The Cultural Significance of Domestic Grinding Implements in Ghana

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Abstract—Located in West Africa, Ghana has a rich culture and heritage of indigenous artifacts of unique and interesting forms with absorbed philosophy linked aspects. The usage of items such as the mortar, pestle, grindstone, apotoyewa (or asanka) and other alike local domestic tools have their origin in Ghana of the medieval times (4th century to 13th century.) Even if culture happens to be changing and transforming with time it is manifested in societal, lingual and outside atmospheres. Given the plurality of Ghana in the current context, such tools are being applied in several homes and are liked in comparison to modern implements and instruments. The aim of this research is to delve into and chart out the traditions and staying power of such tools.

Index Terms—Culture, domestic, mortar, pestle, apotoyewa, grinding, philosophy, surviving strengths.

1 Introduction
The biology of human beings and animals is such that there is need of a variety of naturally available eatables and foods, which can be broken down, for simpler chewing, ingesting and absorption of important elements which the body needs. The biology and culture based growth of human beings is hence connected with the historical of techniques based in the Paleolithic age (Ambrose, 2001)[1]. Primitive Paleolithic instruments slowly changed by means of Neolithic techniques and the aim was the search or innovation of techniques to grind and particularly process foods and to make easier other necessities of life.

In each of the ten political administrative regions of Ghana, as depicted in Figure 1, the usage of Domestic Grinding Implements (DGI) or local grinding tools is not restricted to just food treatment but is also crucial for two key aspects, the making of herbs based medication and gold extraction in the artisanal and small-scale mining industry.

This research is a documenting of the legacy, culture based importance and the philosophy linked aspects of instruments to grind specially with regard to mortar and pestle and enhanced Neolithic grind stone which is termed as apotoyewa in Akan language. The structure and uncomplicated techniques of these tools is thought to have existed alongside the primitive human beings and still used despite modernity and state of the art inventions which have come about.

2 History of Grinding Implements
The most early and direct proof of usage of these kinds of instruments can be traced back to 2.5 million years ago (2.5Ma) located in the Ethiopian Rift Valley. As per Ambrose (2001)[1], this technique consisted of jagged sided slices and bits of stone and also hammer and anvil. This fact has been corroborated by the existence of hammer and other cutting indication on bones, which originated in that particular age. Still, when the Neolithic Revolution came about which also saw for the first time sweeping changes in agriculture, that the usage or innovation and the finding of instruments to grind became rather common. This age saw the change from the chasing of wildlife and collecting of raw food material to agricultural tasks and soon there were patches of civilization that were existing in the tropical and subtropical regions of southern part of Asia, northern and central parts of Africa and the Central part of Africa during 8000 to 5000 BC (2004)[2]. The growth of the first Neolithic agricultural produce such as corn and rye and also other linked cultures happened with the correct techniques or instruments to grind for instance the Neolithic grinding implement seen in Figure 2 for the treatment of grain.
3 Local versions of the Grind Stone and Mortar

The Neolithic grinding stone has been enhanced from its stone form to concrete finish slabs for the base and a smallish circular or cylinder shaped concrete for the repeated crushing activity. Even though the designs may be different, the same principle and technology that require the exertion of pressure from two hardened surfaces to comminute the desired material is virtually the same. Whilst the Neolithic crushing stone has a more bottom oriented concave structure, on which the small stone is used to crush the substance, can be found in many indigenous rural Ghanaian homes, the concrete versions are mainly identified with the urban settings.

As has been cited here, the main aspects of the crushing stone, mortar and pestle tend to be similar. The mortar is comprised of stone, wood which is hard or some metallic material which is then given a hollow to gather the substance and the weight is brought in by the pestle. Five types of innovations of the mortar, which are showed in Figures 4, 5, 6, 9 and 10, can be seen in Ghana. The very first one which is drawn from the Egyptian bell structure in Figure 3 is usually at mid leg height and is of dimensions of 100 cm tall and 45 cm in diameter. The next, drawn from the first, is usually beneath the knee, and measures about 45 cm vertical largeness and diameter. The third in the series, the largest is of a cone shaped and based in the ground and is of a measurement of 1500 cm in terms of diameter, 1000 cm in terms of depth, 800 cm diameter base wise and requires roughly in the region of five to ten pestles. The fourth is metal based or an iron based mortar with a rough size of 40 cm in height and 30 cm in diameter. The last normally labeled the apotovewa in the Akan vocabulary is the same as the regular medicine person’s mortar.

4 The Cultural Significance of DGI in Ghana

The number of people in Ghana is roughly in the region of 24 million persons and consists of more than 60 local groups primarily composed of Akans, Ewes, Hausas, and Adangbes. Each local grouping has their own culture-based aspects but they tend to be very individualistic and the attitude has an immediate bearing on society and people. The extended family system tends to dominate more than the small family setup and thus performs the function of a binding factor, which results in the usage of DGI in Ghana. DGI has a very important part to play in the cultural life of the Ghanaian. The key fields are related to processing of food, herbs based medicine treatment, and artisanal and small-scale mining - basically termed galamsey which is a corruption of gather-them-and-sell.

4.1 Food processing

Ghana is a tropical nation in Africa and boasts of delectable and impressive locally cooked dishes. The nation’s agricultural wealth and historical links tied with the unique cuisine have resulted in the prolific usage of DGI for the making of food such as fufu. Fufu is a starch-based food prepared from cassavas, yams or plantains, which are boiled, pounded to an appropriate mixture and then formed in balls.
Fufu is then enjoyed with a special kind of soup (from palm nut or groundnut) which is made with Ghanaian unique condiments and then consumed with fish, meat or snail in almost each house in Ghana.

