Colonialism and the Destruction of Indigenous Knowledge System: Reflection on African Arts, Science, and Technology

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Abstract:- **From time in memorial, Africa is bequeathed with a rich cultural tradition reflected in its unique mode of art, science and technology. The people searched inwardly for solution to basic human problems such as illnesses, material needs and tools which resulted in traditional practices that served as viable if not super-active instruments for manipulating nature. From its resource deposits such as salt in the Wadi el Natrun, ancient Africans learnt the art of mummification and food preservation as far back as 500 BC. Owing also to a rich deposit of orchard woods as the Bytyrospermum parkia, Senegalensa Africanesis, etc, as well as the availability of clay particularly around its tropical regions, its people produced masks and sculptures used as disguise for masquerades and as display or for guiding containers filled with sacred relics of ancestors. History of Africa is awash with tales of this diverse art-forms which also included the ingenuity of iron working from NOK (spanning 500 BC – AD 200) or Meroe, the ceramic vase of Sintiu-Bara of Senegal, and recent once like the 19th to 20th century reliquary head of the Fang of Gabon. Its history is further epitomized by the construction of such menacing architectural forms as the pyramids of Egypt and the rich stone culture at Gokomere in Zimbabwe. With a combination of native herbs, roots, barks, and pyrotechnics, health problems such as psychiatry, orthopedics and those requiring prophylaxis, therapeutics, and antibiotics were checked. In this study therefore, an intra-African cross regional assessment of the concept, forms and challenges that these native arts, science and technology encountered during the 20th century era of colonialism and globalization is provided, showing how the twin forces of colonialism and globalization threatened to stultify their growth if not diminishing or extricating their overall essence.**

Key Words: **Colonialism, Destruction Indigenous, Art, Science, Technology**

I. INTRODUCTION

The abrogation of indigenous knowledge and the blind adoption of Western education and its hand maidens, science and technology by many developing nations have resulted in a situation where people in various indigenous communities seem to have lost their sense of cohesiveness, cultural identity and charity of purpose (Ogunniyi, 2013). This is so even though in Africa, the consolidation and use of indigenous art, science and technology has the capacity to liberate the continent from some of the physical challenges and the covering of some of its socio-cultural needs that contemporary forces of imperialism and modernization has subjected it to a height of dependency. Mereku writing on the theme; "Scientific Perspectives to African Cultural Exression", pointed out the need for educators to adopt local or indigenous knowledge as a form of science which must be taught in schools as part of an educational approach to broaden conventional understanding of knowledge. (Mereku, 2014) further demonstrated how indigenous science and technology can be interplayed with modern life mode in Africa through education by showing how African folktales or fables can be used to explain why certain phenomena happen. He also demonstrated how possibly mathematics and science could be taught using the Adinkara symbols which is currently used for producing geometric pattern on cloths produced by the Akan of Ghana and the people of Ivory Coast. The perceptions about indigenous technology have had a profound effect on Africa self-perception and identity. Such perceptions, as a central canon of historical thought about Africa, have inevitable shaped the direction of recent science and technology on the (Schmidt, 1997:4). It is common wisdom that the present is dependent upon the past, that all cultures are shaped by their historical experiences. There is also a relationship of between how a culture sees its past and how it views. Generally, the historical constructs about technology in Africa stand in stark contrast to the Western experience. The paradigm of African inferiority in technological life is widely taught throughout the West and Africa. Thus, African believe that there is little of value in their technological past that there were no technological achievement innovations is alien to Africa (Avery & Schmidt, 1979). This alienated Africans from their historical past such alienation has undoubtedly affected how the present and future are perceived. Hence, there is urgent need to deconstruct every iota of Western misrepresentation about African indigenous technology.

Despite the above submission by Mereku, what is apparent across the length and breadth of Africa at the moment is an obstinate inclination to the Western way brought on through their imperial and colonial experience, even though it is becoming increasingly clear that much of the knowledge these communities need for their survival (much of which are locatable and retrievable from the archives of their own traditional cultures) has become fragmented, commoditized, suppressed, devolved or lost altogether

(Ogunniyi, 2013). As Mwaura (2008) noted; "Indigenous knowledge can be summed up as the wisdom of a people for survival in their own environment". Hence, it becomes instructive for Africa to start thinking from within as only it and its people can best solve its own problems. Across Africa, evidence abound to attest to the fact that, even after over 50 years of disintegration with colonialism a vast majority of its people are still deluded and disillusion about any positive essence in clinging to the old walls of "modernism erected by the former colonial masters".

