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Where Bottom Dropped off Manufacturing Innovation in Nigeria: An Example of the Esan People in Edo State

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ABSTRACT The nucleus of technological growth is innovation. With a population of over one hundred and fifty million people Nigeria is yet to experience any major technological breakthrough. Communities are undeveloped and the people lack self-esteem. Massive poverty and unemployment give rise to corruption and inefficiency in Nigeria. Since independence on 1st October 1960 industrialisation seems a mirage because the skills and ideas of the pre-colonial past were abandoned during colonisation by Britain and the advancement of western European ideas. These jettisoned native methods of production and procurement to meet basic human needs without deep-rooted replacements. Instead, a dependency nature on European manufactures was enthroned. Thus, individuals, bodies and groups to restructure the economy and transform the country into a self-producing society made some uni-directional efforts that were tailored after European growth patterns and have failed to reach the goal. A panacea for this failure is to identify where bottom dropped off technological innovations in the past with a hope of learning some lessons.

INTRODUCTION

Lessons are part and parcel in the development of human race. Advanced technologies of the world and the knowledge of sciences were derived as innovations from individuals or groups. Contemporary times believe technological advancement as a major requirement for any modern nation. In Nigeria, various skills and manufacturing ideas developed from the pre-colonial period. Such achievements sustained and enhanced the growth of populations and societies including that of Esan up to colonial rule. Esan people by language and culture are Edo located North East of Benin City, the capital of Edo State, Nigeria. They generally speak variants of the Edo language, which became separated from the Niger-Congo family of languages about 4,500 years ago (Flight, 1981, p. 52). The people refer to themselves as Esan while the words Isa, Esa and Ishan that were interchangeably used by European writers and colonial administrators became a corruption of the same word Esan.

Impact of colonial rule and the distortions which it created weakened the fabrics of indigenous societies; led and brought about a neglect of indigenous ways of living. This work explains that lack of technological development suitable for modern Nigeria's development derives from the neglect of the pre-colonial achievements. Modern strategies towards manufacturing processes did not put into consideration lessons from the past and as such laudable efforts by individuals and groups failed to reach destination. On the other hand, the use of indigenous technologies in the past had led to the production of goods to meet basic human needs for food, water, shelter, and clothing to mention but just a few and were expanded from time to time to meet external demands.

CLOTH WEAVING

Textile manufacturing was a great industry in pre-colonial times. Major centres for cloth weaving and dying included Kano, Biu, Nupe, Idah, Oyo and Uromi in Esan. Almost all pre-colonial societies in Nigeria had cloth weavers (Nzemeke, 1985, p.3). The importance of cotton and the size of cloth production were significant in pre-colonial Esan hence it was described as the largest industry in the area (Aveling et al., 1925-1926). Indigenous specie of cotton "Ishan cotton" (G. Vitifolium) locally called *olulu* was cultivated for centuries before the introduction of American and Asian crops in the 15th century. Purseglove (1991, p. 344) agrees with the antiquity of cotton in Esan and suggests that the perennial forms of Gossypium barbadense spread in post-Columbian times from Eastern South America and the Caribbean to West Africa and gave rise to the indigenous specie of the Esan cotton in Nigeria.

It had the long and strong lint that was durable for weaving the thick multi-coloured cloth that the natives described as *ukpon ododo*. Apart from the domestic consumption Esan cloth was traded to neighbouring people and to distances. For instance, cotton products were exchanged for salt, iron tools, and beads with people from Edo north before the coming of the Portuguese in the 15th century. Apart from the lint that was used for cloth weaving, cottonseeds were edible and were used for cooking soups.

The transformation of wool into threads was done in such a way that manufactured cloth included *ukpon asiso* specially woven as work cloth or sewn as the farmer's bag, *ukpon agbo* or the ordinary wrapper, *ukpon-ododo* or the multi-coloured cloth and *ukpon-nogian* – the scarlet cloth. Though it is possible that the craft was independently developed because of the raw materials that were available in the forests, it is also possible that the knowledge came from neighbouring peoples.

Wool seeds were separated from the wool with tools made of wood. The wool was then spun into threads with wooden spindle. But first, the wool had to be beaten to a fluff and spun into threads with the thumb and fourth finger into threads that were later dyed into the required colours of black, red or yellow. Thus vertical and horizontal handlooms locally called *erindo* were used to weave the threads into cloth. The loom was usually constructed in a corner of the female apartment throughout the pre-colonial era. The *ikpogho* were usually tied horizontally to the vertical loom, and were firmly rooted to the floor. The undyed and the dyed threads were used alternately based on what patterns the weaver wanted to create. Other tools that were used in the manufactre of cloth were *eben, aha, okidore* and *ikpifeme*. At the stage of rolling the thread on to the two-*ikpogho* sticks two *ikpifeme* were used to separate each strand of thread from another. An approximate space was created between the threads on the loom and this was important to the successful weaving of a strong piece of cloth. *Eben*, an instrument of wood was used to smoothen the threads time after time. It was also used for tightening the woven parts while two other sticks *Aha* held the thread in position. The cloth was first woven into *utaba*, about a yard in length. Two *utaba* were tacked together to form about two yards of cloth which was called *Aruenmudu* used as a wrapper by women while three were sewn together as a cover cloth called *igbu* used by men.