In the Volta Region, two to four individuals each holding pestles in Figure 4, pound fufu in the big mortar until proper proportions are gained. The Ashantis and the Akans normally choose the short mortar along with the pestle as has been depicted in Figure 5. The huge mortar, in Figure 6, is for pounding palm nut for the making of palm oil in commercial quantity may be found in the Volta Region.

4.2 Herbal Medicine

The mixing of herbs with medication has existed in Ghana’s traditions for a long time for hundreds of years. In fact, local medication is thought to be the foundation of health provisions and has usually been resorted to by many people. According to the 2010 WHO reports, in Ghana, roughly 70 per cent of people rely mainly on basic medication for health facilities with roughly only one local medicine user per 400 persons, in comparison with just one trained medical doctor for the treatment of disease by conventional means for 12000 persons (Anon, 1995)[5].

During a local medicine practicing camp for healthcare people handled by the local medical council in Kumasi, it was established that roughly 70 per cent of the substance needed for the usage of herbal medication begins with DGI, 20 per cent through boiling and 10 per cent through other methods as shown in Fig. (7), (Anon, 2010)[6]. The crushed or treated herb based substance then passes through extraction, fractionation, purification, concentration, or other physical or biological processes for final or ultimate usage. It must be noted that though the variety of fufu mortar and pestle tend to be rather easy to use in comparison with the more advanced regular medicine mortar and pestle in Figure 8, the apotaviva in Figure (9) which is identical is more appreciated in the kitchen for grinding and blending spices.
4.3 Artisanal and Small-Scale Mining

Mining of gold on a limited scale began in the Gold Coast from the 14\textsuperscript{th} century onwards and continues to be intrinsic to Ghanaian livelihood, particularly, in areas of gold mining. It is estimated that a total of about 100,000 small-scale miners extract gold from alluvial, consolidated and semi-consolidated of the Tarkwaian and Birimian deposits in the Western, Ashanti, Central, Brong Ahafo, and Northern regions (Amankwah and Anim-Sackey, 2003; Kesse, 1985)[7;8].

The majority of these miners, called galamsey operators, work without a legal title and very often on concession of large mining companies. The miners generally use basic hand tools such as picks axe, shovels, steel mortar and pestle Fig. (10), sluiced boxes and pans, although occasionally water pumps and washing plants are also used. In consolidated and semi-consolidated ores, the gold is occluded by certain minerals and it is necessary to go through size reduction to liberate gold particles before gravity concentration. The metal mortar and pestle, which are implements adapted from DGI, feature prominently in the progressive size reduction process.

5 Philosophical Dimensions of DGI

Ghanaian DGI may be described as embodiment of simplicity and timelessness, old and “wise” with lineage that extends very far back in history. The continued usage of DGI in Ghana rather than the current modern machines such as blenders poses intriguing and philosophical queries. Does it just boil down to a matter of convention or lack of capacity to be able to get electric machines? On the other hand, maybe just a way of thinking of the mind? On moral values and religious aspects, it is believed some tribes even go to the extent of burying their dead together with DGI apparently for “use” in the spirit world. There are a number of Ghanaian folk tales in the context of the mortar and pestle, which are steeped in philosophical ethical lessons. For example, they illustrate instances in life when one would have to be “pounded” well enough or “comminuted” to be useful to society, or easily and fruitfully assimilated into the human “cultural” system. In other words, it is necessary to remain diligent even as we go through pains. Successful people remain focused irrespective of insults and poundings meant to distract them. In the opposite vein, there are a host of other examples wherein even if you need to crush a foolish person in a mortar with pestle alongside grains, his basic nature will not change (Proverb 27:22)[9].

Metaphorically, no matter how much effort is required to instruct a “stupid” man by precept or example his foolishness his foolish behavior will not leave him.

The mortar and pestle may also be likened to unfortunate and highly incomprehensible situations where people work tirelessly and selflessly to provide others with wealth or other life essentials and when all is said and done they are relegated to the background or sort of banished. The elegant and proud servants in the kitchen hierarchy are completely forgotten at dinner until the inevitable vicious circle beckons them again to serve!

6 Surviving Strengths

About two decades back, the Kwame Nkrumah University of Science and Technology (KNUST), in Kumasi, created the \textit{fufu} treating tool. This move was needed and would have been a perfect yardstick to examine the Ghanaian cultural inclinations with regard to the sustaining capacity of DGI. However, there is no news about the actual product or its replication for sale. Mortar Grinder RM 200 could be a state of the art crushing, pounding and stirring instrument, but can it actually get rid of the formidable \textit{apotoyewa}? Could there be concrete causes as to why DGI continue to be integral for the Ghanaians? There exist just some energy points that fuel the usage of Ghanaian DGI and even if there is no empirical evidence, the mentioned factors here might be relevant. First is the channelizing and the translating of the Ghanaian culture linked DNA from one set of people to the next. The other energy point is linked to the scientific aspect of tasting.

As per Asseo-Asare (2011)[10], Prof. Sefa-Dedeh of the University of Ghana, Legon, the aspects of pounding and crushing do tend to effect the taste that food gives especially if \textit{Apotoyewa} is applied as a size decreasing tool since the
force which is used is lesser compared with a blender. The writer said that varied types of particles would result in differing taste even if the condiments tend to be similar. Finally, apart from the fact that the maintenance cost of DGI is virtually nothing, they are far less expensive to purchase and faster to use in some instances.

7 Conclusion

DGI have played a leading role in food processing for many centuries and in Ghana their use continues to flourish despite the availability and affordability of other modern grinding and food processing equipment. Ghanaian DGI have a wonderful history and served as powerful tools for the indigenous herbalist, kitchen cooks and the galamsey fraternity spanning the ages from the dawn of civilization and may possibly continue until the end of time!

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References