

POTTERY AND HUMANITY

Dr. A.B. Etukudoh^a, Prof. O.K. Oyeoku^b, Dr. D.E. Ezemokwe^c
^{a&c}Project Development Institute, (PRODA), Enugu State, Nigeria
^bUniversity Of Nigeria, Nsukka, Nigeria

Abstract

The above remark summarizes the fact that pottery, amongst many, seems to be the most widely spread from East to West and North to South. The wide spread of this industries is therefore a strong testimony to the place of pottery in the life of mankind in both domestic and ceremonial life. It becomes clear that there is hardly any culture or civilization in which pottery is not used, a situation that seems to have been made possible and sustained too by the availability and wide distribution of clay.

1.0. Introduction

It ranges from the purely functional. Pottery is one of the most ancient of crafts with a history stretching back, literally into the unknown. It was certainly been practiced since the Neolithic times. Some of the earliest known examples are urns used to contain ashes of the dead. Some of these have been traced back to nearly 4000BC in Egypt.

Pottery is thought to be one of the oldest surviving crafts practiced by man from the earliest times to the present. Pottery has been, not only from the pot shards found in archaeological sites, but the continued practice of the craft and its marriage to traditional beliefs. Pottery is traditionally and culturally very common, but useful to man from the prehistoric times. Several other writers have attempted to give some historical account of pottery, its emergence and development. In all those accounts, the common denominator is the dating of pottery to the prehistoric times. Pottery is an age old craft that began, almost with the beginning of man. He writes that different dates have been given to it, but the more generally accepted, was derived from the carbon dating of the archaeological finds from Turkey, which lies within the region from where pottery making spread to other parts of the world, reaching the Far East about 5000 B.C and Western Europe about 3000 B.C.

The origin of pottery can be traced back to 4000 B.C in Egypt, where the earliest known examples were urns used for holding the ashes of the dead. The first evidence of pottery appeared from the Zagros area of the Mediterranean basin, dating back to 6000 B.C, but there is a different position taken by some scholars; pottery making extends as far back in time that it is useless to attempt to place its beginning in any one region. According to him; one of the most remarkable things about pottery making is its almost universal association with the early man over the surface of the earth and because communication was practically nonexistent, we are led to the conclusion that it evolved independently in many region.

Art through the ages is a universal language. Hence the making of pots was confined to certain rules or countries. It was something that was bound to occur through man's unavoidable contact with the earth. Everywhere was the same pattern of development and it is interesting that while pottery from the Greek civilization was similar to those of Egypt and Mesopotamia, the same similarity exist between, that of the pueblo Indians of New Mexico and Nigeria.

The above remark perhaps summarizes the fact that pottery, amongst the many seem to be the most widely spread from East to West and North to South. The wide spread of this industries is therefore a strong testimony to the place of pottery in the life of mankind in both domestic and ceremonial life. It becomes clear that there is hardly any culture or civilization in which pottery is not used, a situation that seems to have been made possible and sustained too by the availability and wide distribution of clay. There it appears to be a general consensus that clay was one of the first media of expression employed by man, perhaps a consequence of man's unavoidable contact with the earth. Clay as holding an old and deep meaning for man because of what can be made with it.

In fact, archaeological excavations are constantly uncovering new and even more exacting relics of those far off days for unlike most other materials, pottery is almost indestructible. This applies to pots that have been fixed to the right temperature.

Clay itself may form a crude shape or container merely from being baked by the sun. Recently excavation in the Nile Valley produced samples of pottery, which were estimated to have been made nearly 11,000 years BC. Similar excavation in other parts of the world, both in Europe and the America, confirm that the making of pottery dates back to many thousands of years.

The basic process of pottery known and practiced by mankind not merely for hundreds but for thousands of years have not undergone any major changes. The clay, which the modern potter uses to shape his coffee jugs or contemporary vases, is basically similar to the material, which our most primitive ancestors shaped their crude vessels. The method of working the clay, by throwing upon a spinning wheel or molding in prepared moulds. Art through the ages is a universal language. Hence making of pots was not confined to certain races or countries, it was bound for man. Pottery has been regarded as the first synthetic material to be discovered by man. The end product is obtained by firing clay shaped to a temperature sufficiently high to change the physical and chemical properties of the original clay into a new substance of hardness and durability. Pottery is said to object such as pots, plates, and cups that are made out of baked clay. The skill of making pots, plates and dishes from clay, which are made by hand and fired to render it permanently durable. Pottery making is something that was bound to occur through man's unavoidable contact with the earth. Everywhere was the same pattern of development and it is interesting that while pottery from the Greek civilization was similar to those of Egypt and Mesopotamia the same similarity exists between that of the Pueblo Indian of New Mexico and Nigeria.

It is rather unfortunate that the early pottery civilization of Nigeria has not been greatly studied and are little known. In spite of the fact that arts were major expression of the people's culture, it was the cultural elements of the different population groups that had their effect on the development of this particular traditional Nigeria art which is so popular in the society.

