

## INTER-SITE ANALYSES AND INTERPRETATIONS

Archaeological data from the Cazier site on spatial organization, site structure, and consumption habits was used for comparisons with other sites in the Middle Atlantic Region with similar temporal periods of occupation, site function, or inhabitants. The results of the comparisons were then related to regional historical archaeological issues concerning the patterns and processes of social and cultural change. The Data Recovery Plan listed several nineteenth century tenant sites, from urban as well as agricultural contexts, to be used in the inter-site analysis of the Cazier site. These sites included the Robert Ferguson site (Coleman et al. 1983), the Howard-McHenry Tenancy (Hurry and Kavanaugh 1983), the late nineteenth century occupation of the Hawthorn site (Coleman et al. 1984), the Block 1191 investigations in Wilmington (Beidleman et al. 1986), the Temple site (Hoseth et al. 1990), and the Williams II occupation of the Williams site (Catts and Custer 1990). Only the Block 1191 investigations in Wilmington (Beidleman et al. 1986) were not used in this analyses since the data was not comparable. In addition to the above mentioned sites, other sites that contain comparable data were included in the different levels of inter-site analysis. These sites included the black occupation of the Dickson site—referred to as the Dickson II site (Catts, Hodny and Custer 1989), the Grant Tenancy site (Taylor et al. 1987), the Heisler Tenancy site (Catts, Hodny and Custer 1989), the Allen site (Basalik et al. 1988), Lots 304 and 306 King Street (Berger and Associates, Inc. 1985), and the Fischer site (Hurry 1982).

The following discussion presents a summary description of each of the sites used in the comparisons. For further site specific information, reference should be made to the original publications.

The Hawthorn site was a nineteenth century owner-occupied farm, consisting of 111 acres. The occupants of the Hawthorn site were wealthy white farmers ranking in the upper four to twelve percent of the taxable local population through time (Coleman et al. 1984).

The Williams site investigations in Glasgow, Delaware revealed a black laborer occupation (Sidney Stump). The archaeological information, along with the archival research of Sidney Stump's ownership of the property, revealed the relatively low socio-economic status of the site occupants (Catts and Custer 1990). This period will be referred to as the Williams II occupation within this analyses.

The Dickson II house, a tenant dwelling located near the village of Christiana, Delaware, was inhabited by a black family clearly of the lowest social station within the black community, relying on rag picking for income and wild game for much of the family's diet (Catts, Hodny and Custer 1989).

The Grant Tenancy site was an early nineteenth century tenant site in Stanton, Delaware. Based on ceramic comparison and faunal analysis, the site appeared to have been occupied by individuals of a higher economic status (Taylor et al. 1987).

The Heisler Tenancy site near Christiana, Delaware was owned by William Egbert Heisler, a prominent white landholder in the mid-nineteenth century. The site was occupied by white tenants from the 1850's to 1887 and was black owner occupied from 1887 to the 1940's (Catts, Hodny and Custer 1989).

The Ferguson site, located between Newark and Ogletown, Delaware, was tenant occupied during the nineteenth century. The economic status of the white inhabitants at this site was unattainable due to lack of sufficient evidence to draw any clear conclusions (Coleman et al. 1983).

The Allen site was tenant house located within the Lewden-Allen farm complex in Christiana, Delaware. Documentary evidence indicated a possible black occupation of the tenant house during the latter part of the nineteenth century. The site contained high-status artifact and faunal remains. Basalik et al. (1988) concluded that the high status remains more accurately reflected the lifeways of the wealthy white family inhabiting the adjacent Lewden-Allen farm complex of which the Allen tenant site was part. The upper strata of the tenant house addition contained large amounts of bottle glass dating to the second half of the nineteenth century, with a concentration to the last quarter of the nineteenth century, provided a temporal association with the glass vessel analysis of the Cazier site.

During 1880 through 1900, lots 304 and 306 of King Street in Wilmington, Delaware, housed middle class, small scale entrepreneurs and their families. The privy, shared by the occupants of the two buildings, contained large amounts of kitchen refuse located in the night soils (Berger and Associates, Inc. 1985). The ceramic and glass vessel functions of lots 304 and 306 were used for temporal comparisons with the ceramic and glass excavated from the Cazier site, as well as the glass from the Allen site.

