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Rethinking Food Production in West Africa: The Prehistorical Perspective

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Abstract

Food sufficiency in a society can guarantee development in it. In West Africa today, there is food shortage reality to malnutrition, hunger and starvation. This has ignited negative trends such as corrupt practices, lack of respect for societal values and low esteem of the people among other vices. The need for food is sin qua non to all human requirements yet it is not receiving appropriate attention by peoples and governments of the region. It would appear that the region lacks the experience but history here approached through prehistorical analytical tools does not ascend to this. The environment is capable of producing the food if only the peoples can strive. And they would be happier if they do.

Introduction

By Food production is meant the period in history when man began to domesticate plants and animals especially for food. During this period plants and animals were manipulated to such an extent that the genetic changes taking place in them result in the evolution, of new races or species. The domestication process involves deliberate selection and control of breeding. For example preference will be given to the largest yam tuber kind to cereals which do not shed their seeds as soon as they are ripe but retain them when harvested; animals of docile temperament often of small size will more readily be incorporated in controlled herds (Sowunmi 1986). This domestication of both plants and animals eventually give rise to physical differences which serve to differentiate the domestic forms from their wild prototypes. The manipulation involved in domestication takes many forms including horticulture, herding, mixed - farming etcetera and began at different times in different places. Whether they also began in West Africa, when and by who, and how it happened and proves for these would constitute the business of this paper.

Literature Review

Initial efforts at solving the above problems for the West African region particularly witnessed a corpus of theorizing with many accepting that the problems (of origins of food production) were hinged on environmental and cultural conditions obtaining in the Near East and outlying areas. This caused some to think therefore, of the knowledge of agriculture as diffusing from the Nile valley to

West Africa via the Sahara and Maghreb (Bakker 1980, p. 69). The warming of climate which set in around 12, 400 BP that brought in more rainfall from the Atlantic Ocean with a colder interval which set in from C. 10,500 - 10,000 BP that lessened the influence of the monsoon and favoured the extension of the savanna was taken by some scholars to have been advantageous for yam development (Coursey, 1976). They agreed that a dry period set in around 4,000 BP in West Africa and inspired the move southward out of the Sahel of Neolithic grain farmers. The postulation that the climatic change of the terminal Pleistocene corresponding with last glacial maximum as being the period of ecological shift and consequent of several organisms in West Africa from the areas north of the region does not hold water any more. Hall *et al'*s (1978) work in Bosumtwi lake Ghana has indicated that an increase in rainfall of 250mm has no significant impact on the vegetation of the area, whereas the same increase would more significantly affect vegetation and terrain further worth. Invariably it has become clear that there was much greater ecological differentiation in the Sahara and Sahel than in the regions further south including West Africa. This clarification is confirmed by the polynological work in Senegal (Rossiquol-Stick & Duzer, 1971, p. 130) and the coastal Cote d' Voir (Assemien *et al*.,1970; Fredoux & Tastel (1976). It is an indication that from and Pleistocene times these coastal areas were more subjected to warm humid climatic conditions with monsoonal rains similar to conditions prevailing today than the areas inland and further north.

Clark (1976:61), was one of such scholars who linked the beginning of agriculture in West Africa to the influx of population (man and animal) into the Sahel and Sudan zones from the north during the first two and half millennia BC. It was asserted that the region assumed the linguistic complexity Dalby (1970), which led to refer to it as the sub-Saharan fragmentation belt. Shaw (1977, p. 99), thought that the Sahel strip from Lake Chad to the Nile and the stimulus from the Saharan desiccation which occurred after the middle of the third millennium BC, rather than the wheat and barley growing areas of northwest Africa should be looked upon while searching for the origin of agriculture in West Africa.

Livingstone (1958, p. 555), based his conclusion on the physical anthropological studies. He viewed increase in frequency of sickle-cell traits in the Guinea region of West Africa which coincides with and resulted from the spread of yam cultivating peoples, that people with the lowest frequencies today of sickle cell traits were among the last people to adopt an agricultural mode of life. He placed this event in Liberia and Sierra Leone around 13th C. AD. Livingstone among other things assumed that forest clearances were either only affected by agricultural people, if not that the clearances were such as to favour the anopheles mosquito and holendemic malaria. Also, that the first form of agricultural practice in this part of the region necessarily involved forest clearances.

