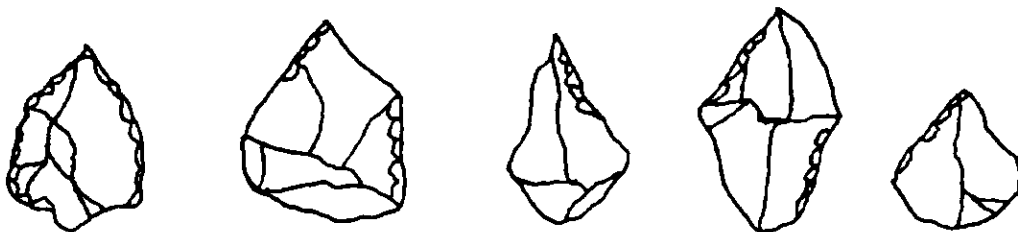




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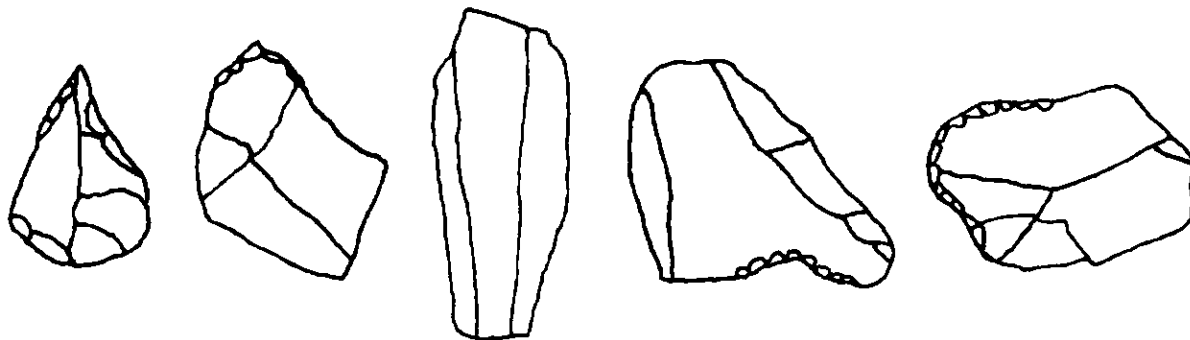
August 1995



Unifacial Arrow Points

and

Other Lithic Tools from Site 41HR5



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Additional Data for 41HR5, Harris Co., Texas

Leland W. Patterson

Introduction

The first detailed archeological investigation for the inland subregion of Southeast Texas was done by Wheat (1953), when several prehistoric sites were excavated on the west side of Houston in Harris County, Texas. One of the excavated sites (Doering, 41HR5) has a very long occupation sequence, with artifact types typical of other sites in this general area that have long occupation sequences, such as 41HR315 (Patterson 1980a), 41HR206 (Patterson 1980b), and 41HR182 (Patterson 1985, 1990a). This paper gives a reinterpretation of site 41HR5, based on the current understanding of projectile point and ceramic sequences for inland Southeast Texas. Additional data from a surface collection at this site are also presented.

Aten (1983:10) dismissed Wheat's (1953) work as not contributing much to the establishment of a chronological sequence for Southeast Texas. Comments by Aten, however, were made mainly in the context of the coastal margin subregion of Southeast Texas. The chronology of sites on the coastal margin is generally limited to after 1500 B.C., when sea level stabilized, while the inland subregion has many sites with occupation sequences starting at 9000-8000 B.C. Also, inland sites have different patterns of artifact types than coastal margin sites, even for the same time periods (Patterson 1983).

Site 41HR5 has an occupation sequence from the Late Paleo-Indian period (8000-5000 B.C.) through the Late Prehistoric period (A.D. 600-1500). All intermediate time periods are represented. There are also indications that the Early Paleo-Indian period may be represented here. Even though much more is now known about the archeology of inland Southeast Texas (Patterson 1995), data from site 41HR5 still remain important. Interpretations by Wheat (1953) can be further refined to show that this site fits well into current interpretations of the archeology of inland Southeast Texas.

Projectile point chronologies

A complete classification scheme for Texas projectile point types was not available at the time of Wheat's (1953) work. Therefore, Wheat used many provisional projectile point type categories. Wheat did illustrate and describe each projectile point type, however. It is now possible to fit data from site 41HR5 into the current classification system for Texas projectile point types (Suhm and Jelks 1962; Turner and Hester 1993), and the current chronological interpretation of projectile point types in Southeast Texas (Patterson 1991a,b).

Establishment of a projectile point sequence for 41HR5 is complicated by some obvious stratigraphic mixing. This may be a situation similar to that at site 41HR315 (Patterson 1980a), where stratigraphic mixing occurred on the sloping area of the site, but not on the level area. Mixing by bioturbation is also possible. There are two indications of stratigraphic mixing at 41HR5. One indication is that some projectile point specimens do not fit the chronological classifications of various stratigraphic intervals that can be made with current information. The other indication is that a few potsherds occur at every excavation level below 60 cm (Wheat 1953: Table 1), in normally preceramic context. Even with some stratigraphic mixing, it is still possible to assign each excavation level to a specific time period, because the majority of projectile point specimens do fit into the expected chronological sequence. It should be noted that some projectile point specimens that appear to be too late in the stratigraphic sequence may be curated items found by later Indians.