Esan dyers obtained their colours from Agbede (Etsako) traders. Dyers obtained more of the indigo from indigofera as dried balls known as *alo* by Esan traders (Aveling et al., 1925-1926). Weaving industry dyed threads just as it is done today. The most valued product was *ukpon-asiso*, thickly woven and coarse in texture used by farmers. The *ukpon-agbo* was woven with un-dyed threads. They were usually woven for women who tied them as home used wrappers before the advent of European textiles. The *ukpon ododo* or multi-coloured cloth was the popular Esan cloth, and attracted commercial demand from Portuguese traders from the 15th century. Also important was the *ukpon –nogian* or the red woven cloth, that became an article of trade between Portuguese and Benin traders on the one hand, and Benin traders and Esan manufacturers on the other. Vogt (1975, p. 648) explains that the Benin people regarded red as the sign of royalty and of noble rank to the extent that it was very popular at the Oba's court in Benin.

The amount of cotton that was produced annually in Esan met with the demands on the cloth weaving industry just as in other cotton producing and cloth manufacturing centres of Zaria, Biu and Yoruba land; a production that sustained Portuguese and Dutch demands for the Benin cloth for many centuries (Ogunremi, 1982, p. 21). Cotton is a textile plant, which was grown mainly for weaving cloth both for local and external trade. Cotton cultivation, yarn making, dyeing and weaving were all specific industries for both men and women. There were professional classes of people who wove, dyed, and spun threads from cotton. For example, those who made the yarn were usually the elderly women who had less of more strenous work to do.

As the weaver in Kano produced about thirty-six metres of cloth in a day and at least thirty-four in Yoruba land, the fast cloth weaver in pre-colonial Esan produced the *ukpon-ododo* or the multi-coloured loin cloth of three yards or nine feet (2.74 metres) long by two feet (0.61 metres) wide in a week (Okoduwa, 2004, p. 123). The Hausa or Yoruba weavers used the vertical loom with narrow width ranging from 3 – 6 inches or 7.62 cm – 15.24cm while Esan weavers used the horizontal looms that produced cloth of about 24 inches

(0.61 metres) in width. Three pieces of the loincloth sewn together was known as *igbu-ododo* or the multi-coloured male coverlet, which the Portuguese called "mukponoqua", a corruption of the Esan word *ukpon-nokhua* or the big or heavy cloth. In Esan the use of cloth was a necessity like it was in other parts of West Africa. For example, Peter Darling (1983, p. 200) suggests that the population for Uromi a part of Esan by the mid 15th century was in the neighbourhood of 15,000. Going by a regression ratio of Uromi population in 1923 which stood at 13,653 with a distribution of 3,415 males, 4,411 females, 2,422 boys and 2,305 girls between 1400-1460 AD, Uromi had an estimate of 4,967 males, 4,854 females, 2,679 boys and 2,542 girls. The low population figure for Uromi and other Esan chiefdoms in 1923 can be explained from the view that many people evaded the head count believing that it was for the purpose of taxation. Moreover, their Onojie Okojie I alias Ogbidi the Great of Uromi was sent to prison in Ibadan because he rejected the idea of taxing his people by British officials (Okojie, 1997). The same fear would have affected people in other Esan chiefdoms.

The point that is being emphasised here is that apart from external demand, thousands of pieces of loincloth were manufactured for internal use in Esan during the 15th century. All Esan men and women possessed the loincloth. For example, an average Esan man had a loincloth for ordinary wear and three pieces sewn together known as *igbu* (male coverlet). This gives a total of four pieces on the minimum of loincloth needs for every male. The woman also needed at least two wrappers of two loincloths sewn together as one. A European visitor James Welsh (1975, p.144) observed in 1588 AD that the wrappers were tied by women above their breasts to cover their bodies up to their knees. Therefore, the woman needed an average of four pieces of loincloth at any given period. The number of loincloth that was produced to meet these domestic needs in Uromi by 1460AD must have been very large (Okoduwa, 2004, p. 234).

With two months left out for planting and another two for the harvest and festivals, Esan weaver worked about eight months only in the year and manufactured about 4 pieces of loin cloth per month, thus bringing to thirty-two the total number of cloth a weaver produced in a successful year. Therefore, about 1,228 women out of an approximate population of 4,854 women in Uromi by 1460AD could have woven about 39,284 pieces of cloth (Okoduwa, 2004, p. 247). Like every other industry in pre-colonial Esan surpluses were usually sold in the market. Such surpluses could have arisen partly from the fact that not every male and female needed new cloth especially the coverlet every year. Moreover, external demands stimulated increase in production, which enabled the market to expand.

