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Aboriginal Ceramics at Mitchell Ridge: Toward an Understanding of Technology and Style

Counting the 24,476 potsherds from the 1970s and the 1992 excavations, plus an additional 2,107 potsherds surface-collected from across the site during 1992, we have a total sample of 26,583 sherds from the Mitchell Ridge Site. This constitutes the largest ceramic sample from a single site on the upper Texas coast, and is in fact over 60% larger than the combined pottery sample from various Galveston Bay area sites that was available to Aten for his seminal studies of regional ceramic typology (Aten 1983a). As such, the pottery from Mitchell Ridge represents an unusually good opportunity to examine upper coast ceramics from the perspectives of both technological and stylistic attributes, and to attempt to (a) systematically describe these attributes and (b) discern temporal and spatial variabilities which may in turn have implications for understanding diachronic and synchronic cultural patterns.

Ceramic analyses presented in the course of archaeological research on the upper Texas coast have generally relied on classification of pottery on the basis of a single technological attribute, namely, the kind of aplastic inclusions included in the potter's clay. The most fundamental typological distinctions developed by Aten (1979, 1983a; Aten and Bollich 1969) were made on the basis of the presence/absence of the two major aplastics, sand and grog (crushed sherd) temper, as well as the much less common crushed bone temper. Therefore, excepting certain minor types in the Early Ceramic Period (e.g. Tchefuncte types, O'Neal Plain, Mandeville Plain), the most basic typological distinctions are based primarily on three different kinds of temper. Sherds in which the sole aplastic consists of sand have been assigned to the Goose Creek typological series; those with grog temper have been designated Baytown Plain or San Jacinto Incised, depending, respectively, on whether they pertain to undecorated or decorated vessels. The relatively uncommon bone tempered sherds have not been assigned a formal typological designation, but have been lumped into a generic bone tempered category which is believed to pertain largely to the more recent part of the ceramic continuum (Aten 1983a).

As a consequence of the emphasis on the technological attribute of temper, stylistic attributes have been relegated to secondary status in the classification of upper coast pottery. Since virtually all vessels are of simple, functional bowl or jar forms, there appears to have been little if any stylistic expression in vessel shapes. Style in upper coast pottery thus must be identified on the basis of surface decoration, which usually takes the form of geometric patterns of incised lines, to which are sometimes added secondary decorative elements executed with small punctations (Suhm and Jelks 1962; Aten 1983a; Black 1989). Most ceramic taxonomy has first sorted sherds according to the technological attribute of temper, and then further subdivided samples according to the sole criteria of the presence or absence of these kinds of decorative elements. Thus, with the minor mentioned exceptions of certain early types, all sherds with sand as the sole aplastic are categorized first as Goose Creek, and subsequently designated as Goose Creek Plain or Goose Creek Incised on the basis of the presence/absence of decoration. In the case of grog tempered pottery, plain sherds are typed as Baytown Plain and decorated ones as San Jacinto Incised. Bone tempered ware has generally been lumped into as single more or less residual category, without formal typological recognition of the presence or absence of decoration.

The secondary status attributed to style in Aten's taxonomy is highlighted by the fact that the same designs occur on the two major decorative types, Goose Creek Incised and San Jacinto Incised. In both types decoration consists of various combinations of horizontal, vertical or oblique incisions generally confined to a band just below the vessel rim (Aten 1983a). Further indication of the paucity of attention paid to style is the fact that sherds are classified as Goose Creek Incised or San Jacinto Incised solely on the basis of the presence or absence of incised decoration; no consideration has been to systematic analysis of patterned variability of decorations.

In part, the inattention to stylistic variability is probably due to small samples of decorated sherds at many sites. As a general rule, only a minority of vessels produced by upper coast potters were

decorated so that, in small samples, there are few sherds available with which to explore patterned variation in decoration. Also, it must be kept in mind that Aten's primary goal in his ceramic analyses was to construct a regional chronology of ceramic change, and he postulated early-on that long-term changes in clay tempering were chronologically significant (Aten and Bollich 1969). Since the technological attribute of the kind of temper is discernable even in the smallest sherds (whereas fairly good-sized sherds are usually needed to confidently distinguish between different decorative themes), the use of this attribute for basic classification made good sense, since it permitted the use of samples from sites which would doubtless have proven too small had decorative style been of primary concern (see, for example, discussion in Aten and Bollich 1969). Having established a ceramic typology which was apparently useful for assigning site components to a chronological continuum, Aten's taxonomy has been followed more or less faithfully by various researchers working more recently in the region, both as a means of placing sherds into typological groups and for assigning site components to temporal positions within the chronological continuum (e.g. Mercado-Allinger et al. 1984; Weinstein et al. 1988; Weinstein et al. 1989; Howard 1990; Weinstein 1991; Nash and Rogers 1992).

Some noteworthy work has been accomplished which examines variability in upper coast pottery beyond kinds of temper and the mere presence/absence of decoration. Howard (1990), working with a fairly large sample of 6,868 sherds and 68 vessel sections from the Peggy Lake area near the mouth of the San Jacinto River, examined ceramic variability in terms of discrete attributes. Vessel sections were examined in terms of attributes of orifice diameter, rim orientation (everted, inverted, vertical), lip form (rounded, flattened, pointed), decoration, temper, thickness, surface finish, base form, estimated volume of the vessel, and evidence of use. Sherds were also examined to determine the kinds of paste constituents. Study of the vessel sections showed that most pots were higher than the diameter of their orifice, indicating vase or jar forms; a minority were shallower bowl forms, though the height:orifice ratio could be determined in only seven cases. Surfaces were either smoothed or burnished. On the basis of the attributes of rim orientation, orifice diameter and mean body thickness, Howard suggested two end-member forms for the Peggy Lake pots: One group consisted of small-mouthed, inverted-rim, decorated, thin-walled vessels, while the other group was made up of large-mouthed, everted-rim, undecorated thick-walled vessels. However, the majority (76%) did not fall into either group, indicating a continuum between the two end-member forms rather than two clearly distinguishable shapes. Twenty-one of the vessel sections were decorated, usually with parallel horizontal incised lines in a band below the lip; the remaining 39 vessel sections were plain, although 11 of these did bear lip modification as notching or scalloping (Howard 1990:248). Interestingly, Howard found no evidence of functional differences between sandy paste and grog tempered vessels (Howard 1990:261).

In a study of 726 sherds from Site 41HR616, also on the San Jacinto River near its mouth, Linda W. Ellis recently attempted to discern variability in what she termed "technological style" (Ellis 1992). Ellis cogently observes that ceramic classification on the upper Texas coast has been designed almost exclusively to serve as a tool for chronology building, and argues that only "those ceramic variable that were deemed chronologically sensitive were considered important", with the result that "ceramic analysis in the Upper Texas Coast area has been severely limited and its full research potential has not yet been realized" (Ellis 1992:15). In an effort to identify the kinds of culturally-informed decision-making with which aboriginal potters of the area operated, Ellis examines variability in paste characteristics, vessel form and attributes of firing; most of her analysis centers around an attempt to identify cultural and individual preferences in paste characteristics. She concludes that certain clay bodies seem to predominate in the sample, and attributes this to cultural selection for certain kinds of clays. However, Ellis' attribution of cultural preference to selection of clay bodies is inherently limited by a lack of consideration of the role of natural geologic variables in determining paste characteristics. For example, a preponderance of certain sand grain sizes in sandy paste pottery cannot be evaluated as a cultural preference unless it is first determined whether or not it merely represents the kind of clays naturally available at or near a given occupation site. The Beaumont Formation, which constitutes the surface geology of the upper coast mainland is, in fact, made up of innumerable lenses of sandy clays and clayey sands (Fisher et al. 1976), resulting in complex localized stratigraphies that represent countless fluvial-deltaic depositional events over many millennia. This author's field examination of numerous exposed profiles of Beaumont sediments indicate that within relatively short horizontal distances, sediments can range from predominantly sand to almost pure clay, and that there is considerable variation in the size of sand grains as well, variations which reflect episodically variable energy levels of river/floodwater sediment transport. Without knowing the precise

geologic stratigraphy around a site or the extent/depth of sediment exposures at the time(s) of occupation, it is a daunting task indeed to determine whether a ceramic sample represents preferential human (cultural) selection or simply expedient utilization of suitable available clays. Despite such problems, Ellis' discussion of the limitations of ceramic analysis designed purely for chronology building are insightful, and highlight the need for exploration of culturally meaningful stylistic elements of the regional pottery-making tradition.

A recent attempt to systematically describe design motifs on upper coast pottery has been presented by W. Marshall Black (1989). In order to overcome the commonly encountered problem of too few decorated sherds in a given site sample, Black collected data on a total of 241 decorated sherds from the Dow Cleaver Site (41BO35) on the lower Brazos River, sites reported by Wheat (1953) in the Addicks Reservoir just west of Houston, the Alabason Road Site, 41HR273 near Houston, and Galveston Bay area sites reported by Aten (1983a). He identified the following nine "design families", each consisting of an incised (or infrequently punctated) decorative motif which recurred in his sherd sample: (1) horizontal only, (2) horizontal plus one diagonal, (3) horizontal plus opposing diagonals, (4) horizontal plus vertical, (5) horizontal plus opposing diagonal plus vertical, (6) opposing diagonal, (7) curves, (8) vertical only, and finally, a residual category, (9) miscellaneous. The most common "families" in order of decreasing abundance, were horizontal lines only, horizontal plus one diagonal, horizontal plus opposing diagonals, and horizontal plus vertical. Black's work is useful because it presents in a single place a relatively large selection of decorated sherds (abundantly illustrated with line drawings), and because it highlights the abundance of exterior, sub-lip bands of parallel horizontal lines and shows the variability in other decorative elements which can occur in combination with the common theme of the horizontal lines. The study is also of interest because it shows that the same design families occur on both Goose Creek Incised and San Jacinto Incised pots, suggesting that decorative style was independent of the technological attribute of tempering.

Black's scheme is not followed in the analysis of the Mitchell Ridge pottery because his design families include combinations of decorative elements which may or may not be of primary significance in creating the basic motifs. For example, the commonly occurring "horizontal plus vertical" family includes both vertical-horizontal cross-hatching and decorations which are primarily horizontal incised lines with only a minor border of short vertical incisions. Similarly, the "horizontal plus opposing diagonals" family includes horizontal bands which are crosscut at intervals by diagonal lines and horizontal lines which are underlain by a border element consisting of contiguous incised triangles. In short, primary, highly visual elements are not systematically distinguished from minor or secondary ones, a distinction which analysis of the Mitchell Ridge collection suggests is both analytically feasible and probably reflective to some degree of the stylistic decisions made by aboriginal potters.

Analysis of the Mitchell Ridge Pottery

Goals

Our analysis of the Mitchell Ridge ceramic sample was designed to achieve the following goals:

1. To determine, when possible, the size and shape of vessels, with the goal of identifying possible correlations between the technological attribute of temper and the stylistic attributes of presence/absence of decoration and kind of decorative motif employed.
2. To systematically define the kinds of decorations placed on pots in order to better understand the ways in which aboriginal potters combined various decorative elements to achieve patterned results in decorative style.

The latter component of our analysis receives the greatest attention, for several reasons. First, we concur with Ellis (1992) that too much attention has been directed toward study of upper coast ceramics as a chronological tool, at the expense of understanding potentially more culturally significant stylistic variation. Indeed, the continued emphasis on ceramics as a seriation tool for chronological control becomes largely irrelevant in light of the ready availability of direct, radiometric dating techniques for placing site components within a temporal continuum. The seriation approach had its origins-- and its heyday-- prior to the discovery of radiometric techniques, when chronology builders could rely only on stratigraphically controlled models of relative change in material culture (e.g. Willey and Sabloff 1980).

This is not to say that chronology of material culture is unimportant; clearly it is, since it constitutes a key measure of rates and kinds of culture change and thus ultimately contributes to the understanding of culture process. However, it need not, and arguably should not, constitute the primary approach to defining chronology in the context of modern archaeological research. The construction of independent, radiometric (or "absolute") chronologies, into which synchronic artifact assemblages can then be placed, ultimately provides more accurate and therefore more reliable measures of culture change.

Stylistic analysis of the Mitchell Ridge ceramics is emphasized because stylistic expressions often reflect important social dimensions of past cultures to which archaeological research can gain some access. Although style in archaeological material culture should not be automatically assumed to directly represent prehistoric social realities (e.g. Hodder 1982; Butzer 1990), it is generally recognized that geographically and temporally defined spheres of stylistic redundancy-- particular in ceramics-- reflect some level of past sociocultural reality (e.g. Shepard 1956; Wobst 1977; Graves 1982; Pollock 1983; Rice 1987). In the Texas area, for example, while Caddoan ceramic styles might be mimicked by non-Caddo peoples, or show up on non-Caddo sites as items of trade, it cannot be seriously questioned that, on the whole, there is a readily recognizable ceramic tradition that has a discrete geographic home in northeast Texas and adjacent states, and which represents people who were linguistically, culturally and ethnically Caddoan. In short, ceramic styles represent, at least potentially, prehistoric sociocultural realities, and geographic variability in stylistic expression may reflect degrees of social similarity or difference.

The present analysis does not yield a definition of the sociocultural membership of the people who lived at Mitchell Ridge, nor does it provide a measure of their social relationship with any other such membership grouping in the region. To even begin such an inquiry would require detailed stylistic data from a series of approximately contemporaneous site components located across geographic space; such information is presently unavailable, though it might be possible to begin to generate this sort of data with extant collections (an effort well beyond the scope of this report). However, the analysis of ceramic decoration at Mitchell Ridge can serve as a first approximation of the patterned variability in upper coast ceramics, a task which is justified by the large size of the collection, and which hopefully can contribute to the eventual development of a detailed regional data base for examining stylistic variability.

Approaches

The primary unit of analysis here is the vessel rather than the potsherd. An initial examination of larger sherds, and groups of sherds from the same vessel, indicated that the same decoration was generally applied around the entire circumference of a pot, so that a single sherd or a group of sherds from that pot can be assumed, with considerable confidence, to represent the kind of decoration placed on the entire vessel. The vessel as the unit of analysis is in any case preferable to individual potsherds, since the representation of a particular design can be potentially biased according to how many sherds of the vessel are present in the total sample.

The first step in analysis was, therefore, to segregate sherds into groups according to the vessels to which they pertain. This was done on the basis of macroscopic attributes of color, surface finish, decoration and thickness and, most definitively, on the basis of 20X microscopic examination of fresh edge breaks to determine the quantity, size and shape of sand grains and other aplastic inclusions. While it is probably impossible to completely avoid error in assigning sherds to vessel groups, it is believed that the combined macro- and microscopic observations have yielded essentially reliable counts of the whole vessels represented.

Given the facts that over 26,000 sherds are in the combined collections, and that detailed examination of all sherds would be extremely time-consuming-- and ultimately unnecessary-- only rimsherds were used. This procedure had the additional advantage of permitting observation of attributes which are not present on bodysherds (lip form, rim profile) and thus of considerably increasing confidence in the grouping of sherds according to vessels.

After rimsherds were sorted into vessel groups, the following attributes were recorded for each group:

Technological attributes:

- Thickness
- Coil breaks (presence/absence)
- Firing (oxidation vs. reduction)

- exterior
- interior
- sherd core
- Aplastic inclusions
 - sand
 - grog
 - bone
 - shell
- Formal Attributes
 - Vessel diameter (estimated from sherd curvatures)
 - Rim profile
 - straight
 - inverted
 - everted
- Surface Treatment
 - Smoothed
 - Burnished
 - Scored (with ribbed bivalve shell)
 - Brushed
 - Asphaltum coated
- Decoration (according to criteria discussed below)

Dimensions of Technology and Form on the Mitchell Ridge Pottery

Examination of the various attributes of the ceramics from the Mitchell Ridge site reveal basic features of the vessel assemblage. These fall into the two broad categories of technology and style. Examination of the basic data for possible correlations between technological and stylistic attributes also permits assessment as to whether in some case technology may have been geared toward achieving certain stylistic ends, and thus, in effect, have been an element of style.

Firing

The majority of vessels at Mitchell Ridge were fired in an oxidizing atmosphere, as indicated by sherd colors of various reddish, orange and light tan hues. While there is some variability in the three excavation areas for which samples were analyzed-- the Block Excavation, Feature 9 and the C. C. Area-- in all areas most vessel exterior surfaces were oxidized, as were approximately half or more of vessel interior surfaces. The inner cores of most vessels, on the other hand, were reduced to various shades of gray, indicating that firings were in most cases too short in duration for oxidation to penetrate the entire thickness of the vessel wall.

Experimental pit firings, using dried sticks, were conducted on small bowls made of local lagoonal clay which matched many of the sherds from the site in terms of quantity and grain size of inclusive sand, and it was found that a rapid firing produced a firing profile similar to that on most of the archaeological specimens; after a 20-minute firing interior and exterior surfaces were oxidized to a red-orange color, while the core was reduced to a dark gray. A bowl made from the same clay was subjected to a firing under similar conditions but lasting 60 minutes. In this case, oxidation completely penetrated the vessel wall so that the entire thickness was fired to the orange-red color. Interestingly, it was noted that the longer firing did not appear to increase the hardness of the fired clay. Therefore, assuming that aboriginal potters at Mitchell Ridge used the same or similar clays, no advantage would have been achieved from prolonged firings. Apparently, vessels were generally fired rapidly, and this probably produced the optimal results which could be expected within the limits of aboriginal firing capabilities and the kind of clay available.