These theories, observed Andah (1987), implicitly equate agriculture with cereal crop farming. They assume, he continued, that the requirements for other forms of plant agriculture are more or less the same as for cereal agriculture and wrongly conceive domestication as meaning about the same thing as first cultivation or the first herding or rearing of animals. Domestication, thus, was seen as singularly biological phenomenon which manifests immediately plants were cultivated or animals are reared by distinctive morphological changes recognizable in archaeological contexts even from single grain or single impressions, Andah noted. The theorists without order lumped under the general rubric of Neolithic, several different kinds of agricultural economies he reasoned. Andah regretted that the complexities of and significant locale differences within the major ecological zones of West Africa were glossed over by the theorists. That West African prehistoric peoples were treated as incapable of perceiving their environments and the resources they possess, and with social economic systems which lacked cognitive structure, and knowledge making possible the adoption of agricultural modes of existence.

Clarifications

These notwithstanding, recent ecological and ethno-archaeological studies are increasingly shedding abundant light not only on the various kinds of farming traditions that were practiced in West Africa but with

a) the crops and the animals that were farmed in this area that are still cultivated and or reared,

b) the kinds of tools used,

c) the soil management techniques that were employed and

d) the settlement patterns and social systems, all correlate and indicate that contrary to the image made above of West Africa, its local population and resources played an active and indeed inventive role.

A look at the environment of West Africa will throw more light on the issue at hand. As one moves from the Congo basin and the Equator or inland from the West African Coast northward, there is a latitudinal progression of rainfall and vegetation types. First there is the rain-forest (including coastal swamps) zone, followed by wood land and open savanna, Sahel and shrub land and thence to desert (Sahara). Further sub-division of the forest and savanna zones reveal intra-zonal habitats on the basis of rainfall and geology, soils, gradient, drawings and other physical factors, "many of these intra-zonal perhaps more so than the broad zonal zones have direct bearing on the story of agricultural beginnings in West Africa" (Andah 1987, p.17).

Andah pointed out that hilly terrains like the Futa Djallon and Guinea highlands, the Dandiagara escarpment, Jos Plateau and Cameroon Adamawa mountains, and the drier Acora coastal plains are characterized by relatively mild climates because of local orographic and rain shadow effect, and they have well-structured soil developed from base rich rocks. Andah equated that these niches are relatively more ecologically varied than other terrains, with vegetation ranging from montane grasslands to forest, including highly specialized - montane Agro-Alpine plant groups.

The drainage is such that the major river networks traversing the region in particular Niger - Benue, the inland deltas' of the Niger and Logone, Senegal, Gambia, Volta and their tributaries; lakes especially Chad, provided watering places for early man, as well as sustained a rich variety of animal/plant populations (vegetation) and soils (Andah, 1987). Judging from both the drainage network especially of the drier northern regions and the hilly terrains, it appears to provide special focal points for early farming.

Among the earliest scholars to direct attention to the part that may have been played by local factors such as African cultigens of wild plants and animal and African intellectual structure were Murdock, Baker, Lhote and Wrigley. Andah supports these people in agreement that (a) the methods employed by a human group to cultivate a plant or domesticate animal are invariably adaptations of one sort or another to the particular sets or characters of the species recognized or perceived as useful by the people in question, (b) that domestication should be viewed as a kind of interaction or processes of gradually intensifying of man's plan and or man/animal relationships rather than a morphology trait.

Such relationships would require not only an appreciable length of time to occur; its manifestation would be in several forms. This will depend on several factors which have been outlined as -

i. The nature of the organism involved.

ii. The kind of plants and animals that were involved particularly with regard to their internal tie inherent and ecological or eternal attributes and requirements and

iii. The kinds of relationships that existed between man and plants and or animals involved.

iv. That agricultural beginnings can either be revolutionary (suddenly or evolutionary (gradually and that which one it is cannot be determined a priori but would depend on the particular type of agriculture in question and its specific historical circumstances. For evolution the organisms undergo drastic change for any number of climatic and or cultural reasons resulting to economic and social changes that are usually a very long co-evolution of the domesticates with no marked jumps in the cultural record (Andah 1987, p. 98).

