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The View from the Midden: An Analysis of Midden Distribution and Composition at the van Sweringen Site, St. Mary's City, Maryland

ABSTRACT

Most intrasite spatial studies in historical archaeology have focused on the horizontal distributions of artifacts with only minimal attention given to the associations of materials found in midden contexts. In this paper the distribution and composition of plowed midden deposits from the van Sweringen site, a late 17th and early 18th century dwelling in St. Mary's City, are investigated. Temporal changes in disposal patterns and midden composition, spatial variation among midden deposits, and the relationships between midden content and building function are presented. These findings demonstrate the potential of midden analysis and the importance of plow zone contexts for site interpretation.

Introduction

The intrasite spatial analysis of archaeological materials has been a focus of considerable research within the last fifteen years. Most published studies, however, have emerged in prehistoric archaeology, and much of this research has been concerned with the development of analytic and interpretive methods (cf. Whallon 1973a, 1973b, 1974; Hodder and Orton 1976; Hodder 1978; Hietala 1984). A major problem encountered by prehistoric archaeologists is the interpretation of their findings, especially the functional identification of artifacts and artifact patterning. Historical archaeologists can overcome much of this difficulty since the availability of documentary sources, the tight temporal and functional control provided by many artifacts, and a similar cultural heritage all greatly facilitate the interpretive process. Indeed, research at historic sites should help

resolve important questions about the relationships between activities and material remains and the causes of variation in spatial distributions.

Refuse disposal at most British colonial sites in North America occurred primarily in surface middens located around structures and only secondarily in so-called trash pits or other features. Many of these sites have been subjected to post-occupational plowing, resulting in the destruction of vertical stratigraphy and a mixing of depositional contexts. Recent research has demonstrated, however, that *horizontal* relationships are only minimally affected by agricultural activities (O'Brien and Lewarch 1981). Hence, plowed midden contexts contain information of potential significance for site interpretation. Not surprisingly, most spatial analysis in historical archaeology has focused upon the evaluation of artifact distributions.

The study of horizontal distributions of artifacts is an important element in artifact analysis. However, if the full potential of archaeological spatial data is to be realized, it is necessary to go beyond distribution analyses and evaluate the composition of middens. In this paper, the results of a preliminary study of artifacts from plowed midden contexts at a well-documented colonial site are presented. The identification of temporally discrete middens in plowed soils is discussed and temporal changes in disposal behavior are evaluated. The composition of these middens, including both temporal and spatial variation, is also investigated. Finally, the relationship of midden content to the function of buildings and rooms within them is examined.

The van Sweringen Site

The data used in this study derive from the van Sweringen site (18 ST 1–19), a late 17th and early 18th century household in St. Mary's City, Maryland (Figure 1). The site is located on a high bluff adjacent to the St. Mary's River, a small tributary of the Potomac River. The site is near the heart of Maryland's first settlement and 17th century capital, St. Mary's City. Founded in 1634, St. Mary's

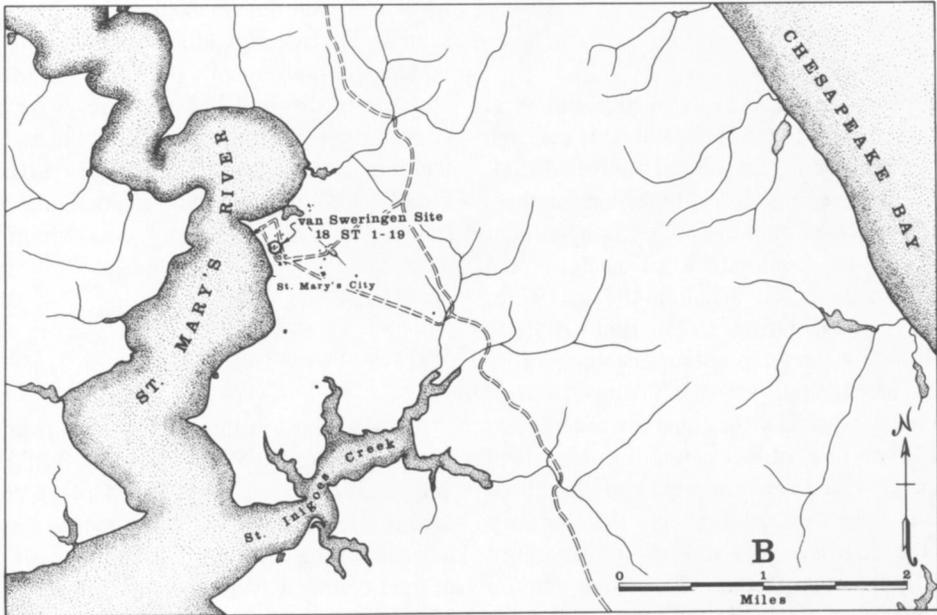
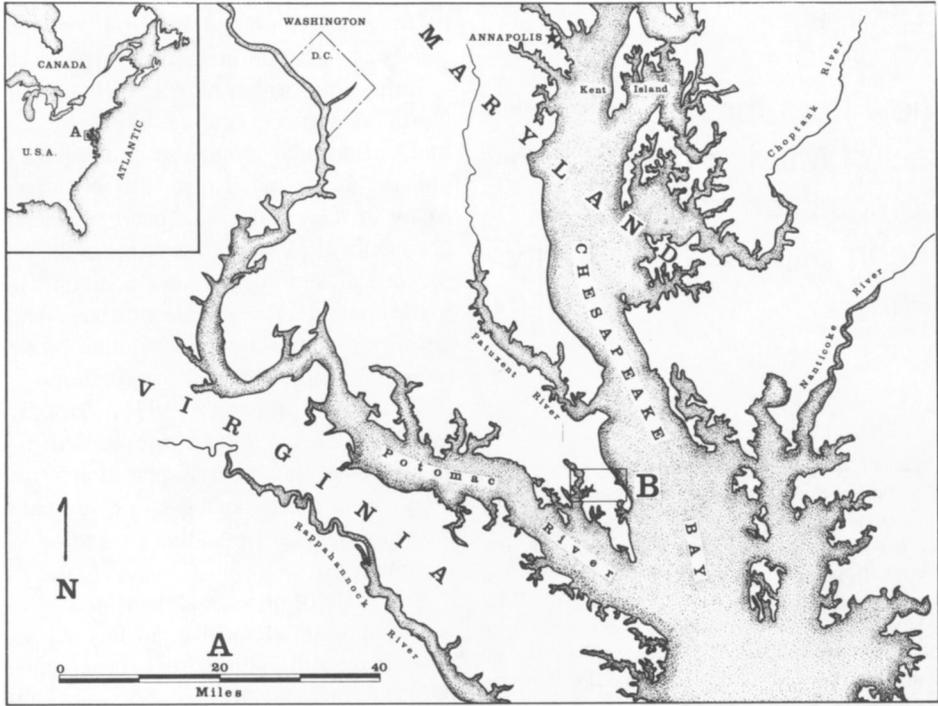


Figure 1. The van Sweringen site in St. Mary's City, Maryland.

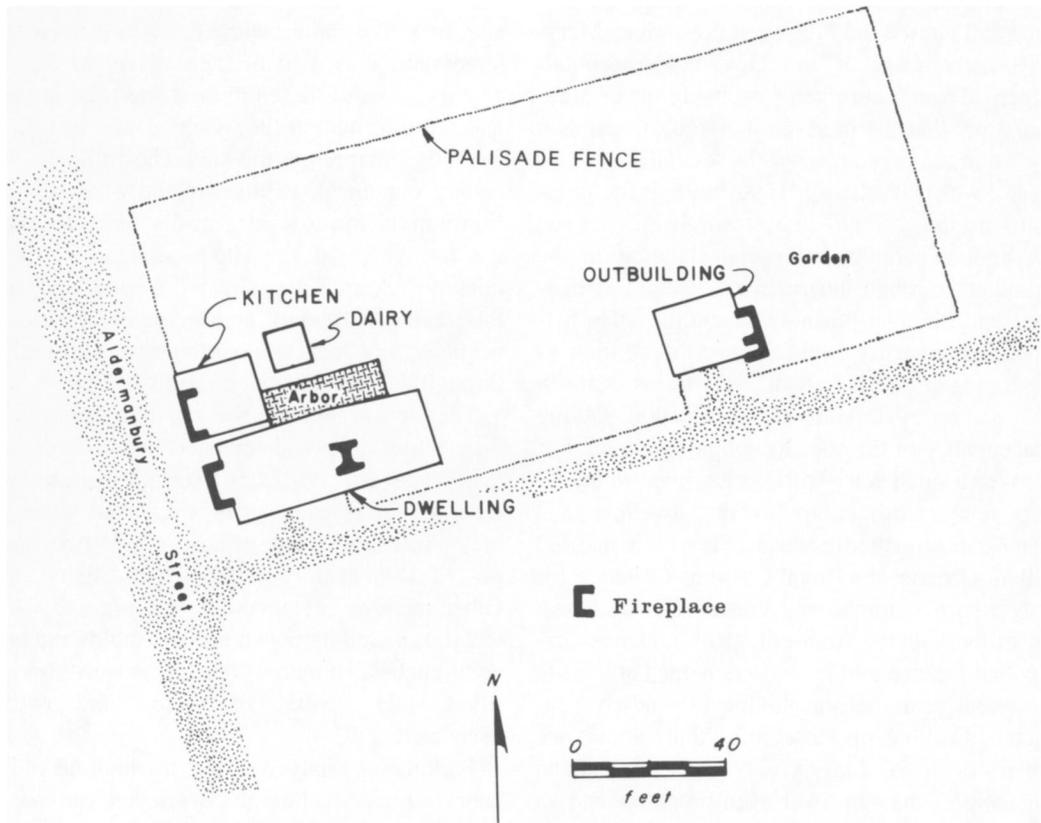


Figure 2. Plan view of the van Sweringen site.

served as the political center of the colony and was one of the few major settlements in the Chesapeake region. It remained the capital until 1695, when the government was moved to Annapolis. After that, much of the former capital was abandoned and St. Mary's City became a small agricultural hamlet in the 18th century.

