

Technology and Innovation: Pottery production and development in Uganda

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ABSTRACT

This paper presents the results and experiences regarding the technical history, instruction and production of pottery in Uganda during the twentieth century. It investigates how local low-tech, attitudes, norms and values in traditional Uganda pottery have been presented and represented in changing high-tech innovations, social structures, which they, in turn, can be seen to reproduce. The starting ground is that the shift in pottery manufacture itself would reflect patterns of contemporary technological, socio-economic, cultural and power relations in Uganda in general and globalisation in particular. It would seem, therefore, that the findings of this paper lead us to attempt to account for previous technological knowledge dispositions, specific to economic, social and cultural history, in Uganda and the wider humanity. In other words, it would seem that the past local technology has left its mark on both recent and present activities and attitudes to pottery making.

1. Introduction

Technologies in Uganda like elsewhere in Africa seem to belong to the larger low-technology domain that dominate most communities. Pottery technology roots still echo the strong traditions that supersede the ever-present common practice of any community. The impact of universal education, imported technologies, art practice and markets have had their major onslaught social structure. There has been a constant shift of ideas and their related practice from mainly the West technologies. This paper argues that Uganda in particular and Africa in general offers a ground for a host of new technologies, innovations to researchers, investors and promoters of pottery/ceramics. With a string of ample resources from raw materials to competitive labour and new technologies, one would achieve maximum output with minimal input without compromising the environment.

In analysing the degree and extent of production technologies and influence on Uganda's pottery, it is necessary to describe the various historical technological actors during the 20th century. There were firstly the concrete narratives that developed between formal education and production technology practices, which included formal and informal contact,^[1] economic links, technical relationships and the status accorded to indigenous practices (pottery production and exploit). Secondly, there is the question of the technical functions, formal education and external influence in relation to artefact production and utilization. Thirdly, there is a need to access the type of relationship that emerged, by asking certain, fundamental questions. What factors influenced the relationship and accounted for the process of ceramic technology transformation? Is there a balance between the two sides, or is it a situation of domination and association? It is important to examine the technology impact, the links thus established on the domestic workings of those involved; the qualitative or evaluative aspects of the changes.

It is argued in the present paper that formal education and technologies continue to determine the course and nature of local Ugandan ceramics/pottery production and use (Figs. 1, 2, 3 & 4). While changes in Uganda's socio-cultural domains has occurred during the twentieth century, the production and technology of local pottery skills remain obscured by the educational institutions that are themselves the products of the same historic and socio-cultural antecedents. Thus, pottery can be placed as a positive-rational action at the local level and as communicative action at the technological level.^[2] In addition, the present paper proposes that local craft skills, and in particular, pottery, be made obligatory in lower primary schools, since children spend most of their

[¹] See Mair, Lucy *An African People in the twentieth century.*, (1934)

[²] For discussion of the levels see Outhwaite W., (ed.) *The Habermas Reader*, Cambridge: Polity Press, (1996), p53.

prime time at school, rather than at home, as was the case in traditional Uganda communities. The paper further reveals some of the underlying factors that have led to both the success and failure of formal schooling institutions to implement their goals, as a result of the increased enrolment and expanding population in Uganda.



Fig 1: Ceramics products formed using local methods, the coil

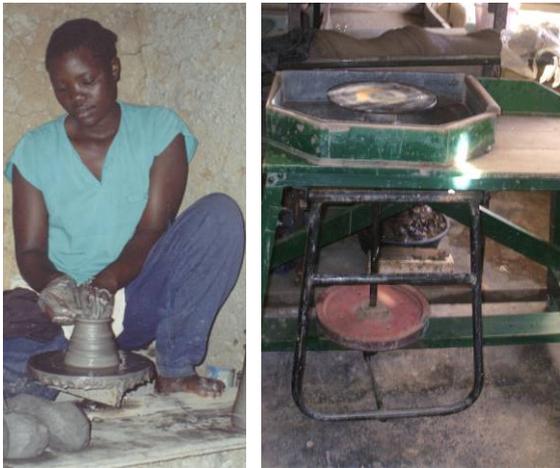


Fig 2: Ceramics forms using mechanical methods the wheel



Fig 3: Ball Mill, is an equipment that has increased in quality clay production and reduced wastage



Fig 4: Pug milling using mechanical methods

An evaluation of Uganda's educational pattern indicates that there are tendencies towards handling issues of intervention. Uganda has either pursue a policy of technology integration by emphasizing the promotion of traditional pottery structures, undermining the local practices, or merely allowed events to take their natural course, usually in a restricted environment. Whatever line it took, it has had consequences beyond the confines of the traditional communities, and has eventually dictated the technological directions of the state.

Uganda's education policy makers are fully aware of the linkages between educational aspirations, social class structure and technological/cultural change, and acknowledged, at an early stage,^[3] the importance of agency. Yet, initially, the Western was reluctant to become directly involved in education, apart from the baptismal requirements as laid down by Christian organisations,^[4] the training of a few technical craftsmen and, at the highest level, the education of the sons of Chiefs, with a view to them becoming future chiefs, clerks and interpreters.

