

CHAPTER 17

A WORLD TOUR OF BREWERIES

JOYCE MARCUS

The mouth of a perfectly contented man is filled with beer.
—Egyptian text from ca. 2200 BC

NOTHING COULD BE A more appropriate homage to Michael Moseley than to take him on a world tour of breweries. This tour begins in Upper Egypt, where the archaeological data for beer production and consumption abound, then moves to the ethnographic present Sub-Saharan Africa, where ceremonial beer drinking plays a key social and economic role, and finally arrives in Peru, where we examine evidence for beer production at four prehispanic sites: Huánuco Pampa, Manchán, Cerro Baúl, and Cerro Azul.

ANCIENT EGYPT

In contemporary Western culture, virtually every man or woman has access to beer. In some cultures, however, access could be restricted or even forbidden. Among some ancient societies beer was consumed primarily on special occasions, at public rituals scheduled by elites; in others, beer was widely used to attract, reward, and pay laborers for their work.

In ancient Egypt, for example, laborers for the state were often paid in both bread and beer. One standard wage for an ancient Egyptian worker consisted of ten loaves of bread and a measure of beer that varied between one-third of a jug and two jugs (Kemp 1991:125). In Egyptian hieroglyphic writing,

the determinative (or classificatory sign) associated with beer was the depiction of a specific jug (Figure 17.1). This determinative was used not only in those expressions where one might expect it—“to be drunk” or to have “food and drink”—but also in phrases where we might not expect it, such as “tribute.”

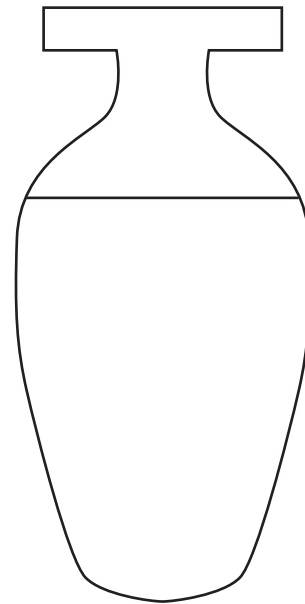


Figure 17.1. Example of the “jug” hieroglyph, a determinative for beer, in ancient Egyptian writing. (Redrawn by K. Clahasse from Kemp 2005:45.)

Egyptian beer, a staple beverage written *bnkt* or *hqt*, was often placed in tombs so that the deceased could be sustained in the afterlife (Figure 17.2). Wine, too, might be placed in tombs, particularly in those of nobles and rulers. For example, King Scorpion's tomb at Abydos shows the high value placed on beer and wine around 3200 BC (Dreyer 1992; McGovern et al. 1997). Of the twelve rooms that make up the tomb, two (Rooms 3 and 4) contained beer jars and bread molds, while three (Rooms 7, 10, and 12) had as many as 700 wine jars that had been brought from the southern hill country of Jordan/Palestine (Figure 17.3). Forty-seven of the wine jars held grape pips, and several had preserved grapes in them. Eleven vessels yielded sliced figs that had been perforated, strung together, and likely suspended in the wine to add flavor or sweetening. The average capacity of such vessels was 6.5 liters.

Beer was a beverage consumed by both laborers and nobles, and there were several different kinds; the builders of the Fourth Dynasty Giza pyramids could enjoy five varieties. Beer, of course, is much older than that. The earliest known Egyptian breweries date to ca. 3500–3300 BC at Upper Egyptian sites such as Ballas, el-Mahasna, and Hierakonpolis. At Hierakonpolis, archaeologists found vats capable of brewing 1,134 liters. Some of these vats contained a sugary dark residue in which remains of both wheat and barley were found (Geller 1993, 1999). This Upper Egyptian evidence for beer manufacturing is, at present, our oldest for the region.

In Egypt, the art of brewing beer was typically mastered by women, although men could also be involved. Ancient Egyptian women were under the supervision of some kind of chief brewer, such as the high official Kha-bau-Seker, who bore the title “Controller of the Brewing Women” (Murray and Sethe 1937:11; Darby et al. 1977:531).

From scenes painted on Egyptian tomb walls and from wooden models placed in those tombs, we learn much about beer brewing. Because beer and bread shared the same ingredients, we often see brewing and baking being carried out in adjacent scenes in murals or in adjacent rooms in wooden models. Women are shown in prominent roles in both cases. A well-known wooden model found in the tomb of an Eleventh Dynasty high official named Meket-ra shows a brewery in the miniature building's front room and a bakery in the back room (Figure 17.4). In the brewery we see grinding stones, beer jars, dough cakes, and vats for fermentation. In the bakery we see grinding stones,

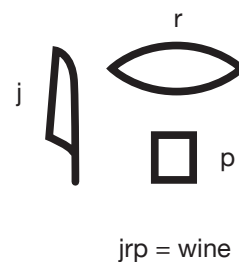
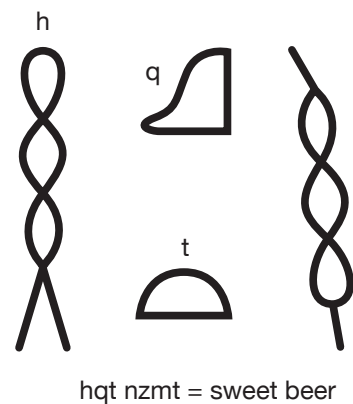
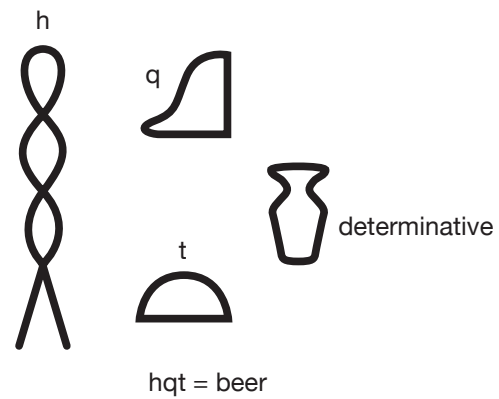


Figure 17.2. Egyptian hieroglyphs for beer (*hqt*) and wine (*jrp*). (Adapted by K. Clahasse from Murray and Sethe 1937; Darby et al. 1977; and Davies and Gardiner 1920.)

dough-filled vats, bread-making tables, bread molds to make loaves, and ovens to accommodate the dough-filled molds.

A mural (Figure 17.5) showing both baking and brewing was found in the Twelfth Dynasty tomb of Intef-iker, a vizier at Thebes (Davies and Gardiner 1920). In the upper portion of the mural we see a woman grinding with a handstone (*c*) while another woman (*b*) sieves out coarse elements; still other women (*e*, *f*) fill the molds with dough, while a man (*d*) tends to the hot bread molds in the oven. In the lower row

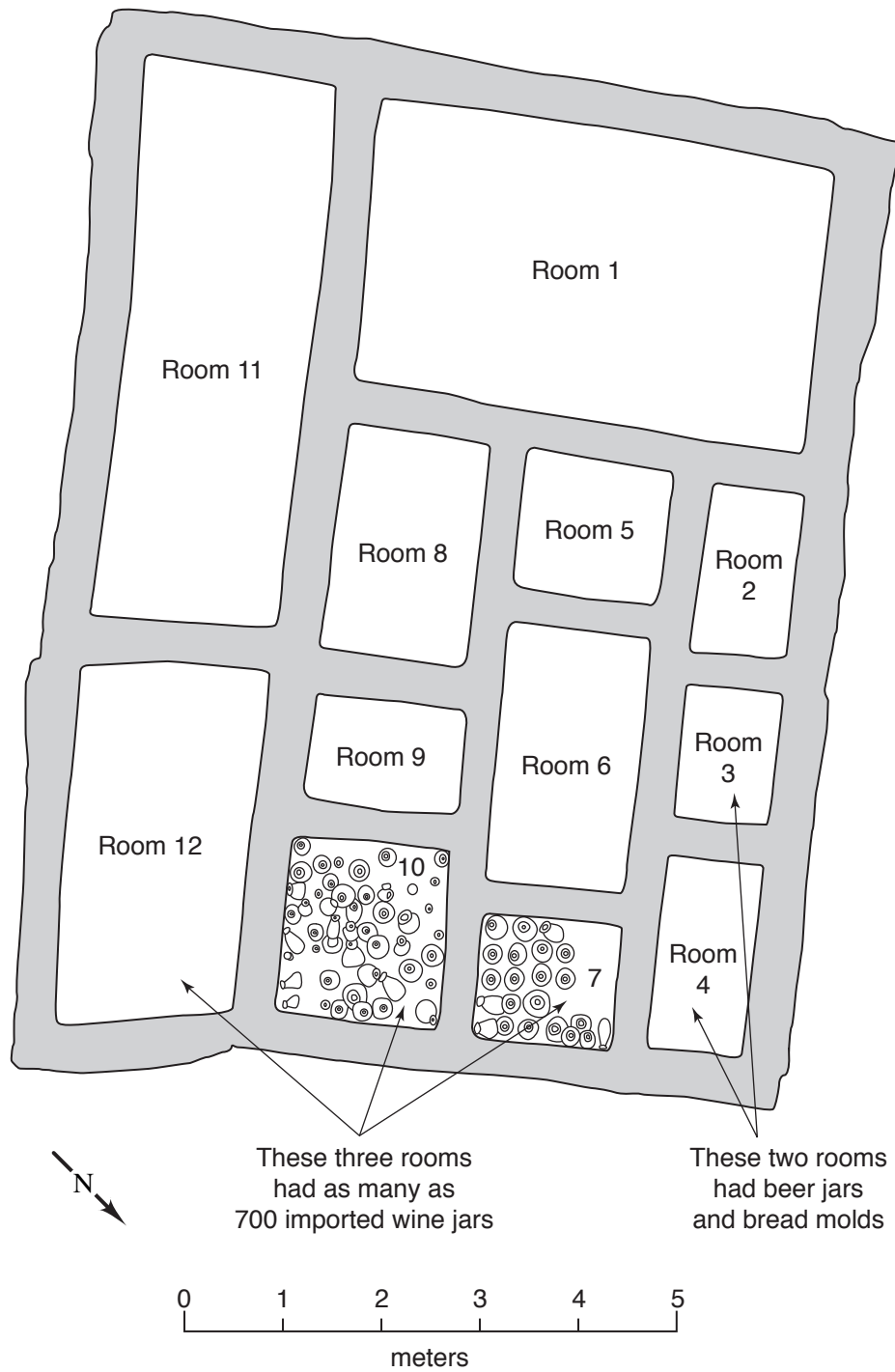


Figure 17.3. This Egyptian tomb, thought to be that of King Scorpion, included hundreds of jars of beer and wine to sustain the king in his afterlife; Rooms 3 and 4 had locally manufactured jars for beer and bread, while Rooms 12, 10, and 7 contained as many as 700 imported wine jars. (Redrawn by K. Clahassey from McGovern et al. 1997:Figures 4, 5.)

