Order Number 8726549

The language of the motif; an analysis of the Walker Village Late Woodland ceramics

McDaniel, Roland Edward, Ph.D.

The American University, 1987

U·M·I
300 N. Zeeb Rd.
Ann Arbor, MI 48106

PLEASE NOTE:

In all cases this material has been filmed in the best possible way from the available copy. Problems encountered with this document have been identified here with a check mark ✓.

1. Glossy photographs or pages ✓
2. Colored illustrations, paper or print _____
3. Photographs with dark background _____
4. Illustrations are poor copy _____
5. Pages with black marks, not original copy _____
6. Print shows through as there is text on both sides of page _____
7. Indistinct, broken or small print on several pages ✓
8. Print exceeds margin requirements _____
9. Tightly bound copy with print lost in spine _____
10. Computer printout pages with indistinct print _____
11. Page(s) _____ lacking when material received, and not available from school or author.
12. Page(s) _____ seem to be missing in numbering only as text follows.
13. Two pages numbered 203. Text follows.
14. Curling and wrinkled pages _____
15. Dissertation contains pages with print at a slant, filmed as received _____
16. Other _____

THE LANGUAGE OF THE MOTIF; AN ANALYSIS OF THE WALKER VILLAGE LATE WOODLAND CERAMICS

By

Roland E. Mc Daniel

submitted to the

Faculty of the College of Arts and Sciences

of The American University

in Partial Fulfillment of

The Requirements for the Degree

of

Doctor of Philosophy

in

Anthropology

Signatures of Committee

Chairman: June Evans

Louana M. Lackey

Charles W. McNutt Jr.

Betty Meggers

Dean of the College

August 26, 1987

Date

1987
The American University
Washington, D.C. 20016

THE LANGUAGE OF THE MOTIF: AN ANALYSIS OF THE WALKER VILLAGE LATE WOODLAND CERAMICS

BY

ROLAND E. MC DANIEL

ABSTRACT

The Walker Indian Village (18MO20) is a prehistoric Late Woodland archeological site on a 700-acre island in the Potomac River Piedmont. When placed upon the National Register of Historic Places in 1975, it became the first prehistoric culture site in Maryland. It is currently marked by a scatter of cultural debris in a modern corn field. The owner granted limited access for survey activities, but will not allow excavations.

Concentrations of surface debris have made the site a favored target of avocationalists and relic collectors since the late 1920s. Recently, deep plowing has exposed even more material, including a significant amount of freshly broken human bone and pottery. The pottery sherds vary widely in surface finish and pattern design as well as in tempering material. This variety is unknown on other Piedmont sites and cannot be classified using the traditional classification schemes used in the Virginia and Maryland areas. There are no published accounts of the many visits and investigations of this site.

This dissertation relates a study of the Village ceramics under the dictates of an hypothesis stating that designs on rim sherd collars and lips are coded messages of social membership. As such, these designs will covary in time and space as iconic symbols that continue in application over significant periods. A corollary statement claims that tools used to create the iconic messages display even longer traditions. Studied as motifs that fall into a limited number of sets based upon tool markings and basic schemata of arrangements, the Walker Village ceramic motifs are compared with those seen in more thoroughly documented sites in other areas. It is demonstrated in terms of motif congruence that this Potomac Piedmont site was occupied on four different occasions by people with ceramic traditions closely akin first, to the Shenks Ferry/Owasco ceramic cultures of Pennsylvania-New York, then the Eastern Ohio-West Virginia-Pennsylvania Fort Ancient traditions (with minimal Mississippian influence), later the Monongahela ceramic traditions of Western Maryland and Pennsylvania, and finally with an Appalachian cotradition from the south.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF ILLUSTRATIONS

CHAPTER I

INTRODUCTION

Thirty-eight kilometers northwest of Washington, D.C. and just south of Poolesville, Maryland, there is a large island in the Potomac River. The island is named Selden, for a 19th century owner. Land records from the early 18th century refer to Selden Island as "Lost Eden". From a romantic point of view, the earlier name is more appropriate for the focus of this dissertation: a prehistoric Indian village site located on Selden Island. The village is known on the National Register of Historic Places as the Walker Indian Village Site. The Maryland State Archeologist has assigned a unique serial number to the Village (18MO20) that sets it apart from all others in the state. Little published information is available about the Walker Village even though many people have visited and worked there during the past fifty years. Because of a very dense and varied artifact assemblage on the surface of the modern corn field containing the site, it is well known among both collectors of antiquities and archeologists in the Middle Atlantic region.

This dissertation will relate an archeological investigation of the Walker Village designed to establish the cultural definition and affinities of its inhabitants. The field research has been conducted without excavations because of land owner restrictions. An attempt is made to relate the cultural materials recovered at the Village to other sites in the Middle Atlantic archeological area. This comparative process depends upon work performed by others, in different locales, pursuing different objectives. Published reports of these other investigations are of highly variable content and quality. One of the research projects supporting this study has been a review of these reports to select from them those with the most complete and reliable data specific to the Walker Village investigations.

Traditional views have placed the Village chronologically in the Late Woodland prehistoric period. This was a 500 year span from about A.D. 1000 to European contact. These judgments were partially based upon the diagnostic artifacts collected from the site: specifically, small triangular arrow points and pottery sherds. Not so often collected, but related to age estimates, were the thousands of bone fragments seen upon the surface. Experience at other sites has taught investigators and collectors that bone seldom survives more than about 400 years in the acidic soils of a riverine environment. One

series of excavations made about thirty years ago exposed burials and house patterns surrounded by markings of a stockade. These characteristics of burials, houses, the stockade, the artifacts, and bone preservation have been well dated to the Late Woodland periods at many other prehistoric Indian sites.

Research at other Middle Atlantic Late Woodland archeological sites has shown increasing evidence that it was a period characterized by radical culture change caused in part by reactions to stresses attributed to increased sedentism, growing populations, significant weather system changes not yet fully understood, and the onslaught of European diseases no later than the 1500s. The artifact and settlement patterns reflect social upheaval and ongoing modifications to lifeways that had seen extensive stability with moderate changes in the prior centuries. The desire and intent of the present study has been to place the occupation of the Walker Village more specifically within the 500-year epoch and to relate its occupants to cultures that have been more extensively studied in the Middle Atlantic.

The surviving artifactual record that must be used in the analysis, unfortunately, is composed of many items that have low morphological variation between widely separated groups for long spans of time. This is especially so with stone tools, an artifactual category

that has survived with a bewildering and huge variety on this site. The functional needs that could be translated into a flaked stone implement resulted in a wide range of devices that look the same from almost every archeological site of this period. With the exception of the triangular arrow points (also quite variable at a single location), the surviving knives, scrapers, drills, planes, cores, and utilized flakes furnish little discriminant information.

Pottery sherds are quite again another matter. The ceramic industry of the Late Woodland cultures was well developed and reflects traditions that vary in micro-social definitions. In addition to the pottery cooking utensils, beads and pipes were made from clays and tempering materials readily available at most settlements. Of even greater value to the careful investigator are the patterned designs that were placed upon the pipes and pots. Isolation of social groups is being demonstrated by many investigators in North America "...based on the covariation of discrete attributes that exhibited sensitivity to change through time, which tended to cluster in space" (Griffith 1982:51). The Walker Village artifact assemblage includes pottery sherds and pipe fragments that have aplastic tempering materials and geometric decorative designs of great diversity. There is not another known village site in the Potomac Valley that contains such a large and variable ceramic sample. Preliminary investigations

revealed similarities between these temper combinations and decorative design sets with ceramic cultures to the north, east, west and south of the Potomac Piedmont.

A better understanding of the Walker Village and the cultures represented there will be approached via an analysis of the ceramic material. This will be conducted within the hypothetical constraints of several propositions concerning the aplastic materials used in the production of the pottery and the designs that were worked into the plastic clay of the rim and neck areas. Patterns found upon the body sherds are for the most part residuals of the manufacturing process in which a cord wrapped paddle was used to hammer the clay into the desired form and density. While many of the sherds show that such marks were subsequently smoothed over, the body sherds (marked and smoothed) do not have the diagnostic potential of the rim sherds that carry design impressions.

The major hypothesis guiding this analysis states that the markings on the rim and neck portions of Late Woodland ceramics are not decorations but are iconic symbols relating to social membership. As symbols, these marks will exhibit variation within particular cognitive boundaries. Such boundaries relate to departures from an established prototypical motif to such a degree that the encoded message in iconic form is no longer comprehended by the presumed viewing population. Within the constraints of

this recognition boundary, variation of technical, personal, and micro-social identity will be allowed to persist. As iconic symbols of membership, motif pattern are likely to have several levels of identity.

The most stable and perhaps most subject to abstraction in execution will be the oldest and most widely ranging of the membership identities. At this level of symbolism the coded message may have degenerated to the type of tool used to create patterns. An example might be what appears to have been a cord wrapped stick used to make impressions in the clay versus another tradition that is based upon marks made with a sharp incising tool. More restrictive and less variable will be the symbol identity of the local cultural group within which the potter lives and conducts a day-to-day life (as in a village or hamlet). Tighter symbol identities will take the form of application skills and small personal elaborations within the larger motif themes. The skill-level symbol applications and the idiosyncratic manipulations that can almost be referred to as "whimisical elaborations" are likely to be seen in many different archeological data sets as minority variations within the higher level abstractions of the iconic message carriers. Preliminary reviews of the ceramic analysis reports from many Middle Atlantic sites showed these two characteristics to be pervasive.

A research task in applying the hypothesis will be one of separating the several levels of variation seen in the motif patterns and creating a cognitive reference map of the resulting prototypical recurring iconic symbols. If the sample of designs is large enough (including reference materials from other archeological research sites) certain patterns should be seen to covary in time and space. Such "participation" in a pattern tradition is expected to show congruencies with particular geographical distributions. There is a significant body of rim sherds from this and other sites in the Potomac Piedmont that do not have any design marks. They have usually been referred to as 'plain' in the literature. It is significant that this group invariably has cord marked bodies that have not been smoothed.

The following chapters will relate the study of the Walker Indian Village Site. Chapter II addresses Selden Island's physical environment and then provides an overview of the culture history of this portion of the Potomac Piedmont. Chapter III is a review of prior research at the Walker Village and Selden Island. Archeological sites dating from the Late Woodland in the Potomac Piedmont are also reviewed and evaluated in terms of contributions to the current study (ceramics, stratigraphy, radiocarbon dates, methodological procedures).

Research conducted in other areas that has an impact upon this dissertation from an artifactual or cultural analysis point of view is reviewed in Chapter IV. Chapter V deals with typology and ceramic analysis and the problems that traditional type and series designations generate. Symbolism, motifs, schema, and icons as anthropological constructs are reviewed in Chapter VI. Specific applications in artifact and ethnohistoric research are reviewed, discussed and related to this study. Chapter VII is a review and explanation of the methods applied to artifact recovery in the Walker Village study and the laboratory work involved.

Chapter VIII addresses the analysis structure and the identification of the motif sets. The results of the analysis are related in Chapter IX. Included there are the statistical tests and summaries applied to the thousands of pottery sherds that have been recovered during this study. There, too, are presented the illustrations of rim decorations and the standardized motif patterns that are held to be iconic. Chapter X presents a comparison of the Walker Village motif sets with other Potomac Piedmont sites and locations more distant from the study area. Chapter XI is a review of the results and the writer's evaluation of the hypothesis guiding this research.

The contribution and significance to anthropology and archeology of this dissertation can be focused upon

four areas of concern: 1. demonstration of an analytical method in ceramic studies that overcomes some of the restrictions found in traditional type and series assignment; 2. introduction of an analytical medium (symbol) that has wide inter-regional applications of comparison between cultures using ceramics; 3. the creation of an artifact data base that pertains to a poorly documented National Register site in the State of Maryland; 4. creation of a Late Woodland comparative ceramic data base for the Potomac Piedmont detailed beyond traditional type and series notation.

CHAPTER II

ENVIRONMENT AND CULTURE HISTORY

The Walker Village Site is located on Selden Island in the Potomac River in Montgomery County, Maryland (Fig.1). At one stage in its history it was a palisaded settlement containing oval house patterns surrounding an open central plaza area (MacCord 1978, personal communication). It lies in the Outer Piedmont zone about 24 kilometers west of the Great Falls of the Potomac and six kilometers southwest of Poolesville, Maryland. Selden Island is an ancient floodplain anchored to triassic red sandstone bedrock by a large boulder and gravel bar in the river. The Island and its foundation were formed on the south and outside curve of a river rapidly widening from a constriction formed by an intrusive gneiss dike in the softer shales and sedimentary rocks of the area (Cleaves, Edwards, and Glaser 1968; Bernstein 1980; Johnston 1964). This intrusion today forms the bedrock of the bluffs on either side of the river just at Edwards Ferry to the west of the village site. Goose Creek follows the fault line of

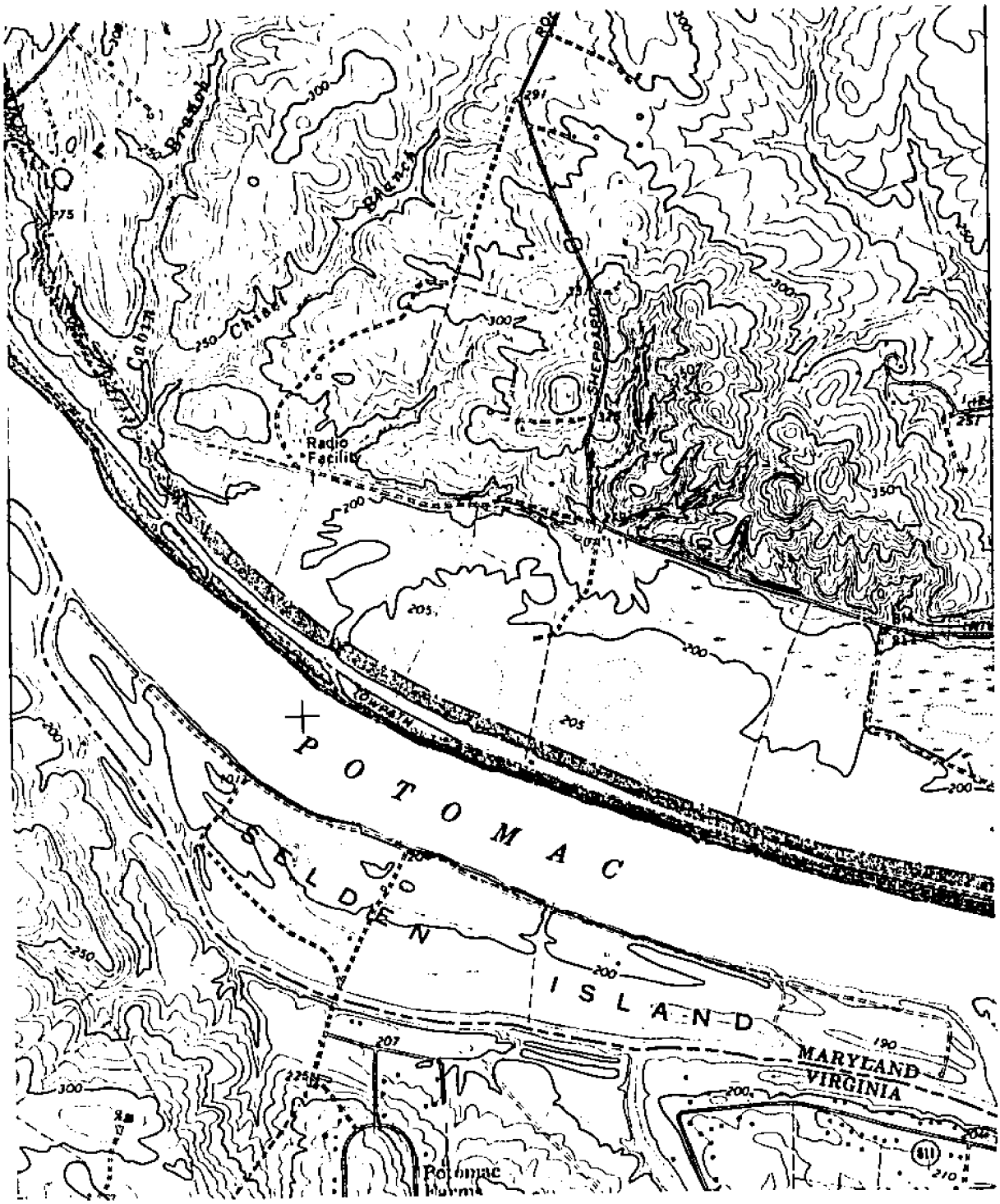


Fig. 1. Selden Island and vicinity. (U.S. Department of the Interior, Geological Survey, Sterling Quadrangle, Virginia-Maryland, 7.5' Series, 1984).

this intrusion from the south and west and enters the Potomac just upstream from the constriction.

The broader area of the river floodplain valley east of the restrictive gneiss venturi constriction is composed of a wide, flat floodplain bearing silted troughs that mark extinct meanders of a braided river environment (Larsen 1980). Many of these are of sufficiently low definition to retain moisture throughout the year and nurture swamps and small, shallow, ponds. The moisture is constantly replenished by creeks and small streams that flow to the river valley only to become entrapped in the old meander scars at the base of the bluffs. Over-bank flooding of the Potomac occurs several times a year and adds water and silt to this swampy area. The levee-like, inter-trough zones provide a rolling surface with distinct orientations roughly paralleling the down-cutting modern river. Variations in elevation across this plain seldom exceed two meters.

The floodplain environment is narrowed to extinction on the eastern periphery of this wide valley by another hard rock constriction of the Potomac River. This, and its related high bluffs, are positioned one kilometer to the east and downstream from the C & O Canal Diversionary Dam #2. The river bed from this point to the east for several kilometers is filled with large boulders and small islands scattered along bedrock protrusions.

Under normal river flow conditions this entire area is a minor rapids environment as compared to the quieter waters fronting the Walker Village Site. Selden Island, 4.4 kilometers in length with a maximum width of 0.6 kilometers is to the south and extreme western end of the 15 kilometer floodplain valley definition.

At the Village, the Island is 0.4 kilometers wide and lies close to the Virginia shore on its south. The island is separated from this shore by a flood chute channel 50 meters wide that carries a modern river flow about one meter deep. The 1820 Diversion Dam #2, located 8.5 kilometers down river from the island, has created an artificially high river surface three meters above the normal level. The elongated pool formed by this backwater maintains the water flow in the southern flood chute and the identity of Selden as an island.

The surface of the island varies from one to three meters above the modern pool surface (57 meters above mean sea level). At the Village site, the bank is three meters high as measured from the cobble beach of the river to the turf line of the modern field edge environment. The banks are steep and covered with trees and briars in contrast to the gently rolling and fully cleared farm land on the island surface. This surface is flooded by swollen river flows four or five times a year. At times, such floods stand a full two meters above the land. Recent farm

efficiency activities have resulted in significant surface leveling that now masks many of the subtle patterns of ancient river channel marks on the island surface.

The Walker Village Site is located on the western third of the island and adjacent to the river along the north bank. To its west is a low north-south ridge that marks a gentle slope to the western end of the island. The site forms an ellipse with the 210 meter long axis parallel to the river bank. The 150 meter width is defined by a surface artifact scatter from the river bank south into the corn fields. River bank profiles cut near the center of the site reveal an artifact-bearing plow zone and two buried horizons containing pottery sherds that are 0.5 and 1.8 meters below the surface. A deeply buried culture layer without pottery or diagnostic artifacts has been exposed about 2.5 meters below the modern surface. This layer is comprised of charcoal flecks, dark soil, and flakes of quartzite and quartz mixed with scattered and broken fire cracked rock. These buried cultural layers are no more than 20 centimeters thick at the profile face.

The material on the surface of the Village site portrays the remains of multicomponent prehistoric settlements. The southwest corner contains fire cracked quartzite cobbles, quartzite and quartz flakes, and the large stemmed projectile points and bifaces of the Late Archaic (ca. 1900 B.C.) Savannah River complexes (Coe

1964:97). The majority of the remains on the rest of the site are from later cultures that made great use of pottery. In addition to the sherds, clay pipe fragments with complicated impressed designs and clay beads have been recovered. Less sensitive diagnostic materials such as triangular projectile points of varied lithic material and size, end and side scrapers, ovate knives, ground stone celts and gorgets, utilized flakes of many lithic descriptions, shell beads and fragments, charcoal hunks, and thousands upon thousands of stone flakes and shattered fragments are scattered in various concentrations about the site surface. Animal and human bone scatters are common in some areas of the site while small bits of bone occur almost over the entire location. Much of this bone material bears the charred or discolored marks caused by exposure to fire. It is also unexpectedly well preserved, showing little erosion or decomposition. No early European materials have been recognized on the site.

The Walker Village Site is not the only prehistoric Indian location on Selden Island or in the immediate area. The island contains at least four other ceramic-bearing surface sites and a minimum of nine deeply buried locations that appear to have been occupied during Early Archaic and Middle Archaic periods. The adjacent Virginia shore on the south contains the confluence of Broad Run with an associated complex of bluffs and floodplains. The entire

zone is scattered with concentrations of occupation debris including the Fisher site, a Late Woodland village location containing burials and related settlement debris all now enclosed in the back yard of a modern dwelling. Slattery's (1946) report describing Selden Island ceramics is the only published documentation for any of these locations.

The Maryland shore of the Potomac River north of the Walker Village has been the focus of archeological research and avocational activities for 50 years. Late Woodland pottery-producing cultures are represented at Hughes (18MO1), Winslow (18MO9), Shepard (18MO3), Shepard Barrack (18MO6), First Road (18MO106), Sycamore Landing (18MO79), Shoo Fly (18MO104), and the Canal Side (18MO88) sites. All of these are within view of Selden Island. These sites will be discussed in the following chapter addressing prior studies in the area.

The entire system of bluffs, highlands north and south of the bluffs, intersecting streams and brooks that cut through to the river, entrapped drains that formed swampy pockets, and the extensive floodplains of the Seneca Pool of the Potomac River provided attractive resources for prehistoric Indian cultures (McDaniel 1978). The following sequence of environments and cultural responses are presented as an historical background leading to the Late Woodland periods that represent the Walker Village cultures. For the better part, these sequences follow the

outlines of Gardner (1982), Chapman (1978), Trigger (1978), Ritchie (1980), Funk (1976), and Fitting (1973) with other specifics provided as indicated. The outline is this writer's view as he has absorbed the research and teaching of others.

The oldest recognized cultural remains in this environment are those of the Paleo Indians. Artifacts typical of these most ancient encampments are represented at camp sites at the bluff edges overlooking the floodplains and along the edges of the swampy zones at the bases of the bluffs. These are recognized by the distinctive Clovis-like projectile points, small scatters of exotic cryptocrystalline flakes, and scrapers and distinctive combination tools finely chipped from the same materials. These camps were occupied over 11,000 years ago in an environment undergoing a transition from the cold and wet glacial periods toward modern climes (Carbone 1976; Larsen 1980). The flora and fauna were also undergoing a transition that witnessed the extinction of many animal species and a gradual shift of the floral world from one dominated by conifers to the more diversified southern environment of the Carolinean forest. The mosaic pattern of the Paleo Indian habitat shifted to the more uniform array of the mixed deciduous forest.

This phasing witnessed a change in procurement strategies based on the growth of new food resources in

both animal and plant varieties and densities in a given area. Rising sea levels began to impact river systems in subtle fashions that redefined the breeding grounds of anadromous fish. Gardner (1982) suggests that new breeding streams were in use within the Piedmont by 2000 B.C. Tool systems were modified to support these changed hunting and collection strategies. We see the results today in the form of changed projectile points recovered from camp sites occupied during these transitional periods.

Settlement patterns evolved that reflected scheduled procurement processes that optimized seasonal availabilities of both animal and plant foods. The archeological record reflects this in camping sites that seem to have been reoccupied again and again on a seasonal basis. Seasonality has been judged by the recovery of charred nut shells and seeds that are only available in particular times of the year. In the vicinity of the Walker Village site these are reflected in the remains of what has come to be called the Archaic cultures. The bluff tops and swamp sides continued to be utilized, but in addition, the highlands away from the river came into frequent use. These scattered remains are recognized by the distinctive corner notched and stemmed projectile points found on these sites (McDaniel 1978). These smaller scatter sites likely represent extraction stations for one or several resources and were associated with larger base

camps back along the river and its floodplains. Cryptocrystalline stone preference decreased. Less exotic quartz and quartzite materials locally available began to appear as the majority lithics in the tools and flake wastage. There is growing conviction among anthropologists that this in turn reflects growing sedentism in which the source of the cryptocrystalline materials was too far away to be economically exploited.

New tool forms began to appear that seem to have been utilized in woodworking. This is judged from edge wear and polish analysis patterns and replicated experiments. These gouges, axes, perforators, and plane scrapers were made from a wide range of lithic materials that are available in the Piedmont gravels and regional outcrops. Other devices appear in the archeological record in the form of grinding stones and the associated metates used to grind gathered seeds and nuts. Intensive use of the entire floodplain environment is implied by a growth in the numbers of sites that contain today the same basic lithic tool kits. The levee tops were preferred locations for large settlements as compared to the earlier, very scattered, and rare bluff/swamp camps. A growing population is credited with the proliferation of sites that mark the Archaic periods.

The Archaic period includes the entire span of time between the Paleo Indian and the ceramic-using Woodland

cultures. It is a 7000 year period for which little has survived in the Potomac Valley other than the stone implements and the debris from their fabrication. A combination of acidic soils and the damp environment quickly reduced the non-lithic materials to their chemical constituents. From archeological sites in the very dry southwest and from a very few waterlogged locations, researchers recognize that the stone materials form only a small portion of the full material culture of prehistoric people. Future research in the floodplains will possibly expose deeply buried Archaic settlements that will likely have survived with such materials in waterlogged contexts. Tantalizing glimpses of such locations have been seen at Selden Island when a very large river meander scar was bulldozed to create a farm reservoir. Hearths, bone, charred material, and diagnostic projectile points from about 6000 B.C. and 4000 B.C. were observed upon living floors that were up to two meters below the modern plow zone. This complex was within view of the Walker Village location.

At some time during the later Archaic periods a series of changes came to pass in the social organizations and densities of the groups living in the Potomac Piedmont. The changes were significant enough in the material culture for them to have survived and be recognized today. It is suspected that these changes were brought about by

intensifications in the gathering and harvesting of plant foods and perhaps the new utilization of protein sources not emphasized during earlier times. The archeological record tracks these changes in the form of yet another projectile point change (toward a smaller and lighter unit), the intensification of settlements in floodplain environments, introduction of carved stone (steatite) bowls or flat-bottomed cauldrons of multi-liter capacity, a growing proliferation of grinding stones and grubber-like stone hoe blades, and intensification of exchange networks that moved exotic materials between widely separated locales. This period is referred to as the Early Woodland period by most Middle Atlantic area archeologists.

To the south of the Potomac River and perhaps in the eastern plains area pottery was coming into use. It likely was introduced into the area of the Walker Village in the form of large and crude copies of the slightly earlier steatite stone bowls. At any rate, samples of this coarse ware tempered heavily with crushed steatite have been recovered at a dozen different locations around the Seneca Pool (MacCord, Slattery, and Schmitt 1957; McDaniel 1979). Similar flat-bottomed pots with other tempering materials have been reported in the Potomac Valley from this period (Waselkov 1982). It was a short period in the span of time defining prehistoric Indian habitations in this area and covered perhaps less than one thousand years.

Change continued throughout this period and is measured again by the growth and decline of various cultural processes. Changes in burial practices are seen in other areas with better preservation conditions. The first evidence is seen in differences in social status as reflected in interments accompanied by lavish grave goods. Many of the materials were exotic to the area of the burial and have been traced to sources hundreds or thousands of miles away. Special areas were set aside for these burials and were often covered with mounds or rock cairns. Another of the changes was a continued growth in the technical skills that produced pottery and the demand for decoration of increasingly stylized and regular design applications to the upper portions of many of the pots (but not all).

Cultivation of beans, squash, gourds, and other seed plants was augmented by the introduction of maize. Primitive horticulture involving a few low yield, almost casually planted and tended plants evolved into agriculture utilizing large plots of prepared ground and the introduction of high yield and labor intensive crops. The earlier planting and tending of goosefoot, amaranth, beans and squash prepared the Woodland cultures for the more intense utilization of maize. Maize cultivation in the Middle Atlantic area began perhaps as early as 500 B.C. Corn remains recovered from this region have been identified as a fairly advanced strain that evolved from a

tropical ancestor less tolerant of cold or shorter growing seasons. Corn in the green and mature dried state quickly became a staple of major significance in the subsistence strategies of the budding agricultural cultures of the Middle Atlantic.

Because of the linear characteristics of corn horticulture (the more one plants, the more one harvests), land in large parcels that could easily be farmed under swidden conditions became a premium. The most productive of these for the longest periods were the alluvial bottom lands and floodplains of the larger rivers. Not only were the soils deeper and free of stone outcrops, they were replenished on a regular basis by flooding rivers. That populations continued to increase at a geometric rate is postulated based upon the growth in size and numbers of the hamlets and their remains. The material culture reflects a period of changes taking place with an increasing frequency.

Burial practices changed again with less emphasis upon status burials and the lavish trade materials included with the corpses. Specialized burial grounds and structures gave way to localized interment in trash pits and small graves that tended to be in close proximity to the villages, very often below the house floors of the survivors. Conflict of war-like proportions is implied by the appearance of stockades and palisades. Burial remains

from this time very often are found with projectile points imbedded in the bony remains or within what had been the body cavities. Knife marks are seen on the cranial fragments. While some would have it that these marks are the results of cleaning bones in preparation for burial, other investigators are convinced they imply violent deaths and scalping. Other evidence from burials implies degradations in the well-being of the populations on a more general level. Teeth are seen to be deeply worn on even young adults. Dental caries are evident in almost every case examined. Tooth loss is common. Deformations of spinal segments and long bones bespeak serious nutritional deficiencies. Infant mortality appears to have increased along with child burials becoming commonplace in the village middens.

Social structure is seen to have developed into stratified societies. One reflection of this is in the deference shown in burial practices where people of different value within the society are provided different treatment when they die. This deference gradually disappeared and it is thought to reflect a return to a more egalitarian social structure. The long distance trade networks that had been established in the Early Woodland periods and continued to some degree into the Middle Woodland periods were abandoned. This view is derived from a change in the materials recovered from sites of this

period that no longer contained 'exotic' materials from distant places such as galena, mica, obsidian, banded agate from very localized sources, and shells from species found only in the Gulf of Mexico. Much of the drive that had created and maintained the earlier trade networks is thought to have been in support of the elaborate burial furniture associated with the elite burials mentioned above.

Status goods can still be recognized in the later archeological record but they are now made from materials locally available or when exotic, of far fewer number. Many material traditions are seen to be tightly circumscribed with particulars common only to one tightly related group of settlements. An example would be the Sick Incised ware (Lucy and McCracken 1985) of Pennsylvania (in which the tempering material is exclusively crushed chert). It occurs in a very small area and only upon about a dozen sites. Other aspects of material culture can be seen as widely spread characteristics that were maintained both in time and between widely divergent cultural definitions. An example of this can be seen in the pan-culture burial practices that had much in common even between different language groups. As such, these practices waxed and waned at different rates between widely separated groups, yet direction of change was the same for all (Kehoe and Kehoe 1973).

The Walker Village inhabitants experienced some, if not all, of the pressures that produced the rapid changes seen in the material remains from the Late Woodland epochs between A.D. 1000 and A.D. 1400. Based upon the stratified deposits seen in the river bank at the site at least three groups separated by an undetermined period were at the site. How long each remained there has yet to be determined. This study is designed to answer questions that relate to them while they were at the site: what were their roots, and what ceramic cultural attributes can we recognize and relate to better known groups in other places?

CHAPTER III

PRIOR RESEARCH IN THE STUDY AREA

Earlier Activity at the Walker Village Site

Circumstances of easy access have made Selden Island a favored target of relic collectors and avocationalists for over fifty years. An isolated farm road directly connects Virginia Rt.7 and the small bridge joining the Island to the Virginia shore. Boaters from downriver and up have found the rather placid Seneca Lake pool of the Potomac River an equally easy road to the Island and its archeological remains. This access coupled with the plowing of the Island surface at least twice a year creates an ideal collecting environment. Add to these two factors the very dense artifact scatters that mark the many sites located on Selden Island and one has a location that quickly becomes the favorite for the collector. This is even more likely since the land owners have readily granted permission over the years for surface collecting activities so long as the crops in the same fields are not jeopardized.

In the late 1920s, J. Sipes and a large number of similarly interested relic collectors began collecting from the surface of Selden Island. They very soon recognized the large area toward the western end of the Island that seemed to always have pottery, triangular arrow points, and odd bits and pieces of bone and worked stone on the surface of the field. This concentration eventually was named the Walker Indian Village and in 1986 was still being collected by Sipes and several of his cohorts. In past years they used steel rods to probe the ground of the Village site looking for the softer subsurface that usually marked burials and pits. They then excavated to the feature and removed the items of interest that they recognized.

Sipes extended a kind invitation to the writer in 1978 to visit his home and review his vast collections. The material came from his active collecting on over 100 sites in Virginia. The collections also included many artifacts that he obtained through trades with fellow collectors. He acknowledged that many of the items he had recovered from the Walker Site had been traded away or given to interested friends and relatives. A few had evidently been sold to collectors or commercial outlets. The writer photographed a significant portion of the collection that was attributed to the Walker Village. Subsequent reviews of the pictures and analysis of the illustrated artifacts raised significant questions as to

the validity of Sipes' cataloging system and the reliability of the attributed associations.

That such activities (including those of avocationalists during the same period) have created a bias in the artifact corpus of this site cannot be denied. The materials that have been removed do seem to have a rank, or probability of removal. This conclusion of the writer is based upon discussions with hundreds of collectors in Maryland, Virginia, Pennsylvania, and Illinois. Every county or state fair will have extensive displays of recovered artifacts that have been arranged into pleasing designs or Indian-related patterns. The builders of these displays spend thousands of hours collecting from the same sites that we attempt to interpret. The curiosity and satisfaction that inspire collecting are American traditions of long standing. The reality of it, and the likelihood that it is not going to be stopped by archeological indignation, are factors that we must acknowledge.

Once acknowledged, we must somehow devise a way to evaluate the impact in terms of the residuals we have at hand in surface survey activities. The types of artifacts that will be recognized first and quickly removed in order of their perceived desirability are: grooved axes, atlatl weights, gorgets, beads, projectile points unbroken, projectile points broken, biface tools, uniface tools,

pottery rimsherds, pottery body sherds with unusual markings, unbroken bones, broken bones. Needless to say, the rare stone or clay pipe, whole or fragmented, is quickly removed. These impacts, if recognized, are almost impossible to evaluate unless the subsurface of the site structure can be determined. Questions addressing the slope and exposure of buried surfaces in relation to the modern plowed surface must be answered. Excavation must be performed in the form of bank profiles, transect pitting, or core boring to explore these unknowns. Part of any site excavation plan should include in the design sufficient excavations to answer these questions about collector bias in terms of what remains versus what has been exposed to removal activity.

During the late 1930s and early 1940s several young avocational archeologists regularly visited Selden Island and the Walker Village site. Personal discussions with Hugh Stabler, Carl Manson, Howard MacCord, and Gates Slattery garnered recollections of an Island site that they considered as one, large, archeological bonanza. For their own reference, they divided the Island into thirds: the western portion was called Selden Island I, the middle third as Selden Island II, and the eastern portion as Selden Island III. This same grand scheme was applied to the very similar situation they had encountered at Lowes Island, just downriver from Selden. In particular they

recalled the materials to be seen and recovered after the catastrophic spring flood of 1937 when the ice-laden Potomac River swept over the floodplains to a depth of several feet. The plow zone was virtually swept away, leaving all of the artifacts scattered about in several concentrations that we now consider as separate sites. Like Sipes, these investigators were entranced with the density and variety of materials from the Village site. With so many other sites in the Potomac Valley and its drainages awaiting their attention, they did not have the time required to devote to a full investigation.

The location was finally excavated with the cooperative supervision of Smithsonian professionals during the 1950s and 1960s. Albert Hahn was the principal investigator. His field crew was composed of amateur and visiting professional archeologists. This writer finds it amazing just how many people encountered at regional and national archeological conferences have recollections of working on this excavation at Selden Island. Because of a catastrophic event some years after the excavation, all of the field notes, photographs of record, and the recovered artifacts were destroyed. The Maryland State Archeologist was later presented some photographs taken during one of these avocationalist field expeditions that illustrate bundle burials in sub-surface features. Personal communications with several of the participants in these

investigations (Stabler, MacCord, Slattery, Manson) elicited memories of oblong house patterns, a palisade line of postmolds, and many pit features including over 70 burials. Current research by an American University graduate student at the Smithsonian (J. Chase) has brought several collections of archived burials to light from these excavations.

Witthoft refers to this Selden Island site in his discussions of his migrational theories and ceramics in the Townsend Site report from Delaware (1963). He perceived a continuity in ceramic traditions between coastal Delaware and the Potomac Piedmont. Larabee formally recorded the site in a report to the Maryland State Archeologist in 1963 as part of his cultural resources management survey of the National Park Service C&O Canal Park. The C&O Canal is located on the Maryland shore of the Potomac River directly north of Selden Island. Clark (1974) prepared a nomination of the Gore Site (as it was variously known then) for the National Register of Historic Places.

The nomination was accepted and the site became the first prehistoric site in Maryland to be placed upon the Register. In his justification statements, Clark related the view held by Witthoft and many of the avocational archeologists mentioned above that the occupants of the Village were ancestral to the later Powhatan Confederacy groups of tidewater Virginia. These were the Indians

encountered by the first European settlers at Jamestown. Clark also observed in his documentation the wide variety of ceramic wares at the Village. This opinion was based primarily upon the multitude of tempering materials he observed. They seemed to him to be related to ceramic cultures to the south and to the northwest.

Rust (1981), unaware of Larabee's and Clark's efforts, or that Selden Island is in Maryland and not Virginia, prepared a Virginia Research Center for Archeology site report as part of his on-going survey work in Loudoun County, Virginia. He recognized nine different tempering materials in the 206 sherds he collected from the Walker Village site. His computerized site file work sheet did not provide for decorative observations. This material is archived at his archeological laboratory at the Arcola Community Center in Virginia.

This writer's work at the Walker Village began in 1978 when the site was encountered during a survey of Selden Island in support of salvage excavations and recovery of material at an Early and Middle Archaic complex exposed by bulldozers on the eastern one-third of the island. At that time, he noted the heavy density of surface bone material and the many sherds that seemed to represent multiple ceramic cultures. This was judged from the many different tempers and decorative designs seen upon

the sherds. With a volunteer crew, the writer returned to the site in 1980 with the intent of performing a controlled surface survey that would define the site perimeters and content by an artifact plot and analysis of the plotted materials. It was to be the first of many working weekends spent at the site over the next four years.

Crew availability, weather, mature corn crops, and farming activities combined to limit continuous examination and a survey not interrupted by lengthy periods of field inactivity. Complicating the scheduling of work is the owner restriction upon fall and winter access because the property is leased out as a hunting preserve (fox, deer, rabbit, goose, duck). The material recovered from these surface survey activities has been augmented by a very large artifact corpus recovered during salvage excavations and water sceening a large colluvial fan on the beach near the center of the site. Together, these materials will form the base comparison lot for this study. It is composed of over ten thousand pottery sherds and tobacco pipe fragments. Also, over ten liters of bone material and 30 liters of lithic debris and tools are part of the combined material data base of the Walker Village. The bone and lithic material will not be addressed in any detail for this study.

Related Studies in the Research Area

Literature addressing the Late Woodland of the Potomac Piedmont is comprised of a few site reports that were prepared in conjunction with salvage operations or work done by avocational archeologists. Additional investigations have been made by university graduate students and some of their findings are available in the form of non-published dissertations or theses. Most of this material is of limited value for the present study because of varying research goals and focus of the studies. The earliest of these reports is by Stearns (1940) for the Hughes Site (18MO1).

This site is located three kilometers due east of the Walker Village site on the Maryland floodplain shore. It had been a village with strong artifact resemblances to Monongahela sites to the northwest. Stearns recovered what he could while the site was being pillaged by a commercial pothunter. Many of the artifacts illustrated in his report had to be purchased from the digger. About 77 burials were exposed that reflected bundled, flexed, supine, or cremated remains. Thousands of shell tempered pottery sherds, bone implements, shell beads, and small quartz triangle arrowheads were also recovered. The village seems to have been circular in configuration, if the trash and burial pit pattern reflects house placements. The diameter of this

arrangement is about 200 feet (122 m). By most standards of comparison in the Eastern Woodlands, this was a significant settlement of unusual size.

Other villages containing just such characteristics as those found at Hughes have not been discovered in the Potomac Piedmont. While excellent bone preservation and the finely tempered shell (fresh water mussel) ceramics indicate a quite late settlement of Late Woodland Indians, this writer does not believe Hughes to have been contemporaneous with the Walker Village. No European artifacts were observed in direct context with aboriginal materials. The three non-Indian burials with fragments of coffins and T-headed nails are considered to be fully intrusive. Additional supporting comments relating the ceramics to this difference will be provided in the following chapters.

MacCord, Slattery, and Schmitt (1957) relate the excavations conducted at the Maryland floodplain Shepard Site, about one kilometer north of the Walker location. Work was performed by three investigative groups over a span of almost 15 years. In the middle 1930s Stabler and Slattery worked for three years off and on at the site, excavating over 2,000 square feet under the guidance of interested Smithsonian professionals. Yinger and Fout from Frederick, Maryland, next investigated the site during 1952-55. MacCord, assisted by members of the Southwestern

Chapter of the Maryland Archeological Society, completed this triad of investigative activities. His published report includes the data extracted during all of these excavations. Shepard is a well stratified, multiple-component site. The lower layers contain Early Woodland Marcy Creek, ceramics while the top zone contained Albemarle crushed stone temper ware as defined by Evans (1955).

Six other wares were identified using the Evans type definitions as the excavators interpreted them. These are listed by the series name and the percentage of the total sherds each series represented: Chickahominy 6.6%, New River 2.2%, Stoney Creek 2.2%, Clarksville 0.5%, Radford 0.4%, and Potomac Creek 0.3%. The Albemarle majority ware recovered during MacCord's investigations represents three tempering agents: granite, 1084 sherds; quartz, 168 sherds; and two sherds with mica temper. No mention is made of mixtures of tempering materials in the same sherd. Two dates from MacCord's excavations are of interest: A.D. 1220 and A.D. 1280 (Stuckenrath and Mielke 1970). Both were obtained from charcoal associated with quartz and granite tempered wares.

The Shepard Barrack Site (Clyde 1959), located close-by on the west of the Shepard site, was excavated by the Southwestern Chapter of the Maryland Archeology Society. While a final report of this activity has not

been published, Sigalove and Long (1964) do report a date of A.D. 1520. The wood charcoal that was dated was obtained from a burial pit that had quartz tempered pottery present.

Slattery wrote an extensive report on the excavations at the Winslow Site, a Maryland floodplain village five kilometers east of the Walker site and just downstream from the Hughes Site. This report has now been edited by MacCord and is scheduled for 1987 publication. Two earlier preliminary reports were published by the Archeological Society of Maryland in its Miscellaneous Papers series (1960a, 1960b). A significant portion of the site remains undisturbed, for it is partially covered by the 19th century spoil piles of the C&O canal construction. This writer has surveyed the surface of Winslow and has recovered pottery sherds tempered with granite. The rhyolite projectile points from this site are larger than those of the more common quartz variety found on other sites in the area.

Although the Slattery excavations were conducted in the 1960s, the report should still be of value because of the abundant artifact descriptions and the radiocarbon dates that were processed on stratified pit fills. One of the three dates from a storage pit was associated with a chert tempered ware and translates to A.D. 825 (Sigalove and Long 1964). The second date of interest from this site

was obtained from a house floor and was associated with a steatite tempered ware: A.D. 1285 (Sigalove and Long 1964). This last date, especially, is thought to be within the occupation frame of the Walker Village Site. Based upon the overlapping pattern of trash pits arranged in a circle and a subsequent large enclosing palisade line that does not coincide with the earlier pit pattern, two different Late Woodland habitations likely.