The distribution of projectile points at 41HR5 by type and excavation level is shown in Tables 1 and 2. These tables compare Wheat's classification of projectile point types with current typological designations. A time period is assigned to each excavation depth interval. In this present interpretation, all excavation levels below 60 cm are considered to be preceramic, as discussed further in the section on ceramics. Excavation levels of 0-30 cm are considered to be Late Prehistoric (A.D. 600-1500), and excavation levels of 30-60 cm are considered to be Early Ceramic (A.D. 100-600). The Late Prehistoric period at 41HR5 has concurrent use of dart points and standardized bifacial arrow point types, as is common for the inland subregion of Southeast Texas (Aten 1983:306; Patterson 1980a). Three Perdiz arrow points at excavation levels below 30 cm are probably displaced. The Early Ceramic period is characterized by dart points and ceramics, but no bifacial arrow points.

Several dart point types occur in both the Early Ceramic and Late Archaic (1500 B.C.-A.D. 100) periods in Southeast Texas (Patterson 1990b). At site 41HR5, these types include Gary, Kent, Ellis, and Palmillas. Two Ensor points in Late Prehistoric strata may have been displaced from Early Ceramic levels. Gary and Kent points were used from the Middle Archaic (3000-1500 B.C.) through the Late Prehistoric periods, and cannot be used as precise time markers. Pedernales points were used in both the Middle and Late Archaic periods in Southeast Texas. There are two Pedernales points at 41HR5, one of which appears to be displaced to the Early Ceramic level.

Projectile points from the Middle Archaic (3000-1500 B.C.) at 41HR5 include Williams, Pedernales, Bulverde, and some of the Wells/Carrollton mix (Wheat type 12). Wells and Carrollton points are also found in the Early Archaic period (5000-3000 B.C.) at sites in Southeast Texas, including this site. In this region, Early Stemmed points occur in both the Early Archaic and Late Paleo-Indian (8000-5000 B.C.) periods.

As shown in Table 2, there is dual classification of some point types above and below the boundary of the Middle and Early Archaic periods. This was done because Wheat may have combined some early and later point types in his classifications. For example, Early Stemmed and Early Notched point types had not been established at the time of Wheat's work. At least some Early Stemmed point specimens may have been placed in the Gary-Kent category. Even without the reinterpretation of point types made here, the long occupation sequence of site 41HR5 is apparent, with Late Prehistoric arrow points at the highest excavation levels, and Scottsbluff and Clovis points near the bottom, indicating the Paleo-Indian period. The Scottsbluff point type is from the Late Paleo-Indian period (8000-5000 B.C.), and the Clovis point type is from the Early Paleo-Indian period (10000-8000 B.C.).

Ceramics

Wheat (1953) classified all pottery from 41HR5 as Goose Creek Plain or Goose Creek Incised, based on the sandy paste. However, Wheat (1953:184) describes some Goose Creek Plain specimens as having large amounts of coarse sand. This may indicate the presence of some O'Neal Plain, variety Conway pottery, which Aten (1983:238) places in the Early Ceramic period in the Galveston Bay area. Based on the block excavation (stratitest) at 41HR5, I have placed the start of the Early Ceramic period at this site above 60 cm, rather than Wheat's (1953: Figure 23) placement of the start of the Early Ceramic period above the 75 cm excavation level.

Bifacial knives

Wheat's (1953) classification of various bifacial specimens as knives appears to be a mixture of knives, dart point preforms, and large dart points. Bifacial knives are not common at sites in Southeast Texas, but do tend to be slightly more common in the Late Prehistoric; this may indicate

the increased presence of bison. Wheat's (1953: Plate 40) bifacial knife type 1d appears to be dart points reworked for use either as knives or scrapers.

Additional data

After Wheat's work at 41HR5 in the early 1950s, the remaining portion of the site was severely disturbed by many years of pothunting. A number of years ago, it was possible to make a surface collection of artifacts from pothunters' backdirt. Data from surface collections can be used to supplement data from excavations at a site, such as was done at Location A of site 41WH19 (Patterson et al. 1987). The surface collection from 41HR5 is useful for providing additional details on lithic and ceramic technologies.

Additional projectile points

There are 2 Kent points, 1 Gary point, and 1 Gary preform in the surface collection (Figure 1). One of the Kent points has a tip impact fracture. This is no surprise, because dart points of the Gary-Kent series are the most common point types from excavations at 41HR5. Six unifacial arrow points were also found (Figure 1). Unifacial arrow points start much earlier than bifacial arrow points in Southeast Texas, such as at site 41HR315 (Patterson 1980). One unifacial arrow point (Figure 1G) has impact damage on the tip. Five unclassified dart point fragments and one preform fragment were also found.