Garret van Sweringen, a free immigrant of Dutch origin, owned a one-acre lot separated from the river by one of the major roads in the town, Aldermanbury Street. The site was initially occupied c. 1665, when an unheated, 20-by-40-foot frame structure was constructed to house provincial records. In 1677, van Sweringen purchased or leased the lot and made several additions to the property over the next decade. He expanded the frame dwelling and added a partial brick veneer to

its facade (Stone 1983). This enlarged building, which now measured approximately 55 by 20 feet, had three rooms on the ground floor with a loft above (Figure 2). Van Sweringen also constructed a kitchen immediately adjacent to the dwelling and a small, 20-by-18-foot outbuilding approximately 55 feet to the east. This outbuilding may have been constructed as a bake and brew house, since van Sweringen had planned to go into that business in the late 1670s (Carr 1972).

Throughout the late 17th century, van Sweringen operated a lodging house out of his residence during meetings of the Maryland Provincial Court and General Assembly. Unlike the public ordinary, which was required by law to provide food, lodging, and stabling to all travelers, the lodging house required reservations and catered to a much

more exclusive clientele. Van Sweringen entertained and housed only the most prestigious Marylanders, members of the Governor's Council. Lodgers at van Sweringen's probably never numbered more than six or seven individuals, and then only when the assembly was in session.

Van Sweringen died in 1698, willing the property to his son, Joseph. Joseph van Sweringen had both high economic and social standing in the community through inheritance, a fortuitous marriage, and his own business capabilities. He participated in the early 18th century tobacco trade as both a planter and merchant, and, at his death in 1723, had an estate valued at over £1000. During his occupancy of the site, Joseph probably built or improved a small dairy with a brick-lined cellar but made few modifications to the dwelling and kitchen. Shortly after his death, his widow married William Deacon, the Royal Customs Collector for the Northern Potomac and one of the wealthiest men in the county. Archaeological evidence suggests that Deacon and his wife remained at the site for several years before moving to a newly constructed dwelling on Rosecroft Point, about one mile south of St. Mary's City. Deacon retained ownership of the van Sweringen property, and an unknown tenant was apparently living at the site during the 1730s and early 1740s. Occupation ceased about 1745, based upon archaeological data.

Data Base and Methods of Analysis

Historic St. Mary's City began preliminary excavations at the van Sweringen site in 1974, with intensive archaeological work occupying four subsequent seasons. The initial excavations focused on the recovery of information relevant to the evolution of the site's architecture. After a firm understanding of the structures had been established, a strategy of stratified random sampling at approximately 10 percent was applied in the yard areas to collect spatial data (Figure 3). Final excavations to resolve specific questions and prepare the site as an exhibit were conducted from 1982 to 1985.

During the excavation of the van Sweringen site, only five major feature deposits were encountered, and only two of these dated to the 17th century. Four of these pits contained few artifacts, and the information they yielded was insufficient for fully interpreting the site. The fifth, the dairy cellar, contained a large quantity of domestic refuse in the lower levels, mostly deposited during the last years of the site's occupation. Consequently, research was directed toward analysis of the large quantities of archaeological materials in the plow zone in an attempt to redress this problem through detailed midden analysis.

The plow zone level was carefully excavated in 5-by-5-foot units and screened to standardize and facilitate recovery. All subsurface features were recorded and many were excavated. The five major features include a borrow pit, two storage pits, a 17th century cellar and the dairy cellar. Other features encountered were primarily architectural, including post holes and molds and builder's trenches. Numerous fencelines were also identified, and several of these were partially excavated.

Preliminary analysis of the distributions of plow zone artifacts at the van Sweringen site was accomplished using the SYMAP computer mapping package (Dougenik and Sheehan 1979) available at the VAX/VMS facility of St. Mary's College of Maryland. The SYMAP package uses a nearest-neighbor statistic to project complete densities across a study area using sampled data. Excavation units were standardized to 25 square feet and the center of each was used as the mapping point. Depth of strata above subsoil was generally consistent at the site, averaging ten inches.

Spatial patterning usually involves highly variable shapes and sizes that may indicate rather complex underlying regularities. At present, statistical techniques used to identify clustering often require unwarranted assumptions about the data and, in many cases, require complete excavation of the study area. For these reasons, visual inspection of spatial distribution maps is one of the more sophisticated (and practical) methods of pattern identification currently available to archaeologists (Doran and Hodson 1975: 151). Midden deposits at the van

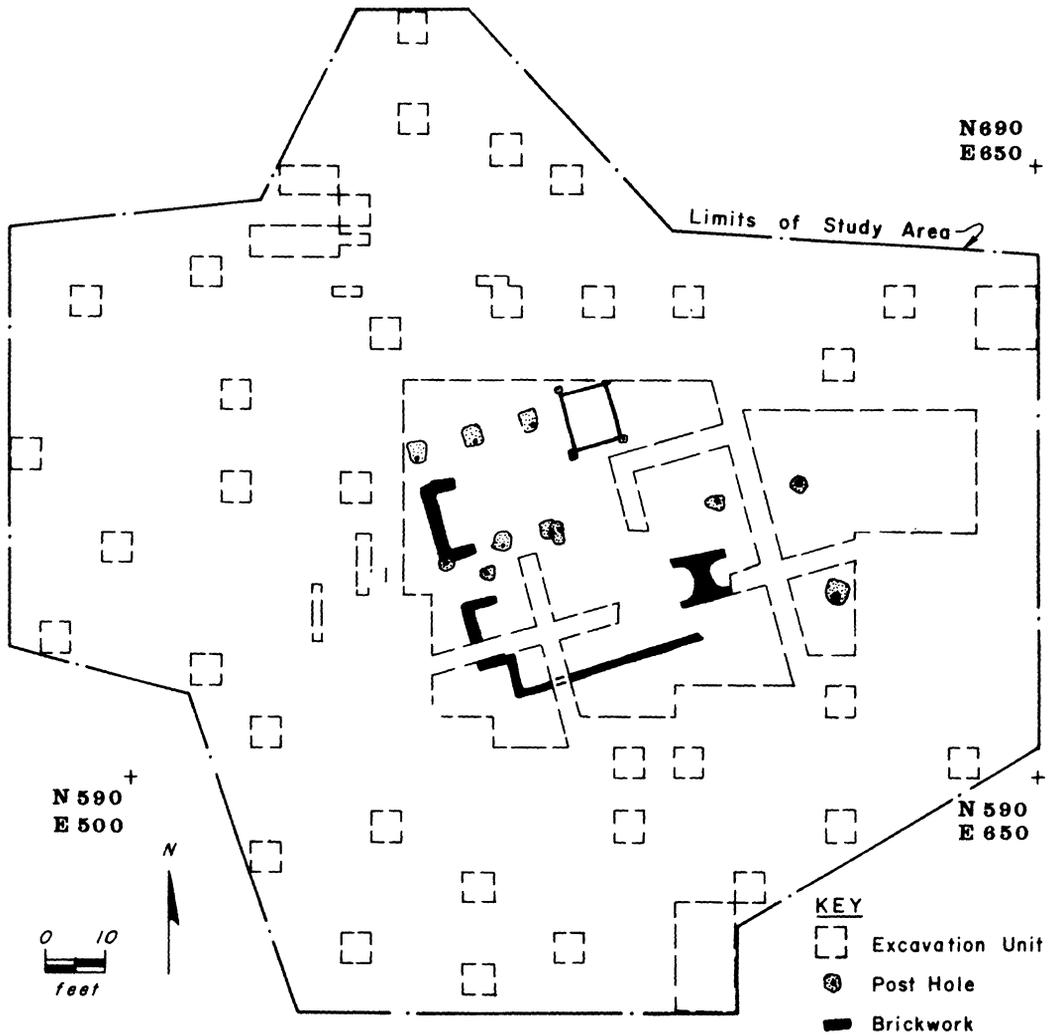


Figure 3. Study area and sampling units at the van Sweringen site.

Sweringen site were located using the computer-generated SYMAPS to visually identify overlapping concentrations of artifact types. In addition, tobacco pipe maker's marks, pipe bowl forms, datable tin-glazed earthenwares, table glass, and bottle glass fragments recovered from midden contexts were used to date the deposits. Some overlap and blurring between middens will inevitably occur, a result of behavioral processes during the site's occupation as well as the effect of post-depositional plowing. Nonetheless, midden areas at the van Sweringen site could be located and dated.

Once major clusters were identified and dated, artifacts from excavation units within the most tightly dated deposits could be combined and quantified to address questions of midden content and artifact association. The major artifact groups used in the analysis are tobacco pipes, ceramics and bottle glass, since these are the most temporally diagnostic. Ceramic sherd counts provide an important focus for analysis, although data on 800 vessels identified from the site are also used. Variations in the artifactual assemblages were assessed using the chi-square test (χ^2) for signifi-

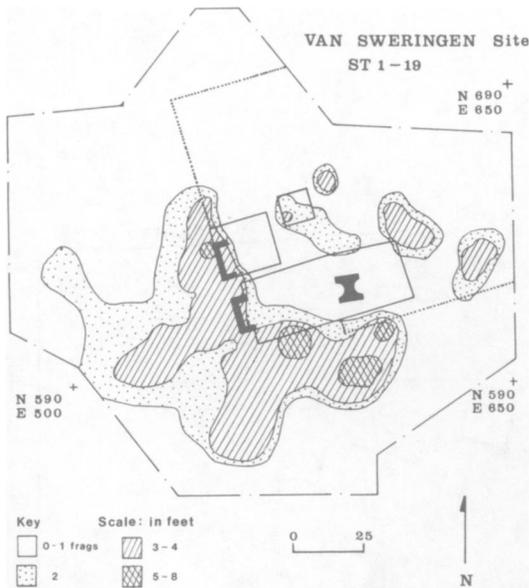


Figure 4. Distribution of white clay tobacco pipes with 3.0 mm bore diameters.