Surface Finish

Four kinds of surface finish were noted on the vessels in the analyzed samples from the Block

Excavation, Feature 9 and the C. C. Area. The majority of vessels in all areas were entirely smoothed on both the interior and exterior surfaces; in the combined sample from all areas, 82% of the vessels were smoothed. A minority of the pots from all three areas bore scoring on the interior and/or exterior surface, a treatment found on 16.7% of the pots in the combined sample. The scoring consists of shallow, parallel striations which appear to have been executed on the still-wet clay with the edge of a ribbed bivalve shell such as bay scallop or Atlantic cockle (see Figure 7.20, c, e). This scoring is identical to that often found on the Late Prehistoric Rockport ware ceramics of the central Texas coast, also believed to represent the used of ribbed bivalve shells (Calhoun 1961). The remaining vessels, making up less than 2% of the combined samples, bear burnished or brushed surfaces.

Vessel Shapes

The ideal approach to determining the variation in vessel shape is examination of a relatively large sample of whole vessels or large sections of vessels. This is not possible at Mitchell Ridge, since no whole vessels were recovered and few pots were represented by enough sherds for reconstruction of sizeable sections. However, there are enough fairly large sherds, and a few reassembled sections, with which to gain some insight into vessel shapes. Examination of these pieces indicates that virtually all pots were made as some variant on the basic themes of simple bowls and jars. The range of shapes indicated is shown in Figure 7.6. While the sample is too small for anything approaching a precise determination of the relative frequencies of the different shapes, it is impressionistically apparent that most pots had either more or less vertical walls with straight rims (see examples illustrated as Figure 7.7 and 7.8), or had slightly constricted necks with slightly to moderately everted rims. Neckless vessels in which the walls constrict at the rim (with inverted rims) are few, as are vessels which had strongly everted or flaring rims. Sherds indicate that, with only one exception, bases of pots were rounded; the exception is a single sherd of a flattened basal section. Occasionally the bases had slight exterior nodes (see Figure 7.19a).

These observations are basically supported by raw data on rimsherd attributes presented in Table 7.4, and expressed as percentages in Table 7.5. It will be seen that in the rimsherd samples examined from the 1992 (Block area and Feature 9) and 1970s (C. C. Area) excavations, straight (vertical) rim profiles are by far the most common. This is the case for 55% of the pots represented in the Block Excavation, 76% represented in Feature 9, and 82% from the C. C. Area. For all areas combined, for which 361 vessels are represented by rimsherds large enough to determine rim profile, 66% of the pots had straight rims. Everted rims comprise the next most abundant category, representing 38% of the vessels from the Block Area, 24% from Feature 9, and 16% from the C. C. Area. Inverted rims are consistently few, representing 7%, 0%, and 2% of the vessels from, respectively, the Block Excavation, Feature 9, and the C. C. Area. For all areas combined, only 4% of the vessels had inverted rims.

It is significant to note that, as may also be seen in Table 7.4, there is no marked correlation between rim profile and the aplastic content of the vessel clay body. In the two excavation areas for which relatively large numbers of pots are represented (Block excavation, C. C. Area), the two major temper groups (sandy paste, grog) show roughly the same proportions of the three rim profiles. For the vessels from the Block Excavation, 41% of the grog tempered pots had everted rims, 53% had straight rims and 5% had inverted rims. Similarly, 37% of the sandy paste pots had everted rims, 58% had straight rims, and 4% had inverted rims (see Table 7.5). Among the vessels from the C. C. Area, 10% of the grog tempered vessels bore everted rims, 88% had straight rims, and 2% had inverted rims. The breakdown for sandy paste vessels is 19% everted rims, 79% straight, and 2% inverted. The vessels represented from Feature 9 show what may be significant differences; 33% of the grog tempered pots had everted rims as opposed to only 17% of the sandy paste vessels. However, the sample from Feature 9 is relatively small (38 vessels), and may thus be biased accordingly. In all areas, the sample of bone tempered vessels is too small for reliable assessment of correlations between form and temper.

Another attribute of vessel form is lip treatment. Vessel lips, in cross-section, were either rounded, pointed or flat (see various rimsherd profiles shown in Figures 7.14 - 7.23). Rounded lips predominated in all excavation areas (see Table 7.6), comprising 49% in the Block Excavation, 61% in Feature 9 and 63% in the C. C. Area. The balance of the vessels had either flat or pointed lips, the percentages of which are virtually the same in the combined samples from all three areas (pointed, 22%; flat, 24%). The proportions of flat and pointed lips do vary somewhat between the samples from different areas, comprising roughly equal numbers in the Block Excavation (22% and 29%, respectively), but with flat lips about twice as

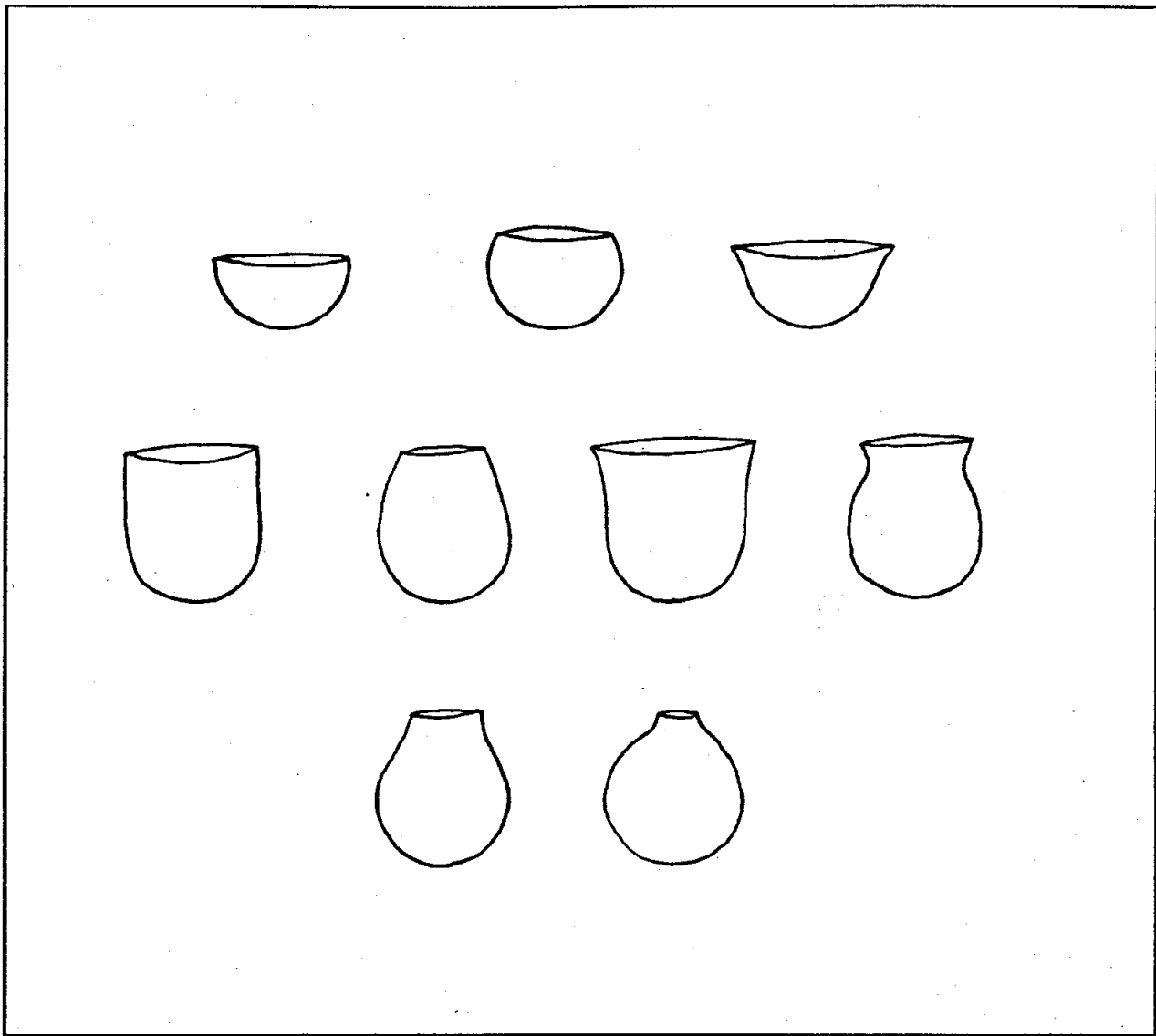


Figure 7.6. Vessel shapes indicated by examination of larger sherds and vessel sections from Mitchell Ridge.

abundant as pointed in Feature 9 and the C. C. Area.

Vessel Size

The size of ceramic vessels very generally tends to correlate with vessel function (e.g Shepard 1956; Rice 1987). For example, very large pots may have been used for storage, whereas small vessels may have functioned as individual serving dishes. Cooking vessels may tend to be large, since meals are likely to be prepared for several or more individuals and larger vessels are more efficient for this purpose.

Rimsherds from the 1992 Block Excavation were examined to determine whether the represented vessels showed significant variations in size, from which functional variability could be inferred. The same dearth of vessel sections which precludes an accurate determination of overall pot shapes also prevents precise calculation of the volume of vessels. An approximate indicator of vessel size, however, is orifice

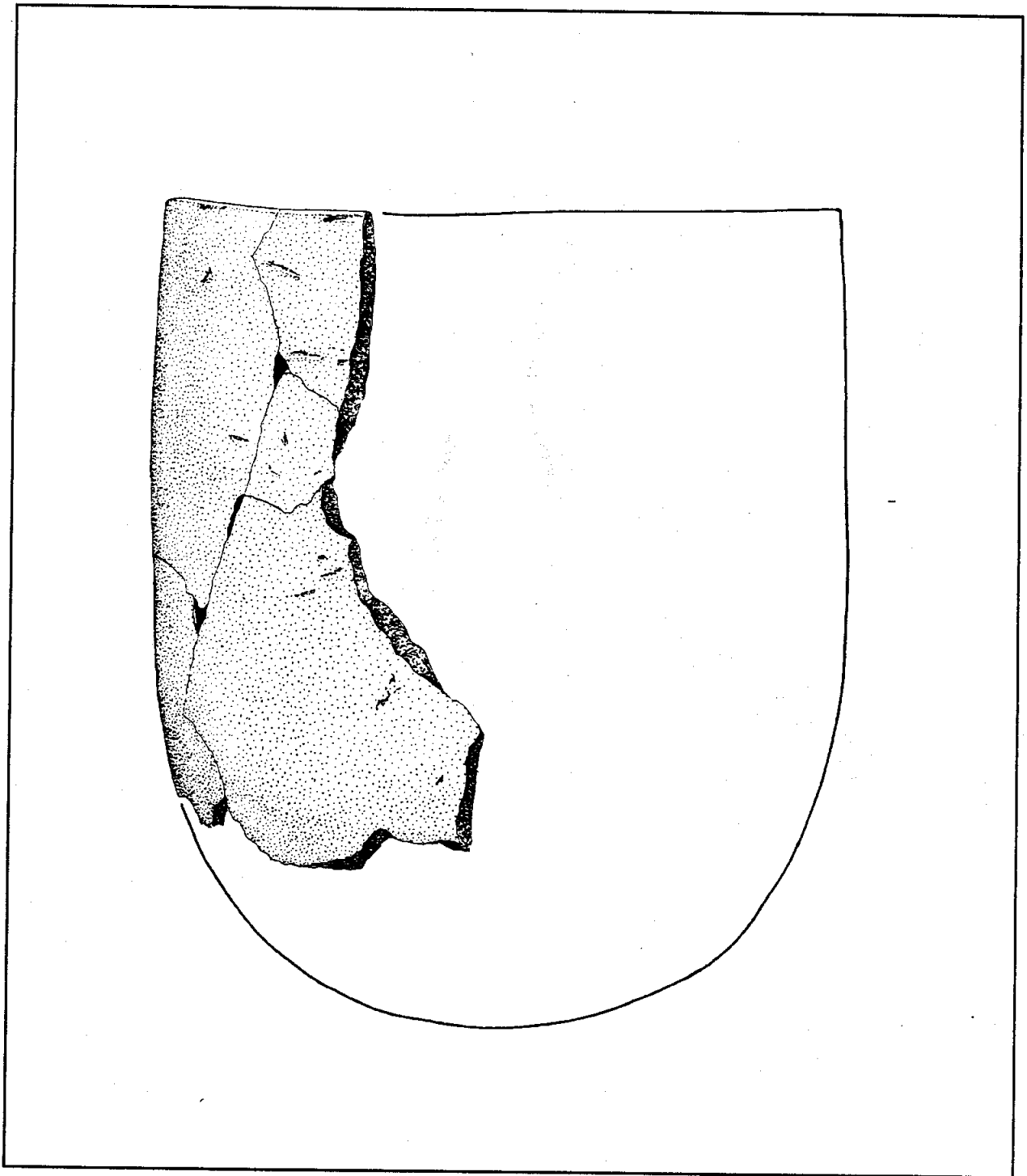


Figure 7.7. Section of Goose Creek Plain straight-sided jar from Block Excavation, with shape of vessel indicated, based on sherd curvatures. Shown actual size.

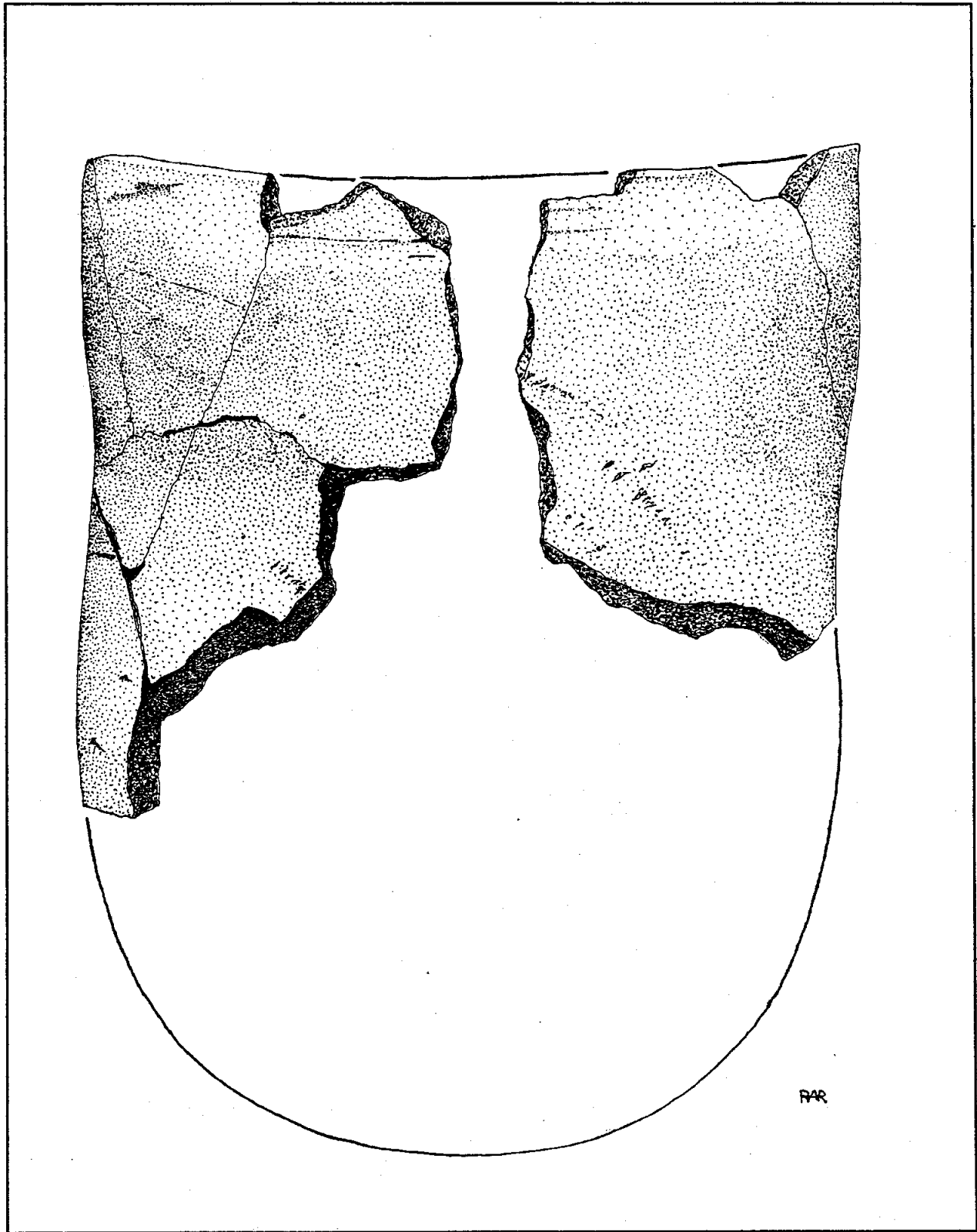


Figure 7.8. Goose Creek jar, partially reconstructed from sherds in shell and sherd-lined heartli, Feature 110-A, Block Excavation.