Additional ceramics

The surface collection from 41HR5 contains 92 Goose Creek Plain and 2 Goose Creek Incised sherds. One incised sherd has a single incised line, and the other has two parallel lines. The presence of O'Neal Plain, variety Conway pottery at this site is confirmed by 10 surface collection sherds of this type, which is characterized by coarse sand temper. One Goose Creek Plain sherd has a drilled lace hole.

Fired clayballs

The surface collection has 31 fired clayballs with diameters of 15-45 mm, and 8 rounded caliche pieces with diameters of 25-50 mm. These items were probably used for cooking, as has been concluded for some other sites of inland Southeast Texas (Patterson 1989). This type of artifact is suitable as a heating element in earth ovens to retain heat (Hudgins 1993).

Unifacial stone tools

Formal types of unifacial tools in the surface collection include 10 graters, 7 perforators, 2 scrapers, 3 notched tools, and 5 denticulates. Some unifacial tool specimens are shown in Figures 1 and 2. In addition, the surface collection contains 33 utilized flakes with cutting and/or scraping edge wear. In Southeast Texas, utilized flakes are generally more common than formal unifacial tool types. Flakes used as expedient tools were often casually selected from bifacial thinning debitage. Unifacial tool types listed in the original site report (Wheat 1953: Table 6) include scrapers, graters, and perforators (some of which are bifacial).

Prismatic blade industry

There was an industry for the manufacture of small prismatic blades at 41HR5, similar to that at several other sites in this general area. Prismatic blades at this site were not detected by Wheat because it was not customary to analyze lithic flake collections at the time that work was done. The surface collection contains 84 small prismatic blades, with a range of widths of 7-16 mm, as shown in Table 3. The distribution of blade widths at site 41HR5 is similar to blade width distributions at other sites in this area, such as 41HR315 (Patterson 1980a), 41HR206 (Patterson 1980b), and 41HR182 (Patterson 1985). Typical small prismatic blades from the surface collection are shown in Figure 2. Prismatic blades are 4.9% of the total flake collection. Some blades have some retouch and edge wear patterns from use for graving (1), cutting and scraping (1), cutting (2), scraping (2), and perforating (1). One blade has been retouched as a denticulate. One blade has distal end impact damage that may represent use as an arrow point. Excavations at site 41HR315 (Patterson 1980a) show that small prismatic blades start about the later part of the Middle Archaic period in Southeast Texas (roughly at 2000 B.C.), and continue through the Late Prehistoric period.

One polyhedral blade core (Figure 2I) and 23 blade core trim flakes (Figure 2G,H) were found. Blade core trim flakes may represent the conversion of blade cores to flake cores to make further use of the lithic raw material.

General lithics

At the time that the original report on 41HR5 was done (Wheat 1953), it was not customary to study lithic flakes and cores, which indicate lithic manufacturing activities at a site. Aside from prismatic blades, there are 1619 chert flakes in the surface collection. Flake size distribution is shown in Table 4 and Figure 3. Bifacial reduction of flake blanks tends to give a straight line for flake size distribution, when data are plotted with a logarithmic scale for percent of flakes and a linear scale for flake size (Patterson 1990c). The flake size distribution for 41HR5 is roughly linear except for the 35-40 mm square flake size range. This probably indicates that much bifacial reduction of flake blanks was being done to make dart points, but that small non-linear irregularities in the curve shape result from less frequent use of other types of lithic reduction, such as the production of flakes from small miscellaneous cores made from small chert cobbles. Ten miscellaneous cores with diameters of 30 to 70 mm were found during surface collecting at this site.

Other items in the surface collection that indicate lithic manufacturing activities include 5 limestone hammerstones with diameters of 50 to 75 mm, 6 quartzite hammerstones with diameters of 30 to 50 mm, 7 quartzite hammerstone fragments, 21 thick chert pieces, and 1 thick piece of petrified wood. Eighteen small chert cobbles with diameters of 30 to 50 mm were probably brought to the site from a local (25 miles) Brazos River source, because this is typical of chert cobble sizes from this location. The large sizes (over 60 mm lengths) of many lithic artifacts in Wheat's (1953) report for 41HR5 indicate that chert was also being obtained from a more distant (50 miles) Colorado River source, where chert cobbles well over 100 mm in length can be found.

Many chert flakes from 41HR5 show evidence of heat treatment in the form of waxy luster, potlid surface fractures, and reddish coloration. Heat treatment of chert was done to improve knapping properties; in particular, it decreased the tensile strength of the material. Twenty-nine pieces of burnt rock (chert) found here may indicate that heat treatment of chert was being done at this site.

Other artifacts

Six sandstone abraders with very worn surfaces were found, having diameters of 20-45 mm. Wheat (1953:227) recovered some sandstone abraders in the excavations at this site. Wheat (1953:228) recovered several pieces of red ochre, and the surface collection has one piece. Red ochre may have been used in powdered form for body ornamentation. A flat piece of hematite (Figure 2) with incised lines on one side was found during surface collecting; it is similar to a specimen from the excavations (Wheat 1953: Plate 46a). The surface collection has one small shell bead (Figure 2N).