Tidwell and Woodward (1965) report the excavations conducted at the Hargett-King Rockshelter (18MO12) where they recovered ceramics judged similar to those from the Winslow site. Slattery and Looker discovered the site and dug a small test pit during the winter of 1960-61. The rockshelter is located along Great Seneca Creek in Montgomery County about 33 kilometers north of the Potomac River. The temper materials in the sherds recovered from the upper layers of the habitation floors included granite, quartz, leached limestone, schist, and sand. Below these were found Marcy Creek steatite tempered sherds and below these, sand tempered sherds. Some of the quartz tempered sherds had cord wrapped stick impressions as decoration elements.

Maryland State archeologists have conducted extensive surveys in the Monocacy River Valley to the north and west of the study area. Kavanagh (1981) has developed a careful analysis of the traditionally defined wares in

support of her transect sample surveys in the Frederick valley. She relates many of these to sites and the relative stratigraphic positioning between ceramic types. Kavanaugh used the typology established by Stephenson (1963) and Evans (1955) modified with caveats based upon the research and conclusions of Peck, referenced below. These investigators encountered four Late Woodland period village sites on the floodplains of the Monocacy River or upon adjacent high terraces. Sixteen radiocarbon dates have been reported (Stuckenrath 1978, 1979, 1980) for the four village sites that span the period from A.D. 1015 to A.D. 1590.

At the Biggs Ford Village (18FR14) dates from three features are associated with limestone tempered pottery. At Nolands Ferry (18FR14) the dates were derived from features that also had limestone tempered pottery in association. At Rosenstock Village (19FR18) the features that were dated contained quartz and granite tempered wares. Devilbiss Village (18FR38) had a single dated hearth with quartz and granite tempered wares in association. The Nolands Ferry Site was excavated under carefully controlled parameters as part of the Archeological Society of Maryland annual field school under the direction of personnel from the State Archeologist's office. Peck (1980) reported this activity and published for the first time in the Potomac area a comprehensive

review of the decorative motifs and patterns found upon the wares recovered from the surface and excavations at this site. He showed a sensitivity to the shortcomings of traditional pottery typology that has so far not been repeated in the Potomac area. This particular study will be referenced in detail in a later chapter dealing with the results of the Walker Village site ceramic analysis.

Peck and Bastian (1977) describe their test excavations at the Devilbiss Village site. It was a far less ambitious undertaking than the Nolands Ferry project. Nevertheless, they did recover significant information and a valuable radiocarbon date from a pit feature that relates to the ceramics there (A.D. 1105). The sherds recovered in the pit fill were tempered with crushed quartz and had a folded collar with horizontal cord impressed decorations. Peck and Bastian defend the continued use of the Shepard typology in reference to these sherds versus the more inclusive Albemarle type defined by Evans (1955). Their argument is based upon the differences in decoration about the neck and lips of their sample. They also go to some length to relate their Shepard sample to what are perceived to be similarly decorated and dated Owasco wares from New York and Clemson Island wares in Pennsylvania.

The Monocacy Site, located at the confluence of the Monocacy and Potomac Rivers, is a deeply stratified settlement location with multiple cultural layers separated

by sterile alluvium. The upper cultural layer, bounded by radiocarbon dates of A.D. 1250 and A.D. 1665 (Gardner and McNett 1971:44), contained a majority ware tempered with crushed quartz. Crushed limestone and crushed shell were the two minority wares in this zone III of the excavation. McNett provides additional details and comments about the ceramics from this cultural level in his manuscript dealing with the Potomac River Survey (1986). Here he decides to abandon the traditional type, Albemarle, and attempts to define other types based upon finer distinctions of surface finish, appendages, decoration, and stratigraphic positioning relative to other redefined wares. He references excavations conducted at the Virginia shore Catoctin Village Site, the Fisher Village Site, and the Mason Island site complex studied by Franklin (1979).

Commonwealth Associates (1980) performed a 10% unaligned sample excavation at the Bazuine Site (44LD3) on Lowes Island just downstream from the Walker Village site. This was a salvage or mitigation of a site scheduled for destruction by the Fairfax County Water Authority as it proceeded with its plans to build a water induction facility on the banks of the Potomac River. The site was a multicomponent complex on the first levee of the floodplain environment. The plow zone and a significant portion of the buried matrix contained evidence of Woodland Indian cultures.

The ceramics recovered in the excavations were for the most part not identified or related to any of the other artifacts. The report of these investigations is of high value not for the excavation of the upper layers of this site but for the recorded research directed to paleo-environments and weather systems that impacted the entire ten thousand year history of its sporadic cultural use. The conclusions stated and justified by Larsen (1980:17-46) apply equally to any site in this portion of the Potomac valley. Another study that addresses the former weather systems and the environments of this general area is the Ph.D. dissertation of Victor Carbone (1976). His primary focus was the upper Shenandoah River zone that contains the Paleo Indian Thunderbird Site, but his findings and weather systems include the Potomac Piedmont as well. His research is of benefit to every site examination conducted in the Middle Atlantic area.

The western boundary of the Monocacy River Valley is formed by the Blue Ridge Mountain chain. Immediately adjacent and forming a roughly north-south barrier is Catoctin Mountain. The valley to the west of Cactoctin Mountain is drained by Catoctin Creek which flows from roughly the Pennsylvania border to the Potomac River. This valley (Middletown Valley) is the source of much of the rhyolite that is encountered on many of the sites in the Potomac Valley. Along Catoctin Creek are various rock

ledges and overhangs. One of these forms a rather well defined rock shelter: the Everhart Rockshelter reported by Geasey (1972). The materials excavated from this location form a veritable museum collection of almost every known projectile point type seen in the Middle Atlantic archeological province. The pottery fragments are equally representative. The shelter has been judged a way camp involved in the procurement of rhyolite. The materials recovered seem to represent innumerable short-term camping episodes.

Adjacent to this valley on the west and partitioned by South Mountain (also an element of the Blue Ridge system) is the Great Valley of Maryland. This is the local portion of a wide valley that reaches from near New Jersey down past Harrisburg, Pennsylvania, to the Maryland-Virginia Potomac Valley, and on down the Shenandoah Valley to the headwaters of the James River in southwestern Virginia. In Maryland this topographical configuration is locally known as the Hagerstown Valley. Stewart (1982), under contract to the Maryland Historical Trust, worked extensively in this area performing survey and analysis of the prehistoric cultures.

His analysis of the Late Woodland ceramics shows a continuity with the wares identified by Peck (1980); Peck and Bastian (1977); MacCord, Slattery and Schmitt (1957); and the summaries provided by McNett (1986). In addition,

Stewart finds an increasing presence of ceramic types traditionally attributed to the Monongahela cultures northwest of the area and the Clemson Island cultures just north in Pennsylvania. Stewart's comments about typology and the creation of type names apart from a stated problem analysis justification are also most appropriate to this study.

The western reaches of the Potomac River toward its headwaters in the Appalachian Mountains contain numerous Late Woodland occupation sites. Most of these have only recently been discovered or comprehensively excavated. Kavanagh (1983) relates the first analysis of materials from the Paw Paw Village location where Clemson Island and Shepard-like ceramics have been recovered. The lack of shell tempered wares normally attributed to the Monongahela cultures and the presense of Buck Garden ceramics (a West Virginia early Late Woodland ware) indicate an early Late Woodland occupation for the site. A radiocarbon dated trash pit (A.D. 1010) contained sherds tempered with crushed quartz, chert, grit, limestone, and mixtures of these. Rim sherds have close affinities to those from the Potomac Piedmont.

Excavations at Cresaptown (Wall 1983, 1984) in Allegany County, Maryland, have revealed the presence of what seems to be a Monongahela village showing strong artifact relationships to other sites of this culture in

the Upper Ohio River Valley. The majority of the ceramics are tempered with limestone (described as Page ware) with a minority showing shell tempering. The form and markings of these ceramics can be related to those of the Gagney Monongahela village 25 miles northwest of Cresaptown which is thought to have been occupied ca. A.D. 1100. A second occupation at the Cresaptown site is believed to have taken place about A.D. 1600, just before European contact. Pousson (1984) reports National Park Service excavations at the Moore Village site, also in Allegany County. This is a Monongahela village with houses around an open square. Wattle and daub were elements of the house structures. The ceramics were almost entirely Monongahela shell tempered wares as recognized from other village sites in Pennsylvania. Three of the four radiocarbon dates processed indicate that the site was occupied between A.D. 1400 and 1500.

The following chapter will review the literature and studies of areas beyond the Potomac Valley which are directly applicable to this study because of ceramic patterning or chronological settings that provide some of the desired placements in time to be addressed later in this study. Several of the works are included because of the techniques used in the analysis of ceramics. They provide some of the more innovative and careful ceramic studies that are available.

CHAPTER IV

CERAMIC STUDIES BEYOND THE POTOMAC PIEDMONT

There are hundreds of studies that address pottery and design elements. Some few of those that most directly apply to the configurations and motifs addressed in this study or that utilized applicable investigative methods will be discussed in this chapter.

The pottery examples and analysis of Stephenson (Stephenson, Ferguson, and Ferguson 1963), as an example, are of value because of the illustrations and the thorough work he performed upon the collections from the Accokeek Creek site materials. This material, excavated earlier by the Fergusons under conditions that were very non-scientific, forms an extensive corpus of ceramic material from which Stephenson extracted a significant amount of information. This site, a multi-component Late Woodland palisaded vilage, is just to the east and downriver from Washington, D. C. It is in the tidal reaches of the Potomac River. Sherds from this collection and their description are of significance to the Walker

Village ceramic study because of similarities in temper and design on some of the examples. Of value also are the distributional aspects Stephenson provides for these wares in the tidal reaches of the Potomac River and the associations with other cultural settings in Late Woodland villages. This research is referenced on a regular basis by every serious study in the Middle Atlantic where pottery samples are posited against the Stephenson standards. These comparisons are made even when the Accokeek material typology is being replaced or augmented with new work, chronological enhancements, or nomenclature.

Of equal value in examining continuity of design element and form is the Egloff and Potter (1982) study of the ceramics from the coastal plain of Virginia. It provides a detailed review of some of the Evans (1955) typologies and demonstrates the need and application of new types that are more closely defined and structured to reflect archeological problem statements than the original wares that comprised many of the Evans groupings. Of greater significance, this article is one of the first (and most recent) that ties new radiocarbon dates to studies both old and new in the area.

Potter (1982) and Waselkov (1982), who conducted extensive site analysis and excavations on the Virginia side of the tidal regions of the Lower Potomac, have provided welcome details from stratified and sealed middens

that show occupational continuity from ca. 2000 B.C. to A.D 1650. In addition, each author has addressed the settlement patterns of evolving ranked societies in the Late Woodland. Their analyses also discusses the weather systems impacting those cultures.

A subtle enhancement that each of these studies brings to Potomac River Valley archeology is found in their descriptions of the lithic tools and artifacts found in direct association with radiocarbon dated features and accompanying ceramics. The lithic tool kits from Late Woodland contexts have usually been beclouded by poor stratigraphy, plow-mixing, or excavation procedures that did not incorporate careful scientific methodologies. There are subtle differences in the projectile point sequences that, once established in chronological order, will enhance the ability to place the ceramics into like chronological sets when radiocarbon dating is not available (as at the Walker Village Site).

A survey of the artifact collections from the Patuxent River drainage (Steponaitis 1980) shows the site distribution and artifact occurances that collectors have established over the years. Pottery samples are part of these collections; Rappahannock Incised, Rappahannock Fabric-Impresssed, Townsend Corded-Horizontal, and Potomac Creek Cord-Impressed rim sherds and Sullivan ware are illustrated. This study also relates the historic

locations of village sites as recorded by Smith's seventeenth century explorations and what seem to be modern site definitions based in large part upon the ceramic wares recovered.

The Townsend wares described and their ubiquity at Late Woodland sites in the Coastal Plain are of prime importance because of their demonstrated temporal sensitivity in design motifs and documented trends over time. Artusy (1976), Blaker (1963), Griffith (1980,1982), Griffith and Custer (1985), Custer and Griffith (1986), and Custer, McNamara and Ward (1983) provide a complete review of the Townsend ware ceramics of the Delmarva peninsula. The more recent of these studies offer carefully separated chronological sequences based upon both radiocarbon dates and the documented change in design motifs over time. These changes have recently (Griffith and Custer 1985, Custer and Griffith 1986) been worked into a settlement pattern for the Late Woodland cultures of the area that help place ceramic covariations into perspective.

An example of the diagnostic value of careful design and motif analysis is to be seen in the Custer (1985) identification of the Minguannan wares in southeastern Pennsylvania. This is especially applicable in light of similar studies by Kraft (1977, 1986) in the Upper Delaware River Valley; Stewart, Hummer, and Custer (1986) in the Lower Delaware Valley; and the review by

Custer (1986) of the Lower and Middle Susquehanna Valley. Custer's discussion (1984) of his Woodland II period cultural remains and interpretations for Delaware and the surrounding area adds considerable cohesion to the overall current view of the cultural dynamics of that period in the Middle Atlantic region. These investigators have become highly sensitized to ceramic design elements and motifs as they have searched for a better mode of definition than was available under the traditional generalized ceramic typologies in use when they began their investigations.

Studies From More Distant Areas and Their Applicability

Many of the ceramic characteristics recorded for the wares of the Potomac Piedmont have been referenced to northern, northwestern, and western correlates. These include the cord wrapped paddle markings on the bodies, basic shape of the pots, fillet-thickened rims, decorations made with a cord wrapped stick, lip surface markings, and scribe and punctate designs on the thickened collars or areas adjacent to and below the lip. Temper materials of shell, limestone, and crushed rock have also been the keys often used to relate the Piedmont wares with those of distant river drainages.

It must not be overlooked in this discussion of ceramics that other aspects of material culture recovered

at archeological sites form part of the evidence justifying these suspected interrelated cultures. The artifacts of stone and bone as well as village house patterns and burial customs comprise characteristics or attributes that when coupled with the sensitive ceramic traditions imply co-traditions or successive development in given zones and micro-zones. Cultural definitions of the pottery of these areas are grouped under the larger rubric of such terms as proto-almost-anything, Monongahela, Fort Ancient, Shenks Ferry, Clemson Island, and Owasco.

After reviewing dozens of site reports and summaries addressing these cultures, the writer became sensitive to the wide range of investigative interests and the highly varied quality of research these represented. He has had to establish some parameters or selection criteria for inclusion in this study. In short, these criteria are a melange of subjective controllers, any one of which could be over-ridden by what was perceived as a higher priority for inclusion by another. Some of the criteria include clarity and organization of prose, professionalism of the investigation as reported, quality of illustrations, amount of text devoted to the ceramic analysis, quality of the bibliography, quoted radiocarbon dating, and relations to other studies in terms of problems addressed.

Owasco is a term that relates to the precursors of the Iroquoian tribal cultures of New York and the surrounding areas. It is an all-inclusive term that is more accurate in the chronological periods assigned to it than the detailed material cultures the rubric covers. There is no reason to assume that the pre-Iroquoian cultures were more uniform in material expressions than the subsequent 'tribal' identities justified by later covariations in the archeological record. Owasco was identified by Ritchie and MacNeish (1949) and has been in general use ever since.

Ceramic charactristics attributed to Owasco are typically found in New York and adjacent Canada, and in Pennsylvania, especially around Lake Ontario and in the drainage systems of the Susquehanna and Delaware Rivers. These wares tend to be cord wrapped paddle marked, decorated with a cord wrapped stick, have crushed rock temper, and often have collars formed by a fillet or down-folded rim. Strohmeier (1980, 1985), McNett (1967), Ritchie (1980), Kraft (1975), and Funk (1976) illustrate examples of this ware. Hays (1965) provides a now dated but still appropriate summary of the radiocarbon datings that relate to this Woodland manifestation.

Niemczycki (1984, 1986), Wright (1980), Sykes (1980), Stothers and Graves (1983), and Hayes (1980) provide a northern boundary analysis for the Iroquois

connection. To the east, the work of Petersen (1986) and Snow (1980) in New England provide sufficient comparative material for the purpose of the Walker Village relationship search. In Pennsylvania, issues of the Pennsylvania Archaeologist have provided the most rewarding source for much of the information sought about cultural affinities north, northwest, and west of the Potomac River Piedmont.

Monongahela settlement and ceramic analysis are addressed by Boyce (1980) for the Novak Site, Buker (1968) for the McKees Rocks Site, Michael and Grantz (1981) for the Fisher Site, Bunker (1970) for the Drew Site, and George (1974, 1978a, 1978b, 1980, 1983) extensively at several sites. Nale (1963) relates the salvage excavation of the Monongahela Boyle village where over 6,000 ceramic sherds were recovered. Mitchum (1984) encountered a deeply buried Monongahela village on the banks of the Monongahela River in West Virginia. The alluvial covering of the site implies significant environmental events since its occupation.

The cloudy relationships of the Clemson Island, Shenks Ferry, and Susquehannock cultures are assessed in the light of an extraordinary stratigraphic record at the Fisher Farm Site (Hatch and Koontz 1983). The Parker Site (Smith 1973) also provides information that relates to the these cultures in the middle Susquehanna River area. A valuable overview (now a little dated) of the Shenks Ferry

'people' is offered by Heisey and Witmer (1964). Additional work is reported that addresses the Owasco-Clemsons Island-Shenks Ferry continuum by Bressler (1980) and Kinsey and Graybill (1971). Heisey (1971) provides an interpretation of Shenks Ferry ceramics.

Graybill (1980,1984) records his impressions of the Ohio Marietta Works as the eastern periphery of Fort Ancient culture settlements. Gardner (1982) sees Fort Ancient as "Adena without mounds". Characteristics of this culture are to be seen in many of the remains of the later western Pennsylvania Late Woodland archeological materials. Fort Ancient influence is also recognized in the material record of sites ranging to the south in the Appalachian river systems of West Virginia (Applegarth, Adovasio, and Donahue 1978) and Virginia. Without doubt the most comprehensive review of the Fort Ancient aspect is that of Griffin (1966). Tankersley and Meinhart (1982) provide a more current review of Fort Ancient ceramics. In addition to the excellent journal reports, the regional compendiums of Kent (1984) and Kent, Smith, and McCann (1971) are of considerable value.

Geographic areas west of the Appalachian Mountains were far more subject to influences that have been little recognized in the Potomac Piedmont areas. Among these are the much earlier Adena and Hopewell interaction spheres followed by the Mississippian culture zone that reached

from the Gulf coast north and up the Mississippi River to the Canadian border, and perhaps beyond. Because so much of the analysis of the Walker Village motif analysis has addressed the tools used in making designs that comprise the motifs, the writer examined site reports from these areas farther to the west than one would think necessary. This examination showed a surprisingly wide area in which tool types used in the Late Woodland Potomac Piedmont zone were being used by cultures a thousand miles away. They also had been in use there for a very long time.

The Kay and Johnson (1977) analysis of the A.D. 100-400 Havana Tradition in Central Missouri provides a report of an unexpected western utilization of tools that produced very familiar punctate and bossed designs, zoned patterns, and the favorite of all, the cord wrapped stick on the lips. The observation that incising was also used in much the same style as our local Late Woodland examples was almost anticlimactic. Michigan was next examined via Fitting's (1970) review of the southeastern part of the state. Here too are to be seen the tool utilizations that formed the Walker Village patterns. They also closely conform to the Missouri examples, but they have different dates. The Parker Festooned series found in this area and attributed to the same Late Woodland cultures by radiocarbon dating had construction details and decorative finishes that did not seem to be of the same basic

tradition as the other series. Strothers and Pratt (1981) have since related this interloper to the very different Mississippian influences from the south.

The western plains seem rather remote from the Potomac Valley and from any consideration of ceramics that might be observed from sites so far removed from the Walker Village Site. However, the eastern zones in the area of Nebraska and Kansas do have some common aspects with the traditions observed in the Middle Atlantic. These aspects are the cord wrapped stick and paddle used to decorate or mark the pottery recovered from sites along the western river plains and adjacent bluffs. Wedel (1959) has illustrated the continuity of the cord wrapped device as reflected in the markings on sherds recovered from dozens of Woodland period sites in this broad zone. This is also the area where the Puebloan painted wares have been encountered in their most eastern settlement context, near Kansas City.

In addition, this is the region displaying the western extremes of the earlier Hopewellian influence that was transcended in most technological aspects by later cultures. The Upper Missouri River area of South Dakota (Stephenson 1971) was surveyed in connection with the Oahe Reservoir project. The Potts site and several others in the region of the same chronological set bear pottery examples that could have come from the Walker Village site:

single cord marking in rows parallel to the rim, lip markings, angular patterns of inscribed and nested triangles in bands below the lip. The writer does not mean to imply that these cultures are directly related to the Potomac Piedmont. He does emphasize that traditions of pottery decoration in motif aspect were widely practised and there are many examples to draw from in illustrating long lasting traditions of wide distribution.

To the south of the Appalachian Potomac headwaters, in Tennessee, North Carolina, and southwestern Virginia, the ceramics encountered upon village and camp sites also relate to the Walker Village pottery complex. This assessment is based upon similiarities in temper materials, surface decorations and finish, and radiocarbon dates when available and attributable to the ceramic evidence. The classic and much referenced Coe (1964) studies of the Carolina Piedmont address significant and well-excavated Late Woodland sites in this area. Keel (1976), in turn, provides the results of his detailed excavations in the Cherokee village areas of North Carolina. He examines the settlements that predated the historic Cherokee and is able to show a continuity of cultures over a considerable period.

The ceramic cultural changes seen in the southern Appalachian mountains of North Carolina, Tennessee, Kentucky, and Virginia have a direct bearing upon the Ridge

and Valley province of Virginia and Maryland Late Woodland cultures. Pottery from these southern areas is found in the Shenandoah Valley and its northern extension in Maryland, the Hagerstown valley. An example is the study reported by Riggs (1985) in northeastern Tennessee that illustrates the southern expressions of limestone temper and the added reappearance of steatite tempered sherds with surface decorations seen in southwestern Virginia. This area seems to be the source of the complicated rectalinear stamped examples recovered at the Walker Village.

Several studies (Benthall 1986; Johnson 1986a, 1986b; Geier 1985) from the Gathright Dam area of Bath County, Virginia provide additional evidence for Late Woodland traditions that seem to have a very wide north-south distribution along the mountain chains from Pennsylvania to Tennessee. Bott (1981) provides data that relate the archeology of the uplands versus the riverine environments with particular attention to the ceramic evidence. He does this in terms of settlement locations and the introduction of non-riverine placement of Late Woodland sites in locations that seem more directed to control of, or access to, trade or communications paths. Hoffman and Foss (1980) provide an integrative overview of Blue Ridge prehistory that fits well with the above studies.

Holland's (1970) survey of southwestern Virginia, Gravely's (1975) update and expansion upon Holland's data and typologies, plus applicable portions of Evans, (1955) discussion of pottery series and wares also provide considerable elaboration upon these studies. Each and all of these works are highly subject to revised conclusions as new research and radiocarbon dating refocus what seem to be many confounding positions of counterviews and serial descriptions of cultural change or continuity.

Even the earliest of these studies provided caveats in terms of conditional statements based upon acknowledged scanty information or generalizations that required far more detailed stratified or dated evidence from a wider area of investigation. An example from the Central Shenandoah Valley is provided by the Manson, MacCord, and Griffin (1943) excavation at the Keyser Farm Site where the limestone tempered wares now called Radford or Page were encountered.

The following chapter will review and evaluate studies directed toward ceramic typology. Emphasis will be directed toward those that have addressed problems involving cultures as reflected in pottery and perceived differences and regularities in technological and artistic expressions.

CHAPTER V

CERAMIC CLASSIFICATION: TRADITION, WARE, TYPE, AND SERIES

> ...there is magic in names. Once let a handful of miserable fragments of fourth-rate pottery be dignified by a "Name", and there will follow inevitably the tendency for the name to become an entity, particularly in the mind of him who gives it. Go one step further and publish a description and the type embarks on an independent existence of its own. At that point the classification ceases to be a "tool", and the archaeologist becomes one.
>
> (Philips, Ford, and Griffin 1951:62)

The use of type and variety to organize ceramics into cohesive lots that can be related to other cultural material remains, ecologies, site definitions, interarea definitions, and even individual village craft traditions has been the topic of unending discourse and debate. Much of this debate seems focused upon the failure of investigators to fully understand the historic basis and intent of the original type or variety definition. This debate can also be attributed to researchers who assign different emphases or priorities to different attributes and continue to either use the old typologies or create new ones without explaining fully the key attributes that have

been found not to covary in the traditional manner.

This study is a prime example of research that is addressing the same aspects as most of the types and series, but is doing so by applying criteria in type definitions very different from those that would normally serve that purpose in the Piedmont Potomac. Cultural continuity is to be sought via the medium of coded message icons that are in the form of ceramic designs. The traditional factors of surface finish, shape, temper, wall thickness, and color here are assigned very low priority positions in the hierarchy of attributes that would allow assignments of the sherds to the traditional type and varieties that have been established in the area. This chapter will review the genesis and support of 'type' as it is being applied and modified in various applications. The intent is to place the current use of motif in this study in perspective in terms of attribute covariation, diagnostic attributes, and variation real and imagined.

It is reassuring to read the conditions and parameters placed upon a type or variety by the original investigator and distressing to see these conditions ignored by later investigators who likely have information not available to the earlier studies. The type then moves on into current studies burdened with characteristics or conditions not considered initially. Gifford (1960:341-3) offers one perspective of type and variety:

> Types are summations of individual or small social group variation consistant with boundaries imposed by the interaction of individuals on a social level and determined by the operative value of systems present in any society. The variety probably reflects common decorative tradition among villages of a relatively small area (Gifford 1960:341).

It is an education in the real world of type and variety to try and follow the logic of Steponaitis (1983) as he addresses the "morass" of different pottery wares at Moundville, and then proceeds to create and combine old and new varieties to meet the more critical demands of his research. It is of more value to follow the careful development and application of type and variety presented by Shepard (1956), both in the chapter on typology and the views expressed ten years later in her foreward to the 1965 edition, where she contrasted the criteria listed by Adams (1964) and the earlier position of Smith, Willey, and Gifford (1960).

This writer's introduction to Potomac Piedmont prehistoric Indian pottery prior to the current study had been piecemeal and totally unplanned. Archeological sites were discovered during larger site survey activities that contained pottery sherds that required some sort of report description. Since simple observations that pottery was found at a new site would not suffice for a site report, an identification reference had to be found. Initially, advice from co-workers with wider experience in the pottery

aspect of artifact identification sufficed. Over time, this advice was perceived to have some inconsistencies or was found to provide pottery type names so all-inclusive that reversion to a generic name "pottery" would have been as definitive.

The writer, unknowingly, was being introduced to one of the more active debates in modern archeology: type and series definitions and related problems of analysis, justification, and the systemics of attribute recognition and documentation. The realities of different research goals and the definition of data needed to support those goals had long been an active part of the writer's work with lithic materials and in particular the projectile point morphological sets that appear to have chronological and cultural significance. Now the same problems and dilemmas were to be focused on pottery sherds as well.

Gross consideration of the Walker Village ceramics was initially organized within the framework of the Virginia ceramic typologies established by Evans (1955). This was a traditional reference and approach that, while dated, represented a very wide overview of pottery from all areas close to the Potomac Piedmont. In addition, most of the available publications of site reports in the Maryland, Virginia, and Delaware archeological society publications also used the Evans reference, as did the professional

reports. The same types and series were being addressed in the many archeological meetings in the Middle Atlantic area. True, some researchers had shown that one or two of the types could be better applied if recent radiocarbon dates were used to establish the chronologies involved, but in general, these types and series maintained their primacy as "the names to use". By the time laboratory work had been completed on material recovered during the third controlled surface survey of the Walker Village Site, the Evans reference had become inadequate as a typological guide and identification manual.

Ceramic sherds from the Village had so many different and combined tempers that traditional typologies simply could not be applied as they were defined in the Evans study. Variation in the surface decorations of these sherds also seemed to confound the decoration sets traditionally attributed to the type. Additional references made to site reports as published by the area archeological socities and several regional overviews from Pennsylvania, New York, and New Jersey provided little additional information that could be used in identifying the growing corpus of ceramics from the Walker Village. The intent of the Walker Village studies was to relate the material culture represented by the artifacts with other locations with similar artifacts. It would have served no purpose to simply respond to the frustrations of the

ceramic dilemma by creating new series names so as to isolate the Walker Village materials and announce to the world that they seemed different.

What emerged from the more recent of these references was a widespread dissatisfaction with traditional ceramic typologies and ware naming. The writer had arrived at a point in the research where he was unwilling to use any published classification system that resulted in a type/series/ware with a personal or geographical name. The type names that included some aspect of design or surface finish attribute were equally frustrating in comprehension. A pottery referenced as "grit tempered cord roughened" is hardly set apart from the universe of similar sherd lots by naming it "Bruinhild Farm grit tempered cord roughened" ware. Research was then focused as an alternative upon the theory of archeological type definition itself and the criteria that have been found to result in effective isolation applications. The recognition or measurement of the criteria was planned to be another reference study.

Clarification of the identification process and the required information for type building was not readily available in the journal debates on typology. What was available amounted to a review of how serious a problem typology was in the minds of active and much admired archeologists. The review became a literature search

guided by the need to understand as many aspects of the typology problem as could be held applicable to ceramics in the Potomac Piedmont. Every consideration and argument, every explanation and discussion in some way seemed applicable (Braun 1985, Brown 1982, Brunson 1985, Kintigh 1985, Plog 1980, Spaulding 1982, Vierra 1982, Wright 1980, Whallon 1980). The product of this review is a much more sensitized researcher who still feels somewhat alone with thousands of sherds of pottery that any other student would surely have tidily classified in one tenth the time this study has taken.

In defense of confusion and a reluctance to lump attributes within a type name, some justification and explanation are in order as a prelude to moving forward into the methods of this study and a reading of the results. Ceramic typology is not the villain in this one act play of analysis and comparison. The problem lies in the differential weighting of attributes as unstated givens in descriptions of ceramics and their ultimate lumping under a one 'type' rubric. An insidious factor within this problem is the use of descriptive terms that, while imaginative, are provincial and not mutually exclusive in their broader language applications.

The fact that characteristics, or attributes, are singled out, clustered, counted, and then subjected to various esoteric and plain statistical analyses does not

change the symptoms of the problem in the least. A series of observations are often first generalized into a category, then translated from continuous scale dimensions to a name-cluster set. These sets are presumed to be equally weighted in diagnostic value and are then converted to Cartesian coordinates through placement upon a new scale matrix. Here they (or their positional equivalents) are converted to a new set of measurements that address deviations from a self-defined or impressed norm (the slope of a line which is a translation of something else). Then this last mathematical schema is compared to tables of values that represent true random dispersional distances from a perfect norm.

Variability measurements and comparisons with any of several available norms do not 'prove' or disprove membership in a type that is itself an artifact of the mathematical conversions. In reality, traditional type assignment, or establishment, has attempted the same process through intuitive reasoning reinforced by subsequent recognition of the same suite of characteristics in another applicable sample. Seldom have the reasons or needs been stated for assignment to a type. The problem to be addressed is often left unstated as though subsequent research will somehow know just what was being sought in the original study.

In retrospect, most of the studies that have used type and series assignments as non-spectacular statements of fact were all attempting to relate a site or the culture it represented to other sites and cultures. Many series within types have been established simply because the researcher felt that the variables he had isolated were too far removed from the 'mother-type' to be allowed to remain under that family rubric. Localizations of series sub-sets were (and are) isolated by assigning a new name to a pottery that had most of the attributes of the 'mother series' but had one or more unique other characteristics. The unique characteristics might vary from use of a different temper material to the perceived difference in the width of inscribed lines on a collar element. The advent of radiocarbon dating changed some of the old assumptions but gave credence to many more.

This is not a case of scientific self-confabulation, but rather a demonstration of the expansive questions and equally expansive answers that were being bandied about. If a question is general enough in its latitude of coverage, the answer can be equally broad. More recent studies are asking questions that require a much more finely honed blade of inquiry than most of the traditional studies could ever provide. These new studies are less in search of chronological settings for the sites being examined; they probe, rather, into the very

motivations of the long gone inhabitants themselves. Ceramics, by being one of the more plastic, and presumably sensitive, carriers of tradition, have become more than chronological markers set out against seriations of many types. Ceramics, by being coded carriers of messages once understood in the symbol sets of their parent cultures, deserve better treatment than most typologies would allow. In short, typologies as shorthand names for culture trait lists or as technical expressions of one or two attributes mask and generalize away unique and lasting data.

Typology will persist. Series within types will continue to be named and applied to local collections. This in and of itself is not a mortal wound for scientific inquiry. In fact it is well and good, but only if sufficient attributes are aligned with each named grouping. It would be far from sufficient to simply establish a new series within a type if the difference elaboration still used terms like "grit temper", "incised collars", "cord marking on the neck", etc. Ceramic attributes that address the decorative marks upon the clay, motif forms, and elements of covariance, are all being used by researchers around the nation. The problem seems to be that everyone is not doing it, and among those who do, meaningful standardization of descriptive ceramic terms has yet to come into common play. Most of these researchers are operating within the traditional types that have been used

with mixed success over the years to address material cultural remains.

In the Potomac Valley and surrounding areas of Virginia, Maryland, West Virginia, and Pennsylvania, typologies have been established by avocational and professional archeologists in attempts to organize the artifacts from thousands of prehistoric sites into ordered groupings that would provide a standardized shorthand in ceramic descriptions and chronological placements. The traditional reference is the compilation by Evans (1955) of the various wares recognized in Virginia. It was an admirable task performed during the same period that radiocarbon dating was being developed and tested. Additional types were recognized, defined, and published in limited distribution journals of local archeological societies. It is not uncommon to encounter type references that are tied to only verbal communications from the individual who has been consulted as the expert for an area or site. The actual description of the artifact has never been published by the original researcher, nor was the full range of unique characteristics presented which would have assured other researchers that the "new" item had been adequately studied in relation to other wares and samples.

Various investigators had addressed the earlier ceramics of this region (Manson 1947) and established typological sets that have survived the additional research

of later studies. These have prevailed because the wares involved were from some of the earliest types recognized in the area, and they all tend to be non-varying in technology and decorative definitions. Variation, both large and small in definition, became the rule rather than the exception in ceramic production in the later Woodland periods. Within the gross type descriptions that had come into use, a seemingly endless list of varieties within the types began to enter the literature as investigators looked more closely at the smaller elements of variation and attempted to incorporate them into unique group definitions. This proliferation of varieties has made it almost impossible for an investigator to consider the ceramics in hand as opposed to those that might be referenced because of differences both stated and unstated that have entered the variety definitions and are not published as a reference corpus. The names themselves have become a shorthand or a code system that only those in the club can understand. The club is normally a group of archeologists who have lived and studied in one restricted area. For them (or at least most) the shorthand terms work within the constraints of their research.

This study has created new types. They are at the moment only appropriate for this study. They are based upon the marks that pottery tools made in the soft material of a pot in production and the patterns that resulted.

They become types when the schema of the pattern is found repeated within the Walker Village rim sherd sample and also at other archeological sites. That these patterns are offered here as coded messages of membership is a new approach in Potomac Valley archeology. The following chapter provides an extensive review of motifs as cultural communication devices and their iconic nature. The topic is a broad one that ranges from some of the basic psychological definitions of group dynamics through some of the more recent considerations of cognitive studies. All of this is part and parcel of the motif identification and its use in place of the temper and pot morphologies traditionally used in assigning ceramic covariance episodes in typology.

CHAPTER VI

ART, STYLE, PATTERNS, SCHEMA, MOTIF, ICON, AND RITUAL: MARKINGS IN THE CLAY

Deetz (1960) was certainly one of the first to use an analysis of the distribution of design attributes to show their correlation with changes in social organization or residence. He used data from three components of the Medicine Crow Site to show that Arikara social changes in the historic period were reflected in the attributes of ceramic manufacture where earlier non-random distribution of stylistic attributes became more random through time. Additional demonstrations of intra-group correlations with pottery designs were made by Cronin (1962) in her analysis of design elements that showed that there were more similiarities in style among the types found at any one village than existed within one type at several villages.

Longacre (1970) followed Cronin's lead observation and applied stylistic analysis to an entire Pueblo ruin where he observed functional and habitation unit regularities in his results. He designed his entire data recovery and artifact analysis process around the suspected

non-random variations hinted at in earlier work done at the site. Many of the conclusions reached by Longacre were questioned in terms of appropriate ethnographic analogies or their application to the observed data (Stanislowski 1973), but his concepts of ceramic analysis and patterned elements related to style remain as landmark approaches in continuing efforts to use pottery as a key to human organization and activity.

Hill (1968, 1970) conducted a similiar study but with perhaps more interpretative discipline applied to a wider context of artifacts and functional definitions at the Broken K Pueblo. This study also came under critical scrutiny (Muller 1973; Fried 1968; Aberle 1968) that was focused more on the ethnohistoric analogs and the implicit dangers of attempting to bridge the gap of prehistory with anything that is to be seen today or in the recent recorded past. Such bridging is not considered inappropriate, as such; the caveats are applied as cautions and underline the need to specifically address the potential slip points in one-for-one comparisons. In Fried's words (1968:351), "the reflecting edge must be held at the proper angle to avoid distortion". Work continues upon the painted wares of the Southwest and also continues to provide inspiration and techniques that can and should be applied to studies of ceramic style and change (or variation) in any context.

The ceramic analysis system and guide of Bennett (1974) and the non-hierarchical approach to ceramic decoration analysis of Jernigan (1986) are of particular value as a focus of method and analysis organization. Once the meaningful (significant) elements of design have been identified and related to a particular context of cultural or tradition focus, Plog's studies and discussions (Plog and Braun 1984; Braun and Plog 1982) provide good guidance in statistical testing and inference relating to tribal networks and systematic attempts to define 'tribe' itself in terms of material culture. Working with fine chronological controls provided by both extensive radiocarbon datings and dendrochronological samples, these investigations have demonstrated that ceramic variation in design motif execution and content can be used to trace the expansion and contraction through time of ceramic cultures in large areas. Interaction of people is seen in the continuity of these motifs and subtle changes, changes that reflect trade and the deduced elaboration and subsequent degeneration not only of intergroup activities but in intragroup social definitions of rank and function.

The Eastern Woodlands do not have the exotic and delightfully patterned painted wares of the Southwest that have provided such analytic opportunities. Research in the East has focused instead on the ceramic elements that are molded, impressed, or cut into the clays of the pottery.

Decorations have been incorported by these means into many of the wares of the Late Woodland prehistoric cultures. Through studies of the paste and tempers, surface treatment, and in particular the tool marks that comprise the patterns on these ceramics, investigators are making strides equal to those in the Southwest.

The major difference in regional focus is surprisingly not the difference between painted wares and non-painted wares, but in the lack of fine chronological controls in the East. This lack is not for the trying. It is a result of a combination of an environment that is not kind to the preservation of materials left upon an archeological site, three hundred years of intensive agricultural activity on many of the sites since their abandonment, and a very dense population of modern definition. This population has built roads, bridges, and cities on top of many of the more productive archeological locations.

Ceramic design motif analysis has been used to excellent advantage by Griffith and his cohorts in Delaware (1974, 1980, 1982, 1985). These studies are of particular interest to the present study of the Walker Village wares because of the many shared characteristics not only of the design motifs but of the basic construction and body markings as well. Whitlam (1981) in Alabama, Benn (1978) in Iowa, and Lugenbeal (1978) in Minnesota have all tied

motif change and regularities to fine chronological benchmarks which has allowed them to look beyond the ceramics to the dynamics of social organizations in varying positions of stress from the environment, technological change, and intergroup reactions.

In New England, recent work (Petersen 1986) has shown new applications of the motif study in definitions of design elements and subordinate tool applications. This work also provides another example of site-specific cases where multiple tempering materials are found in ceramics in the same stratigraphic horizon that differ from one another in no other aspect. These studies have also provided leads to explanations of suspected population response to influences from their west and south. Ideas of the origins of Iroquois culture have recently been drastically modified (Niemczycki 1984, 1986) for the Seneca through a detailed analysis of ceramic motif change and discontinuities that eliminated a traditionally identified hearth-land and pointed instead to a northwestern origin that was in reality a migration path.

Similar studies keyed to sensitive ceramic motifs by Dickens (1976), Dickens and Chapman (1978), and Riggs (1985) have provided growing understanding of cultural sequences and interactions in Tennessee and Virginia border zones. These changes are documented in an area adjacent to the southern and western extremes of the Potomac River

drainage. In Late Woodland periods this was an obvious interaction frontier between the ranked societies of Mississippian tribalism to the south. The Flanary Site (MacCord 1979) in Scott County, Virginia and the Coronett Site (Evans 1955:107) provide eloquent testimony to this presence. Motif and form from these sites are remote from anything at the Walker Village; however, the limestone temper of the Carolina-focus of the Mississippian wares is also one of the majority fillers at the Walker Village.

The literature addressing the regularities and beliefs of various and sundry societies and the individuals within them seems to have few problems relating what can be observed as recurring behavior and the various materialistic symptoms of these regularities. One might quibble with the terms used or perhaps what was not observed in sufficient detail to support later studies, but overall, a consistent picture does emerge. What does not emerge, or at least in terms that can be universally understood or measured, is why people behave the way they do. There is much confusion between overt behavior patterns, the terms used to describe them, and the terms used to justify such patterns. This dilemma is not restricted to the study of prehistoric peoples. Our own world is literally a writhing system of symbols, motifs, and iconic displays.

Symbols and the interlocking systems of reference shared and not shared are so common in our lives that we seldom take note or even show awareness of them unless a violation of tradition places a symbol in the wrong place at the wrong time. An example would be tennis shoes on a bishop at a high mass. Another is to be seen in the facade store fronts of boomtown shacks, or even along any Main Street, U.S.A. The personal symbols we display or avoid are obvious and an integral part of our roles in society as we do, or do not, perceive them.

We display an automobile, and upon it little signs and symbols of membership or belief. Our front yards are symbols of what we believe and the degree to which we choose to conform to the wider social system of beliefs reflected in the neighborhood around us. It is easy to observe high variability in detail between yards that conform to a higher pattern configuration and definition. One aspect of yards can illustrate this: floral decoration, content and placement, species planted, and grooming of the natural growth forms that result. At times symbols are used in this context to isolate through use of detail variation (isolate in the sense that Smith wishes to set himself apart from Brown, yet communicate to the observer [and himself] that both he and Brown are members of the same social, economic, or community set). Other physical aspects of the yard and its contents are symbols of

belonging to part, but not all, of the neighborhood. And so it was with the prehistoric people who created the clay pots of the Walker Village Site and every other archeological site that we can find. While we can see our own symbols, and can offer justifications or implied understanding of them, can we do the same for pottery from a different setting and time frame?

Harris (1978) nicely sums up a view stated in countless ways in the anthropological literature:

> Most people are conformists. History repeats itself in countless acts of individual obedience to cultural rule and pattern, and individual wills seldom prevail in matters requiring radical alteration of deeply conditioned beliefs and practises (Harris 1978:290).

The continuity described by Harris is to be seen in the ceramic technologies and the decorative techniques used by particular people throughout North American prehistory. Anthropologists have recognized combinations of these morphological and decorative techniques as bounded by geographical and chronological parameters. Names have been applied to sets of covarying characteristics. The names have usually implied a oneness demonstrated by a trait list comprised of ceramics and every other physical and material item that has been recognized at the name site. Such lists address house patterns, burial practices, pit placement and configuration, lithic preference and utility, food remains, and relative placements of the site in the physical world.

Concerns about the larger lists have often diminished particularistic attention to attributes of the ceramics that would have emerged if they had not been subsumed into the larger cultural picture.

Generalizations can be justified in any descriptive situation; indeed, we must generalize at some point in the analysis of anything or we degenerate to the absurdity of atomistic description that is at such a low level that the analytic particles are equally present among all units seen. However, generalization must be carefully considered and applied only after extensive demonstrations have shown it to be justified. An example would be in reference to the shape of complete pots found at a site. Some generalizations in regard to construction technique and general shape can be made after a reasonable perusal of the sherds. It would be spurious to then generalize that, "all rim sherds had linear decoration and some other markings below the rim ." This would be especially true if a name was being applied to the pottery as a specific type, implying a difference from all others.