Table 7.4. Numerical data for assessing correlations between vessel decoration (presence/absence only), temper and form, three excavation areas (R=rounded; P=pointed; F=flattened; EV= everted, SRT= straight; INV=inverted). All numbers represent vessel counts; Lower totals for rim profiles reflect indeterminate status due to small sherd size.

BLOCK	LIP FORM				RIM PROFILE				
	R	P	F	Total	EV.	SRT.	INV.	Total	
Grog	undec.	35	12	11	58	21	32	4	57
	dec.	4	5	5	14	10	8	0	18
S. paste	undec.	63	35	25	123	33	61	5	99
	dec.	1	7	7	15	10	6	0	16
Bone	undec.	4	4	1	9	2	2	5	9
	dec.	1	0	1	2	1	1	0	2
TOTALS	undec.	102	51	37	190	56	95	14	165
	dec.	6	12	13	31	21	15	0	36
FEA. 9									
Grog	undec.	3	3	5	11	3	8	0	11
	dec.	1	0	0	1	1	0	0	1
S. Paste	undec.	15	0	5	20	4	16	0	20
	dec.	1	2	0	3	0	3	0	3
Bone	undec.	3	0	0	3	1	2	0	3
	dec.	0	0	0	0	0	0	0	0
TOTALS	undec.	21	3	10	34	8	26	0	34
	dec.	2	2	0	4	1	3	0	4
C.C. AREA									
Grog	undec.	17	5	12	34	2	32	0	34
	dec.	13	2	3	18	3	12	1	16
S. paste	undec.	34	5	10	49	8	37	1	46
	dec.	9	1	6	16	5	16	0	21
Bone	undec.	4	1	0	5	1	4	0	5
	dec.	0	0	0	0	0	0	0	0
TOTALS	undec.	55	11	22	88	11	73	1	85
	dec.	22	3	9	34	8	28	1	37
GRAND TOTALS	undec.	178	65	69	312	75	194	15	284
	dec.	30	17	22	69	30	46	1	77

Table 7.5. Percentages of attributes of rim profile (everted, straight, inverted) broken down according to vessel temper, presence/absence of vessel decoration, and for all vessels.

	TEMPER GROUPS			DECORATED VS. UNDECORATED		ALL VESSELS
	GROG	S. PASTE	BONE	DEC.	UNDEC.	
BLOCK						
Everted	41%	37%	27%	58%	43%	38%
Straight	53	58	27	42	57	55
Inverted	5	4	46	0	8	7
FEA. 9						
Everted	33%	17%	33%	25%	24%	24%
Straight	66	83	66	75	76	76
Inverted	0	0	0	0	0	0
C. C. AREA						
Everted	10%	19%	20%	21%	13%	16%
Straight	88	79	80	76	86	82
Inverted	2	2	0	3	1	2
ALL AREAS COMBINED						
Everted	29%	29%	26%	39%	26%	29%
Straight	67	68	47	60	68	66
Inverted	4	3	26	1	5	4

Table 7.6. Percentages of attributes of lip form (rounded, pointed, flat) broken down by vessel temper, presence/absence of vessel decoration, and for all vessels.

	TEMPER GROUPS			DECORATED VS. UNDECORATED		ALL VESSELS
	GROG	S. PASTE	BONE	DEC.	UNDEC.	
BLOCK						
Rounded	54%	46%	45%	19%	54%	49%
Pointed	24	30	36	39	27	29
Flat	22	23	18	42	19	22
FEA. 9						
Rounded	33%	70%	100%	50%	62%	61%
Pointed	25	9	0	50	9	13
Flat	42	21	0	0	29	26
C. C. AREA						
Rounded	58%	66%	80%	64%	62%	63%
Pointed	13	9	20	9	13	11
Flat	29	25	0	27	25	26
ALL AREAS COMBINED						
Rounded	53%	54%	63%	43%	57%	54%
Pointed	20	22	26	25	21	22
Flat	26	24	11	32	22	24

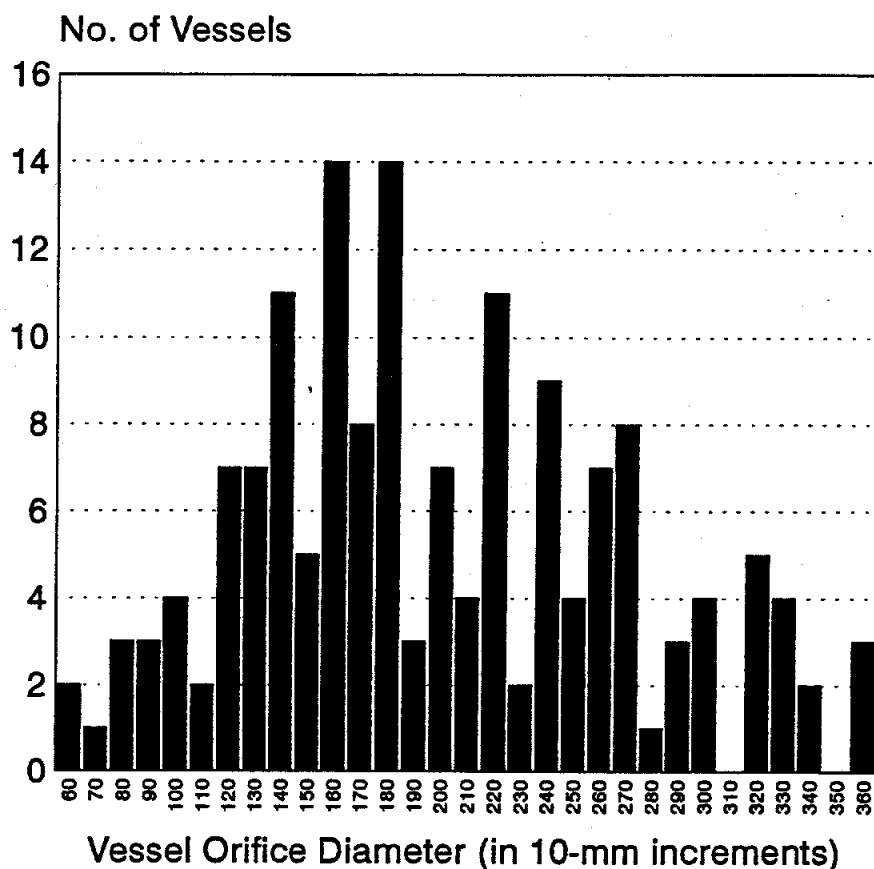


Figure 7.9. Bar graph showing numbers of vessels in 10-cm increment orifice diameter groupings (diameters are estimated from rimsherds curvatures and grouped according to nearest 10-cm).

diameter, a figure which can be readily extrapolated for a given pot from the representative rimsherds (except in the case of rimsherds which are too small for reliable estimation/determination of curvature).

A total of 158 vessels are represented from the Block Excavation by rimsherds sufficiently large for determination of orifice diameter. The largest rimsherd for each vessel was placed against a chart made up of concentric circles drawn in 10-mm increments, and the vessel assigned to a corresponding class of orifice diameter. The vessel was then placed in the appropriate orifice diameter class; the results are presented graphically in Figure 7.9. It is apparent that most pots in the sample had orifices ranging between 120 and 270 mm. This is taken to indicate that the majority of pots were not very large, since, as noted above, inverted rim vessels-- on which small orifices could pertain to relatively large pots-- constitute only a very small percentage of the total number.

The distributions of vessels according to orifice diameter shows an essentially unimodal pattern, a fact which is highlighted in Figure 7.10, where diameters are indicated in increments of 30 mm (thus "smoothing" the distributional curve). It may be concluded on the basis of these data that, if the ceramic vessels in the sample were intended for different functions (e.g. cooking as opposed to serving or storage vessels), this is not reflected in discernable clusterings of vessels by size.

Aplastic Inclusions

Another attribute of ceramic technology which may correlate with vessel function is the kind of aplastic in the clay body. Vessels used for cooking can be expected to be subjected to thermal shock from

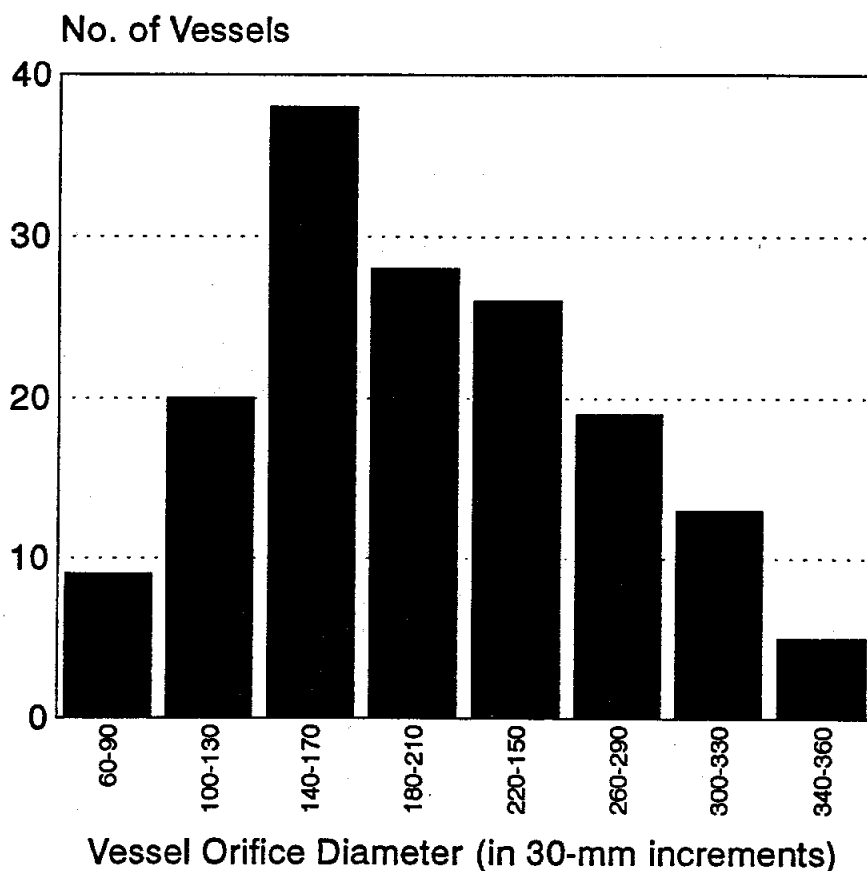


Figure 7.10. Bar graph showing numbers of vessels in 30-cm increment orifice diameter groupings (derived from combining data presented for 10-cm diameter increments in Figure 7.9).

repeated heating and cooling, and the kind of temper added to the clay can increase resistance to such shock, preventing development of cracks, and thus prolonging the use-life of the pot (Rice 1987).

There can be no doubt that sherds containing grog and crushed bone represent vessels made from intentionally tempered clay. The presence of sand in the clay body is, on the other hand, somewhat problematic. The use of sand as an added tempering agent is well-documented ethnographically (e.g. Rice 1987), so the sand in all but a few of the sherds from Mitchell Ridge could, conceivably, represent intentional temper. However, since the clays along the Texas coast invariably contain varying proportions of sand, it is likely that much, if not virtually all, of the sand in the sherds occurred naturally. The difficulty of distinguishing natural, sandy paste clay from clay with added sand temper has been pointed out by various researchers (Aten 1971; Dillehay 1975:110-111; Howard 1990). In fact, microscopically examined fresh edge breaks on Mitchell Ridge potsherds showed sand in quantities and grain sizes indistinguishable from clays of the Beaumont Formation or locally available lagoonal clay. As a general rule, the sandy paste clays with which pots were made were most likely used essentially as they were extracted from the ground.

Assuming this to be the case, the question arises as to why true tempering agents were artificially introduced into the clay body of over 40% of the vessels represented by sherds from the site (35.6% of the vessels listed in Table 7.4 were grog tempered; 4.9% were bone tempered). Since tempering usually has little or no visibility in a finished pot, and thus contributes little or nothing of stylistic value, and since its addition to the clay involves considerable additional time and effort in preparation, it is reasonable to infer that prehistoric potters went to the trouble of adding grog because it proffered a functional advantage to

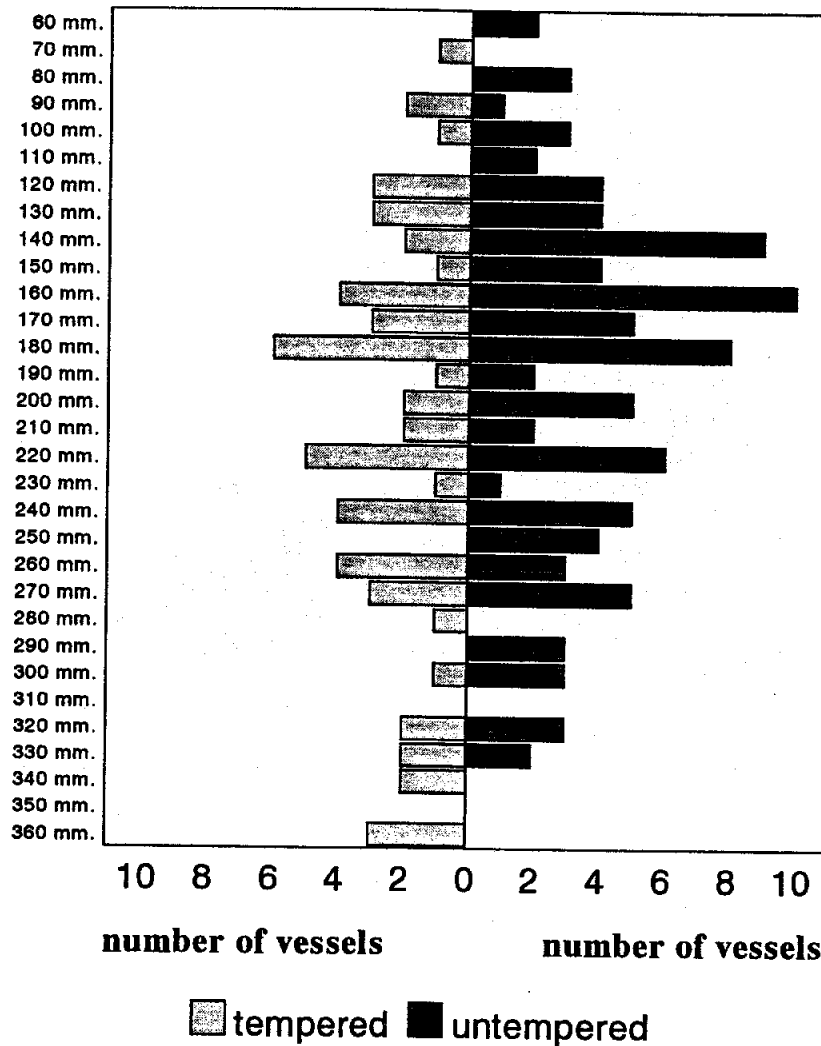


Figure 7.11. Bar graph showing numbers of tempered (grog, bone) vs. untempered (sandy paste) vessels by 10-cm-increment measures of estimated vessel orifice diameter.

the vessel. Although the technical merits of bone tempering have not been explored in detail, it is well established that grog reduces pre-firing cracking of drying vessels, and mitigates the effects of thermal stress (Shepard 1955; Rice 1987). Sand, on the other hand, has a coefficient of expansion and contraction considerably higher than that of clay (Rice 1987:230), and thus is not an ideal tempering material for pots that are to be repeatedly exposed to heat. As Rice (1987:229) notes, "The optimal solution in the manufacture of vessels intended for use with heat would be to have inclusions (temper) with coefficients similar to or less than that of the clay".