The Howard-McHenry site was a tenant occupied mill, that contained the mill, as well as two domestic structures and a stable. The mill was a small-scale country enterprise in operation until the 1860's or 1870's near Pikesville, Maryland. The mill was owned by well-to-do, socially well-connected white men—Cornelius Howard and James McHenry. Through documentary evidence much was known about the two owners, but very little was known about the tenants (Hurry and Kavanagh 1983).

The Fischer site was a post-bellum black residence in Anne Arundel County, Maryland. The house was built of hewn logs in the 1880's, designed to house tenants or farm laborers working on the Benjamin Lusby farm (Hurry 1982). The Phase II investigation of the Fischer site limits comparisons with the Cazier site to architectural comparison between the two black occupied tenant structures.

## ARCHITECTURAL COMPARISONS

Archaeologists have used architectural comparisons as one way to determine the socio-economic status of the sites' inhabitants. Archaeological information about structures is often the only information available on the social ranking of a site's occupants. The Cazier site dwelling and outbuildings were compared to several other excavated house sites in the area. All of the structures compared were contemporary, dwellings of either tenant or owner occupancy, both black and white, and in both urban and rural settings. Table 24 compares the first floor dimensions

TABLE 24  
 First Floor Dimension Comparisons from  
 Archaeological Sites in the Mid-Atlantic Region

SITE	TIME PERIOD	OCCUPANT STATUS	DIMENSIONS IN FEET	AREA
Hawthorn (7NC-E-46)	1738-1960	Owner	Original log 29 x 21 Frame addition 12 x 21 Frame kitchen 12 x 17	609 sq. ft. 252 sq. ft. 204 sq. ft. <b>TOTAL 1065 sq. ft.</b>
Wilson-Slack (N-6-269)	1859-1983	Owner	32 x 30	<b>960 sq. ft.</b>
Temple House (7NC-D-68)	c. 1830-1955	Tenant	Original frame 26 x 20 Frame addition 16 x 20	520 sq. ft. 320 sq. ft. <b>TOTAL 840 sq. ft.</b>
Ferguson House (N-3902)	1837-1955	Tenant	16 x 24 Addition 18 x 15	384 sq. ft. 270 sq. ft. <b>TOTAL 654 sq. ft.</b>
Williams II / Stump (7NC-D-130)	1845-1930	Owner*	27 x 17	<b>459 sq. ft.</b>
<b>Cazier Tenancy (7NC-F-64)</b>	<b>1844-1935</b>	<b>Tenant*</b>	<b>17 x 17</b> West addition 17 x 9	<b>289 sq. ft.</b> <b>153 sq. ft.</b> <b>TOTAL 442 sq. ft.</b>
Dickson II (7NC-E-82)	1845-1919	Tenant*	18 x 22	<b>392 sq. ft.</b>
Grant Tenancy (7NC-B-6)	c. 1830-1941	Tenant	16 x 15.5 East addition 6 x 16.5	248 sq. ft. 93 sq. ft. <b>TOTAL 341 sq. ft.</b>
Heisler Tenancy (7NC-E-82)	1850-1887 1887-1940	Tenant Owner*	12 x 21	<b>252 sq. ft.</b>
Fischer Site	c. 1880-1920	Tenant*	16 x 12 Shed addition 5 x 12	192 sq. ft. 60 sq. ft. <b>TOTAL 252 sq. ft.</b>

\* Black occupied

and total floor space available, including any additions to the structures. The nine houses compared with the Cazier site dwelling included three owner occupied sites: the Hawthorn House (Coleman et al. 1984), the Wilson-Slack House (Coleman et al. 1985), and the Stump occupation of the Williams House (Catts and Custer 1990). The tenant occupied houses used in this analysis included: the Temple House (Hoseth et al. 1990), the Ferguson House (Coleman et al. 1983), the Dickson II House (Catts, Hodny and Custer 1989), the Grant Tenancy House (Taylor et al. 1987), the Heisler Tenancy House (Catts, Hodny and Custer 1989), and the Fischer House (Hurry 1982) (Figure 35). Six of the dwellings (Hawthorn, Temple, Ferguson, Grant, Fischer, and Cazier) contained the structural remains of additions.

