# ARCHAEOLOGICAL INVESTIGATIONS AT GUNSTON HALL PLANTATION (44FX113)

## Report on 2011 Activities

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# Archaeology in the Shadow of the Mansion

# Preface

The current annual summary of archaeological activities at Gunston Hall Plantation is divided in two distinct sections. The first is an account of the field work accomplished by the Staff Archaeologist and the Gunston archaeology volunteers. The main subjects here relate to evidence pertaining to the configuration of a walkway and fence line in the kitchen yard, and the search for a possible carriage circle on the landfront side of the mansion.

The second section is an extension of the work reported by Miervaldis and Wendling in the annual report for 2010 (Miervaldis and Wendling, 2011). The focus is the use of the “golden rectangle” in the design of the exterior of Gunston Hall mansion, and its possible role in the understanding of the landscape design. Some of this material was included in presentations given by the authors at the 2012 annual meeting of the Society for Historical Archaeology and at the Gunston Hall Symposium on the Archaeology of Mason Neck.

# Acknowledgements

The archaeology program at Gunston Hall is a project of the Gunston Hall Board of Regents, and funding to support labor costs is provided by that organization. However, the program is dependent on gifts and grants to cover the cost of supplies, equipment and other expenses. I am enormously grateful, therefore, to the support provided in this respect during 2011 by Mrs. James Irby Barganier, Mrs. Raymond Hardesty, Mrs. John P. Kennedy and Mrs. Ronald Snider.

The continued support, interest and encouragement given by members of the Board of Regents have been most gratifying. Particularly appreciated has been the personal attention bestowed by First Regent Wylie Raab, Regents Archaeology Committee Chair Mary Ingham, Regents Historic Grounds and Gardens Committee Chair Margery Jenkins and all of the individual members of the aforementioned committees.

The program is indeed fortunate in that it is assisted by a corps of accomplished volunteers. Those providing assistance during 2011 were: Carol Boland, Alex Bowers, Janice Brose, Jerry Foster, M.J. Grabulis, Susan Hardenburgh, Thomas James, David Kepplinger, Eric Kepplinger, Chris McDonald, Susan Marquis, Grace May, Ann Oliver, Crystal Ptacek, Leslie Rakowsky, Sarah Romero, Karl van Newkirk, Don Ward, Claudia Wendling and Isabelle White.

In addition to assisting with the archaeological field and laboratory work, several volunteers undertook a variety of document research projects. These have proved invaluable not to the archaeology program, but to our understanding of the Mason family and to Gunston Hall in general. The persons involved in these projects were Jerry Foster, Paul Inashima, Wendy Miervaldis and Claudia Wendling.

During the 2011 season, we were fortunate to again have Paul Inashima serve as field consultant to the program.

# Introduction

One of the things that makes archaeology at Gunston Hall particularly interesting is that we know of no description of the landscape dating from the time George Mason lived here.[*] Thus, our efforts to understand the eighteenth century landscape are akin to attempting to solve a gigantic puzzle. However, when things do start to fit together and pieces of the landscape do start to make sense, one is rewarded with a feeling of immense satisfaction.

The challenge presented by the lack of documentation is compounded by the fact that the historic core area of Gunston Hall has been continuously occupied since George Mason moved his family into the mansion in 1759. Over that time, buildings have gone up and come down and the landscape has been repeatedly altered to reflect the needs and tastes of the various occupants of the property. In addition, a considerable amount of undocumented and poorly documented excavation was done in the name of archaeology in the decade or so following the 1949 acquisition of the plantation by the Commonwealth of Virginia (Shonyo 2011:7-11). All of this has left the eighteenth century fabric of the plantation in tatters. Yet, in the nooks and crannies there remain fragments of the landscape that George Mason knew.

The field work undertaken during the 2011 field season involved, for the most part, a continuation of work initiated in previous seasons. These projects included an attempt to trace the course of an eighteenth century gravel walkway first uncovered during the 2010 field season (Shonyo 2011:24-27), and the continuation of an effort to determine whether a carriage circle existed in the landfront side of the mansion during the time of George Mason's residence (Shonyo 2008: 9-12; Shonyo 2011:31-35).

[*] It is true that we have the *Recollections* (Dunn 2004) of John Mason, one of George Mason's sons. This account, written about 1840, is intended to summarize the author's childhood with his famous father. It does mention some landscape features in passing, but does not tell us exactly where they were located or what they looked like.

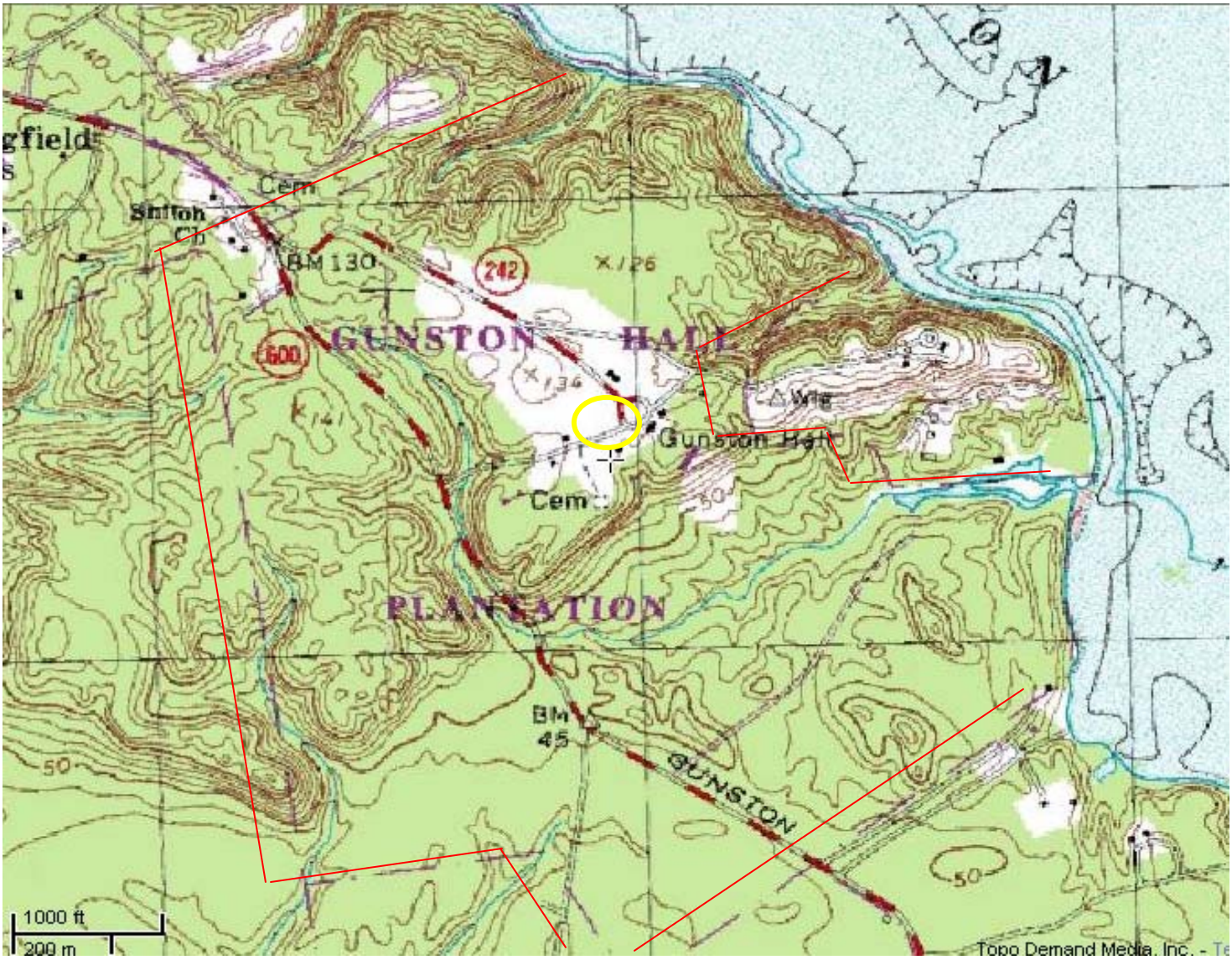


**Figure 1.** Environs of the 2011 study area. The excavations were conducted within the area of the yellow circle. (Detail from USGS Belvoir Quadrant.)

The study areas were near the northwest face of the Gunston Hall mansion and in the kitchen yard associated with the mansion. The mansion is near the east end of a ridge that runs in a more-or-less east-west direction across the Mason Neck peninsula (Fig 1.). The landscape is generally flat and open, with a scattering of trees and buildings. The soil in the area excavated was of the relatively well-drained Grist Mill sandy loam series (Fig. 2).

The general study methodology followed that described in Shonyo 2008:5.


**Figure 2.** The soil series in the area investigated during 2011 is designated Grist Mill sandy loam (indicated as 40 in the map). Excavation work was done in the areas indicated in red. Soil phosphorus testing was done within area designated by white dashed lines. The surrounding soil series are: Beltsville silt loam (7B); Matapeake silt loam (76B); Sassafras-Marumsco complex with 7% to 15% slopes (91C); Sassafras-Marumsco complex with 25% to 45% slopes; Urban (95). (Detail from California Soil Resource Laboratory 2010).

## Kitchen Yard Walkway

During the 2010 field season, a project was undertaken to mitigate the areas where two construction projects were scheduled (Shonyo 2011:12-30). The projects involved the construction of a lift to assist handicapped individuals, and the realignment of a section of the paled fence surrounding the kitchen yard. Both projects would impinge on an area that was occupied from the 1870's until 1950 by wood frame addition to the mansion. The addition abutted the entire east wall of the mansion and extended eastward about 25 feet into what was George Mason's kitchen yard (see Shonyo 2011: Fig. 4).

The excavations revealed that the southernmost two-thirds of the frame addition had sat over a cellar. This had been filled with a mix of soils after the addition had been demolished. However, the northernmost third of the area that had been under the structure was relatively undisturbed. The presence of the structure, in fact, served to protect this small plot from many of the disturbances that were inflected of other parts of the kitchen yard, so the eighteenth century fabric was still relatively intact.

Among the items of interest found here were two old gravel walkways, one positioned above the other. A straight line extending along the axis of the uppermost walkway would reach the basement entrance of the mansion in one direction and the vicinity of the representation of the detached kitchen on the other. The artifacts associated with this walk suggested that it was in use through approximately the first quarter of the nineteenth century. The exposed segment of the lower walkway ran parallel to the east side of the mansion. All of the artifacts found in and below the feature were items that could have been present during George Mason's occupancy of Gunston Hall.