This research however finds out that aside those things that enhance their national economic, political and social imperativeness; these colonial masters are not in the least out to milk any of its colonial babies on the black continent. The destruction of indigenous art such as the Tiv Kwaghir, science such as the Yoruba Ifa, and technology as we have in such places as West, East and South African iron metallurgy in the colonial period are pointers adduced to this fact. In Nigeria, for instance mining and smelting have almost if not completely disappeared due to increasing availability of metals from European scraps (Adegba, 1989: 247). Smiting too is becoming less and less common. In some parts of Africa both ferrous and non-ferrous metals are smite but it is only in respect of iron that mining and smelting have been documented. Today, the current generations of Africans have become indifference to cultural showpieces in the Western cinema, while there is the fear that the current state of erosion of African values will continue except held-over in abeyance by some mechanistic posture put forward by Africans themselves. There is no denying the fact that most Africans of today's world would also jettison indigenous cultural art such as the Yoruba Gelede and the Atilogwu dance among the Igbos for Western based rhythm and blues or the corrupting influences of Afro-American hip-hop.

II. CONCEPTUAL CLARIFICATION

From the outset, it suffices we provide the conceptual framework for the five key words that are central to the subject matter of this research. Hence, the five paragraphs to follow the current one below shall deal with colonialism, indigenous knowledge, art, science, and technology in a sequential order.

Scott and Marshal (1994), defined colonialism as;"the establishment by more developed countries of formal political authority over areas of Asia, Africa, Australia, and Latin America…. It is distinct from spheres of influence, indirect forms of control, semi-colonialism, and neo-colonialism". In a more complex but apt way, (Longman, 2003) defines colonialism as; "when a powerful country rules a weaker one, and establishes its own trade and society there". With regards to Africa, colonialism is referred to the historic period from 1888 onwards (just three years after the Berlin conference of 1885), when the various European powers granted charter of economic control to their various imperial trading companies which lasted until about 1900 when state led colonialism among the European colonizing powers was brought on-stream, and running through the 1960s when most of this African colonies "gained" political independence.

The term "indigenous knowledge" is construed by (Oguniyi, 2013) "as a dynamic, vibrant and renascent way of knowing and interpreting experience… it is knowledge that empowers the individuals or groups to harness the potential of their bio-physical environment for the overall welfare of the society". It is a combination of knowledge systems encompassing technology, social, economic, and philosophical learning, or educational, legal and governance systems…. (including) the technological, social, institutional, scientific and developmental, as well as those used in the liberation struggles" (Hoppers, 2002: 8). According to the South African Portfolio Committee on indigenous knowledge systems, indigenous knowledge is defined as knowledge, "emanating" from the spiritual being of people, it is organized knowledge which is used further for to accumulate knowledge with the objective to create quality of life and to ensure a livable world indigenous knowledge of learned information, skills, and understanding that individuals and groups have acquired over a period of time about their immediate environment which is not dependent of exogenous cultural intrusions. In an attempt to obviate negative connotations surrounding indigenous knowledge, some Post-Modern scholars have adopted the word, "endogenous knowledge" to denote a knowledge corpus that evolves from a local community based on its experience and historical context rather than endogenous or imported idea imposed by a supposedly superior culture (Hountondji, 1997). Indigenous knowledge is the product of human reflection, creativity and resourcefulness. It is the sum total of organized human interactions with nature and represented in various forms: verbal, graphic or written (Ogunniyi, 2013). Though Ogunniyi however cautioned in the following words;

> "However, the nature and development of these various forms differs from one indigenous culture to another. For the same reason, a culture with a written record of such interactions is likely to have a higher level of development than another solely dependent on oral traditions. Like Scientists, indigenous people in various cultures in the course of their daily lives have derived their knowledge through the use of their senses of sight, smell, taste, touch and hearing. By reflecting on these sensory data, they are able to formulate hypothesis and generalization which in turn serve as the basis for their enquiries". P. 14

What the foregoing lines suggest is that there is usually a geographical if not demographical undertones when talking about indigenous knowledge as we have for instance African indigenous knowledge or Asian indigenous knowledge. Still within Africa we could in a literary sense 'micrify' our reference to the scope of indigenous knowledge to say; "indigenous knowledge of the Yoruba, Igala, Luo, Kalenin, Mandinka, etc.