Bernard Herman's research on nineteenth century tenant houses in the Lower Delaware Valley indicated that tenant structures were generally smaller, not as valuable, and less substantially constructed than owner-occupied structures. Generally, tenant houses ranged in size from 380 to 490 square feet (Herman 1987a:64, 1987b; Stiverson 1977). Houses with more than 490 square feet of living space were considered to be large houses usually associated with owner-occupied sites.

Recent examinations of nineteenth century reform literature dealing with slave cabins and surveys of standing slave cabins in Virginia provided useful architectural information about dwellings built by whites, but inhabited by African Americans (Breedon 1980; McKee 1992; Herman 1984). The characteristics of well-constructed, single-family slave quarters included cabins built of weatherproofed logs, measuring 16' x 18' and elevated two to three feet

above the ground for ventilation and cleanliness, with a shingle roof, plank flooring, brick chimney, and sufficient windows (Breedon 1980:115). A few planters felt that brick was a preferable construction material and stoves would consume less wood than chimneys. These characteristics, among other recommendations, were discussed in numerous slave management journals written by slave owners, planters, and agricultural reformers in the first half of the nineteenth century. The occupants of these cabins were not consulted for their opinions about construction, size, convenience, crowding or hygiene.

Southern planters weren't the only group constructing one-room quarters during the nineteenth century. The Anglo-American building tradition of one-room or hall plan was one of the major building types in the eastern and southern United States from the seventeenth century onwards (Herman 1984:267). Labor class dwellings of the late eighteenth and nineteenth century were of similar construction as southern slave quarters. An 1834 monograph describing labor class housing indicated that the cottages were single rooms, measuring 18' x 14' or 15' (Herman 1984).

Several observations were made based on house dimensions, ranked in Table 24 from the largest to the smallest house. Herman (1987b) stated that for the housing stock of the Lower Delaware Valley, the dimension of 490 square feet of living space was a dividing point between large and small houses. All of the dwellings that had less than 490 square feet of first floor space in this comparison were tenant occupied, with the exception of the Williams II house.

Three of the five black occupied houses (Williams II, Cazier, and Dickson II) were very similar in size, ranging from 392 to 459 square feet. The Fischer House and the Heisler Tenant House was much smaller in size (252 square feet) than the other black occupied houses listed above. All five of these sites clearly fell at the lower end of the scale for all housing stock.

Herman (1987a) suggested that two categories of tenant houses existed: the farm manager, whose house was larger and more substantial, and the resident laborer, whose house would be smaller and ephemeral. The Temple House, although larger than any of the compared tenant houses, was occupied by a farm manager working for absentee landowners. The Cazier house was occupied by resident laborers (two known black laborers) and was smaller, but built of the same brick as the Cazier Mansion. Henry Cazier built the house near the entrance to the lane leading to his mansion for use by a servant or tenant family. Perhaps Cazier, being a well-read individual, adopted some of the construction methods described in agricultural reform journals of day. Perhaps he read the 1834 labor class housing monograph (Herman 1984) or even read the journal containing the advice of a planter/physician from Mississippi "One sixteen or eighteen feet square is not too large for a man and a woman and three or four small children..." (Breedon 1980:120). Although the dwelling was made of the same brick as his mansion house, Cazier planned this house to measure 17' x 17' square. This "gate-house" was the first feature of Cazier's grand estate that guests would see before they passed through the nearby wooden gates or the lane that led to his mansion. Like the cabins built in the south by planters for their slaves, the Cazier site dwelling reflected the status of Henry Cazier, rather than the status of the occupants of the dwelling.

Herman (1987a) stated that tenant sites generally lacked substantial outbuildings, which would instead be located at the main farm. Archaeological evidence of one, possibly two small outbuildings and two privies at the Cazier site supported this theory. The yard area was less than one quarter of an acre. All outbuildings, such as barns, stables, sheds, dairies and smokehouses necessary for the large farming operations of Cazier's acreage were at the main farm located less than one quarter of a mile from the tenant house. In comparison, the owner occupied Wilson-Slack complex consisted of numerous outbuildings (a blacksmith shop, granary, chicken house, barn, machine shop/grist mill, and one unknown structure) located on a two acre property. The other white owner occupied property, the Hawthorn site, located on a 111 acre tract, consisted of a barn, milkhouse, granary and shed, corn crib, six chicken houses, a toolshed, and a woodbox.

