POTS, PANS, AND PEOPLE: CERAMIC ECOLOGY IN WEST MEXICO

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'Unless ceramic studies lead to a better understanding of the cultural context in which the objects were made and used, they form a sterile record of limited worth.' (Matson 1965:202)

Introduction

Pottery has been by far the archaeologist's favourite item of material culture since the inception of systematic archaeological research. This is particularly true in areas such as Mesoamerica, where other remains of past behaviour,(e.g. textiles, wooden artifacts, animal skins, etc.) are normally not preserved. Pottery is in most instances the best-preserved and most abundant aspect of material culture that has come down to us from the Prehispanic past. Therefore, pottery analysis has been used for a myriad applications: to establish chronologies, to identify activity areas, to define site structure and dimensions, and to study funerary customs, religious beliefs, trade, and so on.

However, many processual questions regarding patterns of ceramic production, use and discard in the past cannot be fully answered using traditional archaeological techniques. Therefore, many archaeologists have turned to the observation of present-day potters, an approach termed 'ceramic ethnoarchaeology' (Kramer 1985). This kind of research 'has covered a broad topical range, dealing with matters relating to technology, taxonomy, vessel function, longevity, recycling and disposal, division of labour, learning, style, ethnicity, distribution, and technological and stylistic change' (Kramer 1985:78).

Some of these studies of present-day potters have been carried out within a 'cultural ecology' framework, thus giving birth to what has been termed 'ceramic ecology.' The concept of ceramic ecology was first postulated almost three decades ago by Matson (1965), and it has recently been defined by Kolb (1989:309) as the relationship of the physical and biological environment, man as a genetic and behavioral organism, and man's cultural manifestations, with special emphasis on the total range of the ceramic complex (from selection of raw materials, manufacture, and decoration, through distribution, consumption, and discard).

Ceramic ecology is a contextual approach to ceramic analysis (see Figure 1) in which the investigator seeks to place technical data into both an ecological and a sociocultural frame of reference by relating the raw material resources (clays and aplastics) to the production and use of the ceramic products (Rice 1987:314; Kolb 1989:285). The final step of a ceramic ecological investigation links the data on environmental and sociotechnological factors of pottery making to the broader role of pottery in a culture. This kind of analysis deals with such features as economic organization (local and long distance trade arrangements), kinship structure, settlement patterns, demographic factors, ceremonial or ritual activities, and so forth (Rice 1987:317).

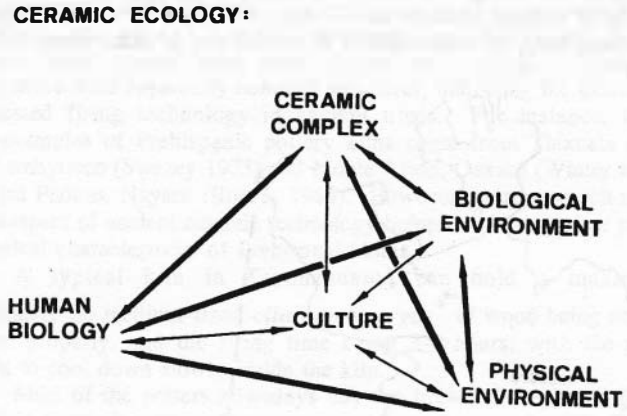

Fig. 1. Ceramic ecology diagram - - the ceramic complex (after Kolb 1989: fig.3)

Little is known about the interrelationship of environment and ceramic specialization, and many questions still remain to be answered, for example: What factors favor or limit the development of ceramic specialization? Why did pottery apparently arise in some places and not in others? One way to answer these questions is to explore the environmental interrelationships of a modern pottery-making community and apply the results to the prehistory of that region (Arnold 1975:183).