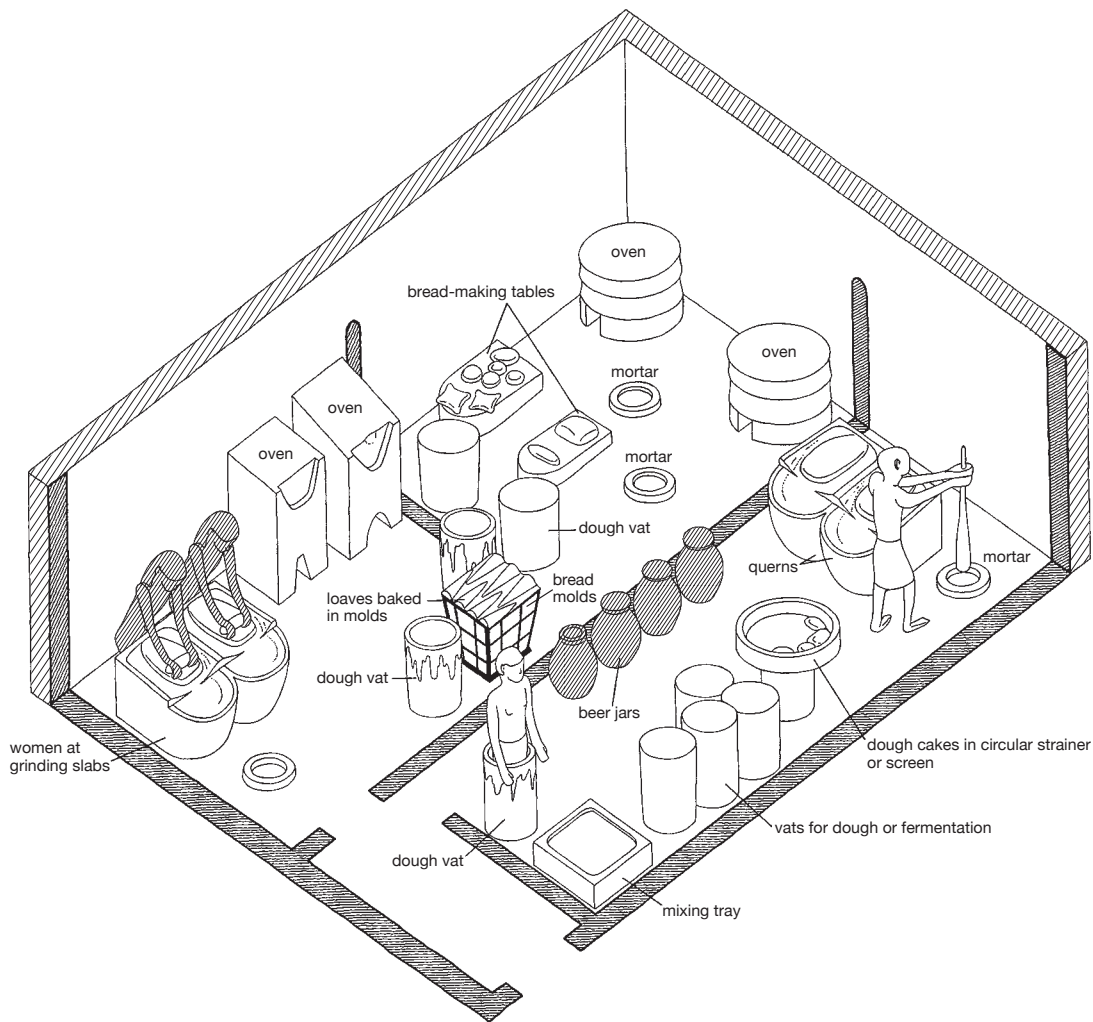


Figure 17.4. This wooden model, with a brewery in the front room and a bakery in the back, shows the close relationship between baking and brewing. This kind of model was placed in the tombs of Egyptian officials, in this case Meket-ra at Thebes, to ensure a steady supply of bread and beer. (Redrawn by K. Clahasse from Winlock 1955:Figures 22–23, 64–65; Kemp 1991:Figure 42.)

we see men who make dough (and perhaps add dates) (*g*), mix dough with water (*b*), decant beer into jars (*i*), then seal the jars (*ʿ*) (Davies and Gardiner 1920:Plates 11 and 12; Kemp 1991:Figure 43).

SUB-SAHARAN AFRICA

Beer making and drinking not only were important to ancient African populations, they continue to be important in the ethnographic present among the Balobedu (Krieger 1932), Gamo (Arthur 2003), Mossi and Bisa (Saul 1981), Baganda (Robbins 1979), Samburu (Holtzman 2001), Kofyar (Netting 1964), Tiriki (Sangree 1962), Nyakyusa (Willis 2001), Zulu (Reusch 1998), and Xhosa

(McAllister 2001, 2003, 2004, 2006). In speaking of the Kofyar of Nigeria, Netting (1964:376) says that “occasions which involve the entire community are difficult to imagine apart from beer.” He adds that large quantities of beer were drunk (1) when celebrating the harvest, (2) when an admired warrior killed an enemy, or (3) when a man killed dangerous game. Such brave men not only were honored by a beer feast, they also acquired the coveted right to drink from a special fermenting jar for the rest of their lives. In contrast, “the most severe punishment meted out to a man by his community is exclusion from all occasions for beer drinking” (Netting 1964:377). Among the Kofyar, it was the flow of beer that defined behaviors that were socially valued, as well as those that were socially censured.

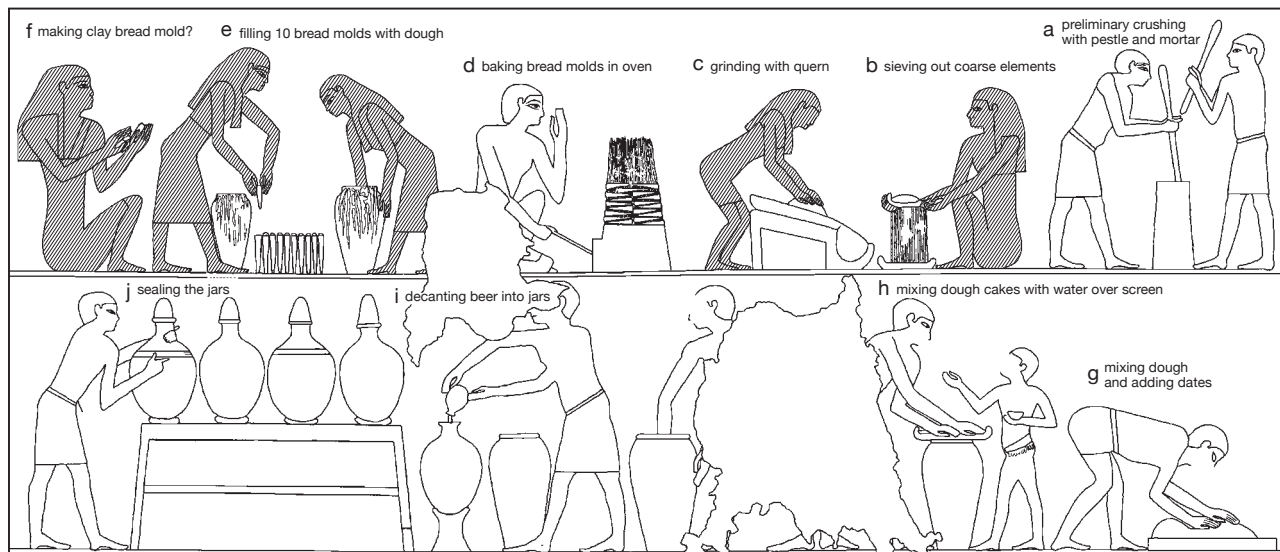


Figure 17.5. This painted scene shows both baking and brewing. Such scenes played the same role as wooden models, ensuring that a steady supply of beer and bread would be available in the afterlife. This painting is from the tomb of Intef-iker, a vizier at Thebes, Egypt. (Redrawn by K. Clahasse from Davies and Gardiner 1920: Plates 11, 12; Kemp 1991:Figure 43.)

Like the ancient Egyptians, twentieth-century Kofyar workers were paid in beer. The tasks of harvesting, gathering thatch, and building corrals “are all occasions on which a beer party can mobilize large work groups without reference to kinship or neighborhood affiliation” (Netting 1964:377). For funeral rites, large quantities of beer were also brewed by relatives of the dead to give to attendees from both patri-kin and matri-kin.

In a similar fashion, cooperative work groups among the Xhosa of South Africa are still rewarded with beer after the work has been completed; even nonworkers attend these events with the expectation of receiving a share (McAllister 2003:195).