With the exception of the Temple site, the tenant occupied sites revealed a decrease in number of outbuildings compared to the owner occupied sites. Excavations at the farm manager occupied Temple site revealed the remains of a house, and six (possibly seven) outbuildings, a well, and two privies. The Ferguson site contained the remains of two outbuildings, as did the Grant Tenancy site. No outbuildings were found at the Dickson II site. One outbuilding, used for storage of root crops, was present at the Fischer site. Although Phase II testing at the Heisler Tenancy site revealed no structural features associated with outbuildings, historical documentation listed outbuildings present on the property.

The comparison of the Cazier site dwelling with other archaeological sites demonstrates that a relative ranking of dwelling size can be conducted using archaeological information about structures. The analysis can provide one indication of the relative socio-economic status, and perhaps even ethnicity, of the site's inhabitants. The dwelling size ranking should not be used alone to determine economic status and ethnicity, but instead be used in conjunction with archival documents, ethnographical information, and artifact analyses.

## **VESSEL FUNCTION ANALYSIS**

The Cazier site's reconstructed ceramic vessels from Feature 32 (Cellar), Feature 170 (nineteenth century privy), and Features 37, 37A, and 65 (Trash Midden) were analyzed according to several functional categories. Significant differences in functional distribution reflect important changes in domestic economy. The categories were then compared and contrasted with other assemblages to distinguish general trends and characteristics of vessel use and function (Otto 1984; Kelso 1984). Vessel form frequencies identified diachronic and spatial differences in lifestyles between social and economic classes (Kelso 1984). The purpose of this study, in accordance with the state historical archaeological management plan (De Cunzo and Catts 1990), was to look at household social and economic strategies and then to place the households into their communities and cultures.

TABLE 25  
Percentage Values and Vessel Frequencies

	CAZIER	TEMPLE	WILLIAMS II	DICKSON II	HEISLER	KING
Flatware	33 (28%)	13 (31%)	91 (37%)	14 (29%)	108 (38%)	9 (41%)
Hollowware	85 (72%)	29 (69%)	153 (63%)	34 (71%)	173 (62%)	13 (59%)
Preparation / storage	13 (65%)	12 (21%)	88 (36%)	13 (29%)	28 (18%)	1 (33%)
Serving	7 (35%)	44 (79%)	156 (64%)	32 (71%)	132 (83%)	2 (67%)
Cups	10 (77%)	3 (100%)	13 (87%)	10 (100%)	60 (97%)	7 (100%)
Mugs / jugs	3 (23%)	0 (0%)	2 (13%)	0 (0%)	2 (3%)	0 (0%)

Note: Percentages reflect the frequency of flatware to hollowware, preparation / storage to serving, and cups to mugs / jugs at each site.

Values represent total vessels recovered from the given site.

The categories compared were flatwares to hollowwares, serving vessels to storage/preparation vessels, and cups to ceramic mugs and jugs. At most residential sites, the flatware/hollowware ratio was indicative of food consumption and dietary patterns. Flatwares include plate, saucer, and platter forms associated with the serving and consumption of foods. The hollowware forms (more versatile than flatwares) represented in the comparisons included bowls, baking dishes, pots, jugs, mugs, tea cups, tea pots, tureens, and butter pots. Higher proportions of flatwares suggested a greater household investment in tablewares and a diet that included prime meat cuts, such as steaks and roasts. Higher proportions of hollowware suggested a diet of less expensive soups, stews, and porridges. Thus, in this comparison a higher percentage of flatwares was assumed to represent a higher social or economic status for the site's inhabitants.

Regional historical archaeological sites, with similar occupation dates, functions, and/or ethnic group, and comparable data chosen for use in the ceramic vessel analysis included the Temple site (Hoseth et al. 1990), the Williams II site (Catts and Custer 1990), The Dickson II site (Catts, Hodny and Custer 1989), the Heisler site (Catts, Hodny and Custer 1989), and Lots 304 and 306 King Street excavations in Wilmington, Delaware (Berger and Associates 1985).