The almost parenthetical phrase, "and some other markings below the rim", is a cartoon in this example, yet such generalizations of almost equal absurdity are not uncommon in many studies that include ceramic analysis of incomplete definition under wide generalizations. Steward and Shimkin (1961:480) consider the problem of cultural

evolution analysis to be two-fold, ". . . the life histories of elements, and the identifications of patterns, including their development and transformations". While cautioning that cultural innovations are constantly developing, they observe that:

> . . . the acceptance of innovations is rare, since it depends upon the social recognition of their distinctiveness, their utility, and their compatibility with existing practices (Steward and Shimkin 1961:480).

They add to this the impact of "borrowing" and the very real possibility that borrowing may be only in symbolic form through stimulus diffusion and that such elements may acquire novel functions in the new environments. At best, many dangers lie in the assumptions easily attributed to singular ceramic traditions.

At worst, outright error can be passed as observed fact without the slightest clue that error lies in our perception of a pattern that was perceived far differently by the pattern craftsman. Shimkin (1947) recognized this posssible duality when he observed that patterns combine microvariations (individual styles) with prescribed rules. Schapiro (1953:308) addresses this in his discussion of style in art: the artist versus the greater tradition within which he maintains the 'style' yet displays himself. Schapiro (1953:291) focused much of this writer's approach to motif identification with his observation, " A style is like a language with an internal order and expressiveness

admitting a varied intensity of delicacy of statement." Later, he becomes much more explicit:

> Style, then, is the means of communication, a language not only as a system of devices for conveying a precise message by representation or symbolizing objects and actions but also a qualitative whole which is capable of suggesting the diffuse connotations as well and intensifying the associated or intrinsic effects (Schapiro 1953:304).

Style and Art

At this point in the study of sherds recovered from the Walker Village Site, a consideration must be made of some very abstract concepts. These concepts are not new to anthropology nor are they new to the study of ceramic designs. They are new to discussions of artifacts recovered from Potomac River Valley prehistoric sites. Most of the terms that will be used are abstract, subjective, analogous, and seem steeped in the "non-scientific" jargon more often found in carefully phrased art critiques. The terms presume to describe events or perceptions that are internal to an artist and the people who view his work. They attempt to circumscribe the influences that the viewer may or may not recognize in the work and then to define these coherently as logical trains of cause and effect. In short, attempts are made to identify reasons for the art work as it appears, why it reflects or does not reflect

some aspect of social, psychological, or historical continuity. Few would deny that the systematic markings made in the soft clay of prehistoric pottery qualify as art and are fair game for such analyses.

As art, these marks become subject to the extensive measures and contemplations that have been applied to art of all forms. One of the key subjects in discussions of art centers upon style and attempts to identify aspects and characteristics of the art that can be attributed to a unique style or some variation upon it. As we pursue the concept of style and how it can assist the analysis of ceramic sherds we are confronted with the same semantic challenge we have yet to fully resolve with 'type': what does it mean? Schapiro (1953:291) offers, "A style is like a language, with an internal order and expressiveness admitting a varied intensity or delicacy of statement." He is a little more specific with, "By style is meant the constant form, and sometimes the constant elements, qualities, and expression, in the art of an individual or a group" (1953:287). Qualities must be taken here as 'attributes', and 'expression', hopefully, as execution.

Evaluation of art styles is often couched in physionomic terms that depend upon internalized comparisons within the experience of the viewer: warm, cool, sad, morbid. The language of aesthetics is fully dependent upon shared cultural factors of a deep and often non-verbalized

nature. It is common to address an art object in second, third, and fourth level symbolic terms that elicit from past experience keys to emotional loading that interlock in turn with the shared experiences of a cultural group. An example might be a painting that contains figures and symbols common to that one culture. In this example they elicit memories of pleasant childhood outings in the care of a loving mother on a religious holiday in a warm spring rural environment. A viewer from a distant and non-related culture would recognize the surface symbols of some of the elements but could never experience the deeper identifications implicit in the experience of the artist and the culture that nurtures him.

The successful art critic (he is paid for his opinions) has become an expert in one or more of the broad aspects of a painter's life or that of his culture which includes other artists of the time or traditon. The critic is able to verbalize his perceived relationships and thus render the art object the more meaningful in the eyes of the public viewer. He invariably will evaluate the art against a norm of experience that in turn creates expectations. Terms such as, "fails to", or, "exceeds... goes beyond", are not uncommon in such evaluations. Schapiro (a man of high hopes) addresses style investigation much as some current archeologists are pursuing ceramic typology. His terms (1953:289) could have

come from a current archeological journal: " . . . careful description,. . . formation of a richer, more refined typology,. . . continuities in development."

By, "richer", he alludes to research into meanings, symbols, and iconographic types. He emphasizes that form is not a static being but is, rather, related to the changing attitudes that form a history of the form evolution itself. While discussing the more traditional art loci in our own culture (Greek temples, Baroque), his reference to hidden correspondences to be explained by organizing principles which determine both the character of the parts and the patterning of the whole is precisely what the investigation of the Walker Village ceramics is all about.

A few more observations from Schapiro's review of art style are appropriate. In a far more elegant fashion he has verbalized the analytical differentials being used in this study of patterned designs and recurring motifs. He considers style as the means of communication, as a language, that conveys precise messages through symbolizing specific objects and actions as well as suggesting diffuse connotations that intensify associated or intrinsic effects. While the markings on Potomac Valley clay pots are not traditionally companions of the great and small canvassas of Europe and America, they too reflect attitudes of the individual to the world and to his or her own

existance. Schapiro (1953:308), in his closing pages states, ". . .in discerning the personal expression in a work of art, one must distinguish between those aspects that are convention and those that are clearly individual". He strongly feels that style cannot be understood apart from the conditions and cultural definitions extant at its creation.

Symbol and Ritual

Style is a fact of recognized similarities or differences in a corpus of art or perhaps in a single piece of art. The genesis of the style and an understanding of it in regard to Late Woodland ceramic decoration displays requires a review of another abstract zone in the documented study of man. This is the realm of symbolism and the acts that produce it or at the least a recognition of patterns that seem to be symbols because of their reoccurance. We are no closer to hard and cold facts in this pursuit than we were with style. Below her subtitle, "Prospects", Munn's (1973:606) opening sentence reads, "At the present time, our understanding of ritual symbolism is still in the formative stage." Earlier, she had opened her discussion with the observation:

> Looked at from the inside out, ritual can be seen as a symbolic intercom between the level of cultural thought and complex cultural meanings, on the one hand, and

> that of social action and immediate event on the other. (Munn 1973:579).

Another view can be justified in that the repetitious production of symbols becomes a ritual. In this application, ritual becomes the guide within which behavior (production of design on pottery) becomes automatic within certain latitudes of variation. The technical requirements of the pot fabrication give way to the esthetic addition of non-technical elaborations that we recognize as designs, motifs, and symbols.

We also observe that the esthetic variations upon the lips and rims are not always applied, and when they are, they vary in detail of application, element placement, and density in a given space. Yet, when present, there are overall continuities that are always there. Conversely, there are elements that are never there. An example is the horizontal line below the lip area that has been created by pressing a single cord into the plastic clay. This line runs parallel to the plane of the pot lip, and can be predicted to be a given distance below the lip on pottery from a single site. The missing, or never used, element might be circles incised into the clay below the single line of cord impression, circles four centimeters in diameter. It is enough for this study to attempt to address the "why" of the cord mark without going into the endless lists of "why nots" and missing inscribed circles.

Munn (1973:580), citing Talcott Parsons (Parsons 1963:39), refers to the symbol/ritual process as a social mechanism which refers to, "...a symbolic control system in which as in language, the media manipulated by the actors are communication vehicles that themselves have no intrinsic utility but 'signify commodities that do'". She defines ritual as a generalized medium of social interaction. The vehicles for constructing messages are iconic symbols. These in turn convert the load of significance or complex sociocultural meanings into a communication currency. As iconic, she sees a component or likeness patterning the relationship between the form and its meaning. The form of the vehicle is intrinsic to the message carried. From the perspective of ceramic decoration, this can address several characteristics of the sherds that have been recovered. The most obvious is that the pottery itself, with or without designs, is part of the message.

The pot as a container can become the symbol of what it contains or relate to the consumption or disposition of the contents. This writer can visualize no test that is within the archeological realm that can address this hypothetical statement. To the contrary, design on the pottery, as a message in iconic form, can be tested by establishing attributes of motifs and demonstrating their continuity in time or place. Here the

pottery becomes the medium of the message which appears in motif patterns. Because of the observed variation within a larger motif form, this writer suspects that several messages are encoded in the designs. All of them are not iconic as traditionally considered. The non-iconic design elements are more likely idiosyncratic, or egocentric displays as demonstrations of potter skills of executions.

The situations described above pertain to continuity and replication which imply stability and some semblance of personal longevity within a social context that is more or less stable in those characteristics that are likely to be used as personal or social identifiers. The binary opposite of stability either in social or personal continuity in the production of iconic symbol sets that could be interpreted as style would be seen in a degeneration of replication and disappearance of motif lines. Munn (1973:582) addresses this other side of the problem: "Rituals 'fail' when they no longer co-imply this kind of relationship. . ." If the society is redefined to the extent that the new definition does not recognize value in the symbols offered, before long the symbols will be changed. Social change may result in alterations to the designs placed upon the long-traditional billboards we recognize also as pottery. The media of display as well as the iconic definition may change to expressions or material backgrounds that have not survived in the archeological

record. Such changes may be of such magnitude that the icon appears only in the coiffure of the women, or in the sequencing of beads in multiple strands. Perhaps the signals are all converted to designs worked into the fabric or skins used in clothing.

The proposed Late Woodland period of occupation at the Walker Village Site coincides with what has been recognized at many other sites as a period of great change. The changes are reflected in the density of settlements in a given area, the size of villages as populations shifted from scattered hamlets to fortified compounds and changes in burial practises. The burials themselves show the evidence of social stress through increased occurances of traumatic deaths and stress-related markings of the bones due to dietary deficiences brought on in part by expanding populations. It is not unexpected that changes impacted the Walker Village, even if they occurred early in this cultural turmoil process, and that some ramifications of this will be seen in the pottery decorations.

Cultural Cognitive Maps: Style and Social Complexity

One of the factors involved in the social upheavals mentioned above was an organizational shift from what had been egalitarian societies to the more hierarchical structures that have been called 'tribes'. The well

documented Powhatan confederacy encountered by the first settlers in Virginia is an example and a result of this shift. In the South (Swanton 1985), Spanish expeditions and explorations encountered hierarchial societies of complex and well defined structures that implied some antiquity in their development. It is not yet known when this social change began or just where it had its first focus in the Potomac Valley area. Clues to social upheavals exist all over the Middle Atlantic archeological province that seem to indicate a date of roughly A.D. 1200 for the start of fortified settlements and a coalescing of scattered hamlets into large villages (George 1980:48).

Returning for the moment to art style as discussed above, we may be able to introduce a testable set of hypotheses that can illucidate the introduction or growth of hierarchical societies in the Middle Atlantic, and the Potomac Valley in particular. Fischer (1961) has made several proposals relating art style and social organization. He used the study results and definitions of styles reported by the psychologist Herbert Barry in an honors paper prepared at Harvard. The tests compared particular aspects of art styles with social structure complexity as defined by Murdock (1957). Fischer made the assumption that pictorial elements of design are, at one psychological level, abstract, mainly unconscious

representations of persons in the society. He lists the polar contrasts (Fischer 1961:83):

> 1. Design repetitive of a number of rather simple elements should characterize the he egalitarian societies; design integrating a number of unlike elements should be characteristic of the hierarchical societies
> 2. Design with a large amount of empty or irrelevant space should characterize the egalitarian societies; design with little irrelevant (empty) space should characterize the hierarchical societies
> 3. Symmetrical design (a special case of repetition) should characterize the egalitarian societies; asymmetrical design should characterize the hierarchical societies
> 4. Figures without enclosures should characterize the egalitarian societies; enclosed figures should characterize the hierarchical societies

While the thirty cultures that comprise the comparison sample are drawn from a worldwide population, Oceana and North America are heavily represented. The exact criteria applied in the graphic arts grading (sculpture was not used) are discussed in Barry's later 1957 publication. The psychological characteristics offered by Fischer (1961:82-87) to identify the differences in populations living in the two different social structures will not be discussed here. It is sufficient to relate the artistic tendencies that have been identified with the structure of the lives creating the designs. Statistical testing of the resulting rankings are highly significant at less than the $p = .05$ level.

It is appropriate to highlight some of the variables that were implicit in the Fischer study and were

not addressed by him. These factors do impact considerations of these data and comparisons that might be applied to Middle Atlantic cultural remains. Egalitarian social organization with hierarchical replacement as a normal process of cultural evolution is not a demonstrated fact. Hence, the hierarchical need not have evolved from some earlier egalitarian form. What this might mean in the carryover or change of art styles cannot be evaluated.

Traditional loadings that impart great inertial continuity in the face of change are to be expected in iconic depictions. This is especially so if the symbolic message represents a supernatural representation or a long-standardizied plea or acknowledgement statement encoded in the icon. It is not unusual for such statements to be used in proper context, yet to have lost the initial first level of symbolism meaning through which a current encoder could with comfort explain what it was all about. Another aspect that would likely impact patterns of art would be the antiquity (or newness) of the social configuration. All of these considerations would be slip points that could not be controlled as one departed from examples within a large sample and began to seek applications in a narrow area of population that was likely undergoing stressful conversions from a prior state of equilibrium to another one not as yet achieved. In short, subsequent attempts to apply measures that would support or

deny either Fischer's results or the status of Middle Atlantic social structure during the period of the Walker Village occupation will be tenuous. Tenuous or not, more will be addressed to these observations in a later chapter.

Cultural Cognitive Maps: Views Outward and Inward

Cognition deals with human perception and understanding as it pertains to the experience of one individual, whether that person is you, the reader, or this writer. Group or cultural cognition can be defined for a given problem, but for this discussion, the individual will be the focus. Studies of cognition most often involve the language with which the person must verbalize his understanding in communications with others. Language then becomes the vehicle for overt measures of comprehension and elements shared within a community as a common understanding. Cognition mapping is the identification of the boundaries of allowable generalization within which the subject person (or community) is willing to allow a word or statement to represent what he himself perceives to be factual.

We as investigators operate with cognitive maps every time we refer to a particular sherd of pottery as representing a particular type. As a matter of fact, it is

the fuzzy boundaries of our cognitive typological maps that have caused us so many problems in ceramic technology. This writer's map of Albemarle Cord Marked is so fuzzy in its boundary definitions at this point that he knows that the map is next to worthless. There are many other things in the writer's life and his interest in archeology that have cognitive maps cleanly defined with boundaries etched in acid. An example apart from ceramics (for the moment) would be the Clovis projectile point.

The Clovis cognitive map will have in its center an image of the perfect Clovis point as always seen in someone else's publication. This center image with the well known fluting flakes, lower edge grinding, collateral flaking, and certainly the exotic lithic material is a common map held by every professional and avocational archeologist in the western hemisphere. Variations upon the Classic Clovis in form, fluting, edge grinding, flaking, and material used cause all of us to recognize that the variation is moving away from the center of the map and approaching the edge of our cognitive Clovis map.

Here is where we all start to become individuals again: no one single map is going to be the same in area or shape. You, the reader, are likely to allow retention of the name, Clovis, in one aspect or the other after the writer refuses to accept the point as Clovis because it has been altered to the point that it is beyond the edge of his

cognitive Clovis map. This could be caused by any one or several of the many characteristics that define the point being altered to the degree that the writer's generalizations for Clovis would be violated and he would find the point at the extreme edge of another cognitive map with another name in the center... perhaps, Dalton.

Few, if any, of the cognitive maps that define our world as we perceive it will be symmetrical. Some characteristic value of the center item will be so crucial that its dimensional map edge is immediately adjacent to the item itself. One tiny bit of deviation from the generalized focus and the map is violated and a new map must be found to contain the changed item. Other characteristics are normally widely variable and the map has wide lateral space to accommodate this variation and still relate to the center item.

An exaggerated example to illustrate both of these extremes might be the cognitive map tht surrounds the term (and physical item) "sherd". The size of the sherd is certainly variable and at some point in its growth toward the whole pot will slip off of the sherd map and reappear on the "broken pot" map. Slippage is immediate and final if the sherd is found to be a piece of weathered bone.

This study is concerned with the cognitive maps of the potters who created the ceramics that we now consider

as broken fragments. The study has been complicated by the cognitive maps of fellow archeological researchers. This last has been reflected in typologies and series that are not different in ways that the study would desire. The former is reflected in decorative patterns on the clay that show shadows of replication or outright duplication. Analysis of the tool marks has revealed how the marks were made and the various attention or skills of the potters that were devoted to the task of creating the decorative motifs, or icons, or designs, or whatever they are. But tool marks alone do not help us recognize the bounds of the maps that were involved in creating a pot with marks that had to fit in a given pattern.

Ethnological research among potters may cast some light upon what the potter thinks as he/she creates pots for different reasons or use. Kempton (1981) has produced one of the more comprehensive studies in this field. It is full of information relating to Mexican perceptions of ceramics utensils. His study vehicle was comprised of the common words used as nouns defining a given shape of container and a page full of illustrations in matrix aray of container variations. The variation was depicted in subtle changes in some aspect of the container morphology (from fat bodied to thin bodied) that worked in two dimensions: impacting width/height ratio, and presence or absence of things like spouts and handles. His subjects

were asked to pick the most "jarro-like" picture and then indicate on the variations shown at what point the containers would no longer be called "jarro".

Each informant (subject) effectively created a map that contained the prototype container and a boundary within which variation of jarro could still be called "jarro". Several different types of container were used. His subjects were carefully selected from local potters, traditional small town men and women, children of many ages, informants from urban environments containing all of the modern amenities, and members of family units in both rural and the urban settings. The results of these mapping sessions showed many expected regularities in cognitive maps of container definitions. They also presented some surprises that required reevaluations of earlier assumptions. Perceptions and allowed word assignments were found to vary between rural and urban groups as functions to learned traditionalism and lack of variables competing for a "word" in the rural environment versus the urban. The same sort of variation was seen between the very young who were still developing their experiences, the stabilized central ages, and the quite old. Variation of an expected nature also was obvious between the women and the men that could be traced to functional differences of container aspects rather than to the variation in shape (lips, handles, etc.). In short, the women perceived the

containers more from the advantage of utility and use-familiarity than did the men.

The size of the cognitive maps in terms of the number of variations that would be allowed under the generic container name being tested varied widely. The potters had the most restricted maps and variation seemed to be accepted based solely upon the size and relative proportions of the pictured choice-matrix items. Symmetry was usually observed around the prototype figure in the definitions of acceptable variation from plainly acceptable to the more distant map edge "barely acceptable". This was not the case for the modern villagers who displayed a prototype displaced from the traditional toward the standardized manufactured (and imported) containers that were becoming more familiar in their lives. The range of acceptability was also truncated (a small cognitive map with very few items beyond the prototype), which is interpreted as a function of a learning process that will stabilize into a symmetric configuration of a cognitive map as they become fully familiar with the containers of the modern world.

Kempton's demonstrations of prototype and range of acceptance, and the variability around an "arch-type" based upon container (ceramic pot) morphology, more than likely have cross-overs into other cognitive maps that would be of direct interest to this study: in particular, the findings

of cognitive stability (tradition-bound) and the predicted instability attributed to a learning process. These could well have recognizable cross-overs in decorative scheme cognitive processes that would be reflected in the production of "acceptable " wares. It is worthy speculation to consider the cognitive maps of hamlet and village potters of the Late Woodland periods and perceptions of what would have been acceptable as a design placement on a pot. They too had a prototype, and that prototype was bound by limits of acceptable variation in design structure and placement. This resulted in the schemata that are being assigned motif types in this study.

Replication as performed in validity and reliability tests by Kempton cannot be conducted on prehistoric ceramics. Recognition of replicated design elements can be achieved, a form of test replication several steps removed. If the cognitive maps existed in the minds of the potters, their products should reflect them to the degree that production remained within the boundaries of the acceptable design sets. The contents and structure of the motif types used in this study attempt to isolate these prototypical schemata. As a type, each motif set, by definition, will be a reflection of the various potter conceptualizations of what was appropriate for a

given pot and its use within the hamlet of occupation or within a target environment if the pot was intended for exchange.

Each motif set is going to be tested beyond the home hearth of the Walker Village. Personal and group identity factors will be demonstrated to be widely pervasive within broad chronological and geographical definitions. While this study amounts to a pilot that is presenting a new analytical tool, the hypothesis embedded in the assumptions of the study execution has implications far beyond the Walker Village and this attempt to help explain its cultural history.

CHAPTER VII

METHOD OF STUDY: FIELD ACTIVITIES AND LABORATORY PROCEDURES

Introduction

There are several phases that comprise the recovery, analysis, classification, and comparison of the ceramics from the Walker Village Site. Each of these has a set of methodological processes and supporting assumptions. This chapter will discuss those that pertain to the field activities and the laboratory procedures. The results of the phased investigation are displayed and discussed in Chapter IX. Justification and discussion of this writer's rejection or acceptance of a traditional method or analytical assumption will be addressed in this section. Selection of this or that approach has been eclectic in the hope that the results will have maximized recognition and tabulation of the information needed for this study. The basic analytical process that has been applied is one of attribute recognition and isolation. The isolated clusters of attributes are then addressed as unique markers of undefined ceramic traditions. The attributes of highest

priority are hypothesized to be tool marks and the patterns they form. Clay temper retains a priority attribute position in this study but it is of significantly less value than tradition would assign.

Artifact Recovery

Three different environments of the Walker Village Site have provided the ceramic materials subjected to analysis in this study. The first is the surface of the site itself. The artifacts obtained were collected during several controlled surface surveys conducted over a span of four years. The second environment was a colluvial fan on the beach of the Potomac River where material had washed from the site surface to the beach below. The third source was material from a bank section and profile cut thirty meters west of the colluvial deposit. This was a reliability check of the sectioned bank profile at the colluvial deposit. Fig. 2 illustrates a plan of the site with an overlay of the grid system and the two bank sample locations. The site map is drawn approximately to scale and is provided more as a postitional focus within the site and its island environment rather than to provide an exact grid plan from which pareticular cross references can be made to the coordinates of different field recovery gridding activities.

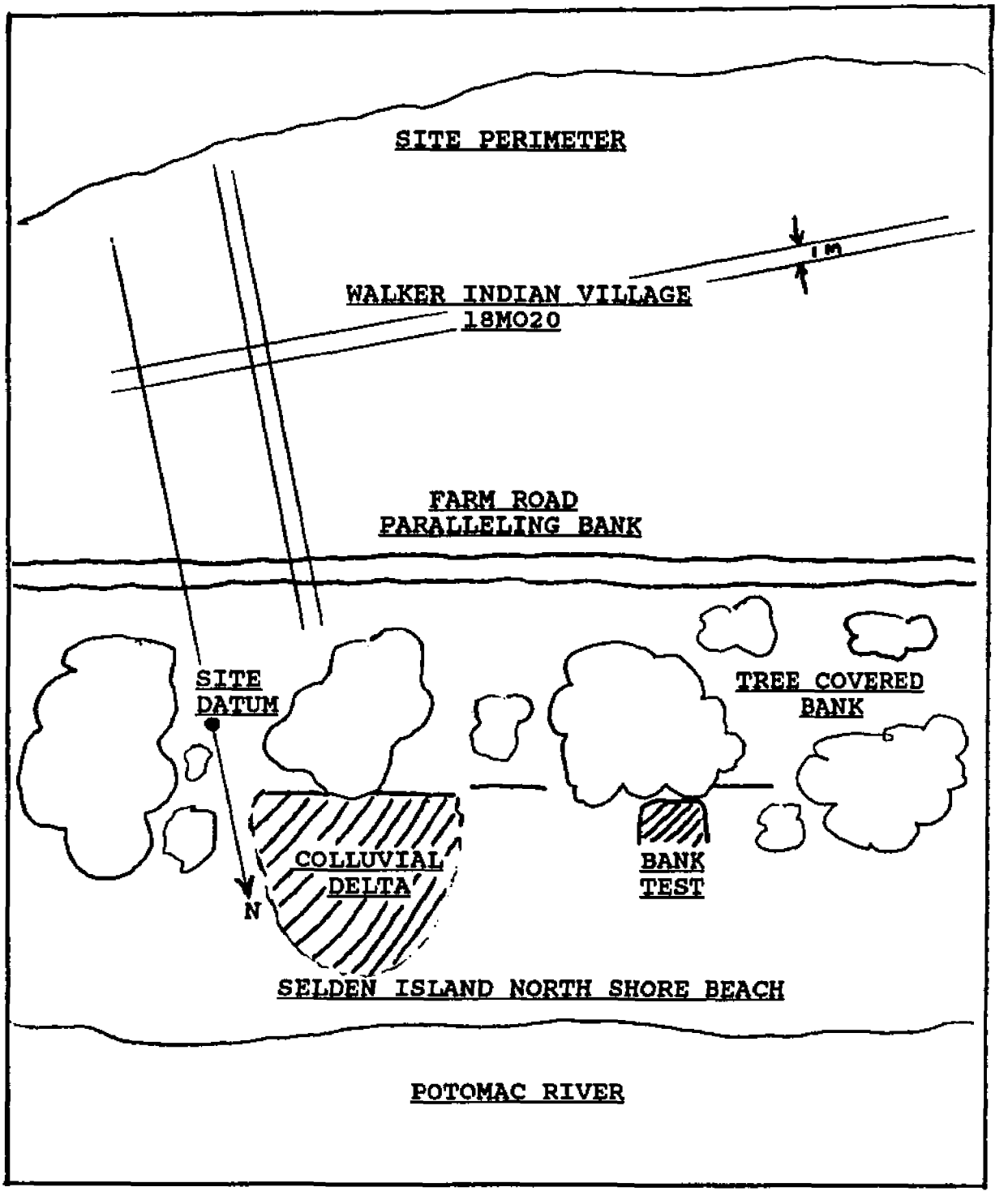


Fig. 2. The Walker Indian Village Site (18MO20) on Selden Island, Montgomery County, Maryland. Plan view showing site grid scheme and the position of the two river bank sampling locations, the beach delta deposit, and the bank test.

Not one of the many field investigations of the Walker Village Site was designed with the express intention of recovering ceramic artifacts. They were, rather, designed to delimit the boundaries of the surface ramifications of the site or to identify surface concentrations of freshly exposed material after a farm plowing episode. This last was an attempt to locate subsurface features that were newly being disturbed by modern deep plowing techniques with the hope of negotiating specific and limited salvage excavations.

Each field trip was designed around the basic strategy of marking artifacts on a master grid of the surface of the site. This entailed the use of a site datum reference point, a compass, thirty-meter tapes, and wire survey flags. Pedestrian passage over a survey sector of the site resulted in flags being placed at each artifact recognized on the surface. These were then measured into the master grid and the coordinates (measured to the nearest centimeter) recorded with a brief description of the artifact in the field log. The artifacts were usually bagged in zip-lock plastic containers uniquely marked for each east-west, one-meter, transect.

One departure from this procedure was a modification caused by coming darkness and the loss of volunteer field crew before the full recording job had been completed. Several hundred flags remained in the growing dusk of a Sunday evening. Work could not be resumed at the

site until the following weekend. As a result, a flagged sector 30 by 60 meters at the western edge of the site was not measured into the grid and all artifacts there were divided between two bags that separated the north and south sub-segments of that 60 X 30 meter search sector. The artifacts recovered under these conditions represented less than 5% of the materials recovered that day.

Several variations on the basic sector search and recovery process were attempted to obtain the desired information on concentration locations while retaining the efficiencies required by limited manpower. These variations were directed at the search units and the size of a 'plot' within which all artifacts were grouped into one recovery bag within the sub-grid definition. Plot size trials varied in size from one square meter to a transect one meter wide by thirty long (north-south) on two different occasions. Many of these field activities were conducted under far less than ideal conditions. Combinations of weedy field stubble and rain-filled low areas confounded many of the attempts to conduct a reliable search in which all artifacts on the surface could be recognized, or even recovered.

Once the artifacts had been bagged, the next step in this process was to edit the field logs and compare the entries for validity in terms of the artifacts recovered, log entries, and the coordinates that had been assigned.

This was done by the writer in the laboratory environment. Artifacts were then lightly washed in bulk using a kitchen collander and warm water. 'Clean' artifacts were then set to dry on large trays. During the drying process, initial sorting began and tabulations were made of the various types of materials present. Ceramic materials were roughly sorted by the temper visible in the sherds. Dried artifacts were returned to the sector bags, labeled, and placed in storage.

The second portion of the Walker Village Site artifact corpus was recovered under very different circumstances and conditions. This material was dug from an over-bank colluvial fan on the beach of the Potomac River adjacent to the site. The entire matrix of the fan was eventually removed and water screened through 1/4 inch mesh. The primary excavation was performed with trowels and the loosened dirt shoveled into plastic 5-gallon buckets for transport to the water screening station some thirty meters west of the delta. Here a screen waited at water's edge where two or three buckets would be poured into it. The screen was then towed into deeper water and one or two workers would gently agitate the loose dirt through the screen as it became saturated with water. When the artifacts began to become visible with the washing away of the dirt, the washers would remove the smaller items visible that might fall between the mesh of the screen and

be lost. A bag was retained with the screen for holding these materials.

After the screening team was satisfied that no additional dirt was going to wash free, the screen and its remaining contents were returned to the beach sorting station. The screen was dumped upon a very large plastic sheet where the contents were sorted and placed in collection bags marked for bone, lithics, shell, ceramics, and 'other'. This last category was designed as a fail-proof catch-all that minimized questionable decisions made by a crew undergoing field training. This was a pure salvage operation brought about by discovery of the colluvial fan and the very apparant fact that it was being progressively washed away with the frequent flooding of the river. River flotsam and natural pebbles were removed and discarded while the artifact sorting was in progress.

Artifact density in the delta matrix was unexpectedly high. It was not unusual to recover in a single screen over 1,000 easily recognized items. Because of the excavation with trowels and artifact recovery during that process, screen materials tended to be the smaller fractions of bone, beads, flakes, and ceramic sherds. On several occasions due to increasing darkness or intense summer storms, the entire contents of the plastic sheet were hurriedly poured into a bucket for later resolution in the laboratory environment. There, after each field

session (13 days), the material was lightly washed (considerable mud was left from the water screening) and again sorted.

It was quickly recognized that field sorting of the wet and mixed screen residuals was less than 100% accurate. By examining the refuse piles at the beach sorting location after each outing, it was verified that sorting error was heavily on the side of inclusion rather than exclusion. Subsequent work in the lab completed the removal of natural clay lumps, pebbles, bark, and river flotsam. The 500 man hours invested in artifact recovery and field sorting were doubled in the laboratory as finer sorts and counting divided the data base into coherent sub-units. This was fully completed before the intensive ceramic analysis began that forms the focus of the current study.

A third set of artifacts is included in this study: those recovered during a reliability check of the bank profile about thirty meters west of the beach delta deposit. A bank cut was made to obtain a comparative subsurface profile of the stratigraphy thought to be present away from the natural drain that had created the colluvial beach delta. This excavation was one meter wide and cut into the bank from the top to the cobble layers of the island basement on the beach. The bank face of this vertical examination was cut far enough into the bank to insure a surface unmarred by bank slump. As with the

matrix from the delta, all of the spoil from this excavation was water screened, sorted, cleaned, examined, and tabulated.

Tests of Validity and Reliability

At the sherd analysis level, certain abstract concepts must be taken into account for the investigation to have more than passing value or interest. These concepts involve the statistical validity and reliability of the sample-in-hand. Does the ceramic sample from the beach represent the full body of ceramic material on the surface of the site itself? Do the several samples obtained through controlled surface survey activities have internal consistancy? Is it valid to then combine the delta materials with those of the surface recoveries and the bank test profile into a single corpus that reflects the full Walker Village Site ceramic presence? A very significant question at the base of any answer to the above questions is, "What aspect of the sherds should be used to obtain measures of reliability or validity?".

To approach the several answers to the above questions some assumptions must be stated. First, in consideration of the surface material as representative of the full range of ceramics at the site, the plow zone surface is a thoroughly mixed soil matrix 50 centimeters

deep. All ceramics that had been embedded in this matrix have had an equal opportunity to appear on the surface since modern deep plowing began in 1972. Each surface collection has been made on a field that had been plowed at least once since the prior collection. Any collection taken under these circumstances will have a representative sample of the ceramics in the top 50 centimeters of the Village matrix.

Secondly, the beach delta deposit is the result of colluvial wash from the surface of this same field. An unknown proportion of the material in the delta arrived there before farming activities began under modern conditions. It might have been augmented by over-bank trash deposits by the inhabitants of the Village. Such an addition to the beach material is judged to be minimal because the modern bank definition is a product of different flood regimens caused by modern deforestation and the artificially high level of the river caused by the C & O Diversion Dam #2. Bank section profiles taken at Lowes Island (Mc Daniel 1979) and at the Selden Island Walker Village Site as part of this study in 1984 indicate that the first levee environment at both locations has been severely truncated in historic times by heavy flooding.

A simple test of the over-bank sample was made to measure one aspect of the ceramics recovered in the controlled field surveys versus those from the beach delta

and its companion bank profile. This test (Table 1) was a comparison of the proportions of sherds/temper in three environments.

Another set of circumstances has an impact upon samples of sherds that comprise any study group: bias

TABLE 1

COMPARISON OF SAMPLES BY MAJOR TEMPER GROUPING.

MAJOR TEMPER	BEACH DELTA		BANK TEST		FIELD SURFACE		TOTAL	
	#	%	#	%	#	%	#	%
Quartz	1571	26.5	33	18.8	486	30.4	2090	27.2
Qtz & Lmstn	430	7.3	18	10.2	121	7.6	569	7.4
Limestone	718	12.2	13	7.4	170	10.6	901	11.7
Shell	1223	20.7	43	24.4	202	12.6	1468	19.1
Hornfels	331	5.6	8	4.6	166	10.4	505	6.6
Granite	1459	24.7	50	28.3	392	24.5	1901	24.7
Sand	178	3.0	11	6.3	62	3.9	251	3.3
TOTAL	5910	100	176	100	1599	100	7685	100

introduced by prior collecting activities at the recovery site. Having seen one of the larger collections taken from the Walker Village Site by avid relic collectors, such a bias is a real if unmeasured factor. The degree to which it will impact conclusions drawn from the remaining materials seen in this sample must be addressed once the analysis and summaries have been tabulated.

One of the frequently recurring criticisms of traditional ceramic analysis relates to the use of raw

sherd counts and statistical summaries derived from them. This concern addresses inherent biases caused by single vessel sherd over-representation in an artifact lot. If, through the luck of the draw (sample variability in the archeological recovery process), all of the sherds from a throughly broken large pot are recovered and only a few from other pots, mortal over-representation of the large pot will skew numerical analysis. If the large pot is the only one of its kind at the site, serious misjudgments will result when based upon its sherd 'majority' presence. This growing sensitivity to biases inherent in many of the traditionally performed site examinations is well documented (Petersen 1986; Lavin 1986).

Heeding and agreeing with these concerns, this writer performed a test to measure the impact of sherds versus sherd-lot-pots. The shell tempered material from the beach delta was tested. A multiple "oneness" criterion was created using the attributes one would expect to be "stable" in a single pot: cord impressions (size, twist, and applied pattern), interior surface color and finish, exterior color and finish, temper (size, alignment, and density), and core composition (color, clay characteristics, and non-temper inclusion analysis). This was a very time consuming task in which the writer recognized that many subjective decisions were being made in the process of sorting and judging membership in a

particular sherd-pot pile. Gradations of surface and core color intensity and hue seemed after a time to all blend into an amorphous reddish-brown.

Judgements were found to vary under different light conditions (sunlight versus several artificial illumination sources). These considerations were found to be reversed or modified over a period of time when the sherds were not viewed and then again approached for sorting. The exercise is deemed worthwhile as a one-time experiment in this study. The identification of perhaps six sherd-lot pots each represented by about six sherds does not seem to justify the work and time required to lessen an unmeasured bias.

None of the sherds representing a particular pot could be fitted together on the existing broken faces. None of the sherd/pots provided additional information as to shape. Those that could not be matched in this process remained as a several-hundred-shell-tempered-sherd-group that defied further cross-mending to a single pot identification. By definition, this large residual of sherds could represent as many different pots. Removal of the non-pot identity sherds from this study would have been unscientific at a minimum and blatantly destructive of the sample reliability at a maximum. There would have been very few shell tempered 'pots' in the subsequent whole-pot sample.

Close familiarity with the sherds of other tempers and their variability in temper size, core color, surface finish inside and out, and the difficulties in perceiving differences in cord impressions that had been wiped to various degrees of oblivion, gave the writer a feeling of foreboding should he follow the 'single pot sherd lot' criteria in restricting the sherds to be used. A positive aspect of this exercise was the demonstration of the large pottery sample that the beach delta contained. It would seem that hundreds of shell tempered pots had been broken during the Village occupation and portions from many of them had been washed or thrown over the bank lip to lie as isolated representatives of their home vessel.

Another suspected bias in the use of sherd counts to determine the proportion of a given attribute present at a site is addressed in many of the more recent references. In particular, proportions of the sample in each of the temper lots is thought to be biased when sherd counts and percentages are used. Analysis performed by Applegarth, Adovasio, and Donahue (1978) at the Fort Ancient village site on the New River in West Virginia (46SU3) provides some relief from this concern. Differences between proportions of temper lots by gram weight versus temper lot proportions by sherd counts are not significant. It must be understood that several factors enter into these observations. The most obvious is the uniformity of sherd

size, a condition much evident at the Walker Village Site. The other factor is embedded in the theory of large numbers and the heavy majority of a given temper element. In the case of shell tempered sherds at 46SU3, there were over 2,000 and they weighed over 14,535 gm. They also comprised over 97% of the total in both count and gm weight.

Part of the Walker Village material is archived in hundreds of plastic bags: one bag for each surface search grid unit being used on the day of the field work. All artifacts from a given grid unit are in the same bag. It has not been feasible to readdress the ceramics in each in order to further test the bias that may be present in sherd count statistics versus sherd weight comparisons. The other part of the sample resides also in plastic bags, but bags that are dedicated to various intermediate aspects of this study. To realign all of these different sorts by weighted temper lots is beyond the scope and focus of this dissertation.

CHAPTER VIII

METHOD AND TOOLS OF CERAMIC ANALYSIS

Attributes of Concern

The number of individual attributes that can be isolated on any one sherd seems to be infinite (Shepard:1965). Bennett (1974) produced a 155-page manual that addressed the ceramics of only a restricted area and period of southwestern ceramic tradition. LaFrance (1980) has developed an Onondaga pottery attribute worksheet that in five and one-half pages does not even address the design motifs. These studies grapple with the coding implications of continuous scale attributes by clustering within given sets. This allows less complicated manipulations of physical attributes that are delineated with metric definitions carried to some point of accuracy and then rounded to a reasonable approximation. Bennett (1974:105) takes the same approach in measuring temper proportions within a paste by providing the coding worker with standardized pictures of density sets (10%, 20%, etc.). LaFrance addresses entire vessels and not individual sherds

in his tabulation and standardization process. The implication of his method is that one has entire pots (or nearly so) available for study. Such a situation is very rare in the Potomac Piedmont where most researchers are faced with small and shattered sherds that give only a small hint of what they may have once been.

Pragmatically, and fortunately, there are only a reasonable few characteristics that provide data that the current investigator can use as diagnostic attributes. These are thought to be culture-specific, some more so than others. Traditional ceramic analysis attributes arranged in their order of importance in this study are:

1. tools used in creating any marks on the sherd
2. surface finishes and decorations
3. identification of the aplastics that have been added to the clay as temper and their several proportions (as a part of the clay mass and multi-temper proportions)
4. identification of methods of pot fabrication in terms of coiling or slab applications, collar fabrications or added fillets and lugs
5. color (both chroma and hue)
6. hardness of surfaces and cores
7. contents of the clay material that includes the elements and minerals present beyond the intentionally added tempering materials

8. identification of the natural inclusions found in clay as aplastics or casts of fired materials

9. firing temperatures as examined by replication or re-firing

10. metric attributes of thickness, curvature, and volume

Many of these attributes are variables caused by random (or nearly so) events that are part of any pottery production process using locally available clays (per site) and the open firing techniques used by the native potters in the Eastern Woodlands. Countless investigators have cited whole pots that had highly variable color combinations due entirely to the firing conditions on a particular day, at a particular place, in a particular fire. These same multi-colored pots are seen to vary in thickness due to the lack of control (variation being fully acceptable to the potter within particular bounds) or due to the structural needs of particular segments of the pot being measured (shoulder versus lip versus base versus body).

Porter and Szuter (1978:5) demonstrate variability in a pot rim element due to "bloating" of the body during firing or manufacturing. This slumping caused different rim profiles and thickness measurements taken from initially unassociated rimsherds. Temper concentrations in the same pot can vary in different parts of the body. More

distressing for the analyst are sherds from the same pot that appear to have different tempers, or different sizes of temper visible on the broken surfaces.

Modern technology in the geological science laboratory provides archeology with the full capability to identify all of the minerals and elements found in any sherd. This capability is even extended to the identification of the rock mass type that is responsible for the clay or the marine sediment identification of the calcareous materials present. A demonstration of this is to be seen in the analysis of clays reported by Sideroff (1980:179-200) in her replication studies based upon archeological evidence. Beyond such elegant demonstrations we face the pragmatic problems of clay source identification when the sediments of a study area are plentiful, varied, and almost totally unstudied or located. This is the unfortunate situation for the Walker Village Site clay sources.

The writer has observed many different clay beds at bank cuts, creek bank faces, and in various trenching operations in the floodplains of Selden Island, Lowes Island, and the extensive floodplains to the north on the Maryland shores. The clays vary greatly in color and texture (from almost black through the reds to an absolute white). On four different occasions pottery was replicated from these clays using coiled construction and shell or

sand temper. The pots were fired in open wood fires. On one occasion, a modern folk potter used five gallons of one of these clays to turn a whole series of vessels that were fired in a modern wood burning kiln. All of the pottery was successfully completed. All of it had quite different color and fired clay texture. The writer has no idea as to what the chemical, mineral, or elemental contents may have been. In the absence of geological references against which to compare the clays of the Walker Village, sherd clay analysis must assume a low priority in the list of attributes being addressed for this dissertation.

Hardness will vary on sherds from a single vessel in archeological context because of sub-surface conditions of moisture and ground salts (Hodges 1976:197). Wetting and drying will differentially impact those areas of the pot that received different heat applications during production. Other salts that are crystalline residuals from contained materials during the life of the pot are likely to be imbedded within the clays of the pot itself and will contribute to the ultimate disintegration as the crystals cycle through various stages of moisture adsorption and absorption. The absorption properties of clay cooking vessels also impact the color of sherd cores when organic materials absorbed into the body of the vessel are subsequently carbonized through overheating or after broken sherds remain in the fire environment. Because of

the variability cited here, color and sherd hardness are assigned low attribute priorities in this study.

The size and shape of archeological pottery are very important attributes whose full identification requires both metric and verbal description. This information provides details that can be translated into technical regularities for a given sample or population. Such measurements help the investigator infer the functional definitions of the ceramic vessels. Basic pot morphologies that address lip diameter, eversion-inversion patterns of the neck/rim elements, height, and basic structural proportions are invaluable for comparative studies between different applications of design and motifs. Here also belong the definitions of the lip and rim attributes; if or if not there is thickening through an appliqued collar or down-folded rim. Cultural continuity has been keyed to just such characteristics.

The problem is to recover sherds large enough to reflect these morphological attributes. Few from the Walker Village Site can provide more than the curvature seen in a large rim sherd. Because of the very shattered state of the these sherds (average size is 3 cm), many of the traditional measurements that are culled from ceramic remains are not available for this study.