The kitchen yard, as it is presented today, is almost entirely conjectural. The only evidence of a possible eighteenth structure is foundation trench (the brick had been removed at some earlier

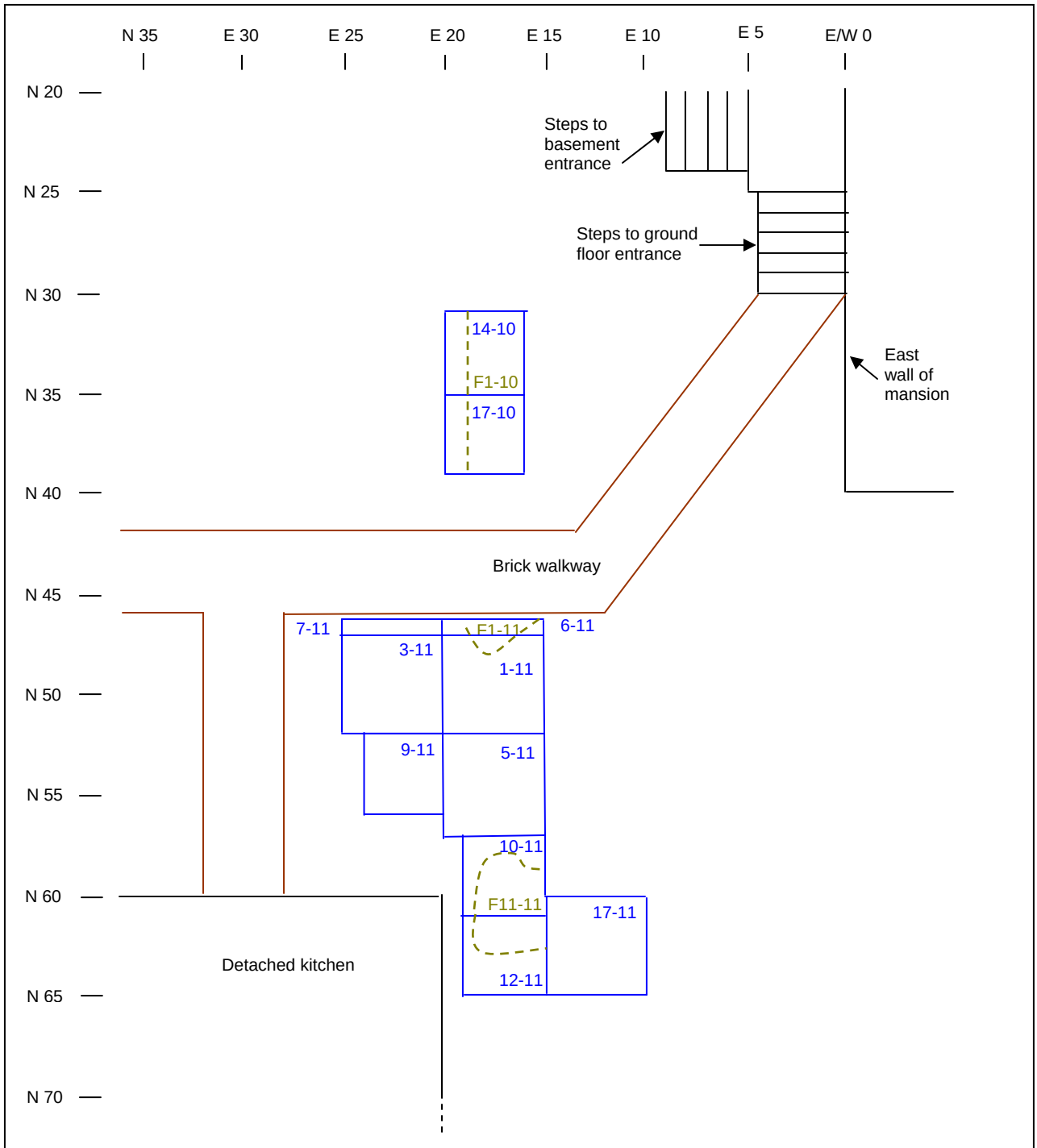


**Figure 3.** Excavation units dug in an effort to trace an eighteenth century kitchen yard walkway are shown in blue. Fragments of the walkway are indicated in olive. Units 14-10 and 17-10, containing walkway fragment F1-10, were excavated during the 2010 field season. The others were excavated during the 2011 season. Unit 17-11 was not completed during the season.

time). Kelso (1973) and Outlaw (1973), who both excavated here, suggested that this might be the site of the original eighteenth century detached kitchen. It may very well be, but the archaeological evidence is not overwhelming. A mix of both eighteenth and nineteenth century artifacts was found. An abundance of ash was uncovered, but there was no evidence of a hearth or a chimney.

In any event, evidence is growing that the kitchen yard was configured quite differently in the eighteenth century than it is now represented. It is thought that the lower walkway feature, if it could be traced along more of its length, would add substantially to the emerging picture. The walkway was destroyed by the basement of the frame structure immediately to its south. It was decided, therefore, to try to find traces of the walkway to the north of the segment previously uncovered.

During the 2011 field season, a series of excavations was undertaken site north[*] of the walkway segment found in 2010 (Fig. 3). This area proved to be considerably more disturbed than that in which the original walkway segment had been excavated. Many of the disturbances involved utility trenches or were otherwise construction-related, while others were caused by cross trenching and other digging done by Claiborne (1949) and Fauber (1953) and the excavation work of Kelso (1973) and Outlaw (1973).

A fragment of a walkway was found in the south end of unit 1-11 and in unit 6-11 (Fig. 3). The walkway fragment, designated feature F1-11, continued under a modern brick walk which lay between the 2010 excavations and the 2011 excavations. (Fig, 4). An examination of the artifacts within the feature material and those lying beneath the feature indicated that it is highly probable that the walkway dates to the eighteenth century. The ceramic types found were gray salt-glazed stoneware, porcelain, creamware and pearlware. Wrought nails were found, but no later types of nails were present. Also recovered were many mammal, bird and fish bones, and oyster shells.

[*] As a matter of practical convenience, the coordinate system used in the historic core of the Gunston Hall site is aligned with the mansion, the long axis of which is orientated southwest to northeast (see Fig. 2). Thus, “site north” is actually compass northwest. Site directions are hereinafter implied.


**Figure 4.** A section of the eighteenth century pebble walkway (yellow arrows) lying under a modern brick walk. This is feature F1-11 as seen in the south sidewall of unit 6-11.

Feature F1-11 was directly in line with the previously found walkway feature, F1-10. However, it was not initially known whether the presumed walkway would have continued along this line or made a right turn to pass along the south side the kitchen structure. For this reason, units were placed in both directions. Units 3-11, 5-11, 7-11 and 9-11 (Fig 3.) were all too badly disturbed to make a determination as to whether or not a walkway once passed through them.

Another walkway fragment was revealed in the adjacent units 10-11 and 12-11. This fragment, designated feature F11-11 (Fig. 5), was aligned with features F1-11 and F1-10.
Again, all of the artifacts found in the feature material and below the feature were things that could been present dating Mason's residence, strongly suggesting that the walkway was in use during that time.


**Figure 5.** The pebble walkway feature F11-11 (yellow arrows) is seen extending into the sidewalls of unit 10-11, which is here in the process of being excavated. (The photo board says "F8-11." The feature was later redesignated "F11-11" to make it consistent with a continuation of the feature in the adjacent unit, 12-11.)

The segments of the feature thus far uncovered indicate that this part of the original walkway trended in a north-south direction. The part of the walkway that lay immediately to the south of unit 14-10 was destroyed by the old cellar. It may have continued south beyond the cellar, but it is more likely to have turned toward the current basement entrance of the mansion (which is thought to have been Mason's basement entrance as well). Another fragment of the walkway may have been detected with a soil probe just to the north of unit 12-11. This feature stops just about at the midpoint of the west wall of the kitchen structure. If the feature is indeed part of the walkway, and it does truly terminate where the probe seems to indicate, then it is possible that the walk lead to a doorway midway along the west side of the structure that rested on the old foundation. This supposition will need to be tested with future excavations.

In 2010, a segment of the kitchen yard fence was removed. This segment extended from the southwest corner of the kitchen structure to the northeast corner of the mansion (Shonyo 2011:Figure 3). The fence segment was to be rebuilt so as to extend from the southwest corner of the kitchen south along our E 20 transect. This would have the effect of separating the kitchen yard from the mansion with a 20 foot gap, a configuration which is thought to more accurately reflect the original lay out of the kitchen yard.

The mitigation work in 2010 revealed no evidence of a fence along the E 20 transect (Shonyo 2011:23-30). Further, if the fence was positioned along this transect, the walkway would have been outside the kitchen yard. It was decided, therefore, to check for fence post remains near the east edge of the walk, between the E 15 and E 10 transects. Based on other eighteenth fence remains found at Gunston Hall, it was assumed that the posts would be spaced at ten-foot intervals. Therefore, it was planned to excavate two 5' x 5' units just to the west of the location of the walkway fragment F11-11. One of these, unit 17-11, was opened late in the field season (Figure 3). Due to a nighttime public event that was scheduled for the area, it was necessary to close the unit before the excavation was completed. Plastic sheeting was used to cover the exposed surface, and soil and straw was placed over this. The project will be continued in the 2012 field season.

***An Unusual Artifact***

The recovery of an unbroken and otherwise fairly well preserved eighteenth century household items is a rare occasion, indeed. Normally such objects would not be disposed of until they were damaged beyond any possible use. Of course relatively small items, such as coins, beads etc., might easily be dropped on the ground and lost. However, that would be an unlikely fate for, say, tableware.

That is why a fork which appeared about one inch below the surface (Fig. 6) in excavation unit 1-11 was greeted with both surprise and a certain amount of skepticism. The skepticism was engendered both by the good state of preservation and the high level in the soil in which the artifact rested. It had two pointed tines, which were circular in cross section. The body was


**Figure 6.** A two-tined fork emerges a very short distance from the soil surface.

ferrous, probably steel, and exhibited a moderate amount of corrosion. The handle was made of bone, or possibly antler. Two pins, which appeared to be of some sort of white metal, secured the handles to the body of the fork (Fig. 7).

In spite of some reason to doubt the authenticity of the artifact, there were several factors which spoke in favor of this being an actual eighteenth century item. At about three inches almost immediately below fork there was recovered a 1775 George III halfpenny. The coin was in good condition except for a couple of relatively small patches of encrustation.[*] The abundant oyster shell in this kitchen yard soil could have retarded the corrosion of both the fork and the coin. The soil in the area in which the artifacts were found was highly disturbed, which may be why they were near the surface. The bone handles had several flaws which would be consistent with am

[*] The markings on the coin were well formed and exhibited little discernable ware. However, it was noticeably thinner than one would expect for a British copper coin of the period, and its weight was significantly less than the British government considered acceptable. It is very likely that this is one of the large number of counterfeit copper coins in circulation during this time when there was a serious shortage of the genuine product from the Royal mint.

**Figure 7.** Fork prior to conservation. (Photo by Susan Blankenship.)

**Figure 8.** Fork after conservation. (Photo by Caroline Riley.)

eighteenth century manufacture (e.g., the two bone pieces are not of the same thickness). A curator from Colonial Williamsburg examined the fork and verified that was of a type that was in use during the fourth quarter of the eighteenth century. And, finally, the conservator who worked with the artifact saw no reason to doubt an eighteenth century origin.

The condition of the fork was described by the conservator as follows:

> The fork is corroded from burial. The iron portions are covered with a thin layer of voluminous corrosion products which include soil deposits. There are a few small cracks in the top surface of the iron on the prongs of the fork. The iron is actively flaking. In areas where flakes of iron have become detached small spots of bright orange corrosion are visible. This corrosion is an active chloride based corrosion product called alkageneite. Alkageneite is damaging to the iron as it forms a tubular structure that actively pushes the iron apart. The iron has a strong magnetic pull, which indicates the iron has a solid metal core and that the core metal is not heavily corroded. Edges of the bone that are in direct contact with the iron are stained orange from iron corrosion products. The bone on the back of the fork is stained from the soil and/or use and contains faint scratches. There are tiny loses of bone around the rivets. These losses may have occurred when the rivets were inserted. (Norquest 2011)

The ferrous portions of the fork were cleaned of corrosion products by air abrasion using alumina powder. The treated surface was then coated with a microcrystalline wax to retard the reoccurrence of corrosion. Dry brushing, followed by swabbing with distilled water, was used to clean the bone handle. (Norquest 2011)

The fork is currently on display in the mansion (Fig. 7), where it may very well have once graced the tables of George Mason and his family.

## In Search of a Carriage Circle

The attempt to find evidence of an eighteenth century carriage circle is a project that has been pursued over a number of field seasons (e.g., Shonyo 2008:9-12; Shonyo:2011:31-35). It is not known that a carriage circle actually existed at Gunston Hall in Mason's time. A carriage circle was present until it was removed in 1976 (Shonyo 2011:Fig. 13). However, an investigation of this feature strongly suggested that it was constructed in the late nineteenth century or earlier twentieth century.

Carriage circles were a very common feature of plantation landscapes. However, they were not universally present. For example, Shirley Plantation, in Charles City County, Virginia, apparently did not have one (Shirley Plantation 2012). If Gunston Hall did have a Carriage circle, it was gone at least by the 1870's. This is attested to in a brief oral history collected from a Mr. Haislip by Gunston Hall's first Superintendent, General Latane Montague, USMC Ret.

> Saturday, the 2nd of February [1952], I went to see Mr. Harley and Mr. Haislip, both old gentlemen who have lived on the Neck all their lives. … Mr. Haislip (whose mother lived at Gunston as a girl…) said he remembered the place in Col. Daniels' time[*]… In answer to specific questions I received considerable extraneous information, which I am recording for the record for whatever it is worth. … I questioned him about the circle and he said he did not remember any circle, but did remember a pathway straight to the Mansion. He did not remember if the "pathway" was paved or not. (R.L. Montague to Mrs. John L. Sullivan, letter, 5 February 1952, Archives, Gunston Hall Plantation, Lorton, Virginia.)