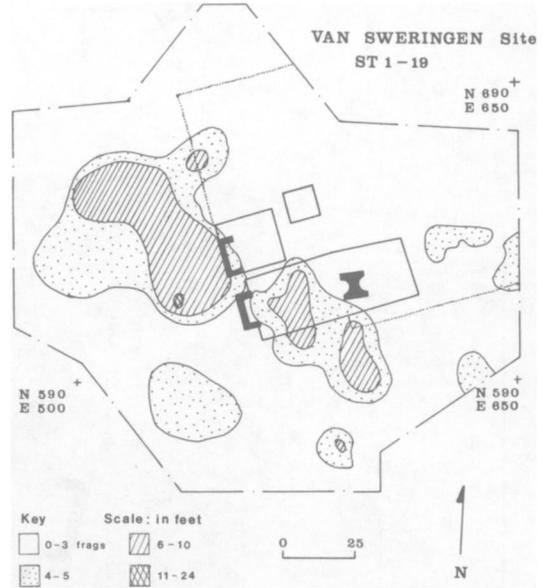


Figure 5. Distribution of white clay tobacco pipes with 2.8 mm bore diameters.

cance at the .05 level. In cases where an expected cell frequency was less than 5, Fisher's exact test was used following the recommendation of Siegel (1956).

Location of Refuse Disposal Through Time

Analysis of the computer-generated artifact distribution maps and other data revealed two phases of deposition activity in the area of the main dwelling at the site. These phases are (1) 17th century (c. 1665–1700) and (2) 18th century (c. 1700–1745). In some cases, it was possible to divide the 18th century middens into two sub-phases: Phase 2a (c. 1700–1725) and Phase 2b (c. 1725–1745).

Phase 1 middens were identified primarily through the distributions of pipe stems having large bore diameters of 2.8 to 3.0 mm (roughly 7/64–8/64ths inch) (Harrington 1954; Stone 1977) (Figures 4–5), and Morgan Jones ceramics (c. 1661–1680) (Figure 6). Plots of Rhenish brown stonewares, identified maker's marks on pipes,

pipe bowl forms, diagnostic table-glass fragments and tin-glazed earthenwares dating to the 17th century were also used. These 17th century artifacts are more concentrated in certain locations of the site and these concentrations are interpreted as areas of trash disposal during this period. Figure 7 summarizes this evidence. These clusters suggest that, during the occupation by Garret van Sweringen, refuse was deposited in two areas. The first was a widespread midden area west of the dwelling along Aldermanbury Street and stretching over to the river bank at the western edge of the study area. The second area was south of the dwelling, adjacent to the main entrance. The close proximity of the river bank, the lack of evidence for any other structures in that area, and ceramic sherd mends between the western midden and the dwelling area indicate that these middens derive from the van Sweringen occupation, not some other site.

Identification of the Phase 2 midden areas was based on concentrations of pipe stems with small bore diameters of 1.4 to 2.4 mm (about 4/64–6/64 inch), dipped white salt-glazed stoneware, and 18th century coarse earthenware (Figures 8–11),

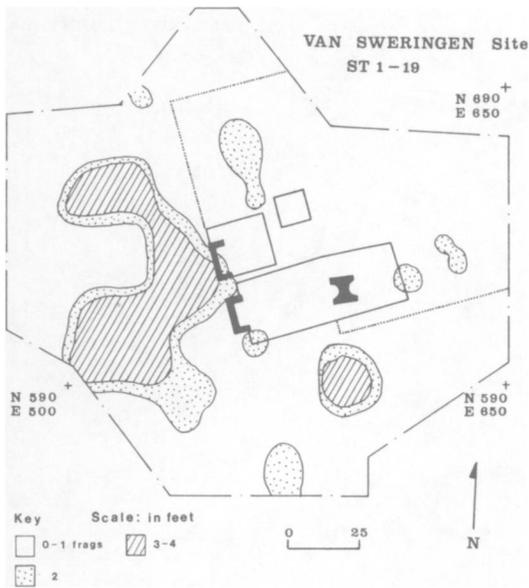


Figure 6. Distribution of Morgan Jones Pottery.

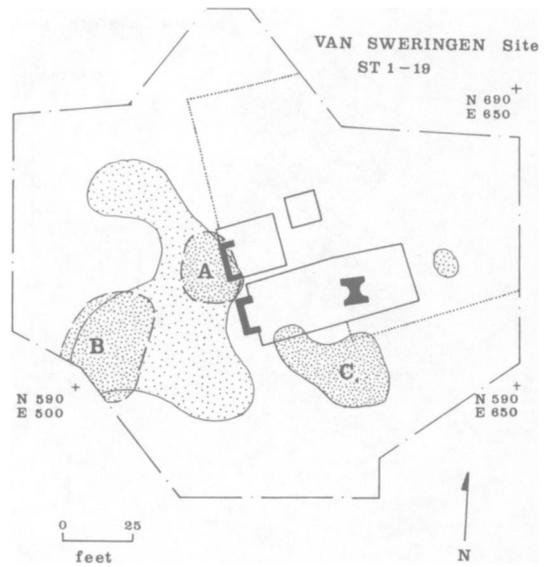


Figure 7. Major areas of Phase I deposition; slightly heavier stippling indicates areas chosen for further analysis.

English brown stoneware, pipe bowls and marks, diagnostic wine bottle bases and dated bottle seals, table glass, and 18th century tin-glazed earthenware fragments. These data are summarized in Figure 12. The clusters suggest that depositional activity at the site was changing by the early 18th century. Garbage was still deposited along the west side of the main dwelling, but middens also developed on the north and east sides of the structure. The area south of the dwelling was relatively free of rubbish.

Changes in disposal behavior were detected during Phase 2. Deposition along the eastern end of the dwelling probably began in the very late 17th century and continued until c.1725, since materials in these areas dated almost exclusively to the first quarter of the 18th century. Dumping also continued on a smaller scale on the western side of the dwelling in the location of the Phase 1 midden, and a small midden of this period was created north of the kitchen. After about 1725, however, the limited data suggest that refuse disposal occurred primarily in the area north of the dwelling complex, within a fenced yard.

These shifts in the nature and location of refuse disposal at the main dwelling are dramatic. Their explanation is complex and certainly due to more than one cause. During the last quarter of the 17th century, refuse from the van Sweringen household was deposited in public areas, especially in roadways and paths. In contrast, the spaces to the east and north of the main house complex, contained within a fenced yard, were nearly free of garbage.

This variation in trash distribution provides some insight into concepts of cleanliness and how spaces were perceived and used. The 17th century inhabitants of the van Sweringen site apparently considered the public roads an acceptable location for garbage disposal. Spaces not considered public, on the other hand, were kept relatively free of trash. Archaeological and historical evidence suggest that the north yard of van Sweringen's homelot was an area used for family and private guest activities. The remains of a stout palisade fence, which apparently enclosed the entire north yard, were found in that area (cf. Figure 2). These

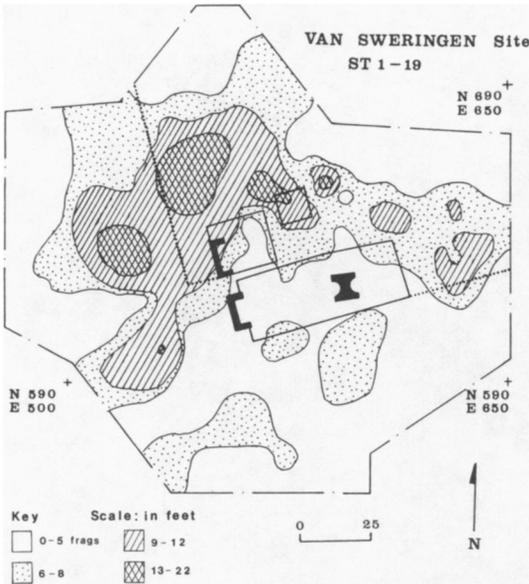


Figure 8. Distribution of white clay tobacco pipes with 2.4 mm bore diameters.

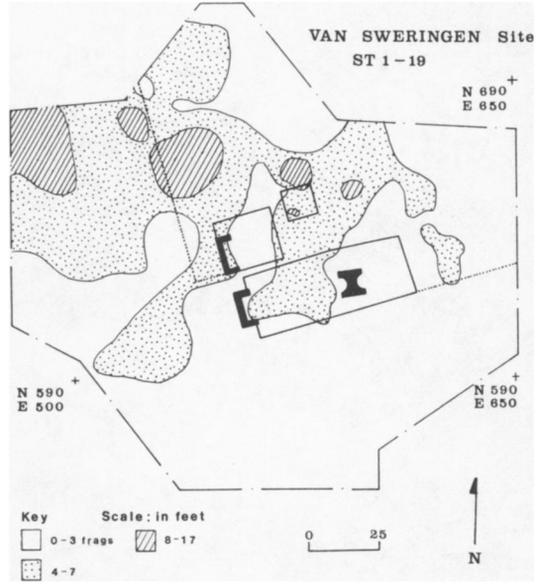


Figure 9. Distribution of white clay tobacco pipes with 1.4 to 2.0 mm bore diameters.

