The Blight of African Indigenous Technology in the 21st Century: The Way Forward

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Abstract
Africans are intricately creative. Invariably their acquisition of diverse skills led to the proliferation of traditional industries during the pre-colonial era which today is referred to indigenous technology. The products of this renowned indigenous technology brought to lime light the sophisticated civilization of pre-colonial African communities. These traditional industries includes blacksmithing, wood carving, textile weaving and dyeing, leather works, pottery making, bead work etc. The colonial era saw the establishment of factories of all kinds that mass produced, and still produce the equivalence of traditional products. Consequently, this dwindled the efficacy of indigenous technology as its products are gradually becoming obsolete. In view of the above, the objective of this paper is to project the historical relevance, cultural significance and the economic value of indigenous technology in the 21st century.

Key words: Traditional industry, Indigenous technology, Indigenous knowledge, Pre-colonial Africa, 21st century

Introduction

Technology is conventionally understood as referring to the practical application of techniques and knowledge to productive processes (Shilling, 2005). This act is known in Africa since the dawn of human history evidently proven with the discovery of early human remains in the Great Rift valley with tools. Humans from time immemorial have been endowed with survival techniques which enable them to produce things for survival. These techniques gradually became the offshoot of the profound indigenous technology which emanates from the application of knowledge accumulated and experienced overtime in achieving desired result using under guided rules, the resources within the environment. In other words, when indigenous knowledge finds applications in tools, techniques, processes and methods that help in solving problems, indigenous technologies arise (Siyanbola, *et al* 2012) which was the mainstay of Nigeria's economy during the pre-colonial era. Fundamentally, technology is a vital driving force in human history accountable for change in all civilizations.

Indigenous technology having been identified with a group of people readily answers to their needs at all levels. Thus, a technology with such an impact ensure technical development. The growth of any economy foremost lies in what it has and can adequately make out of its resources without external aid. In the light of the above, ancient African communities extensively exploited their environment which gave rise to their mastery of

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iron working, arts, textile weaving and dyeing, herbal drugs, agriculture etc. The decline of this prestigious technology, specifically blacksmith industry is the result of lasting impacts of colonialism as well as the tide of globalisation (Mawere, 2014). Of a truth indigenous technology does not hold sway outside the cultural premise that sustained its productivity.

Traditionally, indigenous technology graduated lots of artisans in ancient Africa. It is one of the institutions of higher learning in ancient African community where the future livelihood of the apprentice is guaranteed. Suffices to say that the objective of this industry is to primarily equip people with the necessary knowledge required for basic survival. This medium in turn instilled self-confidence and a sense of place in the apprentice who is adequately useful to the community. However, with colonization came the massive importation of cheap European goods to substitute African made goods. Having been culturally disenfranchised from African root, it was easy for early Africans to embrace these foreign goods as being superior looking at their fanciful finishing. Consequently, most indigenous technology with its crude but high quality products ceased production.

Therefore, it is not strange for an industry to collapse in the absence of patronage. In this 21st century indigenous technology is beset with challenges, including the dearth of apprentices to carry on with the tradition, its competition with foreign made goods, and its crude processes. Hence, this research work employed descriptive analysis in its data evaluation to bring out the value of the indigenous technology and the way forward. This work covers indigenous technology in general and specifically Awka blacksmith industry.

Conceptual Framework

Technology is a complex phenomenon too broad to be confined to a specific definition. To me technology like culture is a way of life. It is an assemblage of methods, procedures, tools, knowledge, resources and man. In other words, it consists of those techniques deployed by man for survival. The word technology according to George (2006) is of Greek origin "tekhnologia," meaning a systematic treatment of an art or craft (tekhne–, skill + -logia, -logy). For Misa (2003) "technology" refers to a body of knowledge about the useful arts. Meaningfully, the existence of technology in the human world goes back to the antiquity of its incubation stage which was rather crude. At this time in Misa's view technology, as a set of devices, a complex of industries, or as an abstract force in itself, had yet to appear.