The beginnings of agriculture in West Africa is thus seen as the indigenous peoples' perception of surviving and a way of life. This is an indication that the peoples specific bodies of customary practices and systems of land use as well as the biological and or social characteristics of these and the dynamics as well as the integrative aspects of several interacting systems (economic, technical, geographical, biological and social) within a study area.

For the tropical rain forest zone or ecosystem, erroneously the most generalized productive and stable of major terrestrial ecosystems (Harris 1976; Sowunmi 1987). Available evidence from archaeological, ethnographic, botanical etc. tend to suggest that both cultivation and pastoralism started through the manipulation of the ecosystem particularly where there were high diversity of wild plants. The presence of such a great diversity tended to have encouraged the subsistence; and to stimulate experiments towards their domestication. The first set or earlier sheaths of agriculture seem to have been located in both the forested and wooded lands within the low and mid-latitudes.

Such manipulation changes may in the main remain invisible in the context of archaeology in West Africa because of its poor preservative quality and instable climate. Nonetheless those kind of changes actually took place in the region as this paper will show. The domesticates in most parts of the region were and are still adapted to growth in seasons characterized by high temperature and high humidity as opposed to the West Asian case. But for the cool and relatively dry highlands, the warm temperate cereals could not thrive in high temperature.

Botanical investigations have revealed that certain crops with respect to the different ecological niches ranging from legumes, grains, vegetable (leaves) and tubers (yam of different varieties) etc. as well as tree crops like oil palm (Harris 1976; Sowunmi 1981, 1985, 1987), were indigenous and probably have a long history of cultivation in different parts of Africa. Example of such crops are Sorghum millet *Pennisetum typhoideum,* fonioi *Digitaria exillis,* rice *Oryza graberrima* Guinea yams *Dioscorea Cayensis* and *Dioscorea rotundata*, oil palm *Elaies guinensis* and geocarpa groundnut *kerstingeilla geocarpa.* Nature mandated roots, tubers and tree crops which require relatively high rainfall to be present in the southern area of the region around 9°N. Thus a variety of yam species, oil yielding plants like palmaceae such as *Elaies guinensis,* kola nut, *Cola acuminate and C. nitida* became the most important indigenous plants cropped in the forest, sub humid woodland and wooded grasslands. Man apparently cultivated them in this region (Andah 1987), whereas the north of 9°N, has a variety of millets, sorghum, wet rice, grasses and some savanna and Sahel tree species abound as dominant plant resources.

In the Savanna areas, the plant resources vary in importance and according to the kinds of the Savanna. As such area of well-defined wet and dry seasons, have mainly cereal grains (Sorghums, millets, rice) legumes oil crops such as Shea butter tree *Butyrospermum paradoxium,* baobab *Adansonia digitata* rhizomes and tuber, vegetable crops like pumpkins *Curcubita moskata* and various other curcubitacea. Central Niger Delta was apparently secondary centre for special forms of *Colens dazoacheu (rhizomes)* and C. *dysenterious* (tubers) with a very wide variety of the sorghum crop.

It has been observed that the technique of farming and attention given to the crops vary with their types. For instance cereals *not* need the same kind of careful friendship treatment as tropical tubers. Whereas the preparation of land for cereal cultivation as compared to that of tuber is minimal.

Ecological and socio-cultural differences in crops cultivation and rearing of animals are clear indications that it is hardly possible that diffusion of knowledge about one necessitated the takeoff of the other. The savanna areas unlike the forest regions had until recently large herds of ungulates and other grazers and browsers with their associated predators but are now replaced largely by cattle primarily of Zebu type (Andah, 1987).

Evidence of the fauna of the savanna and their relative antiquity (early Holocene) with sometimes associated human figures painted and engraved on rocks in Sahel-Sahara areas of the region are indications of their existence and very likely their herding.