LABOR AND BEER IN THE ANDES

In the Andes, chicha or maize beer—also known as *aca*, *jora*, and *azua*—was an important incentive for men to come to work. In one sixteenth-century document Cristóbal Payco, the leader of the northern Peruvian community of Jequetepeque, explicitly asked the Spaniards for permission to continue to provide chicha to men in return for their work on community projects. He explained,

the Indians obey their caciques and principales because of that custom that they have of giving them drink . . . if they [caciques and principales] did not give drink to the Indians to work [this land] and to others to plant the

fields of the community to pay tribute, they would not cooperate or come together to do it. (Juan de Betanzos 1551 [1968:60, 72–73])

In Andean society, supplying large amounts of beer was considered an act of generosity even when the relationship between donor and recipient was asymmetrical or hierarchical. Such “generosity” served to mask the fact that the provider was high status, while the recipient was not only low status but obligated to do the work. This attempt to disguise hierarchy as generosity, widespread in ancient Peru (Morris 1982, 1986), was also used in many other parts of the world. For example, Fredrik Barth (1959), in speaking of the Pathans of Swat, Pakistan, describes similar use of “hospitality” to achieve elite goals:

it might seem . . . that gifts and hospitality would be less important than bribes and payments in supporting claims to authority. As a matter of fact, the reverse is true. Bribes and payments create relationships which render them onerous and hazardous. Gifts and hospitality, on the other hand, are of prime importance in the building up of a political following. . . . A continuous flow of gifts creates needs and fosters dependence, and the threat of its being cut off becomes a powerful disciplinary device. (Barth 1959:77–79)

Abundant documentation shows that Andean leaders who provided liberal quantities of beer attracted sufficient labor to work in their fields (Rowe 1946:292;

Murra 1960, 1980; Rostworowski 1977; Morris 1979, 1982). In fact, studies suggest that many parts of the Andean economy depended on the masking of inequality with hospitality.

In an effort to show the role that chicha played within the Inca economy, Murra (1960) isolated two agricultural systems—one at the local level, emphasizing root crops adapted to the highlands, and one at the state level, emphasizing maize. He showed that state-level political and religious ceremonies as well as agricultural rituals were tied to maize, and that one reason the acquisition of large quantities of maize was considered crucial and prestigious was because maize could be converted into chicha, a beverage of enormous political, social, and economic value.

WHO MADE THE MAIZE BEER?

We saw that women played a prominent role in the making of beer in ancient Egypt, and that seems to have been the case in much of the Andes as well, particularly in the highlands. In the course of administering their empire, the Inca employed a number of strategies, including (1) incorporating some people by peaceful means, such as marriage alliances, (2) incorporating others by not so peaceful means, (3) resettling people, and (4) building new state-controlled installations. Among such state installations were *akllawasi*, or “houses of chosen and chaste women,” dedicated to serving the imperial cult by preparing maize beer (Morris and Thompson 1985:28). Rostworowski (1977:241), however, points out that while women were the primary brewers of beer in the highlands, men were often the chicha makers on the coast. She cites a 1621 statement by Pablo José Arriaga that on the coast, men made the chicha, while in the highlands it was the women (“[en] los llanos son hombres y en la sierra son mujeres los que fabrican la chicha” [Arriaga 1968 (1621):106]).

Other Colonial documents show that for some coastal men, chicha making was a profession, not just a part-time activity. One document in the *Archivo General de Indias* says that

don Pedro Payampoyfel, principal y mandón de los yndios chicheros de este repartimiento, dezimos que nosotros no tenemos otro oficio sino hazer la chicha ques menester para la comida . . . ny tenemos tierras, ny chacaras donde sembrar sino sólo nos substentamos con hazer la dicha chicha y vendella y trocalla en el tianguéz, a trueque de maíz y lana y chaquiras e otras

cosas, y los yndios labradores no la pueden hazer e no tienen aparejo para ello. (Archivo General de Indias, Justicia 458, folio 2090v)

This statement can be paraphrased as follows: “don Pedro Payampoyfel, lord and leader of the chicha-making Indians of this district, says that we have no other job but making chicha, which is how we obtain food . . . nor do we have lands or fields to plant; rather we subsist only by making chicha and selling it and exchanging it in the market [here he borrows the Aztec word *tianguis*], exchanging beer for maize, wool, shells, and other things; Indian laborers cannot produce it, and do not have the equipment to produce it [beer].”

Drawing on various sixteenth-century documents, María Rostworowski (1977:242) has shown that much of the prestige a coastal lord enjoyed resulted from his generosity, which included his ability to supply his subjects with beer. “When leaving his palace,” she says, “a local lord would take with him an entourage of bearers who carried jars of chicha, and wherever the lord’s litter would stop, everyone would be provided beer at his expense.” When the disapproving Spaniards tried to prevent local lords from providing beer, the latter asked that this custom be continued, at least for such tasks as the communal planting and harvesting of crops and the cleaning of irrigation canals.

THE PERUVIAN BREWERIES

Four archaeological breweries will now be examined to show important differences that exist among them.

Huánuco Pampa, Central Highlands, Peru

Huánuco Pampa was an Inca state installation built on previously unoccupied land (Morris 1979). Like many other state establishments, Huánuco Pampa included *akllawasi*, the buildings where chaste women or *mamakuna* worked for the state by brewing chicha and weaving textiles. Although such *akllawasi* are known from sixteenth-century documents, Morris and Thompson (1985:28) say that “identifying the actual structures associated with the official religion such as the *akllawasi* has been one of the most challenging aspects of the study of provincial Inca sites such as Huánuco Pampa.” According to Morris and Thompson (1985:91), the only evidence of production at Huánuco Pampa that was “organized on a large scale and probably maintained on a full-time basis is the brewing of *chicha* and the production of textiles.” Evidence for

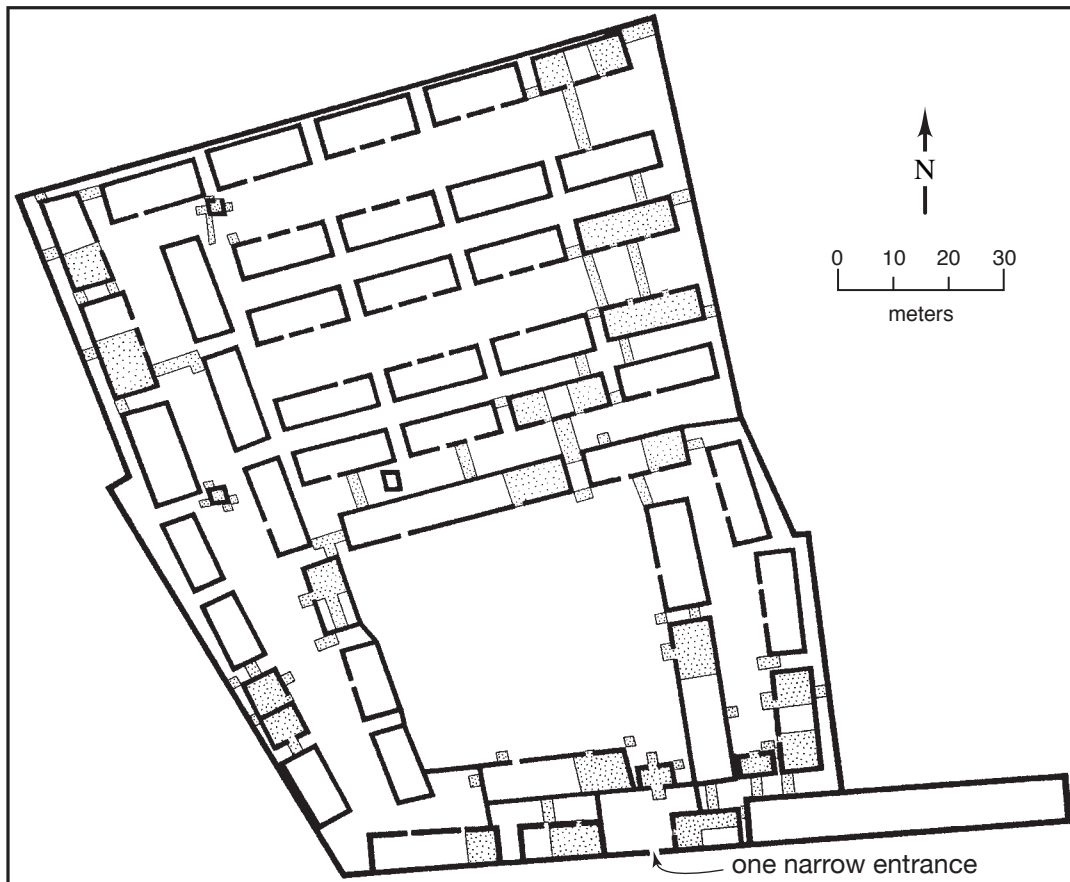


Figure 17.6. This sector of Huánuco Pampa is thought to be where the chosen women or *mamakuna* were living, weaving, and producing beer. This sector produced bone weaving tools, spindle whorls, and thousands of huge ceramic jars for beer. Access to this compound was evidently tightly controlled, since it has only one entrance. (Redrawn by K. Clahasse from Morris and Thompson 1985: Figure 8.)

beer drinking at Huánuco Pampa takes the form of very large concentrations of sherds, all from jars used in various stages of beer production, from soaking the maize to produce malt or *jora*, to boiling the *jora*, to fermenting (*pogoy*), storing, and dispensing the beer. Morris (1979:28) also recovered the “large rocker flattening stones” that were used to crack open the *jora*.

Evidence for chicha brewing on a large-scale was concentrated in two sectors of Huánuco Pampa, to the north and to the east of the plaza. The northern sector featured a walled compound with a single tightly controlled entrance on its south side (Figure 17.6). This sector has been interpreted as a place where chaste, chosen women (*mamakuna*) were housed in an *akllawasi* (Morris 1982:Figure 6.1). Along with large beer jars and other evidence for brewing, Morris found Huánuco Pampa’s only concentration of spinning and weaving tools there. Evidently, just as the sixteenth-century documents affirm, “chosen” women at Huánuco Pampa were both brewers and weavers for the Inca state.