Conclusions

A reexamination of projectile points from excavations at 41HR5, using current typologies, shows that this site has projectile point types typical of other sites in this area that have long occupation sequences, such as 41HR182 (Patterson 1985,1990a), 41HR315 (Patterson 1980a), and 41HR206 (Patterson 1980b). It was not possible for Wheat to establish a complete chronology for site 41HR5 because radiocarbon dating and projectile point typologies and chronologies were not available when this pioneering research was done. Also, it was not possible for Wheat to realize that some stratigraphic mixing had occurred because of a lack of a complete projectile point classification system. In any event, 41HR5 does represent another site in Southeast Texas with a long occupation sequence, from Paleo-Indian through Late Prehistoric time periods, with significant data on various artifact types.

The surface collection from 41HR5 shows details of lithic manufacturing activities that were not noted in earlier excavation work. It appears that most of the stone tools and projectile points found at this site were manufactured at this location. An industry for manufacturing small prismatic blades is also now apparent here. The presence of fired clayballs is another feature of 41HR5 not found in the original excavations.

As Aten (1983:10) has noted, Wheat's (1953) work in Harris County provided the first clear indication of the time depth of the archeological record in Southeast Texas. Later data from other sites show that site 41HR5 and other sites in Wheat's report are typical for the archeology of inland Southeast Texas. Data from the surface collection at 41HR5 illustrate how data from a surface collection can sometimes be used to obtain details of an archeological site that were not found in data from excavations. Additional details on the archeology of site 41HR5 can now be determined, especially because projectile point typologies and lithic analysis methods have been refined since the time of excavations at this site over 40 years ago.

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Table 1. 41HR5 Later Projectile Points

| current typology | Wheat typology | period and excav. depth, cm | | | |
|---------------------|-------------------|-----------------------------|-------|---------------|-------|
| | | Late Prehist. | | Early Ceramic | |
| | | 0-15 | 15-30 | 30-45 | 45-60 |
| Perdiz | Perdiz | 8 | 5 | 1 | 1 |
| Scallorn | Scallorn | 2 | | | |
| Catahoula | Alba Barbed | | 2 | | |
| Scallorn | Eddy Stemmed | 1 | | | |
| Fresno? | Kobs Triangular | | 1 | | |
| Ensor | Type 1 | 1A | 1A | | |
| Gary-Kent | Gary | 6 | 25 | 32 | 48 |
| mixed types | Type 6 | | 2 | 2 | 2 |
| Ellis | Type 7 | | | 1 | |
| Bulverde | Type 8 | | | | 1A |
| Ellis | Type 9 | | 1A | | |
| Palmillas | Type 10 | | | 1 | |
| Williams | Type 11 | | | 1A | |
| Wells/Carrollton | Type 12 | | | | 1A |
| Pedernales | Type 13 | | 1A | | |
| Bulverde | Type 18 | | | | 1A |
| Early Stemmed | Type 21 | | | | 1A |
| unclassified | Type 22 | | | | 1 |
| San Patrice | Type 24 | | | | 1A |
| | potsherds (C) | 7 | 15 | 20 | 12 |

A - displaced

C - block excavation only

Table 3. Prismatic Blade Widths

| width, mm | no. | % |
|-----------|-----|-------|
| 7 | 3 | 3.6 |
| 8 | 7 | 8.3 |
| 9 | 9 | 10.7 |
| 10 | 14 | 16.7 |
| 11 | 17 | 20.2 |
| 12 | 11 | 13.1 |
| 13 | 12 | 14.3 |
| 14 | 4 | 4.8 |
| 15 | 6 | 7.1 |
| 16 | 1 | 1.2 |
| | 84 | 100.0 |

Table 2. 41HR5 Early Projectile Points

| current typology | Wheat typology | period and excav. depth, cm | | | |
|---------------------|-------------------|-----------------------------|-------|-------------------|---------|
| | | Late/Mid. Arch. | | Early Arch./Paleo | |
| | | 60-75 | 75-90 | 90-105 | 105-120 |
| Perdiz | Perdiz | 1 | | | |
| Gary-Kent | Gary | 52 | 30 | | |
| Early Stemmed | Gary | | | 11B | 1B |
| Mixed | Type 6 | | 2 | 5 | |
| Ellis | Type 7 | 1 | 3 | | |
| Early Notched | Type 7 | | | 2B | 2B |
| Bulverde | Type 8 | 3 | 2 | 2A | |
| Ellis | Type 9 | 2 | 2 | | |
| Palmillas | Type 10 | 1 | | | |
| Williams | Type 11 | 1 | 4 | 2A | |
| Wells/Carrollton | Type 12 | 1A | 3 | 1 | 1 |
| Early Notched | Type 14 | | | | 1 |
| Scottsbluff | Type 15 | | | 1 | |
| Bulverde | Type 17 | | 1 | | |
| Bulverde | Type 18 | 1 | 2 | 3A | |
| Early Stemmed | Type 19 | | | 1 | |
| Early Notched | Type 20 | | 1A | 2 | |
| Pedernales | Pedernales | | 1 | | |
| Early Stemmed | Type 21 | | | 1 | |
| unclassified | Type 22 | | 1 | | |
| preform | Type 23 | 2 | 2 | | |
| San Patrice | Type 24 | 1A | | | |
| Clovis | Clovis | | | 1A | |
| | potsherds(C) | 1 | 1 | 3 | 1 |