Though the definition of what constitutes art is disputed (Stephens, 1991, Robert 1997, Noel (ed.) 2000) and has changed over time, general description mentions an idea of imaginative or technical stemming from human agency and creation (Robert, 2012). In the introductory part of her book, Feeling and Form, Susanne Langer held the belief that art is defined by many people from different perspective. Monroe Beardsldy, for example, defines art as "creation of an object, the original intention of whose creation is aesthetic interest'' (Monroe 1981, P. xix). John Dewey sees art as something that is laden with experience Dewey, 1980, P. 4) on his part (Weitz, 1956, P. 29) viewed art from an organist perspective when he stated; "anything which is a work of art is in its nature a unique complex of inter related parts in painting for example lines, colors, volumes, subjects - all interacting upon one another on a paint surface of sort. Certainly, at one time at least, it seemed to me that this organic theory constituted the one true and definition of art. Art is a chain of complex human practices reflecting social, political, cultural and economic content. It is a diverse range of human activities in creating visual, auditory or performing artifacts (artworks), expressing the authors' imaginative, conceptual ideas or technical skills, intended to be appreciated for their beauty or emotional power (Hornby, 2010). Art involves aestheticism since the aesthetic end is the perfection of sensuous cognition and beauty (Baumgarten, 1961). This aesthetic basis of art, Robert Brian was once quoted as saying, "in presenting art as an integral element of economic, social or political institution, I remain aware that the prime element must be the aesthetic in the final analysis" (Bryan, 1980). The three basic branches of art are painting, sculpture and architecture (Hornby, 2010). In Africa, as indeed elsewhere in the world; "art fulfils a multiple of functions, it may be a symbol of status and prestige, a means of acquiring and maintaining political power, a stimulus to farming or trading, a piece of entertainment. African art has never been merely religious and nearly all traditional statutory, no matter in what media, is magico-religious (Bryan, 1980). Hence, African art is distinct from those of Asia, ancient Greece and Medieval Europe.

Science has its origin from the Latin word 'scientia', which simply means a body of empirical knowledge derived through observation of and experimentation on phenomenon (Olaoye, 2009 P. 2). In providing a view to the nature of science, (Gardner, 1975), posits that science is an institutional system with the strengths and weaknesses of all human organizations. Science is the concerted human effort to understand better the history of the natural world and how the natural world works, with observable physical evidence as the basis of that understanding (Mereku, 2014). Science is a systematic enterprise that builds and organizes knowledge in the form of testable explanations and predictions about the universe (Wilson, 1999; Hebron, 2003). Science is broken into natural science and social science. While natural science is concerned with the description, prediction and understanding of natural phenomena based on empirical evidence from observation and experimentation, social science is concerned with society and the relationship, social science is concerned with society and the relationships among individuals within a society.

Technology is a term used rather loosely refer to machines, equipment and possibly the productive technique associated with them; or a type of social relationship dictated by the technical organization and mechanization of work (Marshall, 2005). The word 'technology' is traceable to the Greeks who referred to it as 'techne' meaning "art and craft". According to Olaoye, 2009; "technology involves the application of thinking, skills, hands and, accordingly the production of concrete objects of need". The last definition to a large extent aggresses with (Laudan, 1984)'s view of technology as; "the qualitative and quantitative production of objects of needs through the application of scientific principles. In 1979, Ursula Franklin in her Real-World Technology, defined technology as; "practice, the way we do things around here (Ursula, 1999). More also, (Bernard, 1998) defines technology in two ways, first as; "the pursuit of life by means other than life", and secondly as; "organized inorganic matter". The sum total of the above submission would be that technology deals with the way man manipulate the environment through tools to satisfy human ends. This concerns how man use tools to produce cloth from fiber, to build physical devices like cars from steel etc. while African technology deals with how Africans used traditional or endogenous tools to produce goods to satisfy human needs.

Origin and Forms of Indigenous Art, Science and Technology in Africa

African societies obtained a peculiar form of internally induced development before the infiltration of colonialism (Ahokegh, 2013). The societies were not dormant as the people related with their neighbors in many spheres of life, mainly aided by the application of science and technology. The pattern of pre-colonial relations was dictated by the simple motive of the Africans to acquire the needs for survival. The entire Africans were unique as a people in all ramifications. The uniqueness was however not recognized by Eurocentric writers (Ahokegh, 2013). This uniqueness in African society stems from the nature of African science and technology. The early Europeans to Africa did not understand this model of science and technology that clime the society, and thus forms the avantgarde for meeting all human necessity. For if they did take cognizance of the basic fact of African uniqueness, there would not have been any rationale judging happenings on the continent based on the European model of "modernization" or "globalization". The society was a non-parasitic one, and so African science and technology was not a means for material exploitation. In other words, with a non-capitalist orientation in place, the people of Africa instinctively never worked towards outplaying each other to accumulate wealth.