Today, a gravel road runs more-or-less parallel to the land front (north) face of the mansion and about 35 feet from it (Fig. 2). Previous excavations and tests (e.g., Shonyo 2008:31-32) have shown that the soil in the area to the north of this road which most likely be the site of a carriage circle had been replaced in the nineteenth century. The fill soil, which contained a mix of eighteenth and nineteenth century artifacts throughout its depth, rested unconformably on clayey subsoil at a depth of about two feet.

[*] Col. Edward Daniels owned Gunston Hall during the period 1868 – 1892.

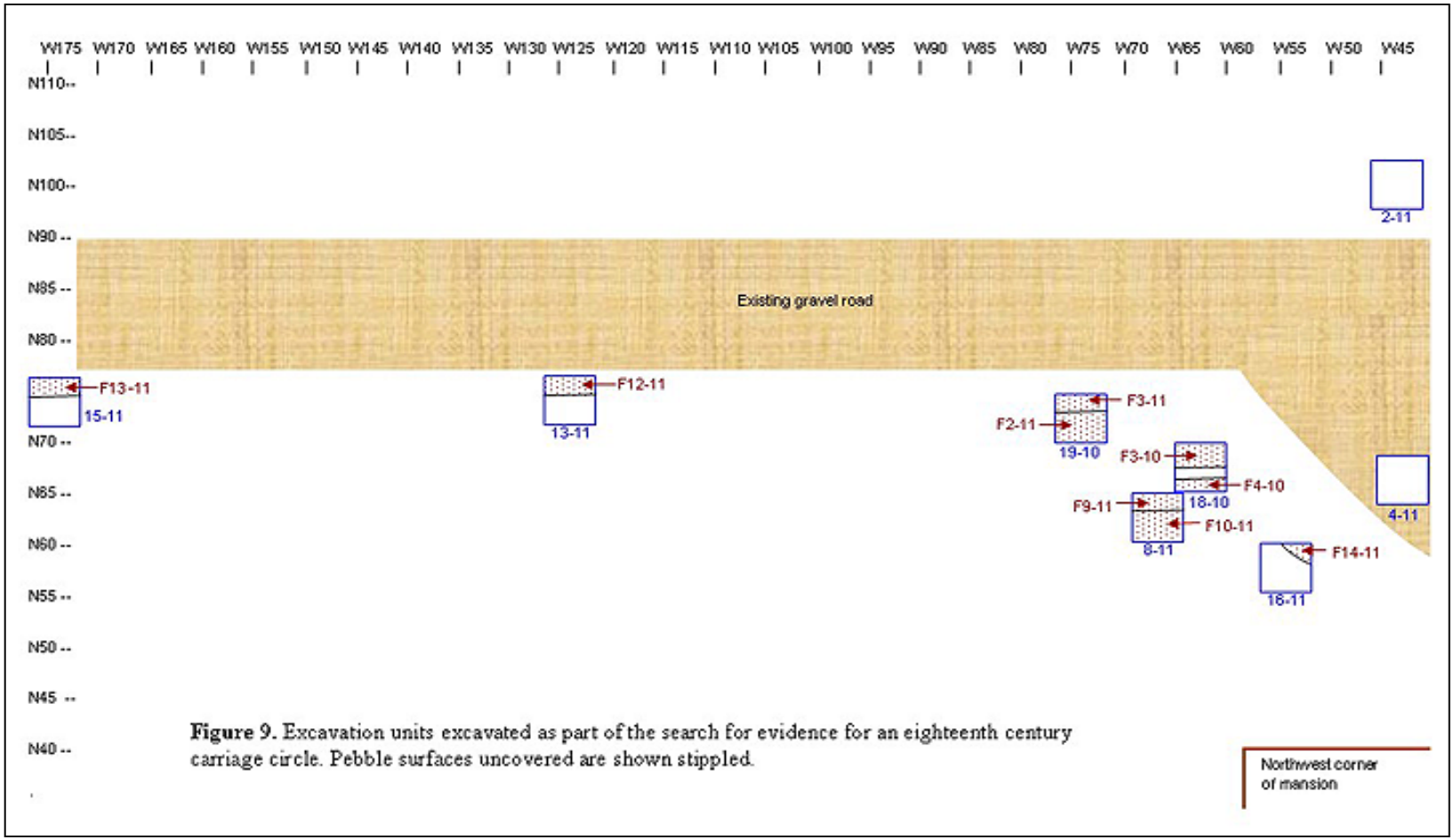


**Figure 9.** Excavation units excavated as part of the search for evidence for an eighteenth century carriage circle. Pebble surfaces uncovered are shown stippled.

In 2010, it was decided to investigate the area to the south of the road (Shonyo 2011:31-35). Although much disturbed, the soil here had not been replaced. Photographs from the nineteenth century showed that a road ran parallel to the land front face of the house at that time, but is was closer to the house than the modern road (Fig's. 12, 13). The plan was to examine the margins of this old road for evidence that it had been intersected by a carriage circle.

Remains of the south margin this earlier road were seen in one of the excavation units completed in 2010 (unit 18-10, feature F3-10 in Fig. 9). Somewhat over a foot to the south was a second, parallel, pebble feature (F4-10) which was interpreted as a possible walkway. The artifacts within and under the feature material indicate that both were in use as early as the eighteenth century. Excavation unit 19-11 was opened in order to expose the north margin of the road

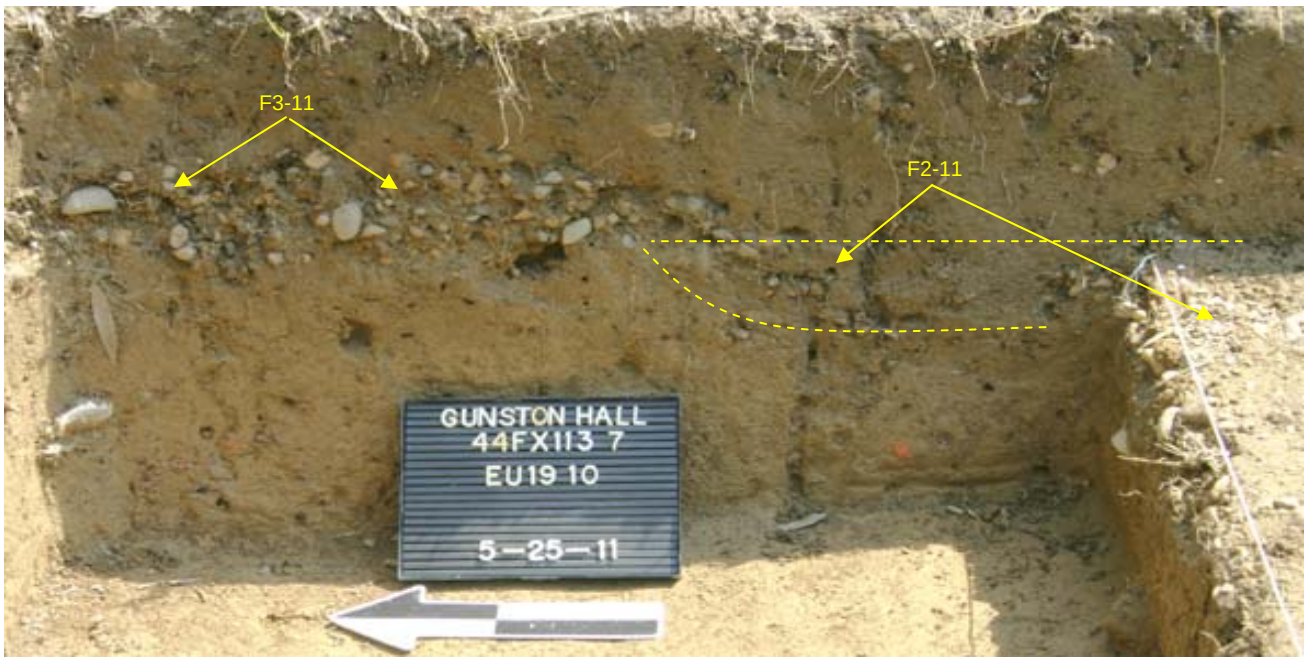


**Figure 10.** The south margin of the nineteenth century road feature F3-11 slightly overlaps the north margin of the older road feature F2-11. Both a section and some of the surface of F2-11 are shown, although some of the feature material in the section has been obscured in this photograph.

feature. Only Stratum 1 of this unit was exposed during the 2010 season. The remainder was excavated in 2011.

The north margin of the roadbed was indeed identified in unit 19-10, and was designated Feature 2-11 (Fig. 10). Also seen in the unit was another segment of a buried gravel road at a slightly higher elevation. The south margin of this road, designated Feature F3-11 (Fig. 10), slightly overlapped the north margin of F2-11. The artifacts found in association with F3-11 indicated that this was a nineteenth century feature, while those found with F2-11 strengthened the possibility of an eighteenth century origin for the road represented by Features F3-10 and F2-11.

The apparent nineteenth century road was also present in excavation units 13-11 and 15-11, designated F12-11 and F13-11 (Fig. 9). The older road did not appear in either of these units, presumably as a result of soil disturbances. No evidence of a carriage circle was seen.

The feature seen in unit 18-10 and tentatively identified as a walkway (F4-10 in Fig. 9) was also present in the adjacent unit, 8-11 (F9-11 in Fig. 11). The total width of the feature proved to be 2.5 feet, which tends to support the possibility that the feature may have been a walkway. The south margin of this feature slightly overlapped another, lower, pebble feature in the unit (F10-11

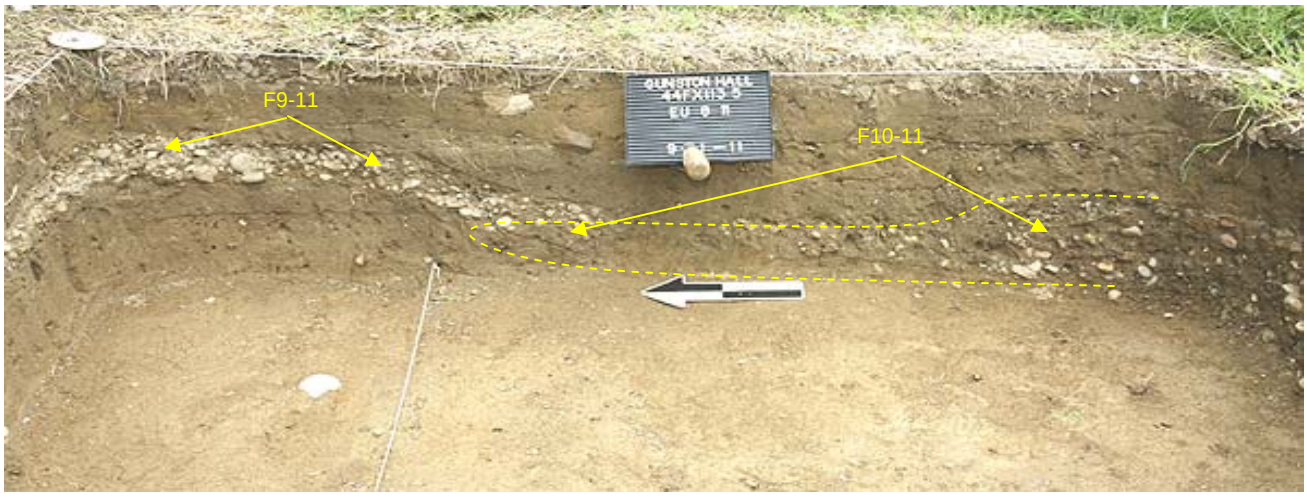


**Figure 11.** Two distinct pebble features were observed in excavation unit 8-11, F9-11 and F10-11. An intrusion (post hole or planting hole) has disrupted the feature material in the area below the photo board.

in Fig. 11). The latter extended the east-west width of the unit and passed into its south wall. The artifacts found in association with the feature indicate that it was in use during the eighteenth century.