An ecological technological approach to the study of pottery production and craft specialization has been successfully applied to archaeological ceramics from various sites and regions in the Americas and continental Europe. Although pottery production in the historic period in Britain has commanded the attention of ceramic specialists, the study of prehistoric pottery has been directed heavily towards the identification of trade. For most of the first half of this century, pottery studies were based almost exclusively on morphology and decoration. Pottery vessels were often regarded as little more than chronological indices or cultural sign-posts symbolizing the ethnic affiliation of their owners. Major stylistic variation was interpreted implicitly or explicitly as the material manifestation of new "culture" whilst minor adjustments in shape and decoration were seen as representing a later phase within a "culture" zone. Intricate time-scale and invasion patterns were constructed on the basis of ceramics styles. Whole empires foundered and new ones arose on new abraded potsherds. The new archaeology which reached its floruit in the 1960s shifted the emphasis from static description and simple induction to explanation and the study of systemic structure and change. Material culture can and does represent the structure of the total cultural system, in which change must viewed in an adaptive context both social and environmental, not whimsically viewed as the result of "influences", "stimuli", or even "migration" between and among geographically defined units. Archaeologists primarily concerned with pottery, could no longer make linear correlation between vessel, style change and the appearance of a "new people". In the United State at the time, potters began to concentrate on design analysis to identify spatial rather than chronological stylistic variation. These studies were intended to shed light on the amount of social interaction within and between communities. Despite earlier definitive characterization work, the possibility of economic interaction was but rarely considered, for until recently, many American pre-historians tacitly assumed that exchange or trade can only occur when a group lacks a particular commodity, or the raw materials to produce that commodity. Clay to make pottery is available in most areas, so ceramic exchange was taken to be unnecessary. In Britain, the emphasis in the 1960s on economic explanation for patterning and change in

the archaeological record generated a very different approach to pottery/ceramic studies. The techniques of fabric analysis were not entirely new to Britain archaeologists, but the broader question posed by the new archaeology provided the necessary stimulus for their development and widespread application. The definitive regional studies drew attention to the potential of ceramic characterization for demonstrating exchange contact between social groups. As trade and exchange were seen at this time as the cornerstones of economic organization, their elucidation through fabric and stylistic studies became the major focus of ceramic/pottery research. However, in the same way that our American colleagues concentrated on social interaction and shunned the possibility of ceramic exchange. In Britain, all efforts have been directed toward economic interaction and failed to recognize other causes of material variability. Pots were and are still sliced, activated and x-rayed mineral suites are identified, related to solid geology, and trading networks postulated. Many such studies, however, have done little more than demonstrate a link between an archaeological site and a geological outcome. Whilst not in any way denying the importance of trade as a field for archaeological study, I nevertheless feel that the mere identification of traded pottery on the basis of foreign inclusions constitute an extremely narrow approach to ceramic studies. The versatility of pottery as a source pottery can provide relates majorly to trading network, but also to the social economic and political activities, organization and relationships of the people who made and used it. At present, this potential is but rarely exploited. In recent years, some workers particularly in the United States dissatisfied with the exclusive concentration on interaction wherever economic or social, have begun to look additionally at production systems and their organization. The impetus for this broader, integrated approach came in the main from two related fields of study; ceramic resource ecology and the ethnography of pottery production. On the basis that little can be said about local exchange until local production is understood workers are now combing ethnographic data on production organization and the resources explored by present day craftsmen, with investigations of prehistoric ceramics from the same areas. The ceramic ecological-Technology approach

successfully demonstrated by Rice in her work on Guatemalan white wares and Petén post classic pottery extended the study of production into the field of craft specialization. This approach combines the principles of ceramic ecology, with the investigation of technology-related attribute states. The patterning of resource utilization that co-varies with attribute patterning in material cultures (traditionally recognized as types of forms) reflects regularities in the socially organized production and distribution of these objects. More recently Rice has extended her studies of production still further by proposing a trial model for the evolution of specialization and ceramic complexity. This model proposes that increasing social complexity will paralleled by changes in the range of ceramic produced, within type standardization, the extent of resource exploitation and the complexity of distribution mechanisms. Although the model has been criticized for its simple linear nature and too rigid use of cross-cultural data.

At the domestic level of production, pots are produced by individuals in answer to periodic basic needs for food preparation and storage facilities. Specific instances of domestic pottery production are rare in the ethnographic literature, but among the Cape Hottentots pots were produced by the women of each household as and when required. In the Maghreb, under the traditional rural system, each family provide its own pottery, replacing all broken and damaged vessels during an annual workshop session.

1.1. Production Studies in Britain and European Prehistory: The Problem

The production-distribution of Roman and later wares in Britain and Europe has been the subject of several thoughtful studies in recent years. However, with the exception of some, excellent work in Scandinavia, such as approach to ceramics has yet to extend into prehistory. The main factors may be suggested to explain the reluctance on the part of pre-historians in Britain to study pottery production. First, there is no related ethnography on the ground in the Britain Isles. Unlike others across the Atlantic, we are unable to question present day potters about raw material sources or observe individual production organization and methods. Craft pottery is rapidly dying out in both Britain and

Europe, and where it persists is often geared to the tourist industry and based on commercially prepared clays. The remaining vestiges of a once thriving industry in the Mediterranean; religion are being actively sought by workers and information acquired used to formulate predictive models of pottery production in the past. However for the prehistorian working in Britain these must remain generalized models which permit no direct cross-cultural inference.

1.2. Ceramic Trade in Ancient Scandinavia

The important production centres and pottery distribution areas are not evident in Scandinavia prior to the iron-age. It is shown that imported pottery was frequently copied by native potters during the late iron-age. There is, up to now, no evidence of ceramic mass production in Sweden until medieval times. Important production centres and substantial demand within a local area are necessary conditions for the development of pottery trade. Imported goods can be identified in different ways. On the one hand, raw materials for imported pottery may differ from those locally available. On the other hand, decoration and manufacturing techniques may, at certain times, differ from one area to another. In view of this, both pottery raw materials and manufacturing technique have been investigated. Studies of production centres and distribution patterns have also been of major importance in this research.