When comparing the vessel assemblages among different archaeological sites, it is important to systematically compare the frequencies of the vessel types among all sites to correctly assess their similarities and differences. In order to avoid underestimating assemblage variability, a difference-of-proportion test (Parsons 1974:445-449) was applied to paired combinations of the sites for each of the vessel categories.

Research at African-American archaeological sites (Deetz 1977; Otto 1984; Baker 1980) has suggested a distinctive pattern of ceramic use at black occupied sites, consisting of the presence of serving bowls exceeding 40 percent of the artifact assemblage. By examining sites with the temporal range of the nineteenth century and comparing artifact categories from known black occupations, as well as white-occupied sites the hypothesis of an existing universal African American pattern was addressed by the ceramic assemblage recovered from the Cazier site.

Table 25 lists the percentage values and vessel frequencies used in the comparison, and Table 26 shows all of the test statistics for each of the paired site comparisons for each paired vessel category. Test statistic values greater than 1.96 indicated that a significant difference-of-proportion existed for those categories. Table 27 shows rankings of the sites for each vessel form category and Table 28 shows the frequencies of significant similarities among each pair of sites; higher values indicate sites that are most similar. Out of 84 pair-wise comparisons, approximately 20 percent exhibited significant differences.

TABLE 26  
Ceramic Vessel Form Comparisons  
Difference-of-Proportion Tests

CAZIER	KING	HEISLER	DICKSON II	WILLIAMS II (STUMP OCCUPATION)	TEMPLE
Flatware	1.22	2.00*	0.16	1.75	0.37
Hollowware	1.22	2.00*	0.16	1.75	0.37
Storage / prep.	1.05	4.78*	2.74*	2.56*	3.56*
Serving	1.05	4.78*	2.74*	2.56*	3.56*
Cups	1.38	2.61*	1.63	0.67	0.92
Mugs / jugs	1.38	2.61*	1.63	0.67	0.92
<b>TEMPLE</b>					
Flatware	0.80	0.93	0.18	0.79	
Hollowware	0.80	0.93	0.18	0.79	
Storage / prep.	0.48	0.65	0.86	2.10*	
Serving	0.48	0.65	0.86	2.10*	
Cups	--	0.32	--	0.67	
Mugs / jugs	--	0.32	--	0.67	
<b>WILLIAMS II (STUMP OCC.)</b>					
Flatware	0.34	0.27	1.07		
Hollowware	0.34	0.27	1.07		
Storage / prep.	0.10	4.03*	0.93		
Serving	0.10	4.03*	0.93		
Cups	1.10	1.58	1.20		
Mugs / jugs	1.10	1.58	1.20		
<b>DICKSON II</b>					
Flatware	0.97	1.23			
Hollowware	0.97	1.23			
Storage / prep.	0.16	1.69			
Serving	0.16	1.69			
Cups	--	0.58			
Mugs / jugs	--	0.58			
<b>HEISLER</b>					
Flatware	0.23				
Hollowware	0.23				
Storage / prep.	0.71				
Serving	0.71				
Cups	0.48				
Mugs / jugs	0.48				

\* Significant difference-of-proportion

TABLE 27

Rankings of Sites by Ceramic Vessel Form Categories

FLATWARE	HOLLOW	STORAGE/ PREPARATION	SERVING	CUPS	MUGS/ JUGS
King	<b>Cazier</b>	<b>Cazier</b>	Heisler	Dickson II	<b>Cazier</b>
Heisler	Dickson II		Temple	King	<b>Williams II</b>
Williams II	Temple	<b>Williams II</b>	Dickson II	Temple	
Temple	<b>Williams II</b>	King	King	Heisler	Heisler
Dickson II		Dickson II		<b>Williams II</b>	Dickson II
	Heisler	Temple	<b>Williams II</b>		Temple
<b>Cazier</b>	King	Heisler	<b>Cazier</b>	<b>Cazier</b>	King

TABLE 28

Summary of Significant Similarities  
Among Ceramic Vessel Form Comparisons

	KING	CAZIER	TEMPLE	WILLIAMS II (STUMP OCC.)	DICKSON II
CAZIER	--				
TEMPLE	4	1			
WILLIAMS II (STUMP OCC.)	3	2	4		
DICKSON II	5	1	5	4	
HEISLER	5	--	5	2	4

\*Maximum value is 6

The Cazier ceramic vessel assemblage was expected to resemble the vessel assemblages of sites with equivalent status and ethnic group. However, Cazier was the least similar of all sites compared (Table 29). The Cazier ceramic assemblage was similar to only three of the six sites (the Temple, Dickson II, and Williams II sites; Table 30). The assemblage from the privy at 304 and 306 King Street was very similar to all the sites, except for the Cazier site.