An effort was made to determine the extent of Feature F10-11 by the use of a soil probe in the area near unit 8-11. What appeared to be a fairly substantial deposit of gravel was located near the northwest wall of the mansion. Excavation unit 16-11 (Fig. 9) was placed within this area. The deposit detected with the probe turned out to be a layer of coal fragments, about 0.6 foot below the surface. It is speculated that, for a period during the nineteenth century, coal supplies for the mansion were dumped here prior to being moved into the basement through the basement windows. Immediately beneath the coal deposit was a layer of crushed shell. The artifacts in the soil below this layer indicated that the feature was of nineteenth century origin.

At an elevation of about 0.95 foot, another pebble feature was uncovered (F14-11). The exposed margin of the feature formed an arc in the northeast corner of the unit (see fig. 13 on p. 48 of Section 2 of this report). The part of the arc closest to the mansion lined up with the outer edge of the lower-most step of the land front portico.[*] All artifacts from the stratum containing the feature were items that could have been present in George Mason's time.[†]

Feature 14-11 is the most promising candidate for carriage circle evidence thus far uncovered. It corresponds well with the carriage circle model proposed by Miervaldis and Wendling, as illustrated in Fig.14 on page XX of Section 2 of this report. Work will be undertaken in 2012 to better define this feature.

[*] The current lower-most step was added in the 1920's and is composed of blocks of stone taken from the disassembled carriage mounting bloc.

[†] An unexpected component of the artifact assemblage from this stratum was the large amount of bone.

## Other Inquiries

*Carriage Mounting Block*

During 2010, photographic evidence was used to attempt to determine the location of a carriage mounting block that was known to reside near the land front entrance in the nineteenth century, and which may have dated to Mason's time. Excavation unit 4-11 was opened where the best estimate put the site of the mounting block (Fig. 9). This happened to be on the gravel apron immediately adjacent to the land front entrance to the mansion. Nothing was seen that could have represented the footprint of the mounting block. This may have been wholly or partially the result disturbances attendant the construction and maintenance of the apron.

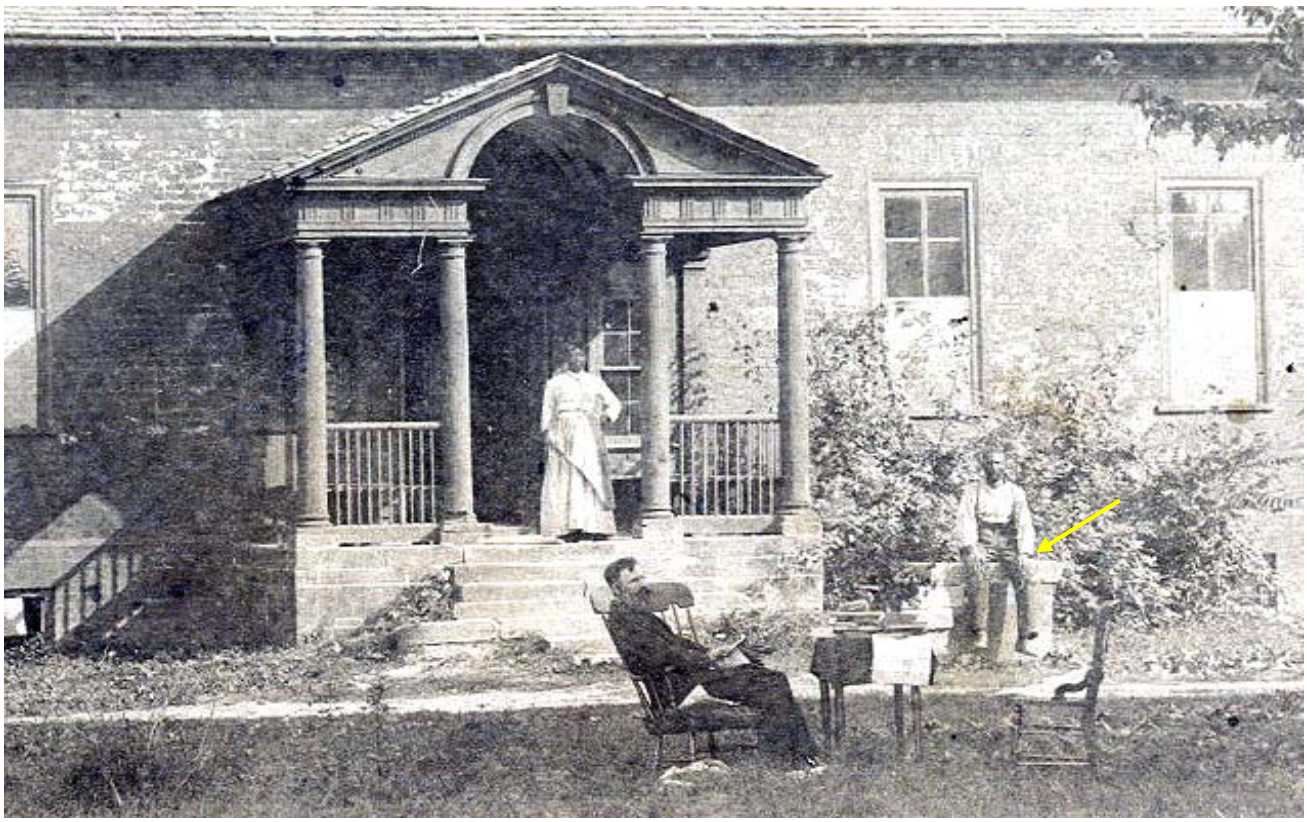

**Figure 12.** This c.1880 photo was the primary one used in the initial attempt to pinpoint the location of the land front carriage mounting block (arrow). Col Edward Daniels, then the owner of Gunston Hall, is seated in the foreground. (Detail of photo from the Gunston Hall archive.)

**Figure 13.** A photo taken sometime in the period 1892 – 1898 gives a better idea of the location of the carriage mounting block. (Detail of photo from the Gunston Hall archive.)

Several nineteenth century photographs were used in the effort to estimate the location of the mounting block. However, the principal one used is that shown as Figure 12. Recently, a more revealing photo has surfaced (Figure 13). This photograph was made sometime during the period 1892-1898, when Joseph and Emma Specht owned Gunston Hall. Here, the mounting block appears closer to the central axis of the mansion and further from the portico than in Fig. 12.

The mounting block also seems to be right on the edge of the road that runs parallel to the land front of the mansion. This is likely the road represented be Features F3-10 and F2-11. It thus should lie along a line extended east along the north edge of F2-11. An estimate based on this would put the northeast corner of the block a coordinates N73 W32.

*Soil Phosphorus Testing*

In his recollections, John Mason mentioned two slave quarters in the vicinity of the mansion. One was to the northwest of the mansion and was called "Log Town," where lived "…several families of slaves serving about the mansion house" (Dunn 2005:77). To the east of the mansion, beyond the kitchen yard and "…masqued by rows of large cherry and mulberry trees," were "…servants quarters (in them days called Negroe quarters)…" (Dunn 2004:75). No direct physical evidence of either of the quarters has ever been found.

In the Spring of 2011, Sam Pell, a student at Cornell University, proposed undertaking a project to attempt to locate the sites of the quarters through an analysis of soil chemicals. The use of soil phosphorus has long been used, with varying degrees of success, as an indicator of intense human activity (e.g., Holiday and Gartner 2007). Gunston Hall agreed to a test project

**Figure 14.** Soil samples were collected for analysis at ten-foot intervals on a 2,000 sq.ft. area between the mansion and garden area and the Director's Residence.

to determine whether this would provide a relatively simple and inexpensive method for identifying the sites of slave quarters and other activity areas at Gunston Hall.

The general procedure involved collecting soil with a soil core sampler. The upper 0.1 ft. of soil was discarded and the remainder placed in an archival-quality plastic bags. A portion of each sample was tested for phosphorus (P) and, initially, potassium (K) using a LaMotte Soil N-P-K Kit. Each soil sample was mixed before testing so that the test results reflected an average for the entire length of the core sample. A portion of each sample was retained for possible re-testing by other means. Initially, the color chips supplied with the test kit were used to determine the relative element concentrations in the test solutions. Later, a laboratory spectrometer was used to obtain much more accurate results.

In an effort to provide a kind of baseline for use in the search for a slave quarter at Gunston Hall, it was decided to test soil samples from a known quarter. Fortunately, one was close at hand in the form of the quarter recently identified at Lexington Plantation by Paul Inashima (personal communication 2011). It appears that other than the salvaging of building materials, there had been no significant disturbance to the site after it had been abandoned. Soil samples were taken at ten-foot intervals along two transects that passed through the approximate center of the site, one in an east – west direction and the other north – south. The results showed no pattern of high P or K concentrations except near a long-disused road trace. The latter was probably due to waste from the horses and other draft animals which used the road.

It was decided to test an area to the east of the mansion and garden (Fig. 2), since this seemed to be the area in which John Mason placed the “servants quarter.” Pin flags were placed at ten-foot intervals over an area of 20,000 sq. ft. Core samples were taken within one foot of each pin flag. The test results showed a patchwork of P concentrations, with a few small areas of high concentration. Test units dug in the vicinity of the high concentrations yielded nothing that would explain their presence.

The sampling and test methods used in this exercise, while instructive, proved to be ineffective for the purpose of locating human activity areas. Some of the problems encountered were:

- The dry, hard soil in the test area prevented the coring tool from penetrating the soil to a uniform depth. In some cases the coring tool could not be made to penetrate more that a couple of tenths of a foot.
- The reagent solution begins to change color within a few minutes after adding the soil sample, so the reading must be taken almost immediately after mixing the soil with the reagent.
- Soil samples taken within a few inches of each other gave different readings depending whether the soil was collected under dry conditions or after a rain.
- Calibration samples taken in a kitchen yard sheet midden could have been expected to yield high P and K values. They did not.
- P values seem to be higher close to trees than nearby.
- The patchwork of soil disturbances in the area tested prevented any overall pattern of P concentrations from being discerned. It might be useful to do close interval sampling (at one foot or less) around high concentrations of P to determine the size and shape of the concentration.

In all, the simple sampling and testing methods seem not well suited to conditions at Gunston Hall. This is not to say that more sophisticated analytical tools and an improved sampling procedure might not yield useful results.

## Summary and Conclusions

*Kitchen Yard Walkway*

The walkway fragments found thus far indicate that for a period of time during the eighteenth century a pebble walk extended along a line parallel to the east side of the mansion and at least partially continued parallel and close to the foundation that has been interpreted as a detached kitchen (Fig. 3). Probing seems to indicate that the walk proceeded to point midway along the west side of the kitchen. If the walk did indeed end here, there may have been an entrance to the original structure at this point.

All of the artifacts found in the walkway gravels represent items that could have been here in the eighteenth century. This indicated that the walk was not used after the eighteenth century, and was probably replaced by the higher, diagonal walk mentioned on page 9. Immediately below the walkway features were two distinct artifact-rich strata. These contained an abundance of bone fragments as well as other typical kitchen yard artifacts. The diagnostic artifacts clearly indicate that these are eighteenth strata. Further, they are evidence that the walkway was built after the kitchen yard had been in use for some time.

It can be hypothesized that the walkway ran between a west entrance to the kitchen structure and the east basement entrance to the mansion. (It is very likely that this is where prepared food was brought into the mansion, probably initially to a warming kitchen in the basement.) At some point in the late eighteenth century, a new walkway was constructed to run between the basement entrance diagonally to an entrance on the south face of the kitchen structure. It is possible that both the west and south entrances coexisted. It is also very possible that in the late eighteenth century the kitchen structure was rebuilt with a single entrance on the south side.

*Carriage Circle*

Excavations on the land front side of the mansion have revealed two buried east-west trending gravel roads. The earlier of the two, represented by Features F3-10 and F2-11 (Fig. 9), seems to have been laid down in the eighteenth century. It was still in use in the fourth quarter of the nineteenth century, and can be seen in photographs of this period. Vertical sections of the road

show that layers of gravel had been added on several occasions. The later road, represented by Features F3-11, F12-11 and F13-11, is slightly higher in elevation that the other and is partially overlain by the modern east-west road. The artifacts associated with it suggest that it was constructed in the late nineteenth century or very early twentieth century.

In addition, relatively narrow east-west strip of gravel (F4-10, F9-11) was uncovered. This 2.5 foot-wide strip appears to date to the eighteenth century and has been tentatively identified as a walkway. Another gravel feature, F10-11 in unit 8-11, has not yet been identified as to its possible original function.