Science and technology constitute core ingredient of any civilization. While Africa is at times credited as being the

cradle of world civilization what we are not so sure of is the exact date of this civilizations or whether it was a black-based civilization. Science and technology in Africa are as old as the beginning of human civilization on the continent. Africa's exploits in science and technology including arts is made possible by the presence of four rich geological frameworks comprising four principal elements, namely;

1. The cratons and the basement shield where metamorphic and most of the igneous rocks are exposed;
2. The great interior basin such as the Taudeni, Chad, Zaire and Kalahari basins;
3. The East African Rift Valley; and,
4. The continental marginal basins which encircle the continent (Andah and Okpoko, 1979).

These four factors to a great degree contributed to Africa's rich trado-cultural heritages which date far back to antiquity. Starting with Egypt, we cannot be certain at this point, exactly when the Egyptian civilization started but there were probably human beings living in North Africa about 10,000 BC (Abramowitz and Job, 1981). By about 1150 BC, the lands around Egypt have begun to use iron weapons (Abramowitz and Job, 1981). By 5500 BC the ancient Egyptians have already mastered the arts. (Omonemene, 2004), traced the technology of wood carving amongst the Benin of Central Nigeria between 900 – 40 BC. A dug-out unearthed in Dufuna in current Yobe State, North-Eastern Nigeria in March 1994 dates to between 7300 BP and 7600 BP as well as proves that Africa has a long tradition in boat making. The unearthed boat from the site is still the oldest in Africa and one of the oldest in the world (Breunig, Garba and Hambolu 1995, P.34). Aside Meroe whose iron works technology is dated back to the 7th – 6th century (Humphris is and Scheiber, 2017; Humphris et al, 2018) evidence of Bloomberg iron smelting technology particularly in areas before now have remained relatively unknown have blossomed in recent times. According to (Okafor 1995, P.72), eleven C – 14 dates produced by the Accelerator Mass Spectrometry Laboratory at the University of Oxford show there was continuous iron smelting in Nsukka Division, south-east Nigeria, approximately from 760 BC to 1950 AD (also see Okafor 1992a; Okafor 1992b; Okafor and Philips, 1992). These dates cover and bracket all the accepted published radio carbon dates for early iron smelting sites in other parts of Nigeria (Anozie 1979:131; Calvocoresi and David 1979:10 – 11; Connah 1968:317, 1981:146; Fagg 1969; Shaw 1969, 1978:97, 1981:630; Sutton 1976:18).

Ancient Africans developed elaborate forms of Agriculture, husbandry, pottery, and the fabrication of such personal as bracelets, combs and beads and by 2,500 BC the Egyptians have already developed resistance to the stored products pest (Tribolium spp.) (Taylor, 1977). By 2700 to 2200 BC (Old Kingdom), the Egyptians had in some ways surpassed the Sumerians and has created some of the finest art and architecture the world has ever known (Lutyk (ed.) 1987). The Egyptian Budarian tribe around this time became known for their high-quality ceramics, stone tools and the use of copper (Hayers, 1964). Some of these items were as sophisticated as their modern equivalent haven been embellished with color and decoration as typified by the Naqada II Jar which was decorated with gazelles. Within the New Kingdom (1600 – 1100 BC), the Pharaohs have as well learnt to build Colossal Scale. The Sphinx and the three Great Pyramids at Giza have fascinated people of other civilization for 5000 years (Lutyk (ed.) 1987).

Metal working constituted an essential form of indigenous technology in Africa ab initio. Thus, it has added value to African civilization both in the past and present. The chain processes of mining, smelting and smiting are the main aspects of metal working. In the well-known Nok culture, precisely Taruga, iron smelting site was excavated and dated to the fourth century B.C. Thirteen furnaces were found and so far, the oldest site of iron smelting in west Africa (Andah, :1979: 136). Everywhere in Africa, smiting is a specialist trade. The specialists in most cases belong to the same lineages. In some places such as Bida and Benin in Nigeria, lineages were organized into some kind of guilds (Nadel S, 1942). Thus, it is worthy to know that, blacksmith emerged in West Africa around 1500 B.C.E. Iron working made farming, hunting and war much more efficient. Iron allowed for greater growth in societies with the ability to support larger communities came social growth and the development of large kingdoms, which spread across western Africa. Through knowledge of iron working technology Aksumite emperors in what is today's Tigray region in northern Ethiopia and Eritrea (Butrier, 1981) by around the 4th century BC have already minted their own Aksumite currency for facilitating local trade and to be used between Aksum and foreign traders passing through Aksum in the trade between the Roman empire and India. The idea of innovating currency was however not exclusive to Aksum. In pre-colonial Africa, among the currencies which had been used are gold, dinars or mithqals, gold dust, cloth money, copper rods, iron, cowries and manillas (Ake, 1981).