1.3. Neolithic Pottery

The very first potters of Scandinavia belonged to the late Mesolithic Ertebelle people (from c. 5000BC). Oval two types of vessels were manufactured by these potters: a cooking pot with conical bottom, and an oval, shallow lamp vessel both products for domestic use made of local clay and temper. A specific distribution of these vessels may sometimes be observed. This is probably met a result of trade but due to settlement mobility. Seasonally dependent hunting and fishing caused as spread of both man and pottery. The cooking pot may also have been used for storage purpose and as a container for bringing products from fishing station to dwelling places. The lamps have frequently been found with spears, and many have been used in connection with nocturnal fishing. The Ertebelle pottery/ceramic from different areas are very homogeneous, and vessels

of foreign shape and raw materials seem to be missing. Each group was provided with pottery by its own potters.

1.4. Bronze Age Pottery

As in the Neolithic, there is no evidence for ceramic trade in Sweden and Norway during the bronze-age. Local areas may have had specialized potters carrying out a more or less centralized production, but it is equally probable that each farm produced its own ceramics. Potter of Lusatian culture appearance is frequently found from this period in Scandinavia. The vessels were made locally by techniques showing foreign influence.

1.5. Iron Age Pottery

It is not until the Roman iron-age that we have firm indications of ceramic trade. In South-eastern Norway, there has been found evidence for both a great production centre and the wide distribution of products. Investigation into this area is still in progress, and includes clay prospecting, analysis of new and fired clays and study of temper materials. A well-organized network of ceramic trade already existed on the industrially produced Terra Sigillata which was distributed to most areas. In the remote northern European countries, however, only very few pieces of this ware have been found. This may indicate that there was no organized trade network importing ceramic to Scandinavia.

The commonest foreign ceramics came from the Slavic areas. These dark, thin-walled, finely decorated vessels of high quality have long been considered exclusively as imports. Most of these imported ceramics have been found at seaport and trade centres. It was not until the late iron-age that substantial quantities of continental ceramic were brought into the northern countries.

1.6. Medieval Pottery

Foreign pottery soon became highly appreciated and frequently imported. Wheel thrown, glazed pottery and stoneware from Germany and the Netherlands were introduced, and have been found in great quantities in towns and cities.

The domestic industry still relied on traditionally manufacturing method, exploiting local raw material.

Neither complicated equipment nor sophisticated workshops were required. The production could easily be carried out at home, like slaughtering, brewing and other seasonal activities. It was probably part of the woman's work. This opinion is largely based on pottery craft traditions which persisted until the 20th century in Jutland and on Fyn in Denmark. This vessel were exclusively produced by women according to ancient methods. During the last centuries, at least, however, they were frequently traded. It is interesting to note that the men who were not allowed to handle the unfired pottery distribution and traded these ceramics over long distances.

During medieval times, there was a gradual increase in domestic manufacture of sophisticated pottery, but an apparent absence of suitable clays must have been a serious obstacle. This problem could have been overcome by importing clays from overseas. Technologically, investigations have clearly distinguished the clays they contained from local quaternary deposits, normally used in domestic ceramic manufacture. Many of these "bottoms" consist what is called the refractory clay, which sinters at or above a temperature of 1300°C. These clays were possibly transported by boat and stored on the shore in heap, of which the "bottom" are the last remains. It is possible that a more industrialized ceramic production was initiated, based on such imported clays. This involved workshop equipment with the potter's wheel and purpose built kilns. A completely new ceramic pottery tradition appeared.

A full time potting became a male profession.

1.7. Exchange of Pottery in Western Britain

For many years, archaeologists have been investigating prehistoric exchange. They have tried to understand its organization and culture exchange. The major emphasis has been the identification of modes of exchange from the archaeological record. Fall off models have been developed and utilized in an attempt to identify these mechanisms. The majority of these studies have concentrated on the movement of a single good to (Obsidian) over long distance. This narrow focus is now widening with the theoretical work, the archaeological work of Irwin.

They have clearly demonstrated that a variety of modes of exchange can operate within and between groups, and that these modes are dependent upon the type of artifact in circulation and the role that artifact plays with the society. This approach which examines several different types of material cultures, will enable the archaeologists to identify a variety of level of complexity within potentially diverse system, rather than attaching a standardized label to a system based upon the interpretation of a single artifact study such as a redistributive system or a marketing system. The identification and comparison of exchange networks should be based upon several critical variables. These include the range and amount of materials exchanged, the extent of their distribution, the time span of the networks involved, the direction and intensity of any two-way flow of goods, the degree of centralization of the networks, and the overall complexity of these systems of exchange. Some of these critical complexity of these system of exchange, some of these critical characteristics can be investigated from the patterns of artefacts in the archaeological record of a region. The limitations of the data base, however, restrict the levels of inference possible from these patterns to those of behavioural variations rather than the identification of specific behavior correlates.

The emphasis on the network characteristics which can be analyzed as continuous variables and patterns of change is a step towards understanding some aspects of change in later British pre-history. An explanatory framework which accounts for the complex distribution evidence is necessary to articulate the variety of different distributional patterns of artefacts accompanying more complex societies.