Given these facts, it was hypothesized at the beginning of analysis that the Mitchell Ridge tempered (with grog, bone) vessels were designed as cooking vessels. It was further assumed that if this were the case, the tempered pots should, on the average, be larger than untempered vessels, since the latter group would have been better suited to non-cooking uses such as serving dishes. While it is recognized that storage vessels need not have optimal resistance to thermal shock, and that untempered pots could thus be relatively large, it is also true that, ethnographically, storage vessels tend to have

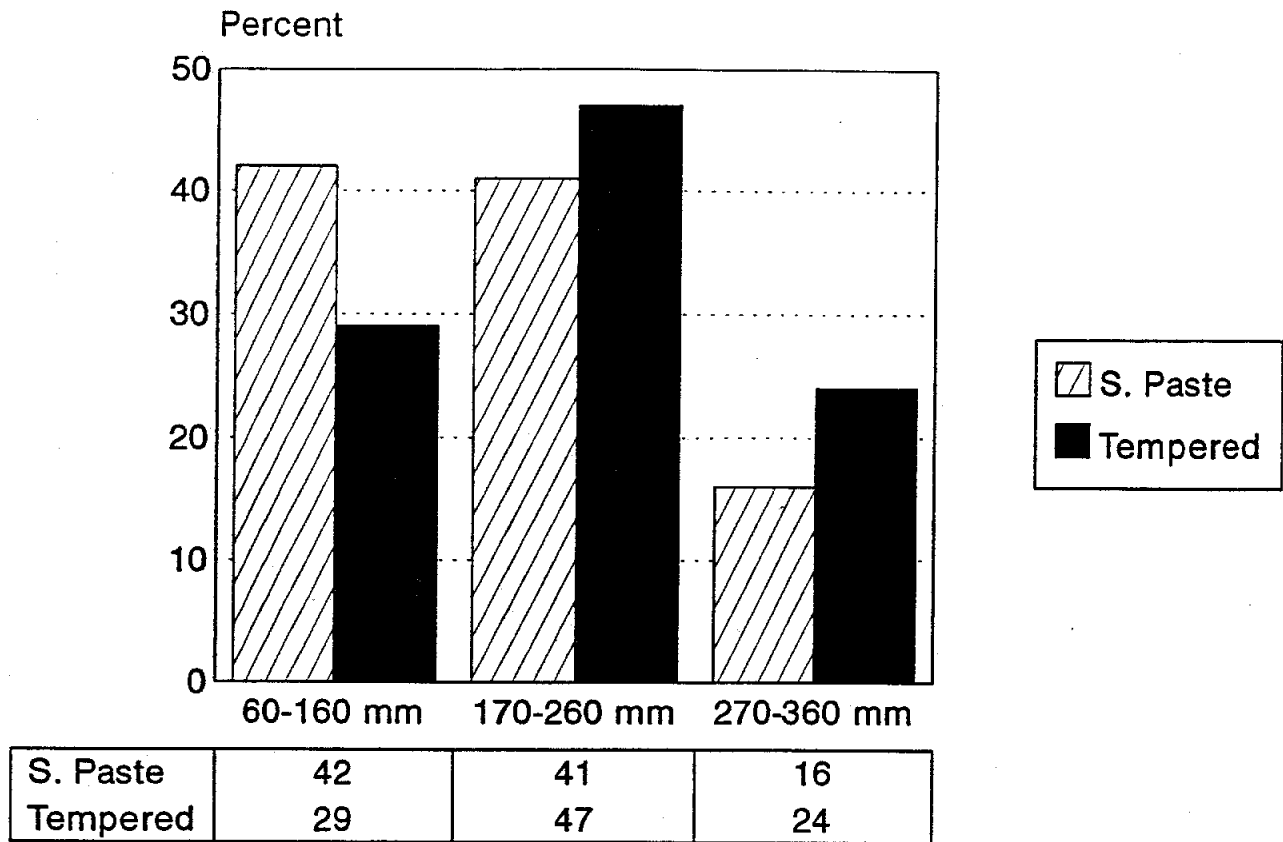


Figure 7.12. Bar graph showing percentages of tempered vs. untempered vessels in each of three orifice diameter groupings.

constricted orifices (Shepard 1956), which most of the vessels at Mitchell Ridge do not, judging by the low numbers of inverted rims and the relatively high percentages of vertical rims. Considering these factors, if tempered vessels were intended for use as cooking pots, then they should, hypothetically, show a marked tendency toward larger orifices than do the untempered vessels.

The numbers of tempered vs. untempered pots in the 10-mm increment vessel orifice size groupings are shown graphically in Figure 7.11. Although there is considerable overlap, the tempered vessels do in fact tend to fall into larger-diameter groupings than the untempered pots; the groupings with the largest numbers of untempered vessels range from 130 to 220 mm, whereas those with the largest numbers of tempered vessels range from 150 to 260 mm. Also, the very largest vessels in the sample are tempered, though this alone is hardly an impressive fact considering the small number of pots in the greater-than-300 mm groupings.

These same data are expressed in Figure 7.12 as percentages of tempered and untempered pots which fall into three arbitrarily selected orifice diameter groupings. Forty-two percent of the untempered pots fall into the smallest orifice diameter group (60-160 mm), 41% are in the middle group (170-260 mm), and only 16% are in the largest group (260-360 mm). In the case of the tempered vessels, 29% are in the smallest group, 47% fall into the middle, and 24% are in the largest group. While these figures are not dramatic, they do show an overall tendency for tempered vessels to have wider orifices than untempered pots. Under the working assumption that cooking pots had relatively large orifice diameters, it can be rather tentatively suggested that tempering was added to pots for functional reasons.

Decorative Style on the Mitchell Ridge Pottery

As indicated above, the analysis of decoration on the Mitchell Ridge pottery was designed to identify, if possible, the system by which the aboriginal potters adorned vessels. In order to maximize the size of the sample available for study, and to thus include the widest possible range of stylistic variations, all decorated vessels from the site were used for which the basic decorative themes could be identified; sherds representing pots from all excavations of the 1970s and 1992 were examined. In most instances, this involved rimsherds, though in some cases sherds representing parts of pots immediately below the rim were also employed. In this way, a total sample of 177 decorated vessels was represented for analysis.

Lumping together of vessels from across the entire site precludes, of course, chronological control of stylistic variability. Since radiocarbon data from occupation areas and burials indicates major use of the site from ca. A.D. 800/1000 into the Early Historic Period, the combined samples can only be assumed to represent ceramic manufacture over that span of time. However, the primary goal here is to explore the range of stylistic variability of the pottery as representing the regional ceramic tradition. Once the *range* of variability is established, the question of the temporal dimension of that variability can eventually be explored.

The approach used here is simple and straightforward. Decorated sherds were sorted into vessel groups, according to the criteria listed earlier. Vessels represented by sherds which were too small for confident identification of decorative themes were noted, but excluded from further analysis. The crucial criteria for inclusion in the analysis were that enough of the decoration was present to (a) identify the primary design element and (b) determine whether a secondary design element was present and, if so, identify its configuration and spatial relation to the primary element. Primary elements are here defined as the main decorative theme which is readily identifiable visually on the vessel. Secondary elements are those decorative components that are readily distinguished from primary elements by virtue of contrasting or opposing geometry or method of execution and which, at the same time, serve to highlight, outline or otherwise complement the primary element. A third kind of element consists of small patterns of incisions or punctations which fill the spatial interstices created by either primary or secondary elements. These are noted here but, because they were relatively few, and patterned correlation with specific primary or secondary elements could thus not be identified, they are not further considered in terms of the systematic combinations of primary and secondary elements.

The primary and secondary design elements observed in the Mitchell Ridge collections are defined as follows:

1. *Primary elements on vessel lips.* This grouping includes all vessels on which the sole decorative theme is confined to the lip of the pot. Though spatially highly restricted on the vessel, these constitute primary decorations because they immediately attract visual attention and identify the pot as decorated. Decoration was achieved either by patterned removal of still-wet clay from the lip or by impressions made in the clay as nicks or incisions. Scalloping (N=45; see Figure 7.17, d, Figure 7.20, g) and lip crenelation (square notching, shown in Table 7.7; N=1) both involved removal of clay. Impressions in the still-wet lip of the vessel include nicking, short impressions made at right angles to the vessel circumference (Figure 7.21, e), and incising. Incised elements consist of short lines at right or oblique angles to the vessel circumference (Figure 7.16, d; Figure 7.20, f) and cross-hatching, created by opposing sets of oblique incisions (see Table 7.7).

2. *Primary elements on vessel exterior below lip.* These elements are incised lines placed in decorative bands immediately below the vessel lips. On all examples from Mitchell Ridge, they are mutually exclusive, so there is no ambiguity as to what constitutes the primary element. The incisions are always quite narrow, having been executed with a more or less pointed instrument. The most simple is a single incised horizontal line, usually immediately below the lip (N=20; see Figure 7.13, a) but in one case 2 cm below the lip (Figure 7.14, a). More elaborate is a series of multiple, parallel horizontal lines which invariably begin just below the lip and extend varying distances down the vessel wall, depending on the number of lines. This element, the most common at the site (N=69), is made up of as few as two to as many as 16 lines (for example, Figures 7.13, b, c).

Contrasting with the use of horizontal lines are vertical, parallel incised lines (N=14). These invariably extend from just below the vessel lip and several centimeters down the vessel wall. Examples are illustrated in Figure 7.16, a, b; Figure 7.18, a-c; Figure 7.17, b, c, and Figure 7.21, f.

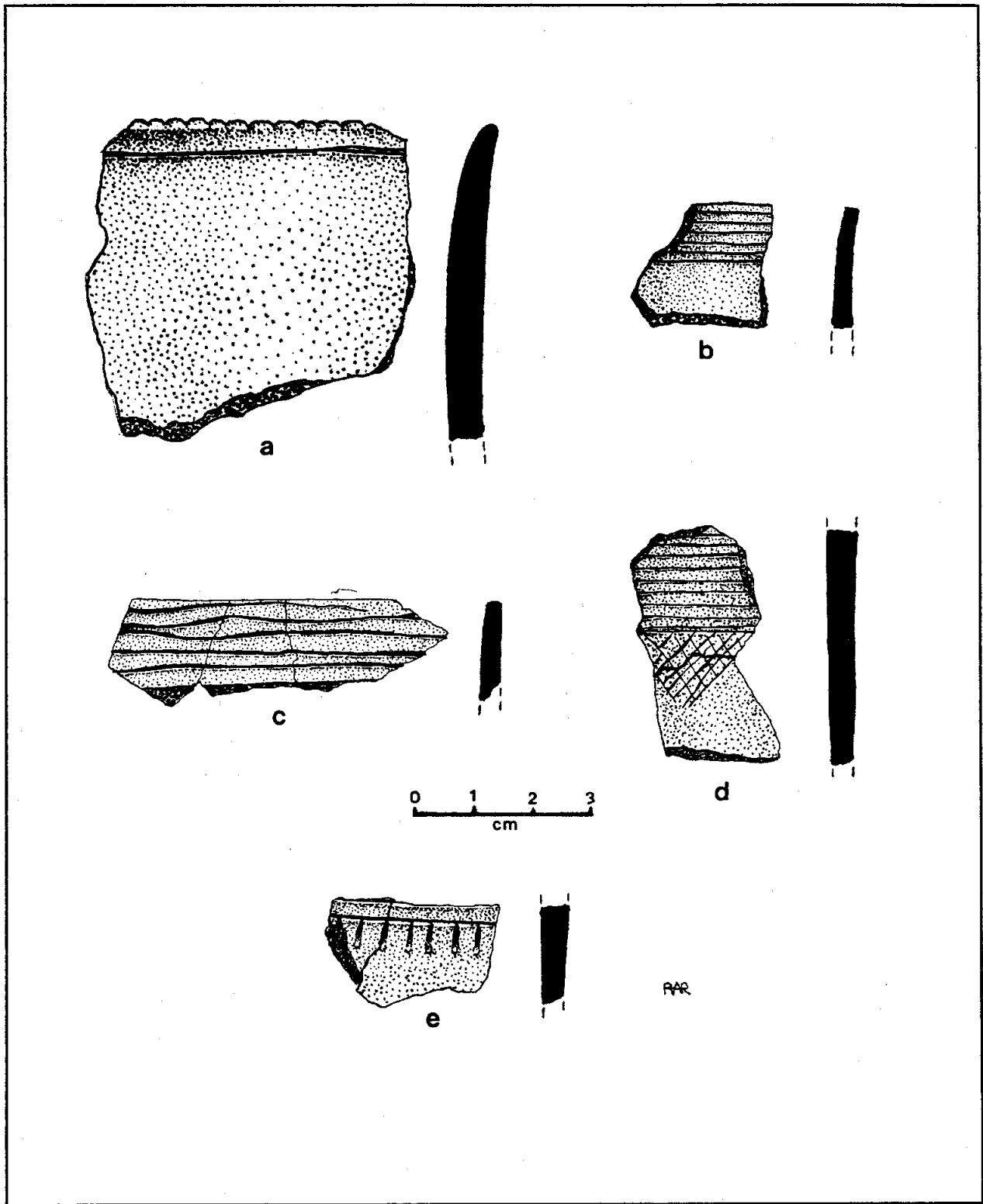


Figure 7.13. Selected examples of potsherds with incised horizontal lines as primary design elements, Block Excavation. Note secondary elements on d (filled pendant triangle) and e (row of short incisions).

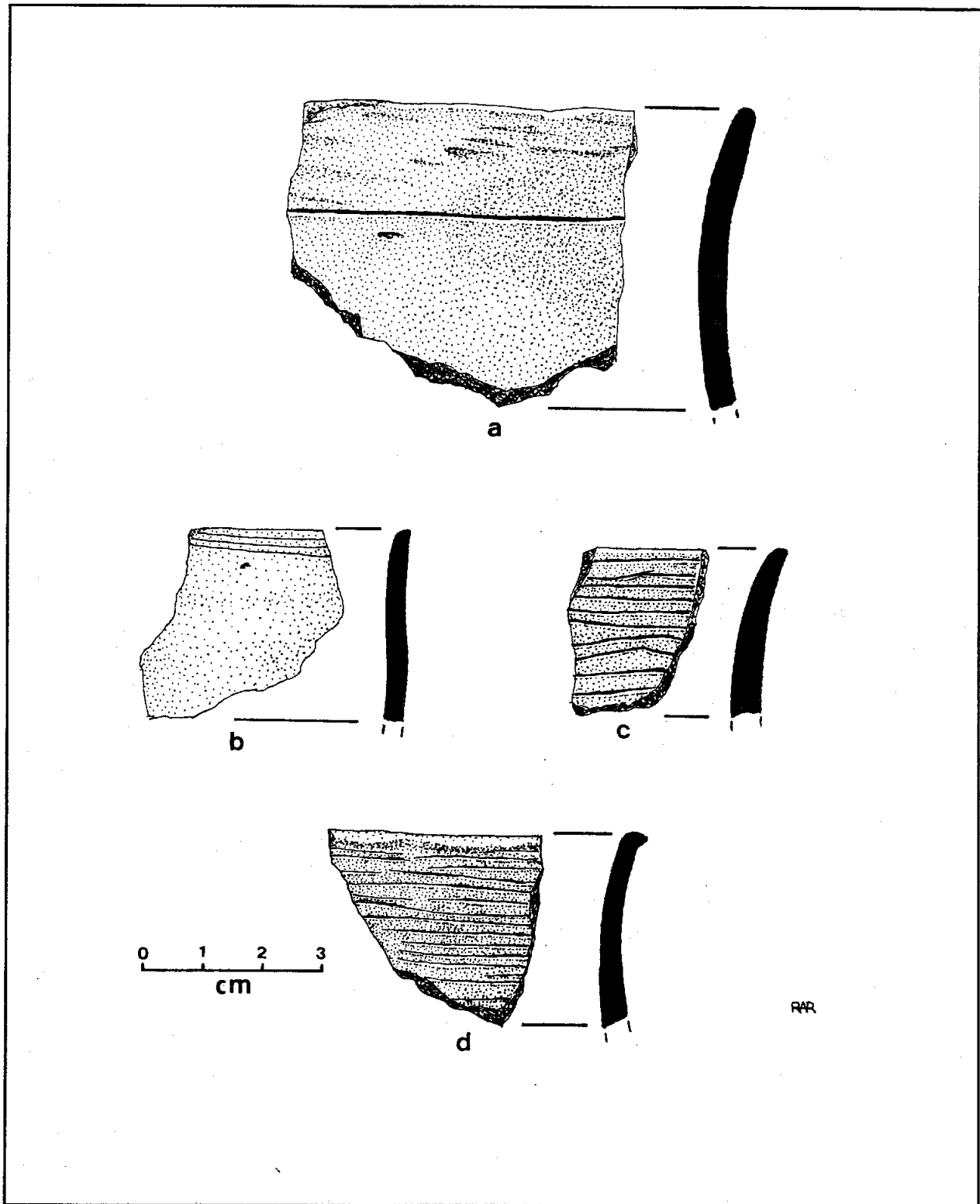


Figure 7.14. Selected rimsherds from the Block Excavation. A, single incised horizontal line; b-d, multiple incised horizontal lines.