The Potters

This study is centred on the village of Teponahuasco, Jalisco, a small peasant community (*ca* 1200 inhabitants) located within the municipality of Cuquío, Jalisco, some 80 km. northeast of Guadalajara (fig. 2). The majority of the people are dedicated to agriculture, with *ca* 20-30% of households dedicated to pottery production on a part-time basis. Part of the year (June-January) is spent on agricultural activities, and the rest of the time is dedicated to other activities, among them production of ceramics. The production of pottery here is a cultural trait that has remained relatively unchanged for many generations. Many of the techniques still employed today were introduced by the Spanish shortly after the Conquest, while others may be Prehispanic in origin. There is no *barrio* (i.e. sector) in Teponahuasco where the ceramic production is concentrated, in contrast with bigger and more urbanized communities, such as San Marcos, Jalisco (Weigand and Weigand 1989). Instead, ceramic production is carried out on a strictly domestic level in houses scattered throughout the community. Each pottery-making house has its own kiln, which may be in the backyard or outside the house, by the pavement. Also an area is provided inside

the house for the drying of unfired pots, usually in the open or under a roof. The modelling of ceramic artifacts can be done in a separate room, designated for that purpose only, or sometimes it is carried out in other areas such as the kitchen.

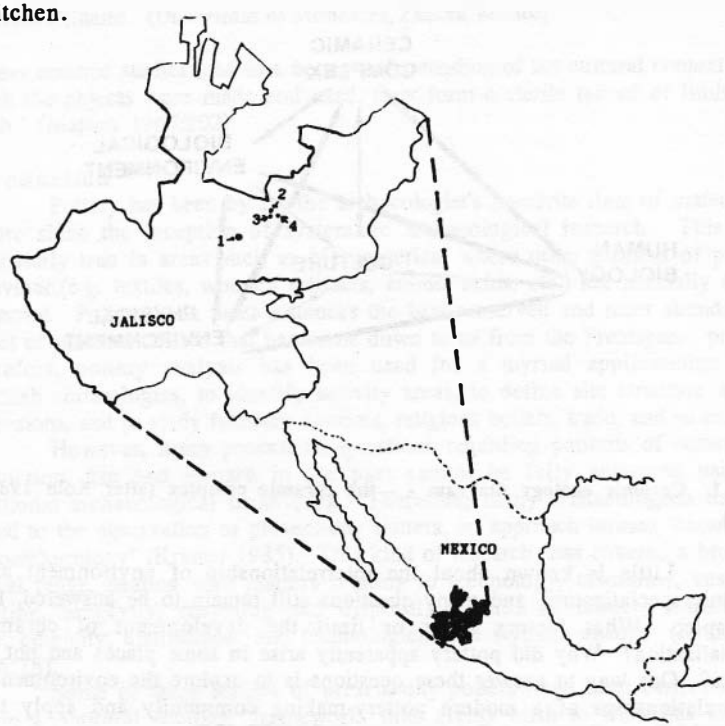

Fig. 2. Sites mentioned in text: 1) Guadalajara, 2) Cuquío. 3) Teponahuasco, 4) Tlacotán.

There is a certain degree of specialization of production, in that some households produce solely *cántaros* (jugs) for carrying water, some make *ollas* (pots) and *cazuelas* (pans) for cooking, large *ollas* for the fermentation of *tejuino* (a maize beer), or even drain-pipes and flower pots. Some of the ceramic vessels are made using a mould, such as the *olla* and *cazuela*. The *torno* or potter's wheel is used mainly for polishing or giving the finishing touches to the outside of the vessel. Some complex forms, such as the *cántaro*, are made in two stages: first the bottom half of the vessel is made with a mould, and then the upper portion and neck are constructed out of coils of clay. This is a very laborious and time-consuming process, in comparison with vessels that are entirely mould-made.