This is an attempt to apply the approach of identifying a variety of different modes of exchange through an analysis of spatial and quantifiable patterning of artefacts found within a limited region of western Britain, dated to C. 450BC, 50 AD (6,750 sq. miles) in order to demonstrate the complexity of exchange networks and the degree of centralized control and authority association with them. Three different artifact types were selected, one example of finer, usually decorated pottery, a type of coarser, usually undecorated pottery and one type of ceramic salt container. The frequency of each pottery type is represented as a proportion of that

type by weight amongst the excavated pottery collection, dated to the period 450BC-AD50, from each find spot. The ceramic salt containers are represented as a ratio of those containers of pottery, by weight again. This latter ratio is here called the Droctwich Salt Index (DSI). These indices represent an indirect measure of the flow rate of goods entering each site, throughout the period. The best index measurement would have been the weight of commodity against the weight of excavated soil, but the latter figures were rarely available.

The type of site would have influenced this index since the collective from several of the sites are associated mainly with large blocks of often sterile, defensive rampart soil, and not necessarily by soils resulting from living surface, or activity area. The index of each artefacts type from each of the sixteen sites which satisfy the above minimal requirement of reliability, is plotted against the distance of that site from the appropriate source.

With these three distributions and the three fall-off curves based on the pottery indices and the DSI, is it possible that three different modes of exchange could account for them. What types of exchange could produce these patterns? At the lowest order of complexity, a direct type of exchange between producer and consumer, probably near the place of production, which would result to the very localized distribution of an artifact. One possible example of this model is the resultant spatial distribution of the undecorated pottery from the Clee Hills Source. The patterning of this artifact is strongly affected by distance, within a maximum distribution of 35km. There appears to be no correlation between type of site and percentage of this pottery in the particular collections. The very common model with regard to Romano-British coarse pottery of the first to fourth centuries A.D, and suggests a strong correspondence between these distributional effects and simple competitive market principles or predicted market areas. These marketing models for coarse, unspecialized artifact are limited by the constraints of time, energy and social cost, operating as a function of distance from the central place (of production) as has been discussed many times with regard to site catchment analysis central place theory and the territorial extent of early states. The cost effectiveness of a clay's journey to the Clee Hills, and back, to obtain pots had to be

justified against both the quality of the artifact and any other social ad material exchanges which accompanied the transaction. The restricted areas of activity as supply zone behavior, where single journeys by the consumer to the producer, or vice versa, result in an extreme localization in the distribution of product that is not in general handed on in subsequent transaction. Therefore, this type of network, or mode of exchange, is probably based upon single exchange transactions where the producer and consumer are known to each other and are living within a day's journey if each other. Intermediary devices, whether in the form of middleman, or special forms of information exchange such as decorative style are not necessary. These products involved are either of low social, or purely utilitarian value. This mechanism of direct exchange will often result in an item dominating the site collection within the category if the site is located near the production area. The type of settlement site will tend not to affect the proportion of the item found at it, but the distance will strongly affect the quantity and result in a steep, fall-off curve. The undecorated iron-age pottery made in the Clee Hills area seems to be an example of this locally distribution regional coarse ware.

The next level of exchange complexity, can be subdivided according to different types of material cultures. For example between socially-valued artefacts involved either in high level gift exchange or in more generalized reciprocally balanced transfer, and low-level commodities. If the function of an item resides mainly within the social sphere, i.e its importance is based upon its social value, then at the regional scale its distribution will appear as a relatively restricted, intensive zone influenced only marginally by distance or ease of transportation. In a non-market, decentralized system, access to such items would be controlled and diffused by social relationships and obligations along channels of kinship and friendship. The limits of the distribution of socially-valued items can be identified as the spheres within which those items are defined and recognized. These limits often tend to show a bounded and plateau-like, fall-off curve. The use of central places as loci for exchange activity may alter such distributions, while gift exchange may result in the appearance of occasional items at greater distances.

This mode of exchange may be the mechanism behind both the extensive distribution of isolated examples of group A Malvernian decorated pottery. Distance does seem to have some effect on the proportion for this stylistically distinctive, decorated pottery, but less effect than that for the undecorated “Clee Hills” pottery. Since the intensive zone distribution for the decorated material is twice that for the undecorated.

The superficial examination of the archaeological patterning of three different types of material culture within a small regional framework, has demonstrated several possible modes of exchange that indicate the existence of a loosely centralized system during the later iron age in Western Britain. An overall similarity of material culture has shown a tendency towards considerable uniformity within this region suggesting a network along the lines of reciprocal exchange for some items at certain levels. But the complexity of the system emerges alongside this modifying effect, in the forms of supply zone activity and the presence of a centralizing factor. It has been possible, therefore to identify different models of exchange for different modes of exchange for different types of objects. In two out of three cases, the distribution pattern does not appear to be influenced by the type, size of site where the artefacts are found. The next stage of this research will improve and clarify these subjectively established differences through statistical analysis, and will review the applicability of the various modes of exchange outlined above.

1.8. Temper Identification and Source Location Ceramic/Pottery Geology

The geology of the San Juan Basin is by and large sedimentary with igneous formation around its perimeter. This is a happy circumstance in terms of identification of some of the sherds that were not produced in Chaco. Moreover, even with the binocular microscope, it is possible to differentiate igneous rock from the north, the west and the southeast. Of greatest relevance are igneous rocks from the Chusks valley and mountain, and from the San Juan River area.

The San Juan River and its northern tributaries are characterized by extensive plustocene gravel terraces composed largely of and site/diorite cobbles derived from the mountain ranges where the river has its source.

While these igneous tempers were frequently used in the Mesa Verde and Salmon area, sand/sandstone tempers were also used in substantial amounts.

The Chuska Mountain are largely sedimentary formation, but there are two major basalt flows within the range. These flows are composed of a distinct type of basalt, variously termed sanidine basalt.