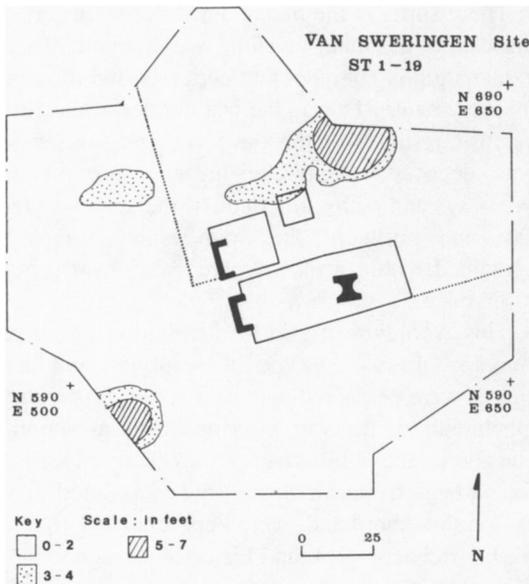


Figure 10. Distribution of dipped white salt-glazed stoneware.

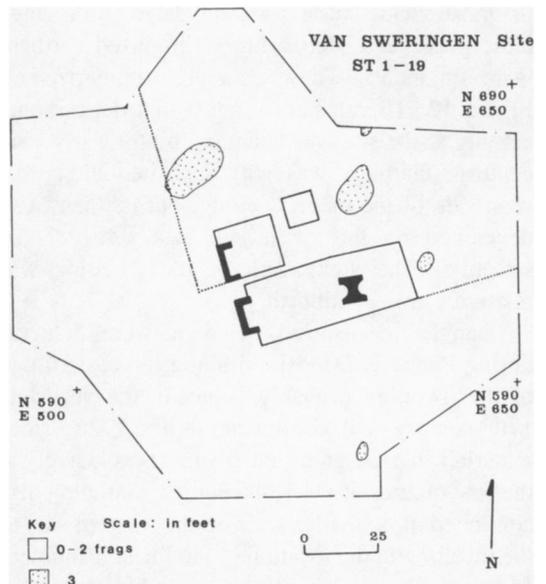


Figure 11. Distribution of unidentified 18th century coarse earthenware.

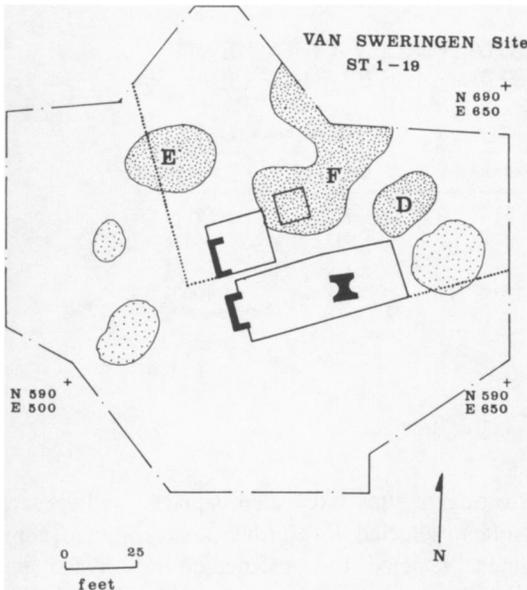


Figure 12. Major areas of Phase II deposition; slightly heavier stippling indicates areas chosen for further analysis.

rugged, ditch-set fences consisted of closely spaced rails that would have created an effective barrier between van Sweringen's backyard and busy Aldermanbury Street. Traces of a post-supported arbor have also been detected along the north side of the dwelling, within the fenced yard. Documents indicate that on at least three occasions in the 1680s, members of the Governor's Council adjourned their meetings and retired to the "arbor at van Sweringen's" (Archives of Maryland 1885: 122,130,137).

Ethnicity may also be related to the spatial arrangement of van Sweringen's homelot. Van Sweringen was of Dutch origin, initially settling at the Dutch colony of New Amstel on the Delaware Bay before moving to Maryland. Many 17th century Dutch genre paintings portray arbors as locations for drinking, feasting and relaxing (cf. Hooch 1984). Generally depicting homes in urban settings, these paintings show that the arbors and courtyards are to the rear or side of the dwellings, and are consistently free of any major accumulations of garbage. During the late 17th century,

when St. Mary's City reached its maximum population size, van Sweringen may have employed a Dutch homelot organization at his Maryland home. St. Mary's was not as large or urbanized as Dutch cities, but it was the only major population center in 17th century Maryland as well as the center of government. When the Provincial Assembly or courts were in session, Aldermanbury Street was a heavily traveled route. The enclosure of an outdoor space adjacent to the dwelling provided a private area for use by the family and the elite customers at van Sweringen's lodging house that would have been especially welcome during the summer months. Thus, this spatial arrangement may represent a response to an increasingly urban environment through the application of an urban Dutch concept of space usage.

In contrast, the distributions of 18th century materials differ significantly from those of the 17th century. The private space north of the dwelling became a general workyard and locus of refuse disposal. Garbage was also deposited at the east end of the dwelling. South of the house, adjacent to the main entrance, however, very little trash was deposited. Eventually, most of the deposition became concentrated in the north yard and perhaps the front or south side of the dwelling became the formal, clean area.

Part of this change is probably related to the movement of the capital to Annapolis in 1695. This event had a tremendous impact on the cultural landscape of St. Mary's City. Within the space of a decade, St. Mary's went from being the most urbanized settlement in Maryland to a small agricultural hamlet. Only a few structures continued to be occupied, and they were scattered over the old townlands. Aldermanbury Street was apparently little used, except by residents and the occasional visitor. Consequently, the need for a private yard at the site, concealed from public view, was probably eliminated.

Van Sweringen died in 1698, leaving the Aldermanbury Street lot to his son, Joseph. Although Joseph was of Dutch descent, he was enculturated into an English colonial society and appears to have used a different homelot layout. This was a formal front yard and informal rear yard

TABLE 1
 COUNTS AND PROPORTIONS OF TOTAL MIDDEN ARTIFACTS IN
 AREAS SELECTED FOR FURTHER ANALYSIS BY PHASE (a)

Artifact Type	Phase 1		Phase 2	
	Count	Percent	Count	Percent
Tobacco Pipes	428	32.7	456	20.4
Bottle Glass	302	23.1	832	37.2
Ceramics	580	44.3	950	42.4
Total	1310	100.1	2238	100.0

(a) See Figures 7 and 12.

spatial arrangement. The front yard, associated with the main entrance of the home, became a cleaner, more formalized area, while the back was transformed into a service yard. Later occupant William Deacon, of English birth and upbringing, appears to have continued this yard arrangement. A similar pattern of spatial organization is found at the nearby St. John's site (Keeler 1978). Constructed in 1638, St. John's exhibited this front-back division from its earliest years. Unlike the van Sweringen site, St. John's was built and occupied for most of the 17th century by Englishmen and was in a more isolated section of the edge of St. Mary's City.

These data suggest that there are a number of factors influencing refuse disposal at the site. Along with the shift from a semi-urban to rural setting, differences between first- and second-generation colonists and ethnicity are also probably involved. Isolating these variables and determining their influence will require extensive and detailed comparative research. This initial study of the evolution of dumping patterns, however, has revealed information about a site obtainable from no other source. To gain further insight, it is necessary to turn to the composition of the middens and investigate how they vary through both time and space.

Midden Composition Through Time

Following the identification and temporal association of sheet refuse middens at the van

Sweringen site, excavated squares within each midden selected for further analysis were combined. Selected middens include those dated specifically to either Phase 1 or 2. Overlapping middens are present at the site (see Figures 7 and 12), but are not included in this preliminary investigation. This analytic process was begun by combining all materials in the tightly dated middens from each phase to investigate midden composition through time. Table 1 presents the quantities of three major groups of artifacts in the Phase 1 and Phase 2 deposits.

Immediately obvious is the increased quantity of artifacts recovered from Phase 2 deposits. The Phase 1 middens associated with the main dwelling contained an average of 99.0 artifacts per 25 square feet of plow zone. In contrast, the Phase 2 middens contained an average of 131.9 facts per 25 square feet of plow zone, an increase of approximately one third in quantity.

Although ceramics remain at about the same proportion through time, tobacco pipes decline significantly in frequency between the two phases and bottle glass nearly doubles. The relative decline in tobacco pipe frequency in Phase 2 may be related to the shift in function from a dwelling used as a lodging house to a private residence. The increase in bottle glass could be a reflection of the growing availability of glass bottles in the English colonies. A similar increase has also been identified at the nearby St. John's site (Fadeley and Miller 1980). At the same time, the much higher

TABLE 2
 COUNTS AND PROPORTIONS OF TOTAL CERAMICS IN AREAS
 SELECTED FOR FURTHER ANALYSIS BY PHASE (a)

Ceramic Type	Phase 1		Phase 2	
	Count	Percent	Count	Percent
Chinese Porcelain	5	0.9	32	3.4
Tin-glazed earthenwares	151	26.0	313	32.4
Other Imported Fine Wares	159	27.4	195	20.5
Imported Coarse Wares	79	13.6	169	17.8
Colonial/Other Coarse Wares	186	32.1	241	25.4
Total	580	100.0	950	100.0

(a) See Figures 7 and 12.

economic status of some of the 18th century residents of the site could be a significant factor. Garret van Sweringen had few bottles in his inventory and stored wine and other liquids in casks. His son, however, probably bottled his wine and William Deacon is known to have had bottles specially made and marked with his name. A number of bottle seals with Deacon's name were recovered at the site.

Although ceramics as a group exhibit the least variation, they are studied in more detail because of their functional variation and since the origin of many wares can be determined. Ceramics are therefore divided into five categories for analysis: (1) Chinese porcelain, (2) tin-glazed earthenwares, (3) other fine drinking wares, (4) imported coarse wares, and (5) colonial/undetermined coarse wares. The frequencies of these wares by phase are given in Table 2.

Chinese porcelain is a small but important component of the total ceramic assemblages. Although not common during any portion of the site's occupation, porcelain increased significantly in proportion between Phase 1 and Phase 2 ($\chi^2=9.59$; $df=1$). Chinese porcelain was an expensive tableware in the 17th and 18th centuries and does not appear in St. Mary's County probate inventories with any frequency until the mid-18th century. Forms recovered from the site are predominantly tea cups, small bowls, and saucers, indicating the practice of social tea drinking at the site in the early 18th century (Roth 1961).

