 1993, 33). Numerous African metallurgy scholars 'have been at the forefront of viewing technology as social process. Technology is not a monolithic force that is somehow separate from people, but is the product of complex ideology, careful negotiations and manipulations, and the vagaries of local resources' (Childs and Killick 1993, 33).

As a conclusion, African metallurgy, maybe considered to be of important to study because, not only does it include a comprehensive range of study of iron production across the African continent, but it also gives an understanding of how it influenced the aspects of archaeology in Africa. Iron production had given birth to extraordinary diversity in Africa which then had created advanced farming methods through tools, deadly warfare and trading of valuable items; and then on influenced the life of the Africans socially, culturally and politically.

(2, 791 words)