Surface treatment (exterior and interior) provides another field of analysis that can be carried to various

extremes. The degree of analysis must be a function of the problems or questions being studied, the time available (often directly translated to money), the tools on hand to perform the analysis (from simple hand lenses and metric rules to main-frame computers), and a certain undefined (but extensively tested) tolerance for minutiae on the part of the investigator. Surface finish addresses the degree and kind of smoothing present, whether it is applied over earlier markings of manufacture, the condition of the clays when applied (wet or leather hard), and description of the tool used in producing the final texture (soft like a hand or hide, or hard like a stone flake).

McNett (1975:111) demonstrates the variability that can occur in surface markings in his metric analysis of Early Woodland sand tempered ware recovered from the Spring Branch site. In this case, brush marks found upon the interior surfaces are hypothesized to covary with the distance from the pot lip and its basal regions. Applications of the brushing are seen as need-specific activities recognized by the potter during construction of the pot: if the wall was too thick, wipe it down to size with a pad of brush. If it looks ok, leave it alone (no brush marks). This may be an example where surface marking is not a strong diagnostic tool, the marks being a function of primary pot construction and a potter's response to a perceived violation of her thickness constraints.

There has to be a pragmatic limit to the degree of cord impression or surface marking analysis that can be made on each and every sherd. This writer has quickly found the taxing dilemma of the point of decreasing returns as hours of microscopic examination result in perhaps fifty sherds fully examined while four thousand more await perusal. Here too looms the problem of how to record all of the information that is extracted from such minute examinations. Standardizing both nomenclature and a means of tabulating occurrences of specific observations is a very difficult process. If one is to take the study beyond the immediate corpus for comparisons with other data sets, it is not likely that the other data sets have been examined in the same terms just invented to catch every little variation of an attribute that can possibly be recognized.

Characteristics that are discovered and recorded are of little value in themselves. Value lies in the larger framework of diagnostic item arrays that are structured to expose irregularities and continuities in cultural remains. These are the fabrics from which hypotheses are woven and the research designs needed to test them. Arnold (1985:5) is addressing this in his observation, "...great detail is not necessary in ceramic classification in order to ascertain accurately the cultural behavior that produced it; it is possible to

over-classify pottery". A nagging question that never goes away is, "Will any of this add to the overall understanding of the problem being investigated?".

Clay Aplastics, or Temper

Temper variety had been the first unusual factor recognized at the Walker Village Site. It has also been the first sort criterion used in this study to begin the analysis. The examination has not been as straightforward and or as simple as had been anticipated. The entire sherd data set was to be examined. The first problem to surface was the inability to determine the temper on a distressing proportion of the sherds. Plain, old, dirt was the cause; the sherds needed more cleaning... cleaning specifically of the broken surfaces. Once this had been achieved with a toothbrush and warm water, a second problem loomed: several of the tempers could not with comfort be named to a mineral set. Quartz, sand, shell, limestone, soapstone, quartzite, chert, granite, shale, and hornfels seemed to define the suite of materials from which the potters chose individual and combinations of temper.

As sorted piles of sherds accumulated under the rubric of each of these temper materials during the identification process, a particular pile labeled 'unknown' began to assume significant size. Some of the sherds in

this pile had no visible temper on the broken faces. The rest had temper plainly visible but could not be honestly assigned to any one of the 'known' groups. Additional cleaning and examination, while both dry and wet, using a binocular 50X microscope (in sunlight), dwindled the pile significantly. A group of sherds survived this analysis and remain as a class with the temper material unknown. Intensive review of several geological and mineralogical guides and texts clarified some of the confusion in material identification (Bates and Kirkaldy 1977; Bernstein 1980; Chesterton 1978; Johnston 1964; Matthews and Boyer 1976; Pearl 1955; Williams, Turner, and Gilbert 1954).

Unanticipated information came to light while reviewing Bernstein (1980) and Johnston (1964) during the temper identification process. This was the recognition of locations in the Piedmont where several of the above tempers can be found in quantity. Quartz and quartzite cobbles of high quality material have been observed on the beaches of the Potomac River as well as in exposed deposits capping some of the higher elevations on both sides of the river. Granite and hornfels are available as river cobbles, but are present in small and scattered examples. The above two references show that extensive bedded hornfels is available almost within sight of the Walker Village Site to the south between Selden Island and Virginia Route 7. This material is exposed by Sugarland

Run, Broad Run, and Goose Creek as they have down-cut through and around these deposits.

Granite in many forms is available in penetrating dikes in the schists nearby on the east of the Island beyond the junction of the triassic red sandstones forming the Seneca basin and the more resistant Wissahickon gneisses. Soapstone (steatite) can still be seen in the quarry areas that today abut the C.I.A. headquarters in McLean near the Potomac River. Limestone is a prominant rock in adjacent regions to the west of Selden Island. The closest area is around Point of Rocks, Maryland, and the adjacent Virginia plains.

Three types of shell are available in the river today: fresh water mussel, fresh water clam, and periwinkle. It is assumed that these calcium carbonate resources were available to the occupants of the Walker Village Site. Sand, while ubiquitous along the river beaches, is not quite so clearly resolved as to source. Several of the sand tempered sherds contain a uniform white grained sand that has larger grain size than is normally found in sorted or unsorted river beach deposits. The grains are uniformally about one milimeter in diameter; a most unusual size. Cherts of many colors and quality are rather common in gravel form along the Potomac beaches and the cobble beds that form the foundations for many of the river islands as point bars.

Surface Finish, Cords, and Twists

Sorting of sherds continued within the temper lots based upon surface finish: smooth, cord marked and smoothed, cord marked, and fabric marked. Within each marked sub-lot separations were then made based upon the diameter and spacing of the cord or fabric impressions. Otis Mason (1895:225) observed, "...the savage has not been idle in the development of fibers" in his 19th Century review of inventions that mark man's progress from 'savagery' to civilization. Holmes, as observant and sensitive as ever, stated: "The several kinds of textile marking are not equally distributed over the country, but each seems, ... to characterize the wares of a particular region... (1901:397-403)". The antiquity and ubiquity of cordage in North America as reviewed and summarized by Petersen, Hamilton, Adovasio, and McPherron (1984:199-226) leaves little doubt that cord, twining, nets, and twined fabrics have been in general use since at least Paleoindian times, and perhaps for an even longer period. The cast marks of these perishable materials have been preserved from the Woodland periods and are to be seen upon the ceramic sherds that we study today.

Analysis of cordage characteristics in clay impressions has become an important aspect of overall

ceramic study. The twist used to create the cord has been shown to have nonrandom covariation between areas suspected of hosting different cultural and even language groups. Maslowski (1973,1986; personal communication) has accumulated impressive evidence in Central and Western Pennsylvania that the Late Woodland cultures reflected in Fort Ancient, Monongahela, Susquehannock, and Shenks Ferry ceramics have significant differences or similarities when cordage attributes are included with the traditional trait listings.

The twist is considered S twist if the fibers are wound in a clock-wise fashion as viewed from on-end, and Z twist if wound in a counter-clock-wise fashion (Hodges 1976:128). The vertical bar of the S and Z show the direction of the twisted fibers as they are wrapped about each other in the creation of cordage or simple twisted fibers. A word of caution is in order for any investigator new to this business of cord analysis: the impressions in the clay are the negative marks from the opposite side of the cord and will be quite the reverse of the actual cord twist if it were standing free. Cord marking is one of the more common attributes of Woodland ceramics, both in the overall surface finish and as unique elements of decoration worked into patterns and recurring motifs. Cordage as reflected in pottery applications and designs has become a key factor in studies ranging from Minnesota (Lugenbeal

1978:45-68) south to Florida (Milanich and Fairbanks 1980:177). Twist seen in cords and twined fabrics is a function of motor habits developed in particular cultural sets. Different cultural groups differ in the traditions of cordage manufacture. While to some extent reflecting the handedness of the manufacturer, twist patterns are seen to vary in proportions quite different from what would be expected if handedness were the only operating factor.

Funk and Wagnall (1983:368) state that 75% of the world population is strongly right-handed while only 10% is strongly left-handed. They also observe that 90% are predominantly right-handed. This can be translated into cordage twist which would exhibit 90% S twist pattern if all other factors were constant. The last statement must be viewed in the reality of cultural pressures to conform to the group norm. Funk and Wagnall illustrate this caveat with the example of extreme social pressure to conform in Taiwan where only 1% of the population exhibits strong left handedness. It has only been recently that the American parochial and public school systems would tolerate left-handed penmanship. We cannot expect less from the demonstrably traditional and conservative prehistoric Indians. It would then follow that cord twist impressions in pottery would be heavily S twist if handedness and conformity were the only controlling factors.

Archeological reports that address cordage in any detail are currently still rare. An earlier example of fabric analysis in archeological contexts and in particular in relation to textile markings on ceramics is the work of Miller (1962:171-183) in his analysis of the John H. Kerr Rervoir survey. He does not elaborate upon fiber twist and is content to address variations in weaving. Some later reports offer tantalizing leads but omit the explanations that seemed to be available in the data. Benn's study of the Havana Tradition in northeastern Iowa is a case in point (1978:215-284). Ceramics that reflect the Hopewell Interaction Sphere and successive stages are exhaustively analysed. The cordage imprints are decoded to reveal the multi-element Z and S twists; the proportions of either are not offered nor are they enumerated per ware other than to observe the presence of replied twists. Cowan (1979:3-34) had occasion to excavate a rockshelter in eastern Kentucky where cordage was found in some quantity. He dutifully reports his analysis of the Z and S twist fragments recovered yet does not carry this investigation over to the ceramics. He does advise that the sherds were mostly limestone tempered and cord marked.

Three studies of New England Prehistoric ceramics (Hamilton and Yesner 1986, Kenyon 1986, Petersen and Power 1986) do provide the details of cord impressions on carefully recovered and analysed pottery. The cordage

analysis was an integral part of their refreshing attribute study. The problem here relates to the lack of comparative data for the same pottery series in the same area. Many citations are made in the reports of other collections in New England, Canada, and New York, yet no mention is made of cordage aspects found in the comparative collections. This writer suspects that this is due to the omission of cordage analysis in the other reports. Numerous replication studies involving cordage and ceramics have illuminated many of the confusing aspects of cord, wrappings, tensioned twined fabric, and the process of application and the appearance of sherds made under carefully controlled replication processes (Winfree 1972; Falk 1983). In keeping with trends that elaborate upon the cordage found in ceramic impressions this study has examined cord twist, and where visible has tabulated it by temper-lot and then individually for each rim sherd. Sadly, the majority of the rimsherds have eroded or smoothed cord marking and the twist can seldom be determined.

Tools and the Marks They Make

At this stage of the analysis a change in focus was made. Rather than the sherd and its physical characteristics, examination was focused upon the marks in

the clay that had been made by some tool or device as an intentional modification of the pot surface by the potter. Tool marks were assigned to categories that pertained to the tool itself rather than the mode of application. Application was to be a later analysis process. Tools that could be recognized from the clay impressions or cuts are hypothesized to have been:

1. Single twisted fiber or cord impressed into the clay
2. Rigid cylinder wrapped with twisted fiber, cord, vine, or thong
3. Flexible cylinder wrapped with twisted fiber, cord, vine, or thong, perhaps a string of wampum (circular and flat shell discs)
4. A solid cylinder used as a punctate device
5. A hollow cylinder used as a punctate device
6. A solid cylinder used as an axial impression
7. A linear, notched, thin, comb-like tool
8. A vine or thong-wrapped paddle that produced parallel, smooth impressions
9. A simple parallel-mark carved stamp
10. A complicated rectilinear carved stamp
11. Knife-like cutting device that produced an incised V-like line or trough
12. A gouge-like cutting device that produced an incised U-shaped trough

13. A rectangular cross section device that produced a box-like incised trough

14. Fingernail marks as drags or punctates

15. Finger impressions

16. Thumb and finger pinched impressions

17. Twined fabric impressions, includes netting

18. Cord wrapped paddle edge impressions

19. Techniques of selective erasure and reapplications that produce tool-like marks

20. Molding that produced lugs, spouts, and castellations

The materials from which these tools might have been made are sticks, vines, wood blocks, altered sherds, shell, antler, bone, turtle carapace, quills, and stone (specifically the softer and platy stones that were used in gorget and pendent production).

This writer has had difficulty with many of the references that discuss patterns, motifs, and marks in the clay because of non-standardized terminology. This became a serious problem when attempts were made to compare different studies that are not fully illustrated. Even when pictures are provided and referenced, wide variations in photo quality or artistic skills applied to illustrations hinder full understanding of the reports. As an attempt to avoid such pitfalls in this dissertation and to provide the writer himself a standardized and

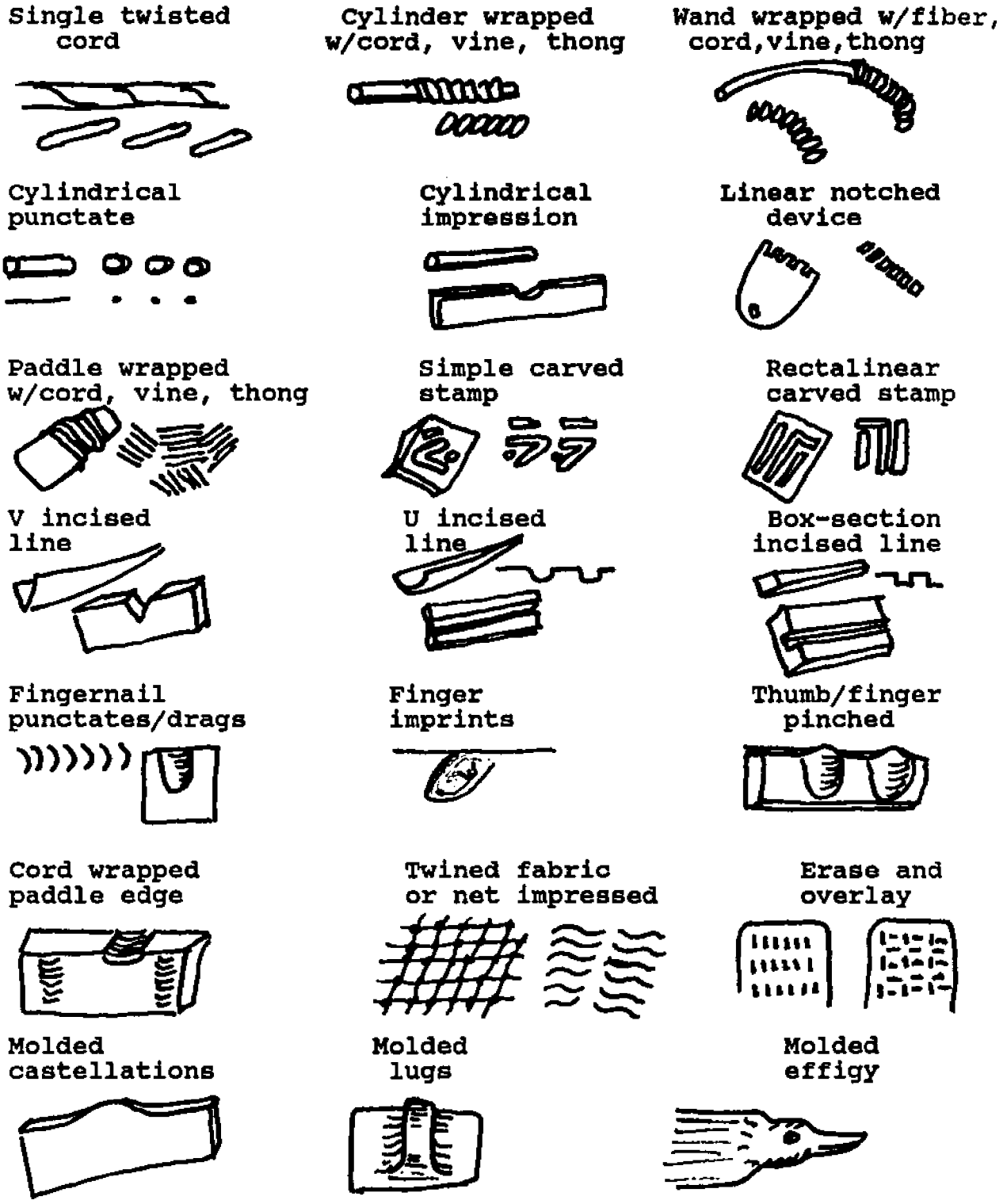


Fig. 3. Tools and the marks they make as seen upon Late Woodland ceramics in the Potomac Piedmont and surrounding areas of the Middle Atantic province.

non-changing reference for this work, a visual glossary has been provided (Fig.3).

Examination of the compound tool marks (the wrapped devices and the erasure/reapplication processes) can enhance a clear understanding of these marks and their application sequences. Sequence is most often evident in the minute folds of clay at the edge of an impression element that represent displacements caused by subsequent surface modifications. When such folds interrupt a pattern imprint, they can be attributed to a subsequent clay impression that has displaced previously fixed impressions. Sequencing of tool mark applications are here considered to be part of the traditional pot construction process and may carry diagnostic value. Possibly confounding such a position would be the multi-potter nullification of single motor habit pattern recognition. This study will hold to the assumption that a single potter made a single pot.

In any given pot production process, however, it is not assumed that only one pot was made. All things considered, it is more likely that a whole series of pots were constructed and fired in one episode. This would optimize the result of gathering and preparing clay and temper, over-production of greenware to cover firing destruction losses, and the creation of a stock pile of easily broken utility containers. The result of such a potting event would be a large number of pots that would

all have very similar clays and temper proportions. Cross-mending efforts that might be applied to the broken sherds several hundred years later would likely be a confounding exercise. It is not hard to imagine a pile of sherds that seem to have come from a single pot lying upon a laboratory table to a depth of a foot.

Tool Marks and Design Elements

The next phase of this study was to return to the sherds themselves, the rim sherds in particular, and to start the process of extracting information from them that would lead to motif definitions. First, a system had to be designed that could carry coded sysmbols reflecting tool mark applications. These would be the design elements that form patterns of larger designs that in turn become motifs through replication in spirit or detail in zonal repetition on other rim sherds. The easy part of this task was to assign a single character code to each of the tool marks discussed above. The difficult part was to then create a dictionary of modifying terms that would relate aspect (direction of application in relation to the rim), higher and lower relational elements (i.e. always occurs with horizontal incised line below), metric attributes (length, depth, width, wraps per centimeter), sequential design element placement data if discernible, and inter-element

metric measurements. These in turn had then to be worked into a data record format that would include other factors and identifiers for each rim sherd that carried the coded design elements. These other items are:

1. Site number
2. Collection identifier
3. Sherd serial number
4. Cord twist if visible, which element marked
5. Outer surface finish
6. Collar indicator, thickening mode if present
7. Sherd metric attributes
8. Lip profile indicator
9. Rim inversion or eversion indicator
10. Lip marking type identifier
11. Lip marking metric definitions
12. Inner surface finish
13. Inner surface marking indicatior
14. Inner surface marking metric definitions
15. Temper materials
16. Temper metric modifiers, size
17. Temper proportions of each

The writer was sensitive to the many aspects that could be attributed to each sherd from the first day of this investigation. He was not in the least sensitive to the magnitude of the task involved in an examination of all of the sherds and their codification. This list is not

intended to be exhaustive. Attendent files that are keyed to the site number can very easily augment this basic sherd identification list. The data base that contains each of these records was not designed as a general file for all possible data that might pertain to a sherd and its entire environment and physical state. The data base is simply a container that has certain study-related fields defined in a standard format.

Other aspects of data base management are apart from this particular design; these are the software applications that provide for the manipulation of the data found in the fields of any data base. Having this information as a standardized set of symbols that can be found, read, and altered by a computer is a major accomplishment inspired by archeologists faced with the same problems in ceramic analysis. Many of these studies have appeared in published form and the writer is most grateful to them for demonstrating that the work could be done; in particular, Martha Latta (1980:159-177) and Ann Bennett (1974). A major problem impacting all of these studies is a lack of standardization caused by differing research goals and methods. More will be addressed to this data base and several unexpected decisions that it impacted or inspired. That elaboration is offered in the chapter discussing results.

Rim Sherd Designs and Motifs

The basic study record for each rim sherd is a 3" X 5" card that was created early in this study. Not all of the information that eventually was deemed to be diagnostic was recognized or recorded on the card at that time. What was recorded during that first pass through the sherds was a profile of the rim, a plan view showing any marks on the lip surface, a 'portrait' that showed the pattern configurations of any markings using a standardized symbol for particular tool marks, and some verbal statements. These statements gave the site name and recorded number, the temper material(s), the condition of the inner surface, the condition of the outer surface beneath the marks and below the marks, and a comment about collar construction. Later, cord twist was added to this information if it could be perceived. Sherd thickness was also added.

Coding for each sherd was planned to be an entry at the bottom of each card. This was abandoned when full realization finally came into focus of just how much information was going to have to be coded into the grid that had been furnished. There was not enough space. Additional data kept coming into focus that vastly complicated the whole process and resulted in the design of a full page work sheet upon which the cards were mounted as one small part of the information being considered and for

which elaborate coding had to be devised. Several more passes through the sherds were made and each one added to the data already recorded.

The analysis had gotten out of hand and the intent of this dissertation had become lost while counting the hairs of the mastadon it purported to describe. This writer has no doubt that a full metric analysis of each sherd and the marks upon it would be of value to some researcher and that it would be a shame to have the data and not make it available during this study. Shame or not, such was not to be. This is a study of symbols, icons, and motifs as represented by entire patterns that will always vary in some minor detail. The depth of a line, the width of a cord, the exact height of a collar element do not define motifs. Line and execution define patterns. Patterns that are seen to covary between pots, sites, and geographical areas are what this study must illustrate.

Order has been brought to the Walker Village sample of rim sherds through a two-part standardization process. This utilizes a 'match-book' drawing technique used by Griffith (1980), Griffith and Custer (1985), Benn (1978), Pratt (1980), and Kraft (1975). In short, design motifs are drawn (using standardized element sysmbols) within a rectangular box that represents a 'sherd'. Once the card file had been created, the sherd images were transfered to the 'match-book' drawings. Each drawing is composed of a

portrait of the sherd, a plan view of the rim showing any markings present, and an outline profile of the sherd in section.

Phantom lines are included on the profile to indicate the depth of castellations, punctates, and the deeper horizontal inscribed lines or design indentations. Sixteen rim sherds are illustrated on each page. Each picture is accompanied by a coded temper indicator, surface finish code, and a serial number. These pages are included in this dissertation as Appendix 1. As shown, these illustrations are not sorted and are in a quite arbitrary order. Included are all rim sherds that could be reliably standardized in light of size and type of surface remaining (a split collar element apart from its body sherd backing would not be used).

It proved impossible for this writer to then look at all of these pages of sherds at once and to be able then to spot patterns of covariance in motifs or design elements along with rim profiles and temper codings. To make this task manageable, copies of the pages were cut into individual sherd pictures and then these were sorted back into groups based upon design motif and schema. For the first time in the study order began to emerge from the sherds.

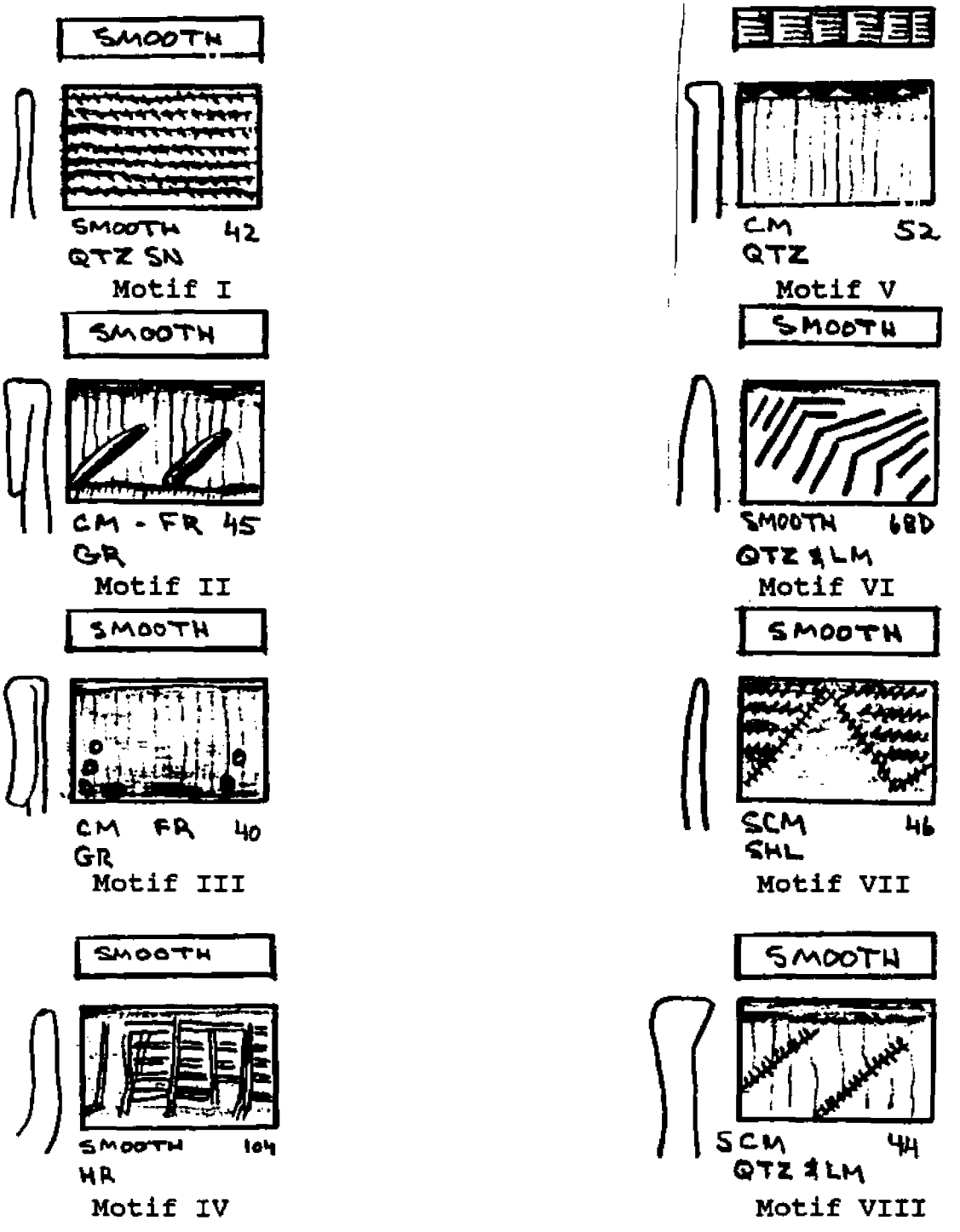


Fig. 4. Eight basic patterns that compose the Motif decorations of the Walker Village pottery rim sherd sample.

There are recurring themes or schemas that are far more positive than the earlier intuitive feelings of this investigator. Eight basic groupings of designs (Fig. 4) are perceived to form prototype units with two or more members. Very few overlaps violate tool element cross-combinations (i.e. horizontal cord markings with vertical incised gashes at the collar base). Note that these considerations were based only upon design motifs as composed of particular design elements (tool applications). Temper and rim profile were not considered in this initial grouping, nor was the presence or absence of folded or thickened collars.

Once the motif set had been identified, tabulations of various sorts were made to isolate additional attributes that covaried with the motifs. The following attributes were considered appropriate for this study:

1. Folded down rim collar construction versus single wall collar
2. Lip surface tool marking versus plain lip surface
3. Temper materials identified for each sherd
4. Interior surface decoration

A prototypical motif design did not automatically emerge from each motif set. One reason for this is the small number of designs that comprise some of the sets. There is little doubt that a given designed rim sherd belongs to a given motif group; it would be something else again, however, to

designate any one of them as the archetypical design arrangement.

Validation of the 'self-defined' motif sets was conducted at a low level by simply applying the designs encountered at several other Potomac Piedmont Late Woodland archeological sites to the motif clusters as fit-no-fit comparisons. Without exception, all of the rim sherd designs available to this writer from the Shepard Site, Shepard Barrack, Winslow Site, Hughes Site, Nolans Ferry, and Sycamore Landing fitted into the schemata. The next step was to compare the motif sets with ceramics from sites to the north, west, south, and east of the Piedmont Potomac Walker Village site. The results of these comparisons and the analysis of this material are related in the next chapter.

CHAPTER IX

THE WALKER VILLAGE CERAMIC STUDY RESULTS

The pottery rim sherds from the Walker Village Site have been grouped into eight motif types. The largest group is composed of undecorated rims and collars. Ninety-five rim sherds have not been assigned to a motif group because they are too small to validly represent a particular design structure. There are alternative groupings besides those that have been chosen for this study. Perhaps a dozen were identified before the current eight evolved. The attributes of design elements and configurations that would support alternative groupings based upon other aspects of covariation will be discussed below.

The characteristics that have been recognized as repetitive design element applications and labled motifs form unfortunately small groups. The restricted sample sizes per motif severely restrict the application of statistics in measures of validation or variation. Future work at the Walker Village site can add to these examples

as will artifact recoveries from some of the comparative sites in the Potomac Piedmont.

The following Motif Types have been used to form the groups that are compared with other site and regional ceramic traditions. Within each Motif Type there will be sherds that have elements found to be controlling attributes in other Motif Type sets. In this study, these are considered to be cross-over examples and are assigned to a Motif Type based upon what has been judged as the major element application.

It is well to keep in mind that the similarities in tool impressed patterns that are here grouped into motif collections are purely a function of this investigator's imagination and desire to find continuities in ceramic decorations. To presume to have identified emic abstractions in these groupings would be at best a quasi-romantic dream that likely could not have been clarified or validated on the day the pots were made. Patterns are patterns; these can be recognized, grouped and tabulated. This is what has been done as carefully as possible. These motif groups were then examined in terms of other shared and non-shared attributes in attempts to widen the motif-set and provide additional keys of co-variation that could be recognized in other collections. Variation within a motif group is itself a required analysis if the motif is to be fully recognized.

Motif I (Fig. 5.)

Twenty-five sherds comprise this horizontal cord marked or wrapped stick-like lined group. The lines are horizontal to the plane of the lip surface and vary in number from one to seven. Most of these impressions are made upon a smoothed collar element (22). On many examples where erosion has been slight enough to allow judgments, the collar areas with the marking appear to have been smoothed again after the lines were impressed into the clay.

All but seven of these rims are single element walls in that they do not have the thickened collars formed by folding down the rim section to the outer collar surface. Of these seven, six also belong to the cross-over group mentioned above. The single sand tempered sherd of this cross-over group has the unusual feature of a wrapped tool impression on the interior of the sherd that seems to be a linear array of down-pointing triangles with the bases at the lip edge. This is the only sherd in this sample from the Walker Village that has an interior pattern cleanly impressed in the clay.

Seven of the granite tempered sherds show impressions of various tools on the lip surfaces. None of the total of 14 worked lip surface patterns is oriented in the axial, or perpendicular to the wall, mode, and only two display circumferential lip marking. One of these is

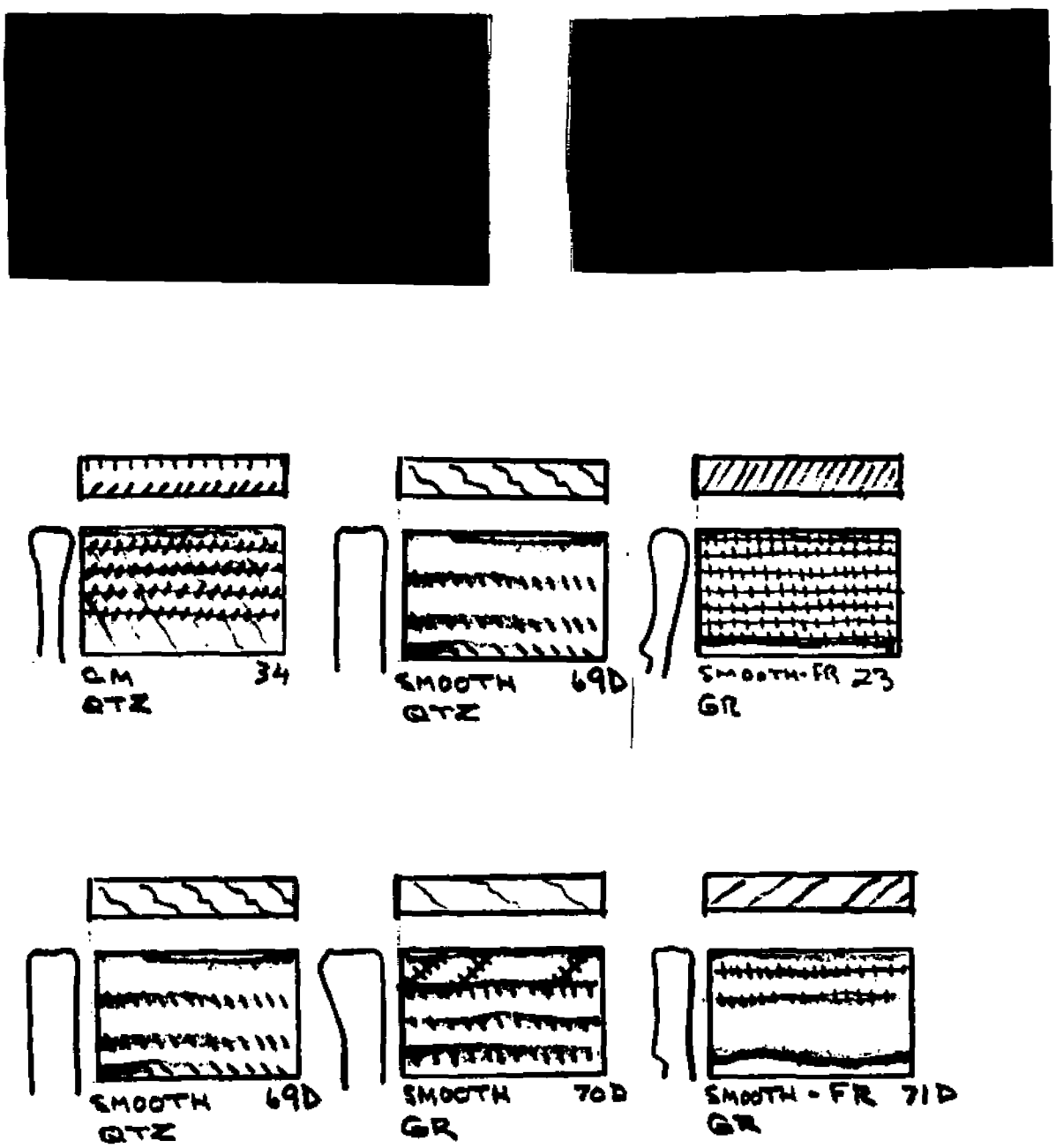


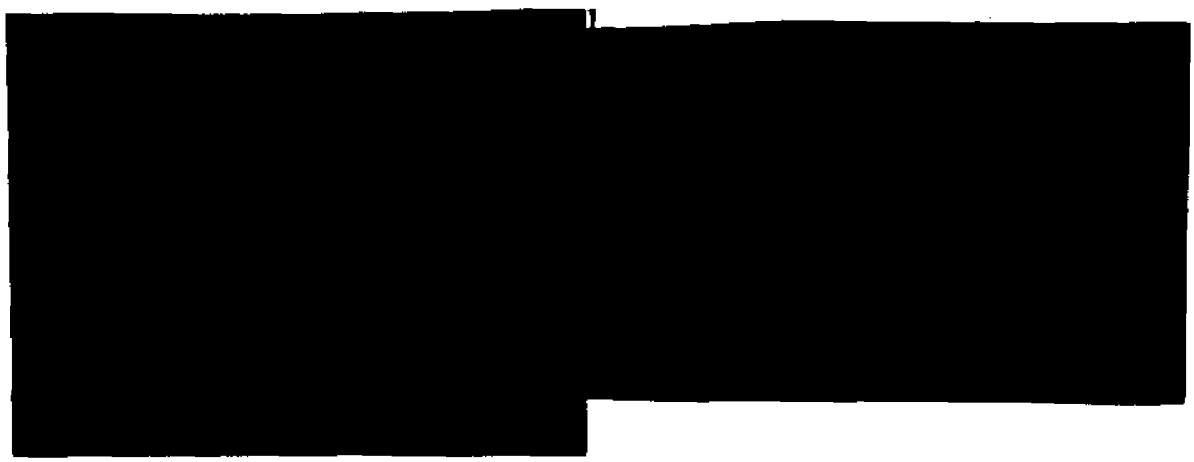
Fig. 5. Standardized drawings and representative photographs of Motif I. Characterized by cord and cord wrapped stick impressed lines.

tempered with limestone and the other with quartz. This last is also unusual in that it is collared, shows four horizontal parallel cord wrapped stick lines, has collar base double gashes in the form of a figure "7" and has three horizontal incised lines below the collar. Temper materials used for these rims are:

Quartz	5
Quartz and mica	2
Quartz and sand	1
Limestone	2
Limestone and hornfels	1
Sand	3
Granite	11

Motif II (Fig. 6.)

Twenty sherds have been assigned to this design set. The element schema arrangement is composed of parallel rows, of vertical or angular incisions on the collar area. These are placed at the top, in the center, or at the base of a collar element where the collar area is defined by the bottom of a folded down lip that forms a thickened collar element. In one sherd this pattern is combined with two incised lines parallel to the lip plane at the bottom of a folded collar. The remainder of this motif grouping is composed of a single and repetitive



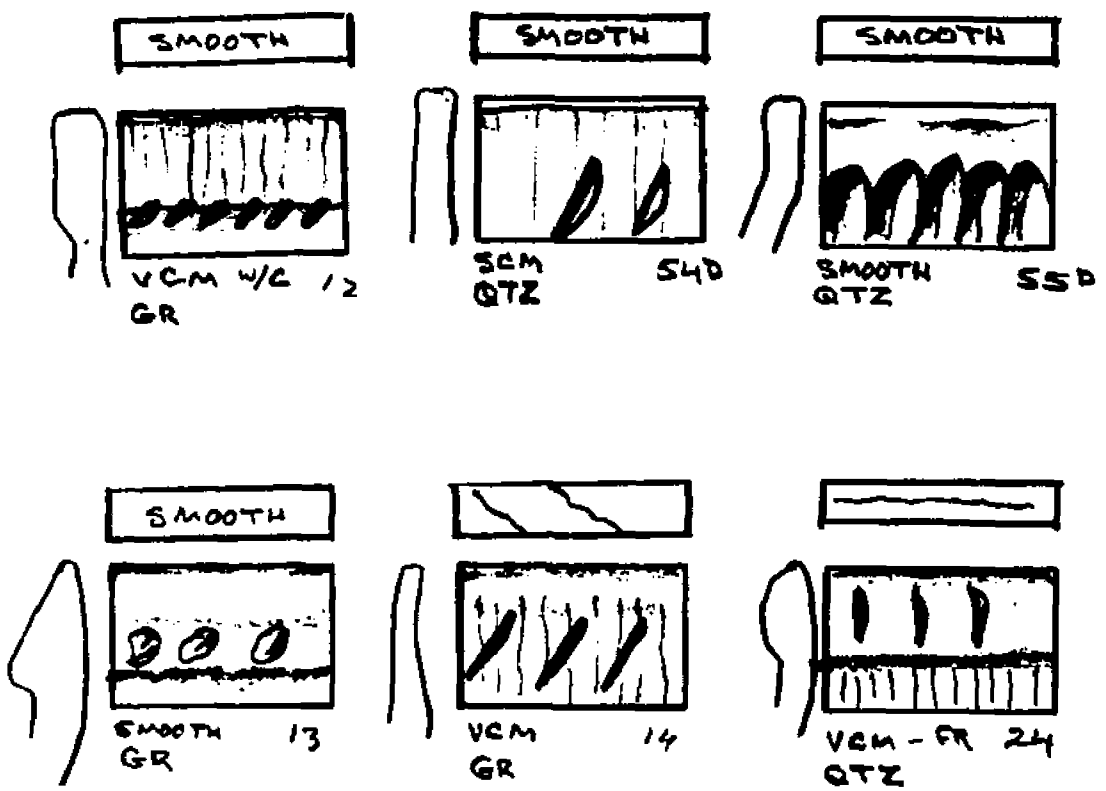


Fig. 6 Standardized drawings and photographs of Motif II. Composed of patterned rows parallel to lip formed by incised marks cut vertically or obliquely in the clay.

incised tool mark in the clay. In those examples where the marking is at the base of a collar element (11), the marking may have also served the purpose of providing more adhesion for the folded collar with the body wall. A total of 13 sherds have the folded collar construction. Incising has been used to create the marking on 20 of this motif class. Temper materials used for these sherds are:

Quartz	5
Quartz and sand	1
Quartz and granite	1
Quartz and limestone	2
Granite	8
Limestone	2
Sand	1

Motif III (Fig. 7.)

Five sherds compose this group. The motif is based solely upon the tooling process of circular punctate marking. In the one case, punctates are made from the inside of the pot and cause an extruded bump on the exterior of the surface. In the other case, smaller punctate marks are placed on the outer surface of the collar area and form patterns of holes in line parallel to the lip plane, vertical to that plane, or at an angle to it. Two of the sherds are tempered with granite, two with

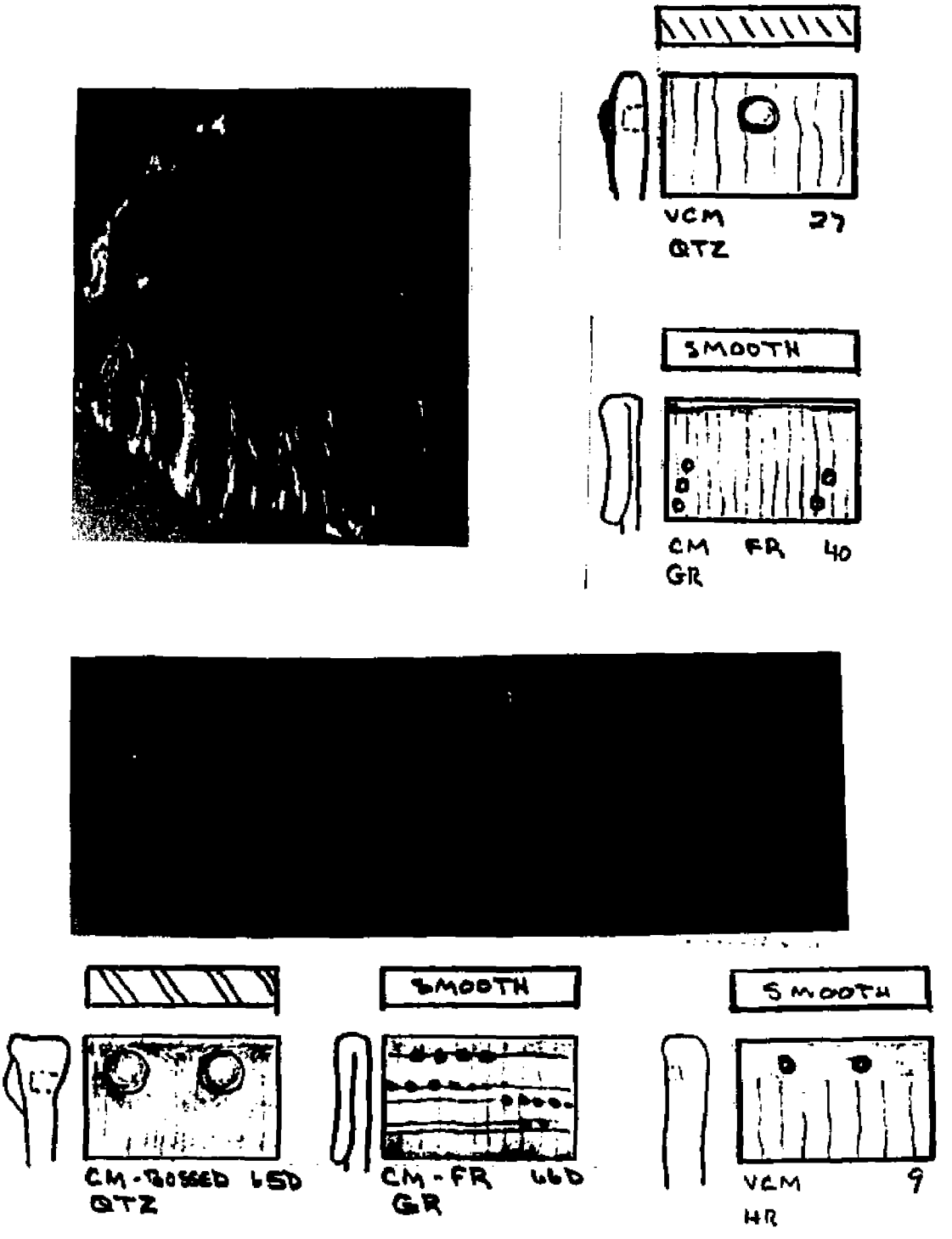


Fig. 7. Standardized drawings and photographs of Motif III characterized by patterns of circular punctate markings.

quartz and one with hornfels. The two sherds with folded collars have smooth lips and are granite tempered. The two bossed sherds have 'S' tool marks patterning the lip surface and vertically cord marked collar surfaces. The collared sherd with the horizontal lines of punctate holes also has incised lines on the same line of centers with the puncates. The surface of this sherd has been smoothed after the application of the lines and punctates.