Though Loose concludes that “trachyte” is not the most accurate term, it is generally acceptable and is retained here. Studies in the Chuska Valley show that trachyte was very heavily used for temper during the bulk of the Anasazi occupation there, the exception being only the earliest ceramics/pottery.

Both trachyte and the San Juan andesite/diorite have several properties very useful to the study of regional interaction. Both are normally readily identifiable with the binocular microscope. Both are commonly tempers in their respective area. Both occur naturally at a distance from Chaco of over 70km. Studies show that maximum distances travelled by non-industrial potters for temper and other non-decorative raw materials are uniformly less than 31km. as the distance from Chaco to natural occurrence of either of these two tempers is well over twice, Arnold’s empirical maximum range, it is safe to assume that ceramics/pottery tempered with these materials were transported to Chaco as finished pieces. The assumption is supported by the absence of stylistic variation, clay oxidation and recovery of the materials in raw form. made similar assumptions with regard to temper. The ideal nature of the igneous tempers in the region is offset by difficulties posed by the sedimentary tempers. The quartz sand observed in Anasazi pottery invariably came from sand stones rather than deposits of loose sand. A large number of sherds do seem to be tempered with crushed stain stone. Working with sherd contents, however, identification of specially when bulk processing sherds. We have therefore recorded a large quantity of sherd as having temper from an amorphous group termed “undifferentiated sand stone”. At least a segment of this group must be considered as possible of Chaco production. Some probability of non-local production can be given to coarse grained sandstone tempers, but a few coarse sandstone have been located in the Canyon and certainly within 30km. Though work has been done on formulation identification, the present

paper makes no effort to sub divided this sandstone group.

There are also some sandstone tempers that are distinguished with a binocular microscope. Some of these are heavily iron bearing and of unknown source. The most interesting is a sandstone with a pink to white chalcedonic cement that is very distinctive in sherds. While precise locations of outcrops are not known. Greater abundance of this temper in sherds in grab, samples from sites approximately 60km south of Chaco in the Red Mesa Valley and attributes it to the Morrison formation there. This temper is of interest because it occurs in more than trace percentages in Chaco, and because it appears to come from south of the canyon, providing at least the possibility of identifiable temper from three of the cardinal directions.

Pottery-quality clays are quite widely available in the basin. Clay research is in an even more rudimentary state than temper research. Some distinctions may be made based on oxidation color, since the residual clays in the Chaco area tend to oxidize light colours while some clays in the Chuska and San Juan Valleys oxidize red. In general, it must at present suffice to say that clay does not seem likely to have been a limiting factor in production.

1.9. The Ceramic Ecology of Chaco

As ceramic specialization is of focal interest here, data on environmental stimulants to ceramic production are of interest. At first glance, if the scarcity argument for subsistence is valid and if the canyon was in fact a redistribution point, the prediction would be that at least some chacoans should have turned to ceramic production as a supplement to horticulture. Clay is abundant and accessible within the 5km radius that seems to be the ethnographic “preferred territory of exploitation. Naturally occurring tempers are not of the same apparent quality, though fine-grained sand-stones and rarely coarser, round groomed stand-stones are also located within the optimal radius. Sherd temper is common in type postdating ca, AD 900 and increased steadily in Chaco. Water availability is less certain, precipitation is low, springs are few and low in volume. On permanent streams are non-present, though the washed run irregularly and domestic and agricultural use would have required most of the water available. Water

then could have been a limiting factor and might help to explain why such large numbers of vessel were brought so far. An even greater problem, however, seems to be fuel. Chaco and much the Basin today are virtually treeless and even brush is not abundant. Chacra Mesa does support spars and stunted pinon-juniper cover and lies within 10km of a number of sites in Chaco. Especially when combined with other fuel needs, present vegetation would be rapidly depleted by extensive pottery production. Fuel, then probably abundant only at distances at 50km or more, is likely to have limited local production and crated a need to import ceramics. Production of pottery is threatened in several centers at present simply because the local forests have been exhausted. It is probable that fuel depletion has, in fact, forced individual potters and in other cases, entire centers out of production in recent years. Given the projected population and the minimal vegetation, depletion of fuel for all uses would presumably have been severe in Chaco by the A.D 1000's if not before.

The Chuska mountain foothills however, seem likely to have been many of the resources, the absence of which would have driven Chaco into supplementary specializations. More abundant and regularly occurring moisture would presumably have made agriculture more productive and readily available. Clay, possible of greater strength with better paint binding capacity, and greater porosity for the production of utility, jars angular igneous tempers, good as a binder and excellent for resistance to thermal shock fuel and water are all present today. This is either an exception to Arnold's cases all state level, some other shortage must have existed, or a different, more direct method of finished ceramic acquisition pertained to account for the large number of vessels from this area found in Chaco, 70km away.

1. The Chuska foothills do seem to have “everything” the lower parts of the Chuska valley near the Chaco River are at least as moisture poor as is Chaco canyon.

The Chuska Valley near the Chaco River also lacks surface fuel resources (through today the San Juan Basin is becoming a coal for ceramic firing). This area is, however, much closer to the wooded foothills than is Chaco canyon. It might be suggested, then, that the stimulus to produce ceramics as a subsistence hedge was

present in the Chuska valley, especially during the peak population of the area Cs, AD 1000-1125.