The eastern sector included a palace that may have housed the ruler, and adjacent to it a series of twelve long buildings arrayed around two spacious plazas (Figure 17.7). In this area, excavators found evidence of cooking and literally tons of large jars thought to be primarily associated with chicha (Morris 1982:165–166).

These archaeological data from Huánuco Pampa reinforce the sixteenth-century documents in suggesting an Andean reciprocity in which work was rewarded by beer. Reciprocity usually implies symmetry, or equal exchange, but in the Andes such relations often masked asymmetries. Often, the cycle of reciprocal obligations was initiated by royal generosity, with the critical ingredient being chicha (Murra 1960; Rostworowski 1977; Morris 1979, 1986).

Morris (1979:32) demonstrates that chicha was intimately associated with Andean state-level political and religious ceremonies, and that beer-drinking ceremonies were basic to the maintenance of the whole political and economic system. It was not just the fact that

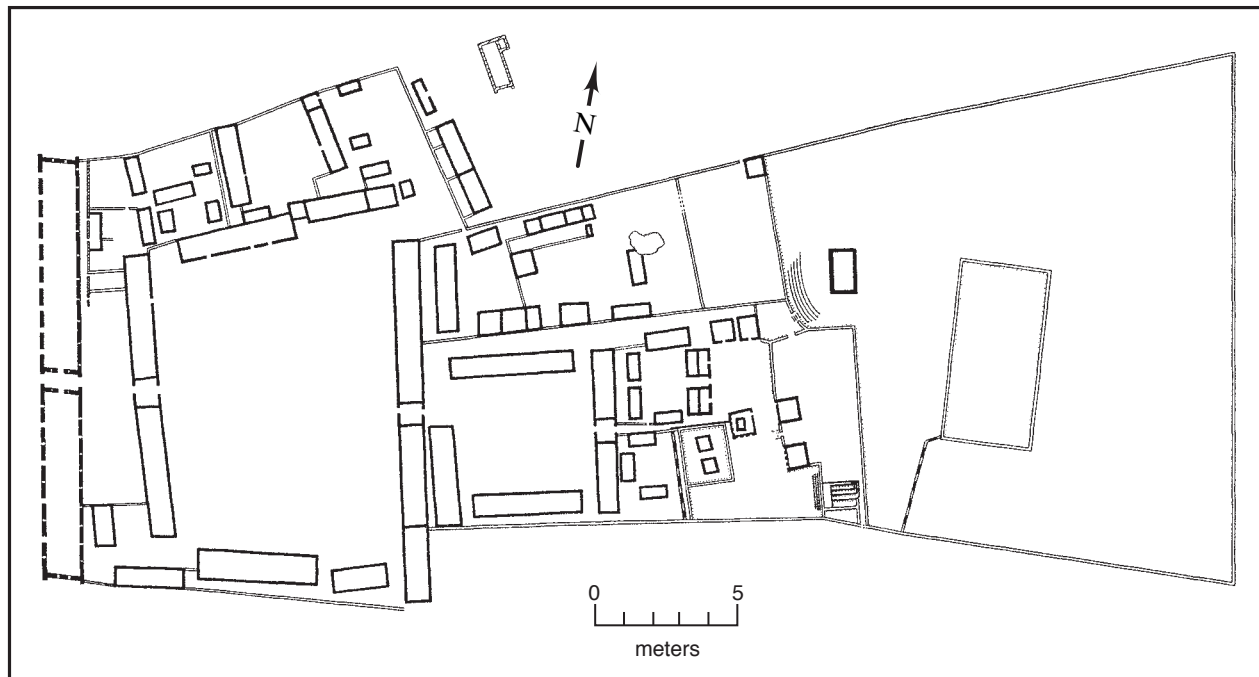


Figure 17.7. This sector of Huánuco Pampa, which possibly served as the palace, yielded evidence of large-scale drinking and feasting. (Redrawn by K. Clahassey from Morris and Thompson 1985:Figure 13.)

millions of liters of chicha were brewed and consumed annually but the way in which beer was dispensed that contributed to Andean leaders' authority. In fact, Morris sees the state's ability to increase beer production as being essential to its political and economic expansion (Morris 1979:32). Over the years more and more land needed to be acquired, and then terraced and planted so that more maize could be harvested.

Manchán, Casma Valley, North Coast of Peru

Manchán was an intrusive settlement, constructed in the Casma Valley of Peru's north coast by the Chimú as the seat of their local administrative authority (Mackey and Klymyshyn 1981; Moore 1981, 1984, 1985, 1989). Excavations at Manchán allowed Moore (1989:685) to answer the question, "How did the Chimú Empire—at least at Manchán—get the chicha it needed?" At Manchán, germinated maize was found with tools and facilities used in chicha making and suggested the following sequence of behavior: the occupants selected maize, removed the kernels from the cobs, soaked the kernels, allowed them to germinate, dried the germinated kernels, then ground or cracked the kernels. This stage resulted in malted maize, or *jora*. The archaeological correlates of the aforementioned behavior, according to Moore (1989:Tables 1, 2), were maize cobs; large jars for soaking the kernels; patio areas where maize

was allowed to germinate; cloth, matting, or leaves to cover the germinating kernels; the *jora* itself; and a *batán* (*maray*) and *chungo* (milling stones similar to a metate and mano) used to grind the *jora*. The next step in the process was to cook the brew of *jora* and water, usually for 1–2 days. The archaeological evidence associated with such cooking consisted of hearths, fire-reddened vessels, a stirring stick, and fuel.

The next step in chicha making is separating the desired liquid from its by-products, removing the *alfrecho*, or small fragments of malted maize kernels and their glumes and skins. This can be done by straining the liquid through a basket or cloth, or by allowing the liquid to stand until unwanted items settle to the bottom. The final step (and the most fun) is consuming the beer. The chronicler Bernabé Cobo (1956:242) states that the inhabitants of the north coast drank chicha from *mates* or gourd bowls, rather than from the ceramic or wooden *keros* known from so many highland sites. In line with Cobo's descriptions, abundant *mates* have been found at coastal sites like Manchán and Cerro Azul (see below).

At Manchán, Moore documents chicha production at the household level, showing that amounts varied from house to house. There is evidence that a cane-walled house at least on one occasion produced 513 liters, a volume that Moore (1989:688) estimates as

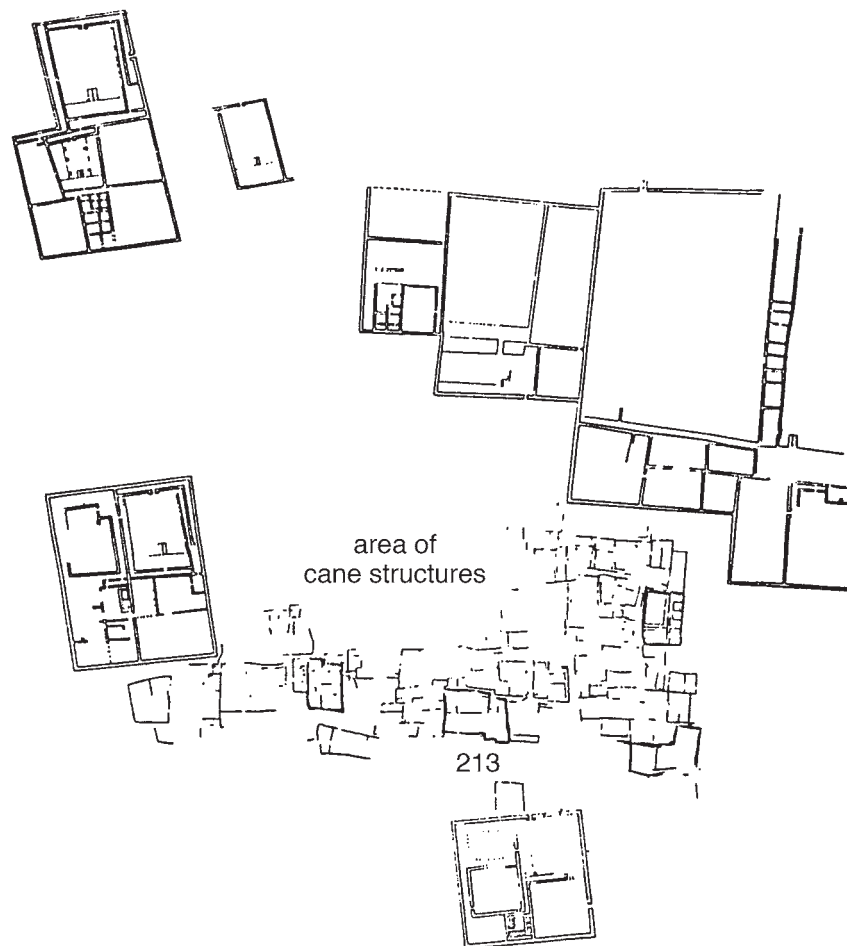


Figure 17.8. Between and around Manchán's adobe compounds, where elite administrators lived, were barrios of cane-walled structures where lower-status people resided. One of these lower-status units was No. 213, which provided abundant evidence of chicha production, including high densities of both jora and chicha dregs (fragments of kernels, glumes, etc.), which suggested to the excavator, Jerry Moore, that this household had produced enough chicha to entertain 171 people. (Redrawn by K. Clahassey from Moore 1989:Figure 2.)

being sufficient to entertain 171 people (Figure 17.8). (At Omo in the Moquegua Valley, Paul Goldstein [2005:209] has also documented chicha manufacturing at the household level.)