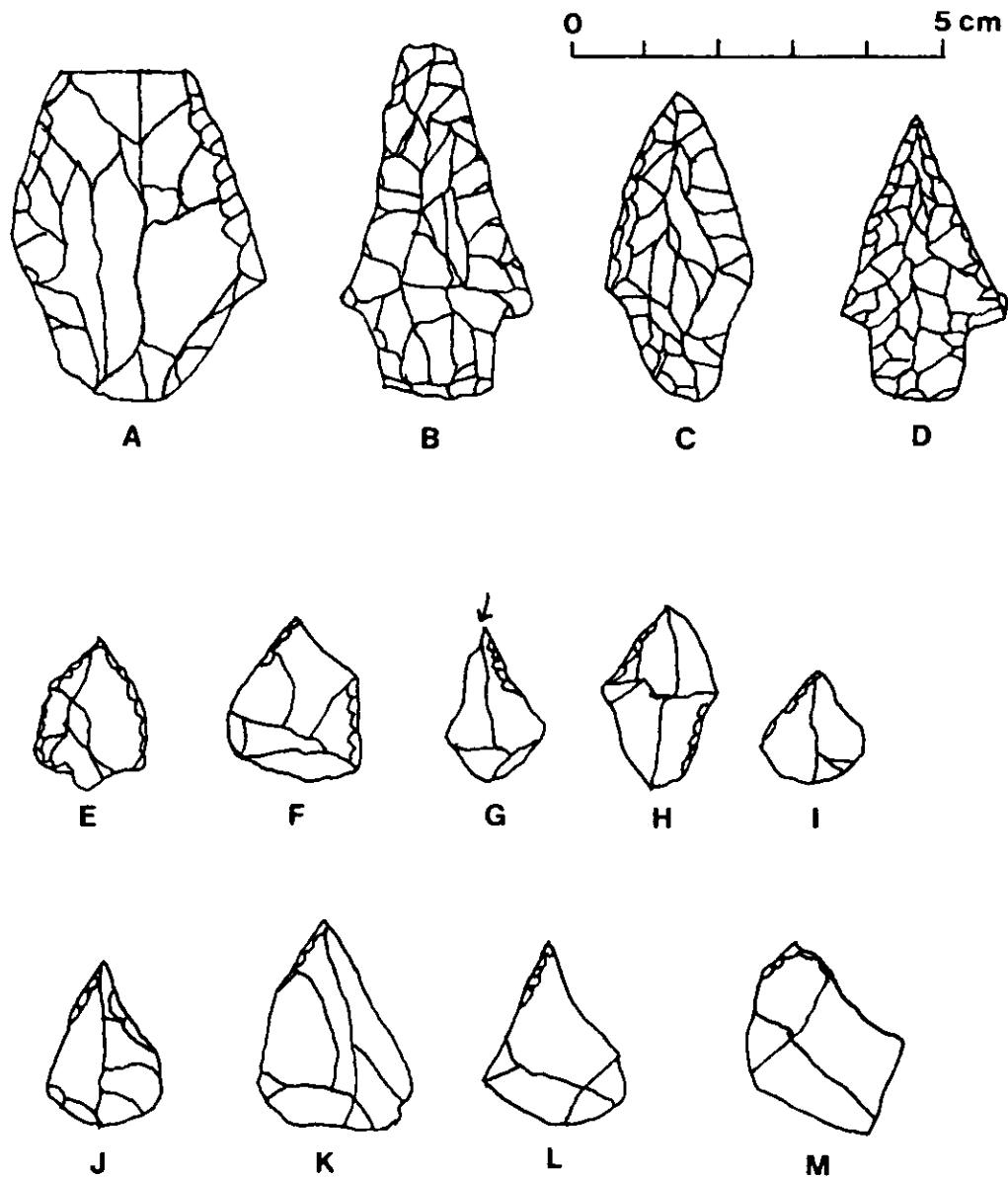
A - displaced

B - reclassified in lower levels

C - block excavation only

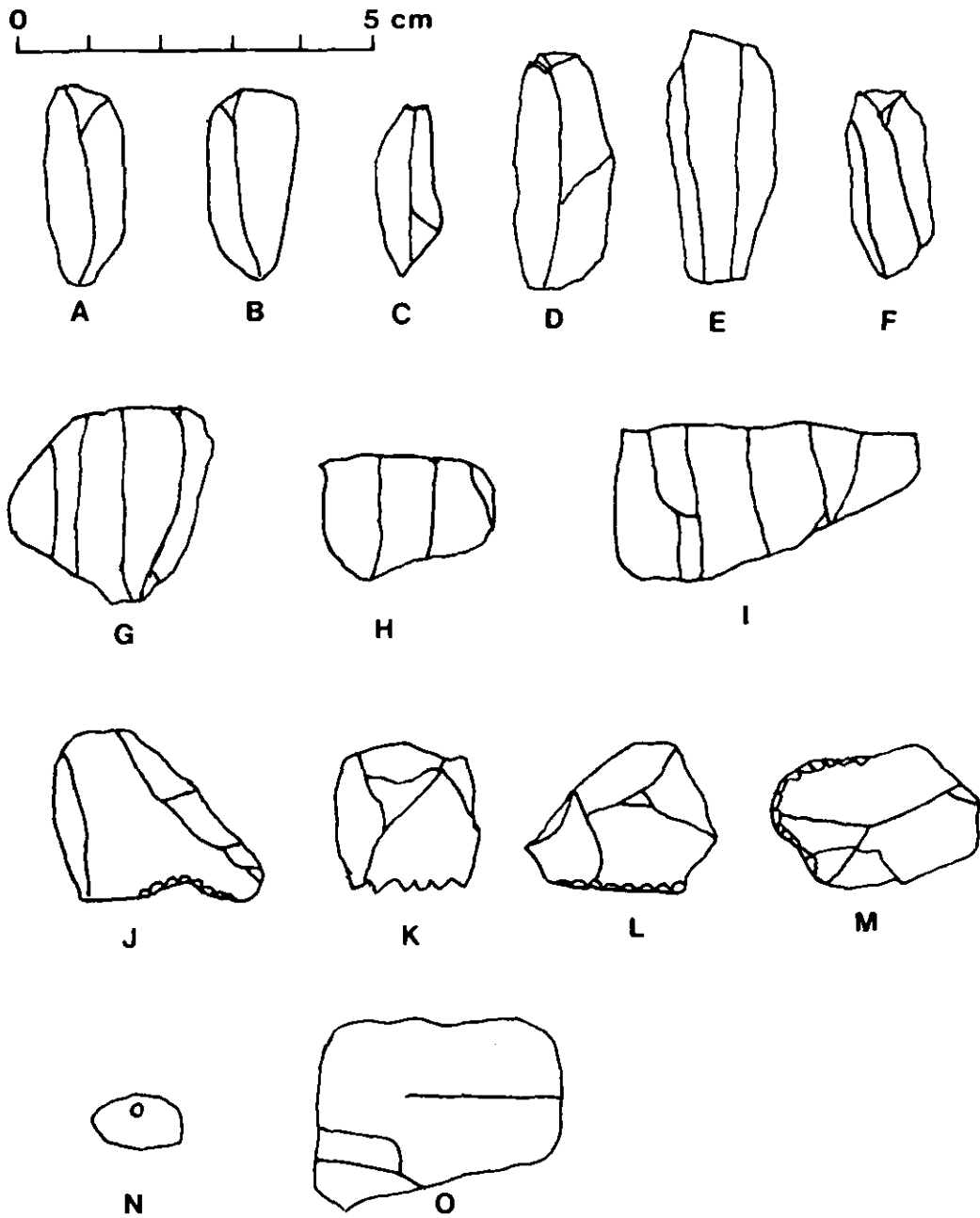
Table 4. Flake Size Distribution

| flake size, mm square | no. | % |
|--------------------------|-------------|--------------|
| under 15 | 874 | 54.0 |
| 15-20 | 407 | 25.1 |
| 20-25 | 236 | 14.6 |
| 25-30 | 67 | 4.1 |
| 30-35 | 32 | 2.0 |
| 35-40 | 3 | 0.2 |
| | <u>1619</u> | <u>100.0</u> |