However, technology involves activities and this seems to dominate its definition. As Oslon (2010) citing Childe (2004) writes: "Technology should mean those activities, directed to the satisfaction of human needs, which produce alterations to the material world [along with] the results of those activities". Here Childe saliently portrays the transformative nature of technology which is today responsible for the different eras (Stone Age, Iron Age, Computer Age, etc) experienced by man. In this vein, technology has

long been viewed as significant to the formation of social relationships, and has sometimes been analysed as determining the very structure of society (Shilling, 2005). Similarly, Humphrey (2010) posits that technologies are inventions of humans that have allowed us to survive, and have enabled our cultures to advance. By this only the processes involved in invention is acknowledged but technology is more than mere means of fabricating objects.

Thus, in answering the question, what technology is, Heidegger (1977) posed two answers, (1) Technology is a means to an end; (2) Technology is a human activity. He analysed the definitions stating that, the manufacture and utilization of equipment, tools, and machines, the manufactured and used things themselves, and the needs and ends that they serve, all belong to what technology is. Invariably it is a means to an end, otherwise known as entities created by the application of mental and physical effort in order to achieve some value (Lewis, 2000). It is important to note that all technologies are created by a manufacturing process resulting from human intention and design, and technology cannot be in any functional sense without a relational human engagement (Keirl, 2006). This makes man the focal point or the entire essence of technology which Burkitt (2002) buttressed in the following words: 'Technology is a means through which humans produce not only products and works, but also themselves as human selves in both their reflexive and non-reflexive aspects. It is through various technologies that humans develop the habits, capacities, skills, identity, and knowledge that mark them out as individual members of a social and cultural group'. Olson (2010) citing Volti (1995) acknowledged technology as a system based on the application of knowledge, manifested in physical objects and organizational forms, for the attainment of specific goals. The knowledge that is presumed to be a feature of a technology here is not the kind of formal theoretical knowledge usually associated with the notion of a science, but instead a kind of tacit knowledge.

In the ancient world, craft know-how was virtually always transmitted orally and/or bodily from master to apprentice and was not written down (Olson, 2010). Such knowledge has long been associated with the terms `local knowledge' or `ethnoscience,' indicating knowledge systems that are specific to cultures or groups in particular historical or social contexts (Richards *et al*. 1989). Therefore when knowledge is indigenous it implies a body of skills acquired through the accumulation of experiences experimented and over time proven efficacious in harnessing resources within the environment of a culture group. Despite the viability of indigenous knowledge it is handicapped in its oral mode of transmission to which it loses its originality with years. Nonetheless, though Indigenous knowledge relies heavily on intuition and may not be as theoretical as scientific knowledge, yet it is definite and always dynamic, an indispensable means of livelihood which ought to be preserved from destruction. In Ngoka's opinion (1992) such technologies employed by the native inhabitants of a country which

constitute an important part of its cultural heritage should therefore be protected. Ignorance of the importance of indigenous technology to the existence and sustenance of a community devalues it. It is a technology according to Tapper and McLachlan, 2005, that established industries indigenous in all senses: survey, construction and maintenance, together with supply of equipment and personnel, can all be done with local and mainly rural resources. Also they have neither foreign dependency nor foreign currency costs in either initial construction or maintenance. In effect Indigenous technology is the totality of indigenous tools and technical know-how developed by man in his locality for the control or otherwise of his environment for his benefit or destruction (Koleoso, 1986).

In practice, technology involves the application of ideas to device techniques and to procreate. The compilation of these techniques including skills, resources and processes forms the foundation of indigenous technology. Simply put, it is the creative ability of a group of people to transform their environment using resources within. Such learned pattern of creativity was prevalent in pre-colonial Nigeria and passed from one generation to another.

Historical Evolution of Iron Working in Nigeria

The origin of ironworking, a technology widely practiced in West Africa (Nigeria) in antiquity has long been an object of dispute amongst scholars. This gave rise to different schools of thought. Some schools of thought suggested diffusion from outside especially North Africa (Carthage or Meore). The diffusionist argue that a number of Sub-Saharan West Africa's cultural traits—for example, ironworking, brick architecture, and divine kingship—diffused across the Sudan grasslands from Meroe in Nubia (McNutt, 1990). While considering the expanse of iron-working residues found in different ironworking centres (Nok,) studied in West Africa in addition ritual connected to the technology, Anozie (1979) strongly advocates for independent invention. McNutt (1990) posited two strong reasons in support of independent invention. Firstly, a great deal of information on iron technology in African societies has been recorded and evaluated by ethnographers. Their sources include not only information on the technological processes involved in iron production, but also on the popular beliefs and perceptions about these processes that are expressed in social and religious beliefs and practices. The role of the primal smith or iron god in mythology and tradition, the social roles and statuses of ironsmiths, and the symbols associated with the ironsmith, the tools of the trade, the smithy, and the end product—iron—are examples. Secondly, in traditional African societies, iron technology is a defining technology that is crucial to social and economic well-being. The iron tools and weapons provided by the ironsmith are essential for agricultural production, for warfare, and, in some societies, for hunting.