Cerro Baúl, Moquegua Valley, Southern Peru

Locally known as the “Masada of the Andes,” the fortified archaeological site of Cerro Baúl sits on a spectacular mesa rising 600 m above the Río Torata. Cerro Baúl was a Wari state installation, essentially a group of colonists placed some 600 km south of the capital of Wari itself. Both before and after the Wari period, Cerro Baúl was uninhabited, since the mesa was a very impractical place to live—indeed, all necessities, including water and food, had to be hauled up to the summit with great effort (Moseley et al. 2005:17264). The elite quarters were located on the summit, while lower-status residences occurred on the flanks. Monumental public

architecture was constructed on the artificially leveled mesa top. The eventual abandonment of Cerro Baúl was accompanied by elaborate termination ceremonies, including brewing, beer drinking, vessel smashing, and the burning of many buildings on the summit (Feldman 1998; Williams 2001).

Cerro Baúl's evacuation seems to have been a planned event, which probably explains why some buildings were accorded ritual termination or “last rites” that left behind artifacts indicative of the structures' status and nature. One elaborate termination rite took place in the chichería, or brewery, which contained not only its original equipment but also final offerings. Wari colonists left behind abundant symbolically charged artifacts (Williams 2001; Moseley et al. 2005), including *tupukuna*, or women's shawl pins, which led the excavators to infer that (just as at Huánuco Pampa) elite women were prominently involved in beer production.

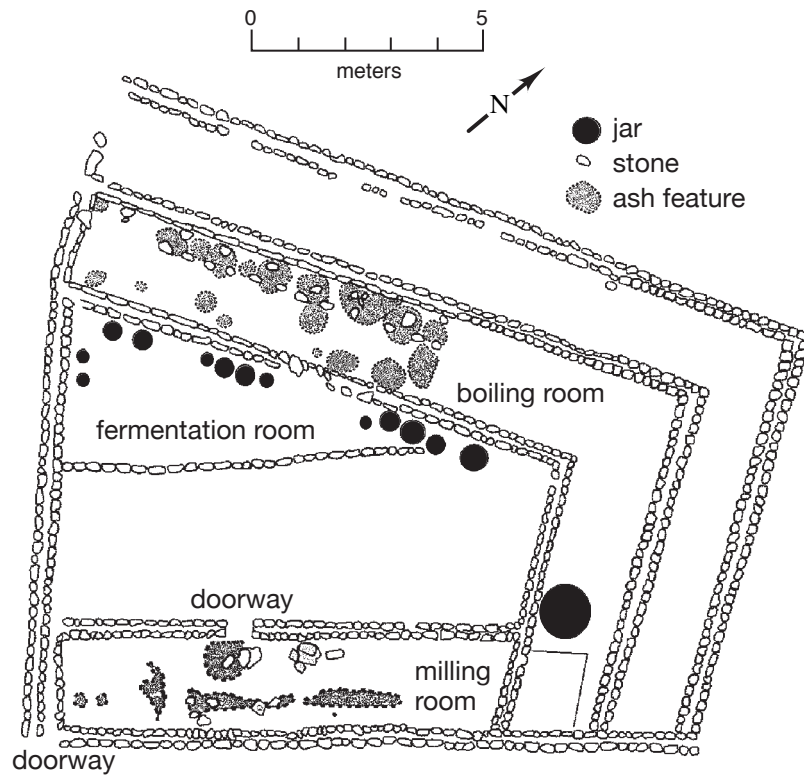


Figure 17.9. Plan of the brewery at Cerro Baúl, Peru, which shows discrete areas for milling, boiling, and fermentation. (Redrawn from Moseley et al. 2005:Figure 5.)

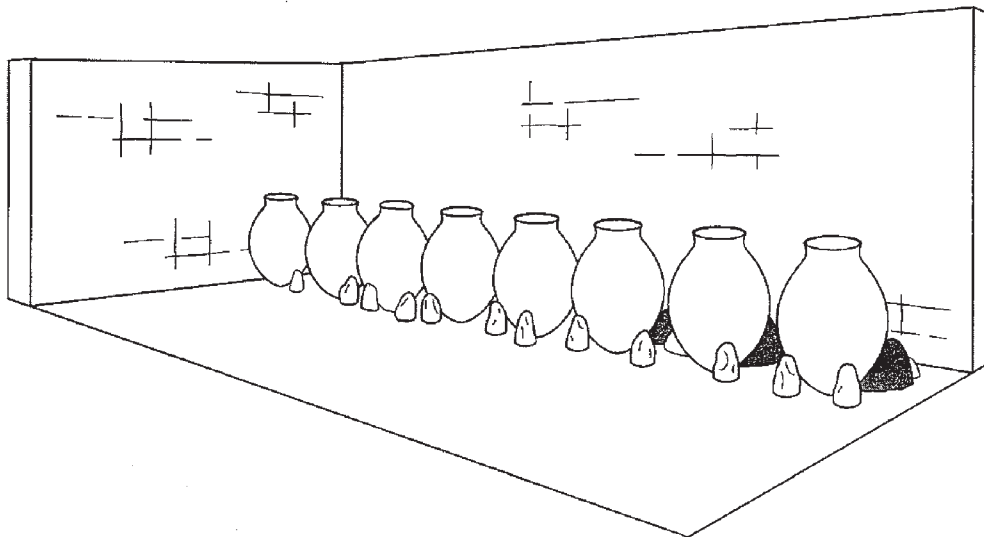


Figure 17.10. Reconstruction of the jars left behind in the boiling room of the brewery at Cerro Baúl, Peru. (Redrawn from Moseley et al. 2005:Figure 6, with the permission of Michael Moseley. Original drawing by Jill Seagard, Field Museum of Natural History, Chicago.)

Trapezoidal in ground plan, the brewery had separate compartments for milling, boiling, and fermentation (Figure 17.9). Its vats could hold up to 150 liters of beer each (Figure 17.10), suggesting a maximum production capacity of approximately 1,800 liters per batch. As the colony of a highland state, Cerro Baúl had keros rather than mates. Individual keros found there could hold at least 12 oz. (0.945 liters), and the largest could hold 64 oz. (3.78 liters). Moseley et al. (2005) suggest that both the quantity and quality of maize beer served at Cerro Baúl varied by social class and rank (as did the food, pottery, and what are interpreted as gifts).

Cerro Azul, Cañete Valley, South-Central Coast of Peru

Cerro Azul, a Late Intermediate fishing community, lies on a bay some 130 km south of Lima, in the lower Cañete Valley (Kroeber 1937; Marcus 1987a, b, 2008). The site sits in a protected saddle between sea cliffs, cobble beach, and an 86-m-high peak. Its most prominent features are ten large residential compounds made of *tapia*, thick walls created by pouring mud between wooden plank molds (Marcus et al. 1999).

One of the large residential compounds, designated Structure D, covered 1,640 m² and seems to have been the residence of an elite family and its support staff (Figure 17.11). Divided into a dozen rooms and four to five unroofed work areas, Structure D included living quarters, storage rooms, corridors that controlled access to the interior of the building, and a kitchen area that could have served as a *chichería* where maize beer was manufactured.

The kitchen/brewery, which covered 110 m² of floor space, was designated the North Central Canchón (Figure 17.12). This canchón (or large walled work area) featured two hearth-trenches and numerous large storage vessels set into the floor. Some vessels were so deeply dug in that their shoulders were virtually at floor level; the largest may have been formed and fired in situ. These storage vessels fall into four sizes: the largest could have held almost 2,000 liters, the next in size 700 liters, the next 500 liters, and the smallest roughly 125 liters.

Feature 9 (Figure 17.13) is an example of a vessel that could have held almost 2,000 liters; Feature 16 could have held 700 liters; Feature 15 could have held 500

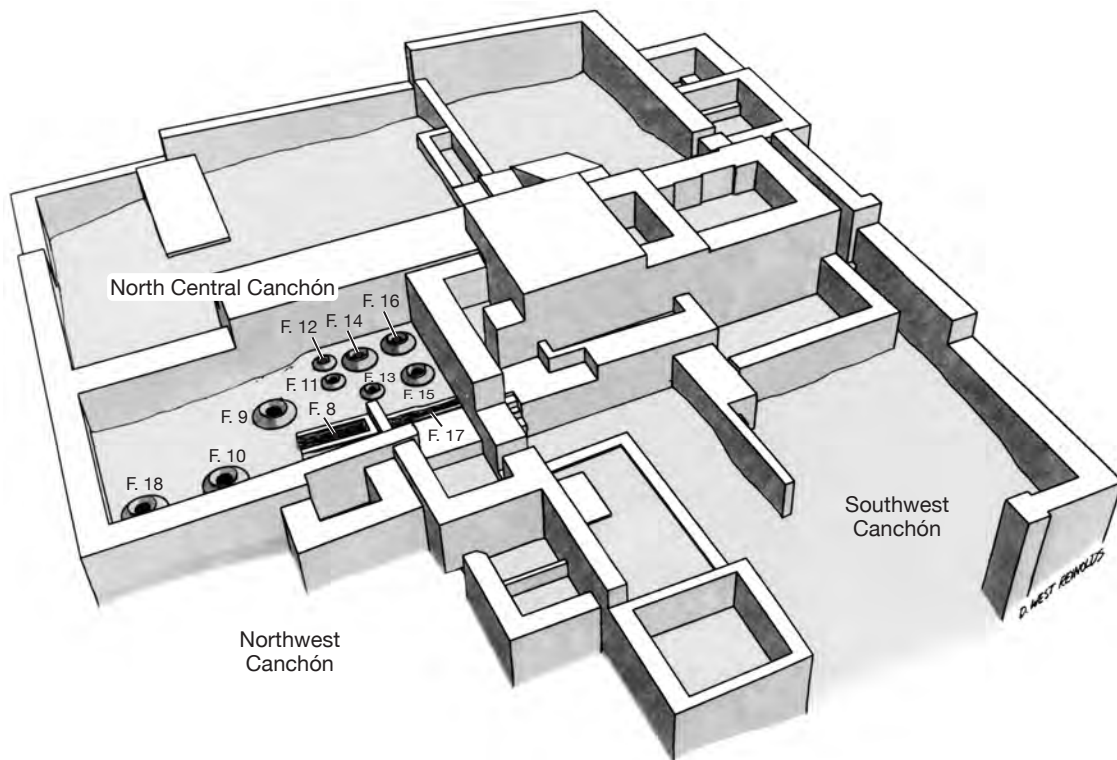


Figure 17.11. Artist's conception of Structure D at Cerro Azul, Peru, showing the North Central Canchón with its hearth-trenches and storage vessels. (Drawing by D. West Reynolds and J. Klausmeyer.)