Once the clay vessel has been made, it is left to dry under the shade for approximately one day before firing. Dry weather is essential for this, as excess humidity will prevent the clay from drying properly, and the vessels may crack while being fired. The kiln used for firing the clay vessels is of European origin, introduced by the Spanish to Mexico after the Conquest

(Foster 1967). The European kiln contrasts markedly with the Indian kilns still used in many parts of Mexico and Central America, which consist of little more than a hearth, covered with wood and branches (Deal 1988:Figures 7-8). Few kilns have been reported from archaeological excavations in Mesoamerica. Some of these were apparently complex structures, indicating the existence of a sophisticated firing technology in ancient times. For instance, the best-known examples of Prehispanic pottery kilns come from Tlaxcala (Abascal 1973), Lambytieco (Swezey 1973) and Monte Albán, Oaxaca (Winter and Paine 1976), and Peñitas, Nayarit (Bordaz 1964). However, more research is needed into this aspect of ancient ceramic technology before we have a clear picture of the technical characteristics of Prehispanic kilns.

A typical kiln in Teponahuasco can hold a maximum of approximately 30 medium-sized *ollas*, two *cargas** of wood being needed to fire them properly, and the firing time being 3-4 hours, with the pots left overnight to cool down slowly inside the kiln.

Most of the potters nowadays buy the firewood they need for firing the kilns from wood cutters who are also part-time farmers, but 20 or 30 years ago the potters used to get their own firewood, some having their own donkeys for transportation of the fuel. Firewood is brought from a place some distance south of Teponahuasco, as the village's immediate area is now almost totally devoid of trees, a condition that has resulted from the unrestricted exploitation of the forests.

All potters have equal access to a plot of land where they extract the clay for making their ceramic vessels. This is located near the village school, within easy access, and forms part of the *ejido*, or communal lands.

In this community the basic social unit of ceramic production is the household, composed in most cases of a nuclear family or small extended family. There is a great degree of variation in terms of family size and organization; in some cases the mother is the only one who makes pottery, with some help from her husband, who, for example, gathers firewood and extracts the clay. In other cases it is the husband who makes and fires the pots, with only marginal help from his wife, and in still other cases the sons and daughters also help in the production process. The sons may also help with more strenuous activities, for example breaking up the clay into small fragments (this can be done using a pickaxe or a big stone to break the lumps), while the daughters may assist their mothers in modelling the pots. However, it is apparent that the younger generations in this area are not attracted to the pottery craft. In all cases active potters are older people, and they complain that their sons and daughters are simply not interested in continuing with the family tradition. It therefore appears that pottery production in this area is dying out.

Teponahuasco is not the only community in the region that produces pottery. Other towns as well, such as Cuquío and Tlacotán (see map) share many traits with Teponahuasco, and they also face the problem of pottery production no longer being an economically attractive enterprise. In Cuquío,

*This term refers to a load of firewood, or the weight usually carried by a donkey, which is approximately 40 kilograms.

for example, there is a very distinctive style of pottery, which was common in the area many years ago, but is now produced by only one man. There is no one interested in acquiring this knowledge from him, so an entire ceramic style is likely to disappear when this potter is no longer active. In Tlacotán only one family is left that produces pottery, and they complain that few people now buy their wares. The public now seems to prefer mass-produced cooking and serving vessels, and the 'traditional,' village-centred potters are in most cases no longer able to support themselves from pottery production alone.

Most of the pottery produced in Teponahuasco is sold locally. Every Friday during the dry season the potters display their wares around the plaza, in front of the church. There are many vendors, and many people come from the neighbouring towns and from far-away (even as far afield as the United States) to visit the church and also to buy pottery. Ceramic production in Teponahuasco is a part-time activity as most "potters" (whether male or female) have some agricultural land. Agriculture is a factor against the increased intensity of the craft, since pottery making must be interrupted to perform agricultural tasks (Arnold 1989:226). The conditions that favour agriculture may not always be adequate for ceramic production. Pottery making requires clear, dry weather, so it may be limited to a part-time activity, alternating with agriculture (Arnold 1975: 193).