TABLE 29  
Percentage Values and Vessel Frequencies

	CAZIER 1850 - 1925	304 & 306 KING STREET 1880 - 1900 FEATURE 10	ALLEN SITE 1850 - 1900
Beverage	28 (24%)	4 (4%)	49 (50%)
Food	36 (30%)	4 (4%)	27 (27%)
Medicinal	25 (21%)	35 (35%)	22 (22%)
Household	30 (25%)	58 (57%)	1 (1%)
Alcoholic beverage	18 (64%)	0 (0%)	9 (18%)
Non-alcoholic beverage	10 (36%)	4 (100%)	40 (82%)
Drinking	8 (22%)	21 (84%)	0 (0%)
Beverage	28 (78%)	4 (16%)	49 (100%)
Drinking	8 (57%)	21 (91%)	0 (0%)
Tableware	6 (43%)	2 (9%)	0 (0%)

TABLE 30  
Glass Vessel Comparisons, Difference-of-Proportion Tests

CAZIER	ALLEN	KING	ALLEN	KING
Beverage	3.99*	4.10*	Beverage	7.30*
Food	0.48	5.04*	Food	4.55*
Medicinal	0.22	2.26*	Medicinal	1.95
Household	5.09*	4.86*	Household	8.75*
Alcoholic beverage	4.06*	2.42*	Alcoholic beverage	0.94
Non-alcoholic beverage	4.06*	2.42*	Non-alcoholic beverage	0.94
Drinking	3.47*	4.75*	Drinking	7.58*
Beverage	3.47*	4.75*	Beverage	7.58*
Drinking	--	2.44*	Drinking	--
Tableware	--	2.44*	Tableware	--

\* = significant difference of proportion

Specifically in the flatware/hollowware comparison the Cazier site tenants discarded a low proportion of flatwares, a pattern not identified in the other assemblages. Note that this pattern was clearly reflected in the difference-of-proportion results, but not reflected by the straight percentage values (Table 29). The corresponding high proportion of hollowwares discarded by the Cazier tenants was similar to the discard pattern observed at the Dickson II, Temple, and Williams II sites. A low proportion of flatwares to hollowwares at tenant occupied and black owner occupied sites, was reflected in this analysis, probably indicating the sites' occupant consumption habits and generally lower economic status.

TABLE 31  
 Ranking of Sites by Glass Form Categories

BEVERAGE	FOOD	MEDICINAL	HOUSEHOLD	ALCOHOLIC	NON-ALCOHOLIC
Allen	Cazier	King	King	Cazier	King
Cazier	Allen	Allen	Cazier	Allen	Allen
King	King	Cazier	Allen	King	Cazier
DRINKING	TABLEWARE			DRINKING	BEVERAGE
King	Cazier			King	Allen
Cazier	King			Cazier	Cazier
				Allen	King

TABLE 32  
 Summary of Significant Similarities Among Glass Vessel Forms

	CAZIER	KING	
KING	0		
ALLEN	1	3	
			*Maximum value is 10

A higher frequency of storage/preparation to serving vessels was expected at the Cazier site due to its rural location; this proportion was observed within the Cazier ceramic assemblage. When the storage/preparation versus serving vessels were compared between the assemblages, once again the Cazier site was anomalous. The Williams II, King Street, and Dickson II assemblages exhibited similar frequencies of storage/preparation vessels, and Temple was similar to Heisler. Based on serving vessels, Cazier and Williams did not compare to each other or any other site. In sum, the rural Cazier site assemblage had a higher proportion of storage/preparation to serving vessels. The opposite proportion was observed at Dickson II, Heisler, Williams II, and Temple sites and the urban King Street site. The Cazier site was the most isolated of the four rural sites, which may account for the high proportion of storage/preparation type vessels.