Motif IV (Fig. 8.)

Nine sherds are assigned to this incised schema. The markings on these sherds are made with a sharp-tipped tool that leaves a shallow 'U' cut, a 'V' cut, or in two cases in this sample, a box-form cut in the clay. The incised lines are either in planes parallel to the lip plane, in the form of a herring bone repetition forming a band below the lip, or they are structured in free-form figures at times rectangular in schematic array. Two sherds from the same pot (the only pot-matched rim sherds in the entire Walker Village ceramic rim sherd sample) form loosely defined triangular patterns with the points toward the base of the collar. None of these sherds has other tool marks beyond the surface cord wrapped paddle marks so common in the entire sample. The herring bone sherd and one with two parallel incised lines are tempered with

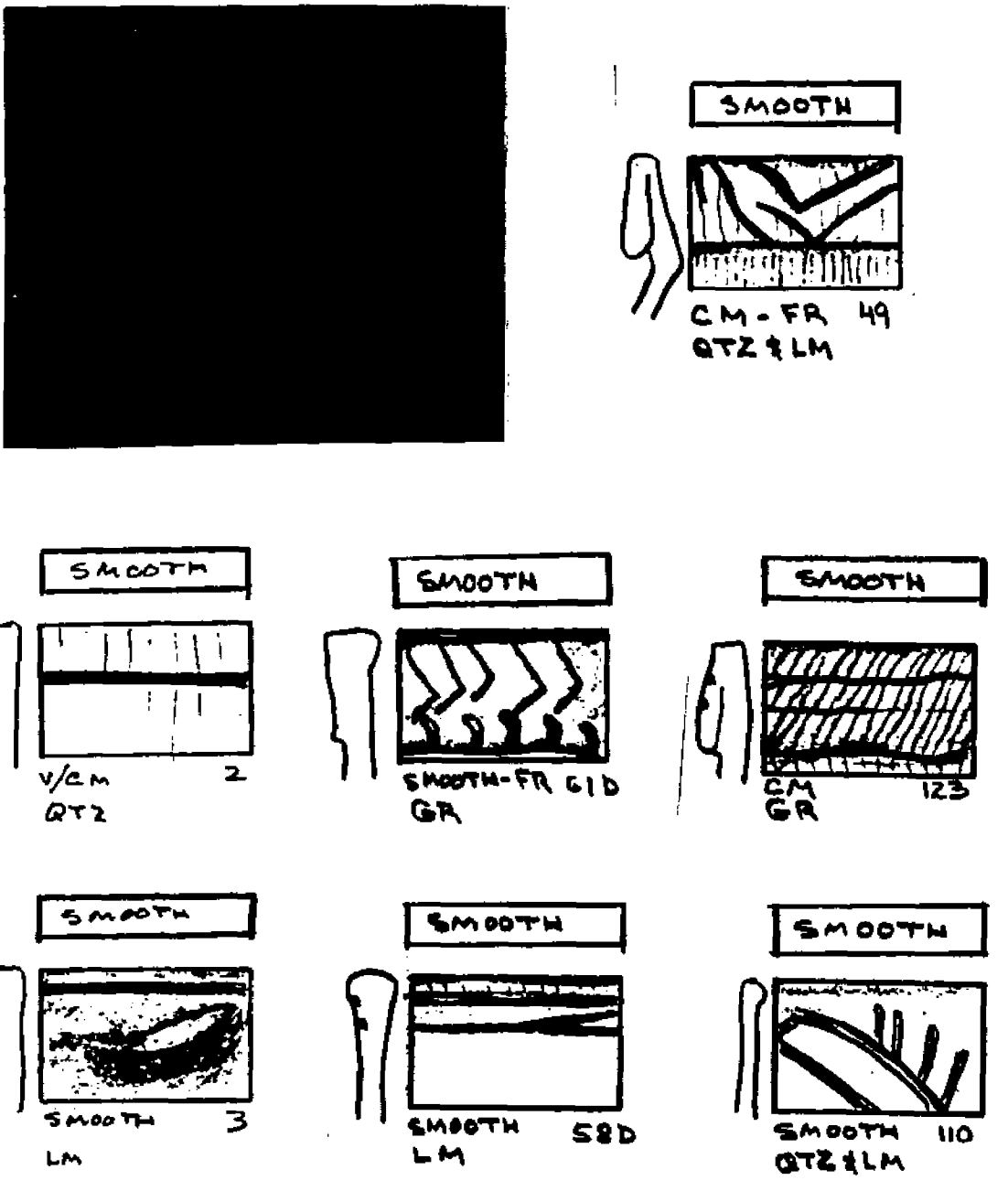


Fig. 8. Standardized drawings and photographs of rim sherds that form the Motif IV group. Incised straight lines that forming cheverons, rectangular designs, herringbone patterns, and parallel line sets.

granite. The same pot pair are tempered with quartz and limestone. The rectangular schema sherd is tempered with hornfels, and the single limestone tempered sherd is marked with two nearly parallel incised lines. One box-form incised line sherd is tempered with quartz and the other with limestone. This latter is unusual in that it has a lug attachment below the incised line and the lug is fitted at an angle of about 30 degrees to the plane of the lip.

Motif V (Fig. 9.)

Two rim sherds form this group of stamped linear or rectilinear decoration motifs. A few sherds from lower on the collar element or body of similarly marked sherds are also part of the sample. The linear stamped sherd is tempered with shell and the markings form a pattern of left oblique lines in a band below the lip of a smooth surface. The lip is also smooth on this collarless sherd. The other sherd is tempered with quartz and limestone and also has a smooth lip. The pattern is a mixed one of right oblique lines with single obtuse angles and elements that tend toward the lip at reduced angles.

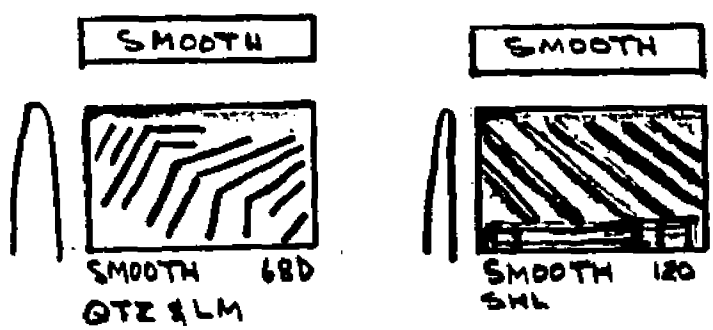


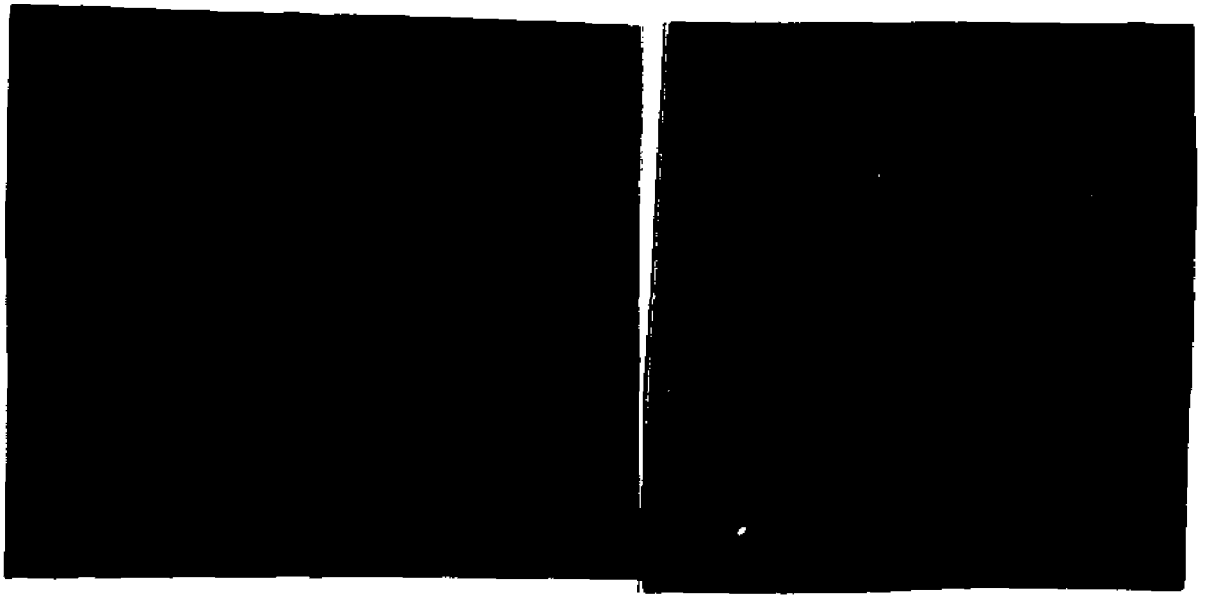
Fig. 9. Standardized drawings of rim sherds that comprise the Motif V group. Composed of stamped patterns of parallel lines or complicated angular nested designs.

Motif VI (Fig. 10)

Six sherds with horizontal and angular straight lines formed by impressed cord or wrapped tool devices form this schematic group. In general they have a triangular pattern bordered by parallel lines in the same plane as the lip. The shell tempered sherd has down-pointing triangles with bases at the lip that are filled with horizontal rows (4) of impressions. The three quartz and single sand tempered sherds have horizontal impressed lines just below the lip and right oblique lines. One of the quartz sherds has its oblique lines bounded on the bottom by two horizontal rows of impressions. This sherd and another tempered with quartz are the only ones in this class with tool impressed lips: both deeply impressed axially aligned tool marks. A quartz and sand tempered sherd seems to have a large scale replica of the down-pointing triangles on the shell tempered sherd. The surfaces used for these markings are either fully smooth or show the faint traces of cord marks within a very smoothed surface. None of these sherds has the folded down rim collar.

Motif VII (Fig. 11)

Eleven rim sherds show the banded oblique impressions on the collar formed by cord or a wrapped tool.



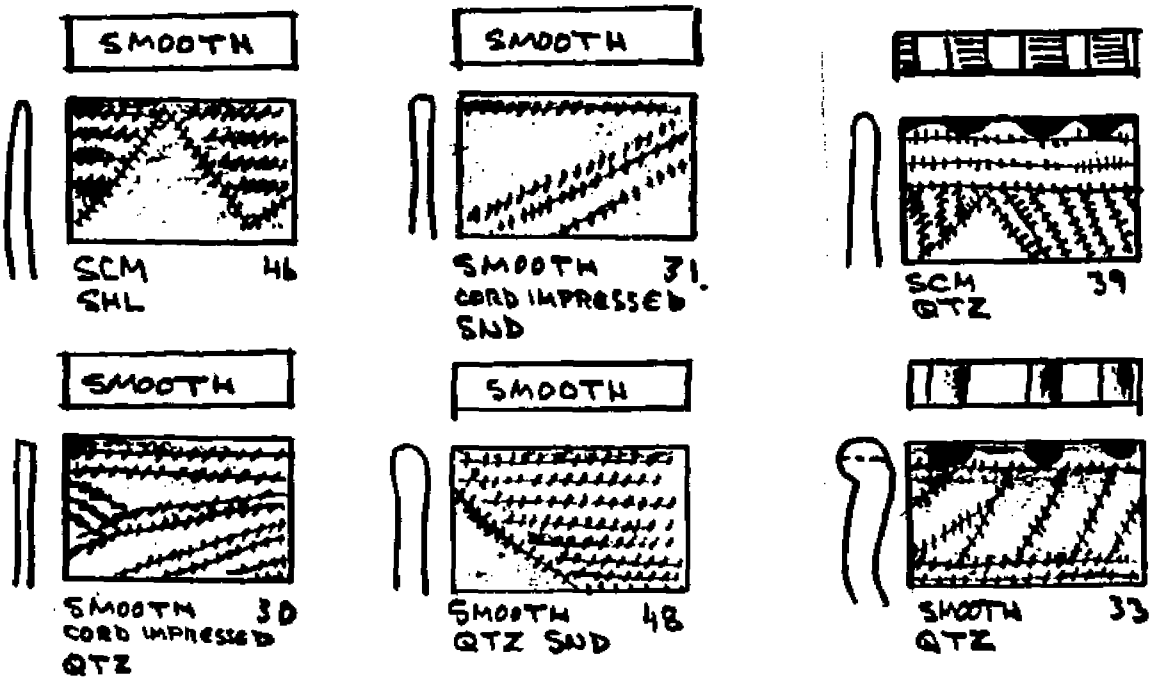


Fig. 10. Rim sherds that comprise the Motif VI group. Standardized drawings and photographs showing typical cord wrapped stick impressed lines that form angular patterns and triangles.

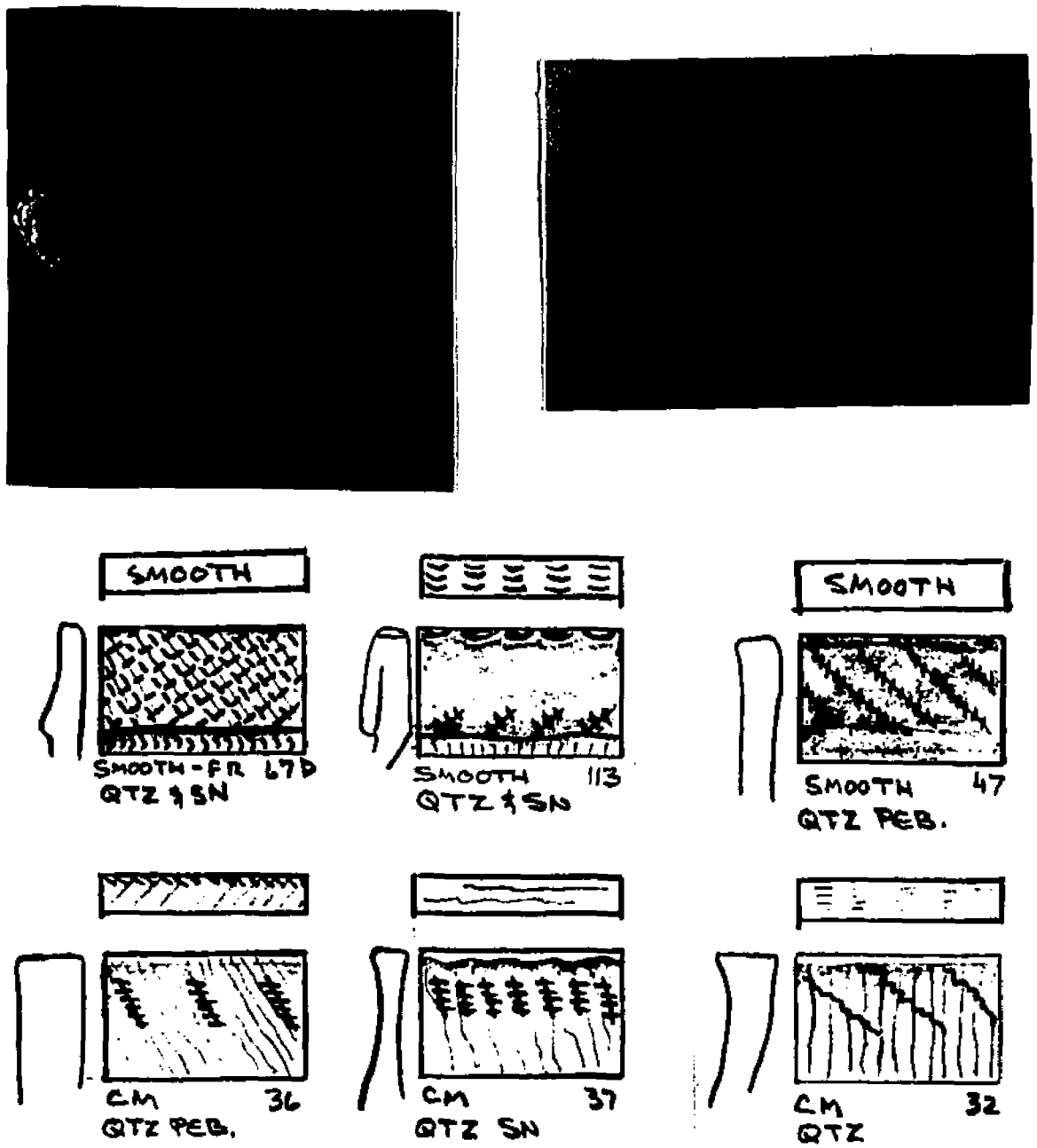


Fig. 11. Standardized drawings and photographs of the rim sherds that form the Motif VII group. A design formed of vertical or oblique repetetive imprints of cord or cord wrapped stick that form a band around the collar area of the pot.

Three of these collars are formed by the folded-down rim. One of this group is placed in this motif group only because the very complicated basketry-like design seems to have been formed by a wrapped stick impression. It is unusual in that every other row of impressions was wiped smooth and then overlaid by the tool application that was rotated 90 degrees from the first. All but two are tempered with quartz; two in the form of pebbles, one has limestone added, and three have sand added. The other two sherds are tempered with limestone or granite. Four show a left oblique set of the parallel marks to the plane of the lip; three are right oblique. Five sherds have markings on the lip from some tool application. The surfaces are either cord marked or smoothed cord marked.

Motif VIII (Fig. 12)

Fifty-two rim sherds do not have any tool marks upon the rim or collar area. Smooth lips are characteristic of 12 of these unmarked sherds while 40 have some sort of tool marking on the lip surface. The following summary displays the interrelations between temper, lip marks, and sherd surface finish.

Additional comparisons and analyses of this "Motif" group will be provided below (Table 2). While the lack of decorative design on a sherd hardly comprises a "Motif", the lack itself signifies that a choice was made by the

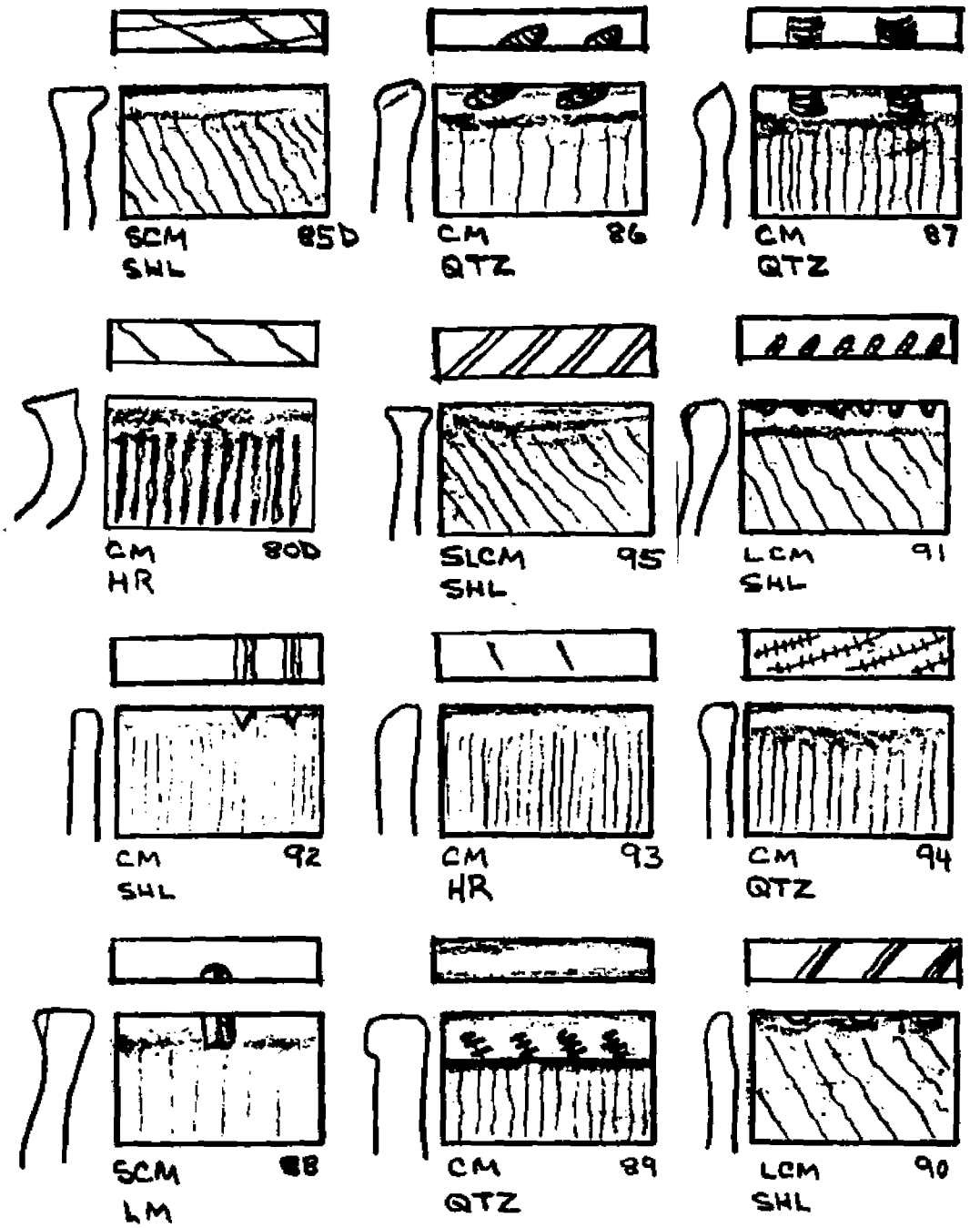


Fig. 12. Standardized drawings and photographs of the plain or no-design rim sherd Motif VIII group. Note that this no-design applies only to the collar surface, as many of them have lip surface markings.

TABLE 2

LIP TREATMENT AND TEMPER IN THE NON-DECORATED RIM SHERDS .

TEMPER	SMOOTH LIP	WORKED LIP
Shell	2	17
Quartz	1	8
Granite	4	4
Limestone	4	2
Qtz & Limestone	0	1
Qtz & Hrnfls	1	0
Chert	0	2
Hornfels	0	3
Quartz & Sand	0	1
TOTAL	12	38

TABLE 3

RIMSHERDS WITH A DOWN-FOLDED COLLAR (DFC): NUMBER, PERCENT, AND TEMPER WITHIN EACH MOTIF GROUP

			% TEMPER/MOTIF					% SMOOTH
	#	%	Gr	Qtz	Sn	Lm	Qtz+	LIPS
Motif I	7	28	57	14	28	0	0	28
Motif II	13	65	46	23	0	7	23	69
Motif III	2	40	100	0	0	0	0	100
Motif IV	3	33	66	0	0	0	1	100
Motif V	0	0	0	0	0	0	0	0
Motif VI	0	0	0	0	0	0	0	0
Motif VII	3	27	0	0	0	33	66	66
Motif VIII	5	10	80	0	0	20	0	60

potter at the time of construction. This might have been a function of the utility of the pot (intended use), time available for pot completion, or the intentional omission of decoration in order to enhance its acceptance in a non-symbolic situation within the cultural process of its use.

The caveat must be offered that some of these smaller rim sherds may have come from pots that had decorations on another portion of the rim or collar and has not been recovered in this sample. Only seven of this group have fully smoothed body surfaces; four are shell tempered, one limestone, one hornfels, and one chert. The markings upon the lips represent almost every mode that has been seen in the entire sample of rim sherds, even a shell tempered castellation 'spout'. One of the shell tempered smooth sherds has a vertical lug with a horizontal 1 mm hole through it. The lug is attached 4 mm below the lip and is about 3 cm long. Only 10 of these sherds have fully smoothed and unmarked lips. Five sherds are formed by the down-folded collar process, four of which are granite tempered, and one is limestone.

The Folded Down Rim Collar Sub-set

It was decided to consider the covariation within the rim sherds that have the technical characteristic of folded down rim collars. While they are heavily

represented in some motif groups, they do not appear at all in others. The significance of these covariations of attributes both technical and 'artistic' will be addressed in the final chapter. There is sufficient variation within this group to allow its dispersal into other motif definitions based upon decorative rather than technical features. Motif II is worth note at this point: the additional technical aspect of incising tool use obviously impacts these collared specimens.

Atrributes Not Seen on the Walker Village Rim Sherds

Contrary to the above sub-heading, this section is not going to be an endless listing of every ceramic attribute known but not present at the Walker Village. It will offer, rather, a listing of salient characteristics that archeologists have identified in collections either in the Potomac Valley or in the areas that are used for the comparisons discussed below.

Strap handles. This Late Woodland or Mississippian ceramic trait is not present. It has been found upon many sites in the drainage systems of the Ohio River and as close as West Virginia. The Fort Ancient cultures of Western Pennsylvania, Ohio, and West Virginia created pottery with strap handles.

True spouts. Spouts that are formed at the lip much in our modern style by molding or bending the clay outward are not found at the Walker Village. This attribute is common among the pre-contact cultures to the south, and is seen in modified form upon many of the Monongahela and Iroquois wares to the north. It is considered to be a trait assimilated from the southern Mississippian influences where it is common upon many types of clay containers.

High collars. The high (exaggerated in one sense) collars seen upon Iroquoian and Susquehannock wares of the Late Woodland periods are not seen at the Village. These wares also are noted for castellations of the rim and deeply foliated lips caused by axially applied stick or tool impressions.

Curvalinear paddle stamped impressions. This typically southern ceramic decorative trait (as close as North Carolina at Cherokee sites and in southwestern Virginia) has not been recognized in the Potomac Piedmont. Linear stamped impressions and rectilinear forms are present at the Walker Village.

Effigy forms. Animal forms and human face representations are fairly common upon late Iroquoian high collared wares. These forms reached a high degree of artistic finesse during Late Woodland periods where the Mississippian influences were stronger than in the Potomac Piedmont. The closest effigy pot that this writer finds

referenced is from southwest Virginia (MacCord 1979:15) where there is heavy southern culture influence. It was in the form of a squash. Faces are seen upon northern wares in the Upper Susquehanna and Delaware River drainages.

Scallop shell impressions. This coastal ceramic attribute is common in the Late Woodland of New England and many Atlantic Coastal archeological sites. While there are abundant ocean mollusk remains at the Walker Village in the form of shell beads formed from conch columnella, scallop shell has not been recognized. Shell edge decorations may be present in the form of incising marks, but scallop shell impressions are not among them.

Painted surfaces. Late Woodland ceramics from Pennsylvania have been reported (Michael and Grantz 1981:33) at the Monongahela village Fisher Site that showed evidence of negative painting. Painting, positive and negative is a common attribute of the Mississippian ceramic traditions to the south of the Potomac Piedmont. No painted sherds have been recognized at the Walker Village.

Guilloche curvalinear design. This is considered to be one of the hallmarks (with strap handles) of the Fort Ancient ceramic traditions of Western Pennsylvania, Ohio, Indiana, West Virginia, and many more southern archeological sites. This incised pattern is not found at the Walker Village site.

Flat bottomed ware. Evidence of flat bottomed ware should be visible in the form of the heel or wall-bottom junction of a broken vessel. No such heel sections have been found; no fully flat sherds that might have been bottom sections have been found. This type of vessel is common in the Late Woodland period to the south where it is often called 'salt pan'.

Constricted neck 'water bottles'. While quite common in the collections of ceramic materials to the south of the Potomac drainage, no sherds from such vessels have been recognized at the Walker Village.

Lower body decorations. With the exception of perhaps ten sherds, the body sherds from the Walker Village site do not exhibit the impressions or scribe marks of lower body decorations.

Analysis of Pottery Temper Material

The multitude of tempers seen in the Walker Village pot sherds (Table 4) is most unusual when compared to collections from other Woodland sites in the Potomac Piedmont. Ten basic aplastics are present as tempering material in either single or multiple applications. Quartz is the only one of the nine rock tempers that was also mixed with other material to a significant degree. These mixtures are: quartz with sand, limestone, and shell.

TABLE 4

BODY SHERDS SORTED BY TEMPER, 18MO20 BEACH DELTA.
(MULTIPLE MATERIALS ARE COUNTED UNDER EACH OCCURANCE)

TEMPER MATERIAL	#	% IN GROUP
Limestone	718	61.8
Limestone and quartz	430	37.0
Limestone and granite	5	-
Limestone and sand	4	.3
Limestone, quartz, and hornfels	4	.3
Limestone and shell	3	.3
Limestone and hornfels	1	-
Limestone, quartz, and sand	1	-
TOTAL limestone	1166	
Shell	1223	90.6
Shell and quartz	90	6.7
Shell and sand	27	2.0
Shell and granite	5	.4
Shell and limestone	3	.2
Shell and mica	2	.2
TOTAL shell	1350	
Quartz	1571	69.6
Quartz and limestone	430	19.1
Qartz and sand	133	5.9
Quartz and shell	90	4.0
Quartz and mica	14	.6
Quartz and hornfels	11	.5
Quartz and granite	8	.4
Quartz, hornfels, and granite	4	.2
Quartz, hornfels, and limestone	4	.2
Quartz, sand, and granite	1	-
TOTAL quartz	2266	
Hornfels	331	94.8
Hornfels and quartz	11	3.2
Hornfels and granite	6	1.7
Hornfels, quartz, and limestone	4	1.1
Hornfels and limestone	1	.3
TOTAL hornfels	353	
Granite	1459	98.6
Granite and quartz	8	.5
Granite and hornfels	6	.4
Granite and limestone	5	.3
Granite and shell	5	.3
Granite and shale	2	.1
Granite, sand, and quartz	1	-
TOTAL granite	1486	

TABLE 4 continued

TEMPER MATERIAL	#	% IN GROUP
Sand	178	51.9
Sand and quartz	133	38.8
Sand and shell	27	7.9
Sand and limestone	4	1.2
Sand, quartz, and granite	1	.3
TOTAL sand	343	
Mica and quartz	14	87.5
Mica and shell	2	12.5
TOTAL mica	16	
Quartzite	16	
Steatite	20	
Chert	61	
Shale	2	
No temper visible	586	

TABLE 5

PERCENT OF SHERDS IN EACH TEMPER LOT BY THICKNESS ROUNDED TO NEAREST mm AND RELATION OF SPLIT SHERDS.

TMP	THICKNESS IN mm								SPLIT SHERDS n = 230	
	3	4	5	6	7	8	9	10	#	% of T
Qtz	1.1	12.9	35.9	25.0	13.9	7.4	1.7	1.3	68	11.4
Q&L	2.0	13.7	36.9	24.4	14.5	6.5	1.2	.4	20	8.1
Lms	2.0	10.8	35.4	26.8	14.9	7.6	2.8	0	29	7.8
Shl	7.7	25.5	30.4	22.1	10.6	2.7	1.0	.2	15	3.3
Hfl	3.5	9.8	23.8	27.3	21.7	11.2	1.4	1.4	34	19.2
Snd	6.1	10.3	43.0	26.1	7.3	3.6	.6	3.0	5	2.9
Gnt	1.3	14.0	27.0	28.3	18.3	7.1	2.0	2.0	59	11.6

Attributes of thickness, temper, and the physical tendency to split appear to covary in a regular fashion. A comparison (Table 5) of these characteristics displays some interesting regularities. All of the tabulated sherds are

over 2 cm in their longest dimension and all of them have both the inner and exterior surfaces intact. The split sherds form a separate group that are added here for comparison purposes.

The tendency of a sherd to split will be a function of the internal cohesive forces between the clay itself and its tempering material. Subsequent to manufacture, use and discard, exterior processes impact this cohesive matrix within the sherd. These forces or events take the form of expansion and contraction under natural cycles of hot and cold plus the mechanical forces of ice formation within voids in the clay matrix. The surface characteristics of aplastics that have been added to the clay will have an impact upon the rapidity of subsequent disintergration as mentioned above. It is this writer's observation that these results can be viewed in Table 5 and related to the technological positioning of a culture in the hierarchy of achievement in ceramic technology.

Seven tempering agents have been analysed. The sherds containing these agents vary systematically in thickness with the type of temper that was used. The proportions of sherds that split also varies in a regular fashion with the tempering materials. Both quartz and granite tempered sherds have an almost identical splitting ratio: 11.4-11.6. Each of these sherd lots are also very

close in the thickness distributions: 87.7 percent of the quartz tempered sherds fall between 4 and 7 mm in thickness; the granite lot has 87.6 percent of its sherds in this span. By comparison, the hornfels lot has the highest proportion of splitting, 19.2%. This group is also the thickest with 84% of the sherds falling between 5 and 8 mm. At the other extreme with both the thinnest sherds and the least splitting are the shell and sand tempered sherds (3.3-2.9 % split and 85.7-84.5 % between 3 and 6 mm). When the potters added limestone to the quartz tempering the splitting rate dropped to 8.1% which is close to the 7.8% split rate of the limestone tempered material.

Each of these tempering materials has different surface and planar intersection characteristics. The clay reaction under expansion and shrinkage activity, including the firing during manufacture, is different for each of these aplastics. Many of the stress relief cracks can be seen with the naked eye and are even more apparent under magnification. The most obvious are around the temper particles of quartz and granite. Very few are to be seen around the shell and limestone, and none has been recognized around the sand particles. The hornfels temper-focused cracking is profuse. This material certainly seems to contribute to the high splitting ratio.

Cord Twist Analysis

Too few of the smoothed surface decorated rim sherds had sufficient cord impressions visible to determine the twist of the cord. The body sherds also provided few (proportionately) good impressions of cord marking where the twist could be cleanly identified. The hornfels tempered sherds do have a Z twist cord marking majority. Shell, quartz, granite, limestone, and sand clearly had a majority of S twist cord markings. For a more definitive statement to be made about cord twist, a much larger sample of sherds must be available than has been obtained from the Walker Village Site. This writer feels that the small size of the sherds that have been recovered, plus their exposure to natural and mechanical erosion in the plow zone and surface of the corn field has degraded fine definitions of the surface markings. This is particularly so when the potter began the process by smoothing over the cord wrapped paddle marks on most of the pots that became sherds.

CHAPTER X

WALKER VILLAGE DECORATIVE MOTIF COMPARISONS WITH OTHER SITES

Comparisons With Rim Sherds From Other Potomac Piedmont Sites

The rim sherds in the writer's possession from sites discussed below are illustrated as standardized motif drawings in Appendix 2, as are those from the Shepard and Nolands Ferry Sites.

Hughes Site, 18MO1

The writer's sample from this site is composed of 25 rim sherds. There are 19 sherds tempered with shell; seven of these also have sand as a secondary tempering material. There are six sherds tempered with finely crushed quartz or sand. All but two of the 25 are Motif VIII (no surface decoration). One with sand temper is a folded down rim with horizontal cord wrapped stick marks on top of right oblique cord wrapped stick marks. This smooth lip sherd is a Motif I schema. The other decorated sherd is

tempered with shell (leached) and has a lip marked with left oblique scribe marks. The surface design is composed of deeply impressed vertically aligned cord or vine wrapped stick marks forming a repetitive band around the thickened collar. This is a Motif VII design. Three of the shell and sand undecorated sherds are segments of rims that have lugs and deeply impressed lips; a cord wrapped stick or smooth rod made these impressions. Three of the unmarked shell tempered sherds also have lug elements that are built into, and flush with, the lip surface.

Stearns (1940) illustrates a much more varied and complex ceramic picture of the Hughes Site. This is a telling example of the difference between excavated data and that which is gleaned from surface collections that no-telling-who has disdained to recover in prior collection activities. The shell tempered sherds illustrated by Stearns seem to favor the punctate designs of Motif III. These are combined with incised lines to create filled parallelograms set in connected rows some distance below the rim. Other examples have single or double rows of punctates forming sweeping pointed sine wave designs banded below the rim. Still other examples show vertical lines of punctates in two or three line-groups banding the area below the collar zone. Some of these sherds are marked with linear-banded finger nail punctations. Still others carry horizontal or vertical chevron-like marks formed by a

wide incising tool that left deep gouges with rounded ends. These would be assigned to Motif IV if they had been found at the Walker Village; none has been recovered there.

Several minority sherds are illustrated that do fit in with the Walker Village sample. Motif IV is represented by two illustrations that show incised patterns forming filled triangular areas. They are poorly executed as compared to the triangular patterns of the impressed cord Motif VI which shows a single horizontal line above filled equillateral down-pointing triangles. Pots with thickened collars do not have these designs. Motif I is present with one example that has three horizontal cord impressed lines just below the lip area. Crushed quartz temper collared ware is present at Hughes and Stearns (1940, Fig. 1) illustrates several. Motif I and Motif VII seem to be present.

Shepard Site, 18MO3

The two restored pots and the four rim sherds shown by MacCord, Slattery, and Schmitt (1957, Plates II and III) are examples of Motif I. They are categorized as Albemarle Cord Marked and are tempered with crushed quartz. There is a growing trend to refer to this ware as Shepard Cord Marked.

Shepard Barrack Site, 18MO4

Seventeen rim sherds from this site form the writer's sample. A first view of this material gives the impression that it might have come from the Walker Village site. Motif VIII is represented by nine sherds; three tempered with sand, four with shell, and two with shell and sand. All but one of these nine have deeply marked lip surfaces made by impressing a rod or cord wrapped stick into the clay. The ninth example is a sand tempered lug sherd that has incised axial marks on the lip surface that continue across the face of the lug element. Two sherds carry the Motif I horizontal cord wrapped stick markings (one line on a shell tempered sherd, seven lines on a quartz and sand tempered sherd).

There are two examples of Motif VI with the oblique cord wrapped stick markings bounded by horizontal lines from the same tool. Both are tempered with quartz and sand. Another sherd has the deeply incised box shaped horizontal line below the lip that places it into the Motif IV group. It is tempered with quartz and has left oblique cord wrapped stick impressions on the surface of the lip. Three sherds have the down folded rim that forms a thickened collar; two are in the Motif II group (quartz and sand, and a granite tempered sherd). One of this collared group is tempered with granite and has the right oblique

cord wrapped stick impressions that form a band around the collar.

Winslow Site, 18MO9

Only three rim sherds are available to the writer from this site. One granite tempered sherd is a Motif IV example with a horizontal deeply incised box shaped line below the lip. An elaboration here is the vertical row of gouges that run from the lip surface down the face of the sherd for about 1 cm. They do not intersect the horizontal line. The other two sherds are also tempered with granite and are both collared by the down folded rim method. One bears deeply set cord wrapped stick impressions set perpendicular to the lip surface in two rows paralleling the lip surface; each row is impressed just at the point of maximum collar curvature (at the lip edge and at the bottom of the collar). It is assigned to Motif VII. The other is a Motif II example with large and deeply set gouges set perpendicular to the lip plane at the junction of the collar bottom and the body.

Sycamore Landing Site, 18MO79

There are seven rim sherds from this site in the writer's sample. Three of these are Motif VIII artifacts: a quartz and sand down folded rim collar sherd, a quartz tempered with a fabric impressed plain surface, and a shell

tempered smooth surfaced sherd with a lip marked by left oblique gouged marks as compared to the smooth lips of the other two in this group. One quartz tempered sherd with a thickened collar area is marked by three horizontal cord wrapped stick impressions, a Motif I sherd. One sherd each of quartz, granite, and sand temper are members of the Motif II group. While all three have thickened collar zones, only the granite tempered sherd with its deep and wide collar base gouge marks was made by the down folded rim process.

Canal Side Site, 18MO103

One granite tempered rim sherd from this small site near the Hughes Site has been collected. It is a Motif I item with the added luster of right oblique cord wrapped stick impressions in a row below the two horizontal lines just below the lip.

Nolands Ferry Site, 18FR17

Peck (1980) illustrates 14 rim sherds from this Frederick Valley site near the Potomac River. There are several close approximations to Walker Village motifs and design schemata in this small group of representative rim sherds. Because Peck was providing collar designs, he did not include undecorated sherds in his illustrations. Motif I is cleanly represented by two sherds. One is a quartz

tempered down folded rim collar example with five horizontal lines of cord wrapped stick impressions on the upper face of the collar and a row of right oblique cord wrapped stick impressions at the base of the collar. The other is also quartz tempered with a sharply outturned rim segment (height = 1 cm) covered with a single row of right oblique cord wrapped stick impressions. Below the 90 degree angle of the outturned rim are vertically arranged ladder-like horizontal impressed cord wrapped stick impressions. The lips of both of these specimens are smooth.

Motif I is also represented by a very busy design on a limestone tempered sherd with a horizontal lug just below the lip. The lip is marked with a circumferential cord wrapped stick impression. A single cord wrapped stick line runs parallel to and just below the lip. Two more just like it run closely below the lug and surmount a row of 90 degree angles with the apex pointing up that are also made with a cord wrapped stick. The angle impressions are also to be seen in a row display on a smoothed down folded collar sherd with limestone temper, a Motif VII example.

There are three other examples of Motif VII, all tempered with limestone. While all three are examples of right oblique cord wrapped stick impressions forming a parallel row of marks on the collar, one of them also has

incised nick marks at the base of its down folded rim collar.

The incised Motif II is represented by five sherds. Four collars are formed by folded down rims where the incising or gouging is at the bottom zone of the collar: one with vertical gouges that are quite wide (5 mm), one with right oblique slashes, one with four horizontal incised lines and a collar base of deep vertically incised lines perhaps 1 cm in length, and one with compound gouge marks that in pairs form a parallel row design. The fifth gouged sherd is heavily excurvate and has the gouge marks as a slightly left oblique series of parallel marks just below the rim edge. The lip on this example has an unusual steepled profile.

The punctate Motif III is represented by one example where a small tool created circular punctates in two rows paralleling the rim. The lip is marked with a single circumferential row of these same small holes. The sherd is tempered with limestone. The last example from Nolands Ferry is from Motif IV, the inscribed line group. This example seems to have been made with a stylus-like tool about 2 mm in width and forms a lattice-like pattern below a single horizontal wide incised line just below the lip. It is limestone tempered.

Comparisons With More Distant Archeological Sites

Keyser Farm Site

Griffin (Manson, MacCord, and Griffin 1944) has identified three different wares at the Keyser Farm Site. The first is Keyser Cord Marked which is tempered with freshwater mussel shell. All but one of the illustrated rim sherds fall within the Motif VIII group of undecorated sherds. The lips have received markings in many instances from rods, cord wrapped stick, and incised marks placed axially upon the lip surface. Lugs are present on some and are in a small form placed as extensions from the lip surface in most instances. The one exception to the above group has a single horizontal row of circular punctates that runs about 5 mm below the lip. This would qualify for a Motif III designation.

The second ware identified by Griffin (Manson, MacCord, and Griffin 1944:405) is Page Cord Marked. It is tempered with limestone and generally has a cord wrapped paddle malleated surface that has been fully or partially smoothed in the collar and neck area. He observes that the collars are often thickened by the addition of rim strips. These can well be the down folded rim collars so familiar in the Potomac Piedmont. He notes that three of this group have no decorative markings; these would be assigned to Motif VIII as would an additional five undecorated forms

that do not have the thickened rim or collar area.

Motif II is well represented within this group by oblique collar bottom incised gashes and vertical incised marks in the same zone. There are six thickened collar sherds that have obligue parallel rows of cord wrapped stick impressions below the rim. These would be Motif VII examples. Motif I is well represented with combinations of horizontal cord wrapped stick markings in single and multiple applications on the collar and even the neck portion of the body below and adjacent to the collar bottom. Griffin (Manson, MacCord, and Griffin 1944:406) cites three rim sherds that have cord wrapped stick impressions obliquely or vertically placed upon the inner rim surface.