2. It might also be argued that while the Chuska area has both ceramic and subsistence resources in greater abundance than does Chaco, some other, less obvious item was lacking, and subsistence goods, raw materials (construction timber, wood, lithic) and ceramic provided access to that missing item. The evidence is slim, but the main thing that would seem to be “exportable from the Chaco central area is organization and hence security, and perhaps, status artefacts in other words, through participation in the Chaco system, area such as the Chuska foothills stood to gain a hedge against the vagaries of horticultural production under a discontinuous moisture regime. The materialist explanation can be buffered by the evidence for a high density of religious features and perhaps “public” architecture in the central part of the canyon.

3. Perhaps as a derivative of the high level of organization in the Chaco system, a more direct means of ceramic and other resource acquisition may have been operative. One possibility is direct, coercive control over producers in the peripheral high diversity areas. A second hypothesis concerning direct acquisition (and a more popular one) relies on the seasonal use of the large Chaco structures, perhaps largely as storage units. Under this explanation, large segments of the Chaco population would have spent part of each year in more productive locations and brought quantities of what Chaco lacked when they returned.

4. Finally, in terms of trend toward ceramic specialization, while a substantial proportion of ceramic recovered in Chaco can confidently be identified as imports, many cannot confidently be identified as either non-local or local. Within the latter group there are wares which draw attention as possible specialized products.

- a. Cylinder Jars: These are rarely, and apparently highly specialized form with a very limited distribution. They have been found only in towns, mostly in Pueblo Bonito. The temper of these has not been

examined most are typologically Gallup and Chaco Black-on-white

- b. Chaco Black-on-white: A sample percentage (2.3% of white wares in our Pueblo Alto sample and 4% of the total white wares of the longer time span of the 627 sample) fit within this type, white is characterized by extremely fine execution of design. The designs correspond in general within the more common Gallup Black-on-white.

Black-on-white contain enough trachyte to be probably of Chuska manufacture. Trachyte of less certain derivation occurs in another portion of this type found in Chaco, the trachyte is sparse enough in this portion that it could well have been introduced in sherd temper still, much of the Chaco B/w in our samples contains materials locally available in Chaco fine to medium sandstone and abundant sherd temper. Thus two tentative conclusions might be drawn. Some ceramic specialization may have occurred in Chaco, but its focus, perhaps, was on high quality specialized (ceremonial) forms. While we cannot hope to answer all of these questions with the data now available, some idea of the distribution of ceramics from different sources at different site types in Chaco, and initial objective attempts to identify specialization in one class of ceramics found there can contribute to a partial solution. The use of ceramic types is, as always, a knotty problem. The problem becomes especially acute in a study such as this, in which identified temper is often a determinant of type assignment. Nonetheless, by assigning a sherd to a type, complex variables such as slip type, paint type, motifs, design layout, rim form and surface treatment have been identified. With this information a high probability statement can be made as to the temporal and geographic sources for a particular item by providing additional detail on design, composition, and other attributes. With the addition of contextual information from minimally disturbed proveniences, synchronic comparisons can be made. As diversity and standardization are of critical importance in the problem as formulated types are useful in controlling for time and space when examining ceramic variability within the region.

2.0. Specialization in Ceramic Production

Clearly identifiable production sites are at best rare in the southwest, specialization in culinary ware production was present in the Chuska Valley, on the evidence of the large quantity of trachyte tempered ceramics observed in Chaco. This remains the best single argument. A purely subjective assessment of specialization is certainly possible culinary jars are remarkable for their large size, thin walls, and nicely finished appearance, and some of the decorated wares, exhibits extraordinary control in their decoration in addition, again, to high quality manufactures. Such subjectivity is of course not very reliable and hardly passes for science attributes have therefore been selected which have potential for indicating consistency or standardization which have potential for indicating consistency or standardization within temper groups. These attributes deal broadly with size, function and style. Estimated rim diameters and rim fillet width were selected to examine various groups for relative variability. Unless otherwise specified, all the tests were performed on lumps of early PII neck corrugated and PII corrugated (designed PII) and of PII – PIII and PIII corrugated (designed PII – III).

Rim Fillet: Virtually all chaco culinary vessels from the period in question have a visible, intentionally shaped rim coil. It is possible that in the presence of production by a limited number of individuals variability in the width should decrease. Fewer potters and greater routinization should produce less variation (Rice 1980).

Estimated Orifice Diameter: Again, if production becomes routinized, the prediction (from our industrialized perspective) is that vessels should tend toward more discrete size groups.

Vessel Form: Again, if production becomes routinized, the prediction (from our industrialized perspective) is that vessels should tend toward more discrete size groups.

Vessel Form: Ethnographically, when there is a real specialization, certainly area tend to produce certain forms (Reina and Hill, 1978). This should manifest itself as disproportionate counts of some forms within specific temper groups.

Since rim fillet width and orifice diameter are being used as separate measures of standardization, the question arises whether the two are in fact independent. That is, if rim fillet size was increased for large pots. Interpreting the two separately would be incorrect since in effect the only real variable would be size. These names (platykurtic and leptokurtic) and originally conferred because among certain regular symmetric distribution the more sharply peaked are leptokurtic and the more flat topped platykurtic. This is not necessarily so for other symmetrical or for asymmetrical distributions, and although the terms are useful of the (fourth cumulant) rather than the shape of the distribution.

If Rice's assumption of reduced variability is correct, it can more reasonably be expected that decreased variance will be found, rather than increased kurtosis. It should also be noted that when the distribution has a high kurtosis it means that the frequency of occurrences is higher around the mean and in the extreme tails, and less in the mid-ranges.