Childs and Killick (1993) disputing the idea of diffusion opined that western awareness of the cultural dimensions of Africa metallurgy is much more recent. It was not until the looting of Benin City by the British expedition of 1897 that the outside world learned of the West African tradition of figurative art in metal and not until the late 1940s that these traditions were first investigated by archaeologists. Similarly, Martin (1935) in his work titled "Culture Areas of Nigeria" concurred with the independent invention of iron work in West Africa. He stated that "my inclination is towards a theory of Negro origin because of the innate industrial skill of the Negro". He further posited that there is no reason why the Negro could not have made primary inventions, including the smelting of iron in a hole in the ground, and the use of a type of wooden bellows with two or four chambers. He buttressed that a point in favour of the independent origin of iron-working among Negros is the nature of the ritual, and the similarity of rites in widely separated areas of Negro culture. If it is possible to believe that the Negro received his first knowledge of iron-working from pastoral Hamites of Asiatic extraction, either by way of the Nile Valley or some other route, to whom is he indebted for the ritual which is typically Negro in character?

In opposing the North African source of iron smelting, Anozie (1979) asserted that the desert tribe the Garamant whom it was suggested taught the West Africans how to smelt must have smelted in their domain between North Africa and the Great bend of the Niger in West Africa much earlier than 5th century B.C. when Herodotus recorded they were in contact with the Negroes until the sites were found and studied, it is difficult to accept this theory as there is no evidence that the Garamant ever smelted iron. Indeed, many scholars believe that iron smelting originated from West Africa. According to Diop (1968) in Okafor (1992) "I do not see why the Negroes should not have discovered how to work iron by themselves." Thus he holds that iron working in dusty sub-Saharan Africa is indigenous and was not introduced from North Africa across the Sahara or from anywhere else. Andah (1979) in his own words after a critical analysis of the subject matter concluded that as of now not enough is known about when, with whom and how iron working began in West Africa. Nevertheless, Okafor (1992) in his research on iron smelting in Nsukka (Nigeria) conclusively affirmed that from the dates available for the earliest iron industries in this region (West Africa) and what is known about their technical aspects, reflect independent development.

Also opposing the diffusionsit theory, Eze-Uzomaka (2011) opined that recent archaeological research does not support the diffusionist hypothesis proposed by some early writers. She buttressed that the proliferation of furnaces, slags and iron objects in Igboland attests to the local production of iron and the dates recovered from iron smelting sites point to the early smelting of iron in Igboland. Hence, the independent invention of iron working could be adopted in Nigeria carefully considering the abundance of

mineral resources (gold, silver, ore, etc) and raw materials with which the resources are being processed. Okpoko and Ibeanu in their article on "Early metal working in Nigeria" noted that Nigeria is richly endowed with mineral resources such as iron ores, gold, silver and copper...some of these resources were exploited in the ancient past. In some parts of Nigeria iron ore was extensively exploited through the wide spread of iron smelting technology.

In Igboland, Neaher (1976) identified three centres of metal working namely Abiriba, Nkwerre and Awka with Nsukka area as a possible fourth centre. Thus owing to the ritualistic nature of ironworking, availability of resources coupled with abundance of ironworking residue it is arguable that an act well engrafted into the norms of a community must have evolved out of interaction between the community and its environment.