A - Gary point preform; B - Kent point; C - Gary point; D - Kent point;
 E to J - unifacial arrow points; K,L - perforators; M - graver

Figure 1. Lithic Artifacts



A to F - prismatic blades; G,H - blade core trim flakes; I - blade core;
 J - notched tool; K - denticulate; L,M - scraper edge wear;
 N - shell bead; O - incised iron concretion

Figure 2. Lithic and Shell Artifacts

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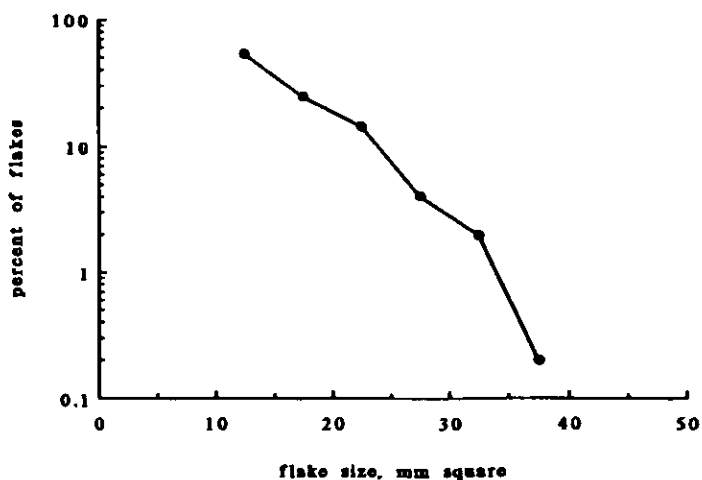