West African Prove Points

The story of the beginnings of food production as have been told in most cases is yet another of those that look as if the region is an empty terrain where the said 'Bantu' folks moved and expanded. It has not been easy trying to find the evidence of early food production in archaeological record (Philipson 1985; Andah 1986). The best evidence was said to be that which consists of the remains of identifiable crop remains in context. This could be either in the form of charred seeds and nuts, or impressions accidentally made in pottery vessels (by their happening to be set down on grains when soft in the course of their manufacture (e.g. the D'har Tichitt case). Other indirect evidence come from such things as hoe - like tools and ground stone – axe, which Philipson (1985) reported could be ambiguous (the sickles and grindstone for instance could have been used for gathering and preparing wild cereals or different materials altogether) and need caution in the interpretation. Also, some evidence come from anthropological and linguistic studies although some scholars like Philipson (1985) claimed that they lack any accuracy of time - depth.

All these have given scholars with diffusionist explanation reason to think of sub-Saharan Negroid's story of beginnings of agriculture as yet another pointer to their inferior nature. However, a twist of this Hamitic myth on African origin of agriculture was exposed with the works of Miege (1948), Chevalier (1938, 1949); Porteres (1951) and Carl Sauer (1952). In the classical statement of that myth, crop-growing is seen as a lower way of life than pastoralism. Philipson (1985), cited Seligman's theory "the incoming Hamites were pastoral Europeans" (Seligman 1980, p. 100) - arriving wave after wave - better armed as well as quicker - witted than the dark agricultural Negros and again, this process was repeated with minor modifications over a long period of time, the pastoralists always asserting their superiority over the agriculturalists. One then began to see that actually the Negros agriculturalists were behind the magnitude of the adaptive shift involved in a change from food collection to food production under African conditions.

Palynological works done in West Africa however, can be said to be one of the best means of exposing the facts about aspects of origins of agriculture (domestication, cultivation of plants) as it deals with the antiquity of plants, understands the earliest methods of cultivation and the palaecological context of plant domestication with direct botanical evidence.

Harris (1976), Shaw (1976), and Coursey (1976), with indirect evidences based on botanical, ecological, archaeological and ethnographic works thought that agriculture may have begun Ca. 11,000 BP Harris (1976:339) then was of the opinion that the earliest methods of cultivation probably included both Swidden and fixed - plot horticulture. There was little knowledge of the ecological context of early plant domestication in West Africa derived through inference from geomorphological and biogeographical data (cf. Van Zinderen Bakker 1976). However, Sowunmi (1985), through Palynological data proved that palm oil and yam domestication are West African in origin. She proved in that palm oil tree's pollen recovered in Miocene deposits of the Niger Delta Zeren (1964) and which until 2,800 BP had been only a minor component of the West African vegetation but became more abundant thereafter evidenced by sudden and notable increase in its

pollen when there was no indication of any environmental change, coupled with the appearance of the pollen of weeds of cultivated land or waste places and decrease in the pollen of some rain-forest components are pointers of an artificial opening up of forest for farming purposes and expansion of the oil palm tree stands. She considered the factors other than man that can lead to creation of gaps in the tropical forest such as flood, rainstorms, old age and elephant and concluded that the combined pollen evidence points not to these but to deforestation by man for agricultural purposes.

Sowunmi (1985), suggested that at least by 1.800 BP a farming technique involving forest clearance preparatory to planting was being practiced in Nigeria's yam and oil palm belts and presumably in other parts of southern West Africa within these belts. This could have been made possible by the use of such flint axes found in the forest region of Ghana (Gray 1962, and Iwo Eleru), Nigeria (Shaw 1978), and which Iversen (1956), has shown were used by early farmers in clearing forest in Denmark. Ca. 4,500 BP as iron working was introduced in the region Ca. 2,500 BP (Shaw 1978, p.92), or by burning with fire. This manner of clearing was found around Kumasi, associated with the Kintampo culture which Davies (1968, p.503) reported to have begun Ca. 3,400 BP. Coursey (1976) cited in Sowunmi (1985), has a hypothesis on the cultivation of yam with regard to environmental conditions. A probable date of Ca. 4,000 BP during which the cultivation on regular basis was said to have begun and has meager palynological evidence in support of it. Sowunmi (1985, p.129), concluded that the cultivation (of Pennisetum) began in South - central Mauritania, in northern West Africa, Ca. 100 BC, also Munson (1968, 1970, 1976), that is Ca. 200 years earlier.