Pre-colonial Indigenous Technology: A Study of Awka Blacksmith Technology

The abundance of local material in pre-colonial Nigeria gave rise to the proliferation of traditional industries. Different areas are acclaimed with specific kinds of technology. The Awka-Nri-Igbo Ukwu area of the Igbo heartland east of the River Niger was famed for pottery, wood carving and blacksmithing (Onyemelukwe (1983). Specifically, Okwu (2010) observed that Awka, Abiriba and Nkwerre are noted iron workers throughout Igbo land. Further, he acknowledged that their technological superiority and monopoly of the smithing profession throughout the area that later became Eastern Nigeria attracted the attention of both the pioneer missionaries as well as that of the early colonial administrators. Ironworking, one of the most prized skilled craft industries of Igboland in pre-colonial times has attracted considerable attention from archaeologists of Igboland (Onwuka, 1991). The iron technology of pre-colonial Nigeria was an advanced technology which incorporated the art of smelting and smithing. The former was a method through which bloom (iron) was extracted from iron ore while the latter entails the actual production of iron implements. The rigorous and tedious nature of smelting technology with its adverse environmental effect of deforestation coupled with the importation of scrap metal led to its extinction.

The relevance of the smith technology in producing crafts for utilitarian purposes, though not devoid of aesthetic beauty accounts for its continuous existence. Hence, blacksmith industry is one amongst the range of indigenous technologies that flourished in pre-colonial Nigeria. In Awka it is one of the oldest craft industries that have survived in the communities for generations (Ezenagu, 2013). Awka blacksmiths travelled extensively performing their craft in smith which enhanced the popularity of their product. The word 'Uzu' (smith) is a household name amongst Awka people that even the presentday traditional ruler of the community is named after the trade 'Eze-Uzu' (King of smith). Basden (1960) remarked that the Awka smiths practically dominated the occupation and they hold a leading place in

the profession throughout Ibo country and in many places beyond. Similarly, Eze-Uzomaka (2011) argued that in pre-colonial times the people of Awka were famous for metal working and their blacksmith was prized throughout the region for making farming implements, guns and tools. It is therefore no accident that Awka and Nkwerre people in Igboland are acknowledged masters in blacksmithing (Okpoko and Okpoko, 2002) being the site closest to the famous Nri civilization that produced the earliest documented bronze works in Sub-Saharan Africa around 800 AD (Eze-Uzomaka, 2011).

This age long technology has not ceased to marvel both visitors and researchers desirous of the success story behind the continuous existence of the industry in the face of modern iron implements. The blacksmith industry being one of the cultural attractions in the community attract tourists who want to study and/or appreciate the blacksmiths at work. The blacksmiths transform pieces of iron scraps into tools and weapons. Awka blacksmiths are especially famous, not only for their skill in ironworking, but also for their religious, social, political, and legal influence.

The smith's trade according to McNutt (1990) is one that is generally passed on through heredity from generation to generation and recorded in long genealogies. Because the proficiency of the trade is acquired through generations of practice and discipline, smiths are normally organized in guilds that jealously guard their secrets and adhere to a rigid system of ethics. The work of the smith is generally bounded by traditional rites and ceremonies. To this Onwuka (1991) opined that traditional Igbo iron-working was highly ritualised and shrouded in mystique. Awka blacksmith industry is wrapped in ritualized obscurity. The influence of modernity has diminished the ritualistic nature of the industry which previously prohibits a stranger from smithing in Awka blacksmith workshop. Today tourist and researchers are permitted to test-smith.

Modern Technology the Vestiges of Indigenous Technology

Technology in Africa has unfolded since the dawn of humanity. Man in bid to survive developed certain cultural traits manifested in the production of tools. These skills, techniques and processes overtime with proven efficacy in satisfying man's need became renowned technologies giving rise to traditional craft industries. As Onyemelukwe (1983) argued, the pre-1900 economy of the various indigenous kingdoms and clans which were later aggregated under the name 'Nigeria' featured considerable craft industries. These craft industries range from pottery making, textile weaving and dyeing, wood carving to blacksmithing, etc. The knowledge of the above industry flourished during the pre-colonial era and accrued Nigeria much fame as the centre of West African Art. Nevertheless, following the prevalence of modern technology, indigenous technology seem to be relegated to the ancient past. In protest Rihll, (2009) acknowledged that indigenous technology was an integral part of ancient life. Inevitably when analysed based on its crude nature rarely are they categorised as technology.