It is noted that both private and public agencies in Uganda were failing to respond to the technical and scientific needs of the majority of the population. As noted elsewhere, "The relationship of technical progress, the social life world, and translation of scientific information into practical consciousness, is not the affair of private cultivation".^[5]

It was on this basis that formal schooling in Uganda not only failed to relate to traditional technologies, but also continually disrupted and diverted the stability of the production and reproduction of traditional artefacts, as well as a whole range of traditional Uganda practices. While these changes happened comparatively quickly, the effects were felt increasingly by the Uganda people. Changes

[³] The Education White Paper (1989), p68

[⁴] See Furley O & Watson T (1978); Wandira X (1972); Watson T (1968).

[⁵] Outhwaite (1996) op cit p42

do not come without any conflict and thus, it could be argued that, in the early years of the twentieth century, there was a sort of unconscious resistance to technological change in Uganda.

2. The Scope of Western influence

The introduction of Western pottery skills and technologies in formal education during the twentieth century mostly took a complete turn around of ideas in production and use of pottery. The introduction of ceramic equipment like potter's wheels, kilns, pug mills, extruders to mention some, undermined the local methods that were mainly geared at satisfying local and confined demands.

Massive and extended urban settlements meant that communities in Uganda required mass produced and standardised items which would be acceptable by the different communities regardless of the traditional attachments. In addition, were demands for items to suit the new commercial foods associated with urban markets.

3. Methods of Analysis

The following section is presentation the findings of the investigation on the levels of influence of Western ceramics production and technology in Uganda. With formal education as the main basis for sustaining cultural re-production (Bourdieu, 1990), the study posits that the levels of production and use of pottery are directly linked to the kinds of education the person and or community had achieved. The objectives were to find the link between technology, education and pottery production and use. Basically, the study was to identify a traditionally pragmatic function specific to Uganda pottery, within the context of its making, alongside the complex symbolic, technological and ideological identity (Kwesiga, 2005).

The study on the influence of north to south ceramics was mostly focused on the ceramics technologies, education and use in western Uganda. These technologies included but were not limited to clay preparation technical processes, ceramics forming technologies and firing equipment.

It was also to find the physical properties of clays the deal with thermal expansion coefficient as ably put by Munz and Fett (2001). It was also set out to ascertain the different between low and high

temperature firing. This was it was observed could be achieved by analysing the available firing facilities that influenced the kinds of kilns (Olsen, 2001) for the various levels of potters.

4. Findings

The following sections are synopsis of the findings of the study highlighting the basic pottery equipment. From the study survey, the following equipments and materials were identified:

4.1 Potters' Wheel

Use of potter's wheel was the most sought after equipment by most formally educated potters (Fig. 2). There were a range of locally fabricated potters' wheel mostly employing the manual technologies (treadle and kick wheel). These tended to be inexpensive and easy to repair. Some of the potter's wheel designs were an imitation of the rather expensive imported wheels in established institutions. There seems to be no equivalent of locally made forming equipment in Uganda.

4.2 Kilns

Kilns for firing ceramics are some of the Ugandan potters' challenge. Not only do potters require specific fire clay materials (fire bricks), kiln construction technology is still a preserve of a few technical experts. The most common design is one that uses either wood or oil (used) as fuel. We cannot forget the traditional bon-firing technology (Fig 5). Given the increased concerns about deforestation, the former may not be sustainable in Uganda. The few electric kilns available to potters are very expensive to run though they give better and reliable results (Fig 6).



Fig 5: A Local potter stacks pots for bon-firing in Ibanda, western Uganda



Fig 6: Locally made kiln in Nyabuhikye Ibanda

4.3 Ball Mills

Ball mills (Fig. 3), help to reduce the amounts of wastage and give fine clay that is desirable to most elite potter. However, local (traditional) potters do not employ this method since they work their clay direct from the deposits in wet form. Ball milling is usually possible with dried materials.

4.4 Pug mills

Pug mills are meant to cater for large establishment where a lot of clay materials are required. The ones available in Uganda are mostly manual and locally fabricated (Fig. 4). The alternative to pug milling clay is using manual labour (the hand).

Most of the equipment above were introduced in Uganda as a result of the contact between the north (West) and south (Uganda). Not only does the equipment dictate what potters' in Uganda produce but it also determines the ultimate use of the products.

5. Types of Clay Bodies

There is a real connection between the types of clays, the location of the potters and the demand for the various items. Yet the power of choice of material lies in the hands-on and acquired knowledge of potters. The decisions are usually based on the location of the nearest clays (materials).

Ball Clays

Ball clays seem to be the most commonly used

clays both by formally and non-formally trained potters. Ball clays (secondary clays) are flexible and give results quickly without much process. Great deals of potters have found these types of clays very convenient.