Across the continent one or several of these forms of currencies were used. Among the Aksumites too, similar to the hieroglyphic used in Egypt from 3200 BC (Mattessich, 2002; Allen, 2010), the Aksumites developed the Geeze script that manifested into the Amharic alphabet which the people used until about the 4th century AD (see Daniels and Bright, 1996). Even the Kushite kingdom that followed Egypt, Akzum, NOK and other ancient centres of African civilization were not left out of art, science and technological experiments that produce innovations. Established around 785 BC (Fisher, Lacovara and Ikram et al (eds.) 2012), the Meroitic kingdom pointed out earlier in this same segment served as the capital of Kush. Aside Iron, like the ancient Egyptians, the Kushites also built magnificent Pyramids (Van 2011). The Kushites were also reported to have mined gold which they sold by way of the trans-Saharan trade to Egypt. South of the

continent the Shona (now found mostly in modern day Zambia and Zimbabwe), by about 1600 years ago built a civilization that was wholly dependent upon black African art, science and technology.

The Shona built massive stone structure that was a source of great marvel and awe to early Europeans. One of this early Europeans, the German, Karl Mauch was so enthralled that he doubted the constructions as being a black Africans' in the following word; "this is the work of Phoenician or Jewish settlers". The Great Zimbabwean extensive stone ruins lying in south-eastern Zimbabwe (about 19 miles or 30 kilometers of Fort Victoria, holds some of the relics of this late stone age civilization of the Shona. The Shona according to some ancient historical account were vivacious pastoralists, crop producers and traded gold on the coast of the Indian ocean. The Shona Acropolis which stood on a steep-sided hill that rises 262 feet above the ground is a living testimony of the people's use of science and technology in times past.

Within the current millennium, the continent of Africa had demonstrated to a great extent an inferential surrogation towards the art, science and technology as a source of well-being and liveliness particularly as demonstrated by states of the central Sudan which includes Ghana, Kanem, Mali, Songhai and Hausa. Account provided by the Moroccan explorer Ibn Battuta who visited the Court of Mali between 1352 -1353 provides us with a glimpse regarding the indigenous art-form in that West African country in the 14th century. This was captioned by (Levitzon and Hopkins, 1981) as thus:

> "…later in the same festival, 'Dugha the interpreter', who was also the Sultan's spokesman, 'plays the instrument which is made of need with little gourds under it, and sings poetry in which he praises the Sultan and commemorates his expeditions and exploits'. This performance was followed by an older form of panegyric, whose performers Ibn Batuta described as Jula, clearly the term Jeli later used throughout Mali's former dominions for a professional hoard of griot… Each of them has enclosed himself with an effigy made of feathers, resembling a (bird called) Shashaq on which is fixed a head made of wood with a red beak…I was told that their poetry was a kind of exhortation."

Prior to Mali, the only Savanna kingdom where such evidence of panegyric and poetry is as well richly endowed was Kanem Borno, originally a loose confederation north-east of lake Chad, perhaps created during the 6th century AD (Iliffe, 2005). Aside poetry, the Africans of the central Sudan displayed a burgeon of equestrian culture as further account by Ibn Batuta as captioned by (Levitzon and Hopkins, 1981) further proves below;

> "Their brave cavaliers wear golden bracelets. Those who's knightly valor is greater wear gold necklets also. If it's greater still, they add gold anklets. Whenever a hero (batal) adds to the list of his exploits, the king gives him a pair of wide trousers and the greater the number of a knight's exploits, the bigger the size of his trousers."

Incidentally, most of these gold and ornaments used to display largesseor produce household use items and for the minting of currencies were mined and fabricated in Africa. Ghana whose establishment probably predates Mali perhaps become a dominant centre of gold production in the whole of the Savannah region of Africa, as this reason is likely responsible for the tag "Gold Coast" that it was being referred to up to the eve of its independence in 1957 (Levine, 2010). Gold production was made possible by deposits along the Niger and other West African rivers. Ghana exchanged gold dust for salt. Most of this gold produced in Ghana came from the mining town of Sijilmasa.

This gold was transported as far away as Egypt and Syria (Bulliet, 2008). Scholars previously believed that Sub-Saharan Africans either did not have a period of using copper until the 19th century (going from the stone age directly into the iron age), or that they started smelting iron and copper at the same time (Herbert, 1984). Copper artifacts recovered from Nubia provide the earliest known evidence of metal smelting in Sub-Saharan Africa, dating back to after 4000 BC. They were probably importing from Egypt copper metallurgy in Africa. Copper smelting is thought to have been introduced from Egypt during the early Old Kingdom (a. 2686 – 2181 BC)(Childs and Killick, 1993).