In this light, Tapper and McLachlan (2005) asserted that it is too easy to assume that preindustrial technologies have no place in an industrializing world, and to ignore not only the centuries over which they have often evolved and adapted to local conditions but the central role they have commonly played in the history of Western technology. These technologies constitute the traditional industries that sustained and sophisticated the economy of pre-colonial Nigeria which outwitted the colonisers' wit and the premise on which modern technology emerged. For instance, the act of writing emanated from the Egyptian Hieroglyphics writing, medicine from the knowledge of herbal mixture etc. Critically, analysing the value of indigenous technology in the face of modern technology one might consider the lives of the ancient people far removed technologically from that of the modern world. Yet, without these crude inventions modern invention would be meaningless.

Of a truth in most developed countries of the world today, modern industries emerged from these indigenous industries. No country emerged from the onset a developed nation rather development in various facets of life took a gradual turn. The transfer of foreign technology to a country does not ensure technical development. It only creates a dependent economy which confines the country within the phrase 'developing nation'. In a bid to attain the status of developed nation most African countries have imported and transferred Western technology to no avail. This is because feasible development demands the modification of indigenous technologies which is highly dependent on the abundant local resources. The processes, skills, equipment and material for indigenous technologies are locally sourced thereby not capital intensive unlike foreign technology which from the onset is capital intensive and unaffordable to developing nations. Little wonder, most developing nations are perpetually in debt. To curtail such debt, developing nations must learn to solve their problems from within. To compare the technological standard of Nigeria to that of the Western developed nations would confine Nigeria to production prowess of imported technology.

It must be noted that the modern European technology is an off-shoot of indigenous technology. Rodney (1974) categorically argued that the 15th century European technology was not totally superior to that of other parts of the world including Africa because the Europeans relied on India Cloth for resale in Africa, and they also purchased cloths from several parts of the West African Coast for resale elsewhere. During this period European technology was still at its early stage. The industrialization of the 1700 ushered in sophisticated machine products. Here lies the difference between indigenous technology and modern technology. According to Heidegger (1977), indigenous technology makes extensive use of the human hand for operation while modern technology is all about the use of power machine. Nonetheless, it is the modification of the hand-machine of indigenous technology that produced the power machine of modern technology. The

success story of most industrialised economies has its root in indigenous technology. A notable example is China that became developed by modernising the local processes of production.

The Blight of Indigenous Technology (Blacksmith) in the 21st Century

There is no gainsaying that the 21st century is an age of unprecedented technological innovation where modern technology is considered the height of human achievement. This era has witnessed the invention of ultra modern technologies, including the all important ICT–information and communication technology. In many ways, it has come to be the backbone of society, and provides the infrastructure upon which other technologies can sit. It is extremely pervasive, rapidly increasing, and undoubtedly important (George, 2006). Yet as vital as modern technology seems, Tapper and McLachlan (2003) observed that there is a real danger, as erratic twenty-first century processes of modernization threaten to sweep away all vestiges of traditional culture, including physical remains and folk memories, that valuable and sustainable skills and technologies are being rapidly and wastefully discarded for short-term commercial purposes. The concept of modernisation upholds the transformation of traditional societies by emulating the West. Such a process invariably creates room for importation of Western technology. Though, the adaptation of new technologies to the old is often possible and desirable for a variety of reasons, in some cases, the old technology itself proves superior, from many points of view, to the new. There is a risk that the thrusting of rapid technological change on developing societies by the industrialized nations will lead to premature obsolescence and discarding of indigenous technologies which could still, both now and in the future, be deployed with advantage (Tapper and McLachlan, 2005).

In Nigeria, the discovery of crude oil has rapidly cast aside traditional technologies and adopted new ones, sometimes without any consideration of long-term sustainability or aesthetics or of the social and cultural implications for either traditional producers or local consumers (Tapper and McLachlan, 2003). Of a truth the drilling of crude oil opened wide employment opportunities for Nigerian youths yet not all are liable to work in the oil sector. The presence of white collar job displaced the possibility of youths' craftsmanship in blacksmithing. Despite the fame of Awka blacksmith industry, the dwindled interest among the younger generation in carrying on with it inevitably led to its decline. In respect to this, Eze-Uzomaka (2011) lamented that for a town with a reputation based on the anvils and blacksmiths' hammers, there are only a few Awka natives still carrying on the tradition of their forebearers. For now, there are only 180 blacksmiths in all Awka and they are desperately in need of apprentices if the trade is to be sustained.