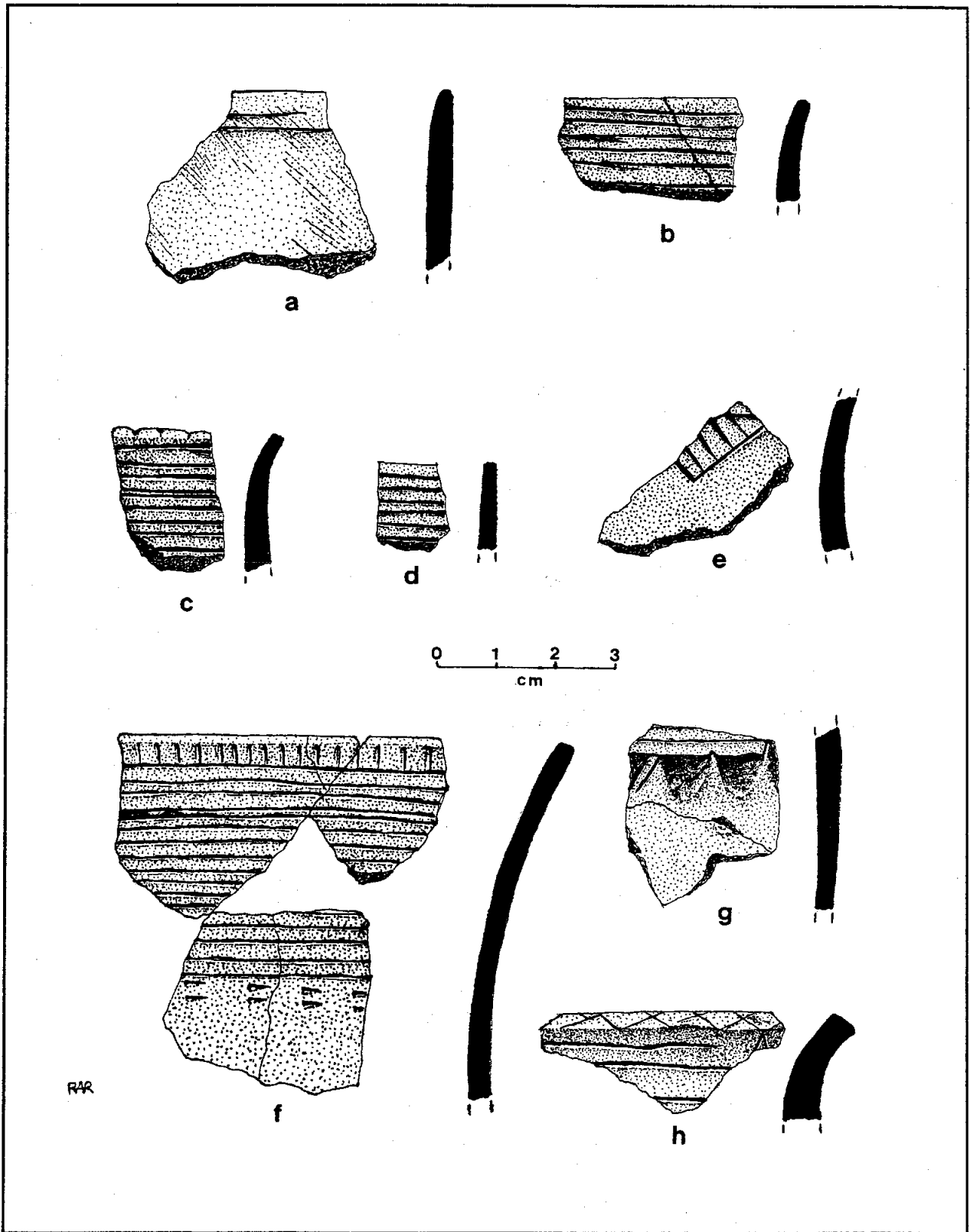


Figure 7.15. Selected examples of potsherds with incised horizontal lines as primary design elements, Block Excavation.

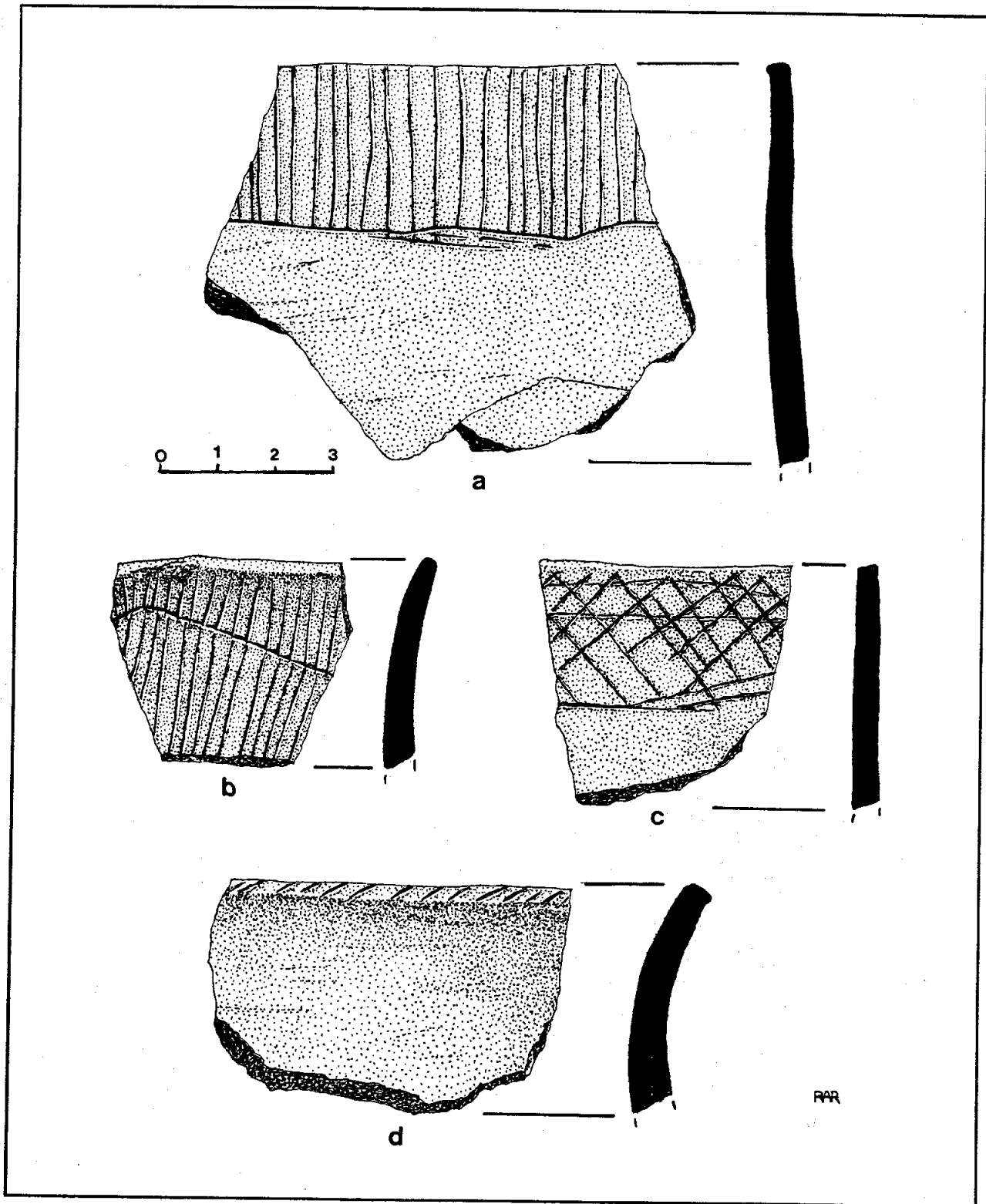


Figure 7.16. Selected sherds from the 1970s excavations. A, incised vertical lines as primary design element; b, vertical sublip incising; c, sub-lip criss-crossed incising; d, lip incised rimsherd.

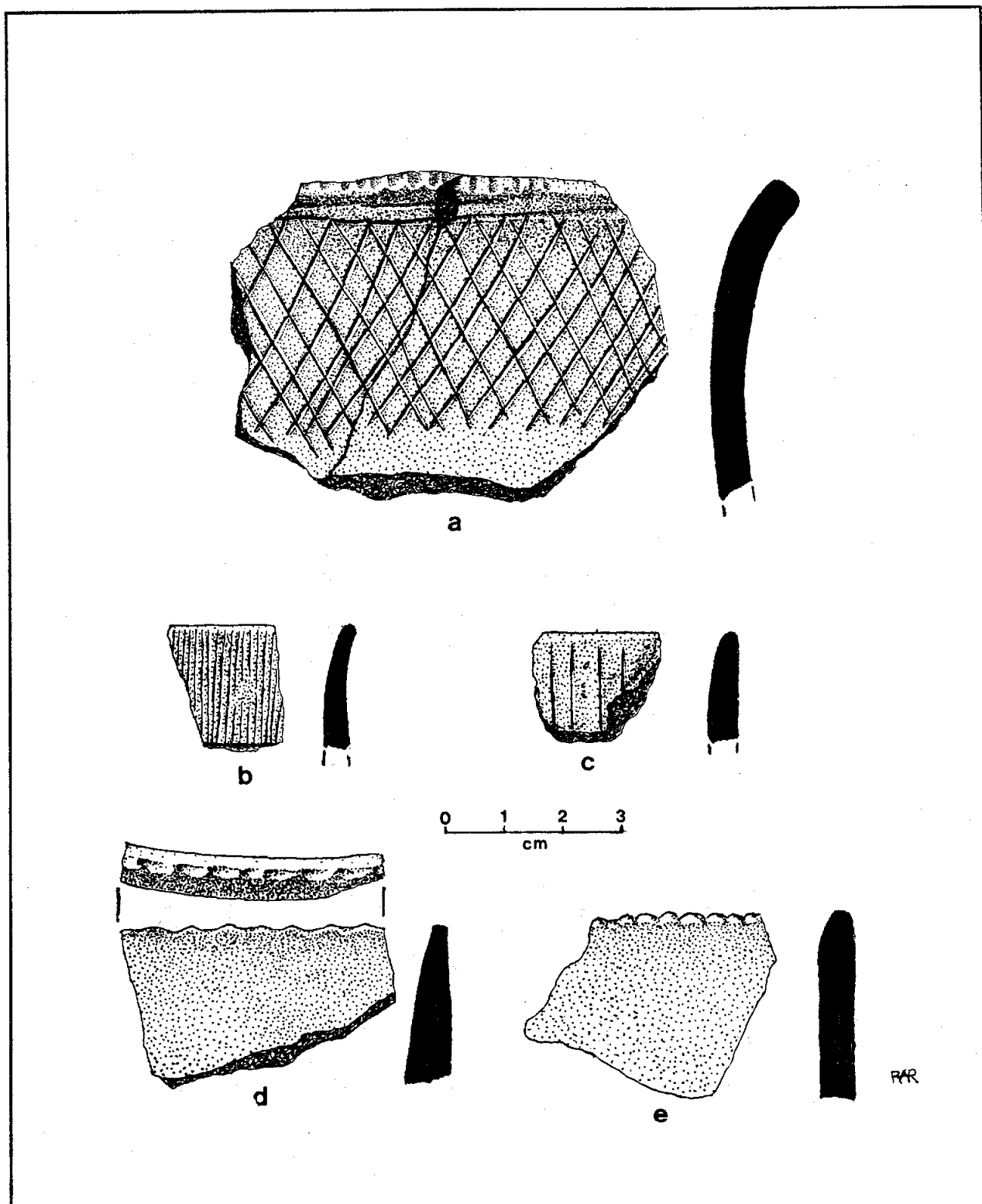


Figure 7.17. Selected sherds, Block Excavation. A, Criss-crossed sublip incising as primary design element (Harrison Bayou Incised); b, c, vertical incising as primary design element; d, lip scalloping as primary design element; e, lip nicking as primary design element.

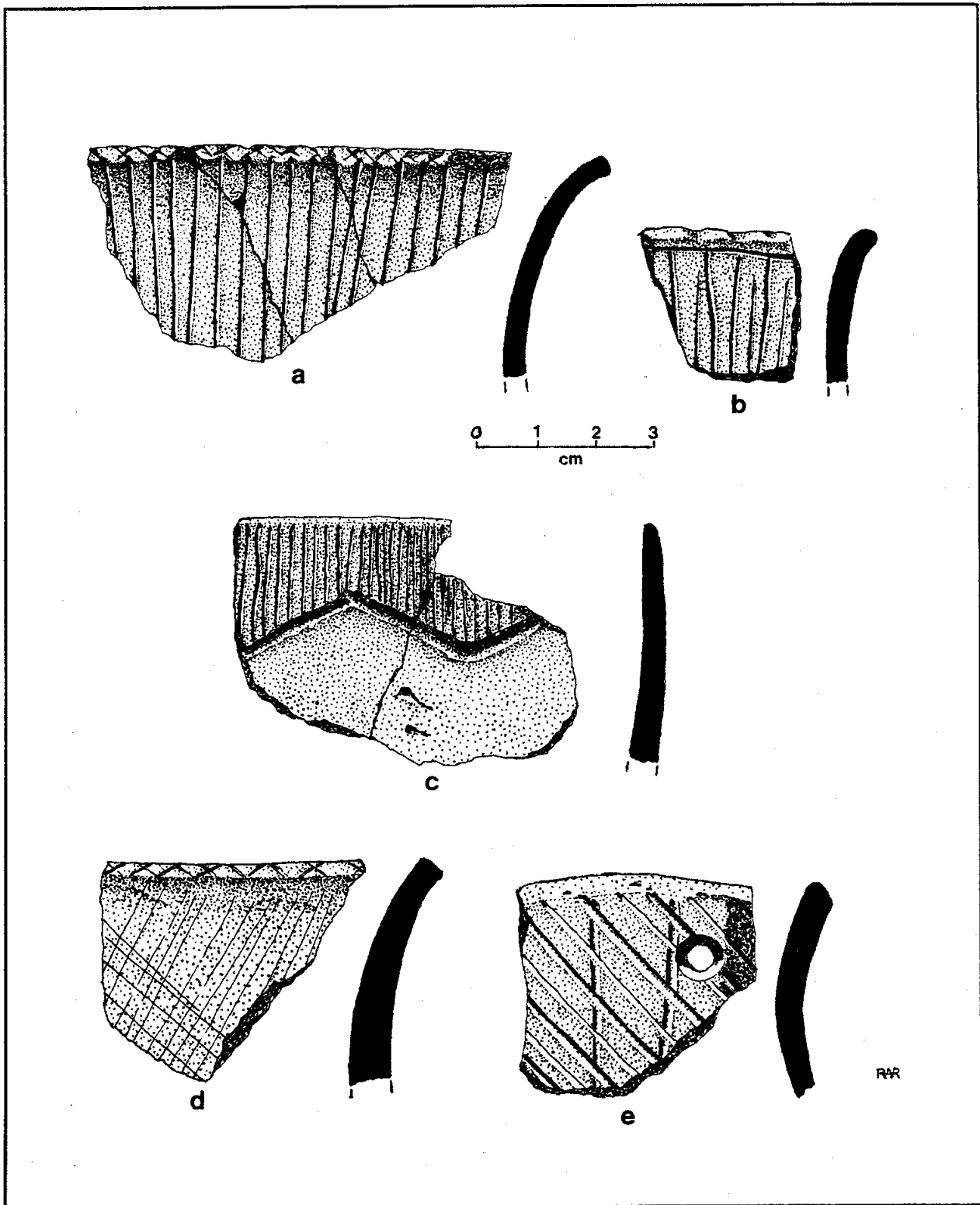


Figure 7.18. Selected sherds with sublip primary design elements of incised vertical lines and criss-crossing. Note drilled crack repair hole and asphaltum crack filler on e.

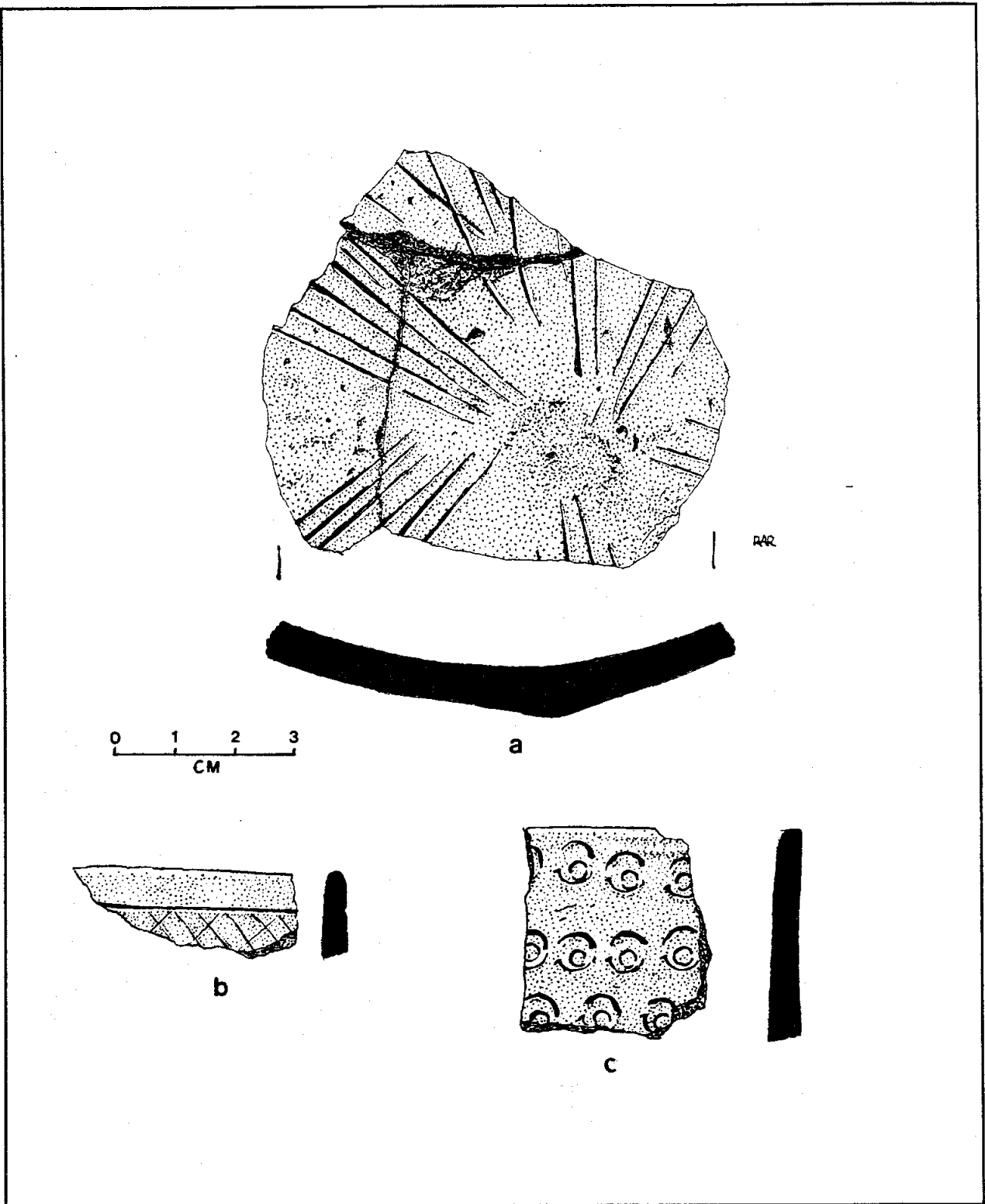


Figure 7.19. Unusual decorated sherds. Slightly noded basal sherd with converging groups of incised lines; b, rimsherd with engraved criss-cross design (possibly Maddox Engraved); c, rimsherd with stamped circular punctations. A and b are from Block Excavation, c is from surface, Area 5.