Tin-glazed earthenwares form a major component of the ceramic assemblages for both phases. Manufactured by a variety of potteries, these wares are predominantly tableware forms, including plates, saucers, basins, and punch bowls. Galley pots, small jars used to store medicines, cosmetics, and condiments, also occur in tin-glazed earthenware, and nearly all of the galley pot forms recovered from the site are of 17th century date. The Phase 2 assemblage contained a larger proportion of these wares, and this difference is statistically significant ($\chi^2=8.14$; $df=1$). Forms of tin-glazed vessels also change from Phase 1 to Phase 2. By the early 18th century, specialized vessel forms, such as sauce boats, a caudle pot, vase, and a fine jar, are present in the ceramic assemblage. Plates also increase in frequency during Phase 2 as do other fine tableware forms (saucers, tea cups, etc.). Although this increase in variety may be partially due to the greater size of the Phase 2 ceramic sample, it is probably also related to the high status of the site's early 18th century occupants and the nature of the English delft industry.

Other imported fine ceramics include Staffordshire slipwares, Rhenish blue and gray stonewares, English brown stonewares and dipped white salt-glazed stonewares. Vessel forms in this category are primarily drinking containers (cups, mugs, jugs, and drinking pots), indicating a strong association of this ceramic group with a particular function. Only a few plates have been identified in Staffordshire slipware. This functional distinction

is the basis for the analytic separation of these fine wares from the tin-glazed earthenware category. These fine wares display a significant decrease between Phases 1 and 2 ($\chi^2 = 9$; $df = 1$).

Utilitarian wares, such as patty pans, milk pans, bowls, butter pots and other storage vessels, were an important component of a colonial household's material culture. These vessels were used in a wide variety of domestic activities, but primarily served for food preparation and storage. Some were manufactured in England and exported to the colonies while local potters in the Chesapeake and in other American colonies made similar utilitarian forms both to supplement and compete with the English products. For purposes of this analysis, coarse-bodied ceramics were divided into two general categories: imported and colonial/other coarse wares. Imported coarse wares include North Devon Gravel Tempered, Midlands Purple, and black lead-glazed, "Buckley-like" (Miller 1983: 91) ceramics. Colonial coarse wares include positively identified local wares, most notably the products of Morgan Jones (Kelso and Chappel 1974), as well as other ceramics of possible colonial manufacture. These wares are made of clays strongly resembling those used by Morgan Jones.

Imported coarse wares increase significantly in proportion from Phase 1 to Phase 2 ($\chi^2 = 4.61$; $df = 1$) and a closer inspection of the Phase 1 and Phase 2 ceramic assemblages indicates that this increase occurred primarily among the black lead-glazed, Buckley-like ceramics. Colonial coarse wares, on the other hand, formed the largest class of ceramics in the Phase 1 sample but decreased significantly in proportion during Phase 2 ($\chi^2 = 8.04$; $df = 1$).

These temporal variations in plow zone ceramic frequencies are probably due both to changes in the ceramic trade and the wealth of the occupants at the site. Although Chinese porcelain became more available in the 18th century, only the most wealthy households in the Chesapeake could afford to drink tea from it. The wealth of the van Sweringen site occupants was substantially higher during the early 18th century, and this probably explains the greater frequency of porcelain in the

Phase 2 middens. The increase of imported coarse wares may be partially due to greater availability as well, especially as the port of Liverpool grew in prominence in the English trade. These imported wares were durable and of high quality, consequently, they seem to have been more valued than local products, judging from appraisals of these ceramics in St. Mary's county probate inventories. Hence, the more wealthy households probably invested in higher quality, yet more expensive utility wares, compared to poorer homes.

Much additional comparative data is necessary from sites of known economic status and function before these variations can be more fully explained, but it is sufficient to note that evidence of temporally significant variation in ceramic use is available from plow-disturbed soils. In the next section of this analysis, the composition of middens at different locations across the site is investigated.

Midden Content and Building Function

A comparison of the midden assemblages from the main dwelling complex and the spatially separated outbuilding (see Figure 2) was undertaken to analyze and assess midden variability between these two samples. The spatial distribution of artifacts at the outbuilding was studied to identify midden locations, and materials recovered from middens associated with each structure were combined to produce a general artifact assemblage for each. While temporal variation certainly occurred and will be addressed in later section, analysis of the composition of the total assemblages provides important insight into the function of these structures.

At this level of analysis, four broad categories of material culture are used: tobacco pipes, bottle glass, ceramics and, additionally, bone (Table 3). Notable differences in the proportions of these groups were observed for the dwelling and the outbuilding.

Although proportions of ceramics ($\chi^2 = 0.16$; $df = 1$) and bottle glass ($\chi^2 = 0.57$; $df = 1$) between the two areas are similar, the outbuilding middens

TABLE 3
COUNTS AND PROPORTIONS OF TOTAL MIDDEN ARTIFACTS
(PHASES 1 AND 2) FROM THE DWELLING AND OUTBUILDING

Artifact Type	Main Dwelling Complex		Outbuilding	
	Count	Percent	Count	Percent
Tobacco Pipes	884	17.9	962	40.4
Bottle Glass	1134	23.0	528	22.2
Ceramics	1530	31.0	699	29.3
Animal Bone	1390	28.1	192	8.1
Total	4938	100.0	2381	100.0

TABLE 4
COUNTS AND PROPORTIONS OF TOTAL MIDDEN CERAMICS
(PHASE 1 AND 2) FROM THE DWELLING AND OUTBUILDING

Ceramic Type	Main Dwelling Complex		Outbuilding	
	Count	Percent	Count	Percent
Chinese Porcelain	37	2.4	3	0.4
Tin-glazed Earthenwares	464	30.3	91	13.0
Other Imported Fine Wares	354	23.1	292	41.8
Imported Coarse Wares	248	16.2	156	22.3
Colonial/Other Coarse Wares	427	27.9	157	22.5
Total	1530	99.9	699	100.0

have a significantly larger proportion of tobacco pipe fragments ($x^2 = 431.24$; $df = 1$) and much less animal bone ($x^2 = 382.49$; $df = 1$) than those associated with the main dwelling. Soil Ph levels at the two structures are similar, so differential preservation cannot account for the variation in bone frequency. This finding suggests that there were important differences in the use of some artifacts between the two structures.

Ceramics displayed the least difference in overall proportions. Although both samples appear similar at the most general level of coarse and fine wares, more refined division of the ceramics reveals notable differences. Ceramics were divided into the five groups previously discussed, and the results are provided in Table 4. One very apparent difference is that the porcelain sherds are almost completely associated with the main house ($x^2 = 10.77$; $df = 1$). As previously noted, porce-

lain was expensive and usually associated with formal social behavior during the later 17th and early 18th centuries. Therefore, it is not surprising that the sherds which are present concentrate around the residence of the landowner.

Tin-glazed earthenware, another fine ware often used as a substitute for porcelain in dining and social tea drinking, is also more abundant around the main house ($x^2 = 76.87$; $df = 1$). The group of other imported fine ceramics, however, make up a significantly higher proportion of the outbuilding ceramic assemblage than at the main house ($x^2 = 80.97$; $df = 1$). Further, significantly more imported coarse ware sherds ($x^2 = 12.06$; $df = 1$) and fewer colonial wares ($x^2 = 7.36$; $df = 1$) are present at the outbuilding.

These comparisons suggest that there was variation in ceramic use between the main house and outbuilding. Additional evidence is provided by

TABLE 5
 COUNTS AND PROPORTIONS OF TOTAL CERAMIC VESSELS
 (ALL CONTEXTS) BY FUNCTIONAL GROUP FROM THE DWELLING
 AND OUTBUILDING

Functional Group	Main Dwelling Complex		Outbuilding	
	Count	Percent	Count	Percent
Drinking	227	39.0	29	58.0
Dining	104	17.9	4	8.0
Food Preparation	111	19.1	10	20.0
Food Storage	103	17.7	6	12.0
Medicinal	36	6.2	—	—
Other	1	0.2	1	2.0
Total	582	100.1	50	100.0

vessel data. Estimates of the minimum number of vessels in each assemblage were calculated and the forms of each identified vessel were determined to the extent possible. The results, given by major functional groupings, are presented in Table 5. The main house has far more vessels than the outbuilding, not unexpected since the main dwelling was occupied for a longer period and probably by considerably more people.

Table 5 reveals a marked difference in the frequency of vessel forms between the two areas. Over half of the vessels at the outbuilding were used for beverage consumption and storage (mugs, jugs, cups, ceramic bottles). Very few vessels associated with dining (plates, other tableware forms) were identified. At the main house, a much smaller proportion of the vessels served a drinking function, and many more were used for dining. In addition, galley pots were recovered exclusively at the main house. Not a single identified galley pot fragment was found at the outbuilding. A greater proportion of food storage vessels (butter pots, jars) is also present at the main house although the frequency of food preparation vessels is about the same.

Variation observed between the two structures using sherd counts is confirmed and clarified by the vessel data. The higher frequency of tin-glazed earthenware fragments at the main house was composed mostly of dining vessels. The absence of medicinal forms at the outbuilding, which could

not have been surmised from sherd counts, was disclosed by vessel formation. The high percentage of imported fine ware sherds is also shown to reflect a real functional pattern, as indicated by the presence of a high proportion of drinking vessels at the outbuilding. Coarse wares, whether imported or colonial, displayed little variation between the two areas in sherd counts, and although this is generally true in vessel counts, there is a larger proportion of coarse ware storage vessels present in the main house midden assemblage.

Therefore, the available evidence indicates that the outbuilding artifact assemblage varies significantly from that found at the main house. The outbuilding middens are distinguished by a greater frequency of tobacco pipes and ceramic drinking vessels, a lower frequency of dining vessels, very little bone and the absence of ceramic medicine jars.