With this in mind, the above manipulation show several trend:

1. There is less variability in the trachyte group in corrugated vessels. The trend is more marked for the stylistic attribute. The similarity of mean diameters suggests that while areal variation existed, the overall function of each areal assemblage was similar enough to dictate overall similarity in size.
2. The trachyte group trend to be somewhat large although in most cases this is not significant.
3. The trachyte-tempered corrugated vessels tend to be somewhat larger at alto, but only significantly so in the PII group.

These trends to reduce variability in size and style suggest that some form of specialized production may have existed in the chuska area. The trachyte vessels tend to be large and more abundant at Alto suggests a stronger tie to the chuska valley potters and perhaps a functional differences. Aside from this one different in size, across site, within temper differences are consistent.

Thus, the overall similarity between tempers and site is quite strong, and whilst significant differences are often small-mostly indicating trends, not discontinuous. It is also important that the category "Standstone" is a

lumped fabric made necessary by difficulties in distinguishing area variation of sand stone, especially when it temper form.

2.1. Multivariate Analysis Of Variance

Having examine these attributes on the univariate level in a number of different combinations, it seemed desirable to turn a multivariate approach in order to examine the interaction of several variables at once. A multivariate analysis of variance was performed separately on the PII corrugated and PII – III corrugated groups. Using all sherds of all tempers for which both rim fillet and orifice diameter were recorded. The procedure used was the statistic analysis system programme, MANOVA.

The programme provides information on individual dependent variables (fillet width and diameter) and then on the variable combined. In this case variance in rim fillet measurements was stabilized by using the inverse of rim fillet in the analysis. MANOVA has been used to address the following questions:

1. Which of the two dependent material variables used in earlier comparison is the more meaningful in defining variability?
2. Can the site provenience of a particular sherd be predicted with any confidence, that is are the ceramics at 627 different from those at alto when measured by these variables in combination?
3. Can the temper of a sherd be predicted?
4. Do the limited number of type, included influence the results, that is, does type lumping distort results?
5. Do combinations of any of the independent variables specified do more to explain variance than do single variables?

A relatively complicated technique such as this must be with care and is likely to produce results susceptible to multiple (or no) archaeological explanations. This being an exploratory exercise, the results are presented, though they are somewhat ambiguous. Ceramics to the sites in chaco was taking place but variability in ceramics was primarily in stylish differences as evidenced here by rim fillets. Part of the variability seen in this group is likely to be the result of temporal stylistic shifts, as seen in the contribution of rough sort type.

Temper becomes a more reliable predictor of variability, and the combination of site and temper now a significant

factor in explaining variability. As before, the contribution of rough sort type suggests that in lumping types some variability from temporal change to being masked.

2.2. The Roman Amphora Trade with Iron Age Britain.

The majority of traded commodities in the ancient world, many of them perishables, have rarely left traces behind for the archaeologist or historian interested in the trade routes and commerce of antiquity. However, certain valued items of trade such as wine, olive-oil and fish products were commonly transported long distances in large pottery amphorae, lightly sealed and sturdily built to stand up to the buffeting of the journey. Sherds of these vessels are often found on a variety of sites during the Grew-Roman and Byzantine era. A detailed study of such amphorae can sometimes provide invaluable evidence of economic activity not readily available from most other classes of pottery. These large two handled jars were specifically intended as containers for bulk carrying of goods, and unlike the majority of other pottery type, it was the contents that were prized rather than the vessel itself. From this it follows that an appreciation of goods carried in amphorae and their origin can furnish us with information on the ancient economy, the trade routes employed and the relative importance of the centre of exportation and importation. It shows some light on the lifestyle of the people who chose to import the best Italian wine or acquired a taste of Spanish fish sauces. Despite the fact that amphorae were apparently produced in large quantities, and might well be broken up on receipt of their contents, there is a high degree of standardization within each category of forms. The various producing centres appears to have had their own particular amphorae shapes, perhaps for easy recognition of the contents, although similar types were sometimes made in diverse areas.

2.3. Roman Amphorae in Late Iron Age Britain

In the study of amphorae in Britain pre-Roman iron-age, contexts, drew attention to the variety of sources from which these vessels had originated. He was able to demonstrate, for example, that the important second and first century BC. Dressel form, “wine amphorae”, 1 and

2 was made principally in Campania and Latium which later extended to include Etruria (Peacock, 1978). Moreover, the Dressel IA type with its jutting triangular rim and the IB variety with a near vertical with a near vertical collar-rim turned out to be petrologically similar, both containing characteristic inclusions of green augite and volcanic rock, and therefore did not represent the products of two distinct areas as had been previously suggested.

The distribution pattern in Britain of these two amphorae types is revealing. The earlier Dressel IA form, dating from at least the mid second century to about the mid-first century BC is present in same number at Hengistbury Head in the south of the country, with outliers as far away as CarnEuny, Cornwall and Mushrooms farm, Braughing, Hertfordshire. Finds of the later Dressel IB form are concentrated in the South-east of the country, more especially the Hertfordshire-Essex region. The two distribution patterns seem to reflect historically known events

- (a) The uprising of the Gaulish Veneti in 56BC disrupting Roman trade with Hengistbury Head, and
- (b) The friendship of Rome with the Trinovantes in the east of the country following Caesar's expedition to Britain in 55 and 54BC. Both of these events appear roughly to coincide with the typological change in amphora form from Dressel IA to IB.