Figure 3. Flake Size Distribution

Classification of Grog-Tempered Pottery in Southeast Texas

Leland W. Patterson

Introduction

Grog-tempered pottery occurs in Southeast Texas during the Late Prehistoric (A.D. 600-1500) and Protohistoric (A.D. 1500-1700) periods, with higher amounts of this pottery type found in the coastal margin subregion than in the inland subregion (Patterson 1990:14). Aten (1983: Figures 14.1,14.2) places grog-tempered pottery in the Galveston Bay area between A.D. 959 and A.D. 1800, which includes the portion of the Historic Indian period between A.D. 1700 and A.D. 1800. Aten (1983) has named two types of grog-tempered pottery without incised patterns: Baytown Plain, variety Phoenix Lake, characterized by large amounts of grog temper, and Baytown Plain, variety San Jacinto, characterized by small amounts of grog temper. Aten (1983) has also named two types of incised grog-tempered pottery: San Jacinto Incised, variety Jamison and San Jacinto Incised, variety Spindletop.

There are two problems with Aten's (1983) classification of grog-tempered pottery. One problem is that classification nomenclature is not consistent. The other problem is that classification criteria have not been developed to differentiate between Baytown Plain, variety Phoenix Lake and Baytown Plain, variety San Jacinto (Aten 1983:241). Both of these problems are addressed in this paper.

It is important to distinguish between the two types of grog-tempered pottery because of differences in geographic distributions and time periods of use. Baytown Plain, variety Phoenix Lake is found only on the coastal margin of Southeast Texas, while Baytown Plain, variety San Jacinto occurs in both inland and coastal margin subregions. The small amounts of grog-tempered pottery found at sites of the inland subregion, compared to larger amounts of grog-tempered pottery at coastal margin sites, might be related to the acquisition of women from the coastal margin by inland bands, rather than settlement incursions into the inland subregion by Indians from the coastal margin (Patterson 1993:16). Baytown Plain, variety Phoenix Lake seems to have been made for a shorter time period than Baytown Plain, variety San Jacinto (Aten 1983:241).

Classification nomenclature

Aten's nomenclature for grog-tempered pottery is not consistent, and is difficult to remember. Baytown Plain, variety Phoenix Lake is defined as having large amounts of grog temper. If this same pottery type is incised, it is called San Jacinto Incised, variety Spindletop. Baytown Plain, variety San Jacinto is defined as having small amounts of grog temper. If this same type is incised, it is called San Jacinto Incised, variety Jamison. Thus, San Jacinto is a subtype name if plain, and a type name if incised, which is not consistent. Also, the name Baytown Plain, variety Phoenix Lake has no relationship to the same pottery type when incised, which becomes San Jacinto Incised, variety Spindletop.

The nomenclature for grog-tempered pottery should be simplified and made more consistent. There is no real need for subtypes in Southeast Texas. I propose that pottery with large amounts of grog temper be called Baytown Plain (with no subtype name), or if incised it can be called Baytown Incised (with no subtype name). Also, I propose that pottery with small amounts of grog temper be called San Jacinto Plain, or San Jacinto Incised, which were the original names for these pottery types anyway (Aten 1983:239,242).

The nomenclature for grog-tempered pottery used by Aten (1983) is an attempt to relate pottery types of Southeast Texas with pottery types of the Lower Mississippi Valley. O'Brien (1995:28) has

warned, however, in regard to pottery types of the Mississippi Valley, that a pottery type should not be used too far away (in time and/or space) from the "center" that produced the modal specimens used by archeologists to construct the type. In any event, my criticism of Aten's nomenclature is based simply on inconsistency of nomenclature.

Analytical criteria

Although Aten named two types of grog-tempered pottery, he did not distinguish between the two types in statistics given for the coastal margin of Southeast Texas, because of lack of sorting criteria (Aten 1983:241). Pottery from shell midden site 41CH290 (Patterson and Ebersole 1992) in Chambers County has been used to study sorting criteria for Baytown and San Jacinto types of grog-tempered pottery. A tabulation of the pottery from this site is shown in Table 1. Sixty specimens previously classified by Patterson as Baytown Plain and 60 specimens previously classified as San Jacinto Plain were selected, to give a total study sample of 120 sherd specimens. In the initial classification of this pottery sample, fresh breaks on sherd edges were examined as well as grog pieces visible on sherd surfaces. Examination of fresh breaks on sherd edges is not sufficient to distinguish between the two types of grog-tempered pottery discussed here, because it is difficult to judge relative quantities of grog temper only from observations of fresh breaks or sherd edges.