Since both structures were occupied during the same general period and form part of the same household, a functional explanation to account for the differences between the two structures seems most likely. The main building was a residence for Garret van Sweringen and later occupants until its abandonment c. 1745. In addition, this structure is known to have served as a private lodging house operated by van Sweringen during the late 17th century (Carr 1972). Unlike the public inn, or "ordinary", in the Chesapeake colonies, which was open by law to all travelers on a first come,

first serve basis, the private lodging house required reservations and the consent of the owner. The quality of the food and the accommodations was apparently better than at a public ordinary. Van Sweringen's clientele consisted almost exclusively of members of the Governor's Council, a small, elite group of men with high economic and social standing and intimate political involvement with the Lord Proprietor. Based upon this understanding of how a private lodging house like van Sweringen's functioned, it is unlikely that the artifacts from it would differ greatly from that of an elite, private residence. There would probably be a larger number of ceramic and glass vessels in the lodging house, but most vessel forms would be expected in either setting. At the main house, all groups of artifacts are well represented and variation between categories is much less than seen at the outbuilding.

The function of the outbuilding is less certain. The scant documentary evidence and the form of the outbuilding chimney suggest that it was built as a bakehouse or brewhouse. However, a plot of the only artifact indicative of baking activities, baking pan sherds, revealed that nearly all of these are associated with the main building. This may indicate that the outbuilding was not used as a bakehouse for any length of time.

The high frequency of drinking vessels and tobacco pipes at this structure and the low frequencies of dining equipment and animal bone are not typical of domestic occupations found at other sites in St. Mary's City. It is, therefore, worthy of note that at van Sweringen's death in 1698, he bequeathed to his son, Joseph, "ye Council Roomes and Coffee House and land thereto belonging" (van Sweringen 1698). The "Councill Rooms" were located in the dwelling structure. What van Sweringen meant by "Coffee House", however, has long been a subject of debate. In England, coffee houses were growing in popularity during the second half of the 17th century (King 1976). Originally serving coffee, tea and chocolate, the coffee house later added wine and other beverages to its menu and was a fashionable place for entertainment and discussion. Little food was served in such an establishment (King 1976: 22).

The artifact pattern expected at a coffee house would likely consist of a high frequency of drinking vessels, little dining equipment and a few food remains. Also, if depictions of public drinking behavior shown in 17th century Dutch genre art are valid, quantities of tobacco pipes should also be found. This is precisely the pattern found at the outbuilding.

In addition to the artifact data, the nature of the yard arrangement at the site supports the idea that the outbuilding was a public establishment. As Figure 2 illustrates, the outbuilding is approximately 55 feet east of the main house, within the fenced yard. The fencing arrangement, however, does not run to the corners of the building as might be expected. Instead, several generations of paling fences originate off the southwest and southeast ends of the outbuilding structure, extending southward for twenty or more feet before turning. Such a layout enclosed a larger area of yard but, more obviously, created a fenced corridor or access route approaching the south door of the building. The pattern of this fencing would have made little sense if the south doorway was used by van Sweringen and his servants, since it more than doubles the walking distance to the main house. A door on the west side, facing the main house, would have been more efficient, and the artifact distributions suggest that a door did exist on that side.

Why, then, a door and fenced corridor on the south side of the building? A secondary road or path seems to have run along the southern edge of van Sweringen's lot, connecting Aldermanbury Street with Middle Street. Archaeological traces of fences at both the outbuilding and the main dwelling lie along this roadway. Hence, individuals using this route could have entered the outbuilding by the fenced pathway extending from the south side of that structure.

Given all the archaeological findings, it is suggested that some sort of public drinking establishment stood on van Sweringen's lot and that this was the "Coffee House" referred to in his will (van Sweringen 1698). No equipment for the serving of exotic beverages such as coffee, tea or chocolate is listed in van Sweringen's inventory

but these drinks can, of course, be made and served without any special equipment. Furthermore, it is likely that van Sweringen, who was astute at providing quality services to Maryland planters, employed the term to connote a stylish place for persons to drink, smoke and converse, without regard to the types of beverages that were served. Fragments of fine tin-glazed fireplace tiles, plaster and window glass found at the outbuilding suggest it was a well-appointed and comfortable structure. Van Sweringen was already operating the most exclusive lodging house in the colony and may have established a coffee house to increase his business. The coffee house would have provided a good meeting place for planters, factors and other travelers to St. Mary's City. Current news, such as the price of tobacco, political information and other topics, may have also been provided at such an establishment.

Such an interpretation cannot be proven beyond all doubt, but the archaeological evidence and documentary reference to a coffee house are highly suggestive. It is important to note that these findings, which provide new and very important data about the site and the institutions in 17th century St. Mary's City, were revealed only through the study of plow zone artifacts. The subsurface features at the outbuilding contained very few materials. Without the information recovered from the plow zone, the interpretation of the structure would have been quite different. This exercise thus reveals that midden content can vary significantly between structures at a site and that the plow zone artifacts can provide essential data for discovering how buildings were used.

Spatial Variation in Midden Content at the Main House

Comparison of the outbuilding and dwelling assemblages demonstrates that significant differences apparently linked to functional variation are evident between structures in the archaeological record. Another subject necessary to consider is how the composition of different middens at the main dwelling varies and what insight this pro-

vides into the organization of activities within a single household. Analysis must necessarily proceed with caution because of the close proximity of the main building, dairy and kitchen and the existence of overlapping middens. Only those middens which could be tightly dated to Phase 1 or Phase 2 with minimal overlap were chosen for further study. Overlapping middens present an analytic problem, particularly at sites occupied for long periods of time, and are not discussed here.

Phase 1

The large, widespread Phase 1 midden west of the kitchen structure was divided into two areas for purposes of analysis, excluding an area overlapped by a Phase 2 midden. These include the area immediately adjacent to the kitchen (A) and the area west of the main structure (B) (cf. Figure 7). A midden south of the dwelling (C) also dates to this period and is included in the study. Proportions of pipes, bottle glass and ceramic fragments in each midden are presented in Table 6.

Artifact density ranged from 70.6 to 121 artifacts per 25 square feet of plow zone. The majority of refuse appears to have been deposited in Midden A, off the west end of the dwelling. The lowest number of artifacts occurred in Midden C, south of the structure. Proportions of total ceramics between these deposits are similar, with no statistically significant variation, although the midden south of the structure contains a slightly larger percentage. The midden deposits adjacent to the kitchen and south of the dwelling both contain comparable proportions of tobacco pipes ($\chi^2=0.28$; $df=1$) and bottle glass fragments ($\chi^2=0.69$; $df=1$). Midden B, west of the dwelling, contains fewer pipes and the largest percentage of bottle glass.

Again, ceramics were sub-divided to investigate differences in the distribution of types (Table 7). Ceramics are distributed fairly evenly among the Phase 1 middens with no statistically significant differences between them. This overall consistency suggests that the site's 17th century occupants deposited ceramics rather uniformly in a

TABLE 6
COUNTS AND PROPORTIONS OF ARTIFACTS AND BONE DENSITY PER 25 SQUARE FEET OF
PLOW ZONE FROM PHASE 1 MIDDEN SAMPLES

	Midden A		Midden B		Midden C		Total	
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
Artifact Type:								
Tobacco Pipes	295	34.5	64	26.4	69	32.5	428	32.7
Bottle Glass	188	22.0	73	30.2	41	19.4	302	23.1
Ceramics	373	43.6	105	43.4	102	48.1	580	44.3
Total	856	100.1	242	100.0	212	100.0	1310	100.1
Bone Density per 25 square feet of plow zone	86 fragments		72 fragments		18 fragments			

TABLE 7
COUNTS AND PROPORTIONS OF CERAMICS BY TYPE FROM PHASE 1 MIDDEN SAMPLES

	Midden A		Midden B		Midden C		Total	
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
Ceramic Type:								
Chinese Porcelain	4	1.1	—	0.0	1	1.0	5	0.9
Tin-glazed Earthenwares	105	28.2	22	21.0	24	23.5	151	26.0
Other Imported Fine Wares	94	25.2	34	32.4	31	30.4	159	27.4
Imported Coarse Wares	48	12.9	15	14.3	16	15.7	79	13.6
Colonial Coarse Wares	122	32.7	34	32.4	30	29.4	186	32.1
Total	373	100.1	105	100.1	102	100.0	580	100.0

widespread midden west and south of the kitchen and main house during Phase 1. Assuming the materials in these middens derived from the structures with which they are most closely associated, there is little artifactual evidence for functional variation between the main structure and the kitchen during Phase 1.

The frequency of bone fragments among the Phase 1 middens was also calculated, but not included in the total artifact proportions. Rather, density of fragments per 25 square feet of plow zone was determined (Table 6). Animal species, bone type, age at death and soil acidity are major factors affecting bone preservation, especially in plowed soils. Therefore, bone density is believed to be a more reliable indicator for studying midden composition among closely spaced buildings, with preservation biases having no effect on the proportions of other artifact categories.