Furthermore, weather and climate together constitute a regulatory mechanism imposed on ceramic production. First of all, raw material sources may be inaccessible during rainy weather and mining the clay may be dangerous. Secondly, rain may prevent raw ceramic materials from drying properly, impairing paste quality. Lastly, cold or damp weather often increases the time necessary to complete a pottery vessel, particularly drying time, to such a degree that pottery making is impractical and unproductive (Arnold 1989:61-66).

These climatological constraints on pottery production are present in most of the New World tropics. For example, in Quinua, Peru, the main reason for the lack of full-time specialization is the weather. Excessive humidity during the rainy season prevents potters from drying their fuel or pots, and in addition to this they consider the rainy season too cold for making pottery. Thus, little is made at this time, the potter undertaking agricultural activities in order to provide food for his family (Arnold 1975:189).

In Rabinal, Guatemala, pottery making is carried out only during the dry season, and production stops completely during the first few weeks of the rainy season so the fields can be prepared and planted (Reina and Hill 1978:140). Most of Middle America shares in this pattern of alternating dry and wet seasons, with negative consequences for pottery production. For example, in the Mazahua region of central Mexico, potters find it impossible to excavate the clay during the rainy season, and extremely difficult to transport it because of almost impassable roads and footpaths. Firing the kilns is generally imposible during rainfall, as most kilns are open at the top, and the lower part of the kiln, where the fire is made, fills up with water (Papousek 1981:58).

Implications for archaeology

Ecological factors affecting ceramic production or distribution have rarely been taken into account by archaeologists when equating areas of ceramic distribution with 'culture areas'. Many years ago Isabel Kelly, in her day *doyenne* of West Mexican archaeologists, presented a map illustrating several 'ceramic provinces' (Kelly 1948:Figure on p. IX), which was meant to illustrate the cultural configuration of most of the western area of Mesoamerica during Prehispanic times. Pedro Armillas presented a similar map in the same volume (Armillas 1948:Figure on p.XI), and these ideas were accepted by most archaeologists, to the extent that 'ceramic provinces became congealed as realities, and the result was an ongoing ceramocentric focus for archaeology that has proved very difficult to reconcile with anthropological or sociological observations. The 'ceramic provinces' were equated to 'cultures' (Weigand 1991:4).

According to Arnold (1989:98), 'centers of ceramic production have at least some climatic base and would not necessarily reflect culture-historical forces in the ancient society. Thus, ceramic history, while revealing important aspects of technological history, would not necessarily reveal a culture history'. A case in point would be the situation in the Prehispanic Andes, where 'there are places which we know, from historical records, to have been a part of the Inca empire, but which have very little or virtually no Inca pottery on or in their archaeological sites' (Willey 1991:206). A similar situation is reported from Prehispanic Oaxaca, where 'archaeological materials in the Valley [of Oaxaca] have not been linked to the incursions of the Mexicas' (Whitecotton 1977:126). These two examples illustrate the inability of pottery *per se* to provide a clear image of prehistoric cultural developments.

Conclusions

Many archaeologists working in West Mexico as well as in other areas have attempted to reconstruct the area's culture history based on ceramic analysis, taking the distribution of different ceramic types on the surface as indicative of different cultural areas. This view, while useful if considered judiciously, can become a rigid framework that impedes a clear perception of processual issues of cultural evolution. As we have seen, its major flaw is that it ignores ecological factors that affected cultural behaviour in ancient times.

The study of present-day pottery-manufacturing communities can give us an insight into the dynamics of ceramic production in the global context of culture. The ecological approach can help us address such issues as the development of pottery as a full-time activity. As we have seen in the examples discussed above, agriculture can function as a factor that limits the development of ceramic specialization, and the distribution of ceramic centres may be governed by ecological factors as much as by cultural ones. This fact should be taken into consideration when trying to reconstruct cultural history on the basis of ceramic distribution.