The dearth of skilled traditional practitioners and the urban migration of practitioners' children have compounded the problem and subsequently

threaten the viability and sustainability of indigenous technology. Thus in bid to hold on to modern technology Africa may lose hold of its indigenous technology. Onyemelukwe (1983) bewail that the modern factory which is threatening the proficiency of indigenous technology was hardly known in pre-colonial Nigeria. Truly, the only factory producing tools of all kinds is the indigenous industry but with the colonial administration came industrial factories. Arguably, the crude and tedious processes of indigenous technology facilitated its replacement with the refined and simpler processes of Western technology.

The products of indigenous technology were hardly a match for the factory, whose products began to flood African markets even at the early stages of the colonial venture (Onyemelukwe, 1983). In the view of Mbagwu (1983), European political control in Nigeria, as in other parts of Africa, provided an imperative for the country to move into the world economy and in their bid to make colonial adventures pay for themselves, the colonial entrepreneurs and administrators stimulated importation of foreign goods. Such importation readily made available same products of blacksmith with better finishing and at a cheaper rate. Majority of the populace preferably patronized the foreign cheap goods at the expense of durable expensive local products. Consequently, in the face of these changes McNutt (2009) asserted that traditional technologies such as ironworking have been swept off in the tides of change. The smelting of iron, for example, has been abandoned in many societies because of the ready availability of scrap iron. Such changes pose a problem for interpreting the nature of ironworking in traditional societies, because many of the old practices are being abandoned.

Furthermore, the absence of indigenous technology in Educational curriculum further devalues the industry. Modern scientific knowledge and technology are taught in schools unlike indigenous technology for lack of expertise in the field. Subsequently, indigenous technology not taught in schools relegates its acquisition to oral method of being passed on from one generation to another. With Western education came scientific knowledge and its experimental laboratories made inventions easier unlike indigenous knowledge which relies on skill experimentation. For a considerable period TK (Traditional Knowledge) has been considered little more than a nostalgic remembrance of our varying pasts, being preserved only as superstitious folklore best relegated to Museums (Gakuru 2006 in Siyanbola *et al* , 2012). A survey of schools in Africa attests that there is no laboratory designated for smithing experimentation except at the blacksmiths' workshops. This explains why Nigeria's indigenous technology is today still in its pristine stage of development yet to be fully utilized in the development process.

Indigenous Technology: The Way Forward

The threat posed by modern technologies to the survival of traditional technologies makes the need for conservation and modification of some technologies that are under current threat of extinction increasingly apparent

(Tapper and McLachlan, 2005). The attendant disappearance of indigenous practices raises the need to preserve and promote indigenous technology. The colonial masters are long gone thus by now African should learn to solve its problems from within. Arguably, Western scientific knowledge and technology is not the only means of attaining civilization and obtaining quality living. Alternatively, the indigenous technologies abound awaiting extensive exploitation. Thus, abandoning this means on the grounds of its inappropriateness to meet modern challenges delimits its efficacy. This is because the practice of these technologies according to Dutton (2005) had a more profound set of economic, social and environmental values to the community.

The local manufacture and usage of goods, from available natural raw materials creates multiple linkages in the social networks which is one of the basic elements of community structure. Indigenous industries are interconnected with one another just like in the past, iron smelter and blacksmith shared common bond. The dependence of indigenous technology on the natural environment creates need for the preservation of the eco-system from harmful exploitation. Unlike today where the value of environmental resources is no longer understood, and so the resources are not respected. For example, indigenous trees are cut and uprooted because they are now deemed irrelevant to present-day living (Dutton, 2005). Reliance on indigenous technology reduces importation rate while promoting exportation of locally produced goods. Nigeria seems to be in dilemma despite our capacity in rice production, we still import more rice than we produce. Socially, indigenous technology relieves a country off the burden of foreign dependence.

Products of indigenous technology answer to the immediate needs of its populace reducing the possibility of flooding the market with irrelevant products unlike the constant flooding of Nigeria market with foreign product. Today, Nigeria is over flooded with foreign abandoned products. Recently the minister of Aviation has to decongest the federal hanger of unused and damaged flights. The garages are filled with vehicles that are not road worthy and adds to the already existing air pollution in the country thereby causing health impediments. The importation of already made technology without an enabling environment only ends up filling a country with substandard goods.