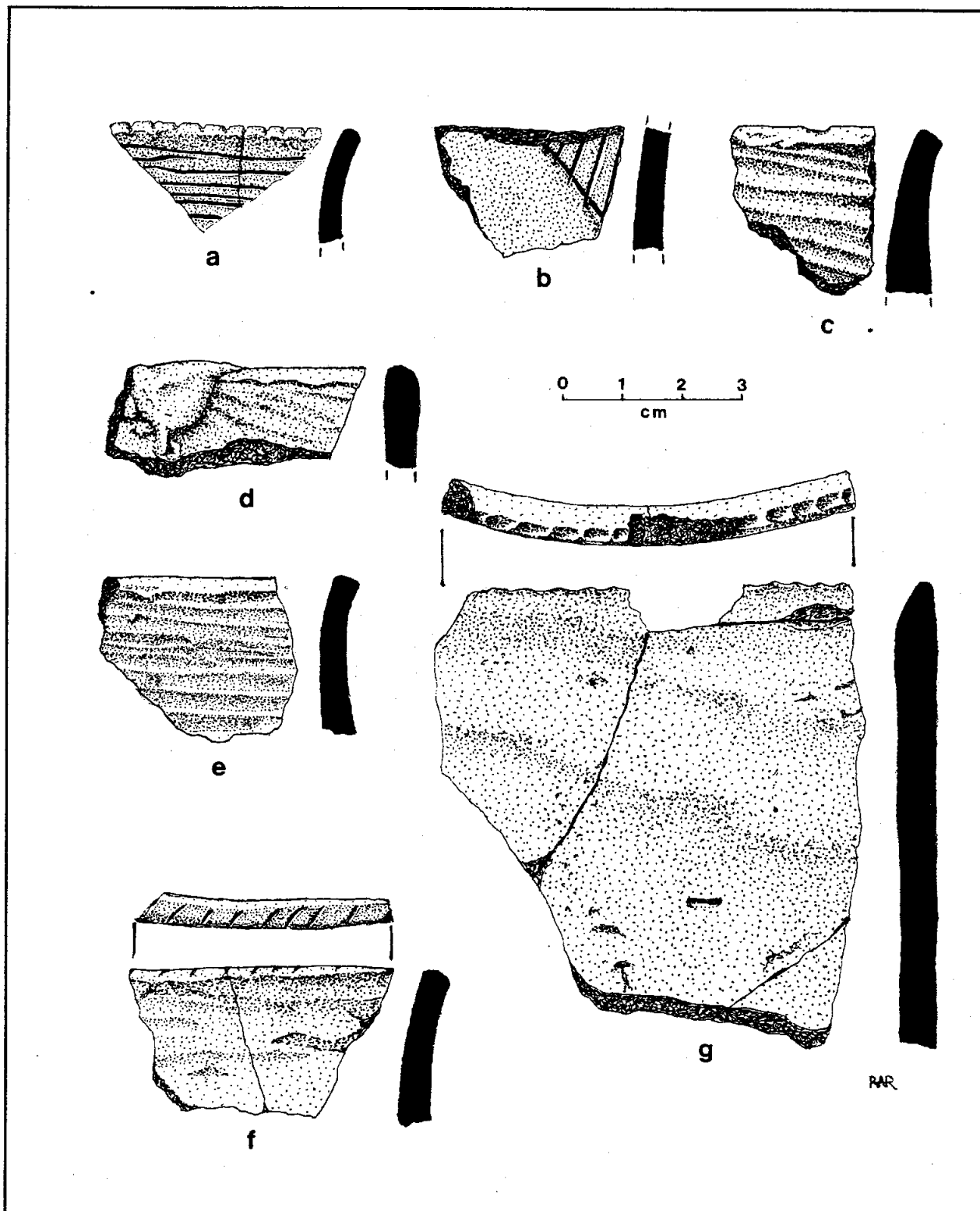


Figure 7.20. Selected sherds from Feature 9. A, multiple incised lines as primary design element; b, incised pendant triangle; c, e, rimsherds with bivalve scoring; d, rimsherd with clay crack repair; f, rimsherd with lip incising as primary design element; g, rimsherd with scalloped lip.

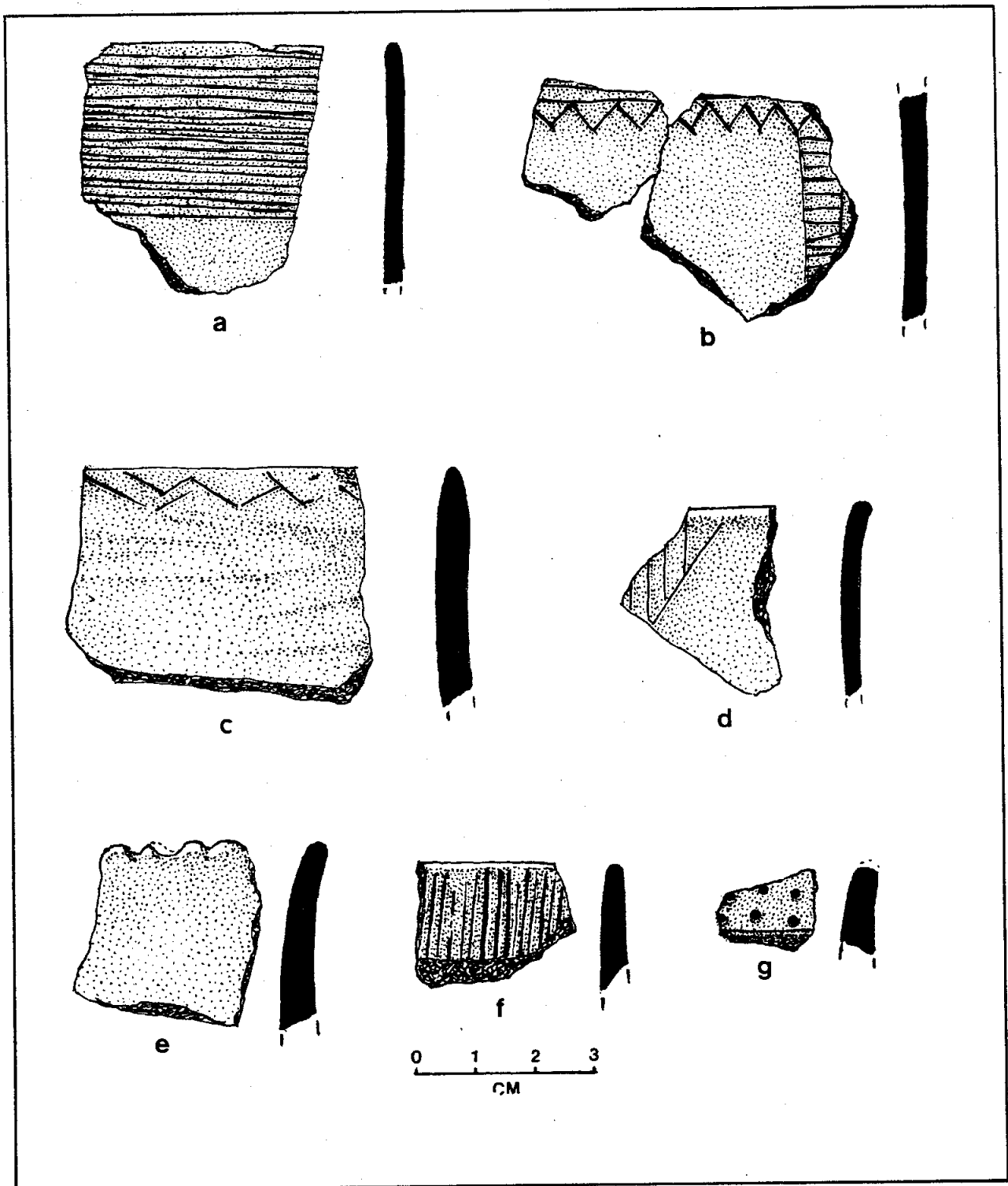


Figure 7.21. Various decorated sherds, 1970s excavations. A, multiple horizontal incised lines; b, multiple horizontal incised lines with secondary element of pendant triangles; c, d, pendant triangles as primary design element; e, nicked lip as primary design element; unusual sherd with vertical brushing; g, sherd with rows of small round punctations.

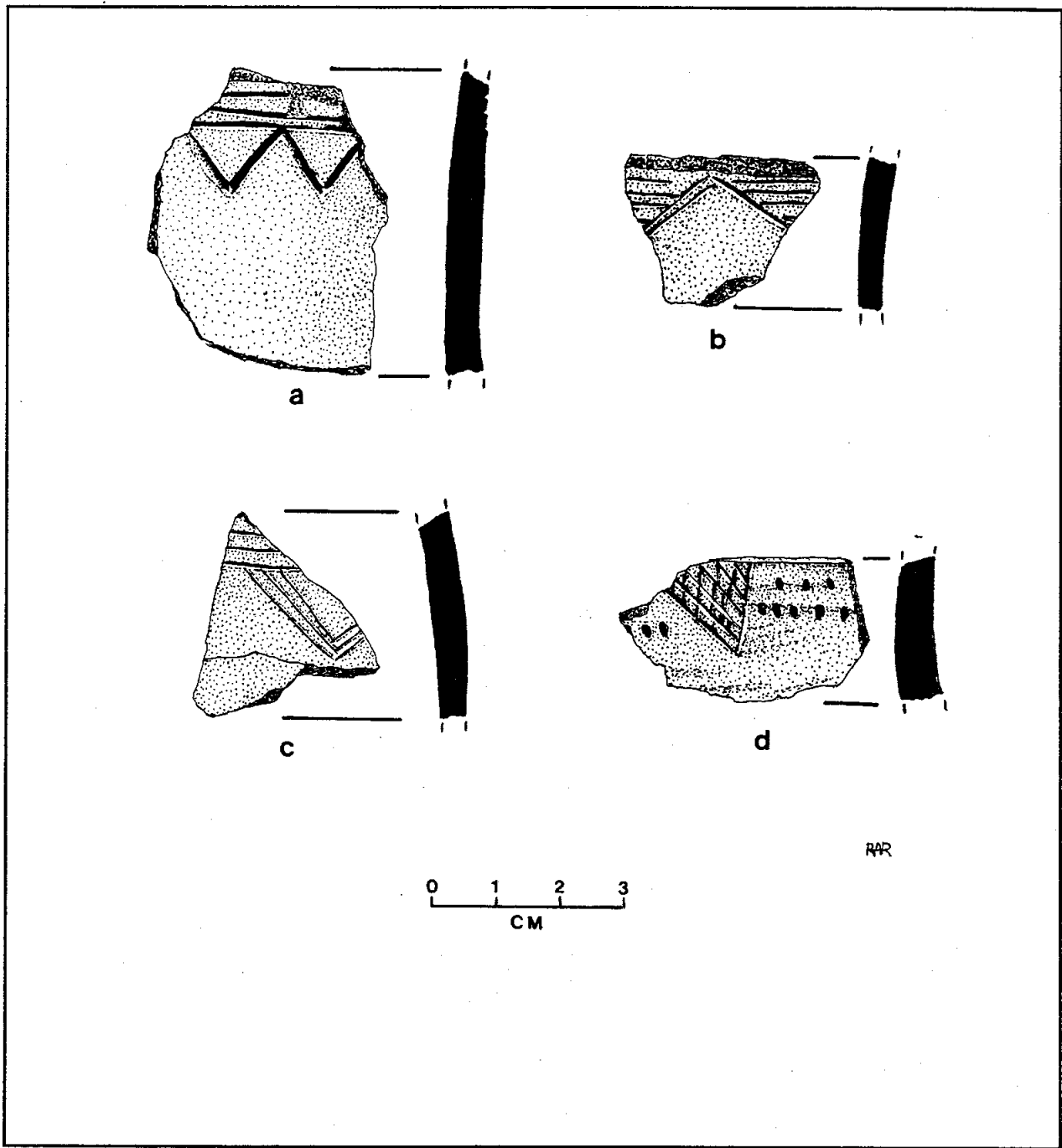


Figure 7.22. Selected examples of potsherds with incised pendant triangles, from 1970s excavations.

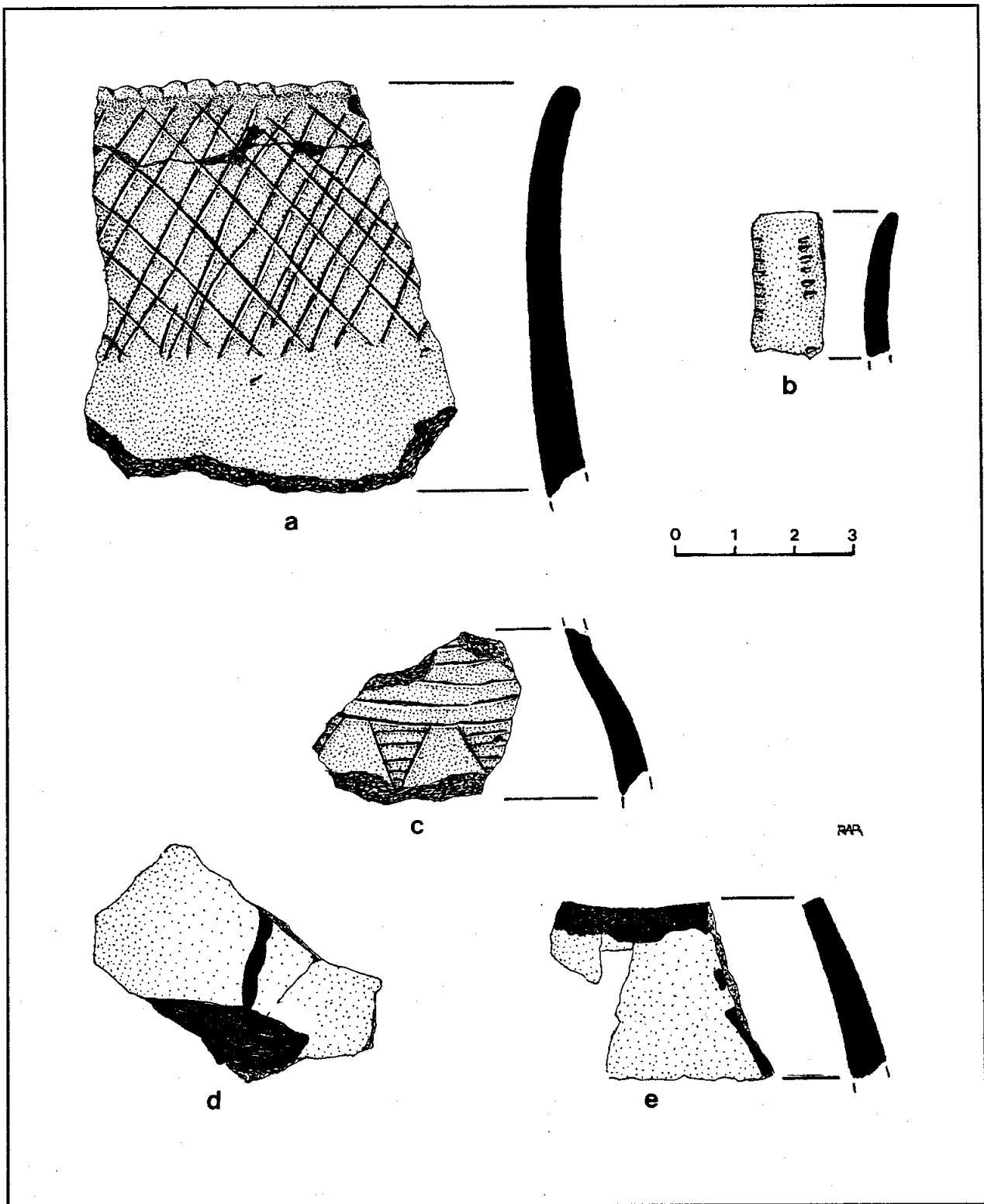


Figure 7.23. Selected sherds, 1970s excavations. A, Criss-crossed sublip incising as primary design element (Harrison Bayou Incised); b, multiple sublip horizontal lines with pendant triangles as secondary element; d, e, examples of aspartum painted decoration on sandy paste sherds (Rockport Black-on-Gray) as primary design element.

Table 7.7. Correlations of primary and secondary decorative elements, Mitchell Ridge Ceramics.