Kaolin and Muscovite

These are primary clays and a more pure in their existence. These clays offer a range of recipes for high firing clays and are rarely used by traditional potters. They are difficult to form (use) using traditional means.

Table 1: Items of pottery and equipment used in production

Type of basic equipment	No of items during survey	No of potters in possession	Where procured	% in use
Ball Mill	2	2	Local	3.5
Sieves	48	26	Abroad	46.4
Potter's wheel	15	12	Abroad/Local	21.4
Pug mill	1	1	Local	1.7
Kiln	12	12	Abroad/Local	21.4

Table 2: Clay types and the use results (N=56)

Type of clay	Number of Potter using the type of clay	% using the kind of clay	Average Distance (km) from the nearest clay source	% of potters with clay equipment
Ball clay	54	96.4	1.5	12.1
Earthenware	48	85.7	2	26.6
Muscovite	12	21.4	20	48.2
Kaolin	4	7.1	60	69.4

Table 3: Levels of schooling and pottery production (N=56)

Type of potter	Level of schooling						Total
	None	Primary	"O" Level	"A" Level	Tertiary	University	
Local	24	14	2	0	0	0	40
Studio	0	0	0	2	10	4	16
Total	24	14	2	2	10	4	56
Per cent	42.9	25.0	3.6	3.6	17.8	7.1	100

6. Analysis of Results

6.1 The survey of equipment used by potters

There are various reasons why potters choose their equipment. One of the major determinants is the ability to finance and maintain such technology and or equipment. Most potters in Uganda are so much used to having traditional cheap alternatives. The other essential ingredients are the skills to work with such equipment, while some of the equipment is power driven rendering most potters in rural setting unable to use them.

Given the nature of transfer of skills, and the usual undermining of occupations like pottery making, pottery has remained a work of either the large numbers of illiterate or semi illiterate women.

6.2 Ball Mills

Ball mills are rarely used by most potters in western Uganda, leaving it to a few educated potters who are looking for markets of their products beyond the region. Ball mills are designed to be powered by electric generation. This is a major hindrance to most pot makers in western Uganda.

6.3 Sieves (Meshes)

Sieves come in a variety of sizes, determined by the number of opening per square inch. The sizes range from 40 to 120 holes per square inch with the former being the most commonly used. While the sieve wooden frames are made locally, all the sieves are imported to the country. Professional potters use either nylon or stainless sieves while the rest use any other netting material.

6.4 Potter's (Throwing) Wheel

Throwing wheels are some of the items that may be used in this study to identify the levels of influence of north to south pottery in Uganda. Yet this paper questions the assumption that potters are first and foremost experts in the field who judge the kind of equipment to use in their various practices. Thus, the suggestion of putting the potter's wheel at the forefront in pottery development some how leaves us with the question, who should be the judge of the most suitable equipment for a potter? Yet, potter's wheels were introduced in Uganda in the 1940s.

6.5 Pug mills

During the survey, pug mills were rare occurrence that one may be led to conclude that the kinds of pottery establishment in western Uganda did not require such machinery. The few that were identified were manually operated. Most potters preferred to use their own hands to do the wedging of clay instead of pug milling it.

6.6 Kilns

Kilns and or the firing processes are some of the most important and final processes that pottery products go through. The level of firing of pottery items would determine the variability in terms of survival (body strength) during their lifespan. The range of kilns – up drought, down drought and bottle shaped are some of the equipment that bears traces of foreign contact. Firing temperatures may not be determined or standardised. On the contrary, closed structural kilns may be fitted with firing cones or even pyrometers for some of the potters. Potters in Uganda are increasingly using the latter methods of firing

7. Conclusion

From the above analyses and data gathered during the various surveys, it is clear that the Western pottery is gradually having a firm entry into the various spaces in Uganda. This paper does not suggest that we should worry about the onslaught of Western ceramics technologies on the traditional pottery. Rather, it advocates and questions the need to introduce pottery technology centres in Uganda where young people and adults alike can experience the power of use of clays. This, it is argued, will cause development, centred on innovation, local initiative and all round understanding of issues in all aspects of life.

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Science and technology in Uganda examines government efforts to develop a national innovation system and the impact of these policies. financial crisis. In 2013, manufacturing contributed 10% of GDP, compared to 21% for industry as a whole and 25% for agriculture. Half of GDP came (54%) from the services sector. In 2012, Uganda's main exports were all agricultural products: unroasted coffee (30.6%), cotton (5.6%) and tobacco (5.5%). In 2010, it spent less than 5% of GDP on agriculture, despite African Every development in the history of mankind is orchestrated by technological revolutions; more specifically when technologies meets up with felt needs and social political will for change. The precarious state of Africa agriculture seems to have attain this threshold of pain more than a decade ago and triggered the action of different organization and pollical structures through the Africa Union Commission.Â This book aims to bridge this gap in knowledge, by reviewing the existing knowledge on scaling technologies and innovation. It provides a comprehensive review of knowledge and systematically proposevarious strategies to ensure that agricultural technologies are scaled up and scaled out for mega social and economic benefits.