Because some sherds classified as Baytown Plain appeared to have large pieces of grog temper, the size of grog pieces was examined as a possible analytical criterion. Grog sizes were measured as maximum dimensions of grog pieces visible on sherd surfaces. A summary of data is shown in Table 2. There is a tendency for Baytown Plain pottery to have somewhat larger grog pieces than San Jacinto Plain, but sizes of grog pieces were not consistent for individual sherd specimens. It is concluded that size of grog pieces is not useful as a sorting criterion for the two pottery types.

The density of grog pieces on the sherd surface was measured for each of 120 specimens. Only one side of each sherd specimen was used. Density of grog pieces is expressed as number of grog pieces per cm^2 of sherd surface. The number of grog pieces visible on a sherd surface is only meaningful if related to surface area. Data for grog density distribution are summarized in Table 3 and Figure 1. It may be seen in Figure 1 that there is a bimodal distribution for the density of grog pieces on the surfaces of sherds, with a breakpoint at 1.5 grog pieces per cm^2 . This fits well with my previous, more subjective classification of San Jacinto Plain and Baytown Plain types. Of the 60 specimens classified as San Jacinto Plain and the 60 specimens classified as Baytown Plain, only 4 specimens were classified differently when a breakpoint of 1.5 grog pieces per cm^2 was used. Two specimens previously classified as Baytown Plain and two previously classified as San Jacinto Plain would now be given opposite classification using surface density of grog pieces.

As a practical matter for sorting large collections of sherds, it appears that subjective observation of "many" versus "few" grog pieces visible on a sherd surface can be a fairly good analytical criterion without precise measurement of the density of grog pieces on sherd surfaces. This is true, however, only if the analyst has experience in handling both Baytown and San Jacinto pottery types.

Measurement of the density of grog pieces on the surface of a sherd is not difficult. A count of grog pieces on the surface of a sherd is done with a 10-power magnifier, to assure that grog pieces are counted without including other surface irregularities. The area of a sherd can be approximated fairly accurately by length and width measurements with a metric ruler, because most sherds are somewhat square or rectangular. Density of grog pieces is then calculated by dividing the number of grog pieces by the sherd surface area.

Aten (1983:239,241) has stated that San Jacinto pottery has a sandy or silty paste (identical to

Goose Creek) plus grog temper, and that Baytown Plain, variety Phoenix Lake has a non-sandy paste with abundant grog temper. Aten (personal communication 1995) has informed me that non-sandy paste (Baytown) versus sandy paste (San Jacinto) plus any amount of grogs are the principal criteria that he is now using to sort grog-tempered pottery. Aten states that "as the sand content is increased, the functional need for grogs decreases; sand is really the independent and causal variable with respect to grog abundance." I have examined the sherds from site 41CH290 used for this paper in regard to sand content and resulting degree of fineness of paste. Aten's observation on degree of sand content for the two types of grog-tempered pottery is generally true for sherds from site 41CH290, although there are some exceptions where there are abundant grog pieces in a relatively sandy paste.

Identification of San Jacinto pottery

Aten has noted problems in the identification of San Jacinto grog-tempered pottery versus pottery that does not contain grog temper. He states:

Identification of grog-tempering in this variety requires considerable familiarity with the variation of its forms in the study area. This variation has misled many analysts into identifying all sorts of natural inclusions (e.g., concretions, clay "galls," organic material, color "ghosts") as grog, and simultaneously to overlook many of the actual instances of its occurrence. (Aten 1983:239)

The amounts of San Jacinto pottery are probably overstated for sites in Southeast Texas, especially for the inland subregion, where analysts generally do not have much experience with grog-tempered pottery. This is an important point in the study of settlement patterns for Indians of the inland and coastal margin subregions of Southeast Texas (Patterson 1993).

Summary

A study has been made to find possible criteria for distinguishing between Baytown and San Jacinto types of grog-tempered pottery. The density of grog pieces on sherd surfaces is the main parameter that has been found to be useful as a sorting criterion for these two grog-tempered pottery types. As noted above, the sand content of paste also appears to be a useful sorting criterion for grog-tempered pottery. These two sorting criteria are probably most useful when used together. It is important to distinguish between San Jacinto and Baytown pottery types because of differences in geographic distributions and time periods of use.

The bimodal distribution shown in Figure 1 for the density of grog pieces on the surfaces of sherds is for data from a single coastal margin site. This grog density distribution needs to be checked for other sites. Surface conditions of sherds might also warrant further study in relation to grog density measurement, because different amounts of grog could be exposed on surfaces that, for example, were well smoothed before firing or have undergone erosion. My observation, however, is that it is not difficult to determine if a sherd has abundant grog temper or only a small amount of grog temper, regardless of surface condition.

It has been proposed here that Aten's (1983) nomenclature for grog-tempered pottery types be modified for simplification and to obtain consistency in type names. The names proposed are San Jacinto Plain, San Jacinto Incised, Baytown Plain, and Baytown Incised, without use of any variety names. San Jacinto Plain and San Jacinto Incised are names currently used anyway by many archeologists in Southeast Texas.