The native cloth industry in pre-colonial Esan accommodated large demands from traders who sold the cloth to the Portuguese and the Dutch from the 15th century. The technology of the pre-colonial weavers remains with us today despite the influx of foreign ideas and machinery for the production of textile materials. Unfortunately, there has been little or no attempt by Nigerian leaders to research into this local manufacturing with a view to upgrading, modernising and making it more efficient to meet with modern needs. Instead, the heritage is been abandoned or at least neglected. There were other industries including iron working, palm oil making, soap manufacture, woodworking, weaving, leather working and pottery in precolonial communities. These industries like cloth manufacturing were carried out with all sense of purpose to obtain desired results.

IRON WORKING

Iron as a tool has been of much significance to mankind. The use of iron enabled early Esan people to conquer their forests and expanded their settlement lands before the 15th century. Shifting cultivation, a pattern that Esan agriculturists were used to required change of farmlands most times into virgin forests. Okojie (1960, p. 204) who does not subscribe to the theory of independent iron development in Esan explains that early iron users left Benin in several bands to settle in the area by the 15th century. But archaeological finds by Peter Darling (1983, p.157) suggests that the primary peopling of the Benin – Esan forest region was from the north, most likely resulting from the dispersal of those who were responsible for the Nok culture. These were people who used pottery and iron tools. Esanland however did not have ironstones but was fertile for yams. Even then, Esan had deposits of gold that were exploited and used to trade for beads, iron and salt from the Igala, *Ighanlan* and the Nupe *Azanama*

traders from across the Niger. Uzea being the foremost Esan chiefdom to the north and with a trading relationship with Ekpoma, gold dust from Ekpoma found its way to Uzea and across the River Niger, further north, into the gold trade of the Maghrib with the Sudan (Bovill, 1978, p. 22).

Gold was used to trade for iron and to a lesser extent, beads. The various uses of iron tools and implements both for farming and warfare persuaded ironmongers to settle in Esanland and set up local smithy. Many of them migrated from Benin, Awka, Etsako, Nupe and Igala. One of them called Omi rigged up a smithy in Odeva in Uromi and beat a knife out of a piece of iron ore, which was in his bag (Okojie, 1960, p. 217). The technology began with the setting up of a smithy with the bowl-bellow drum furnace and sufficient supply of palm kernel shells as fuel. Such immigrant craftsmen became known as *Ojie-ogun* all over Esan as they tended to stay together in quarters that were called Idumigun. Bearing in mind the importance of iron, many of the Onojie's sons were encouraged and taught the art of smithing (Okojie, 1960, p. 213).

Every smithy was collectively built under the supervision of the smith-priest. Every workshop was of a regular construction pattern. The fireplace was made from clay known as *obwe*, which came from the soil strata exposed in valley sides (Darling, 1983, p.23). Projecting into the fireplace on the ground were two wooden cylinders through which air was pumped to raise fire to a desired level. These were the bellows. The other end of the bellows was usually attached to two specially designed bags from the dried skin of antelopes. Attached to the bags with some glue were two stakes of about five feet in length. When pulled and pressed downwards, air was released through the cylinders into the fire.

The technique of producing iron implement was a manufacturing one that only males could perform. Once iron ore was obtained, it went to the furnace for roasting to dispel water and remove various forms of impurities. This first step in the process of iron working included the use of bellows to fan the dried kernel shells, which served as coal. The fire temperature was raised to such a degree that the iron ore became red hot in a few minutes. At this stage, it was removed from the fire with the anvils by the smith who would beat the iron to shape and size. The process of reheating and beating to size was repeated until the tool required was properly formed. It was then allowed to cool before it was filed into a final product (Okoduwa, 1988, p. 68). Every smithy was a production unit of at least seven male members. Two strong hands were usually required to manipulate the bellows so that enough fire was generated at all times in reheating the iron until production was complete. The smith worked on one implement at a time and by the end of the day an average work force of five males could produce at least ten average sized farm implements or fifteen small ones. Thus the smithing industry met the needs of the people for farm and war tools.

Today, local smithies play an insignificant role by repairing worn out imported iron tools including knives, cutlasses and hoes. Due to the unattractive nature of the industry, as it was left to stagnate as no male wants to be a smith the industry is moribund.