Feature F14-11 in unit 16-11 shows some promise of being part of a carriage circle or a carriage turnaround. Its shape and location are consistent with the model developed by Miervaldis (page 49 in Section 2). The artifacts within and below the feature indicate that it was present in the eighteenth century. Additional work will be preformed to better define this feature.

## Work Plan for 2012

First priority will be given to investigating the possibility that Feature F14-11 might represent part of a carriage circle. Initially, units will be excavated immediately to the east and north of unit 16-11. If these show promise, additional units will be excavated in order to determine the shape of the feature so that it can be replicated. In addition, the photograph reproduced here as Fig. 13 will be used as the basis for another attempt to find the footprint of the carriage mounting block.

The project begun in 2011 to determine whether a fence ran along the west side of the recently-found kitchen yard walkway will be continued. Also, an effort will be made to follow the walkway northward to its point of origin. It is expected that the location of a planned new section of kitchen yard fence will be based on these findings.

Several lines of non-archaeological evidence were previously used to propose the boundaries of the eighteenth century curtilage (Shonyo 2011:37-39). John Mason called this an "enclosed ground" (Dunn 2004:77), which implies that it was bounded by a fence or a hedge. Excavations will be made along the presumed boundary of the curtilage in an effort to determine whether it existed in this location as evinced by post remains or root traces from a hedge line. This work will be initiated in the area where the curtilage boundary is shown passing near the school house in Shonyo 2011:Fig. 16.

During a ground penetrating radar survey made in 1997, a large mass was detected just to the west of the schoolhouse. Two years later, during an instructional exercise being conducted by field school students, two shovel test pits dug over the designated mass encountered a rich deposit of 18$^{th}$ century artifacts. During the past five years, Gunston Hall has been basing its acquisition of ceramic, and some other items, for display on actual artifacts recovered. This area will be revisited in 2012 in an effort to determine the nature of the deposit and to retrieve items which may help better understand the material culture of the Mason household.

A project will be initiated to create a digital topographic map of the entire historic core area. The map will identify all known excavations and all features known from archaeological and documentary research to have existed at Gunston during the 18th Century. The map will be capable of displaying topography and features in three dimensions and will enable “fly-throughs” of the landscape. This project will be undertaken primarily be Paul Inashima.

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# SECTION 2
# Modeling the Carriage Circle at Gunston Hall

**Modeling the Carriage Circle at Gunston Hall**

Wendy Miervaldis and Claudia Wendling

**Abstract**

Gunston Hall, the home of George Mason, holds many mysteries, including how exactly carriages would approach the landside entrance of the mansion. Almost sixty years of archaeological excavations have revealed precious little information. In light of this, influences on Mason at the time he built Gunston Hall have been researched. Plantations he lived in and those belonging to relatives, friends, and associates have been studied. Literature available in the colonies at this time has been reviewed. Mathematical relationships found in the landscapes of neighboring plantations, such as Golden Rectangles and Golden Ratios, are explored. Supporting computations for these relationships and other landscape features are provided. The plantations designed for Mason's sons, as well as the plantation built by one son after Mason's death, have been examined for clues. A plan for the carriage circle, based on this research and existing archaeological evidence, is presented.

**Introduction**

George Mason IV was a man of many talents and facets. He was also a man of mystery, at least concerning how he designed the landside lawn at Gunston Hall, his plantation seat on the Potomac River in Mason Neck, Virginia. How did carriages actually approach the landside mansion door? The cherry tree-lined drive is well known but what did the last two hundred feet between the cherry trees and the door actually look like?

In trying to answer this, it is necessary to look at Mason himself. What influenced him as he planned Gunston Hall? All indications are that he planned the mansion and landscaping by himself. What plantations was he familiar with? Did he copy someone else's carriage circle at Gunston Hall? Did he recreate the Gunston Hall carriage circle at either of the homes he built for his sons, George and Thomson? Did his son, John, incorporate elements of the Gunston Hall's landside lawn into the landscaping at his plantation, Analostan?

What changes were made to the landside lawn of Gunston Hall by subsequent owners that might interfere with archaeological excavations?

These things were considered in an attempt to discover George Mason's carriage circle at Gunston Hall. The results of this research are presented in this paper, as well as the evolution of a plan for the carriage circle, and the results of two seasons of archaeological excavations.

**Gunston Hall**

Perhaps the most striking feature on the landside lawn of Gunston Hall would have been the four rows of blackheart cherry trees arranged in a goose foot pattern. As Mason most probably was the architect of Gunston Hall, he would also have been involved in the design of the cherry tree entrance. According to Mason's son John's memoirs, the cherry trees would begin at "about 200 feet" from the door of the mansion and stretch out 1200 feet from that point (Dunn 2004:74). How the visitor traveled the last 200 feet from the trees to the mansion has been lost to history.

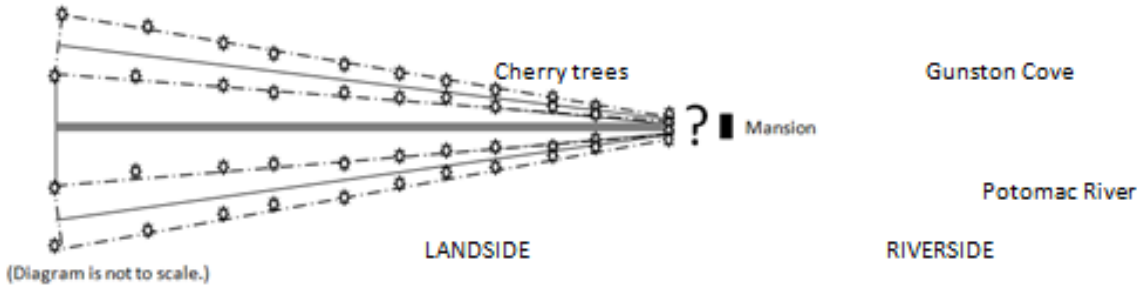



Figure 1 Landside lawn at Gunston Hall, drawing by W. Miervaldis

In order to have planned this elaborate entrance way, Mason would need to possess a certain level of mathematical sophistication. Mason was privately tutored and never attended college or traveled abroad. His guardian, John Mercer, favored an education strong in mathematics and science so it may be surmised that Mason had tutors who excelled in these areas. He would have been taught algebra, geometry, and trigonometry, skills he would need in order to survey land, something he did not only for himself but for friends and relatives as well. He would have been familiar with the Pythagorean Theorem and the Golden Rectangle.

Appearances mattered to Mason; he was a person who prided himself on being aware of current trends. Although the brick, Flemish bond exterior design of Gunston Hall may have

been interpreted as conservative by his peers (Rozbicki 1998:143), the plasterwork of William Buckland in the interior of the mansion and the special "Chinese" room show that Mason was not only aware of current fashions, he intended to set current fashions.

Gunston Hall was built between the years 1755 and 1759. At the start of its construction, Mason was 30 years old and had been married to Ann Eilbeck for 5 years. Before moving out of their Dogues Neck home and into Gunston Hall in 1759, they had five children, four of whom survived. Mason held a variety of local political offices and while he had unsuccessfully run for election to the Virginia House of Burgesses in 1748, he would be elected in 1759. He became the treasurer of the Ohio Company in 1750, a position he was to hold for the rest of his life. Construction on Gunston Hall was begun when Mason was at the height of his financial power. Unlike his neighbor, George Washington, Mason did not make any known changes to the landside landscape once it was completed.

Although much has been written about Buckland's use of pattern books to plan the interior of the mansion at Gunston Hall there is no evidence to suggest that Mason followed a specific plan for his landscaping. Curiously, Mason owned a copy of *Perspectiva pictorum et architectorum* (Rules and examples of perspective proper for painters and architects) by Andrea Pozzo, which was originally written in Latin in 1693 and translated into English in 1707. Pozzo believes that artists and architects should design their works based on one line of sight. His diagrams suggest that a particular point should be used to determine all proportions, admitting that views from anywhere other than this point will be distorted. This is reminiscent of John Mason's story of his father making people stand in the center of the doorway to view the cherry trees. The center of the doorway determines the line of sight for the cherry trees. Figure 73 in Pozzo's work (Pozzo 1707:156; Pozzo 2010 [1709]: Figure 73) is quite similar to the goose foot pattern of cherry trees found at Gunston Hall. Figure 14 in the Pozzo work (Pozzo 1707:36; Pozzo 2010 [1709]: Figure 14) shows how to put circles into perspective. Three examples are given, the third of which shows two concentric circles, an abstract representation of the carriage circle, if you will. Pozzo shows these circles as ovals, designed to be viewed from a single line of sight in the distance. From a distance, an oval will appear to be a circle.

Nothing is known about changes to the landscape of the landside lawn at Gunston Hall for the first seventy years after Mason's death. Local legend has it that soldiers from both Federal and Confederate troops occupied Gunston Hall. Although picket lines were established along Gunston Cove, there has been no evidence found to substantiate these stories of occupation. However, if the stories are true, much damage could have been done to the landscape as well as the mansion. After Gunston passed out of the Mason family, two of its leasers and then subsequent owners, William Merrill and William Dawson, left the mansion in dilapidated condition around the time of the Civil War. At some point, the original cherry trees disappeared (Ware 1900), most probably at this time due to neglect. Colonel Edward Daniels purchased Gunston Hall after the Civil War with the goal of restoring it to its original splendor. It is known that he did extensive work on the landscape of the landside lawn which might explain the difficulty in locating the slave quarters, foundations of outbuildings, and evidence of the original carriage road.

Gunston Hall had one other set of owners dedicated to returning it to its original condition. Louis Hertle purchased Gunston Hall in 1912 and retained ownership until he deeded it to the Commonwealth of Virginia in 1933 upon the death of his wife, Eleanor. Louis Hertle remained at Gunston Hall until his death in 1949.

Morley J. Williams, an archaeologist affiliated with both Mount Vernon and Gunston Hall, had prepared an aerial view sketch of Gunston Hall in 1931 for Louis Hertle. The sketch included a goose foot pattern of four rows of cherry trees and a stirrup-shaped carriage road. In November of 1935, after the Commonwealth of Virginia reached an agreement with the Colonial Dames of America on the administration of Gunston Hall, Williams wrote a letter to the Regent, Mrs. Herbert Payson. In the letter he states, "It is probable that the present circle is much larger than was originally the case for within this area are foundations which probably faced in to the drive and not out to it." (Morley J. Williams letter to Mrs. Herbert Payson, Gunston Hall Collection, George Washington's Mount Vernon Estate Library) It is difficult to determine if the sketch portrays the carriage road as of 1931 or if it was Williams' suggestion for how it should be realized. The cherry trees he has drawn into the picture did not exist at that time. In addition, he

has the trees starting at 240 feet from the mansion door, somewhat further away than John Mason indicated. If the carriage way is an accurate depiction of the roadway in 1931, it can be seen that it would indeed cross over the foundations of the kitchen and school house. The letter would seem to indicate that Williams was now claiming this roadway in his drawing to be incorrect. As his drawing has become iconic, the discovery of this letter was a major find.

**Lexington, Hollin Hall, and Analostan**

In an effort to find any clues to solving the mystery of the carriage circle, the plantation homes owned by Mason's sons George, Thomson, and John were researched and compared to Gunston Hall. Mason was actively involved in the construction of Lexington, George V's home, and Hollin Hall, Thomson's home. Analostan, John Mason's home was constructed after Mason's death. However, Mason relied heavily on John to help in the construction of his brothers' homes, thereby influencing the construction of Analostan.

Gunston Hall and Lexington have similar formal gardens, designed in a rectangular shape, containing walkways and parterres. Both also had elaborate, three-tiered terraces. (Inashima 2008:5.19-32) Lexington differs substantially from Gunston Hall by having symmetrical outbuildings on its north side. (Inashima 2008: 5.36) This does not appear to have been the case at Hollin Hall and it was definitely not the case at Analostan. (Barnette 1936, picture 1) It is as if Mason was attempting to combine the older Georgian style of Gunston Hall with the newer, Palladian style in the design of Lexington. Although there is hearsay evidence that Lexington had a tree-lined drive, its length would be much shorter than Gunston Hall's entrance avenue. (Inashima 2008:5.56) Analostan had a lengthy entrance drive but it also had only single rows of trees lining it. Nothing is known of the entrance drive at Hollin Hall. Given the topology of the area, it does not appear that a lengthy drive could have been planned at this location.