The third ware recovered at this site is called Potomac Creek Cord Impressed. It is a minority ware and is tempered with crushed granite. It is noted for the 90% presence of single impressed cord markings running parallel to the lip on the upper rim area or by horizontal rows of pseudo-cord, as Griffin (Manson, MacCord, and Griffin 1944:407) calls the cord wrapped stick pattern. These would qualify as Motif I decorations. There are also non-decorated rims in this ware group, Motif VIII. This group also includes designs formed by triangles and zone-filled oblique impressions all between upper and lower

horizontal bounding cord impressed lines. These are Motif VI examples.

Six rims have the added thickening strip; three are marked with collar bottom right oblique incisions or punctates, Motif VII and Motif III. The other three are typical Motif I items. The lip markings of this ware exhibit a wide range of cord wrapped stick impressions, smooth rod impressions, and deeply impressed, scalloped-like marks. Many are smooth and undecorated. Griffin (Manson, MacCord, and Griffin 1944:410) sees links between the Keyser shell tempered ware and the Monongahela material to the north. He likens the limestone tempered materials with the Fort Ancient influences from the north and west, and he sees absolute congruence of the granite tempered materials with those of the Potomac River Piedmont and tidal zone Potomac Creek manisfestations. He is of the opinion that the shell tempered material is the most recent, limestone next, and the granite ware the oldest of the three.

Accokeek Creek Site

Stephenson, Ferguson, and Ferguson (1963) report this very large and complicated site. It is a multicomponent stockaded village located on the tidal reaches of the Potomac River, east of Washington, D. C. Stephenson performed the analysis of a sample of the

ceramics (58,298 sherds) earlier recovered by the Fergusons through non-scientific digging during the early 1930s. The Accokeek Cord Marked ware identified by Stephenson (sand tempered with added crushed quartz), while seldom decorated with designs that fit the current Motif designations, is represented by Motif VIII. While these rims are plain, the deep cord impressions and the slightly smoothed rim-collar junction fit well with the specifics of the ware description. The Rappanhannock Incised ware from this site (crushed shell temper) does not appear to be represented at the Walker Village, where the incised rims are all tempered with crushed rock of one kind or the other.

The many illustrated Potomac Creek pots and sherds (Stephensom, Ferguson, and Ferguson 1963, Plates XIII-XVIII) with their cord impressed linear decorations fit well into Motif I, Motif VI, and VII. Because of the highly fragmented Walker Village rim sherds, it is possible that Motif I, Motif VI, and Motif VII examples may represent different portions of the same cord impressed design schema on a particular pot. The Walker Village sample itself does not have rim sherds that overlap in these possible combinations based upon rim profile, temper, and actual cord impressions. There are combinations of cord impressed and cord wrapped stick impressed designs in the Accokeek Creek sample that are not seen in the Walker Village sample.

There is a most unusual exact pattern match on a sherd in Stephenson's illustration D on Plate XVI with sherd 67D from the Beach Delta deposit at the Walker Village. This is the sherd with the very complicated basket-like double-compound application process of partial erasure and re-impressing to achieve a textural result not seen upon any other sherd in this or any other collection examined in this study. This sherd is also made from a very light tan clay significantly different from the others, and Stephenson observes the same thing about his example.

White Oak Point Site

This Lower Potomac River site in Virginia was excavated and reported by Waselkov (1982). It is a shell midden that reflects a long history of occupations from 2000 B.C. until protohistoric times. Radiocarbon dates have been obtained for most of the cultural layers that were exposed. The earliest ceramic material is the flat bottomed Bushnell Ware (1460-1280 B.C.). While similar to the Marcy Creek pots in construction, it has significantly different tempering composed of grog, schists, bone, and fiber in various combinations. Of particular interest are the single cord lip impressions (S twist).

The Late Woodland ceramic cultures are represented by several wares, all radiocarbon dated. Rappahannock

Fabric Impressed (shell tempered) ware is dated to about A.D. 1005. When decorated, it shows incised nested boxes and triangles and is comparable to Motif IV. This type in the Townsend ware series was made for several hundreds of years so is not temporally sensitive. S twist cord was identified on eleven (79%) of the fourteen pots that did not have the marks eroded away.

A new type, named Currioman Fabric Impressed (Waselkov 1982:287), was co-located with Rappannock and Moyaone wares in a feature dated to about A.D. 1320. Currioman is tempered with fine rounded quartz, oyster shell, and occasionally, very fine sand. The decorations upon this new ware are restricted to basket-edge impressions on the lip. Four of the five Currioman vessels where the cord impression could be cleanly seen were marked with S cord twist fabric.

Moyaone ware was recovered from a deep pit that contained charcoal. This provided a date of about A.D. 1430. Stephenson (Stephenson, Ferguson, and Ferguson 1963:120-125) finds this fine grained sand tempered (sometimes with crushed quartz added) pottery to be marked with both cord wrapped stick impressions and incised lines. Single horizontal cord impressions were also found at the Accokeek Creek Site. Three of these illustrated by Stephens (1963:Plate XIX) show a Z twist cordage. This single ware carries Motif I, Motif II, and

Motif IV decorative schemas. The two pots in Waselkov's sample (1982:271) on which the cord twist could be seen both showed Z twist cordage. They also had cord wrapped stick impressions in a row paralleling the lip, a Motif VII design in the one case, and a Motif I design in the other because of a single horizontal cord impression below the oblique cord markings.

Waselkov (1982:288) defined and named another 'new' ware, Yeocomico, which has three types: Fabric Impressed, Plain, and Cord Marked. Four radiocarbon dates have yielded a mean date of about 1590 A.D. Eight pots of this ware had cord marking clear enough to determine the cord twist, half are S and half are Z twist. The most common decoration is composed of multiple horizontal lines parallel to the lip formed with a cord wrapped stick impression. Additional markings below these parallel lines are formed by oblique parallel markings of a cord wrapped stick comprising a band around the lower collar. This design combination has not been recovered in the Walker Village study. If a motif must be assigned to the Yeocomico banded examples, Motif I must do. These would fall into what has been called a 'transitional' design mid-way between Motif I and Motif VII. A larger sample must be accumulated before this mix can be resolved into another motif by itself, or established as a 'real' transitional design tradition.

There is one more design mentioned by Waselkov (1982:272) on this ware. One of the plain examples had vertical alignments of circular paired punctates that ran from the rim down the collar and onto the shoulder of the pot. A single sherd from the Walker Village Beach Delta sample closely resembles this design. The sherd is not a rim sherd and by the compound curvature can be assigned to the shoulder area of a globular pot. It carries a double row of circular punctates on a smooth surface and would be assigned to Motif III.

Delaware and Townsend Ware

Both Artusy (1976) and Griffith (1980, 1982) describe this pottery which is encountered in several variations in the Atlantic Seaboard province from New Jersey through Virginia. They have shown that a development progression within this ware (A.D. 1085 to A.D. 1370) is a gradual movement from incised decorations to cord impressed and cord wrapped stick impressed decorations. The latest in this development is named Townsend Corded Horizontal and is a good example of Motif I. This form evidently succeeded a variation (Townsend Herringbone) that used cord impressions surmounted above incised herringbone patterns. This would have been assigned to Type I as a transitional design if any had been found at the Walker Village Site. The closest example

would be the transitional Motif I sherd 17 from the surface of the Walker Village Site. It is a quartz tempered and cord wrapped stick lined (4) design surmounting a horizontal row of compound gashes that resembles a row of numeral sevens. These surmount three horizontal box shaped incised lines. This sherd has a thickened collar element.

A still earlier design on the Townsend Ware is linear inscribing and is similar to examples of Motif IV. The entire Townsend series is tempered with shell yet has been considered closely akin to the Potomac Creek Wares because of the cord impressed decorations. Another series very similar to the design schemta seen upon the Townsend Wares is the recently reported Minguannan Ware from the adjacent uplands and outer Piedmont area of southern Pennsylvania and northwestern Delaware (Griffith and Custer 1985). Minguannan ware differes only in the use of grit temper rather than shell.

New Jersey and Eastern Pennsylvania

The region of the southern Delaware River drainage is ceramically like northern Delaware in that Motif I designed wares are seen (Custer 1985, 1986) succeeding the incised Motif IV design patterns in time. Townsend ware, Minguannan, Potomac Creek, Bowmans Brook, and Overpeck are the names that cover most of the types currently in use for Late Woodland examples. The northern drainages of the

Delaware River Valley were peopled by cultures that very much reflected the Iroquois decorative ceramic styles of high collars and inscribed designs. It is interesting that the earlier Owasco cultures that are considered the ancestral roots of the Iroquois used cord and cord wrapped sticks to impress decorations upon the rims and collars of their pottery. The succession of incised decorations in the Iroquois wares is quite the opposite of the design trend to the south where incised motifs were replaced by cord impressions.

Kraft (1975, 1986) provides a comprehensive review of the Late Woodland ceramics of the Delaware drainage and adjacent areas. The later wares in this area (A.D. 1400-European contact) have little in common with the Walker Village sample beyond perhaps the use of the incising tool and punctate rod. These wares to the north are characterized by heavy collars fully covered with triangular incised markings below parallel incised lines at the lip. In addition, these have a universal castellated rim with sub-body decoration of incising and following punctate lines that have not been seen at the Walker Village.

Kraft's Pahaquarra Culture period (ca. 1000-1350) contains many examples that share design characteristics with those of the Walker Village with some important differences. In particular, many of the wares discussed

have a severely averted lip form that, in effect, forms a mini-collar perhaps a centimeter or so in height. This small surface is most often heavily marked with vertical cord or cord wrapped stick impressions (Kraft 1979: 112-113). Sherd 18FR17 B (Appendix II) from the Nolands Ferry site is an example of this style. Other aspects of some of this pottery fit well into Motif I, Motif III, Motif IV, and the plain Motif VIII.

Susquehanna River Drainage

The Central Pennsylvania Fisher Farm Site (Hatch and Koontz 1983) has yielded dated and stratified cultural layers in an old stream bed that contain ceramics of significance to the Walker Village study. These fall into the broadly defined Clemson Island amd Shenks Ferry wares and a shell tempered ware that appears to exhibit attributes from the Lancaster-Funk incised types. Radiocarbon dates that are attributed to the Clemson Island material (Levanna Cord-on-Cord and several punctated Clemson Island examples) have a chronological range from A.D. 850 to A.D. 1230. The Clemson Island sample represents Motif III with the punctates on cord impressed bodies and Motif VIII with unadorned cord marked bodies. Motif VII with diagonal cord wrapped stick impressions at the rim and a punctated horizontal line below is also represented. Cord wrapped stick impressions in a

ladder-like array or column below the above diagonal type are also present. None of these collar or rim areas is thickened.

Shenks Ferry ceramics are associated with a radiocarbon date spanning the period A.D. 1245 to A.D. 1455. The sherds in this group are collared and have cord, or cord wrapped stick, impressions forming lines parallel to and below the lip. The collar bases often display incised slashes set obliquely to the collar edge. This ware seems to be a clean combination of Motif I and II and is demonstrated at the Walker Village with the transitional group within Motif I (sherds 60D, 17, 70D). The shell tempered sherds for the most part seem to relate to Motif I and the unmarked Motif VIII.

Monongahela Cultures of Western Pennsylvania

The very term, "Monongahela", is currently being reevaluated as an appropriate cultural designator. This scrutiny has come about because of the range of diversity in both material culture and settlement patterns that have emerged because of new scientifically explored archeological sites. Assumptions and lumping of characteristics or attributes that have typified Monongahela cultural definitions in the past are slowly being shown as inappropriate (Buker 1970, George 1983).

Ceramic analysis has been one of the key factors in this reevaluation.

Three sites in the drainage of the Upper Ohio River will suffice for ceramic comparisons with the material from the Walker Village: Ryan, Drew, and the Gagney Site, which seems to have continuities with many of the ceramic attributes of the Appalachian traditions of western Maryland and Virginia.

The Ryan Site (George 1978) was an upland stockaded village of about 15 round houses that surrounded an open central plaza. It was at least eight kilometers distant from the nearest stream in an upland saddle. One hundred sixty-two rim sherds of shell or limestone tempered cord marked and smooth ware had the same basic decorative motif composed of incised lines. They have castellated rims and punctate (incised) lip surfaces as well as a few displaying impressed cord marks on the lips. Many of the neck and collar areas of these pots were plain, Motif VIII. The patterns formed by wide incised lines were most often open base triangles with the apex near the rim. These were defined with one or more incised parallel lines. An hour-glass form filled with horizontal incised lines was also present (seen too on a pipe bowl). These patterns are classified here as Motif IV more because of the incised work than because of the resulting patterns. There were a few rims that had deeply incised ("punctates") oblique

lines that in parallel formed a band around the rim. These would be Motif II at the Walker Village site.

The Drew Site (Buker 1970) is a two acre non-stockaded hamlet where over 23,000 pottery sherds were recovered. Shell was used as the temper material. The rim sherds were adorned (20%) with lugs, castellations, or loop handles. Rim decoration was composed of lines of punctates or lines of punctates parallel to the lip and joined vertically by opposing oblique incised lines that give the impression of open based triangles with their sides anchored in the punctate holes. Two Motifs are represented here by the Potomac Piedmont standard set for this study: the incised Motif IV and the punctate Motif III. The majority of the rim sherds were totally undecorated and will be assigned to Motif VIII. Lip surfaces are sometimes marked with incised oblique lines, deep 'v' cuts, and incised gashes on the exterior of the lip edge.

The Gagney Site (George 1983) had at least two major occupations: the first between A.D. 920 and A.D. 1030, the second between A.D. 1085 and A.D. 1190. The site is located within 100 meters of an all-season stream on the Somerset Plateau of southwestern Pennsylvania. Garrett County, Maryland, is adjacent on the south. Near the site is the Appalachian divide which splits the streams between west drainages to the Mississippi River and those to the east and the Atlantic Ocean.

Stockades were erected during both occupations. The earliest stockade surrounded both round and rectangular houses, while the later structure enclosed round houses with 'keyhole' additions. This Monongahela culture-set used limestone in its Monongahela pottery with the exception of about 58 sherds in 74,300. The most striking aspect of some of this pottery is the technical mode of adding rim strips and then welding them to the body by means of oblique, vertical, and punctate incisions. This produced a whole series of Motif II rim sherds that used even finger nail impressions to hold down the clay. The majority of the rim sherds did not have any collar or rim decorations other than cord wrapped paddle impressions. The smoothed examples often had lugs and castellations with markings upon the lip surface. These are all Motif VIII examples. As with every site examined, Gagney also had a few aberrant sherds. In this case these few are marked with textile impressions and a few are tempered with grit other than limestone (chert). A few Clemson Island styled pots were also recovered

Central/southern Ohio and West Virginia

The major Late Woodland manifestation of this area is the Fort Ancient culture. Like Monongahela, Fort Ancient is a traditional generalization that has not retained justification in light of current research.

Graybill (1984) outlines four major traditions that have been traditionally generalized as Fort Ancient. He shows that they are unique cultural manifestations sharing some aspects of material culture. These cultures are located in central Ohio and adjacent areas to the south in West Virginia. They have in common the obvious influences of the intrusive Mississippian material culture and village layout configurations. Current research (Graybill 1984) indicates that these four cultures all evolved from earlier Middle Woodland processes. The changes to be seen are functions of increased agriculture and the fissioning and fusion of local groups within river drainage systems.

Ceramic traditions within this area show a continued application of shell and limestone tempered wares. During the Late Woodland periods there are two dated traditions that have often been related to Western Maryland and the Monongahela of Western Pennsylvania: the Feurt phase, A.D. 1050 - A.D. 1450; and the Clover phase, A.D. 1450 - A.D. 1675. Decorations that would relate to the Walker Village sample are few. The Walker Village does not yet show the guilloche (nested sine waves) or the parallel sided strap handles that are part of the inventory on sites like Barker's Bottom located along the New River in West Virginia (Applegarth, Adovasio, and Donahue 1978). A single radiocarbon date that brackets A.D. 1115 and A.D. 1295 fits well with the characteristics of the materials

recovered. The ceramics from this site have been designated as members of the New River variety by Solecki (1949) and later by Evans (1955). Decoration when present is incised upon smoothed or cord impressed surfaces. Some twined fabric impressed surfaces are present in the sample. A technical characteristic of this pottery is the addition of clay thickening bands about the collar/rim area or achieving the same effect by folding down the rim and welding it to the body. Vertical and oblique incised 'gashes' in rows parallel to the lip were added as welds on these enhancements. Motif VIII, IV, and II cover this material.

Virginia Piedmont and Ridge and Valley Province

Published reports that have radiocarbon dating with reasonable standard errors combined with contextual Late Woodland ceramics associations are rare in Virginia. While there have been hundreds of sites excavated under reasonable procedures in the face of encroaching urbanism or as pure salvage activities in the wake of natural and man-made disasters, site reports that could provide support to this study are equally few. Continued applications of the Evans (1955) typology and attempts to perform inter-site seriations seriously erode what value the reported ceramic analyses might offer.

The Huffman Site in Bath County and three related smaller settlement sites in the headwaters of the James River will be used for comparative purposes with the Walker Village materials. The analysis of Geier (1985) has been chosen because of the analytical methods he used, in particular his analysis of the designs or motifs on the thickened collared Page Ware recovered at these sites. The majority of the artifacts examined have been recovered from the Huffman site. The other three seem to be culturally related and much smaller than the Huffman settlement. Geier's analysis was directed to single pot definitions. These were identified through a sequential application of standardized measures that included the designs on the collar area.

There are 143 vessels from the four sites, 135 of them tempered with either limestone and calcite or calcite. One hundred seven of these pots were also assigned to the Page Cord Marked variety within the Radford Cord Marked series (Evans 1955:64-69). Within these traditional ware designations Geier has isolated four types based upon rim and collar decoration motifs. All four are found in the Huffman collection, but differentially among the collections from the other three sites. The vast majority of these pots were constructed using the folded down rim collar technique. This collar and the lip were the areas the potters used to display the decorations. Geier

(1985:81) designates three areas that received systematic treatment on these pots: zone 1 adjacent to the lip at the top of the collar, zone 2 at the bottom of the collar at its junction with the body, and the intermediate zone 3, a prepared surface between zones 1 and 2.

The rim sherds illustrated (Geier 1985:83-87) for this study most resemble Motif II and the cross-over group in Motif I that have linear cord marking with an overlay of oblique or vertical cord wrapped stick impressions. The deeply gashed ("frilled" in northern terms) collar bottoms of the Huffman examples do not occur at the Walker Village. Motif VIII (undecorated) was represented among all temper sets. Geier (1985:67) places the occupation of the Huffman Site between the eleventh and thirteenth centuries A.D., based upon a series of radiocarbon dated features.

CHAPTER XI

DISCUSSION OF THE WALKER VILLAGE CERAMICS STUDY RESULTS AND A FEW OF THE RELATED ISSUES

Should an aphorism be constructed to convey the flavor of the Walker Village ceramics study it might say, "Any anthropological investigation that appears to be complicated from the onset will distinguish itself for such an understatement before its termination." The profusion of different tempering materials and design patterns seen in the pottery sherds of the Walker Village Site have set this archeological location apart from others in the Potomac Piedmont since the first avocationalists began collecting surface materials there in the 1920s. The site later became known among the archeologists who visited this island location as a confounding enigma when considered under the traditional Maryland and Virginia ceramic type and variety classification procedures.

This dissertation has been structured to provide information about the ceramics from the Walker Village Site and to then use these new data to relate the cultural traditions perceived in the pottery sherds to traditions in

the surrounding areas of the Middle Atlantic archeological province. The core of this seriation-like comparison process has been primarily the decorative designs found upon the rims and collars of the sherds. These are seen to comprise motifs that have continuities both within the Walker Village itself and other archeological sites. The designs, as motifs, are comprised of various elements or marks produced by several tools or processes. Such processes and tool applications themselves are perceived to have traditions of use apart from the final configuration of the resulting patterned and repetitive motif designs. In effect, this study has been an attempt to identify and isolate the covarying attributes seen upon the pottery sherds and the material remains from many archeological settings of the Late Woodland period.

This writer has attempted to avoid biases and unstated assumptions that are implicit in the traditional type-series designations by ignoring local typologies in basic artifactual analysis. This has been almost impossible to do because of the organizational approach that most Middle Atlantic archeological research has taken. This has been to name configurations of cultural attributes so that they can be referenced without a lengthy and repetitive trait description being required with every statement and discussion. These names have been applied to clusters of attributes found upon a single artifact (a

Levanna projectile point), an extinct people (Adena), or as a very large blanket statement covering whole chapters of variables for a particular artifact group (Clemson Island pottery). Unfortunately, these names are generalizations that include attributes of both diagnostic significance and general characteristics that are common to entire areas.

While considering the designs that would become motif groupings, tempering materials were ignored, as were the technical aspects of pot construction. Tempering and structure entered into later evaluations of covariation that would be attributed to commonalities of cultural traditions. The designation of a particular pattern of marks in a clay sherd as a motif is a process that is open to bias (recognized and unrecognized). Identification of all elements and criteria that are part of a motif definition must be isolated, justified, and listed. Applicable factors apart from the sherd pattern design itself must be recognized and verbalized using language sufficiently specific to avoid confusion. Such factors, while not part of the motif are perceived to covary with it and thusly provide important cultural data that helps elaborate upon the settings within which the motif is seen to exist. Material remains must be integrated to the fullest extent possible if cultural behavior is going to be imputed from the archeological record.

Relations of the Motif Designs to Other Ceramic Cultures and Chronological Settings

The plain, unadorned, rim/collar ceramic examples (Motif VIII) are to be seen in every ceramic complex in the Middle Atlantic area from the first Early Woodland cauldrons with lug handles to the finely executed shell tempered wares in use at European contact in the 16th century. This holds true for examples seen from Canada to Florida and as far west as the upper regions of the Mississippi and Missouri Rivers. The basic surface finish varies between smooth and the equally ubiquitous markings of the cord wrapped paddle. These plain rims and collars are usually the majority among rim sherds recovered from all Late Woodland sites.

There is variation among the plain rims, however, and this is to be seen on the surface of the lip itself. Marks were cut or impressed into the clay of the flat, rounded, or angular lip surfaces in a multitude of simple patterns. They very likely reflect not only the whim of the potter but the manufacturing process as well (when an unfired pot was placed upside down upon a surface that left marks upon the lip). These latter markings are represented by the slight scratch-like circumferential lines or those of parallel nature crossing the entire lip plane at a constant angular off-set. The intentional

impression on the lip seems as ancient as the pottery utilization itself. Waselkov (1982:262) reports single cord impressions (S twist) on the lips of Bushnell (similar to Marcy Creek ware) rim sherds that were dated to about 1110 B.C.

The highly fragmented nature of the sherds from the Walker Village precludes making statements about the size or shape of the pots that had the plain rims and collars. These rims also are represented in each of the temper sets that have been identified for this site. Those plain rims that are tempered with shell and have lugs and lip castellations can with some confidence be attributed to the same traditions that have been called Monongahela in Western Pennsylvania and were functioning about A.D. 1350. These cultures are thought to be the northern manifestations of the Mississippian cultural influences, and the sites are typically stockaded villages with round houses surrounding an open central plaza. The Hughes Site, located on the Maryland flood plains across the Potomac River from the Walker Village, was most likely a village settlement with strong Monongahela connections.

The horizontal impressions of single cords and the same application of cord wrapped sticks define Motif I. The variations within this motif design at the Walker Village are complex and not at all understood (nor fully justified as being a "Motif I"). As with so many of the

observations among this and other motif groups, individual instances of quite different schemata within the larger traditions are plagued by small numbers of examples. The obvious answer is to obtain a larger sample and test the continuity of the variables. This is the long term intention of this study but cannot be pursued within the time and funding constraints of this dissertation. 'Pure' Motif I examples of single or multiple horizontal lines are at times complicated by other markings of incised or impressed lines. These sherds covary in that they are thicker than the uncomplicated examples. Five of eight such cases involve the down folded rim that is so common with the Motif II group of incised gashes placed in a row along the lower part of a folded collar.

Motif I is well represented in cultural settings that have been dated between A.D. 1100 and A.D. 1500. Seven of the ten examples fall between about A.D. 1230 and A.D. 1450. Three Shenks Ferry sites in Central Pennsylvania, three Potomac Piedmont sites (Nolands Ferry, Shepard, and Shepard Barrack) and the lower Potomac tidal site of White Oak Point are represented in the date span for this Motif. In Pennsylvania, the Shenks Ferry culture is thought to be a continuation of the traditions that are immediately preceding in the form of Clemson Island/Owasco. This earlier tradition was common in New York in areas that became identified later as the Iroquois

homeland and is considered to be itself the evolutionary product of the earlier local Middle Woodland cultures. The White Oak Point example (Waselkov 1982) is found upon Moyaone ware and is dated to about A.D. 1430. It was present at the Accokeek Creek site and is illustrated by Stephenson, Ferguson, and Ferguson (1963). The Yeocomico ware (A.D. 1590) Motif I examples at White Oak Point often have a lower band of oblique cord wrapped stick impressions in addition to the horizontal bands. There are no such examples at the Walker Village. None of the Walker Village Motif I examples is tempered with shell.

Motif II is represented by twenty rim sherds at the Walker Village Site. None of these is tempered with shell. Thirteen are formed with the down folded rim. The incised marks (called 'gashes' by some authors, 'punctates' by others) are either vertical or right or left oblique. Next to the Motif VIII plain wares, this is the most popular as measured by chronological application in the Late Woodland. It is present in Western Pennsylvania on Monongahela sites by A.D. 1030 and also in southcentral Virginia at the Huffman Site on folded down rims. Folding the rim down to form a thickened collar is generally thought to be a southern manifestation of a Fort Ancient limestone tempered ware (Barkers Bottom A.D. 1200) locally designated Page. It is a series within the broader Radford ware of Evans' typology (1955) and is typically found in

the Blue Ridge and Appalachian regions of Virginia. Sites with these wares are all thought to have been under the influence of the Middle Mississippian cultures to the west and south. The most obvious trait was the settlement pattern of circular houses around an open plaza. It was at this time when stockades began to be built around the hamlets we call villages. In the Potomac Piedmont, Nolands Ferry and the Shepard Barrack sites (about A.D.1450-1500) and the Winslow Site (about A.D.1280) exhibit Motif II pottery designs. They are also seen upon the Moyaone ware at the tidal White Oak Point site about A.D. 1430.

The circular punctates of the Walker Village Motif III design are first seen in the comparative data base as characteristics of Clemson Island ceramics dated to about A.D. 1140 in central Pennsylvania. The only other occurence is from the White Oak Point Yeocomico ware dated to about A.D. 1590. The punctate is to be seen in conjunction with incised lines that are obliquely applied between horizontal rows of punctates on some of the Monongahela wares as at the Drew Site in Western Pennsylvania and at the Hughes site in the Potomac Piedmont. The writer has recovered punctated and bossed rim sherds from a site one kilometer west of the Shawnee Minisink site on the Upper Delaware that had no other markings. The Walker Village sample of Motif III is composed of two folded down rim collared sherds where it

seems the punctates were part of a weld that secured the clay collar to the body. Two sherds are punctated from the inside of the pot so that a protrusion, or boss, of clay is on the outer surface. The fifth example is of a rim with a single row of circular punctates just below the lip on an otherwise undecorated sherd. One body sherd is in the sample with a double row of circular punctates that were either vertical to the rim or ran parallel to it at some point near a lower shoulder on the pot. This location can be surmised because of the double curvature of the sherd. The rows have been made upon a shell tempered smooth surface.

Motif IV, the use of straight incised lines to form geometric figures or parallel line patterns, was most popular in the comparative sample between A.D. 1200 and A.D. 1400. It is to be seen upon pottery in the Potomac Piedmont at Winslow (A.D. 1280), Shepard (A.D. 1260), Shepard Barrack (A.D. 1520), and at the Monocacy River Biggs Ford Site (A.D. 1390). Motif IV is also present in the Upper Delaware on Pahaquarra ware (A.D. 1350), the Monongahela McJunkin site in western Pennsylvania ca. A.D. 1360, and at the Fort Ancient influenced Barker's Bottom site along the New River in West Virginia between A.D. 1115 and A.D. 1295. It was also found at the White Oak Point tidal Potomac site with an associated date of about A.D. 1430 as Moyaone ware.

Motif V did not appear in the comparative sample. The use of carved stamps in rectilinear patterns is documented, but this writer could not find a site reported that had both rim sherds with this motif and appropriate radiocarbon dating. It seems to be a motif with southern affiliations in the Late Woodland and was supplanted by the curvilinear designs of Late Mississippian influences that came into southern and southwestern Virginia via the river systems that drain westward to the Mississippi River.

Motif VI appeared only with a radiocarbon date in context (ca. A.D. 1460) at the Shepard Barrack Site. This is a companion site to the Walker Village on the opposite side of the Potomac in Maryland. The writer has been unable to locate other examples of this triangular based design set (made exclusively with single cord impressions or by lines formed with the cord wrapped stick) that were accompanied with radiocarbon dates in the same contexts as the rim sherds. The writer has two sherds from 18MO4 that are tempered with quartz and sand that have the Motif VI schema executed upon a fully smoothed body surface. These are surface recoveries and do not relate to any of the available radiocarbon dates. Stearns (1940: Fig. 10) illustrates a design that would be designated Motif VI for pottery recovered at the Monongahela-like Hughes Site. It is tempered with shell and sand. The Hughes Site is on the same floodplain amd perhaps one kilometer east of the

Shepard Barrack Site. Potomac Creek Ware as defined by Stephenson in his analysis of the Accokeek Creek materials (1963) displays some designs that could be designated Motif VI. Griffin (Manson, MacCord, and Griffin 1944:Plate XIII) does the same in reference to Potomac Creek material recovered at the Keyser Farm site in the Shenandoah Valley.

Motif VII is composed of markings made with a single impressed cord or more commonly, a cord wrapped stick (or perhaps a comb-like tool that produces a linear series of similar depressions). This motif pattern is the result of these devices being impressed in the clay in oblique or vertical parallel sets that result in a band of the impressions running parallel to the plane of the lip. In the Walker Village sample they are impressed upon the cord wrapped paddle impressions of pot malleation or a surface that has been smoothed over. Lip treatment is variable in the markings that might have been placed there. Three of the sample are placed upon a down folded rim that forms a collar.

One example is placed upon the face of a lip that has been everted ninety degrees from the vertical plane of the pot wall. The 'new' lip surface formed by this action is slightly rounded and totally smooth. Kraft (1975:105) charts this type of everted lip "collar" as one step in the evolution of the collared cord marked variety. He posits this process during the A.D. 1200 to A.D. 1450 time frame.

Rim sherd 18FR17B from the Nolands Ferry site at the mouth of the Monocacy River at the Potomac is formed and marked identically to the Walker Village sample with the added horizon marker of ladder-like vertical rows of cord wrapped stick impressions that run from the lip down to the shoulders. It is a typical marking design of the Clemson Island/Owasco/Pahaquarra ceramic cultures that have been dated to the period from about A.D. 1000 to A.D. 1350 along the upper Delaware River, A.D. 900 to A.D. 1435 in New York, and A.D. 1130 to A.D. 1430 along the West Branch of the Susquehanna in Pennsylvania. The Nolands Ferry dates of A.D. 1400 to A.D. 1560 coincide with these periods.

Motif VII pottery is usually tempered with crushed quartz at the Walker Village with this sample including one limestone and one granite tempered sherd. No shell tempering has been recognized. Waselkov (1982) recovered sherds at the White Oak Point site with Motif VII designs. He has designated these Moyaone Ware (A. D. 1430). It was first identified by Stephenson, Ferguson, and Ferguson (1963) at the Accokeek Creek site, another tidal village location on the Potomac River.

Specifics of the Walker Indian Village Occupation

At this stage of establishing some sort of chronological setting for the occupations of the Walker

Indian Village Site, the organizational and relational tools of the motif analysis must be augmented with other covarying attributes of cultural material remains. These are the non-artifactual situations that impacted daily life: environment and the physical/spatial relations of actual settlement patterns. A significant portion of these are rooted in prior times during the Middle Woodland periods between ca. 300 B.C. and A.D. 900.

That the Walker Village Site is a multi-component settlement location is beyond doubt. The gross chronological parameters of these settlements at the same high location upon a flood plain island most likely fall between A.D. 1200 and A.D. 1500. From an environmental perspective, in particular the weather systems, this is a period of significant change that caused stress in all of the cultures of those times. After a 300 year period of unusually warm weather (Gribbin and Lamb 1978:70), the prevailing westerlies changed in a southern shift that brought drier and much cooler Arctic air masses into the middle latitudes.

In the midwestern Mill Creek settlements (Bryson and Baerreis 1967) this change is reflected in the total shift from deer to bison exploitation as the environment shifted to a short grass prairie under severe and prolonged drought conditions. Corn horticulture was also severely restricted or eliminated with a decrease in the frost-free

seasons available for that crop. Greenland, Iceland, and Europe note this period as the 'Little Ice Age'. In temperate North America the loss of highly predictable resource availability in given catchment areas is reflected in the fissioning of the larger groupings that had come together during the Early Woodland times of much warmer weather and sufficient growing seasons for the strains of corn available.

There is strong evidence that the above shift in the westerlies impacted the Middle Atlantic not as a prolonged drought, but through a significant increase in the annual rainfall (Gribbein and Lamb 1978). This phenomenon would help explain the deep alluvial layers that separate floodplain cultural surfaces that seem to be closely contemporaneous. Twenty centimeters of sterile silt separate two ceramic bearing layers that contain the same tempered ware at Selden Island. Similar alluvial covering is reported at Belldina's Bottom on the Monongahela River (Mitchum 1984) where a Monongahela settlement is seen to be deeply buried.

Levee tops and terraces would, indeed, be preferred settlement locations under such conditions, unless they became so repetitive that the land itself could no longer be used for cropping. At that time a shift to activities on the higher terraces or uplands away from major river floodplains would be appropriate. This might explain the

Monocacy River valley settlements that are on higher terraces and bluff edges rather than upon the floodplains. It may also help explain why the Walker Village Site was abandoned on a regular basis during the period between A.D. 1100 and A.D. 1500. There is not yet enough information available to judge the full impact of the 500 year climatic episode of significantly colder winters and rainy summers upon micro-environments like the Potomac Piedmont or the adjacent tidal Potomac estuaries. It is hypothesized that such an increase in rain would have increased the fresh water flow into the tidal regions of the Potomac and would have moved the brackish zone down river to the detriment of oyster beds that had previously been established closer to the fall line. Oyster exploitation sites near these abandoned beds would themselves have been abandoned coincident with the loss of the oysters.

Culture stress caused by a colder and wetter environment that impacted food resources coupled with continued population growth (generally held to have been continuing during this and subsequent periods) is reflected in the stockades that were built to protect villages starting about A.D. 1200 in Western Pennsylvania. Besides the obvious protection afforded the inhabitants of such a village, this arrangement also protected stored foods which may have been the real goal of any marauding group. The

introduction of the stockade itself and the resulting grouped living in close proximity would have produced significant stress among the inhabitants. It would also have required organization and shared responsibilities that would not have been implicit in the more open conditions of scattered hamlets or farm plot settlements.

It is not likely that the Walker Village stockade was erected quite so early if the bundled burials that were encountered within its perimeter are considered. This burial custom was not part of the interment practices of the Monongahela groups who began building stockades in A.D. 1200. The burials at the Keyser Farm site were all slightly flexed or fully prone, no bundled burials. The Shenks Ferry elements of the comparative data base had only fully prone and occasional flexed burials, again, no bundles. The Late Woodland cultures of the Upper Delaware buried their dead in graves that normally held one prone body (Kinsey 1975). Graves were not grouped into any sort of cemetery pattern. Fort Ancient cultural groups buried their dead as flexed burials in single graves. After mound burials ceased to be utilized (about A.D 1450) the dead were placed in pits dug in, and outside of, the stockaded villages. The stockaded village itself came into use by the Fort Ancient cultures about A.D.1450 (Graybill 1984).

It is likely that the stockaded village at the Walker Village site was built in the very late

prehistoric period when such burials were common among the villages to the east in the Potomac tidal estuary area. Decorative Motif I (cord and cord wrapped stick impressed horizontal lines) and Motif III (the circular punctate patterns) would belong to this village group if the tempers used were finely crushed shell. There is no crushed shell temper in either of these two motif examples at the Walker Village. The writer would offer that the bundled burials are not contemporary with the stockade but are deposits from a very much later period. The stockade construction must be left somewhere in the 400 year period between A.D. 1200 and A.D. 1500.

The lithic remains from the cultures of the Walker Village Site are typically Late Woodland and as such do not provide attributes that can be related to chronological fine tuning. The triangular arrow points, made from quartz, quartzite, rhyolite, silicified slate, gray, brown, black, and white cherts, hornfels, tan jasper, blue, green, yellow, and white chalcedony, and igneous rocks, present the entire known range of size and shape that has been seen in the Middle Atlantic Late Woodland corpus of triangular points. Based upon point morphology and the traditional typologies that so closely follow size and shape (no matter where or with what they are found), the Walker Village was occupied continuously from A.D. 300 until the first trappers came along and gave the inhabitants guns.

Other ceramic items from the Walker Village besides the pot sherds are few and not very sensitive chronological markers. One spherical clay bead with a hole punched through its center before firing has few comparative companions in the literature. The bead is about a centimeter in diameter with a hole 2 mm in diameter. Hartzell and Staats (1984:11) report three such beads from the Dark Moon Site in New Jersey. Charcoal from this site has been dated to ca. A.D. 1420. Kraft (1978:75) recovered one such bead at the Minisink Site, also in New Jersey. At the time, he conjectured that the bead was a native attempt to copy European trade beads. The date from the Dark Moon find might restrict such conjecture. Stephenson, Ferguson and Ferguson (1963:138) also report finding clay beads at the Accokeek Creek site. These spherical beads are about twice the size of the Walker Village and Dark Moon examples.

A cylindrical segment of what has been judged a ladle handle was recovered in the water screening of the beach delta matrix at the Walker Village. It is about 2 cm in diameter and 5 cm long. The surface plainly shows the scrape marks that helped shape and smooth this device. Pipe stem fragments have also been recovered, including an expanded bit example that resembles a modern cigar holder. None of these fragments bear any decorations. Fragments of

pipe bowls that are part of this sample are another matter in decorations. Many of these fragments were initially thought to be bone flakes. They are quite thin (some 1.5 mm) and almost all less than a full centimeter in the largest dimension. These carry several types of roulette markings that often are spaced less than 1 mm apart. They seem to form triangular or straight line designs. A few have parallel lines of decoration. None are incised. Patterns of this definition have been observed upon pipe fragments shown in many Late Woodland site reports.

The earliest Walker Village Late Woodland occupation would seem to be about A.D. 1200-1250, based upon datings of Motif styles I, II, IV, and VIII. The ceramic traditions carried by these settlers would have been those of the Clemson Island-Owasco-Pahaquaharra early continuities seen in central and eastern Pennsylvania, New Jersey, New York, and New England. These designs are typified by cord wrapped stick impressions, circular punctates that were sometimes pressed from the inside of the pot to form exterior bosses, and cord wrapped paddle malleated bodies. The Nolands Ferry site at the Monocacy River confluence with the Potomac was also occupied during this period, and Motifs I, II, and VII are present upon the rims and collars of the rim sherds there. The down folded rim thickened collar is a majority technical feature of this pottery. Tempers were crushed rock: limestone,

quartz, granite, and sand that varies from fine to small pebbles.

A second major occupation is hypothesized to have been ca. A.D. 1300-1350. This ceramic tradition included Motifs I, II, IV, and VIII. The Shenks Ferry traditions of central Pennsylvania are seen to be closely similar in ceramic decoration applications. The Winslow site on the Maryland shore just downstream from the Walker Village Site has ceramics that display these traditions and a radiocarbon date within this range.

The third major settlement of the Walker Village Site is thought to have taken place during the A.D. 1450-1500 period when Motifs I, II, IV, VI, and VIII were applied. The Shepard Barrack site on the Maryland floodplains across the river has a radiocarbon date from this period and the same motif clustering. The New Jersey ceramic bead date of A.D. 1420 would fall into this period and match the Walker Village ceramic bead. Shenks Ferry-like decorations are still to be seen in this assemblege implying a continuity of the ceramic culture with that of central Pennsylvania. A continuity is also to be seen in the Moyaone wares of the tidal Potomac that have been dated to this period by Waselkov (1982). Motifs I, II, and IV are represented by this sand or sand and quartz tempered ware.

A fourth major occupation of the Walker Village is marked by the shell tempered wares that exhibit smooth surfaces and rim castellations and lug handles. The shell temper is often augmented with crushed quartz or sand. Lip decorations are also significant markers of this tradition in that the marks were deeply impressed in axial alignments with rods or smooth tools. These ceramics most closely resemble those of the Hughes site across the river on the Maryland floodplains. This site is considered to be Monongahela in cultural affinities. It is usually assigned to the later periods of that cultural expression based upon the very small quartz triangular arrow points, a trend documented in western Pennsylvania. The Walker Village Site also has the small white quartz triangular arrow points of this tradition.

A few overview statements will end this search for dates and related cultural manifestations. The Walker Village Site settlements, and in particular the ceramic cultures that have survived in the archeological record reflect large and wide ranging traditions of ceramic technology and decorative intent. It seems that 1500 years of pottery traditions are reflected at this location. It was not a continuous cultural tradition but represents major ceramic influences from several distinct areas that differed over time. These influences are incomplete in terms of their ultimate fruition in the

hearth areas. In each of these traditions are characteristics that did not appear at the Walker Village Site. Some are technical in nature and pertain to the size or shape of the pottery involved, others are missing style elements (like the strap handles on Fort Ancient ware), and others are pure symbolic carriers that were not adopted among the villagers of the Potomac Piedmont (curvilinear stamped designs from the south, the Iroquoian molded effigy faces from the north).

The most impressive finding in this study for the writer has been the recognition of the wide geographical distribution and great time depth of the use of the cord or fabric wrapped paddle in pottery production. Seemingly linked to this tradition has been the use of the cord wrapped stick as a decorative device for impressing designs in the clay collars, lips, and necks of many shapes and sizes of pots for more than 3000 years. While the use of this device was replaced gradually by incising decorations in many areas, it is to be seen returning to favor again along the Atlantic seaboard just at European contact times.

Three major ceramic traditions are reflected at the Walker Village. The oldest is the decoration with the cord wrapped stick in various applications. This technique began during the late Early Woodland periods and can be seen in the Hopewell influenced areas of the Midwest and the Northeast, as well as the Middle Atlantic regions. The

second tradition was the thickening of collars by adding fillets of clay or turning down the rim. This surface became a zone of decoration itself that incorporated pressure welds of this collar to the body into designs of incised or cord wrapped stick impressions running in bands of parallel markings below the lip. When the thickened rim was no longer applied, the oblique and vertical marking continued. This tradition can be seen in Ohio and western Pennsylvania as early as A.D. 800 and it continued on wares made during the proto-historic periods 1800 years later.

The third tradition addresses the aplastics that were mixed with the clays to provide stability during manufacture and subsequent use. The use of limestone is recorded in the Early Woodland of Tennessee (Chapman 1975) and became almost a universal material along the mountain chains all the way up and into Pennsylvania. The rivers that drained these areas to the east and west all contain sites that continued the use of limestone even when its availability entailed distant procurement (White Oak Point in the tidal Potomac). The use of shell, both fresh water and salt water species, has a history as long and equally pervasive. There are many locations where both limestone and shell were mixed into the same clay batch. Despite this seemingly non-inventive continuity, there is an accompanying display of temper use where it seems that

experiments were being tried that included almost anything. Such variability is not restricted to the early days of pottery, but seems to have proceeded along with subsequent other changes in technological modifications, even when the decorative elements did not change.

Analysis of the Walker Village ceramics using decorative motifs as criteria for creating new typologies has been a mixed success. Several aspects of the motifs themselves and their position in the culture history of the Eastern Woodlands are worthy of some closing comments. Attention will also be directed to a few of the more meaningful covariations that have been observed in this study.