THE MAKING OF PALM OIL

The oil palm was a major crop, which the pre-colonial Esan people cultivated. It is an indigenous crop of West African origin; although some scholars have argued that the oil palm was spread over the continent of Africa by the activities of Arab traders from the East African coast of Madagascar (G. Jackson, 1972, p.159). Thurstan Shaw (1972, pp.150-151) supports the view that the oil palm was indigenous to West Africa where it must have been first developed along forest margins and in gallery forests in the savannah. Oil palm trees are found all over Esan where they grow luxuriantly. Apart from human activity, which dispersed the seeds after eating the fruits, the nuts were also carried from their primary areas by birds and rodents to other places. Such activities accounted for the generous spread of the oil palm trees all over West Africa before the 19th century when increased trade in palm oil motivated the development of individual plantations in Esan. In a communal setting, the palm tree was regarded as common property, which belonged to everybody. Mostly, it grew wild and did not require any tending to grow. Therefore Esan farmers engaged in the exploitation of the oil palm for food as oil and palm wine, broomsticks and body oil. The exploitation of the wild oil palm like yam is of ancient antiquity. People had usufructuary rights over the palm trees that were in their farms as long as the yam crop remained to be harvested

from the land. Otherwise the abundant nature of the oil palm trees in pre-colonial Esan made it unnecessary to have regulations on their exploitation before the 19th century.

Women carried out palm oil production in pre-colonial Esan. Palm oil was used only for cooking until the late 19th century when trade with the Europeans made it a highly demanded commodity. The fact that communities were able to transform their production technology to accormodate increased demand for palm oil in Europe from around 1850 to about 1920 demonstrates the elasticity of indigenous technology. Production began when the ripe fruits were collected by women and stored under cover for about five days. This was to facilitate the separation of the fruits from the thorny bunches. The fruits were thereafter boiled in clay pots and poured into a large wooden trough known as *Oko*. When cool, two or three women depending on the size of the trough entered to mash the soft fruits with their heels. Water was later added to it to make a pudding. Another addition of water after much mashing left a scum, which was allowed to settle on top of the water. The scum was later removed into a pot to boil under strong heat until all the water was evaporated. The top was skimmed off leaving the impurities as dark coloured oil called *enele*, which was used for eating roasted yams. The oil that was skimmed off was again boiled in a gentel fire until the residue was pure oil 'red and light with a minimum of deposit.' According to Okojie (1960, p.132) about 90% of this oil was regarded as grade one. Until the 19th century, palm oil was not produced in large quantities and as such the technology was restricted to the use of the pounding mortar and pestle. The technological innovation of using the trough and mashing of the soft-boiled fruits with heels came with the desire to produce more oil for commercial purposes. Palm oil like yam was for domestic consumption and for trade. Up to the end of the 15th century palm oil was used in Esan only as lamp oil, for soap making and for cooking and as such large quantity was not needed. A by-product of the palm nuts was the palm kernel, which was fried to produce the dark coloured body or hair oil known as *uden*. Elderly women usually produced it. Production began when palm kernels were cracked to get the seeds. These were placed in a pot and gently heated to release the brown oil. When it was allowed to cool the oil was transferred into small gourds for use. The *Uden* oil served as an adequate protection for the skin during the extreme weather months of the harmattan. The oil was medicinal too for it was used for various ailments. Mothers used *uden* to reduce body temperature of children in feverish conditions.

SOAP MANUFACTURING

Indigenous soap or *ebakho* was manufactured in pre-colonial Esan. The soap possessed a dark brown colour and was made in the form of cakes for domestic uses. Soap making involved a number of processes, which required the use of some green woods as part of the raw materials. Production began when such woods were gathered into a heap and fire was set on them until they gradually burnt to ashes. After the ashes were cool, they were gathered into a basket laddened with fresh cocoyam leaves. The basket was thereafter placed on a mud tripod stand and water was poured into it to settle in a collecting bowl. The collected brownish water was gently heated to leave a residue of powdery substance. The soap was formed with the addition of palm oil to the powder. The substance was mixed to a paste and cooked before it was cut into soap cakes. Although the indigenous soap making industry suffered major setbacks especially with the advent of modern soap making technology, the technology of making the indigenous soap remains to be adapted for modern soap making industry in Nigeria.

CONCLUSION

A number of people were engaged in manufacting cloths, iron implements, soap, and oils. Many of these items were produced not only for internal consumption but to meet trade demands even from the Europeans. Raw materials were in most cases sourced locally from forest and what others that were not immediately available were got through trade from neighbouring peoples. Professionals provided for non-professionals and products of special craftsman's skill attracted patronage in both local and distant markets (Hopkins, 1977, p. 53). Local manufactures were on the whole efficient and to a large extent satisfied the basic needs of the people as they increased in population and above all trade needs from the Portuguese, Dutch, French and English. The fact that some products like Esan cloth and

palm oil met with international standards and accormodated increases in demand demonstrates the elastic and efficient nature of indigenous manufactures. This study therefore shows the factor of effective mobilisation of human resources in any area to bring about development of a people.

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