Attempts to reconstruct the history of Benin art have been made five decades. The manufacture of copper base alloy castings from Benin city covered about four hundred years (Herbert, 1973) based on tradition (Egarevba 1960; Herbert, 1973) stated that the transfer of knowledge of the cirriperdue technique from the Yoruba city of Ife to Benin was completed at the end of the thirteen century. southwest of the central Sudan, among the Hausa speaking people, for over 1000 years, the first settlers in Kano in what is today's northwest Nigeria the technology driven Abagayawa blacksmiths who settled at Dola hill, mined ore from the iron stone outcrop (Muhammed, 2013: p.36). Similar to diffusion metal technology from Egypt to black African part of West Africa through the trans-Saharan trade, is the claim that idea of iron working is said to have diffused through the Indian Ocean Rim region to South Eastern African (Chirukura, 2018) though generally southern Africa is believed to be about the last region of African continent that the idea of metallurgy got to. Metallurgy only appeared in the early 1st millennium CE, when ancestral Bantu peoples migrated southwards from Northwest Africa (Philipson, 2005).

Just as Egypt had been a pioneering center mineral works such as gold, bronze and then copper between 5000 to 800 BC onwards (Cradock, 2000) in African, in the aspect of salt mining Egypt was also highly reputable. Through mounds

upon mounds of salt deposits to Wadi el Natrun (Natron valley in Beheira North of the country. The alkali lakes of the Natron valley provided the ancient Egyptians with the sodium bicarbonate used in mummification and in Egyptian faience, and later by the Romans as a flux for glass making. The beginning of salt in Egypt is dated back to 3000 BC. Salt working or production, perhaps its knowledge as well diffused from Egypt also spread Southwards to the Sahel region of west, central and East Africa. In Cross River basin of croon, the production of salt becomes a vibrant industry involving numerous people and trading communities. Salt was produced near Lake Victoria, Kyoga and Albert among the Buhaya and Buganda tribes and among the Mang'anja people near the shores of Lake Nyasa. Salt was also mined underneath rock in places as Taghza, Bilma around the kanembe country of Lake Chad. Also, near Lake Benguela and River Luapala in Central Africa salt was produced in great quantity.

IV. COLONIALISM AND THE DESTRUCTION OF INDIGENOUS KNOWLEDGE SYSTEM: REFLECTION ON ART, SCIENCE AND TECHNOLOGY

If one was to place the continent of Africa on a scale today, what becomes vividly clear would be that the place of indigenous or traditional knowledge about Africa's art, Science and technology, in empowering people are not as they use to be (Nyamekye, 2011-2012). This is caused by a number of factors. First, historiography of Africa represented technological achievements on the continent as derivative, retarded, backward, and otherwise lacking in innovation. There is the argument for instance about the absence of complex socio-political organization in Bantu speaking Africa before the present millennium (Schmidt, 1997). Some of the early European writers had sincerely believed and regarded Africa as a dark continent and that they brought the first light of civilization to a benighted people lost in primitive barbarity (Emordi, 1999). In most cases, some of their views, disparaging as they were and were contemptuous, were expressed in order to justify their imperialistic adventure and "civilizing mission to Africa", all of which gave the European strength over Africa and resulted in the conquest and colonization of Africa (Crowther 1968). One of such remark was made by G. W. Hagel, a German philosopher once said; "Africa is no movement or development to exhibit" (Andah and Okpoko (1979; Emordi 1999). More also the British Historian, Margery Perham, also note;

"Until the recent penetration of Europe, the greater part of the continent was without the wheel, the plough or the transport animal, without stone houses or cloths except skins; without writing and so without history" (Perham, 1951).

Aside the above rhetoric the European through obnoxious policies "systematically stultified indigenous technology (Abubakar, 2009). Imperialist intervention in non-capitalist areas of the world in the 19th and 20th centuries was necessary for the survival of the international capitalist system (Mukhtar, 2013). Colonialism introduced measures such as high taxation, forced labor, compulsory cultivation of crops, land alienation, pass laws, low prices of Agricultural products and high prices of imported goods, as well as local discrimination and segregation (Boahen, 1985). Taxation was the principal instrument use in attaining the objective (Abubakar, 2009) of destroying the indigenous art, science and technology in African by the European Colonizers.