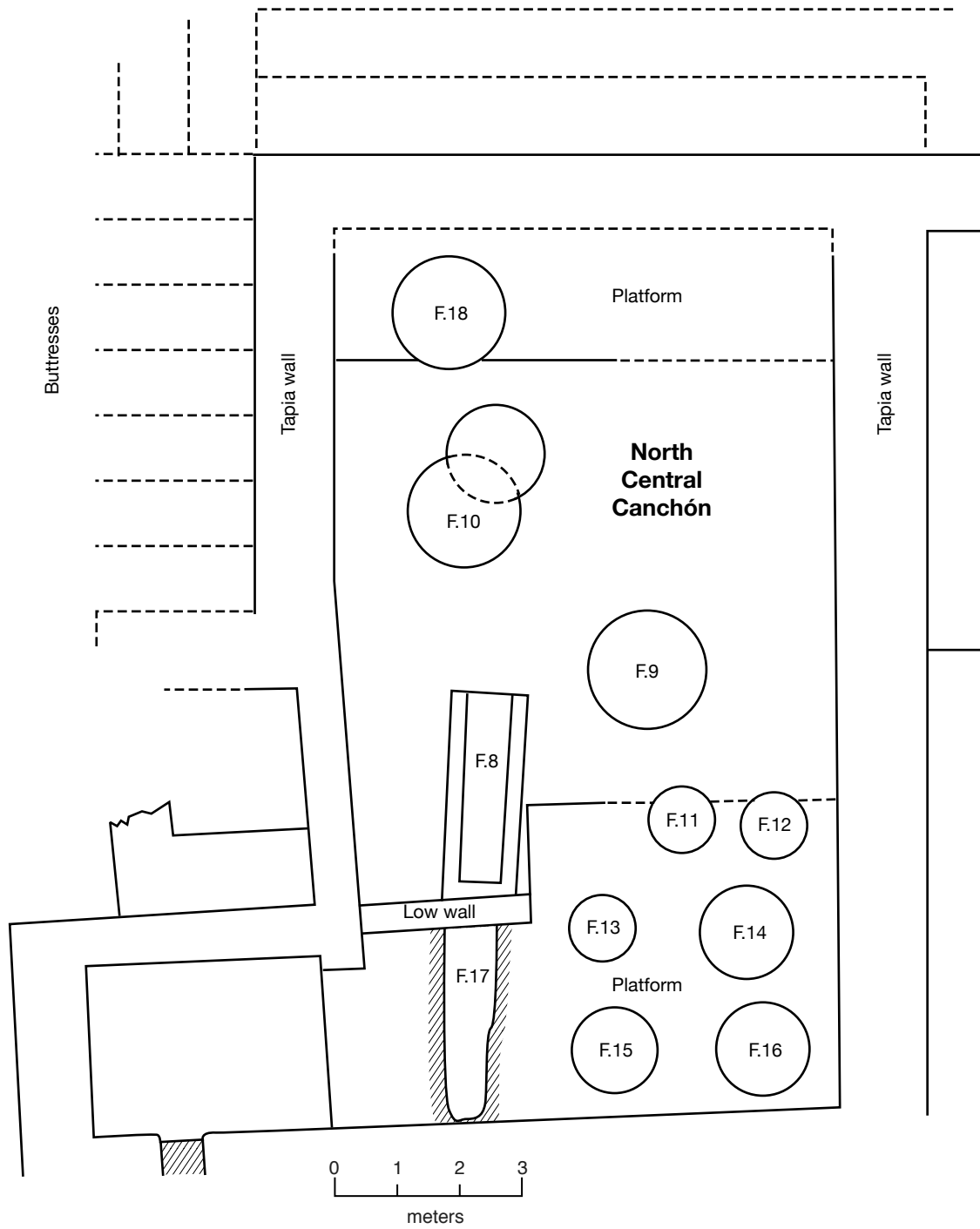


Figure 17.12. Plan of the brewery in Structure D, Cerro Azul, Peru. (Redrafted from Marcus 1987a:Figure 24.)

liters; and Feature 13 could have held 125 liters. We suspect that these four sizes correspond generally to four known Quechua categories, with the largest called *hatun maccma* or *maccma*, the next largest *urpu*, the next *iteco*, and the smallest *puyñu* (Ravines 1978:180).

Had all the vessels in the North Central Canchón been in use simultaneously, their total volume would have been at least 5,000 liters. If, on the other hand, only half of the vessels were filled at one time, their total capacity would have been 2,500 liters, making the Cerro Azul brewery's volume similar to the 1,800-liter capacity of the Cerro Baúl brewery (Moseley et al. 2005:17267). Each vat in the Cerro Baúl brewery had a capacity of roughly 150 liters, corresponding to the smallest of the four vessel sizes set into the floor of the North Central Canchón at Cerro Azul.

We can estimate how many people the Cerro Azul brewery could have served by referring to John Gillin's

ethnographic study of the town of Moche. Gillin (1947:46) estimated that each person there probably consumed 3 liters of chicha at a given beer-drinking event. If we apply this figure to Cerro Azul, it suggests that the elite living in Structure D at Cerro Azul could have entertained somewhere between 800 people (if the half-capacity 2,400 liters were produced) and 1,650 people (if the full-capacity 5,000 liters were produced).

We do not know whether Structure D was the only large compound at Cerro Azul producing chicha in volume, or if the other nine large tapia compounds had similar breweries. Potentially, the chicha produced in Structure D could have been used either to entertain elites from other compounds at the same site, or to reward the countless fishermen who filled up the various fish-storage rooms at Cerro Azul (Marcus 1987a, b).



Figure 17.13. The remains of Feature 9, a storage vessel with a capacity of nearly 2,000 liters of chicha, set into the floor of the North Central Canchón, Cerro Azul, Peru. The workman is sweeping a flat beach cobble on which the conical base of the giant vessel rested. (Photograph by J. Marcus.)

Unfortunately, there is no accurate way to determine how many of the storage vessels in Structure D were filled to capacity for a given event. The fact that four different sizes of vessels were present suggests that different events required different quantities of beer.

THREE MODELS FOR CHICHA PRODUCTION

In sum, the sixteenth-century ethnohistoric documents provide us with at least three general models for chicha production. I believe that all three can be documented in the archaeological record.

One model involves *aklla* or *mamakuna*, the “chosen women,” who were supplied with maize by the state in order to produce maize beer in the *akllawasi* (Cobo 1956:232–233; Morris 1979:28; Murra 1980:171–172). This model seems to fit the data from both Huánuco Pampa (Morris 1979, 1982) and Cerro Baúl (Williams 2001; Moseley et al. 2005).

A second model involves men who were specialists in producing beer for large-scale elite hospitality (Rostworowski 1977:241). This model may fit the Cerro Azul data, specifically those from the North Central Canchón of Structure D, and it may fit the Ciudadela Tschudi data from Chan Chan (Day 1982:339).

A third model is household production of beer, a part-time activity that could have involved both men and women (Cobo 1956:242). In this case, Moore (1989:689) argues that “there is no reason to expect that the state would be directly involved in either the production of chicha or the maintenance of the residential group.” This model may fit the data from Manchán in the Casma Valley and Omo in the Moquegua Valley (Goldstein 2005:209).

With the recovery of more examples of *chicherías* in the future, we should be able to refine these three models and to determine what is typical of different eras, different regions, and different political and economic systems. At present, our sample is too small to say anything definitive about what the norm was for each era or region.

The study of beer production will continue to provide us with insights about the organization of labor in the Andes. We have ample evidence that when beer drinking was embedded in the language of reciprocity and elites were in charge, we should expect the volume of beer produced and consumed to be large.

The Andean case is likely similar to that described by Barth for the Swat Pathans, who saw lavish hospitality

as being of prime importance in creating a political following and fostering economic dependence by subordinates. It was clearly a win-win situation for the Andean elite; they could be seen as “generous” by providing thousands of liters of maize beer, and thus create labor obligations and dependency. The beer-drinking ceremony was a device for making exploitation appear to be an act of generosity, thus making an asymmetrical relation palatable, which was no small feat.

APPENDIX: INTERPRETING THE ARCHAEOLOGICAL REMAINS

As more and more breweries are found, we will need ways to interpret the empirical archaeological data. Relevant here are the African studies that focus on the archaeological signatures of beer production. For example, beer-producing households among the Gamo of Ethiopia have (1) more large vessels; (2) large vessels that show erosion, pitting, and scratches on their interiors and exteriors; (3) large vessels with residue on their interior surfaces that could be subjected to residue analyses; (4) a higher frequency of grinding stones than non-beer-producing households; and (5) a higher frequency of gourds than non-beer-producing households (Arthur 2000, 2003). Since wealthy households produce most of the beer, they own more large vessels. Arthur also shows that the wealthy Gamo can produce more beer because they have a monopoly on landownership, and thus they control access to the grains.

In this appendix we look at some extensive quotations from the ethnohistoric and ethnographic record that may be of use in archaeological interpretation.

Ethnohistoric sources and ethnographies of traditional Andean communities agree on the three basic steps of brewing: preparing the maize, cooking the prepared maize in water, and fermenting the resulting brew. One form of maize preparation involves the germination of kernels. Another involves the conversion of starches into sugars by mixing maize flour with saliva; the saliva provides the enzyme diastase, which triggers chemical activity (Cutler and Cardenas 1947:41).