Comparing the entrance approaches of Lexington, Hollin Hall, Analostan, and Gunston Hall, Gunston Hall seems most similar to Analostan in its long, fairly flat landscape. Analostan's drive ended in a carriage circle feature that includes a semi-circle of trees shielding the front of the

mansion (National Park Service 2001: Section 7, p. 16). It is intriguing that the cherry trees at Gunston Hall would also hide the front of the mansion from someone traveling down the avenue.

**Other mansions known to Mason**

Documentation on over seventy mansions belonging to relatives, friends and business acquaintances of Mason were examined for information about carriage circles and the approaches to the mansions around the time Gunston Hall was built. Although much information is available about the buildings themselves in most cases, very little is known about carriage circles or roads approaching the homes. Those who are interested in reading about these homes are invited to read the full report, "Coming Full Circle at George Mason's Gunston Hall," pp. 45-143 at http://www.gunstonhall.org/grounds/archaeology/Annual%20Report%202010%20Sections%201%20&%202.pdf . Detailed information about carriage circles was found on only two mansions, Belvoir and Mount Vernon, which coincidentally were in close proximity to Gunston Hall.

**Belvoir and Mount Vernon**

*Belvoir*

The first "neighborhood" mansion to be discussed will be Belvoir, the home of George William Fairfax at the time Gunston Hall was being constructed. The Belvoir ruins are located on the grounds of U.S. Army Garrison Fort Belvoir today. The carriage circle, which was uncovered during archaeological excavations performed in the 1970s by the United States Army, had been remarkably preserved. (Shott 1978) Excavations revealed that the carriage circle at Belvoir was circular in shape. The diameter of the inner circle was 130 feet with a roadway of 15 feet, making the entire carriage circle feature 160 feet wide. The distance from the mansion to the start of the carriage circle roadway is not given in the archaeological report. However, this distance can be estimated from a diagram that was included within the report. It appears that the distance from the doorway of the mansion to the roadway is approximately 65 feet. It should be noted that this distance is one-half the diameter, or equal to the radius of the inner part of the carriage circle. Given that the roadway was found to be 15 feet wide, the grassy,

inner part of the carriage circle is located about 80 feet from the mansion door. Belvoir was similar in dimension to Gunston Hall, being approximately 57 feet wide and 37 feet deep without porches, according to the Basement Plan included in the HABS report. (Waterman and Gutterson 1940)

The diameter of the carriage circle was a familiar measurement because of the research that had been done on the Golden Rectangle dimensions that might have been used in the landside lawn of Gunston Hall. Measurements that were being investigated for Gunston Hall included rectangles that were 200 feet by 124 feet and 210 feet by 130 feet. The lengths of 200 and 210 feet were chosen based on John Mason's memoirs in which he states that the cherry trees start "about 200 feet" from the doorway. The widths, 124 and 130 feet respectively were calculated by dividing the lengths by ϕ, which equals 1.618, as per the definition of a Golden Rectangle. The diagram above (Figure 2) was included within the archaeological report on Belvoir with measurements added by the authors. It can be seen that a Golden Rectangle can easily be placed from the mansion door out to the far end of the inner circle. Furthermore, the close end of the inner circle hits at the exact spot where, by the rules of a Golden Rectangle, the large rectangle can be divided such that the lengths of the two smaller rectangles remain in the 1.618:1 proportion found in the length and width of the larger, encompassing rectangle.

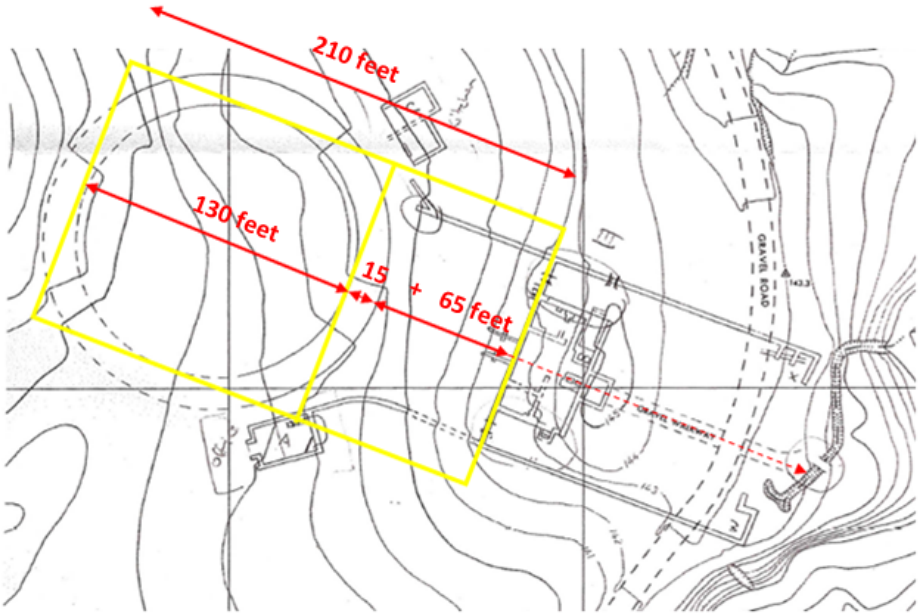



Figure 2. Archaeological plan of Belvoir Mansion ruins Shott 1978

*Mount Vernon*

Figure 3 George Washington's Mount Vernon Estate

George Washington lived for much of his youth at Mount Vernon, the home of his half-brother, Lawrence. He inherited an interest in Mount Vernon upon Lawrence's death in 1752 and took possession of the plantation by purchasing his sister-in-law's interest in 1754. (The Mount Vernon Ladies' Association of the Union 2005:13) He was contemplating changes to the mansion and landscape while Mason was planning and building Gunston Hall. In 1757, Washington began making additions and improvements, inheriting Mount Vernon outright in 1761 upon the death of his sister-in-law. In the unpublished article, "Approaching Mount Vernon," Dennis Pogue discusses the difficulty in determining how carriages would have travelled the distance between the West Gate at Mount Vernon up to the mansion door. He states that prior to 1785, the last part of the entrance drive would have been straight to the carriage circle from what is now the end of the Bowling Green, which was not in existence during the time Gunston Hall was being built. (Pogue 2010:10) Although he continued to rework parts of Mount Vernon through the 1790s, Washington did not change the dimensions of the grassy, inner part of the carriage circle.

The grassy area of the carriage circle at Mount Vernon was elliptical in shape, rather than circular as at Belvoir, with the longer diameter running from east to west, facing the entrance drive at that time. The east/west diameter measures 99 feet, approximately twice the width of the original mansion, which was about 50 feet wide. The north/south diameter measures 75 feet, or 1.5 times the face of the original mansion. The width of the face of the house may have been taken into consideration in the design of the carriage circle. The ratio of the diameters of the width to the length is approximately 75: 100, or more simply, 3:4. Applying these

proportions to the measure of the face of Gunston Hall would result in a carriage circle with an inner grassy part that was 90 feet wide and 120 feet long. The basic unit used to calculate this 3:4 relationship at Gunston Hall would be 30 feet, whereas the basic unit used for Mount Vernon is 25 feet.

Washington may also have employed a more sophisticated technique to determine the dimensions of the inner ellipse in his carriage circle. A diagram can be found in William Salmon's *Palladio Londenensis* which shows a method of circumscribing an ellipse around two circles. (Salmon 1767:12-13, Plate 1, Figure 24) It is known that John Mercer, Mason's uncle and guardian and Lawrence Washington's lawyer, had a copy of this book in his library (Copeland 1989 [1975]:98). George Washington employed the carpenter and undertaker, John Patterson, in 1755 after he had worked on Mercer's plantation home, Marborough. (Dazell 1998:172-73) It is conceivable that Washington had access to this book, or similar books, through Mercer, or someone else in his social circle. The north/south diameter of 75 feel can be directly found from the east/west diameter of 95 feet. Details of these calculations can be found in Appendix A. At this time, there is no evidence that Washington used Golden Rectangles in planning his carriage circle or the surrounding landscape but further research is warranted.

Washington was able to achieve an interesting effect by using an elliptical shape and orienting it so that the longer diameter pointed toward those approaching the circle. From a distance, the grassy area of the carriage circle would appear to be circular. Upon reaching the carriage circle, however, one would realize, perhaps subconsciously, that the distance to the mansion was slightly further than anticipated. By elongating the lengthwise diameter, the impression would be given that there was more land to travel than thought before reaching

Figure 4 Picture taken by David Samuel, May 18, 2010

the doorway. More land meant more wealth waiting behind that doorway. We know that Washington took pride in the interior of his mansion, making sure to leave an impression of power and wealth upon his visitors in the choice of paintings, plaster carvings, and wall colors. It is not surprising that he might employ this optical technique to achieve the same effect on visitors prior to entering the mansion.

**Gunston Hall and the Golden Rectangle**

Figure 5 Gunston Hall with Golden Rectangle, picture by W. Miervaldis

As with many homes built in the Georgian style, the Golden Rectangle is interwoven into the design of the mansion at Gunston Hall. A visitor's eyes would be drawn to the height of the chimneys at either end of the mansion. The chimneys are approximately 38 feet high up to the bottom of the chimney caps. The length of the landside face of the mansion, including the quoins, is slightly less than 61 feet, whereas the length of the eaves is slightly more than 61 feet. The proportion of 61 feet in length to a height of 38 feet closely approximates the Golden Ratio of 1.618. (Figure 5) Furthermore, the location of the landside portico also seems to reflect the Golden Ratio in that the northern most pillar is positioned at slightly more than 23 feet from the outside edge of the mansion. Positioning the pillar in such a way reveals another Golden Rectangle having the dimensions 23 feet by 38 feet. (Figure 6) This portico was not original to the mansion but was thought to have been added sometime in the third quarter of the 18th century. (Gunston Hall 2002) However, in designing the dimensions of the porch, it is obvious that the Golden Ratio was being preserved. The same observation cannot be made of the pillar on the southern end of the porch because, like Mount Vernon and perhaps Belvoir, Gunston Hall is not symmetrical.

Figure 6 Gunston Hall with Golden Rectangle (2), picture by W. Miervaldis

A third instance of Golden Rectangles being evident in the landside facade of Gunston Hall can be seen in the fenestration of the dormer windows. (Figure 7) A rectangle that reaches from the top of the roof down along the inside edge of the northern chimney, then out to the northern pillar of the portico, has a length

Figure 7 Gunston Hall with Golden Rectangle (3) picture by W. Miervaldis

close to approximating a Golden Rectangle. Within this rectangle, the bottom panes of glass in the dormer windows are placed at approximately 13 feet from the top of the roofline. Once again, this separates the rectangle into two smaller rectangles whose lengths are also in the golden ratio with each other. Two other observations should be made at this point. Golden rectangles are also formed if this rectangle is separated at the top of the lintels on the first floor windows. Secondly, the eaves occur halfway between the roof top and the ground or approximately 16.5 feet up from the ground. Perhaps it is coincidental that the measure of a rod is also 16.5 feet. Mason appears to have used measures of feet in designing the mansion; however, the use of rods is evident in other designs from this same time period, notably, the Paca House in Annapolis. In addition, mason Ray Cannetti, during a conversation with David Reese, Director of Gunston Hall, pointed out that if lines were drawn along outside edges of the window lintels on the landside lawn, these lines would intersect the windows at the Golden Proportion. Several other examples of Golden Rectangles were found on the eastern face of the mansion and are presented in Appendix B.