The potter's tools that created the elemental marks in the clay have been shown to be relatively few and of long tradition. The cord wrapped stick or wand seems to have the greatest antiquity and the most sustained continuity. When a very large geographical area is considered, the cord wrapped stick is seen to have been almost ubiquitous. It also seems to have been replaced in most areas by ceramic traditions that are centered in the southern United States, or perhaps even farther to the south. The new influences did not move into these sub-areas all at the same time, but seem, rather, to have been spaced over a period of almost 2,000 years. In some areas the new traditions quickly obliterated all signs of

the cord impressed pottery in a relatively quick succession. In others new design elements were added to the cord markings using incising tools. Just where the Walker Village Site actually falls in the chronology of these events cannot be determined with the sample at hand or the lack of stratified and sealed deposits that could show successive changes.

Almost every comparative site in the Potomac Piedmont had rim sherds that carried the linear markings of the impressed cord or cord wrapped stick. With the exception of the undecorated wares of Motif VIII, Motif I with its cord impressions was the most common design. Dates that have been recorded for deposits containing this design fall primarily between A. D. 1200 and A. D. 1500.

During this same period to the west and to the northwest other ceramic cultures were present that favored the incised designs found on the Fort Ancient and Monongahela wares. In the south ceramics were being produced and decorated with carved stamps or were carefully smoothed and burnished. This writer strongly feels that these events shown in pottery designs reflect populations that had little casual contact with the villagers of the Potomac Piedmont as defined by the cord impressed wares found there.

Fine analysis of the motifs that could separate the stronger traditions of membership advertisement or

iconic displays in the designs has been hampered by two aspects of the sherds themselves. First, there are just too few of them in any given motif lot to be able to statistically separate the design elements and their eventual motif configuration. Secondly, it has not been possible yet to establish the range of variation within a given motif in terms of what would have been within the cognitive maps of the potters. A change in motif is obvious, and great success has been achieved in sorting the sherds into gross motif definitions that by and large are mutually exclusive.

Mention was made of the cross-over sherds that were primarily assigned to Motif I based on the horizontal cord impressions; all of this group were crossing over into the same kind of added design. The question must be asked, are they yet another motif group worthy of isolation and tracking? In some of the site reports reviewed in this study there were many groupings and combinations of elemental tool marks forming motifs that seemed to be combinations of what is seen at the Walker Village. Published report illustrations are as a rule too general and focused upon too many other items to be comprehensive in the ceramic coverage. A factor, too, in these publications is the will of the editor and the policy of the publication. In short, actual collections must be reviewed and tabulated in terms of decorative designs if

answers to the validity of the whole concept is going to be firmly established.

The study of the Walker Village ceramics has not answered one of the more obvious questions: "Why did those people return again and again to the same place?". Study of the ceramics has attempted to help explain when the people were there and what some of their cultural traditions might have been based upon motif congruences and differences related to other archeological data sets. Consideration of Selden Island shows that the Village was on the highest of the low rises that define its rolling surface. Its soils are rich and frequently replenished by river flooding. Recurring settlements would likely have minimized any forest cover in fields that were used for crops. If water transportation is a factor, the Walker Village was located close to a major intersection of rivers flowing to the Potomac from the north and the south, as well as being one of the last locations with broad floodplains in the Piedmont before the narrowing of the river in the rapids leading to the fall line.

The motif is a new tool in the Potomac Piedmont and it shows great promise of providing meaningful alternatives to the traditional typology currently in use. It provides for much finer definitions of ceramic culture interaction and may well lead to linking the past with present understanding.

APPENDIX 1

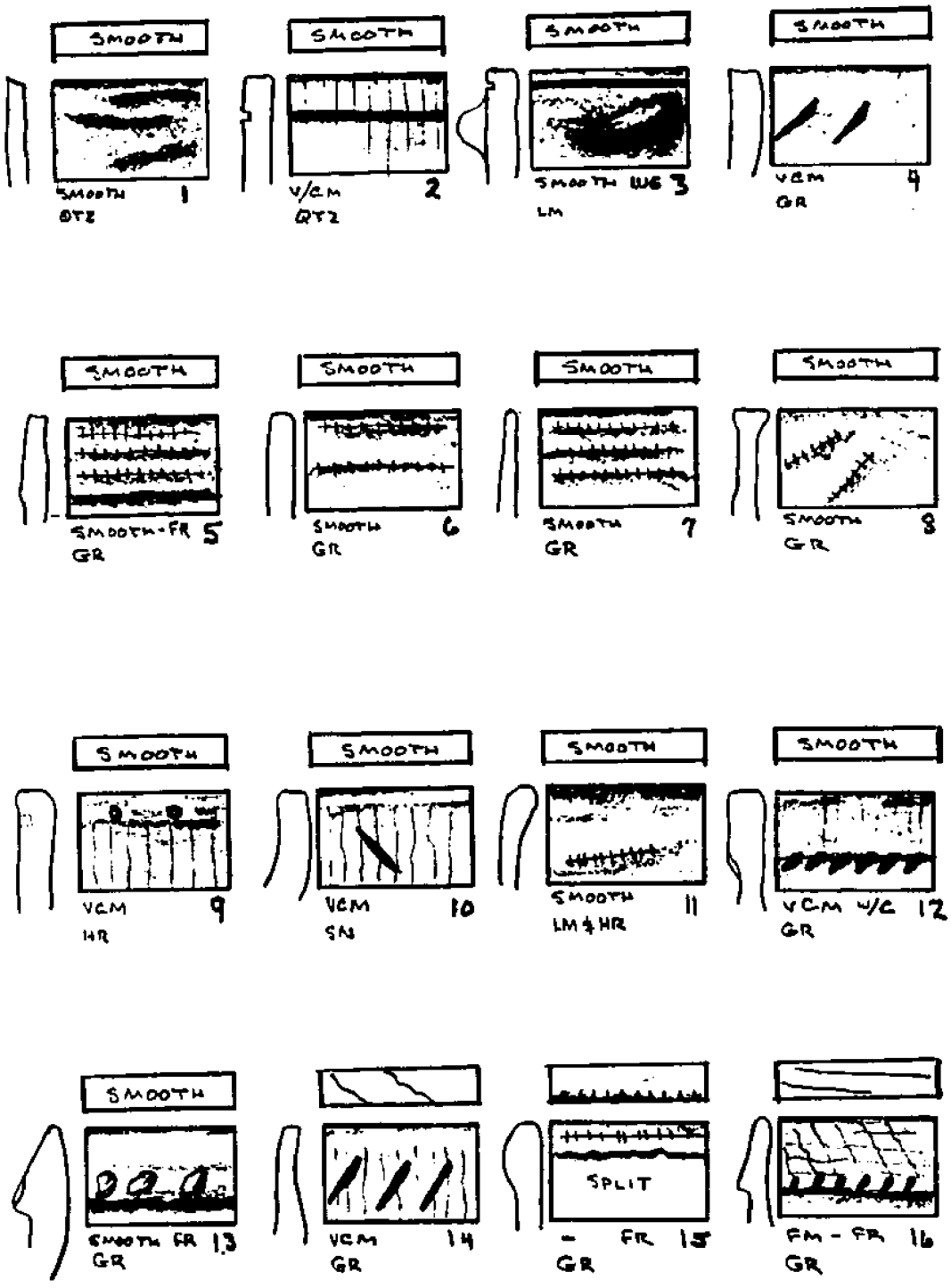
STANDARDIZED RIM SHERD DESIGN ILLUSTRATIONS
WALKER VILLAGE INDIAN SITE, MONTGOMERY COUNTY, MARYLAND
18MO20

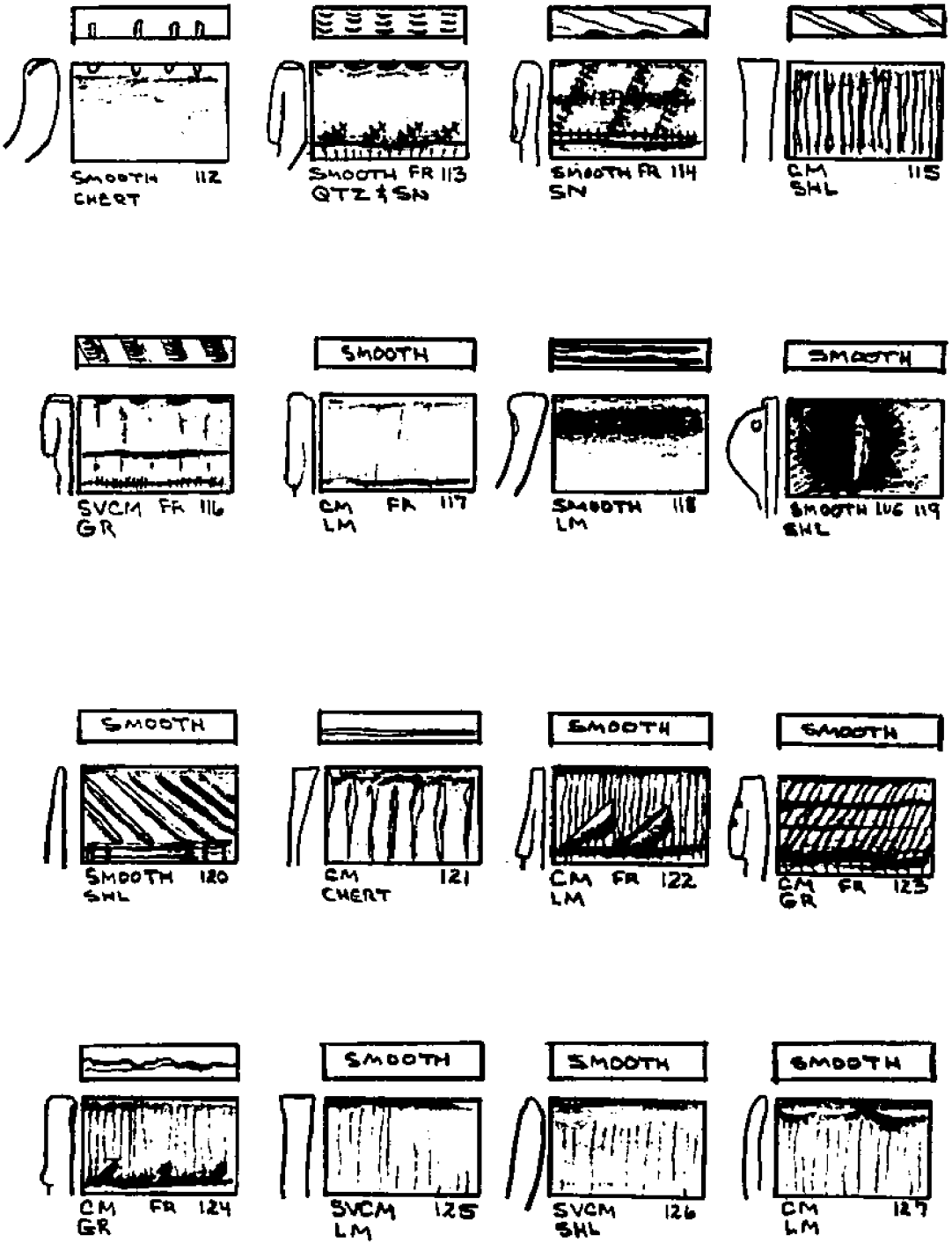
Each standardized rim sherd protrays a plan view of the rim lip surface, a sectioned view of the rim and collar area, and an illustration of the patterns that are incised or impressed on the rim and collar. The first line of coded information shown below each drawing designates: primary sherd surface treatment (smooth, cord marked), a special feature if present (folded rim, bossed), and the sherd serial number. Serial numbers with the letter D designate sherds that were recovered from the Beach Delta sample recovery. All others are from the several controlled surface surveys of the site. The second line of information provides a coded aplastic indicator (single or multiple tempering agents mixed with the clay). Natural inclusions are not designated on these drawings. The tool mark conventions illustrated in Chapter VIII, Fig. 3, are used throughout these illustrations.

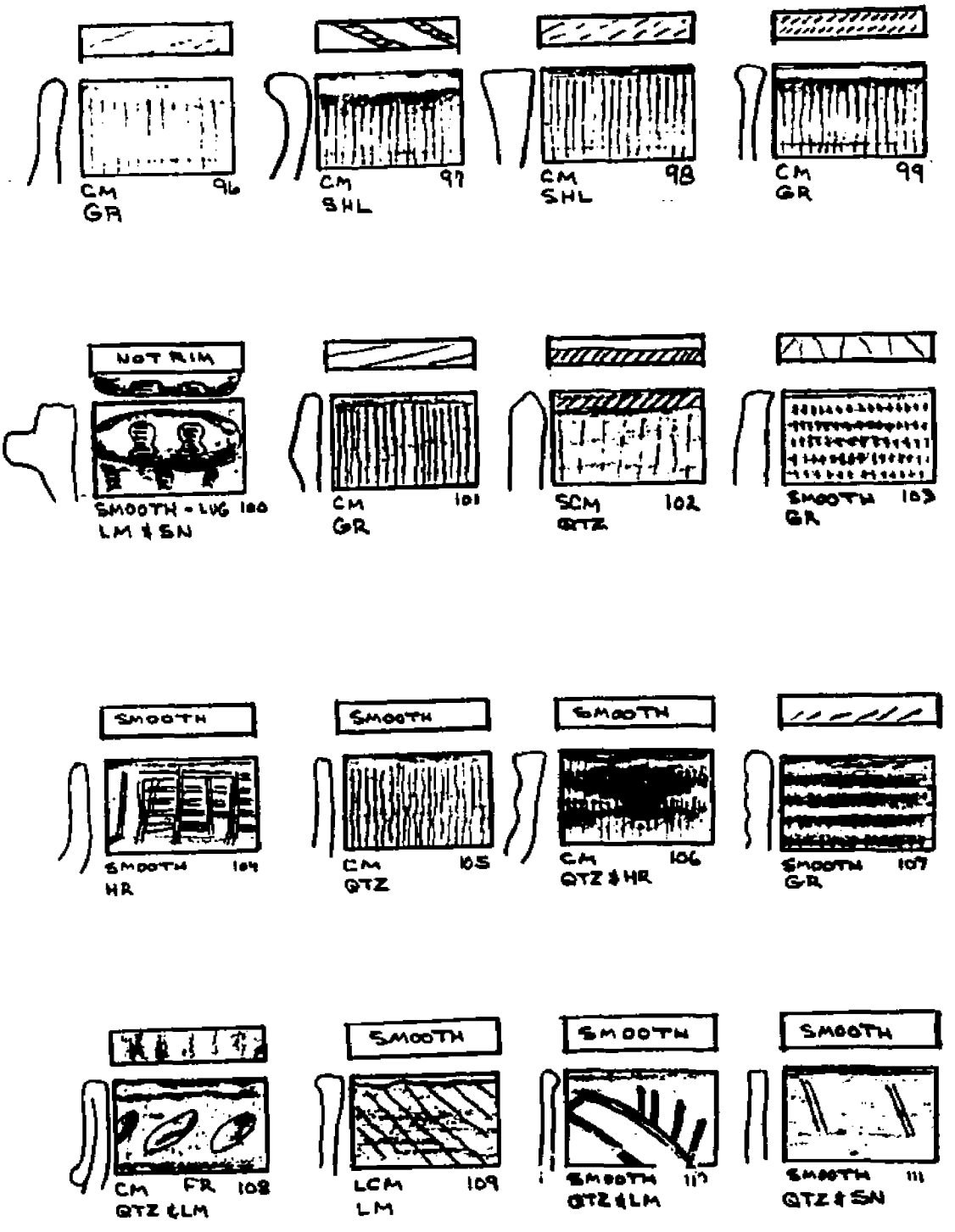
The following lists provide translations for the surface finish symbols and the temper material codes used in this appendix.

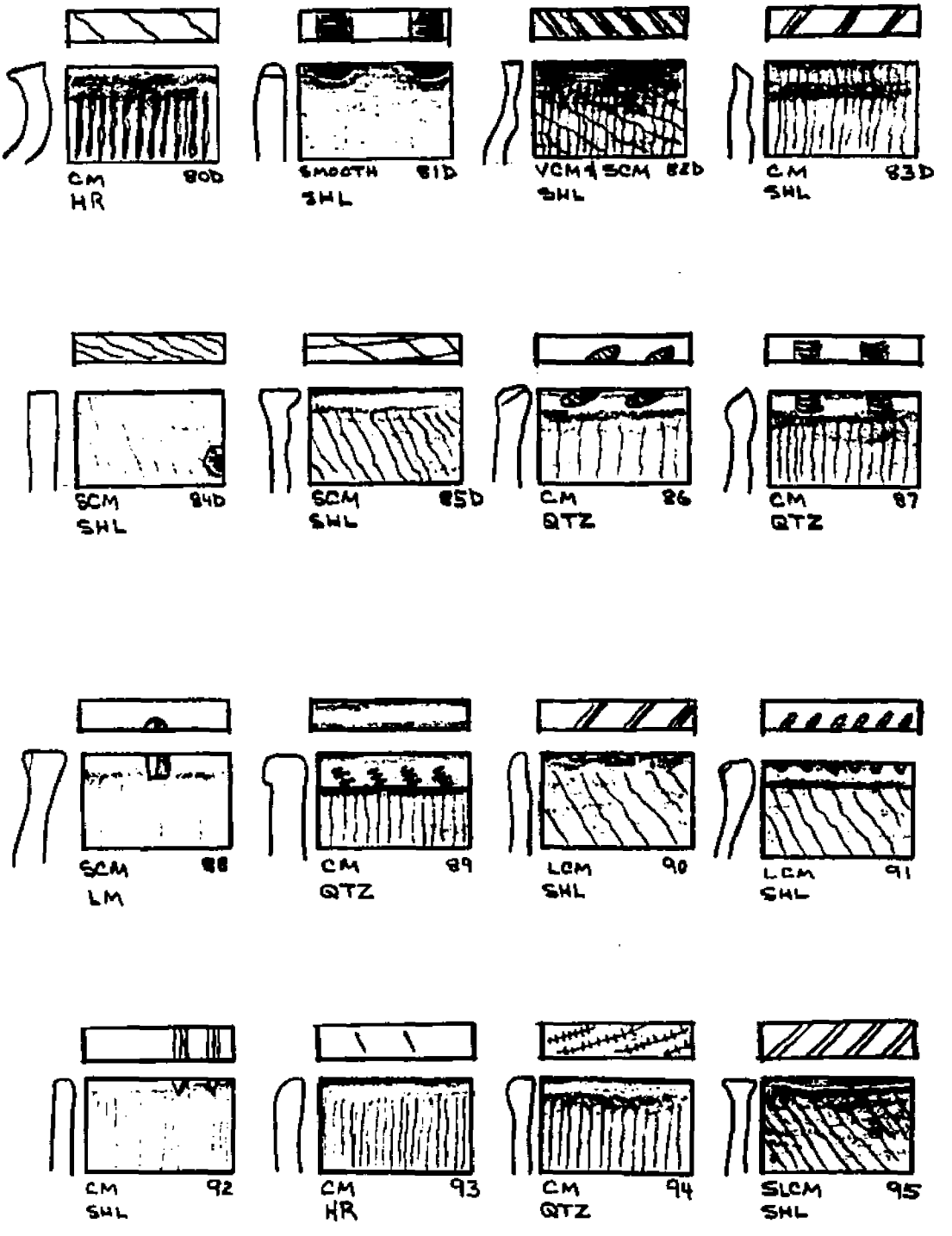
CM	cord marked by cord wrapped paddle malleations
SCM	smoothed cord marking, marks still visible
FM	fabric marked (warp and weft visible)
SFM	smoothed fabric marked, marks still visible
SMOOTH	fully smooth with no markings

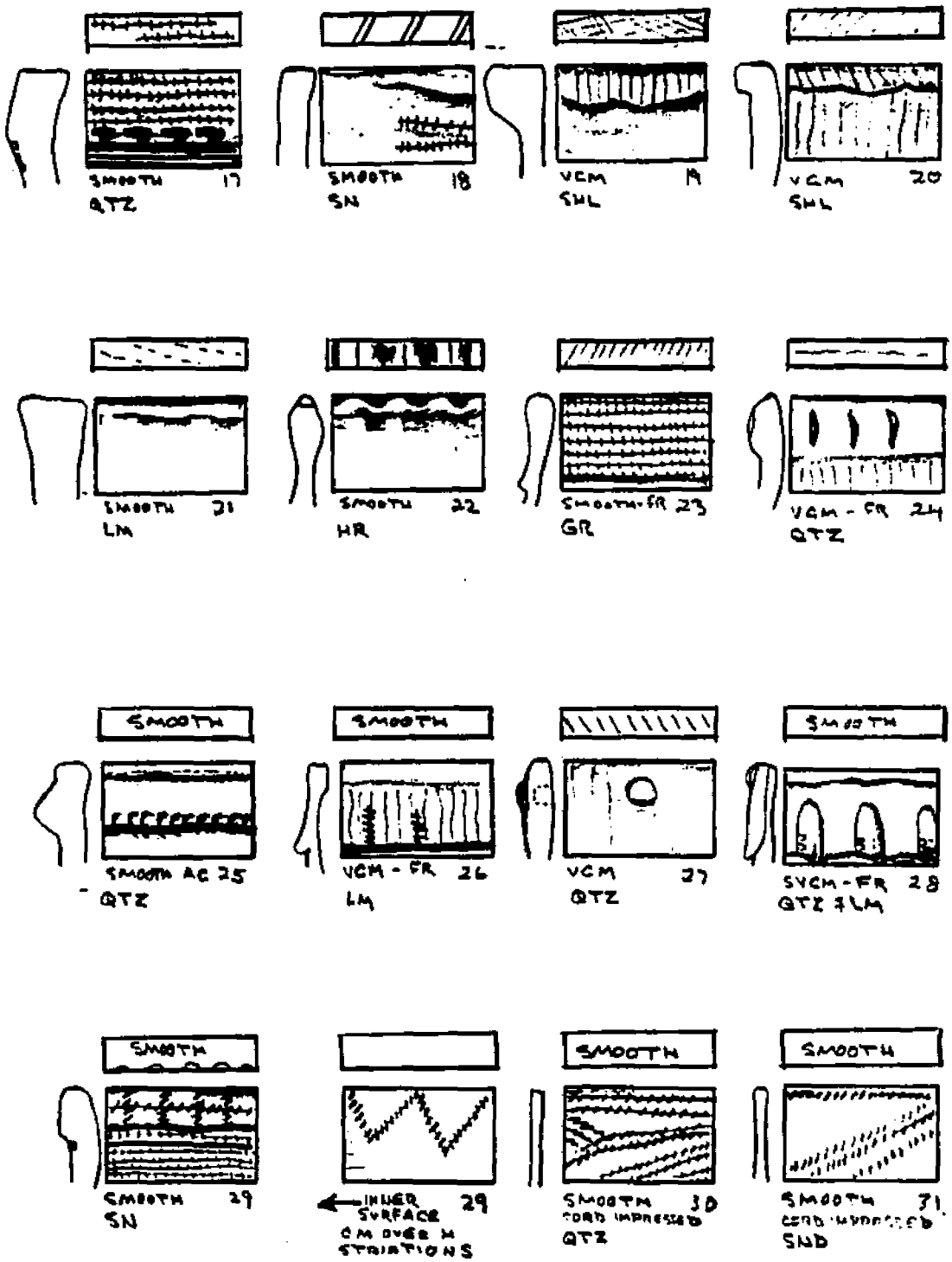
QTZ	quartz	SN	sand
QTZT	quartzite	LM	limestone
SHL	shell	CHERT	chert
GR	granite	MICA	mica

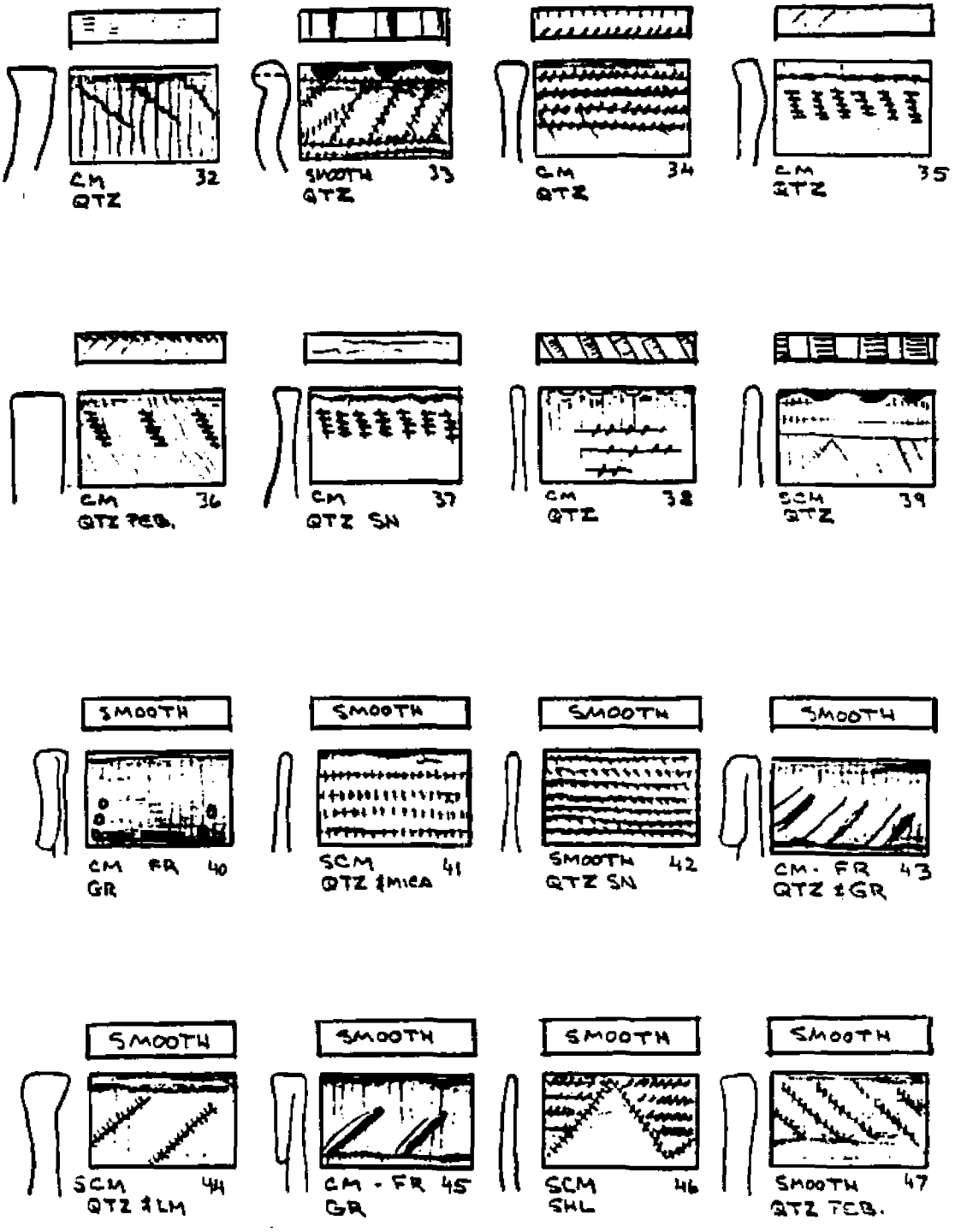

SMOOTH
SMOOTH 1
BTZ
SMOOTH
V/CM 2
BTZ
SMOOTH
SMOOTH W/C 3
LM
SMOOTH
V/CM 4
GR
SMOOTH
SMOOTH-FR 5
GR
SMOOTH
SMOOTH 6
GR
SMOOTH
SMOOTH 7
GR
SMOOTH
SMOOTH 8
GR
SMOOTH
V/CM 9
HR
SMOOTH
V/CM 10
SN
SMOOTH
SMOOTH 11
LM & HR
SMOOTH
V/CM W/C 12
GR
SMOOTH
SMOOTH FR 13
GR
V/CM 14
GR
SPLIT
- FR 15
GR
FM - FR 16
GR

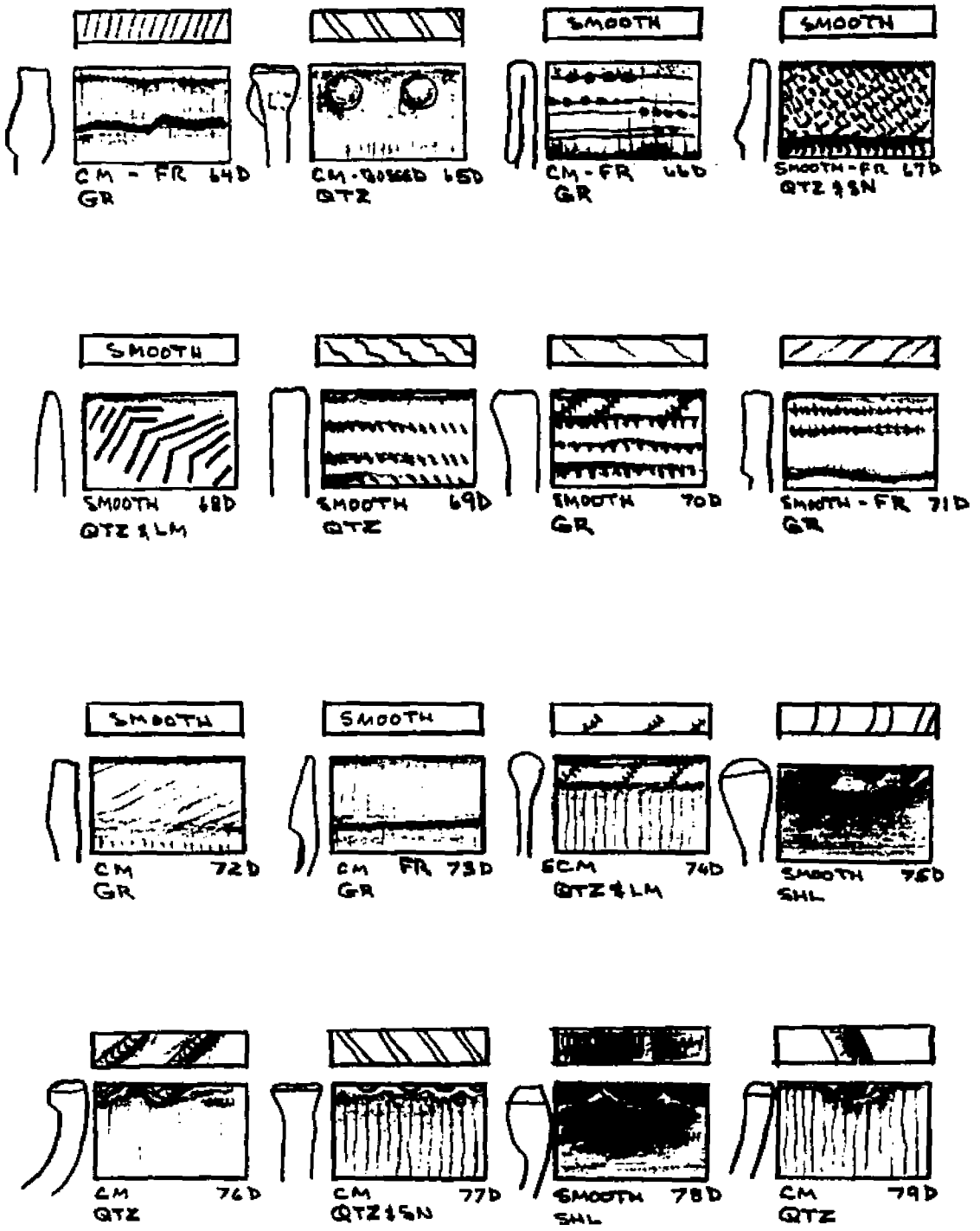

SMOOTH 112
CHERT
SMOOTH FR 113
QTZ & SN
SMOOTH FR 114
SN
CM 115
SHL
SVCM FR 116
GR
SMOOTH
CM FR 117
LM
SMOOTH 118
LM
SMOOTH
SMOOTH LUG 119
SHL
SMOOTH
SMOOTH 120
SHL
CM 121
CHERT
SMOOTH
CM FR 122
LM
SMOOTH
CM FR 123
GR
CM FR 124
GR
SMOOTH
SVCM 125
LM
SMOOTH
SVCM 126
SHL
SMOOTH
CM 127
LM

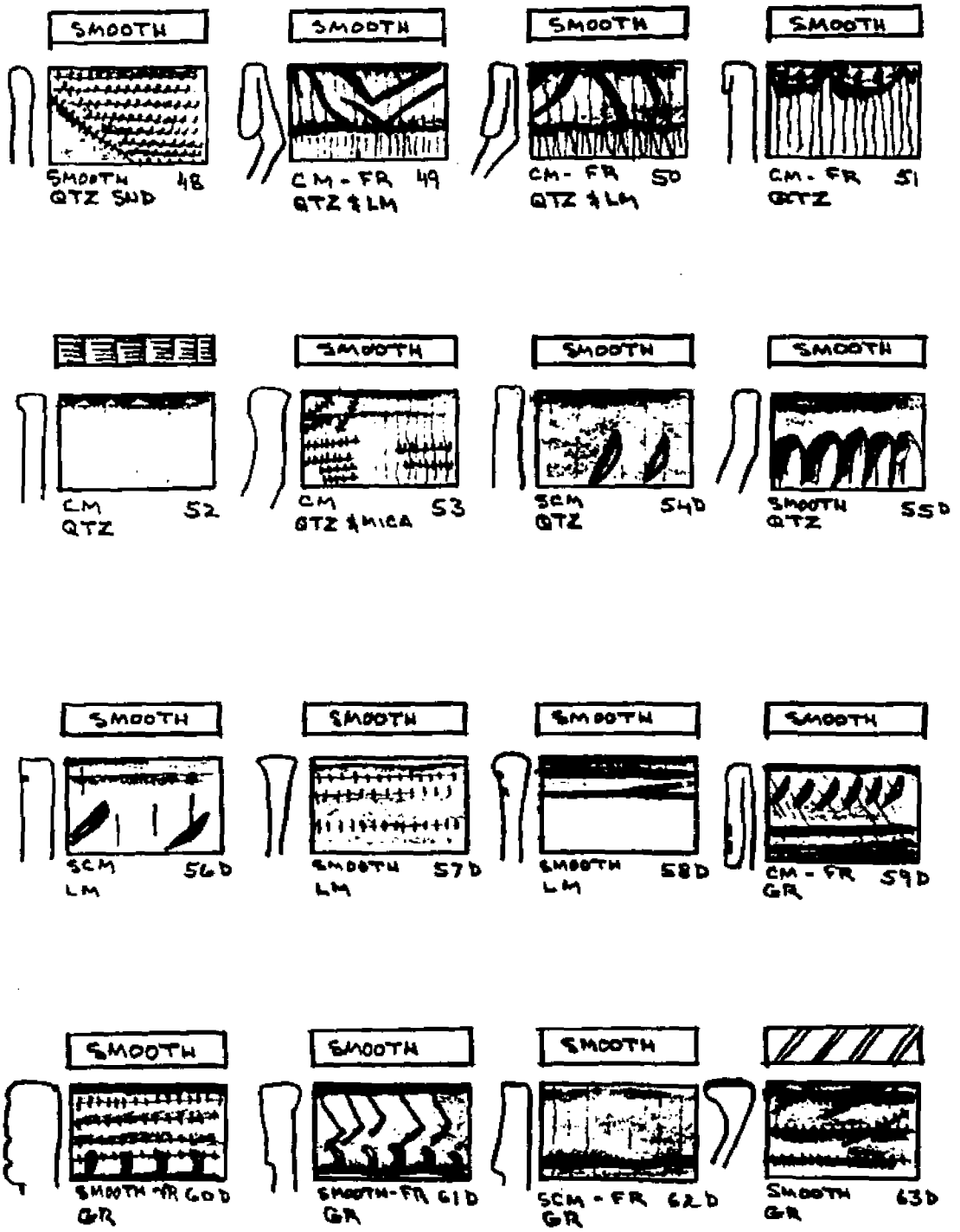

CM
GR
96
CM
SHL
97
CM
SHL
98
CM
GR
99
NOT RIM
SMOOTH - LUG 100
LM & SN
CM
GR
101
SCM
QTZ
102
SMOOTH 103
GR
SMOOTH
SMOOTH 104
HR
SMOOTH
CM 105
QTZ
SMOOTH
CM 106
QTZ & HR
SMOOTH 107
GR
CM FR 108
QTZ & LM
SMOOTH
LCM 109
LM
SMOOTH
SMOOTH 110
QTZ & LM
SMOOTH
SMOOTH 111
QTZ & SN

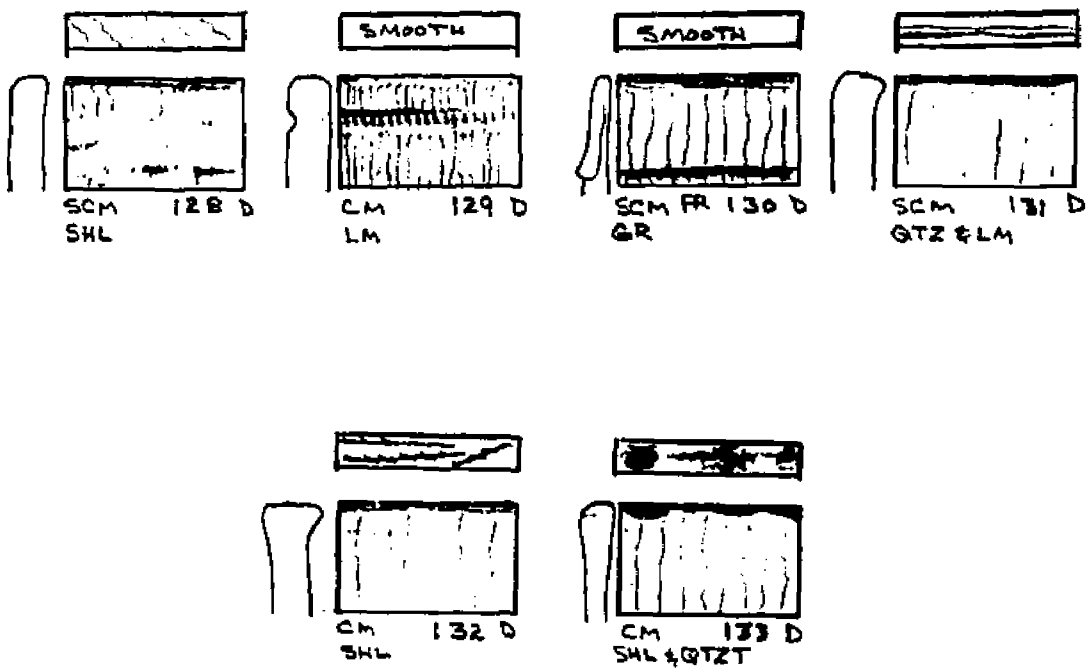

CM
HR
80D
SMOOTH
SHL
81D
VCM & SCM
SHL
82D
CM
SHL
83D
SCM
SHL
84D
SCM
SHL
85D
CM
QTZ
86
CM
QTZ
87
SCM
LM
88
CM
QTZ
89
LCM
SHL
90
LCM
SHL
91
CM
SHL
92
CM
HR
93
CM
QTZ
94
SLCM
SHL
95


SMOOTH 17
QTZ
SMOOTH 18
SN
VCM 19
SHL
VCM 20
SHL
SMOOTH 21
LM
SMOOTH 22
HR
SMOOTH-FR 23
GR
VCM - FR 24
QTZ
SMOOTH
SMOOTH AC 25
QTZ
SMOOTH
VCM - FR 26
LM
VCM 27
QTZ
SMOOTH
SVCM - FR 28
QTZ & LM
SMOOTH
SMOOTH 29
SN
INNER SURFACE 29
CM OVER H STRIATIONS
SMOOTH
SMOOTH 30
CORD IMPRESSED
QTZ
SMOOTH
SMOOTH 31
CORD IMPRESSED
SND


CM
QTZ
32
SMOOTH
QTZ
33
CM
QTZ
34
CM
QTZ
35
CM
QTZ FCB.
36
CM
QTZ SN
37
CM
QTZ
38
SCM
QTZ
39
SMOOTH
CM FR
GR
40
SMOOTH
SCM
QTZ ±MICA
41
SMOOTH
SMOOTH
QTZ SN
42
SMOOTH
CM - FR
QTZ ±GR
43
SMOOTH
SCM
QTZ ±LM
44
SMOOTH
CM - FR
GR
45
SMOOTH
SCM
SHL
46
SMOOTH
SMOOTH
QTZ FCB.
47


SMOOTH
SMOOTH
CM - FR 64D
GR
CM-BOSSED 65D
QTZ
CM-FR 66D
GR
SMOOTH-FR 67D
QTZ & SN
SMOOTH
SMOOTH 68D
QTZ & LM
SMOOTH 69D
QTZ
SMOOTH 70D
GR
SMOOTH - FR 71D
GR
SMOOTH
SMOOTH
CM 72D
GR
CM FR 73D
GR
SCM 74D
QTZ & LM
SMOOTH 75D
SHL
CM 76D
QTZ
CM 77D
QTZ & SN
SMOOTH 78D
SHL
CM 79D
QTZ


SMOOTH
SMOOTH QTZ SND 48
SMOOTH
CM - FR QTZ & LM 49
SMOOTH
CM - FR QTZ & LM 50
SMOOTH
CM - FR QTZ 51
CM QTZ 52
SMOOTH
CM QTZ & MICA 53
SMOOTH
SCM QTZ 54D
SMOOTH
SMOOTH QTZ 55D
SMOOTH
SCM LM 56D
SMOOTH
SMOOTH LM 57D
SMOOTH
SMOOTH LM 58D
SMOOTH
CM - FR GR 59D
SMOOTH
SMOOTH-FR GR 60D
SMOOTH
SMOOTH-FR GR 61D
SMOOTH
SCM - FR GR 62D
SMOOTH GR 63D


SMOOTH
SMOOTH
SCM 128 D
SHL
CM 129 D
LM
SCM FR 130 D
GR
SCM 131 D
QTZ & LM
CM 132 D
SHL
CM 133 D
SHL & QTZT

APPENDIX 2

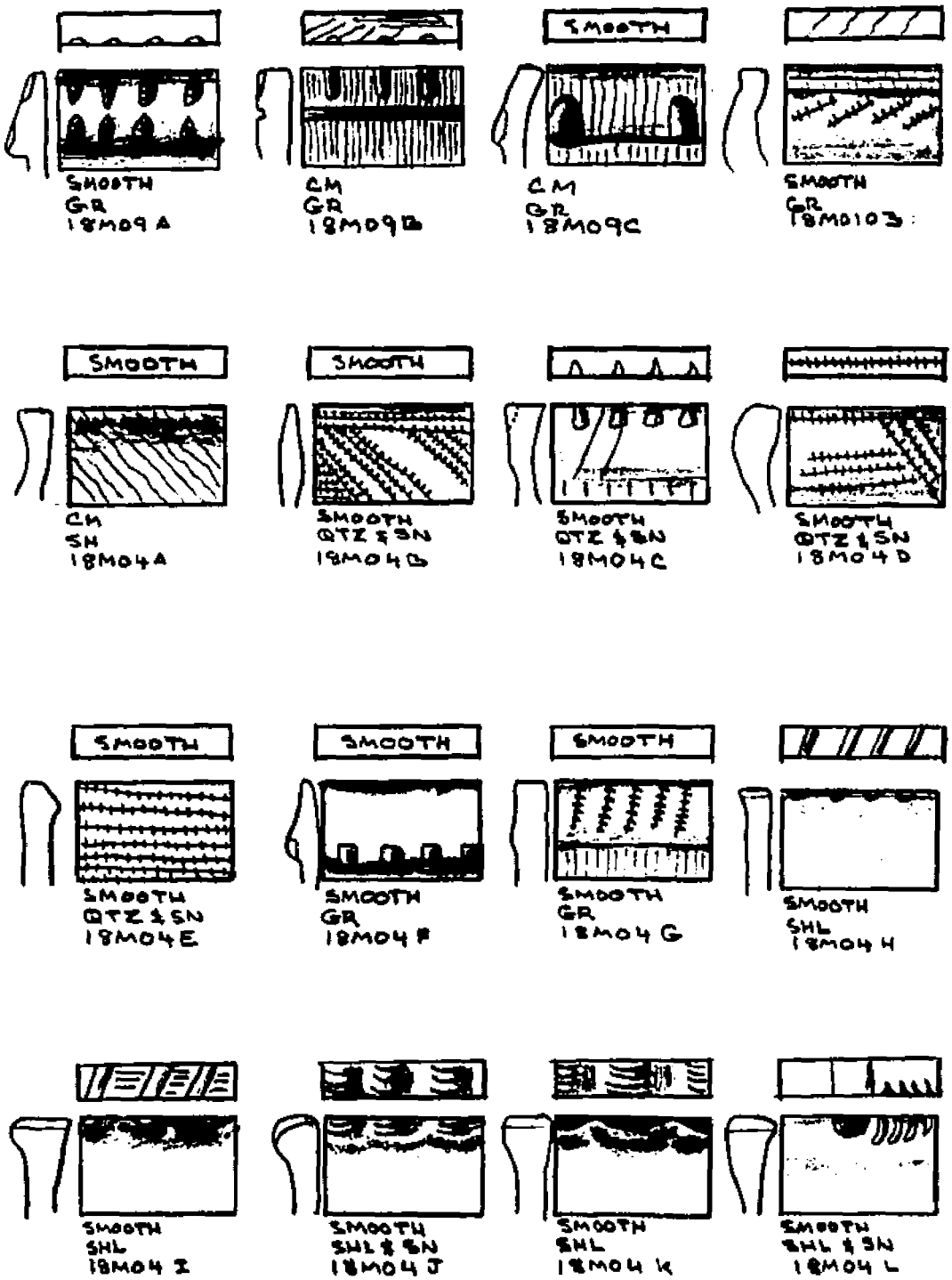
STANDARDIZED RIM SHERD ILLUSTRATIONS FROM POTOMAC PIEDMONT SITES AND ADJACENT MARYLAND POTOMAC DRAINAGES

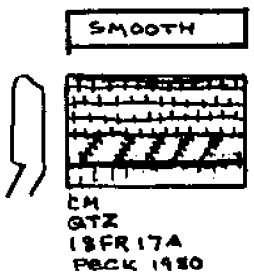
Each standardized rim sherd portrays a plan view of the rim lip surface, a sectioned view of the rim and collar area and an illustration of the patterns that are incised or impressed on the rim and collar. The first line of coded information shown below each drawing designates: primary sherd surface treatment (smooth, cord marked), and any special feature (floded rim, bossed). The second line of information provides a code that designates the tempering material in the sherd. The third line provides the site serial number with a subordinate alpha character for each illustrated sherd from that site. The fourth line may contain the name of a site report publication author and the date of the publication.