To begin, we turn to a very early description, that of fray José de Acosta, who in 1590 wrote,

el vino de maíz que llaman en el Pirú *azua*, y por vocablo de Indias común, *chicha*, se hace de diversos modos. El más fuerte a modo de cerveza, humedeciendo primero el grano de maíz hasta que comienza a brotar, y después cociéndolo con cierto orden, sale

tan recio, que a pocos lances derriba; este llaman en el Perú *sora*. . . . Otro modo de hacer el azua o chicha, es mascando el maíz y haciendo levadura de lo que así se masca, y despues cocido. . . . El modo mas limpio y mas sano y que menos encalabria, es de maíz tostado: esto usan los indios más pulidos, y algunos españoles. . . . (Acosta 1954 [1590]:110)

About 40 years later, fray Antonio Vázquez de Espinosa said,

El que se haze de mais, que es el trigo de las indias lo hazen de muchas maneras. La ordinaria llaman *jura* o *asua* . . . para hazerla echan el mais en remojo, y despues lo ponen tapado con alguna estera, y otra cosa, y lo dexan algunos dias, hasta que todo está nacido, y luego lo muelen muy bien, y van colando aquella masa con agua hirviendo, y echan en sus tinajas, botijas, o vasijas hasta que a hirvido como el vino a cabo de dos dias, y luego, que a hirvido queda con un picante y lo beben y usan con el sus borracheras, y hazen sus casas, sementeraz hacienda cantidad y mingando todo los parientes y amigos, que es lo mismo que convidarlos al trabajo, y fiesta, y assi lo uno y lo otro se haze con solemne baile fiesta y borrachera. . . . (Vázquez de Espinosa 1942 [1629]:397–398)

For an eighteenth-century view of chicha making on Peru's north coast, we can turn to the paintings of north coast life published by Martínez de Compañón y Bujanda (1936). In one painting we see a man and a woman working together under a ramada to produce a batch of chicha (Figure 17.14). If this eighteenth-century north coast scene can be interpreted as evidence for household production of chicha, this would demonstrate some degree of continuity on the north coast, since Moore's (1989) excavations at Manchán found evidence of chicha production at the household level during the Late Intermediate period (see Figure 17.8).

For more recent descriptions of brewing in traditional Andean communities, we can turn to archaeologist Jorge C. Muelle (1945:147–150, 1978), who provides us with this account of jora preparation in the community of San Sebastián, Cusco:

En las casas particulares, se prepara jora cada vez que se intenta elaborar chicha; en las *guñaperías*, todo el año. Para este propósito hay *kochas* o pozas en los patios, a la intemperie, aunque en San Sebastián utilizan frecuentemente ollas. Estas pozas son de piedras unidas con cal y arena; comienza a emplearse también el cemento. . . . Cada poza contiene por lo regular una fanega de maíz,



Figure 17.14. Scene of chicha preparation on the coast near Trujillo, Peru, according to Martínez de Compañón y Bujanda (Muelle 1978:245, Lámina 3).

y mide por lado alrededor de un metro. La razón de que haya varias *kochas* es su empleo rotativo con el propósito de tener jora en días consecutivos. Primero, en una de estas *kochas* se hace remojar el maíz durante una noche y un día. Los granos se hinchan, entonces se escurre, operación que se llama *tchúmay*. Después, se distribuyen a otras pocillas, las cuales deben de estar muy bien lavadas a fin de prevenir que el *guñapo* se malogre; del acomodar los granos extendiéndolos en el fondo de las *kochas*, para lo cual se utiliza sólo las manos, se dice *másttay* (extender). Emplean también las palabras *hásppiy* (arañar). En seguida viene *ppámpay* o *tápay* (tapar), que consiste en cubrir este maíz con *ichu* “nuevo” o con espata de maíz, bien empapados en agua corriente y sujetos con piedras para que el viento no los lleve. . . . Se deja el maíz así cubierto por espacio de ocho días en tiempo ordinario, y por quince en época de heladas (mayo-agosto); durante ese tiempo se practica *tchakhchuy*, consistente en regar o rociar con agua, por las noches, o de día si está nublado, esta jora

en preparación, levantando, enrollando la paja para eso—es lo que se considera mejor riego – o simplemente por encima de ella. En verano se rocía cada tres días; en invierno uno sí y otro nó.

El maíz para hacer *guiñapo* [jora] puede ser cualquier maíz. . . .

Al final de los 8 o 15 días, la persona—hombre o mujer—que prepara la jora suele exclamar al examinarla; “*Olyekba-mushanña* (Están saliendo los brotes)”, y procede a recogerla; dos días o tres más, y el *guiñapo* está a punto.

Pero lo frecuente es que se muele el *guiñapo* en el mismo San Sebastián. Para el efecto, se contrata los servicios de un *kútakb* (molidor), muchacho o viejo que lo machaca en un *maran* [maray], piedra de moler que, para el caso, tiene hasta 1.20 m de largo. . . .

También puede hacerse una segunda molienda con agua y agregando entonces la harina: es propiamente el *péqey*, la primera operación, en seco, es el *amsi*.

En vasijas de barro . . . hacen hervir esta preparación y van removiéndola con un palo. Por supuesto, se necesita tres o cuatro tandas para hacer hervir toda la citada cantidad de jora.

El preparado así hervido vaciase en una canasta con *ichu*, la *isanka*, que hace de coladera y está colocada sobre dos *chakanas* o palos encima de la boca de un *braki*. El caldo sin fermentar todavía es el *uppi*; en otras partes, pero no en San Sebastián, se llama *tempo* (*timpuy* hervir). Se saca la coladera y se echa al *braki* una cantidad de *borra* (sedimento espeso de la chicha de varios días) que miden en un *caporal* [a liter and a half]. . . .

Durante una noche, el *uppi* fermenta. Al día siguiente, se vuelve a hacer hervir el *hanchi* (afrecho [“dregs,” the small fragments of malted maize kernels] o *guiñapo* [jora] de una pasada) para obtener el *seqe* (líquido de segunda pasada), el cual se agrega a la primera chicha, que para mediodía está a punto de tomarse y se pone por lo tanto a la venta después de despumarse algo. . . .

Es creencia general que los objetos que han intervenido en la elaboración de la chicha no deben salir de la cocina o cuarto donde está se ha preparado porque les da “aire” y se descompone la chicha. . . .

El *akha-wasi* suele tener una mesa y algunas bancas, o silleas, aunque es más frecuente que haya solo poyos

en un ángulo del cuarto que hace de taberna. En otro ángulo está el *braki* de chicha que atiende la propietaria del establecimiento.

In other words, to recover the whole process archaeologically, one would have to find the vessels in which the kernels were soaked, the grinding stones used to triturate the kernels, the vessels in which the liquid was heated over the fire, the storage containers in which the brew was cooked and fermented, and the mates or keros in which the chicha was served.

At Cerro Baúl’s brewery, Moseley et al. (2005) were able to distinguish three different work areas: (1) a milling room where maize was ground, (2) a fermentation room, and (3) a boiling room that had at least seven fire pits (Moseley et al. 2005:17267). Each room clearly had a specific function.

Within the North Central Canchón at Cerro Azul, we found two long, narrow hearth-trenches. These two features could have been used to heat the maize brew, and their length ensured that a whole series of pots could be lined up and set in sequence for cooking (Marcus 1987a:50). Feature 8, the earlier and better made of the two hearths, showed evidence of burning and was filled with white ash (Figures 17.15, 17.16).

The second hearth, Feature 17, was filled with densely packed layers of gray and white ash (Figure 17.17). Feature 17 appeared to have been added to increase the production capacity of the brewery, thereby allowing even more pots to be heated simultaneously. When we excavated Feature 17, it contained basal portions of very large Camacho Reddish Brown cooking vessels, one of which included the residue of jora (sprouted maize kernels) still in it (Marcus 2008:183).

The fuel used in both Features 8 and 17 appeared to consist of whatever discarded wood or cane happened to be available, including *caña brava* (*Gynerium sagittatum*), a broken wooden weaving sword (*kallwa*), and some broken wooden posts that appeared to be willow (*Salix* sp.).

In addition, we found several implements that could have been used to grind the maize. Three *tunaukuna* (handstones for grinding) were found inside Feature 10 (a storage jar); a discarded *maray* or *batán* (grinding slab) was found on the floor of the North Central Canchón; another *batán* was found in Feature 11 (also a storage jar). We also found a likely “stirring stick” nearby.

In sum, the North Central Canchón included numerous large floor depressions for vessels, some with parts of vessels still in them; two long hearths with ash in them; fuel;