Thus, traditional industries and crafts occupy an important place in the national economic system and have also been boosted in recent times by a growing tourist-type demand from Europe. Regrettably, there is not enough statistical information to make an adequate appraisal of the contribution which the rural sector is making towards Nigerian economic progress (Mbagwu, 1983). The indigenous technology and knowledge cannot be easily wiped away because it is deep rooted in people's culture. This peculiarity and uniqueness provides unto such a people, a mark of identity and a means

of survival within the environment. The need to live a fulfilled life necessitated the conception of indigenous technology.

Conclusion

Indigenous technology has been the mainstay of development in Nigeria during the pre-colonial era. The fame of its product gave it a sense of place that globally, art cannot be discussed without the mention of Nok, Benin, Ife and Igbo-Ukwu arts. But following the contact with European culture, indigenous technology lost its value in Nigeria. A technology termed crude is no match for foreign refined counterpart with simpler finer products. Moreover, the products of indigenous industries, with its rigorous processes, are more durable and perhaps expensive compared to simple and cheap products. Additionally, Nigerian taste for foreign made goods outweighed the value of locally made products provided by modern civilization. In effect Andah (1992) opined that the mere transfer of supposedly sophisticated international technology, designed for altogether dissimilar circumstances, has so far resulted in a dualistic situation whereby growth is concentrated in a relatively small modern sector but does not percolate through to the rest of the economy to any significant extent. This has had the harmful effects of displacing previously existing and still very relevant forms of technology without serving as an adequate cultural substitute.

It is pertinent to note that the underdeveloped nature of indigenous technology is counter to its productivity. The lip service paid by Nigerian policy makers further devalues the efficacy and longevity of the industry. This is partly due to the fact that the knowledge of indigenous technology exists in oral form or is learned from elders through apprenticeship. It is also part of the complex unfolding of events stemming from severe cultural disruption faced by native Africans during the colonial period. During this period, traditional practices involving the use of traditional knowledge system were largely ignored, undervalued or replaced by colonial practices. The demise of that knowledge is unimaginable. Today, Awka blacksmiths are lamenting on the dearth of apprentices for the industry. Nigerian youth are more interested in software technology rather the crude technology of the indigenous industry.

Conclusively, and as Mawere (2014) rightly observed, it is beyond dispute that Africa is endowed with indigenous materials and technologies that if harnessed could relieve the continent of its environmental, political and socio-economic related problems and advance communities' development. The harnessing of such technologies would relieve Africa from the burden of relying too much on Western modes of production that require 'modern' materials, tools and equipment that in most cases are too expensive or rather difficult to acquire. To this end the revival of indigenous technology is imperative for the future of the African race.

Recommendations

The relevance of indigenous technology in Nigeria cannot be over emphasised. This work showcased the relevance of blacksmith industry to present day Nigeria. Its crude processes could be developed to attain the status of modern technology and its efficacy will be more appreciated if the following are taken into consideration:

- A modification of the processes of indigenous technology to suit present day technology as an appropriate means of community empowerment.
- Banning the importation of locally produced goods as a means of encouraging and promoting Nigeria's indigenous products.
- Introducing indigenous technology in Nigeria's as a mandatory course in primary, secondary and tertiary institutions.
- The establishment of Institutes or centres for training young entrepreneurs on indigenous technology.

References

Andah B.W (1992) Nigeria's indigenous technology. Nairobi: Ibadan University Press.

Anozie, F. N (1970) "Bronze Age Beginning in West Africa: Reflections and Suggestions" In West African Journal of Archaeology. Vol. 9 Pp: 135-152

Basden G, (1960) Niger Ibos, London: Frankcass

Burkitt, I. (2002). Technologies of the self: habitus and capacities. Journal for the Theory of Social Behaviour, 32(2), 219-237.

Childs T.S and Killick D (1993) Indigenous African Metallurgy: Nature and culture, *Annual Review of Anthropology*, Vol. 22, 317-337, October.

Dutton R. W., (2005) The Impact of Oil Wealth on Traditional Technologies in Rural Oman. In Tapper, R and McLachlan, K (ed) Technology, Tradition and Survival: Aspects of Material Culture in the Middle East and Central Asia, London: Taylor and Francis e-Library

Ezenagu N., (2013) Tourism a viable path for wealth creation in Nigeria: An analysis of Awka metropolis, International Journal of Science and Research, Vol.2 issue 9.