Bone densities exhibit significant variation in

the distribution of bone between the Phase 1 middens. Midden B, located west of the dwelling, and Midden A, next to the kitchen, yielded similar densities of bone, with an average of 86 and 72 fragments, respectively. In contrast, the midden deposit south of the dwelling (C) contains very little bone, with an average of only 18 fragments per 25 square feet. The small amount of bone in Midden C could be due to the entry way located there. Table waste may have been returned to the kitchen for final disposal, or deposited further from the structures. Midden C also contains the smallest density of total artifacts (70.6) of the Phase 1 middens. Although refuse was dumped out the front door, the quantity was apparently smaller than in the other two middens. The similar densities of bone in Middens A and B indicate that refuse from general food preparation and consumption activity was deposited in both areas. Analysis of the bones could provide further insight

TABLE 8
 COUNTS AND PROPORTIONS OF ARTIFACTS AND BONE DENSITY PER 25 SQUARE FEET OF
 PLOW ZONE FROM PHASE 2 MIDDEN SAMPLES

Artifact Type:	East Midden D		North Midden E		North Midden F		North Combined		Total	
	Count	Percent	Count	Percent	Count	Percent	Count	Percent	Count	Percent
Tobacco Pipes	304	18.4	93	28.8	59	22.6	152	26.0	456	20.4
Bottle Glass	629	38.0	103	31.9	100	38.3	203	34.8	832	37.2
Ceramics	721	43.6	127	39.3	102	39.1	229	39.2	950	42.4
Total	1654	100.0	323	100.0	261	100.0	584	100.0	2238	100.0

Bone Density per 25 square
 feet of plow zone

47 fragments 66 fragments 16 fragments

concerning midden composition; unfortunately, the plow zone faunal material is so broken that identification is difficult and often impossible. Nonetheless, significant patterning in bone density between these middens is still apparent, despite several centuries of plowing.

Refuse in Midden A, west of the kitchen, most likely derived from activities conducted in that structure, based on the presence of a door and path from the south side of the kitchen. Midden C is a short distance from a doorway located on the south side of the dwelling and is a likely product of activities within that structure. Midden B, located near the edge of the river bank, could have derived from either building. The overall lack of distinction between the middens associated with the kitchen and dwelling, aside from the much smaller amount of bone in Midden C, suggests that similar activities were performed in both structures. Perhaps a pattern in seasonal use of structures is reflected here. The kitchen may have been used most frequently during the summer months, removing a source of intense heat from the dwelling during that time of year. In the colder winter months, food preparation and cooking might have occurred more often in the main house to better heat the living space and make more efficient use of fuel. Additional comparative research is necessary to establish seasonality as a factor in building use.

Phase 2

Little variation in midden content was observed in the 17th century deposits located west and south of the main dwelling complex. During the 18th century, these areas were kept relatively clean while the previous clean areas north and east of the dwelling became loci of trash disposal. The compositions of three discrete 18th century middens located in these yards (Figure 12, D, E, F) were analyzed to assess any differences in midden content.

Middens D, E and F were initially examined for variation in composition between the east (D) and north (E,F) yards (Tables 8–9). Artifact density per 25 square feet of plow zone is slightly larger in the east yard, with an average of 138 artifacts compared to 117 artifacts on the northern side. The north yard deposits contain a significantly larger proportion of tobacco pipe fragments with slightly smaller proportions of ceramic and bottle glass fragments than found in the east.

Ceramic types were also analyzed, and in contrast to the homogeneity of the Phase 1 middens, significant variation was observed between the two yards. Midden D, located off the east end of the dwelling, contains almost 10 percent more tingly glazed earthenwares ($\chi^2 = 5.44$; $df = 1$) and eleven times more porcelain than was recovered from the north yard ($\chi^2 = 7.97$; $df = 1$). The middens north

TABLE 9
COUNTS AND PROPORTIONS OF CERAMICS BY TYPE FROM PHASE 2 MIDDEN DEPOSITS

Ceramic Type:	East Midden D		North Midden E		North Midden F		North Combined		Total	
	Count	Percent	Count	Percent	Count	Percent	Count	Percent	Count	Percent
Chinese Porcelain	31	4.3	1	0.8	—	0.0	1	0.4	32	3.4
Tin-glazed Earthenwares	252	35.0	45	35.4	16	15.7	61	26.6	313	32.9
Other Imported Fine Wares	142	19.7	29	22.8	24	23.5	53	23.1	195	20.5
Imported Coarse Wares	114	15.8	21	16.5	34	33.3	55	24.0	169	17.8
Colonial Coarse Wares	182	25.2	31	24.4	28	27.5	59	25.8	241	25.4
Total	721	100.0	127	99.9	102	100.0	229	99.9	950	100.0

of the structure, on the other hand, yielded significantly more important coarse wares ($\chi^2 = 8.00$; $df = 1$). No statistically significant variation is evident among proportions of other imported fine wares ($\chi^2 = 1.27$; $df = 1$) or colonial coarse wares ($\chi^2 = 0.02$; $df = 1$). The differences in midden composition between the north and east yards occur primarily in frequencies of porcelain, tin-glazed earthenwares and imported coarse wares.

For a closer examination of this variation, the north yard was further divided into two middens, based on fence-line data and the SYMAP distribution maps (cf. Figure 12). Midden E, in the northwest portion of the yard behind the kitchen, and Midden F, north of and probably associated with the dairy, contain similar frequencies of ceramics ($\chi^2 = 1.69$; $df = 1$). A larger proportion of tobacco pipe fragments was recovered from Midden E, but a greater percentage of bottle glass came from Midden F. Glass bottles were likely stored in the brick-lined dairy cellar, and this could account for the increased proportion of glass in this midden. Examination of the site excavation records revealed that during the excavation of the cellar fill, an occupation layer was found at the bottom that contained large numbers of bottle glass sherds, thus corroborating this hypothesis.

The distribution of ceramic types reveals further distinctions among middens in the north yard area. Midden E contains almost 20 percent more tin-glazed earthenware fragments than Midden F, but less than half the proportion of imported coarse wares. Again, frequencies of other imported fine

wares ($\chi^2 = 0.02$; $df = 1$) and colonial coarse wares ($\chi^2 = 0.27$; $df = 1$) exhibit little variation.

Bone fragment density per 25 square feet of plow zone was calculated and, again, displays significant variation (Table 8). The midden north of the kitchen (E) yielded the highest density of bone with 66 fragments. The midden associated with the dairy (F), on the other hand, has a density of only 16 elements. Midden D, east of the dwelling, contains an average of 47 fragments.

Comparison of these Phase 2 middens reveals important variation in artifact content. Two deposits are apparently associated directly with food preparation and consumption (D and E). They have higher bone densities, larger proportions of tin-glazed earthenwares, and smaller quantities of coarse utility wares. The distribution of ceramic types between these two middens is almost identical, with the exception of significantly more porcelain sherds present in Midden D (Fisher's Exact Probability = .03). The third deposit, Midden F is apparently a product of different activities. This midden has the highest proportion of utility wares, especially imported coarse ceramics, a significantly lower percentage of tin-glazed wares and very little bone. This midden's association with the dairy suggests that it derived more from food processing and storage activities, and the artifacts strongly support such an interpretation.

There are still notable distinctions to consider between Middens D and E, associated with food preparation/consumption. The large quantity of

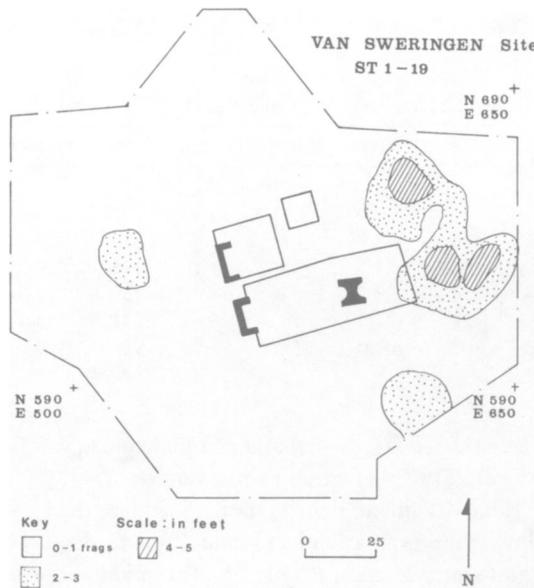


Figure 13. Distribution of Chinese porcelain.

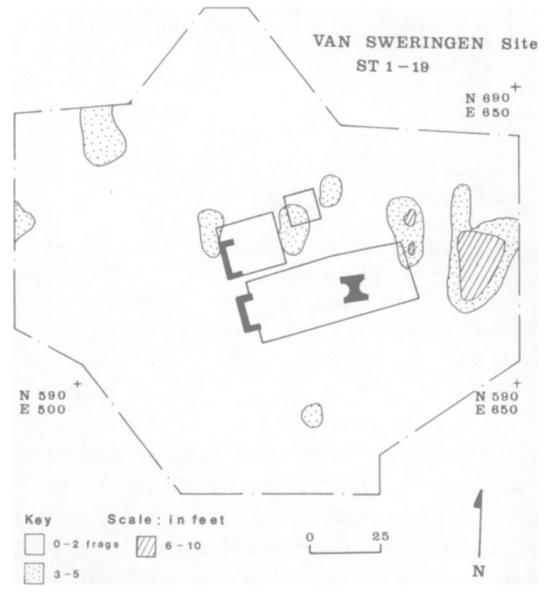


Figure 14. Distribution of table glass.

porcelain in Midden D (Figure 13) implies that many of the materials in this deposit, as compared to the kitchen midden, derived from activities having a more social character and involving the tea ceremony. Corroborating this hypothesis was the discovery in Midden D of concentrations of ornate table glass, wine bottle glass, including a number of bottle seals, and tin-glazed earthenware plate fragments (Figures 14, 15, 16). This midden also contained the most exotic ceramics recovered at the site. These are the sherds from two elaborately decorated Turkish tin-glazed coffee or tea cups (Figure 17). These are the first Turkish ceramics found in colonial Maryland, and this is one of the few times this ware has been recovered in North America. This discovery, along with the other evidence, indicates that Midden D largely derived from social activities by persons of high status, probably conducted in the east room of the dwelling. Dating of the midden to the c. 1700–1730 period corresponds precisely with the occupation of the two most wealthy individuals at the site—Joseph van Sweringen and William Deacon.

Conclusion

Surface midden deposits associated with historic sites are often considered a homogeneous mix of materials from many different activities. Given the processes of midden formation as well as the later plowing of the site, it is inevitable that some mixture and blurring of materials will occur. Nevertheless, as demonstrated here, the activities producing middens can be distinctive enough that specific artifact patterns are often recognizable. Variation relating to status, to function and to time of deposition can be observed in plowed middens around a building as well as between separate structures.