SECONDARY DECORATIVE ELEMENTS		PRIMARY DECORATIVE ELEMENTS				
		Scalloped lip	Nicked lip	Oblique incised lip	Cross-hatched incised lip	Interior lip notching
None		45	15	3	2	3
Correlation unknown						
Scalloped lip						
Nicked lip						
Oblique incised lip						
Cross-hatched incised lip						
Single horizontal line						
Wavy line						
Incised pendant triangles						
Excised pendant triangles						
Filled pendant triangles*						
Short vertical lines						
horizontal zig-zag						
triangular punctations						
round punctations						
TOTAL		45	15	3	2	3

Table 7.7, cont.


































SECONDARY DECORATIVE ELEMENTS		PRIMARY DECORATIVE ELEMENTS			
		Crenelated lip	Single Horizontal incised line	Multiple horizontal incised lines	Vertical incised lines
					
None		1	1	29	
Correlation unknown				20	1
Scalloped lip					
Nicked lip			3	4	
Oblique incised lip				1	
Cross-hatched incised lip				1	5
Single horizontal band					5
Wavy line					2
Incised pendant triangles			2	4	
Excised pendant triangles				1	
Filled pendant triangles*			1	3	
Short vertical lines			2	3	
horizontal zig zag				1	1
triangular punctations				1	
round punctations				1	
TOTAL		1	10	69	14

Table 7.7, cont.

		PRIMARY DECORATIVE ELEMENTS			
SECONDARY DECORATIVE ELEMENTS		Cross-hatched incised lines	Filled triangles	Horizontal zig - zag	TOTAL
					
None		1	2	1	104
Correlation unknown		2			23
Scalloped lip		1			1
Nicked lip		1			8
Oblique incised lip		1			2
Cross-hatched incised lip		2			8
Single horizontal band		4			9
Wavy line					2
Incised pendant triangles					6
Excised pendant triangles					1
Filled pendant triangles*					4
Short vertical lines					5
horizontal zig zag					2
triangular punctations					1
round punctations					1
TOTAL		12	2	1	177

Only slightly less abundant is cross-hatching (N=12), comprised of two opposing sets of intersecting diagonal lines or, in one case, sets of intersecting vertical and diagonal lines. Examples are shown in Figure 7.16, c; Figure 7.18, d, e; Figure 7.23, a.

Two final primary elements, both very rare at the site, consist of pendant triangles "hanging" from the vessel lip and filled with short incised lines (N=2; see Figure 7.21, d) and a horizontal zig-zag line (N=1; see Figure 7.21, c).

3. *Secondary elements.* Secondary design elements are adjacent to or near primary elements and visually frame or otherwise enhance the primary elements. These are listed in Table 7.7. They include the various forms of lip modification listed above as primary elements (excepting crenelation), but in these cases the design elements do not present the main decoration. Examples of lip modification used as secondary elements are illustrated in Figure 7.13, a; Figure 7.15, c; Figure 7.17, a; and Figure 7.18, a, b and d. Secondary elements found on vessel exteriors in combination with primary elements are executed by means of incised lines and punctations. These elements, also listed in Table 7.7, are horizontal incised lines (e.g. Figure 7.16, a; Figure 7.17, a and b), single horizontal incised wavy lines (see Table 7.7), incised pendant triangles (either filled or unfilled (Figure 7.13, d; Figure 7.15, e and Figure 7.21, b), excised pendant triangles (Figure 7.15, g), bands of short incised lines (Figure 7.13), rows of triangular punctations (Figure 7.15, f) and circular, hollow punctations (see Table 7.7).

Correlations of Primary and Secondary Design Elements

Table 7.7 juxtaposes the primary and secondary ceramic design elements and indicates certain redundant associations or correlations between specific primary and secondary elements. These can be summarized as follows:

1. *Modified lip as primary element, without secondary elements.* By definition, modified lips as primary design elements are not found in association with secondary elements, for two reasons. First, the surface to be decorated, the vessel lip, is too small in area to allow for the thematic complexity inherent in the inclusion of secondary elements. Second, if design elements are placed below the lip, they render the lip decoration of secondary importance, since sublip designs are in a more spatially open field and thus tend to automatically attract immediate visual attention.

With the exception of crenelation, which is represented by only one vessel in the entire collection, all of the various kinds of lip modifications could serve as secondary elements. However, it is significant that the two most common kinds of lip modification occur most frequently as the sole vessel decoration. This is particularly true in the case of scalloped lips, which occur as primary elements on 45 vessels and as a secondary element on only one vessel. In general, therefore, it can be concluded that lip scalloping was conceived by the aboriginal potters at Mitchell Ridge as a discrete, independent technique of vessel decoration. The same can be said for lip nicking, which occurs as a primary element on 15 vessels but as a secondary element on only eight pots. Though lip nicking is thus not as nearly independent of other decoration as scalloping, it does tend to be commonly treated as such. These instances suggest that lip-modified vessels represent a definite approach to ceramic decoration, and that such pots should not, strictly speaking, be classified as plain vessels, as has been done in the past (Suhm and Jelks 1962; Aten 1983a).

Other forms of lip modification are comprised of short parallel incisions, either as unidirectional diagonals or opposed sets of cross-hatched diagonals. These are not particularly common, and occur as both primary (N=5) and secondary (N=8) elements.

2. *Horizontal Sublip Incising.* This is the most common primary design element, present on 79 (45%) of the decorated vessels. Although single horizontal lines are included in Table 7.7 as a distinct class, they actually should probably be viewed as one end member of a continuum of from one to as many as 16 horizontal lines. Single line examples are segregated here to (a) highlight their relative scarcity (N=10, compared with 69 for multiple lines), and since (b) there may be chronological significance in the use of a single line, with the number of lines tending to increase over time (as suggested by Aten 1983a, Figure 12.2).

For 20 of the vessels listed in Table 7.7 with this primary element, it is unknown whether secondary elements were present. In these cases, the entire width of the decorated band was not present on representative sherds, so the presence/absence of secondary border elements could not be determined. The presence/absence of secondary elements could be determined in 59 cases. In 30, or 51%, no secondary elements accompanied the incised horizontal lines. Modified lips were present as secondary elements in

6 instances (4 nicked, 2 incised). In 14 cases secondary elements had been executed on the sublip; these form, in all cases, borders above or below the bands of horizontal incised lines. The most common are variations on the theme of the pendant triangle.

3. *Vertical sublip incising*. Fourteen, or 8%, of the decorated vessels bore this primary element. The presence/absence of secondary elements could be determined in all but one instance. In five cases (38%), lip modification is present as incised cross-hatching. Sublip secondary elements consist in most cases of horizontal or wavy lines which bound the top or bottom of the primary element (e.g., Figure 7.16, a; Figure 7.18, b, c). In a single case (Figure 7.16, b) a horizontal zig-zag incised line cross-cuts the primary element of parallel vertical incising.

4. *Sublip incised cross-hatching*. This primary element occurs on 12 (7%) of the decorated pots. Presence/absence of secondary elements was indeterminate in 2 cases. Of the 11 specimens where presence/absence of secondary elements could be determined, all but one bore a secondary element. Five of these consisted of lip modification and four were horizontal incised lines just below the vessel lip which serve to bound the top of the band of incised cross-hatching (Figure 7.17a).

5. *Filled pendant triangles/horizontal incised zig-zag*. In most cases, pendant triangles occur as secondary elements bounding the bottom of primary elements consisting of horizontal incisions. In only two instances do they constitute the primary design element. In a third case, a horizontal zig-zag presents a very similar visual impression. Secondary elements were not placed on these vessels.

Discussion of Ceramic Decoration at Mitchell Ridge

The present analysis is a preliminary effort which only suggests possibilities for further investigations of stylistic variation in upper Texas coast ceramics. While the number of vessels in the combined collections from Mitchell Ridge is relatively large, not all design elements known for the surrounding region are present, suggesting that either (a) the sample is still too small to present the full range of variation in designs employed by resident potters, or that (b) as yet undefinable minor spatial and/or temporal variability existed within the regional ceramic stylistic tradition. Elements recurrently reported from other sites but lacking at Mitchell Ridge include right-angle opposed cross-hatched lines, incised horizontal lines interrupted or traversed by one or several diagonal lines and parallel short vertical or diagonal incisions sandwiched between horizontal lines (as illustrated in Aten 1983a; Black 1989).

Still, most of the commonly recurring themes of upper coast aboriginal ceramic decoration incorporate the same primary and secondary elements identified in the Mitchell Ridge material (c.f. Fox et al. 1980; Aten 1983a; Mercado-Allinger et al. 1984; Black 1989; Howard 1990; Nash and Rogers 1992). Despite the need for thorough analysis of decorative style at the regional scale, the present analysis does indicate that ceramics at Mitchell Ridge (and elsewhere in the Galveston Bay area, judging by the basic similarities in most primary and secondary design elements) were decorated according to known and accepted procedures. A few basic primary design elements were recurrently employed, and these were combined with secondary elements in a redundant, patterned way. Of the 177 decorated vessels represented for analysis, 165, or 93% bore one of only six recurrent primary design elements (scalloped lip, nicked lip, single sublip horizontal line, multiple sublip horizontal lines, vertical sublip lines, cross-hatched sublip horizontal lines). Each of the primary elements occurs on enough vessels, and shows sufficient similarity to other examples of the same element, to be regarded as a culturally informed stylistic expression.

The presence or absence of recurrent secondary elements which tend to correlate with specific primary elements is also largely patterned, again suggesting culturally informed decision making. Pendant triangles most commonly occur as a border element with horizontal incised lines, but never with the sublip primary elements of vertical incising or oblique cross-hatching. In the few instances when pendant triangles occur as primary elements, the potter appears to have used the actual rim of the vessel as the horizontal element from which the triangles "hang". Punctuations and short vertical incisions, though uncommon as secondary elements, appear to correlate almost entirely with horizontal lines, and do not appear in association with vertical lines or sub-lip cross-hatching as the primary element. Horizontal incised lines appear as secondary border elements with vertical incised lines and sublip cross-hatching, and horizontal incised wavy lines or zig-zags are occasionally combined with vertical incised lines. While lip modification appears as a secondary element in association with the three common kinds of primary sublip decoration (horizontal lines, vertical lines, cross-hatching), it is used with proportionately greater frequency

with the vertical lines and cross-hatching than with horizontal lines. Of the 58 vessels bearing the primary element of horizontal lines for which the presence/absence of secondary elements could be determined, only 9, or 15.5% had modified lips. Combining the 26 vessels with the sublip primary elements of vertical incising and cross-hatching, 10 or 38% bore lip modification, usually as short incised lines.

The use of design elements involved, then, decisions made by the potter according to largely pre-established notions as to what constituted meaningful, or at least acceptable, patterning; the decoration of ceramic vessels was not executed with random choice of designs. Some apparently unusual design elements or combinations thereof have occasionally been reported from the Galveston Bay area (e.g. Howard 1990, Figure 58, b, Figure 59, a; see also vessel base showing groups of parallel vertical incised lines, Figure 7.19, a, herein). These are, however, relatively rare, and perhaps represent individual experimentations which were departures from established norms. The important point in terms of the stylistic dimension of the regional ceramics is, in any case, that the norms did exist and there must have been a fairly strong sociocultural imperative to follow them. Choice was, for the most part, restricted to a rather limited number of stylistic options involving the use of a fairly small number of primary and secondary design elements.

The underlying social patterns/mechanisms which led a given potter, in a given instance, to choose one of the several design options cannot be determined at the present time. Nor can we determine to what degree "popularity" of a given stylistic theme may have changed through time. The only sherd samples from Mitchell Ridge for which there is some degree of chronological control come from the Block Excavation and Feature 9, investigated in our 1992 work. The 47 decorated vessels from the Block Excavation represent all of the decorative themes identified here, in about the same proportions present in the aggregate sample of 177 pots from the entire site (see Table 7.7). Since, as discussed at length earlier, the Block Excavation represents a mainly Final Late Prehistoric occupation dating between the end of the thirteenth and the early part of the fifteenth centuries, the sample of decorated pots from that area is to some degree representative of the period. However, since we have no other dated sample from the same period, just how fully representative the limited sample might be is open to question. Feature 9 is radiocarbon dated to between the late fifteenth and early seventeenth centuries, but the total number of vessels ($N = 38$) and the decorated vessel sample ($N = 4$) are both too small for any reliable interpretation of possible changes in styles.

Future research should, then, incorporate investigation of the systematics of aboriginal ceramic decoration, by expanding the present analytical approach to pottery designs to other sites (or by developing a better approach). Spatial and temporal distinctions in the kinds of designs, or at least in the proportional representation of the designs in adequate samples, will be required in order to determine to what degree styles may have correlated with social distinctions (and possible resultant synchronic, spatial patterning in distributions of different design elements, either at the scale of the site or the region), or long-term changes in preferences, or both. For the time being, we must rely on Aten's suggestion of a general increasing elaboration of ceramic designs through time; according to Aten (1983a:218), there are general trends toward (a) a greater number of incised lines in what is here referred to as the primary design element of sublip horizontal incising, (b) increasing use of what we are terming secondary design motifs, and (c) the addition of sublip cross-hatching and vertical incising as primary elements relatively late in the ceramic sequence (Aten's Old River into Orcoquisac Periods). Most of the incised designs at Mitchell Ridge-- multiple sublip horizontal lines, vertical sublip incising and sublip cross-hatching-- have counterparts in the relatively more elaborate designs which Aten illustrates for the latter part of his ceramic sequence, which is in keeping with the clustering of our radiocarbon dates in the Late Prehistoric, Protohistoric and Early Historic Periods (with, as defined in Chapter 3, a combined temporal range from ca A.D. 700-1800).

Despite the present limitations in our knowledge of stylistic variation in the upper Texas coast region, it is possible to make some broad observations which probably have some sociocultural significance, albeit at a very general level. A striking fact concerning the decorative expression on the Mitchell Ridge pottery (and, by extension upper coast pottery in general) are the basic similarity in all major decorative themes to those of the Coles Creek-Plaquemine ceramic tradition of the Lower Mississippi Valley (LMV) and adjacent coastal Louisiana. All of the common primary elements at Mitchell Ridge, as well as most of the combinations of primary and secondary elements, have parallels in the LMV assemblage, as is represented using actual sherds in Figure 7.24 (in which the LMV/coastal Louisiana specimens are adapted from Phillips 1970 and Weinstein and Kelley 1992).

All of the Mitchell Ridge vessels with horizontal incising as the primary design element have direct

counterparts in Coles Creek Incised (see Phillips 1970), an LMV type which extends into south-central Louisiana (Brown 1984; Weinstein and Kelley 1992) and has close parallels as far west as the Pierre Clement Site in Cameron Parish, Louisiana, not far from the Texas state line (Springer 1973). The Mitchell Ridge material is not "classic" Coles Creek Incised (i.e., Coles Creek Incised, variety Coles Creek), since the vessels do not show the range of shapes found in LMV Coles Creek Incised, and the parallel incisions on Mitchell Ridge pottery do not exhibit the "overhang" effect seen on classic Coles Creek Incised, which is attributed to the use of a flat-ended tool held at oblique angle to the vessel wall (Phillips 1970:70). The Mitchell Ridge examples do, however, very closely resemble Coles Creek, *var.* Hardy in both overall appearance and in execution of the horizontal incisions. Further, the use of horizontal rows of punctations or short vertical incisions to bound the horizontal incised lines is commonly found in Coles Creek Incised, *var.* Hardy (see Phillips 1970:73, 196; Weinstein and Kelley 1992, Figures 7.14, 7.17). On the other hand, the pendant triangles on the Mitchell Ridge specimens are strongly reminiscent of prominent triangular punctations found below the horizontal incisions on Coles Creek Incised, *varieties* Coles Creek and Mott. Finally, the single example from Mitchell Ridge with one horizontal incised line about 2 cm below the rim (from the Block Excavation) closely resembles certain specimens of Coles Creek Incised, *var.* Stoner (Phillips 1970:199).

Also very closely reminiscent of LMV and south-central Louisiana materials are the vessels from Mitchell Ridge (and other upper coast sites; e.g. Aten 1983, Figure 12.2; Black 1989) with oblique cross-hatching as the primary design element. In fact, the specimens from Mitchell Ridge are virtually indistinguishable from examples of the Harrison Bayou Incised type reported from the LMV area and south-central Louisiana (compare Figures 7.17. a, and 7.23, a, herein, with Phillips 1970:205; Gibson 1991, Figure 12). Since both the decorative elements and decorative techniques of the Mitchell Ridge specimens are the same as Harrison Bayou Incised, there is no reason not to regard them as examples of the type (other than the established habit of calling virtually all upper coast incised sherds either Goose Creek Incised or San Jacinto Incised). Also supporting the use of a single typological designation is the apparently continuous distribution from the LMV area through south-central Louisiana into southwest Louisiana (R. A. Weinstein, pers. comm. 1993) and the Sabine River basin of the Louisiana-Texas state line (Aten and Bollich 1969).

The primary design element of sublip vertical incising has perhaps a somewhat less direct analog in the LMV-south Louisiana area. It does resemble the type Mazique Incised, though this type is usually characterized by parallel oblique or opposed oblique, rather than parallel vertical sublip incising (Phillips 1970). On the other hand, some sherds from south-central Louisiana with parallel vertical incising have been classified as Mazique Incised (Weinstein and Kelley 1992, Fig. 6-45), and there may well be a genetic relationship between the Mitchell Ridge stylistic expression and Mazique Incised.