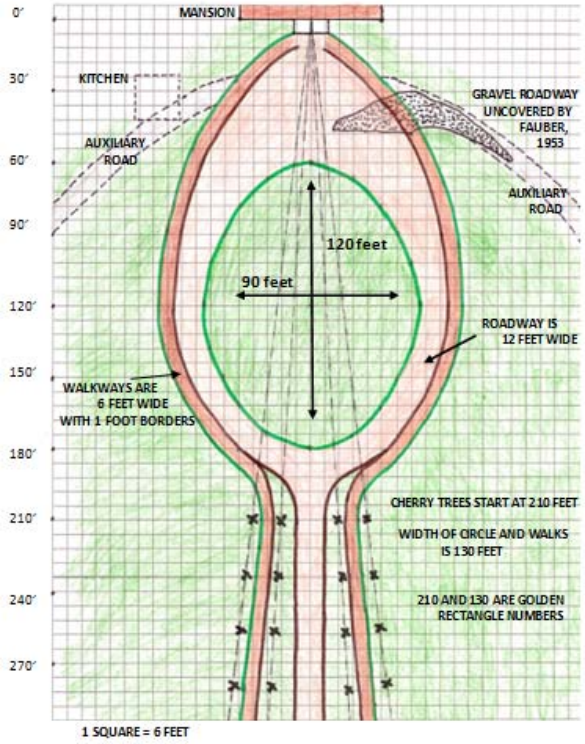



Figure 8 Original carriage circle plan, drawing by W. Miervaldis

**Evolution of proposed plans and excavation results**

Originally, a plan for the carriage circle was devised that made use of the proportions found in the Mount Vernon carriage circle. This plan was then fitted into a Golden Rectangle with a length of 210 feet and a width of 130 feet. These dimensions were chosen based on the memoirs of John Mason in which he states that the cherry tree-lined avenue starts at "about 200 feet" from the door of the mansion.

Since measurements using a basic unit of 30 feet in length were found in other locations at Gunston Hall, it seemed reasonable to consider the length of the rectangle as being 210 feet. Figure 8 shows the original plan for the carriage circle.

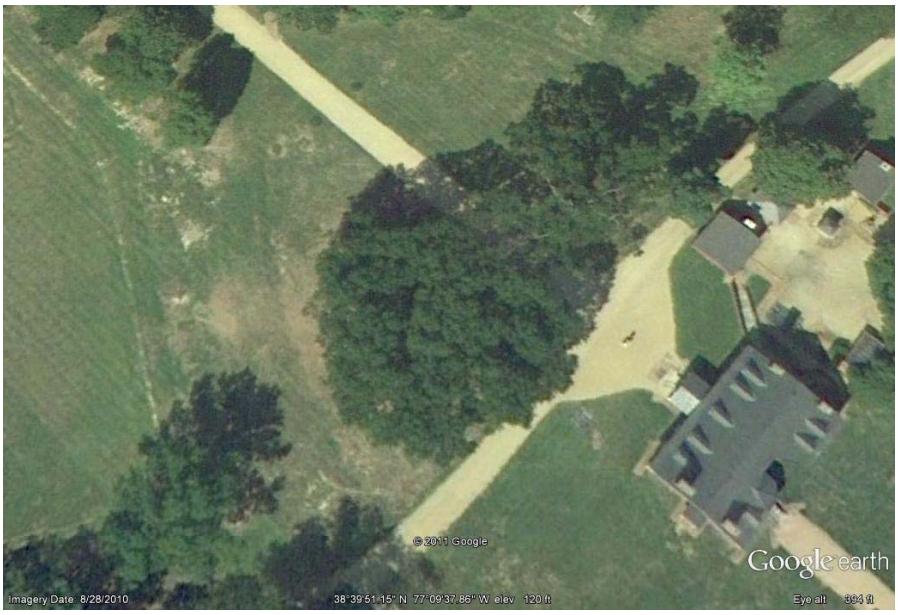


Figure 9 Aerial view of the mansion at Gunston Hall

Excavations in 2010 and 2011, however, did not entirely support this plan. In Fall 2010, the remains of a pebble and cobble roadway were found approximately where a roadway was located near the mansion in the 1870s. (David Shonyo, Staff Archaeologist, Gunston Hall, personal communication 2010) Shonyo reported that the dirt underneath the pebbles and cobbles contained artifacts from the eighteenth century but he had not been able to definitively date the roadway itself. Per correspondence on March 18, 2011, he stated that a walkway was also found that was 1.4 feet south of the roadway. This find appeared to have been somewhat consistent with the proposed model. Figure 9 is a Google Earth shot of Gunston Hall that shows the excavation unit as a disturbance in the lawn off the southwestern corner of the mansion, near the sharp angle in the grass along the roadway.

In 2011, units were dug at the 60 foot mark from the mansion but did not yield any substantial evidence in support of the plan. Units were also dug at approximately 190 feet from the

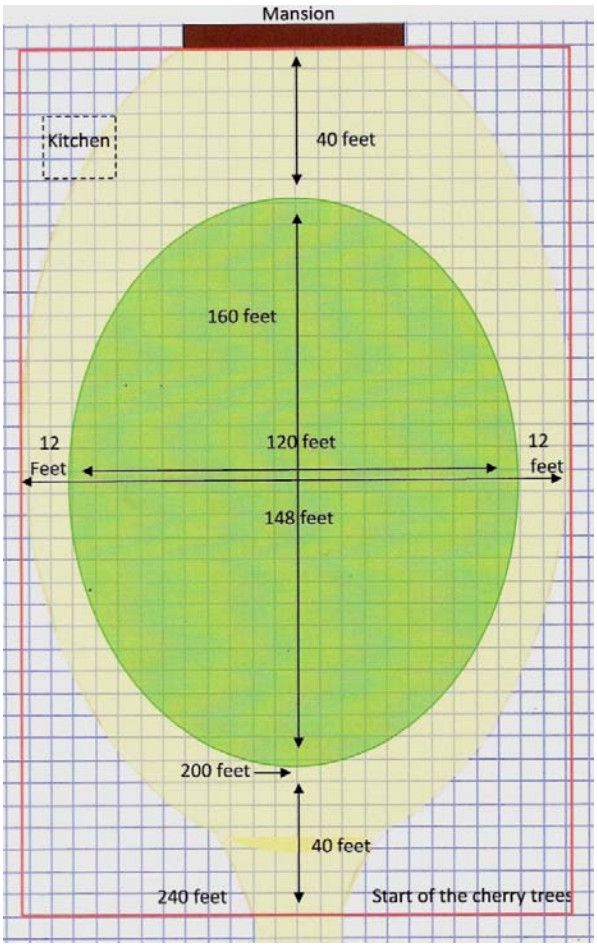



Figure 10 Revised carriage circle plan (1), drawing by W. Miervaldis. One square = 6 feet.

doorway of the mansion toward where the cherry trees would have begun but again, no evidence of 18th century artifacts or gravel was found. Two volunteers, one of whom was Claudia Wendling, used a metal rod to test for changes in the consistency of the soil and found that some type of change seemed to be occurring in the soil at a distance of around 240 feet from the mansion. This was surprising in that John Mason's memoirs had stated that the cherry trees started at a distance of about 200 feet. This might indicate that the roadway could be closer to 240 feet away from the mansion. This find would also be somewhat consistent with the placement of the cherry trees in Morley Williams' plan from 1931. Further investigation is warranted.

Figure 11 Excavation unit shown to right of portico, picture by W. Miervaldis

In response to this find, the model was redone using a Golden Rectangle of 240 feet in length and 148 feet in width. Figure 10 shows the revised version of the plan. It was soon realized that by expanding the length to 240 feet, it was now possible to plan out an inner grassy ellipse

that fell into 3:4:5 proportions based on units of 40 feet, the depth of the mansion and approximately the height of the mansion, 120 foot diameter: 160 foot diameter: 200 foot distance to the edge of the grassy inner part. These particular proportions were highly favored in the Georgian style. Additionally, the edge of the grassy inner part now reaches to 200 feet away from the mansion. Could this have been what John Mason had in mind? Was he remembering that the grass ended at 200 feet and the trees came after the grass? Somewhat problematical, however, was the fact that the edge of the roadway ran through the foundation of the reconstructed kitchen. It had been thought that the reconstructed kitchen was located on top of the foundation of the original kitchen. Recent excavations, however, have cast doubt on this assumption.

In Fall 2011, excavations were resumed closer to the mansion in the general vicinity of those done in Fall 2010. As before, two volunteers, including Ms. Wendling, used a metal rod to test for changes in the consistency of the ground in front of the mansion and again, their efforts achieved results. Excavations were begun at approximately 10 feet west of the mansion and approximately 10 feet south of the porch. Gravel along with 18th century artifacts were located in this area. Figures 11, 12, and 13 show the unit in proximity to the portico and the gravel found. Due to heavy rains the gravel is somewhat obscured in Figures 12 and 13. Its location has been marked with a red dotted curve. The gravel appears to be lining up with the second step which would have been original to the porch. The bottom step shown was added sometime during ownership by the Hertles. (Shonyo, personal conversation, November 19, 2011).

Figure 12

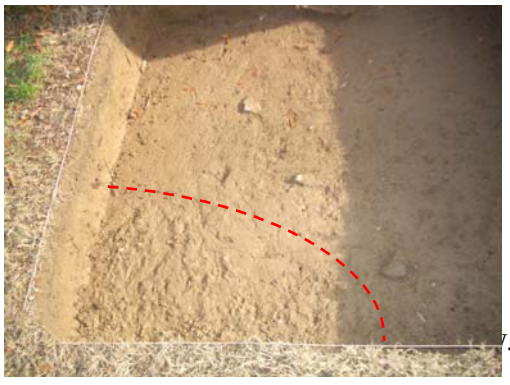
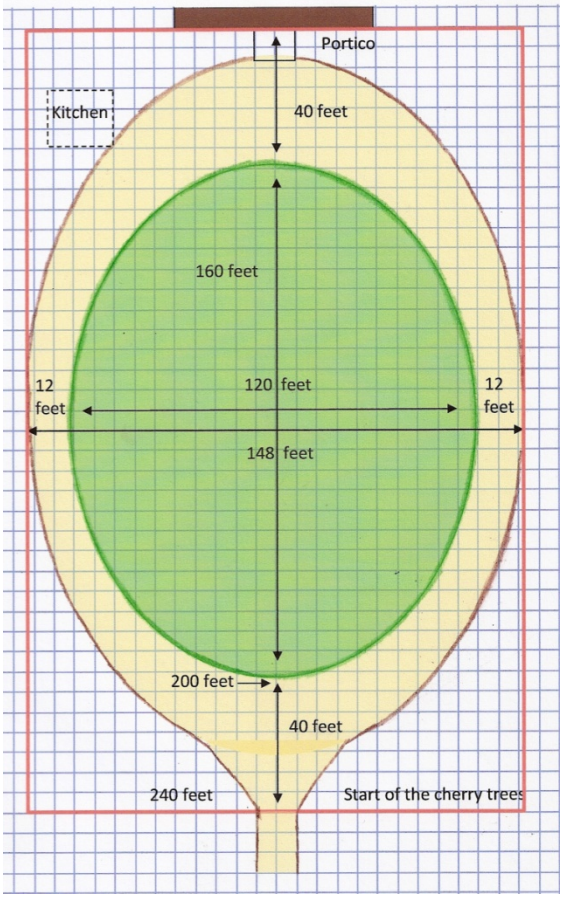


Figure 13 Both pictures taken by W. Miervaldis




Based on this discovery, the carriage circle plan was once again altered. It was still possible to keep the same basic measurements, starting the outside oval that outlines the roadway to meet at the original bottom step of the portico. In so doing, the roadway no longer cut through the foundation of the kitchen. Figure 14 shows the model as it currently stands. Because this unit was excavated in November 2011, it was not possible to continue following the arc of gravel during this season. Excavations are expected to continue in 2012 in an attempt to find Mason's elusive carriage circle.

Figure 14 Revised carriage circle plan (2), drawing by W. Miervaldis. One square = 6 feet.

Since this plan was revised, further research has brought another possible instance of the use of the Golden Proportion at Gunston to light. Accepting that the carriage circle may have started at approximately 240 feet from the mansion door, it would appear that the "rise" in the road that exists today may be occurring at the Golden Proportion mark in the total landscape ranging from the edge of the formal garden on the riverside of the mansion to the end of the cherry tree lanes. (Figure 15) In his 1931 diagram, Morley J. Williams has placed a gate at approximately this location (Williams 1931), perhaps in response to Kate Mason Rowland's claim that a white gate existed somewhere on the landside approach. Rowland states that the cherry trees were "reaching up to the gate." (Rowland 1892: 106) According to Williams' letter to Mrs. Payson, he stopped the cherry trees shortly after this point because he thought the slope of the land would destroy the line of the trees as described by John Mason in his memoirs. In 1914, the sculptor Paul Bartlett and architect Glenn Brown also attempted to plan out the cherry trees for Louis Hertle. In his *Recollections* (Hertle, Gunston Hall Archives), Hertle remarks:

> I can see him [Paul Bartlett] with Glenn Brown lining up books on the floor in the evening trying to reproduce George Mason's avenue of 4 rows of cherry trees on front road and to get the narrowest possible road after going out about 1250 feet from beginning as described by General

John Mason in 1832. The result was they finally decided they could not get it narrower than 750 at that end, a rather wide road!