Yam and related crops seem to have been best satisfied in the interface between forest and savanna with sufficient rainfall. Ethnographic data reported (Andah 1987), on traditional land use systems indicate the existence of a variety of systems that ranging from patch cultivation through a wide variety of land extensive and intensive farming systems. He was of the view that the farming traditions represent different kinds of socio-economic systems and it seem that the subject of early agriculture in this region is inextricably linked up with the histories of these farming systems. Thus systematic utilization of yams date back several millennia and acts as indirect evidence for their cultivation. As such the presence in the region of several wild species of yam closely related to the indigenous cultivated forms and its continued growth and yield after removal of the first crop without killing it which Harris (1976) thought preceded cultivation proper is a good indication for the beginning of yam domestication. Also the fact that in certain areas of West Africa yam is not harvested for new yam festivals with iron implement, Coursey (1971) inferred to be that its cultivation goes beyond the beginning of iron age C. 2,500 BP (Shaw 1978).

Botanical work on such crops -Sorghum, pearl millet, rice and cotton has shown that in many cases the evolution of the crop plant took place in genetic contact with the wild progenitor, leading by disruptive selection of two (not one) new areas of the species, the crop and its weedy relative with the early domesticates' not going extinct. Porteres (1962), dealt specifically with sorghum noting that of the three regions which possessed basic wild stocks - West Africa, Ethiopia and East Africa -, West Africa was of special significance because unlike Eastern Africa and Asia. Its current types are unique instead of being crosses between the three primary forms. Phillipson (1985), recorded that the inland delta of the Niger and Gambia and other related parts of the Sudanic regions appear to have nuclear areas for crops like rice *Oryza glaberrima,* millets *Digitaria,* guinea com *Sorghum imlgare,* and bulrush millet *Pennisetum typhoideum.* Mcintosh (1981) discovered at Jenne - Jeno in the inland Delta, (early studies) of West African rice *oryza glaberrima* cultivation with botanical environmental evidences. Here, the chaff of the crop was met in an excavation and its earliest archaeological attestation occurring in a context dated to the first century AD. Also Olgar Linares de Sapir (1971), archaeological evidence of rice cultivation in tidal swamps and inlets took place in Senegambia spreading later to other appropriate parts of the south western coast. Thus, Andah (1987, p.181) reiterated that cultivation of African rice was well established prior to the entry of Asiatic rice, both

within the rice zone and in western parts of the sorghum millet zone. Porteres (1950, p. 490 - 492, 1962, pp. 197–199, and 1976) indicated clearly that African rice derives from a wild and weedy annual species (O. *barthni, A. Chev* and *Roehr O. brevigulata A Cheu* and *Roehr)* native to the semi-arid interior from Cape Verde to east of Lake Chad; and that it has a primary centre of variation in the area of the upper Gambia and Casamance Rivers. Porteres (1950, p.49; 1976) elucidated more that rice cultivation supported the megalithia civilization of Senegambia which date of between 1,500 and 800 BC from indirect archaeological evidence, is given.

Munson (1968, 1970, 1976) revealed pollen impressions of domesticated pennisetum recovered from D'har Tichitt escarpment in the south centre of West Africa with a late second millennium BC (Oliver & Fagan 1975, p.14). Andah noted that plant materials from earlier levels indicate that a phase of experimentation leading to concentration on Bullish millet long preceded the appearance of the domesticated form. Archaeological evidence from this region such as in the Rim/Sindon Bokina Faso/Senegal area show refuse hill settlement of later Neolithic Early Iron Age who probably in Ca. BP were conversant with permanent cultivation.

In the site of Kintampo in Ghana, remains of cowpea were recovered, with date of Ca. 1,400 BC derived and confirming the long history of cultivation in the region. It used to be cultivated here for its oil yielding and edible seeds and was probably native to and first cultivated in the region with respect to similar evidences available, it seems that pearl millets and possibly some of the other millets like Fonio and Microlithic assemblages containing pottery and ground stone appeared around the 5th millennium BC becoming widely distributed from Senegal and the Malian Sahel at Nioro to the forest regions of Liberia, Nigeria and Cameroon. These assemblages technological base lasted into the first millennium AD in certain areas of the region with evidence of their clustering being discernible. For example in the central part stretching from north to south (associable with grain cultivation) featuring such sites as Bosumpra, Iwo Eleru Rop and the Pun Pun phase at Kintampo.