Eze-Uzomaka D. I (2011) Iron Production and Change in Igboland Nigeria, Ikenga International Journal of Institute of African Studies Vol. 12 No. 1, September.

George, S. (2006) Religion and Technology in the 21st Century: Faith in the E – World Hersey Information Science Publishing

Heidegger, M (1977) The question concerning technology and other essays, New York: Harper & Row, Publishers, Inc.

Humphrey, J. W. (2006) Ancient Technology Greenwood Press Westport

Keirl, S. (2006). Ethical technological literacy as democratic curriculum keystone. In J. R. Dakers (Ed.), Defining technological literacy: Towards an epistemological framework, New York: Palgrave Macmillan

Koleoso, O. A (1986) Building on Indegenous Technology and the Training of Traditional Craftmen "A Paper Presented at the 6th Biennial Conference of the African Association for Training and Development Lagos 8-12 September 1986. P2

Lewis, T., (2000) Technology education in developing countries. Int. J. Technol. Des. Edu., 100: 163-179.

Martin, D. S. (1935) Culture Areas of Nigeria: Chicago: Field Museum Press

Mawere, M., (2014) Culture, Indigenous knowledge and development in Africa: Reviving interconnections from sustainable development, Cameroon: Langaa Research & Publishing Common initiative group

Mbagwu, T. C. (1983) Traditional Industry in Geography of Nigeria Development by Oguntoyinbo, J. S, Areola, O. O. Filani M Nigeria: Heinemann Educational BK

McNutt, P. M (1990) The Forging of Israel: Iron Technology, Symbolism and tradition in Ancient society, Decatur: The Almond Press

Misa, T. J. (2003) The Compelling Tangle of Modernity and Technology. In Modernity and Technology edited by Misa T.J, Brey P, and Feenberg A, Massachusetts: Massachusetts Institute of Technology Press

Neaher, N. C. (1976) Bronzes of South Nigeria and Igbo Metal Smithing Traditions PhD Thesis. Stanford U Shaw

Ngoka, G.N. (1992) An inventory of indigenous technology in Nigeria and the integration into the school system. Nig. J. Tech. Edu., 9: 148-155.

Okafor, E. E. (1992) Early Iron Smelting in Nsukka, Nigeria Information on Slags and Residues. Unpublished PhD Thesis University of Sheffield United Kingdom

Okwu, A. S. O. (2010) Igbo Culture and Christian Missions 1857-1957: Conversion in Theory and Practice, USA: University Press of Amanca Inc

Okpoko A. I. and Okpoko P. U. (2002) Tourism in Nigeria, Nsukka: Afro-Orbis Pub.

Olson, R. G. (2010) Technology and Science in Ancient Civilization, Praeger Santa Barbara ABC- CLIO, LLC

Onwuka, N. N. (1991) Magi, Religion and Iron Technology in Pre-colonial Northern- Western Igboland, Journal of Religion Africa xx1,2

Onyemelukwe, J. O. C. (1983) Structural and Locational Characteristics of Manufacturing in Geography of Nigerian Development by Oguntoyinbo T S Areola Fulani M Nigeria Heinemann Educational Book

Richards, P L, Slikkerveer J, and Phillips, A. O. (1989) Indigenous Knowledge Systems for Agriculture and Rural Development: The CIKARD Inaugural Lectures. Studies in Technology and Social Change, No. 13, Iowa State University, Ames, IA

Rihll, R. (2009) Ancient Technology In A Companion to Ancient history by Erskine A. (ed) Blackwell Publishing Ltd WA

Rodney, W.(1974) How Europe Underdeveloped Africa. London: Bogle-L Overture and Tanzanian Press Publishing House.

Shilling, C. (2005) The Body in Culture, Technology and Society, London : Sage Publications Ltd.

Siyanbola, W.O., Egbetokun, A.A., Oluseyi, I., Olamade, O.O., Aderemi, H.O. and Sanni, M. (2012) Indigenous Technologies and Innovation in Nigeria: Opportunities for SMEs American Journal of Industrial and Business Management, 2012, 2, 64-75. Available online at http://www.SciRP.org/journal/ajibm

Tapper, R. and McLachlan, K. (2005) Technology, Tradition and Survival: Aspects of Material Culture in the Middle East and Central Asia, London: Taylor and Francis e-Library.