The analysis of the distributions and associations of midden artifacts at the van Sweringen site has yielded valuable insight regarding the way this site was structured and used over time. Data recovered from midden contexts, even if plowed, are essential and irreplaceable for answering many questions about site functions and activities. Indeed, many of the interpretations of the van

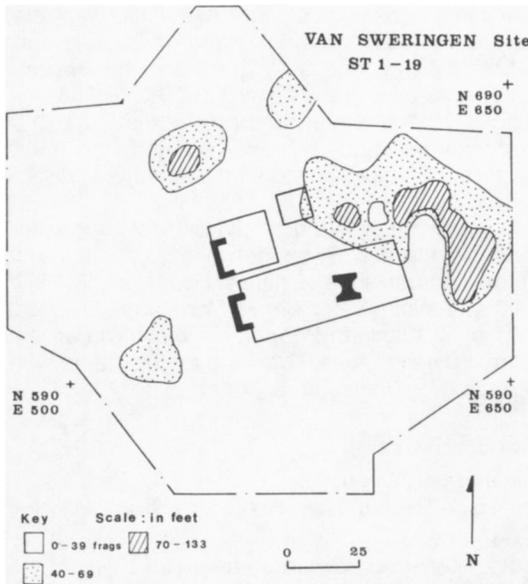


Figure 15. Distribution of bottle glass.

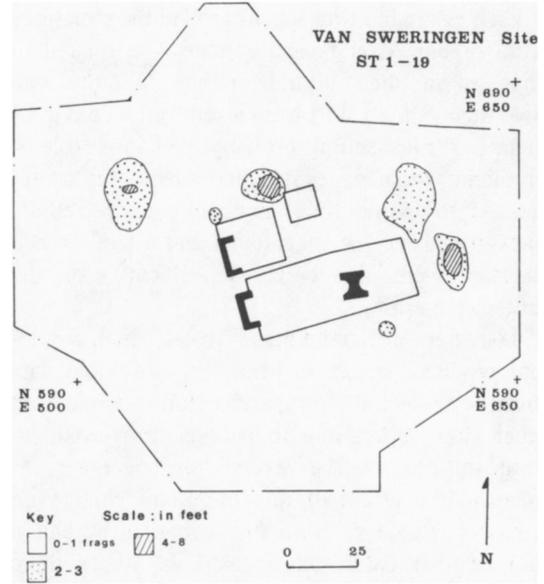


Figure 16. Distribution of ceramic plate fragments.



Figure 17. Early 18th century Turkish tin-glazed earthenware coffee cup fragments recovered from the van Sweringen site.

Sweringen site would have been impossible without such information.

Factors influencing human behavior in a spatial context are mostly cultural. Explaining why specific patterns or changes are found at archaeological sites is difficult, however, because the cultural processes that produce them are usually very

complex phenomena, and human behavior is seldom controlled by a single variable. The change from homogeneous midden deposits to discrete and distinct depositions, for example, is likely related to several factors. During the 17th and early 18th centuries in the Chesapeake region, the process of colonization was at work in this European frontier. An integral component of colonization is a trend through time towards increasingly complex and specialized behavior as the new society develops and matures (Thompson 1973). Archaeological evidence of this trend has been identified in other aspects of Chesapeake culture (Carson et al. 1981; Miller 1984), and the van Sweringen data suggest that this process may also be reflected in disposal behavior.

Also operative during this period is a shift in perceptions, values and style associated with the rise of the so-called Georgian order in the early 18th century. The changes identified at the van Sweringen site, from broad homogenous middens to smaller, separate depositions, could also be due to the Georgian emphasis upon greater formality and segmentation in activities, resulting in these kinds of depositions.

Changes in the way spaces around the structures were organized and used can also be related to changes in the cultural setting. At the van Sweringen site, a shift from a semi-urban environment to a rural setting probably had some role in producing the changes detected during this analysis. At the same time, a change in the ethnic backgrounds of the inhabitants and a shift in site function were also certainly influential on the artifact patterning.

To better understand those factors which control and produce change in behavior, additional data must be collected. Comparable information from other sites undergoing transitions from urban to rural settings, or the reverse, are necessary to measure the effect of this important change on behavior. Evidence from sites occupied by Dutch and English colonists, as well as other ethnic groups, is needed to reveal the impact of cultural heritage on spatial structure and use. Much more information is also required from sites which served known functions so that the influence of this variable can be recognized. Only through such comparative research can the factors which structure and change the spatial aspects of human behavior be identified, their power assessed and the significance of specific associations or pattern of materials determined. Such research is essential for placing all components of a site into both spatial and temporal contexts, so that they can be fully understood as evolving, functioning entities.

This preliminary study of the van Sweringen site clearly demonstrates the potential of midden research, even at plowed sites. The results presented here emphasize that there is more to sites than architectural remains and trashpits. Removing the overlying plowed soils at historic sites without first sampling is highly destructive, and results in the loss of an important and irreplaceable component of America's heritage.

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REFERENCES

- ARCHIVES of MARYLAND
1885 Volume VII. Maryland Historical Society, Baltimore.
- CARR, LOIS G.
1972 Garret van Sweringen—Biographical File. Ms. on file, Historic St. Mary's City. St. Mary's City, Maryland.
- CARSON, CARY, NORMAN F. BARKA, WILLIAM M. KELSO, GARRY WHEELER STONE, and DELL UPTON
1981 Impermanent Architecture in the Southern American Colonies. *Winterthur Portfolio* 16 (2 and 3):135-96.
- DORAN, J. E., and F. R. HODSON
1975 *Mathematics and Computers in Archaeology*. Harvard University Press, Cambridge, Massachusetts.
- DOUGENIK, JAMES A., and DAVID E. SHEHAN
1979 *SYMAP User's Reference Manual*. Laboratory for Computer Graphics and Spatial Analysis, Harvard University, Cambridge, Massachusetts.
- FADELEY, STEPHEN M., and HENRY M. MILLER
1980 Bottle Glass from the St. John's Site. Ms. on file, St. Mary's City Commission, St. Mary's City, Maryland
- HIETALA, HAROLD, ed.
1984 *Intrasite Spatial Analysis in Archaeology*. Cambridge University Press, New York.
- HARRINGTON, J.C.
1954 Dating Stem Fragments of Seventeenth and Eighteenth Century Clay Tobacco Pipes. *Quarterly Bulletin of the Archaeological Society of Virginia* 9 (1):10-14.
- HODDER, IAN
1978 *Spatial Organisation of Culture*. Cambridge University Press, New York.
- HODDER, IAN and CLIVE ORTON
1976 *Spatial Analysis in Archaeology*. Cambridge University Press, New York.
- HOOCH, PIETRE DE
1984 *Courtyard with an Arbor and Drinkers, 1658*. In *Masters of Seventeenth Century Dutch Genre Paint-*

- ing*, edited by Philadelphia Museum of Art, University of Pennsylvania Press, Philadelphia.
- KEELER ROBERT W.**
 1978 *The Homelot on the Seventeenth Century Chesapeake Tidewater Frontier*. Unpublished Ph.D. dissertation, Department of Anthropology, University of Oregon.
- KELSO, WILLIAM, and EDWARD CHAPPEL**
 1974 Excavation of a Seventeenth Century Pottery Kiln at Glebe Harbor, Westmoreland County, Virginia. *Historical Archaeology* 8:53–63.
- KING, DORIS E.**
 1976 *The Colonial Tavern as Cradle of the American Revolution*. Paper presented to the Organization of American Historians, St. Louis, Missouri.
- MILLER, HENRY M.**
 1983 *A Search for the "City of Saint Maries": Report on the 1981 Excavations in St. Mary's City, Maryland*. St. Maries City Archaeology Series No. 1, St. Mary's City, Maryland.
 1984 *Colonization and Subsistence Change on the 17th-Century Chesapeake Frontier*. Unpublished Ph.D. dissertation, Department of Anthropology, Michigan State University.
- O'BRIEN, MICHAEL J., and DENNIS E. LEWARCH**
 1981 *Plowzone Archaeology: Contributions to Theory and Technique*. Vanderbilt University *Publications in Anthropology* No. 27. Nashville, Tennessee.
- ROTH, RODRIS**
 1961 *Tea Drinking in 18th-Century America: Its Etiquette and Equipage*. U.S. National Museum *Bulletin* 225. Smithsonian Institution, Washington, D.C.
- SIEGEL, STANLEY**
 1956 *Nonparametric Statistics for the Behavioral Sciences*. McGraw-Hill Book Col., New York.
- STONE, GARRY W.**
 1977 *Dating Seventeenth-Century White Clay Tobacco Pipe Stem Groups: A Proposal to the Seventeenth Century Study Group*. Ms. on file, St. Mary's City Commission, St. Mary's City, Maryland.
 1983 *Garret van Sweringen's 'Council Chamber' Lodging House (1677–1699): An Historic Structure Report and Restoration Analysis*. Manuscript on file, Historic St. Mary's City, St. Mary's City, Maryland.
- THOMPSON, STEPHEN I.**
 1973 *Pioneer Colonization: A Cross-Cultural View*. Addison-Wesley Module in Anthropology, No. 33.
- VAN SWERINGEN, GARRET**
 1698 Will. Wills, Liber VI, foilo 209–10. Maryland Hall of Records, Annapolis.
- WHALLON, ROBERT**
 1973a *Spatial Analysis of Paleolithic Occupation Floors*. In *The Explanation of Culture Change*, edited by Colin Renfrew. Duckworth and Co., London.
 1973b *Spatial Analysis of Occupation Floors I: Application of Dimensional Analysis of Variance*. *American Antiquity* 38(3):266–278.
 1974 *Spatial Analysis of Occupation Floors II: The Application of Nearest Neighbor Analysis*. *American Antiquity* 39:16–34.
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