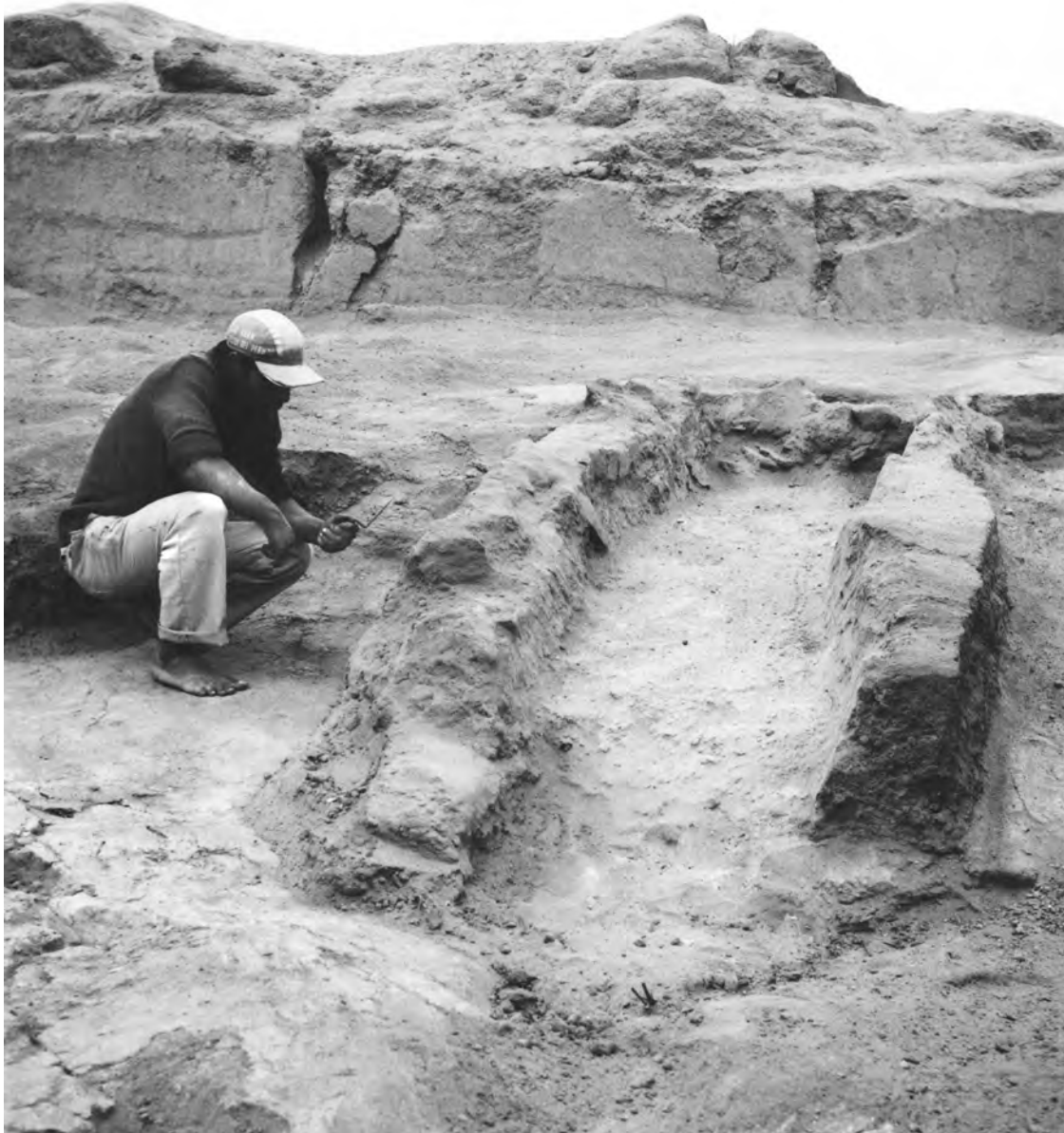


Figure 17.15. Feature 8, a hearth-trench in the North Central Canchón of Structure D, Cerro Azul, Peru, showing the deposit of white ash inside it. (Photograph by J. Marcus.)

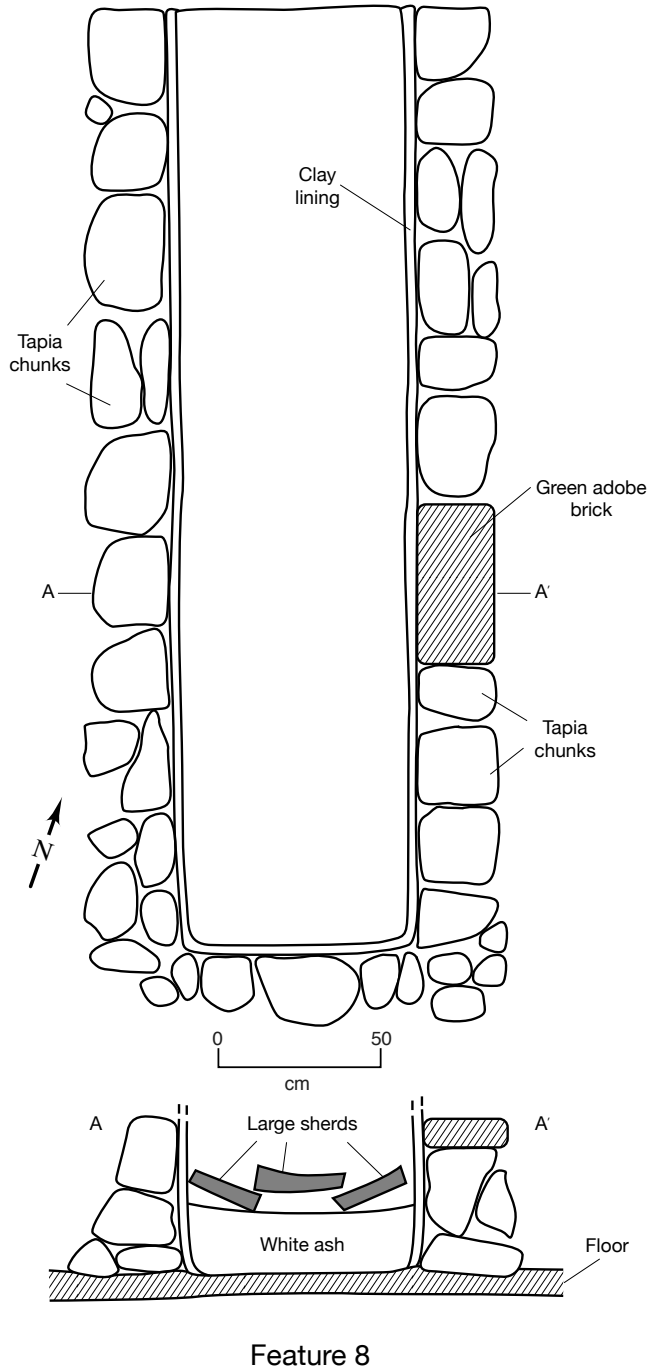


Figure 17.16. Plan and cross-section of Feature 8, a hearth-trench in the North Central Canchón of Structure D, Cerro Azul. The cross-section shows the large sherds above the deposit of white ash.

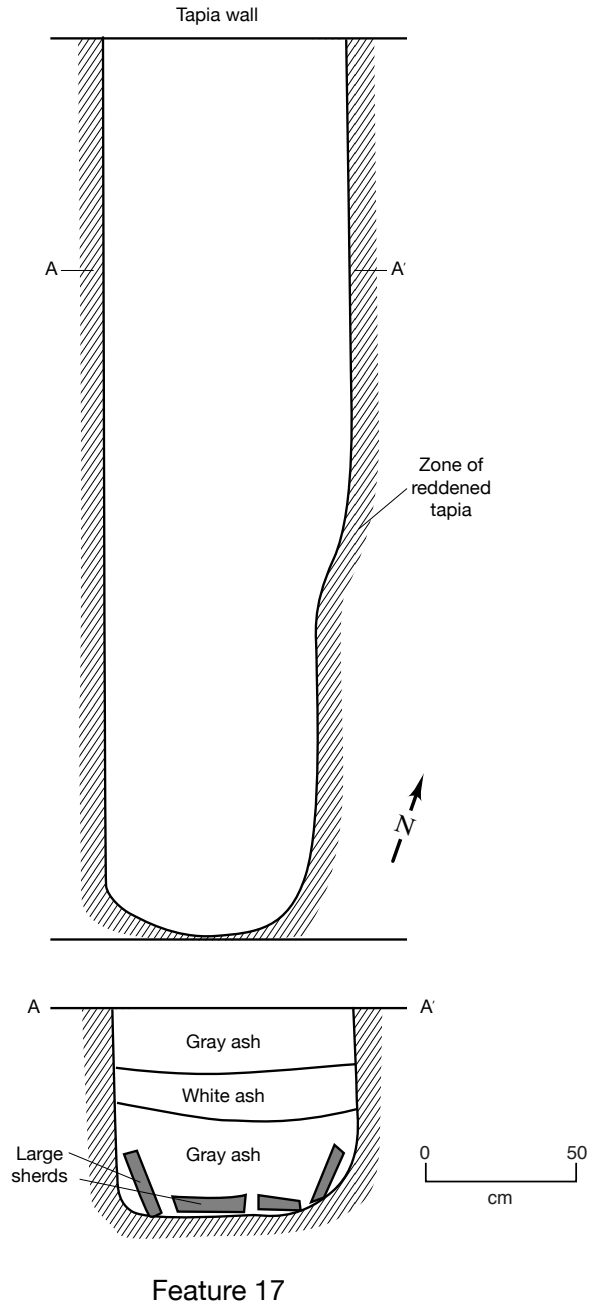


Figure 17.17. Plan and cross-section of Feature 17, a hearth-trench in the North Central Canchón of Structure D, at Cerro Azul. The cross-section shows the layers of gray and white ash.

grinding stones; and some vessel bases with remains of maize still in them. We are uncertain, however, whether the North Central Canchón was purely a chichería or both a chichería and a kitchen.

If this walled work area operated as both kitchen (*tullparwasi*) and chichería (*akhawasi*), it is possible that both men and women worked in the same room, though perhaps in different activity areas. However, if the canchón was used exclusively for producing beer, and if we apply what we have learned from the sixteenth-century documents (namely, that beer production on the coast was an exclusively male activity), then we may be dealing with a men's work area.

With the data we currently have, one could suggest that women were the likely makers of chicha at both Cerro Baúl and Huánuco Pampa, as Morris and Moseley et al. have suggested. In contrast, men may have been the brewers at Cerro Azul, but our minds remain open on the subject.

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Before class we had many opportunities to talk about our similar experiences at UC Berkeley, where both of us had been before we ended up at Harvard. In fact, we chatted about how both of us had had J. Desmond Clark as our adviser and how he had steered us to Harvard for graduate studies.

When Mike asked me if I had ever taken a co-taught class before, I said, "Yes, indeed; I took Andean prehistory from John Rowe and Dorothy Menzel." Then he smiled and said that he had brought something special to class. "What?" I asked, and Mike responded by saying, "Just wait." Having noted the students' reluctance to talk during class, Mike had the great idea of bringing beer to class; and, as you might guess, that beverage helped a lot, although it sometimes led to a few run-on sentences that never ended! But Mike discovered something the ancient Andean elite also found out—things go better with beer, and attendance improves, too.

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