A noticeable trend in the south central eastern woodland zone covering southern Ghana through Nigeria to the Cameroon represented by such sites as Bosumpra LSA level predating 3,420 BC, Old Oyo Mejiro, Iwo Eleru, (19-BP), Afikpo which Shaw (1984) dates to Ca. 9,500 BC to 5,000 BC, and Shuma in the Cameroons with an industry dating from the 7th to 5th C BC. de Maret (1982:2), indentified microlithic and related tools technological tradition used in earliest and assorted crop farming systems. Andah (1987, p. 185), thinks that ''the archaeological complexes of early food producing societies of the forest fringe and forest regions of West Africa are particularly distinctive enough to have been called 'Guinea Neolithic' industries at one time."

The story around initial efforts to rear animals in West Africa as revealed by ethnographic and archaeological evidences suggest that this must have been done in the context of subsistence systems like pastoralism, transhumance and mixed farming occurring first in the sections of the region with relatively poor biomass. Rock paintings and engravings in the northern areas of West Africa show that species of goat, sheep and cattle were among the earliest domesticates among others (dogs, camel and pigs). Among these Barbary sheep *Ammotragus lervia* the giant eland *Derbianus* and the greater Kudu *Strepsiceros strepsicros* for example are local species which could well have been brought into closer relationship with man in parts of West Africa. Within the Sahara and the Sahel zones of the region evidences of rock art dated to pre end about 20,000 B.P, indicate that wide range of animals were hunted then and possibly were tamed. Davies (1967), recorded that Camel was domesticated around the 2nd millennium BC and horse well established in the western Sudan Ca. 100 AD. Munson (1970), have revealed eight separate phases of hunting and farming cultures spanning the thousand years from 1500 to 500 BC with cattle and goat occurring throughout the cultural sequence.

There are technological traditions discernible archaeologically in the Sahel and parts of northern savanna region of West Africa. These suggest some degree of pastoralism practiced with hunting and at times farming showing the socioeconomic features of the people. One of such areas is the Tenereen running from Adiar Bous (4000 - 2500 BC) in the east to as far west as D'har Tichitt of after 1500 B.C. This Andah (1987) observed something different from the traditions of northern Sahara and northern Africa. The assemblage has fine discs, plenty foliates, the scraper and blade tools the flaked or polished axes and the pressure flaked knives. The ceramics found here are more similar to those found in the South than to those of northern Caspian. He continued the clarification by relating the principal areas of the artifacts found there of the pastoral level as appearing to have been locally evolved.

Andah judged that the Neolithic communities with harpoons and fish hooks present in Borkou, Ennedi and Mali (Tafergit, Tamaya Mellet, Kourounkorokale, Karkariachinkat), which are closely similar to the Hoggar, are even more easily differentiated from the northern Saharan industries. However, that skeletal evidence from sites like Asselar in Tilemsi, Daijia in Northern Nigeria and Kintampo in Central Ghana earlier times, are indications that the peoples were probably Negroid in the second millennium and fourth millennium BC in the case of Asseler, whereas the engraving and paintings on rock would suggest that the Negroid actually lived in West Africa from much earlier times.

Conclusion

In sum therefore, West Africa at the first stage of food production that is the incipient stage, occurring in the Early Neolithic was essentially on subsistence basis. The land use and cultivation management and other techniques involved in domestication depended on the socio-ecological background of the peoples and the region. The people adjusted with changing circumstances to different ways of life.

Certain plants and animals were indeed the region's domesticates originating in it by her folks. Proves of these have been found through botanical, ecological archaeological, ethnographical and other searches as have been shown above. Such problems arising from food insufficiency should not be experienced. The people of the region should take advantage of some new agricultural practices being developed in other areas upon some of the traditional ones so to take control of the challenges associated to food production and availability. In this way, a modest, decent, economical viable, civil, and healthier life would be enjoyed by the people.

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