The appearance of the Dressel amphora Britain can perhaps be summed up as follows. Importation of the IA variety arrived at Hengistbury Head during the period from the second half of the second to just before the middle of the first century BC. As small number of the dressel IB form also occurs at Hengistbury Head. This suggests that the shift of Dressel I amphorae supplies from Hengistbury Head took place at the very time of the change in form. Unfortunately this typological change cannot be precisely dated, but sometime around the middle of the first century BC would be in keeping with the continental evidence. The Dressel IA type was essentially a wine amphora and the British finds appear to become mainly from Campania, Latium and probably Etruria. According to Peacock, the trade-route to Britain

is likely to have been via Narbonensis and the Garonne waterway, and then around the coast of Brittany into the English channel. The Dressel IB type, which appears predominantly in the Hertfordshire – Essex region, seems to have been coming in the main from the same producing area and may have followed the same trade-route as its IA predecessor.

2.4. The Late Bronze Age Aegean and the Roman Mediterranean: A Case For Comparison

Any attempt to compare artefactual production and distribution in late bronze-age Aegean with that in the Roman Mediterranean will inevitably invite criticism. Explanations for any resulting correlations could be considered misleading as it has been demonstrated that similar distributional pattern do not necessarily relate to similar processes. Moreover, followers of Polanyi would distinguish the redistributive but primitive economy, embedded in social relations, of the Aegean late bronze age, from the dis-embedded market economy (involving buying and selling for profit outside the social context) of the Roman Mediterranean. From a theoretical stand point, therefore, comparisons between the two systems demand much caution; especially as embedded redistribution does not differ from centralized market exchange in spatial terms. The stage has thus been set for a widespread but close examination and comparison of actual quantified distribution patterns within each to explore their nature and significance with relation to these hypotheses. An aim is to suggest that, when viewed with a fresh perspective and in relation to each other, pottery studies of both the Aegean late bronze-age and the Roman Mediterranean can provide a sound and valid empirical basis for such investigation. This is especially time if we concentrate on identifying similarities rather than on assuming differences, and if a similar methodology, taking account of recent advances in analysis and qualification is used for each period.

2.5. The Polanyi Thesis

The whole question of embeddedness and disembeddedness has been a useful concept, but the distinction between the two is becoming less clear cut and more confused as a result of further research in the period both before and after the fifth century BC when the change over from an embedded to a disembedded

economy is believed to have started in Greece. Profit oriented exchange has been identified in Mesopotamia around 2000BC, while elements of embeddedness, occur for example, in the organization of Roman government supplies in the early fourth century AD, when ship owners were paid in kind at a rate not intended to cover their costs, and compensated in return by privileges and immunities. Indeed, there has been a stimulating discussion, not fully resolved, relating to the relevance of market exchange within the Roman economy.

The uncertainty surrounding the basic assumption that these were very different economic programme.

2.6 In the Wake of Distribution: An Integrated Approach to Ceramics Studies In Prehistoric Britain

An ecological-technological approach to the study of pottery production and craft specialization has been successfully applied to archaeological ceramics from various sites and regions in the Americas and continental Europe. Although pottery production in the historic period in Britain has commanded the attention of ceramic specialists, the study of prehistoric pottery has been directed heavily towards the identification of trade. For most of the first half of this century, pottery studies, were based almost exclusively on morphology and decoration. Ceramics vessels were often regarded as little more than chronological inducers or cultural sign-posts symbolizing the ethnic affiliation of their owner. Major stylistic variation was interpreted implicitly or explicitly as the material manifestation of a new culture whilst minor adjustment in shape and decoration were seen as representing a later phase within culture zone. Intricate time scales and invasion patterns were constructed on the basis of ceramic styles. Whole empire founded and new ones arose on a few abraded pot sherds. The new archaeology which reached its floruit in the 1960s shifted the emphasis from static description and simple induction to explanation and the study of systematic structure and change. Material culture can and does represent the structure of the total cultural system, in which change must be viewed in an adaptive context both social and environmental, not whimsically viewed as the result of influences, stimuli, or even immigrations between and among geographically defined units). Archaeologists primarily concerned with ceramics could no longer make linear correlation

between vessel style change and the appearance of a new people.

In the United States at this time, ceramics began to concentrate on design analysis to identify spatial rather than chronological stylistic variation. These studies were intended to shed light on the amount of social interaction within and between communities. Despite earlier definitive characterization work by Anna Shepard the possibility of economic interaction was but rarely considered for until recently, as has described, many American prehistorians tacitly assumed that exchange or trade can only occur when a group lacks a particular commodity or the raw materials to produce that commodity. Clay to make pottery is available in most areas, so ceramic exchange was taken to be unnecessary.

2.7. Conclusion

Prehistoric pottery has been directed heavily towards the identification of trade. For most of the first half of this century, pottery studies, were based almost exclusively on morphology and decoration. Ceramics vessels were often regarded as little more than chronological inducers or cultural sign-posts symbolizing the ethnic affiliation of their owner.

References

- [1] Cardew M. (1986), *Pottery in Nigeria*. Washington: Smithsonian Institution Libraries, National Museum of African Art Branch
- [2] Carol R.E. and Melvin E. (1999) "Archaeology and the Society; Oxford Press.
- [3] Carol R.E. and Melvin E. (2004) *Cultural Anthropology*, New Jersey: Pearson Education
- [4] Chauchan S.S. (1977) "Innovations in Teaching Process", New Delhi: Vines Publications
- [5] Chikwendu V.E. (1979) "Evidence for Supernatural Belief in Prehistoric Igbo Community in Eastern Nigeria: Archaeological Evidence from Afikpo." *West African Religion*, pp. 42-56.
- [6] Chikwendu V.E. (1998) "Cultural Succession and Continuity in South Eastern Nigeria Excavations at Afikpo." *Cambridge Monographs in African Archaeology*, pp.44