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References

Abascal, R.M. 1973. Los hornos prehispánicos en la región de Tlaxcala. In *Balance y perspectiva de la antropología de Mesoamérica y del centro de México, XIII Mesa Redonda.* Mexico: Sociedad Mexicana de Antropología, pp.189-198

Armillas, P. 1948. Arqueología del occidente de Guerrero. In *El Occidente de México.* Mexico: Sociedad Mexicana de Antropología, pp. 55-71

Arnold, D.E. 1975. Ceramic ecology of the Ayacucho Basin, Peru: implications for prehistory. *Current Anthropology.* 16(2):183-205.

Arnold, D.E. 1989. *Ceramic theory and cultural process.* Cambridge: Cambridge University Press.

Bordaz, J. 1964. Pre-Columbian ceramic kilns at Peñitas, a post-Classic site in coastal Nayarit, Mexico. PhD dissertation, Columbia University. Ann Arbor, University Microfilm Publications.

Deal, M. 1988. An ethnoarchaeological approach to the identification of Maya domestic pottery production. In *Ceramic ecology revisited: the technology and socioeconomics of pottery.* (ed. C.C. Kolb, Part I). Oxford: British Archaeological Reports, pp. 111-142.

Foster, G.M. 1967. Contemporary pottery and basketry. In *Handbook of Middle-American Indians,* (ed. R. Wauchope, vol. 6). Austin:University of Texas Press, pp. 103-124.

Kelly, I.T. 1948 Ceramic provinces of Northwest Mexico. In *El Occidente de Mexico,* Mexico: Sociedad Mexicana de Antropología, pp. 55-71

Kolb, C.C. 1989. Ceramic ecology in retrospect: a critical review of methodology and results. In *Ceramic ecology, 1988: current research on ceramic materials.* (ed. C.C. Kolb). Oxford: British Archaeological Reports, pp. 261-375.

Kramer, C. 1985. Ceramic ethnoarchaeology. In *Annual review of anthropology.* Vol 14 (ed. B.J. Siegel, A.R. Beals and S.A. Tyler). Annual Reviews, Palo Alto, California: Annual Reviews, pp.77-102

Matson, F.R. 1965. Ceramic ecology: an approach to the study of the early cultures of the Near East. In *Ceramics and man,* (ed. F.R. Matson). Chicago: Aldine, pp 202-217.

Papousek, D.A. 1981. *The peasant-potters of Los Pueblos: stimulus situation and adaptive processes in the Mazahua region in Central Mexico.* Assen, The Netherlands: Van Gorkum.

Reina, R. and R.M. Hill. 1978. *The traditional pottery of Guatemala.* Austin, University of Texas Press.

Rice, P.M. 1987. *Pottery analysis: a sourcebook..* Chicago: University of Chicago Press.

Swezey, W.R. 1975. Mound 91, Lambityeco, a description of an ancient kiln. In *Balance y perspectiva de la antropología de Mesoamérica y del norte de México, XII Mesa Redonda.* Mexico: Sociedad Mexicana de Antropología, pp.179-184

Weigand, P.C. (in press.). Introduction. In *Origen y desarrollo de la civilización en el Occidente de México, IV mesa de trabajo. Homenaje a Pedro Armillas y Angel Palerm*, (eds B. de Lameiras and P.C. Weigand). El Colegio de Michoacán.

Weigand, P.C. and C.G. de Weigand. 1989. An ethnographical consideration of an archaeological problem: ceramic production in western Mexico, a case study. In *Homenaje a Isabel Kelly*, (ed. Y. Gonzalez). Mexico: Instituto Nacional de Antropología e Historia, pp. 175-186.

Whitecotton, J.W. 1977. *The Zapotecs: princes, priests, and peasants*. Norman: University of Oklahoma Press,.

Willey, G.R. 1991. Horizonal integration and regional diversity: an alternating process in the rise of civilizations. *American antiquity* 56(2):197-215.

Winter, M.C. and W.D. Payne. 1976. Hornos para cerámica hallados en Monte Albán. *Boletín del INAH*. 16:37-40. Mexico.