The role of taxation in subordinating the conquered society to the interest of the colonialists has been well treated for Kano by (Bello, 1982). The colonialist primary designed taxes as a means by which to make the colonial effort financially self-sustaining and to force the Africans into European enterprises (Betts, 1985). These taxes which were intended to serve as a drain on local or indigenous economic practitioners took several forms including personal taxes for all African males, hut tax, pool or capitation tax, income tax, property tax, money tax and labor tax. As early as 1906 Lugard did introduced discriminatory Caravan tolls which heavily taxed traders dealing in locally manufactured goods (Lugard, 1965). The imported cueillette, the tax by which wild rubber was harvested in Congo Free State, was the most criticized of the colonial taxes, but it duration the French "Presentation", a labor tax required of all males in French West and Equatorial African, unless remitted by cash payment was the longest; it was only abolished in 1944.

Conversely, the Germans in the Cameroon allowed the capitation tax to be remitted by a labor 'payment'. And in parts of Uganda, the British continued the Luwalo, a pre-colonial public-work tax of one-monthlabor, until 1938, when it was replaced by a money tax (Betts, 1985). Imposition of labor tax meant that labor would weak paid seasonal employment over personal enterprise as it happened among young Mossi laborers of Upper Volta (now Burkina Faso) who alienated their land and craft to seek employment in Ghana between 1906 and 1910 (Skinner, 1965). The colonial state policy of taxing industrialist's discouraged production because it made indigenous manufacturing less profitable and attractive. These taxes were based upon capitalist assessment of inputs, cost of production and income.

Tax was a great disincentive to industrialist like blacksmiths, textile manufacturers. The imposition of capitalist tax on the industrials was severe especially when it is considered that in the pre-colonial period the feudal industrial tax was very light. Such taxes were paid in kind (Mukhtar, 2013). The feudal paid by blacksmith annually for example, was about four hoe blades per annum per industry (Jagger, 1973). The heavier capitalist tax burden on the cottage industrialists which might have discouraged the setting up of new industries by perspective indigenous industrialists and perhaps forced many to fold up; must be seen as an important factor altering the condition of production and reproduction of indigenous industries.

Through the use of the policy of forced labor, against the wish of local artisans and economic practitioners their

labor power was diverted away from their craft to those enterprises that suite the imperial design of the European colonizers. Examples would suffice below. When the Brazzaville-Point-Noire railway started in 1921, French rounded up thousands of Africans and sent them to work on the sites. The African laborer slaved under such inhuman conditions that an estimated 25% of them died annually (Ake, 1981). The records of the gold coast transport department for 1908, also does proves that, the British as well practiced forced labor. According to this record, African carriers work for a twelve-month period average about 400 miles a month. Naturally, many of the men became incapacitated, their sales 'almost completely worn through' (Ake, 1981).

Under colonialism, unpaid labor was common and wide-spread. Colonialists instituted a system of compulsory cultivation of crops. The principle, which originated as early as the end of the nineteenth century in the Belgian Congo, was revived during the First World War, following a mission carried out in 1915 in Uganda and the Gold Coast with respect to cotton and cocoa respectively (Passelecq, 1932). Farmers were forced to produce cash crops over food crops production and preservation. The compulsory cultivation of rice was introduced in the Eastern province, and that of cotton spread from Maniema and the Uele to the entire colony (Coquery-Vidrovitch, 1981). In 1930, the 'state fields, covered more than a million hectares; as a result, the Congo produced 15,000 tons of rice and 3,000 tons of cotton; some ten companies foreign companies controlled III ginning mills. The innovation was particularly unpopular but was adopted in the French federation (Coquery-Vidrovich, 1981).

Through the policy of land alienation, lands which hitherto were subject to the productive whims of indigenous artisans and economic proprietors were expropriated by the force of colonial factors of terror and militarism. These policies discouraged local artisans and adversely affected the growth of indigenous science and technology which prior to colonialism depended upon these portions of land. In Tunisia, the process of dispossessing the fellahin (peasants) had started as soon as the French protectorate was started there in 1881. In the place of the fallahins, big capitalist firms (i.e.; compagnie des Batignolles Societe' Marseillaise de credit, Societe Fonciere de Tunisie, etc) gained control of nearly 430,000 hectares. In Algeria, land taken from the authorities and allocated to European settlers, (loans, implements, housing, etc.) (Boahen, 1985). In Kenya the land ordinance of 1915 extended the duration of lease of African lands to Europeans from 99 years to 999years. It also reduced the rents and the minimum value of the required improvements as stipulated in the 1902 ordinance. Much of the alienated land was not put to any productive use. In southern Rhodesia, an even greater proportion of land was alienated to Europeans between 1890 and 1900, Europeans entrepreneurs and adventurers poured into the country.