The following lists provide translations for the surface finish symbols and the temper material codes used on this appendix.

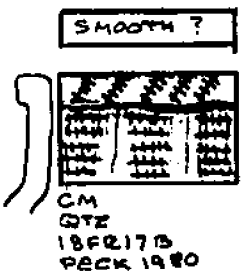
CM	cordmarked by cord wrapped paddle malleations
SCM	smoothed cord marking, marks still visible
FM	fabric marked(warp and weft visible)
SFM	smoothed fabric marked, marks still visible
SMOOTH	fully smooth with no markings

QTZ	quartz	SN	sand
QTZT	quartzite	LM	limestone
SHL	shell	CHERT	chert
GR	granite	MICA	mica

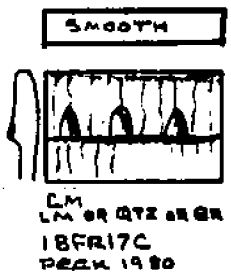

SMOOTH
GR
18M09A
CM
GR
18M09B
SMOOTH
CM
GR
18M09C
SMOOTH
GR
18M0103
SMOOTH
CM
SH
18M04A
SMOOTH
SMOOTH
QTZ & SN
18M04B
SMOOTH
SMOOTH
QTZ & SN
18M04C
SMOOTH
QTZ & SN
18M04D
SMOOTH
SMOOTH
QTZ & SN
18M04E
SMOOTH
SMOOTH
GR
18M04F
SMOOTH
SMOOTH
GR
18M04G
SMOOTH
SHL
18M04H
SMOOTH
SHL
18M04I
SMOOTH
SHL & SN
18M04J
SMOOTH
SHL
18M04K
SMOOTH
SHL & SN
18M04L



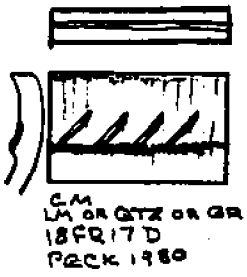
CM
QTZ
18FR17A
PECK 1980



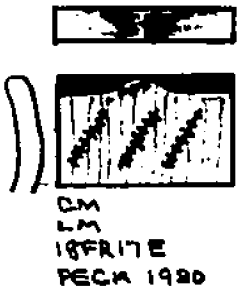
CM
QTZ
18FR17B
PECK 1980



CM
LM OR QTZ OR QR
18FR17C
PECK 1980

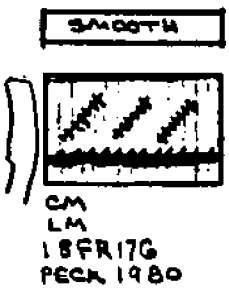


CM
LM OR QTZ OR QR
18FR17D
PECK 1980

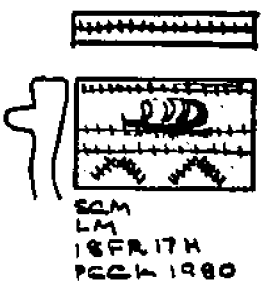


CM
LM
18FR17E
PECK 1980

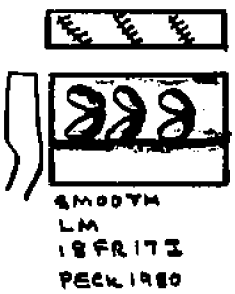
CM
LM
18FR17F
PECK 1980



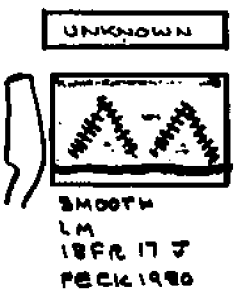
CM
LM
18FR17G
PECK 1980



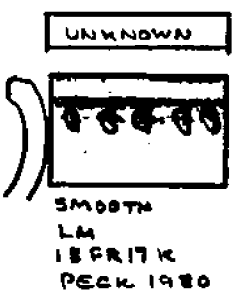
SCM
LM
18FR17H
PECK 1980



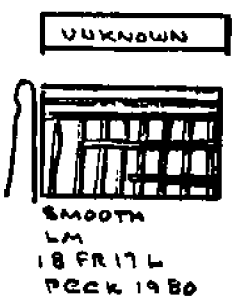
SMOOTH
LM
18FR17I
PECK 1980



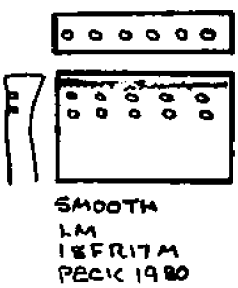
SMOOTH
LM
18FR17J
PECK 1980



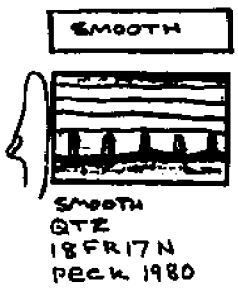
SMOOTH
LM
18FR17K
PECK 1980



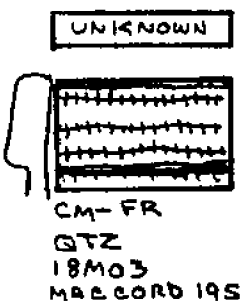
SMOOTH
LM
18FR17L
PECK 1980



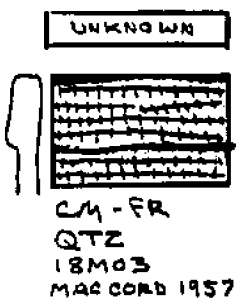
SMOOTH
LM
18FR17M
PECK 1980



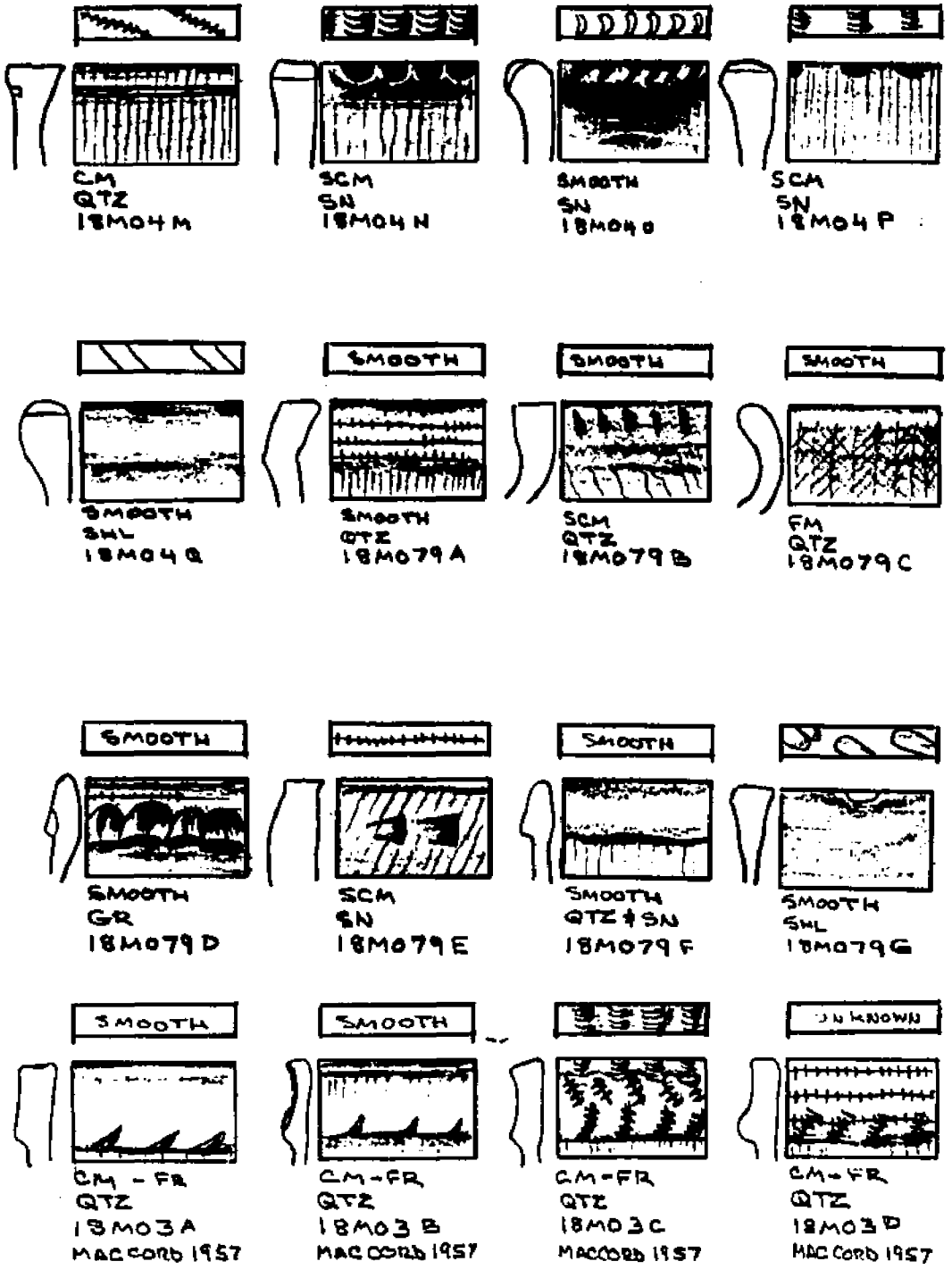
SMOOTH
QTZ
18FR17N
PECK 1980



CM-FR
QTZ
18M03
MACCORD 1957



CM-FR
QTZ
18M03
MACCORD 1957


CM
QTZ
18M04M
SCM
SN
18M04N
SMOOTH
SN
18M04O
SCM
SN
18M04P
SMOOTH
SHL
18M04Q
SMOOTH
QTZ
18M079A
SMOOTH
SCM
QTZ
18M079B
SMOOTH
FM
QTZ
18M079C
SMOOTH
SMOOTH
GR
18M079D
SCM
SN
18M079E
SMOOTH
SMOOTH
QTZ & SN
18M079F
SMOOTH
SHL
18M079G
SMOOTH
CM - FR
QTZ
18M03A
MACCORD 1957
SMOOTH
CM-FR
QTZ
18M03B
MACCORD 1957
CM-FR
QTZ
18M03C
MACCORD 1957
UNKNOWN
CM-FR
QTZ
18M03D
MACCORD 1957

REFERENCES CITED

Aberly, David
1968 Comments. In New Perspectives in Archeology. edited by Sally R. Binford and Lewis R. Binford. pp. 353-359. Aldine, Chicago.

Adams, W. Y.
1964 Introductory Classification of Meroitic Pottery. Kush 10:245-288. Kartoum.

Applegarth, J. D., J. M. Adovasio, and J. Donahue
1978 46SU3 Revisited. Pennsylvania Archaeologist 48:1.

Arnold, Dean E.
1985 Ceramic Theory and Cultural Process. Cambridge University Press, New York.

Artusy, Richard E.
1976 An Overview of the Proposed Ceramic Sequence in Southern Delaware. Maryland Archeology 12(2) 1-15.

Bates, D. E. B., and J. F. Kirkaldy
1977 Field Geology in Color. Arco Publishing, New York.

Benn, David W.
1978 The Wooddland Ceramic Sequence in the Cultural History of Northeast Iowa. Midcontinental Journal of Archaeology 8:215-284.

Bennett, M. Ann
1974 Basic Ceramic Analysis. Eastern New Mexico University Contributions to Anthropology, 6:1.

Benthall, Joseph L.
1986 A Preliminary Archeological Survey of the T. M. Gathright Reservoir. In Prehistory of the Gathright Dam Area, Virginia. edited by Howard A. MacCord, Sr. Privately Printed. Richmond.

Bernstein, Lawrence R.
1980 Minerals of the Washington, D.C. Area. Department of Natural Resources, Maryland Geological Survey, Baltimore.

Blaker, Margaret C.
1963 Aboriginal Ceramics. The Archeolog 15(1):14-39.

Bott, Keith Edward
1981 44RU7: Archaeological Test Excavations at a Late Woodland Village in the Lower Uplands of Southwest Virginia. Research Report Series No.2. Department of Conservation and Historic Resources, Division of Historic Landmarks, Virginia Research Center for Archaeology, Yorktown.

Boyce, Hettie L.
1980 The Novak Site: a Late Woodland Upland Monongahela Village. Pennsylvania Archaeologist 55:3;21-49.

Braun, David P.
1985 Ceramic Decorative Diversity and Illinois Woodland Regional Integration. In Decoding Prehistoric Ceramics. edited by Ben A. Nelson, Southern Illinois University Press, Carbondale.

Braun David P., and Stephen Plog
1982 Evaluation of "Tribal" Social Networks: Theory and Prehistoric North American Evidence. American Antiquity 47:504-525.

Bressler, James P.
1980 Excavation of the Bull Run Site 36LY119. Pennsylvania Archaeologist 50:4, pp.31-63.

Brown, James A.
1976 The Southern Cult Reconsidered. Midcontinental Journal of Archaeology 1:115-136.

Bryson, Reid A. amd David A. Baerreis
1967 Climatic Change and the Mill Creek Culture of Iowa. Archives in Archaeology No. 29. Society for American Archaeology.

Buker, William E.
1968 The Archaeology of McKees Rocks Late Prehistoric Village Site. Pennsylvania Archaeologist. 38:1-4, pp. 3-49.
1970 The Drew Site (36AL62). Pennsylvania Archaeologist 40:3-4, pp.21-65.

Carbone, Victor A.
1976 Environment and Prehistory in the Shenandoah Valley. Non-published Ph.D. dissertation on file at The Catholic University, Washington.

Chapman, Jefferson
1975 The Rose Island Site. University of Tennessee, Department of Anthropology, Knoxville.

Chesterman, Charles W.
1978 The Audubon Society Field Guide to North American Rocks and Minerals. Alfred A. Knopf, New York.

Clark, Wayne
1974 Non-published nomination document submitted to the National Register of Historic Places, Washington D.C.

Cleaves, E.T., J. Edwards jr., and J. D. Glaser
1968 Geologic Map of Maryland. Maryland Geological Survey, Baltimore.

Clyde, Virginia
1959 The Shepard Barrack Site. Archeological Society of Maryland Miscellaneous Papers, No. 1.

Coe, J. L.
1964 The Formative Cultures of the Carolina Piedmont. Transasctions of the American Philosophical Society, New Series, Vol. 54 Part 5. Philadelphia.

Commonwealth Associates
1980 Archeological Excavation of the Bazuin Site: 44LD3. Report prepared for the Fairfax County Water Authority, Commonwealth Associates, Jackson.

Cowan, C. Wesley
1979 Excavations at the Haystacks Rockshelters, Powell County, Kentucky. Midcontinental Journal of Archaeology 4:1 pp.3-34.

Cronin, C.
1962 An Analysis of Pottery Design Elements, Indicating Possible Relationships Between Three Decorated Types. In Chapters in the Prehistory of Eastern Arizona,I, pp.105-114. Fieldiana: Anthropology, vol. 53, Chicago Natural History Museum, Chicago.

Custer, J. F.
1984 Delaware Prehistoric Archaeology: an Ecological Approach. University of Delaware Press, Newark.
1985 Test Excavations at the Webb Site (36CH51), Chester County, Pennsylvania. Pennsylvania Archaeologist 55:1-2, pp.42-53.
1986a Late Woodland Cultures of the Middle Atlantic Region. edited by Jay F. Custer, University of Delaware Press, Newark.

1986b Late Woodland Cultures of the Lower and Middle Susquehanna Valley. In Late Woodland Cultures of the Middle Atlantic Region. edited by Jay F. Custer, University of Delaware Press, Newark

Custer, Jay F., and Daniel R. Griffith
1986 Late Woodland Cultures of the Middle and Lower Delmarva Peninsula. In Late Woodland Cultures of the Middle Atlantic Region., edited by Jay F. Custer, University of Delaware Press, Newark.

Custer, Jay F., Joseph M. McNamera, and Henry Ward
1983 Woodland Ceramic Sequence of the Upper Delmarva Penninsula and Southeastern Pennyslvania. Maryland Archeology 19:27-30.

Deetz, J.
1960 An Archaeological Approach to Kinship Change in 18th Century Arikara Culture. Ph.D. dissertation, Department of Anthropology, Harvard University.

Dickens, Roy S. jr.
1976 Cherokee Prehistory: the Pisgah Phase in the Appalachian Summit Region. University of Tennessee Press, Knoxville.

Dickens, Roy S., and James H. Chapman
1978 Ceramic Patterning and Social Structure at Two Late Historic Upper Creek Sites in Alabama. American Antiquity 43:390-398.

Egloff, Kieth T., and Stephen R. Potter
1982 Indian Ceramics From Coastal Plain Virginia. Archaeology of Eastern North America 10:95-117.

Evans, Clifford
1955 A Ceramic Study of Virginia Archaeology. Bureau of Ethnology Bulletin 160, Smithsonian Institution, Washington.

Falk, Carole Portugal
1983 Cordage Impressed on Potomac Creek Pottery: Decoding the Corded Style Motifs and the Methods of Pattern Manufacture. Maryland Archeology 19:1-20.

Fischer, J. L.
1961 Art Styles as Cultural Models. American Anthropologist 63:1;79-93.

Fitting, James E.
1970 Late Woodland Cultures of Southeastern Michigan. Anthropological Papers No. 24, Museum of Anthropology, University of Michigan, Ann Arbor.

Fitting, James E., ed.
1973 The Development of North American Archaeology. Doubleday, New York.

Franklin, Kitt
1979 A Late Woodland Occupation Site on Lower Mason Island Montgomery County, Maryland. unpublished MA thesis, The American University, Washington. Fried,

Morton H.
1968 Discussion. In New Perspectives in Archeology. edited by Sally R. Binford and Lewis R. Binford, pp.350-352, Aldine, Chicago.

Funk, Robert E.
1976 Recent Contributions to Hundson Valley Prehistory. Memoir 22, New York State Museum, Albany.

Funk and Wagnall
1983 Handedness

Gardner, William M.
1982 Early and Middle Woodland in the Middle Atlantic; an Overview. Paper presented at the Middle Atlantic Archaeological Conference, Rehoboth Beach.

Gardner, William M., and C. W. McNett, jr.
1971 Early Pottery in the Potomac. Paper presented at the Middle Atlantic Archaeological Conference, Washington.

Geasey, Spencer O.
1972 Everhart Rockshelter. Pennsylvania Archaeologist 42(3):16-29.

Geir, Clarence R.
1985 An Ode to a 1000 Piece Puzzle: the Comparative Anatomy of Four Early Late Woodland Huffman Phase Ceramic Assemblages. Quarterly Bulletin of the Archeological Society of Virginia 40:65-107.

George, Richard L.
1978a The McJunkin Site, a Preliminary Report. Pennsylvania Archaeol;ogist 48:4, pp.33-47.
1978b Monongahela Artifacts from the Ryan Site. Pennsylvania Archaeologist 48:3;20-36.

1980 Notes on Possible Cultural Affiliation of Monongahela. Pennsylvania Archaeologist 50:45-50.
1983 The Gagney Site and the Monongahela Occupation of the Somerset Plateau. Pennsylvania Archaeologist 53:4.

Gifford, J. C.
1960 The Type-variety Method of Ceramic Classification as an Indicator of Cultural Phenomenon. American Antiquity 25:341-347.

Graybill, Jeffry R.
1984 The Eastern Periphery of Fort Ancient. Pennsylvania Archaeologist 54:40-50.

Gribbin, John, and H. H. Lamb
1978 Climatic Change in Historical Times. In Climatic Change, edited by John Gribbin, p.68. Cambridge Univrsity Press, London.

Griffin, James Bennet
1966 The Fort Ancient Aspect in Cultural and Chronological Position in Mississippi Valley Archaeology. Anthropological Papers Number 28. University of Michigan Museum of Anthropology, Ann Arbor.

Griffith, Daniel R.
1974 Middle Woodland Environmental Adaptation on the Potomac: Popes Creek and Mockley Phases. Manuscript on file at the American university, Department of Anthropology, Washington.
1980 Townsend Ceramics and the Late Woodland of Southern Delaware. Maryland Historical Magazine 75:23-41.
1982 Prehistoric Ceramics in Delaware (an overview). Archaeology of Eastern North America10:46-48.

Griffith, Daniel R., and Jay Custer
1985 Late Woodland Ceramics of Delaware: Implications for Late Prehistoric Archaeology of Northeastern North America. Pennsylvania Archaeologist 55:3-20.

Hamilton, Nathan D., and David R. Yesner
1986 Early, Middle and Late Woodland Ceramic Assemblages from Great Diamond Island, Casco Bay, Maine. In Ceramic Analysis in the Northeast. Contributions to Methodology and Culture History, edited by James B. Petersen, pp.39-72, Franklin Pierce College.

Harris, Marvin
1978 Cannibals and Kings, the Origins of Culture. Random House, New York.

Hartzel, Warren M. and F. Dayton Staats
1984 Rare Clay Beads From the Dark Moon Site. ASNJ Bulletin No. 89:11

Hays, Charles F.
1965 The Late Woodland in Central New York. Pennsylvania Archaeologist 35:1, pp. 19-24.

Hays, Charles, F., ed.
1980 Proceedings of the 1979 Iroquois Pottery Conference. Rochester Museum and Science Center, Rochester.

Heisey, Henry W.
1971 An Interpretation of Shenks Ferry Ceramics. Pennsylvania Archaeologist 41:4, pp.44-70.

Heisey, Henry W. and J. Paul Witmer
1964 The Shenks Ferry People: a Site anmd Some Generalities Pennsylvania Archaeologist 34:1, pp.8-33.

Herbstritt, James T.
1981 Bonnie Brook. Pennsylvania Archaeologist 51:3,ppl-59.

Hill, James N.
1968 Broken K Pueblo: Patterns of Form and Function. In New Perspectives in Archeology. edited by Sally R. Binford and Lewis R. Binford, pp.103-142. Aldine, Chicago.
1970 Broken K Pueblo: Prehistoric Social Organization in the American Southwest. Anthropological Papers of the University of Arizona 18, University of Arizona Press, Tucson.

Hodges, Henry
1976 Artifacts; an Introduction to Early Materials and Technology, reprint of 1964 edition with corrections. John Baker, London.

Hoffman, Michael, and Robert Foss
1980 Blue Ridge Prehistory: a General Perspective. Quarterly Bulletin of the Virginia Archeological Society 324:185-210.

Holland, C. G.
1970 An Archeological Survey of Southwest Virginia. Smithsonian Contributions to Anthropology No. 12, Washington.

Holmes, W. H.
1901 Use of Textiles in Pottery Making, an Embellishment. American Anthropologist 3:397-403.

Jernigan, E. W.
1986 A Non-hierarchical Approach to Ceramic Decoration Analysis: a Southwestern Example. American Antiquity 51:3-20.

Johnson, Larry Dean
1986a The Huffman Site, Bath County, Virginia. In Prehistory of the Gathright Dam Area, Virginia, edited by Howard A. McCord, Sr. Privately Printed, Richmond.
1986b The Revercombe Site, Bath County, Virginia. In Prehistory of the Gathright Dam Area, Virginia. edited by Howard A. MacCord, Sr., Privately Printed, Richmond.

Johnston, Paul M.
1964 Geology and Ground-Water Resources of Washington, D.C., and Vicinity. Geological Survey Water-Supply Paper 1776, U. S. Government Printing Office, Washington.

Kavanagh, Maureen
1981 Maryland Piedmont Ceramics. Paper presented at the St. Marys City Conference on Prehistoric Ceramics. St. Marys, Maryland.
1983 Paw Paw Village Tested. Current Maryland Archeology No. 18, Division of Archeology, Maryland Geological Survey.

Kay, Marvin, and Alfred E. Johnson
1977 Havana Tradition Chronology of Central Missouri. Midcontinental Journal of Archaeology2:195-217.

Keel, Bennie C.
1976 Cherokee Archaeology; a Study of the Appalachian Summit. University of Tennessee Press, Knoxville.

Kehoe, Alice B, and Thomas F. Kehoe
1973 Cognitive Models for Archaeological Interpretation. American Antiquity 38:150-154.

Kempton, Willett
1981 The Folk Classification of Ceramics. Academic Press, New York.

Kent, Barry C.
1984 Susquehanna's Indians. Anthropological Series No.6, Pennsylvania History and Museum Commission, Harrisburg. edited by Kent, Barry C., Ira F. Smith III, and Cathrine McCann

1971 Foundations of Pennsylvania Prehistory The Pennsylvania History and Museum Commission, Harrisburg.

Kenyon, Victoria Binker
1986 The Prehistoric Pottery of the Smyth Site. In Ceramic Analysis in the Northeast: Contributions to Methodology and Culture History. edited by James B. Petersen, Franklin Pierce College.

Kinsey, W. Fred III
1971 The Middle Atlantic Culture Province: a Point of View. Pennsylvania Archaeologist 41:1-8.
1972 Archeology in the Upper Delaware Valley. Pennyslvania Historical and Museum Commission, Harrisburg.
1975 Faucett and Byram Sites: Chronology and Settlement in the Delaware Valley. Pennsylvania Archaeologist 48:1-2.

Kinsey, W. Fred,III, and Jeffrey R. Graybill
1971 Murry Site and its Role in Lancaster and Funk Phases of Shenks Ferry Culture. Pennsylvania Archaeologist 41:4, pp.7-43.

Kintigh, Keith W.
1985 Social Structure, the Structure of Style, and Stylistic patterns in Cibola Pottery. In Decoding Prehistoric Ceramics, edited by Ben A. Nelson. Southern Illiois University Press, Carbondale.

Kraft, Herbert C.
1975 The Late Woodland Pottery of the Upper Delaware Valley: a Survey and Reevaluation. Archaeology of Eastern North America. 3:101-139.
1978 The Minisink Site. Archaeological Research Center, Seaton Hall University, Trenton. p.75.
1986 Late Woodland Settlement Patterns in the Upper Delaware Valley. In Late Woodland Cultures of the Middle Atlantic., edited by Jay F. Custer, University of Delaware Press, Newark.

LaFrance, Albert D.
1980 Onondaga Chance Phase Ceramic Trends - an Attribute Approach. in Proceedings of the 1979 Iroquois Pottery Conference, edited by Charles F. Hayes, pp51-64. Rochester Museum and Science Center, Rochester.

Larabee, Thomas
1963 Archeological site report (18MO20) on file with the Maryland State Archeologist, Baltimore.

Larsen, C. E.
1980 Environmental Overview. In Archeological Excavation of the Bazuine Site: 44LD3, Lowes Island, Loudoun County, Virginia. Commonwealth Associates, Inc. Report No 2054. Jackson.

Latta, Martha
1980 A Decorative Paradigm: The Late Ontario Iroquois Ceramic Tradition. In Proceedings of the 1979 Iroquois Pottery Conference, Charles F. Hayes, ed. Rochester Museum and Science Center, Rochester.

Lavin, Lucianne
1986 Pottery Classification and Cultural Models in Southern New England Prehistory. North American Archaeologist 7:1-14

Longacre, William A.
1970 Archaeology as Anthropology: a Case Study. Anthropological Papers of the University of Arizona 17, University of Arizona Press, Tucson

Lugenbeal, Edward
1978 The Blackduck Ceramics of the Smith Site (21KC3) and their Implication for the History of Blackduck Ceramics and Culture in North America. Midcontinental Journal of Archaeology. 3:44-68.

MacCord, Howard A. Sr.
1979 The Flanary Site, Scott County, Virginia. Quarterly Bulletin of the Archeological Society of Virginia. 34:1-32.
1984 Evidence for a Late Woodland Migration From the Piedmont to Tidewater in the Potomac Valley. Maryland Archeology 20:7-18.

MacCord, Howard A., Gates Slattery, and Carl Schmitt
1957 The Shepard Site Study. Archeological Society of Maryland Bulletin No. 1.

Manson, Carl P.
1948 Marcy Creek Site: an Early Manisfestation in the Potomac Valley. American Antiquity 13:3:223-227.
1962 Potomac Valley Ceramics. Archeological Society of Maryland Miscl Papers No. 4 pp.2-17.

Manson, Carl, Howard A. MacCord, and James B. Griffin
1943 The Culture of the Keyser Farm Site. Papers of the Michigan Academy of Science, Arts, and Letters, Vol.29.

Maslowski, Robert F.
1973 An Analysis of Cordmarked Watson Ware. Pennsylvania Archaeologist 43:2,pp. 1-12.

1984 The Significance of Cordage Attributes in the Analysis of Woodland Pottery. Pennsylvania Archaeologist 54:51-59.

Mason, Otis T.
1895 The Origins of Invention. Walter Scott, London.

Matthews, William H. III, and Robert E. Boyer, eds.
1976 Dictionary of Geological Terms (Revised Edition). Doubleday, New York.

Mc Daniel, R. E.
1978 Bluff, Bank, and Swamp; Prehistoric Indian Settlement Patterns in the Potomac Piedmont. Ms on file at the Department of Anthropology, The American University, Wasington.
1979 The Archeological Survey of Lowes Island, Virginia: Testing a Predictive Settlement Model. Masters thesis on file at the Department of Anthropology, The American University, Washington.

McNett, C. W. jr.
1967 Broadhead-Heller: a Preliminary Report on a Stratified Transitional Period Site on the Upper Delaware. Pennsylvania Archaeologist 37:1-2; 22-32.
1975 Excavations at the Spring Branch Site. Quarterly Bulletin of the Archeological Society of Virginia 29:97-123.
1987 The Potomac River Survey. Manuscript on file at The American University, Department of Anthropology, Washington.

Michael, Ronald L.
1981 The Campbell Site: a Monongahela Village. Pennsylvania Archaeologist 51:3;60-61.

Michael, Ronald L. and Denise L. Grantz
1981 The Fisher Site (36OR21): Drew Phase Monongahela Pennsylvania Archaeologist 51:4, pp.19-37.

Milanich, Jerald T., and Charles K. Fairbanks
1980 Florida Archaeology. Academic Press, New York.

Miller, C. P.
1962 Archeology of the John H. Kerr Reservoir Basin, Roanoke River, Virginia-North Carolina. River Basin Survey Papers, Smithsonian Institution Bureau of American Ethnology Bulletin 182., Washington.

Mitchum, Beverly A.
1984 Investigations at Belldina's Bottpoms (Site 46MG75A) Monongalia County, West Virginia. Pennsylvania Archaeologist 54:62.

Muller, Jon
1973 Review of Broken K Pueblo: Prehistoric Social Organization in the American Southwest,by James N. Hill. American Antiquity 38:249-251

Munn, Nancy D.
1973 Symbolism in a Ritual Context: Aspects of Symbolic Action. In Handbook of Social and Cultural Anthropology Edited by John J. Honigmann, pp.579-612. Rand Mc Nally, Chicago.

Murdock, G. P.
1957 World Ethnographic Sample. American Anthropologist 59:664-687

Nale, Robert F.
1963 Salvage Excavations of the Boyle Site (36Wh19). Pennsylvania Archaeologist 34:4 pp.164-196.

Niemezcki, Mary Ann Palmer
1984 The Origin and Development of the Seneca and Cayuga Tribes of New York State. Research Record No. 17, Rochester Museum and Science Center, Rochester.
1986 The Genesee Connection: the Origins of Iroquois Culture in West-central New York. North American Archaeologist,7:15-44.

Parsons, Talcott
1963 One the Concept of Influence. Public Opinion Quarterly 27:37;62.

Pearl, Richard M.
1955 How to Know the Minerals and Rocks. McGraw-Hill, New York.

Peck, Donald W.
1980 Test Excavations at the Nolands Ferry Site, Frederick County, Maryland. Maryland Archeology 16(1):2-17.

Peck, Donald W., and Tyler Bastian
1977 Test Excavations at the Devilbiss Site, Frederick County, Maryland. Maryland Archeology 13(2):1-10.

Petersen, James B. (editor)
1986 Ceramic Analysis in the Northeast: Contributions to Methodology and Cultural History. In Occasional Publications in Northeastern Anthropology No. 9. Franklin Pierce College, Department of Anthropology.

Petersen, James B., and Marjory W. Power
1986 Three Middle Woodland Ceramic Assemblages from the Winooski Site. In Ceramic Analysis in the Northeast: Contributions to Methodology and Culture History. edited by James B. Petersen, ed. pp.109-159, Franklin Pierce College.

Petersen, James B., Nathan D. Hamilton, J. M. Adovasio, and Alan L. McPherron
1984 Netting Technology and the Antiquity of Fish Exploitation in Eastern North America. Midcontinental Journal of Archaeology, 9:2 pp.199-226.

Phillips, P., J. Ford, and J. Griffin
1951 Archaeological Survey in the Mississippi Alluvial Valley, 1949-55. Peabody Museum, Harvard University, Papers Vol. 60

Plog, Stephen
1980 Stylistic Variation in Prehistoric Ceramics. Cambridge University Press, New York.

Plog, Stephen, and David P. Braun
1984 Some Issues in the Archaeology of "tribal" social systems. American Antiquity 49:619-625.

Porter, James Warren, and Christine R. Szuter
1978 Thin-Section Analysis of Schlemmer Site Ceramics. Midcontinental Journal of Archaeology 3:1 pp3-14.

Potter, Stephen R.
1982 An Analysis of Chicacoan Settlement Patterns. unpublished Ph.D. dissertation on file at the University of North Carolina, Department of Anthropology, Chapel Hill.

Pousson, John F.
1984 Division of Archeology Reports. Current Maryland Archeology. No. 19, Division of Archeology, Maryland Geological Survey.

Pratt, Peter P.
1980 Oneida Iroquois Pottery Typology. In Proceedings of the 1979 Iroquois Pottery Conference., Charles F. Hayes, ed., Rochester Museum and Science Center, Rochester.

Riggs, Brett H.
1985 Dated Contexts From Watauga Reservoir: Cultural Chronology Building for Northeast Tennessee. In Exploring Tennessee Prehistory, a Dedication to Alfred K. Guthe. University of Tennessee Press, Knoxville.

Ritchie, William A.
1980 The Archaeology of New York State. Revised Edition. Harbor Hill Books, Harrison.

Ritchie, William A. and Richard S. McNeish
1949 The Pre-Iroquoian Pottery of New York State. American Antiquity 15:2;97-124.

Rust, William
1981 Archaeological site report submitted to the Virginia Center for Archeology, on file (18MO20) with the Maryland Sate Archeologist, Baltimore.

Schapiro, Meyer
1953 Style. In Anthropology Today, edited by A. L. Kroeber, pp. 287-312, University of Chicago Press, Chicago.

Shepard, Anna O.
1956 Ceramics for the Archaeologist. Publication 609, Carnegie Institution of Washington.

Shimkin, Demitri B.
1947 Wind River Shoshone Literary Forms: an Introduction. Journal of the Washington Academy of Science. 37:329-352.

Sideroff, Maria Louise
1980 Pottery Replication. in Proceedings of the 1979 Iroquois Pottery Conference. edited by Charles F. Hayes, pp. 179-194. Rochester Museum and Science Center, Rochester.

Sigalove, Joel G., and Austin Long
1964 Smithsonian Radiocarbon Measurements I. Radiocarbon, Vol. 6, pp182-8. New Haven.

Slattery, R. Gates
1946 A Prehistoric Indian Site on Selden Island, Montgomery County, Maryland. Journal of the Washington Academy of Science, Vol. 38, No. 8.
1960a The Winslow Site: a Progress Report of Current Investigations. Archeological Society of Maryland Miscellaneous Papers No 2.

1960b The Winslow Site - Progress Report Number Two. Archeological Society of Maryland Miscellaneous PapersNo.3.

Smith, Ira F., III
1973 The Parker Site: a Manifestation of the Wyoming Valley Culture. Pennsylvania Archaeologist 43:3-4, pp.1-56.

Smith, R.E., G. R. Willey and J. C. Gifford
1960 The Type-variety Concepts as a Basis for the Analysis of Maya Pottery. American Antiquity 25:330-339.

Snow, Dean R.
1980 The Archaeology of New England. Academic Press, New York.

Soleckie, Ralph S.
1949 An Archaeological Survey of Two River Basins in West Virginia. West Virginia History 10:4, pp.319-432.

Spaulding, Albert C.
1982 Structure in Archaeological Data: Nominal Variables. In Essays on Archaeological Typology, edited by Robert Whallon and James A. Brown, Center for American Archeology Press, Evanston.

Stanislawski, Michael B.
1973 Review of Archaeology as Anthropology: a Case Study. by William A. Longacre, American Antiquity 38:117-122.

Stearns, R. L.
1940 The Hughes Site, an Aboriginal Village Site on the Potomac River in Montgomery County, Maryland. The Natural History Society of Maryland Proceeding No. 6, Baltimore.

Stephenson, Robert L.
1971 The Potts Village Site (39CO19), Oahe Reservoir, North Central South Dakota. The Missouri Archaeologist 33.

Stephenson, R. L., A. L. L. Ferguson, and H. G. Ferguson
1963 The Accokeek Creek Site, a Middle Atlantic Seaboard Culture Sequence. Anthropological Papers No. 20, Museum of Anthropology, University of Michigan, Ann Arbor.

Steponaitis, Laurie Cameron
1980 A Survey of Artifact Collections from the Patuxent River Drainage, Maryland. Maryland Historical Trust, Annapolis

Steponaitis, Vincas P.
1983 Ceramics, Chronology, and Community Patterns: an Archaeological Study of Moundville. Academic Press, New York.

Steward, Julian H., and Demitri B. Shimkin
1961 Some Mechanisms of Sociocultural Evolution. Daedalus 90:477-497.

Stewart, R. Michael
1982 Prehistoric Ceramics of the Great Valley of Maryland. Archaeology of Eastern North America 10:69-94.

Stewart, R. Michael, Chris C. Hummer, and Jay F. Custer
1986 Late Woodland Cultures of the Middle and Lower Delaware River Valley and the Upper Delmarva Peninsula. In Late Woodland Cultures of the Middle Atlantic Region, edited by Jay Custer, University of Delaware Press, Newark

Stothers, David M., and G. Michael Pratt
1981 New Perspectives on the Late Woodland Cultures of the Western Lake Erie Region. Midcontinental Journal of Archaeology 6:91-122.

Stothers, David M., and James R. Graves
1983 Cultural Continuity and Change: the Western Basin, Ontario Iroquois, and Sandusky Traditions. A 1982 Perspective. Archaeology of Eastern North America. 11:109-142.

Strohmeier, William
1980 The Unami Creek Rockshelter. Pennsylvania Archaeologist 50:4, pp. 1-12.

1985 Two Bucks County Rockshelters. Pennsylvania Archaeologist 55:4, pp. 4-11.

Stuckenrath, Robert
1978 Letter on file, Maryland Geological Survey, Division of Archeology, re 18FR17.
1979 Letter on file, Maryland Geological Survey, Division of Archeology, re 18FR14.
1980 Letter on file, Maryland Geological Survey, Division of Archeology, re 18FR18.

Stuckenrath, Robert, and James E. Mielke
1970 Smithsonian Institution Radiocarbon Measurements VI. Radiocarbon, Vol. 12, No. 1, ppl93-204. New Haven.

Sykes, Clark M.
1980 Swidden Horticulture and Iroquoian Settlement. Archaeology of Eastern North America Vol. 8:45-52.

Swanton, John R.
1985 Final Report of the United States De Soto Commission. Smithsonian Institution Press, Washington.

Tankersley, Ken, and John Meinhart
1982 Physical and Structural Properties of Ceramic Materials Utilized by a Fort Ancient Group. Midcontinental Journal of Archaeology 7:225-244.

Tidwell, W. A., and Douglas Woodward
1965 The Hargett-King Rock Shelter. Newslettr. Archeological Society of Maryland. XI:4
1967 The Montgomery Focus. Archeology Society of Maryland Miscl Papers No.6.

Trigger, Bruce
1978 Time and Traditions Columbia University Press, New York

Turner, N. Randolph
1978 Population Distribution in the Virginia Coastal Plain, 8,000 B.C. to A.D. 1600. Archaeology of Eastern North America 6:60-72.

United States Department of the Interior, U.S. Geological Survey
1984 Sterling Quadrangle, Virginia-Maryland, 7.5 Minute Series (Topographic). U.S. Government Printing Office.

Vierra, Robert K.
1982 Typology, Classification, and Theory Building. In Essays on Archaeological Typology edited by Robert Whallon and James A. Brown, Center for American Archeology Press, Evanston.

Wall, Robert D.
1983 Cresaptown Excavations Continue. Current Maryland Archeology, No. 17. Division of Archeology, Maryland Geological Survey.
1984 Cresaptown Excavations Close for 1983 Season. Current Maryland Archeology No. 19. Division of Archeology, Maryland Geological Survey.

Whallon, Robert, and James A. Brown, eds.
1982 Essays on Archaeological Typology, Center for American Archeology Press, Evanston.

Waselkov, Gregory A.
1982 Shellfish Gathering and Shell Midden Archaeology. Unpublished Ph.D. dissertation on file at the University of North Carolina, Chapel Hill.

Wedel, Waldo R.
1959 An Introduction to Kansas Archeology. Smithsonion Institution Bureau of American Ethnology Bulletin 174.

Williams, Howell, Francis J. Turner, and Charles M. Gilbert
1954 Petrography; An Introductionto the Study of Rocks in Thin Section. W. H. Freeman, San Francisco.

Winfree, R. Westwood
1972 A New Look at Cord-marked Pottery. Quarterly Bulletin of the Archaeological Society of Virginia. 26:179-189.

Whitlam, Robert C.
1981 Problems in Ceramic Classification and Chronology: An Example from the Mobile Bay Area. Midcontinental Journal of Archaeology 6:179-206.

Witthoft, John
1963 General Interpretations. The Archeolog 15:59-69.

Wright, Phillip J.
1980 Prehistoric Ceramics from Red Horse Lake Portage, a Site (BdGa-12) in Eastern Ontario. Archaeology of Eastern North America 3:53-70.