The vessels with modified lips as the primary decorative element also have similarities in LMV materials (e.g. Phillips 1970:188). It is not possible to point to correlations with specific types, however, because lip decoration has not been treated as sufficiently significant in LMV studies for designation of separate types. Vessels with lip modification as the sole decoration are not particularly common in the LMV assemblage, whereas they constitute 34% of the decorated pots from Mitchell Ridge. Conclusions concerning any extraregional genetic relationships are not possible, though the upper Texas coast material could have had inspiration from the east with subsequent intraregional development as a popular stylistic expression.

Additionally, two anomalous sherds from Mitchell Ridge have close counterparts in LMV ceramics. A grog tempered rimsherd with engraved cross-hatching bounded by a horizontal engraved line (Figure 7.19, b) closely resembles the Maddox Engraved, a type found in the LMV and Caddoan areas (Phillips 1970:107-108; Suhm and Jelks 1962:99). Another rimsherd (Figure 7.19, c) bears rows of stamped circular punctations strongly reminiscent of decoration on certain LMV types (e.g. Evansville Punctate; see Phillips 1970:202).

It is interesting and perhaps culturally significant to note that southward along the coast the most common lip modification at Mitchell Ridge, scalloping, appears to give way to crenelation, a form of lip modification represented by only a single vessel at Mitchell Ridge. Crenelation is distinguished from scalloping and nicking by relatively deep, square notches which are spaced around the lip so as to create intervening, squared lip segments about the same width as the notches (usually about 3-4 mm). Crenelation is a recurrent decorative theme from the area of the Brazos River delta southward to the Corpus Christi Bay area. It occurs at the Dow Cleaver Site (41B)35) on the lower Brazos River (J.

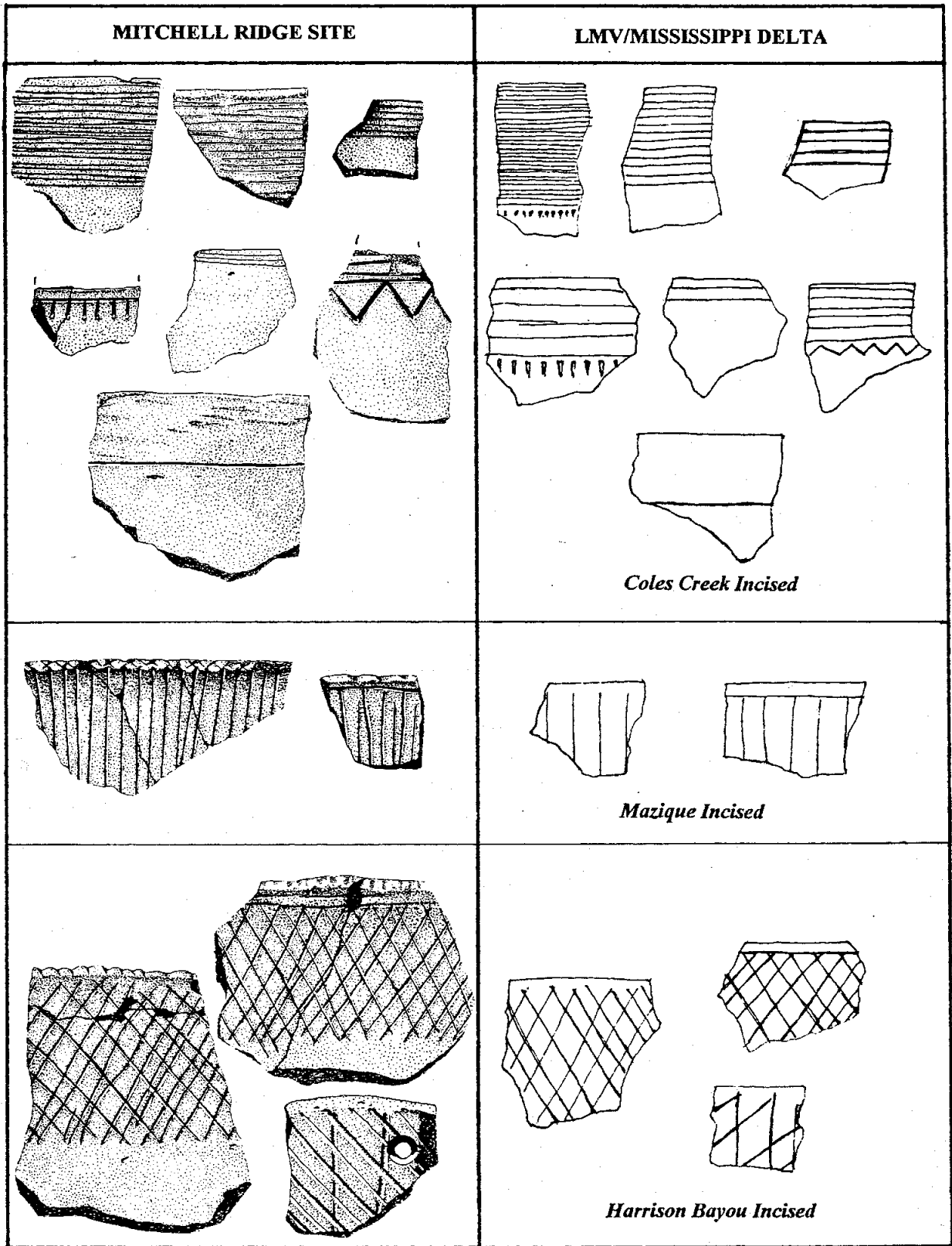


Figure 7.24. Chart showing similarities in decoration between Mitchell Ridge sherds and sherds from the Lower Mississippi Valley (from Phillips 1970) and Southern Louisiana (from Weinstein and Kelly 1992).

Polland, pers. comm. 1985), at the Early Historic Shanklin Site near the lower Colorado River in Wharton County (Hudgins 1984), and at various sites of the Late Prehistoric Rockport Phase such as 41CL2 near the Guadalupe River Delta, the Live Oak Point Site on Copano Bay and Site 41SP120 on Corpus Christi Bay (Ricklis 1990, Appendix A). Crenelation at these sites is usually found as the sole decoration on the pot, suggesting that it is analogous to the use of scalloping as a recurrent primary design element.

It is tempting to infer a broad sociocultural correlation with the largely non-overlapping but virtually contiguous distributions of the two kinds of lip modification. The geographic point along the coast at which crenelation shows up as a recurrent theme, the Brazos River delta, approximates that northern range generally attributed to Karankawan groups (Aten 1983a; Newcomb 1983). The design elements of crenelation and scalloping may thus represent stylistic information flow within linguistically and socioculturally defined bounds representing, respectively, Karankawans of the Brazos delta area and the central Texas coast, and Akokisa Atakapan speakers of the Galveston Bay area.

Typology of the Mitchell Ridge Pottery

As repeatedly noted above, the existing typology for upper coast ceramics is based primarily on the attribute of temper and secondarily on presence/absence of decoration, and thus is inherently limited for examining the spatial and temporal patterns of stylistic variability within the regional ceramic tradition. Nonetheless, the Mitchell Ridge sherd groups (vessels from various excavation areas (the 1970s C. C. Area, and the 1992 Block, Feature 9 and Bayou Lots) are presented according to types in Table 7.8 for the sake of providing data which are comparable to those presented for ceramic samples from other reported sites in the region.

The types listed in Table 7.8 are, however, somewhat modified from the type/varieties generally presented for the upper coast and formalized by Aten (1979, 1983a). Goose Creek Plain and Baytown Plain are unchanged, representing, respectively, undecorated sandy paste and grog tempered pottery. The Goose Creek Incised and San Jacinto Incised types are also largely unchanged, though it should be noted that these types contain the patterned variability in primary and secondary decorative elements noted above. For reasons already presented, sherds with sublip incised diagonal cross-hatching are classified here as Harrison Bayou Incised, as distinct from the Goose Creek or San Jacinto Incised types into which they have generally been placed. The Goose Creek Red Filmed type, rare at Mitchell Ridge, is unchanged from the type described by Aten, consisting of sandy paste vessels onto which a red clay wash has been applied. It should be noted that the vessels here classed as Baytown Plain, following Aten (1983a), would as a group represent San Jacinto Plain as recently defined by Weinstein (1991:104), since virtually all contain sand as well as intentionally added grog; Weinstein has introduced the type San Jacinto Plain, *variety San Jacinto* to distinguish most upper Texas coast grog-tempered, undecorated pottery from the silty paste, grog-tempered pottery defined as Baytown Plain in the Lower Mississippi Valley region.

On the basis of the redundant occurrence of vessels on which various kinds of lip modification are the primary decorative element, two new types are provisionally defined, since it is believed that the assignment of such vessels to either the Goose Creek Plain or San Jacinto Plain types (according to the presence/absence of grog tempering in otherwise sandy paste pottery) masks the stylistic nature of these vessels. Goose Creek Modified Lip includes sandy paste pots with lip modification, and is subdivided into three varieties-- Scalloped, Nicked, Incised-- depending on the technique by which the lip modification was executed. Grog tempered vessels with lip modification as the primary design element are designated San Jacinto Modified Lip, in accord with the established tradition of designating decorated grog tempered sherds "San Jacinto". The same varieties are applicable.

A glance at the data in Figure 7.8 shows that the various Goose Creek, Baytown and San Jacinto types account for the great majority of the vessels at Mitchell Ridge (421 of a total of 449, or 93.7%). The relatively few residual vessels, pertaining to the Harrison Bayou Incised, Maddox Engraved(?) and Rockport Black-on-Gray types, and a few examples of bone tempered ware, comprise the balance of the sample.

Tempering and Chronology at Mitchell Ridge

The types listed in Table 7.8 express the proportions of sandy paste, grog tempered and bone tempered pots from the four pertinent excavation areas. These proportions are presented graphically in

Table 7.8. Pottery types, by Excavation Area, Mitchell Ridge Site. Numbers refer to vessel counts.

TYPES	BLOCK	FEA. 9	BAYOU LOTS	C. C. AREA	TOTALS
Sandy Paste (Goose Creek series)					
Goose Creek Plain	121	19	9	55	204
Goose Creek Modified Lip					
var. Scalloped	8	1	1	13	23
var. Nicked	3	1		2	6
var. Incised	2			1	3
Goose Creek Incised	8	2	2	11	23
Goose Creek Red Filmed	2		1		3
Grog Tempered					
Baytown Plain*	62	9	2	39	112
San Jacinto Modified Lip					
var. Scalloped	6	1	1	4	12
var. Nicked				1	1
var. Incised				1	1
San Jacinto Incised	13	2	2	16	33
Others					
Harrison Bayou Incised	3				3
Maddox Engraved	1				1
Rockport Black-on-Gray	3				3
Bone Tempered					
Plain	11	3		4	18
Incised	3			1	4
TOTALS	246	38	19	148	450

* As defined by Aten (1983a); however, virtually all Baytown Plain sherds at Mitchell Ridge contain sand in addition to grog, and thus also conform to Weinstein's (1991:104) more recent definition of San Jacinto Plain, variety *San Jacinto*.

Figure 7.25. It will be seen that sandy paste pots predominate in all areas, comprising between 59% and 72% of the vessels. Grog tempered vessels are of secondary abundance, making up between 28% and 41% of the vessel total. Bone tempered pots are the least abundant, comprising less than 10% in all areas, and are absent altogether from the Bayou Lots.

In his ceramic seriation for the Galveston Bay area, Aten (1983a, Figure 14.1) indicates that grog tempering appears ca. A.D. 1000 and peaks around A.D. 1400, at which time it represents about 90% of the vessels. Grog tempering then declines in popularity to the point of near non-existence by ca. A.D. 1700. The chronological placements of the ceramic samples from the Block excavation and Feature 9, both of which are radiocarbon dated, do not conform well to expectations based on Aten's seriation. According to the seriation, the pottery from the Block Excavation should consist overwhelmingly of grog tempered

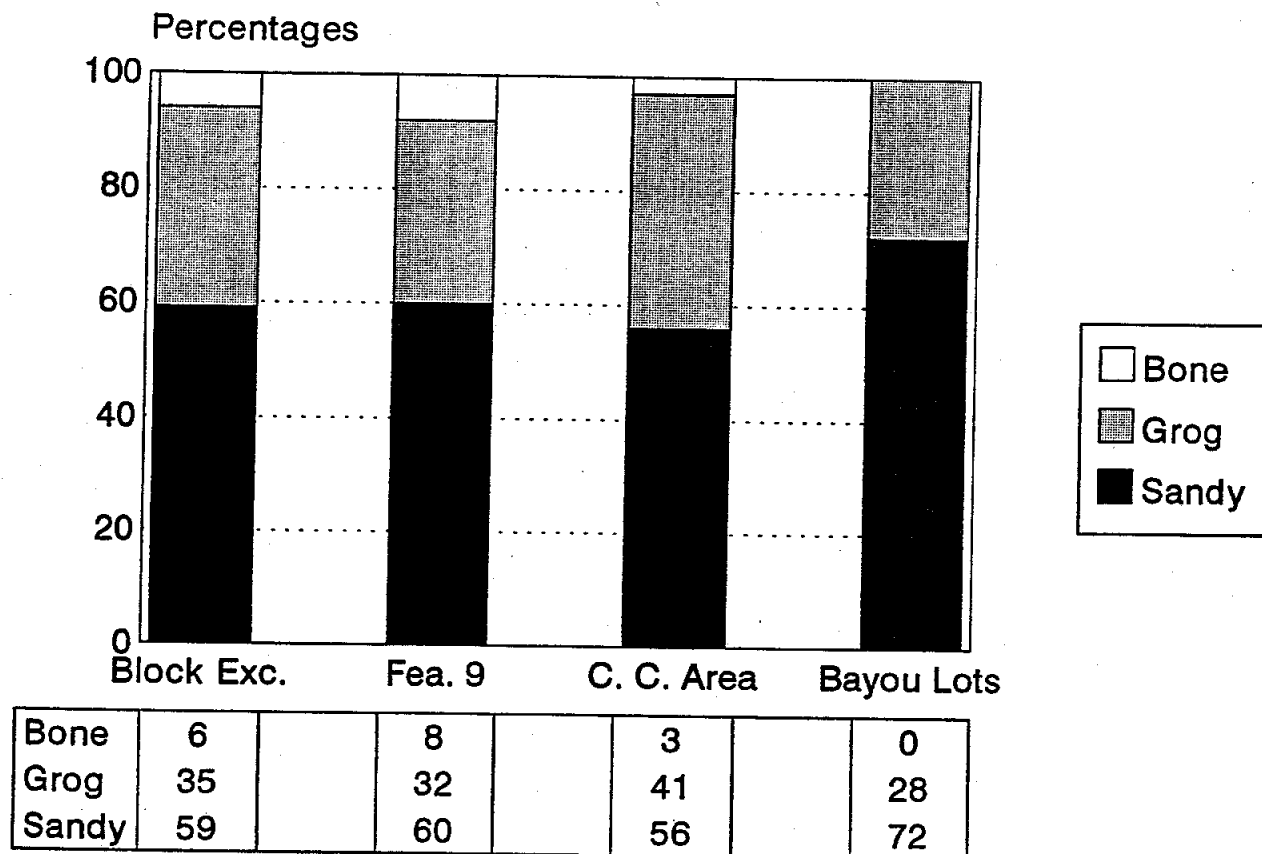


Figure 7.25. Bar graphs showing percentages of vessels with sandy paste, grog temper and bone temper from four excavation areas, Mitchell Ridge Site.

pots, since four radiocarbon assays on features in that area place occupation in the fourteenth century, give or take a bit. Feature 9, basically dating to the sixteenth century, should have a markedly lower proportion of grog tempered pots, but this is in fact not the case; the proportions of grog tempered vs. sandy paste vessels are almost identical in the two samples. It might be argued that the ceramic sample from the Block is a mix of pottery from different time periods, with some of the pots having been made earlier or later than the radiocarbon-dated features. However, given the fact that the time-diagnostic lithic sample is clearly dominated by Perdiz arrowpoints, it seems reasonable to infer, as already noted earlier, that the great bulk of the artifactual debris can be attributed to the Final Late Prehistoric Period indicated by the radiocarbon assays.

The presence of bone tempered pottery does approximately conform to expectations derived from Aten's seriation: Most of his samples with bone tempered pottery are placed at ca. A.D. 1400 or later. In terms of relative chronology, then, the presence of bone tempered pottery at Mitchell Ridge is generally in accord with Aten's suggestion that it appears largely in the late part of the ceramic sequence. The complete absence of bone tempering from the Bayou Lots may indicate that part of the site saw more relatively early occupation than the other areas represented in Figure 7.24, a possibility which would accord with the greater proportion of sandy paste pots as opposed to grog tempered vessels. However, the sample of vessels from the Bayou Lots is probably too small (N=19) for anything beyond mere speculation. Given the tempering data from the Block Excavation and Feature 9, along with the questionable absolute chronological precision of Aten's seriation discussed in Chapter 3, it seems advisable that additional research should be carried out before sites are assigned to tightly defined temporal slots

on the basis of the percentages of vessels with different tempering agents. Large ceramic samples from securely dated contexts will be needed to further test and refine the use of ceramic temper as a tool for the fine-tuning of chronology.