Land alienation was also extended to Matabeleland. While Africans, who needed land bodly, were refused access and right to it, Europeans made spectacular gains from it through speculation (Kaniki). In Angola in South-West Africa, the Angola Diamond Company established by the Portuguese, was given exclusive right to prospect for and mine diamonds in a large are of about 1 million square kilometers. Similarly, Petrangol enjoyed the same sort of concession in regard to petroleum in Cabinda, Belgian and Portuguese interests had concessions covering 400 million tons of coal deposits in Mozambique (Ake, 1981: 48-49).

Through deliberate policy such as the diffusion of strange or unfamiliar input and technology to Africa also alter the balance of science and technology as well as trade between the Africans and the Europeans in favor of the Europeans. Such was the case of the indigenous weavers in Nigerian when in the 1920s, the British following a disguised claim that it was introducing improved cotton seeds, brought into the country the Allen American seed. (Lenniham, 1983) puts the situation as thus;

> "The Allen American cotton was very difficult to hand gin because of smaller and more numerous seeds. It was more difficult to spin because of its final stipple. Finally, its reddish tint made it unsuitable for the local production of undyed white cloth. As such, it was highly unpopular among cotton growers and harmful to the local textile industries."

This measure was intended to put the indigenous industrialists at a serious disadvantage over the British cotton so that they could be edged out of the cotton market. Thus, the native authority as its contribution to the success of this design did introduce the method of forcing cotton producers to grow the Allen variety. A stiff penalty or fine and or imprisonment awaited any peasant that grew the local variety or mixed it with the Allen type in any district designated for the American cotton (Muktar, 2013).

In Blacksmithing, the Africans became confronted with a bleak future because of the decline in the demand for their products occasioned by stiff competition from European manufacturers. Speaking on this trend as it affects the Ebira people of north-central Nigeria (Ohiare, 1995) said; "the Ebira blacksmiths have lost almost completely the trade in cutlasses, and knives. Even such tools as hoes and traps, in which they are still able to hold their own, the threat is serious. The increasing use of agricultural machinery like tractors and also the more affordable and imported utensils pose a threat to the survival of Ebira blacksmithing. As a result of the unaborting decline in the demand for the products of the blacksmith, a good number of them have abandoned the trade for other more profitable venture."

The above claim by Ohiare, showcases, some of the long-run impact of the un-negotiated impact of the integration of Africa's economy to the global capitalist system. In clothing and weaving as we as other aspects of black African science and technology, growth was impeded through imports

of cheap European manufacture as (Lugard, 1965) captures below;

> "the produce of the village 100m, or dye pits, or smithy is discounted by cheap imported goods, and the craftsman's calling is no longer what it used to be."

More also difference socio-religious and cultural belief between the European colonialist and the black Africans also constituted a great undoing on the part of preservation and consolidation of African art, science and technology. The introduction and subsequent widespread acceptance of Christianity during the first half of the 20th century brought a major change in the delicate balance of ritual management of resources. Most of the traditional priests invested with the protection of the shrines and the forests either converted, abandoned their roles, or died without passing on their traditional authority (Schmidt, 1997). In Islamic based societies as well particularly those who have at one time or the other had to be subject to Arab imperialism (i.e.; Hausa or the Tuareg), Islamic injunction outlawing sorcery has made native to drop this practice that is believed to be connected to an art like blacksmithing for instance. Islam prohibits any form of association with another god, which implication is what sorcery instils. Practitioners of sorcery seek assistance from others apart from Allah and as such ascribing partner to him.

Muslim intellectuals often cite Quran (chapter 51, verse 56) to buttress this point (see Salau, 2014). These imperial religious prescriptions against African traditional heritages explains the reason why Ifa practices among such people as the Yoruba, Igala, Jukun and the Igbos of Nigeria has waned. It also explains the reason why the Tiv akombo or Tsav system (Ahokegh, 2013) has as well diminished. It further explains why the sacred significance once attached to groves dedicated to the Baculezi gods among the Buhaya of East Africa has eroded (Schmidt, 1997).

V. CONCLUSION

This work delved into an overview of the destruction of indigenous African art, science, and technology. Indigenous science and technology were a factor in the socio-economic history of the traditional African society. Subsequently, after the incursion of colonialism and its concomitant western civilization the indigenous industry began to phase out as a result of colonial interference coupled with various policies that were hostile to the development and progress of African States. This study therefore recommends an urgent need to consider products and values of indigenous African knowledge as alternatives ways of knowing and/or doing things that could mitigate the current crisis facing not just the continent of Africa but the entire human race such as environmental degradation, pollution, global warming, desertification and other socio-biophysical ills fueled largely by unsuitable scientific and technological imperativeness of exogenous forces in Africa upon the continent.

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