The ranking of sites based on cups versus mugs and jugs indicated that Cazier had a low frequency of cups and corresponding high frequency of mugs and jugs, compared to other sites. Cazier was similar to Williams II in the mugs and jugs category, but did not show any similarities to other sites based on cup frequencies. The high proportion of mugs/jugs to cups is a trend associated with the site occupants' low economic status.

Recently, historical archaeologists have recognized the importance of analyzing bottle assemblages (Baugher-Perlin 1982:259-260). Not only do bottles provide data for studying chronology, but shape analysis can determine a bottle's function. By the second half of the nineteenth century, the use of bottles as storage containers began to replace ceramic bottles and jugs. Recent work in Wilmington, Delaware revealed that in urban sites, bottle glass was more frequently used than ceramics after 1870 (LeeDecker et al. 1987:250-252). Garrow (1982:185-186) suggested that as the nineteenth century proceeded, bottle manufacturing technology improved, resulting in lower bottle costs. As glass became less expensive and more available due to improvements in the manufacturing process, continued re-use became unnecessary, increasing the amount of glass found on late-nineteenth and twentieth century sites.

A variety of glass containers, other than bottles, were found in great proportions at historical sites. Functional differences were readily apparent in drinking glasses. Glass tableware, serving vessels, and decorative items were as common as ceramic vessels of the same function in households of the late nineteenth and twentieth centuries. The addition of glass containers created problems in vessel function analysis of late-nineteenth and twentieth century archaeological sites, particularly if a large portion of the vessel assemblages were glass not considered in the analysis along with ceramic vessels (Catts and Custer 1990; Hoseth et al. 1990).

In order to address the changing consumption habits of the late nineteenth century, a second series of difference-of-proportion tests were executed, using the abundance of glass bottles and vessels excavated from the Cazier site. This was accomplished by comparing and contrasting the Cazier site's glass vessel assemblages, vessel use and function, with local historical archaeological sites with similar occupation dates and comparable artifact information. The sites chosen for this analysis include the Allen site (Basalik et al. 1988) and Lots 304 and 306 King Street in Delaware (Berger and Associates 1985).

This analysis investigated the ratios of specific glass vessel functions including beverage containers, food containers, medicinal bottles, and household items. Additionally, alcoholic beverage bottles were compared with non-alcoholic beverage bottles. The ratio of drinking containers to beverage containers were compared, as well as drinking containers to tableware items. The percentage values and vessel frequencies used in the comparison are listed in Table 29, and Table 30 lists the test statistics for each of the paired site comparisons for each paired vessel category. As with the ceramic analysis, test statistic values greater than 1.96 indicated a significant difference-of-proportion. Twenty-one significant differences between functional categories were observed, out of a possible 26 pairings.

Table 31 shows the similarities and differences between the glass assemblages by ranking the sites with respect to each vessel function category. Table 32 shows the frequencies of significant similarities among each pair of sites; higher values indicated sites that were most similar. Three similarities were observed between the King and Allen assemblages; the categories included medicinal, alcoholic bottles and non-alcoholic bottles. Cazier shared only one similarity with the Allen site, in the food container category. The three compared sites did not show any similarities to each other in the beverage, household, drinking, and tableware function categories.

Although the data base for this analysis was very small, consisting of only three sites, some observations could be made. The three sites compared included one rural site (Cazier), one urban site (Lots 304 and 306 King Street) and one village outskirts site (Allen). The difference-of-proportion test clearly revealed the distinctiveness of each site based on their glass vessel discards. The test provided ten possible comparison opportunities, and only four categories showed similarities between the sites. Of the four similarities, three were between King Street and Allen. Cazier was similar to Allen in the food container category only and did not show any similarities with King Street. One tentative conclusion based on this analysis was that differences in the social relationships and activities of rural and urban dwellers in Delaware during the late-nineteenth and early-twentieth centuries can be observed by studying the glass vessel remains. This analysis indicates that when the glass vessel assemblages of urban, village and rural sites are compared, the village and urban sites are more similar.