Shonyo's plan calls for the outside lines of cherry trees to be approximately 300 feet wide at the farthest end. As Morley would do almost twenty years later, the plan to rebuild the cherry tree lanes in 1914 was also abandoned. In *Recollections* (1917/19), Hertle comments that erosion must have occurred since Mason's time between the woods on the north side of the lawn and the gate as it existed in 1917. He felt that if he had the cherry trees replanted, only the tops of the cherry trees furthest away from the mansion would be visible, ruining the line and. optical effect Mason planned

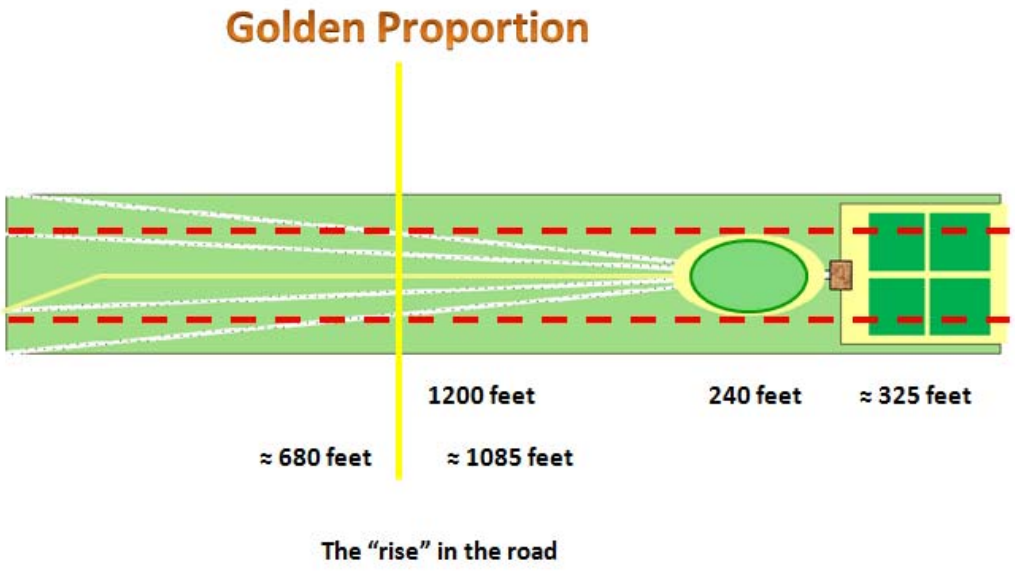



Figure 15 Landside and riverside landscape at Gunston Hall, drawing by W. Miervaldis

The rise in the road seems to occur approximately where the Golden Proportion would fall in the scheme of the entire landside landscape. This makes it entirely possible that the rise is not the result of erosion but rather was present during Mason's time. Given that Mason was capable of designing the optical effect of the cherry trees and the elaborate terraced garden on the riverside front, he would be capable of incorporating this rise into his optical effects. The placement of a gate at this point would make the approach to the house even more dramatic. This rise, particularly if a gate was present at this point, would also hide the mansion from view as someone approached. A visitor would be stopped at the gate and then, once admitted into the inner court of the plantation, would only be able to see the portico until he moved out from the cherry tree lanes. The gate at this point would also separate the approach to the mansion

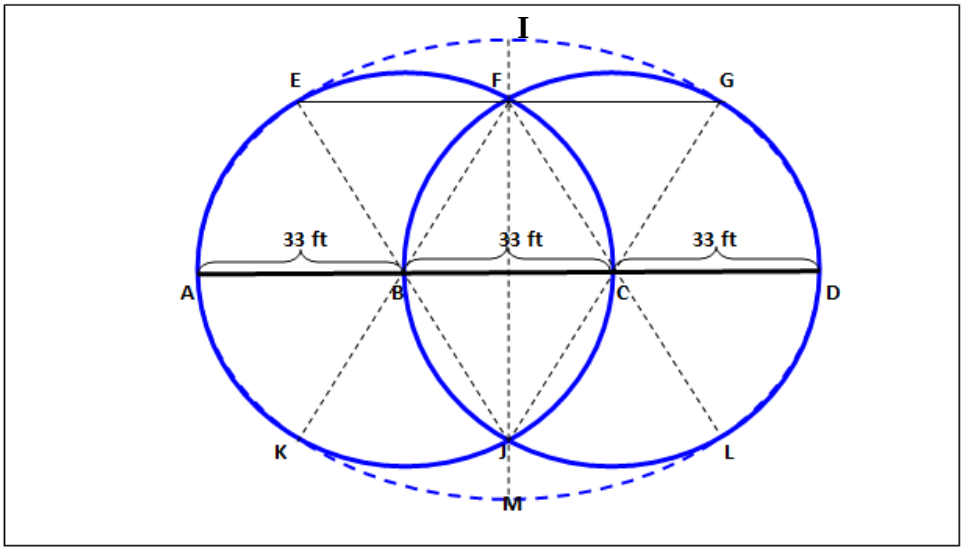
into two journeys of approximately one minute each, if the visitor's horse or carriage was moving at a trotting speed.

One further comment needs to be made about the carriage circle plan and how it interacts with Shonyo's plan for the angles of the rows of cherry trees. The width of the carriage circlein the plan, including the roadway around the grassy, inner circle measures almost exactly the distance between the inner lines of cherry trees bordering the roadway. Perhaps this is coincidental; however, it would be consistent with the symmetry found in the mansion and formal garden on the riverside.

The identification of Golden Rectangles and the Golden Proportion on the landside face of Gunston Hall as well as the fact that the current rise in the road occurs at the Golden Proportion mark in the total landscape scheme reinforces the hypothesis that Mason was aware of these mathematical relationships and could have used them in planning his landscapes.

APPENDIX A

**Use of two circles to determine dimensions of the grassy ellipse in the carriage circle at George Washington's Mount Vernon Estate**




In order to circumscribe an oval around two circles, it is first necessary to determine the measure of the longer diameter in the oval. Washington would have had to know in advance that he wanted the north/south, or longer diameter to be 99 feet. In the following diagram, AD represents the longer diameter and is 99 feet long. The first step in this mathematical procedure is to divide this diameter into three equal parts. Segments AB, BC, and CD equal 33 feet each. Draw a circle, centered at point B, that goes through points A and C. Similarly, draw a circle, centered at C that goes through B and D. The measure of the radii of both circles is 33 feet and the diameter is 66 feet. It can be proven that the measures of EF and FG are also 33 feet each, making the measure of EG 66 feet. The goal is to determine the shorter diameter of the oval or the length of IM in this diagram.

The first step in determining the length of IM is to find the length of IJ. Since both EJ and GJ are diameters of their respective circles, their measure will be 66 feet each. EJ and GJ are actually radii of a larger circle that is not shown. Imagine stretching a piece of string from point E to point J, fastening the string down at point J, then moving the other end of the string over to point G, it can be seen that IJ is also a radius of this invisible, larger circle. Then IJ measures 66 feet. Next, the measure of JM needs to be found. Since, by design, everything is symmetrical around the line AD, the measure of JM can be assumed to be the same as the measure of IF.

Since the measure of IJ is known to be 66 feet, the measure of IF can be found by subtracting the measure of FJ from IJ. Consider the triangle, EFJ. Using the Pythagorean Theorem,

$(EJ)^2 = (EF)^2 + (FJ)^2$

$(EJ)^2 - (EF)^2 = (FJ)^2$

$(66)^2 - (33)^2 = (FJ)^2$

$4356 - 1089 = (FJ)^2$

$3267 = (FJ)^2$

$57.16 = FJ$

The measure of IF = 66 – FJ

IF = 66 – 57.16

IF = 8.84

Then, the measure of IM = 8.84 + 57.16 + 8.84 = 74.84, which rounds to 75 feet, the measure of Washington's east/west or shorter diameter.

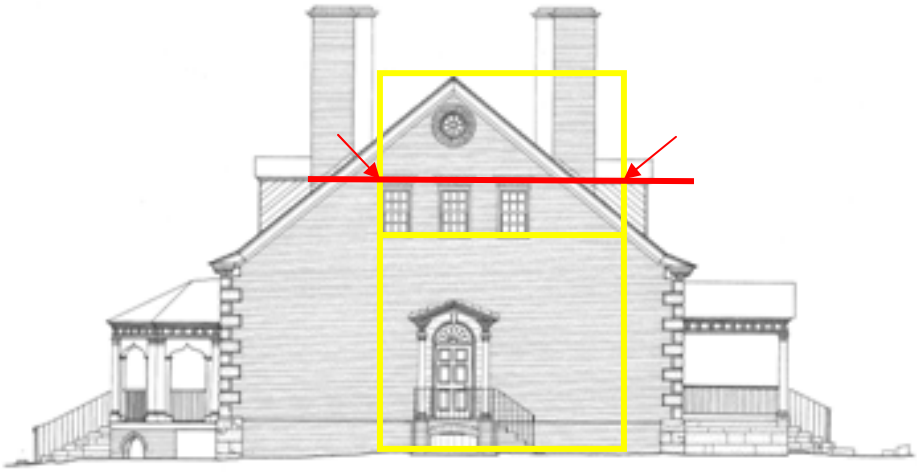
(Salmon 1767:12-13, Plate 1, Figure 24)

APPENDIX B

**Use of the Golden Rectangle in the east façade of the mansion at Gunston Hall**

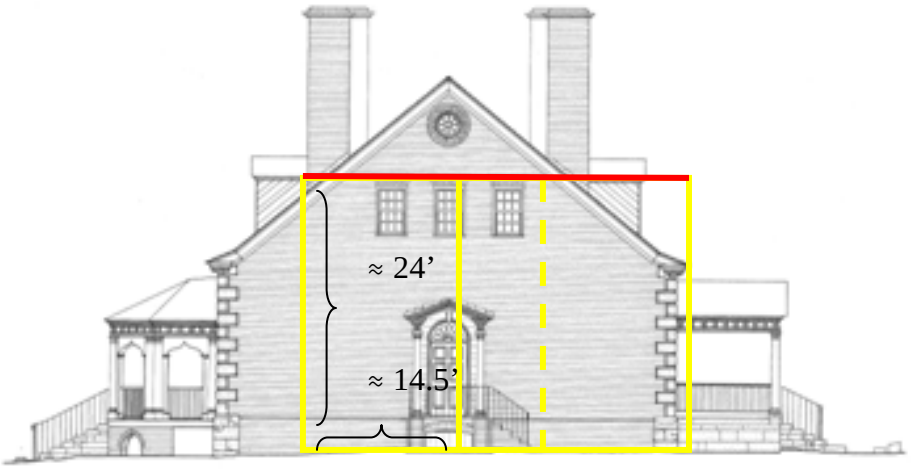
More cases of the use of the Golden Rectangle in the east façade of Gunston Hall have been found. The two most notable are presented here.

As with the landside façade, the bottom panes of glass in the second story windows play a role in defining the Golden Rectangle. On the east façade, the rectangle can be formed from the top of the roof to the ground for a length of approximately 33 feet and in width, from the intersection of a line running from the edge of the dormer gables and the roof line, for a width of approximately 21 feet. These are the same dimensions as the rectangle identified on the landside façade.



Gunston Hall, *HABS*, diagram 8

Using the same red line running from the bottom of the dormer gables, a Golden Rectangle can be formed that establishes the location of the private doorway. In this case, the rectangle is rotated so that the eastern most pilaster divides the rectangle into two smaller rectangles in the Golden Proportion. The same argument can be made for the western most pilaster and is shown with a dotted yellow line on the diagram. Notice the placement of the second story windows in regard to the location of these lines.




Gunston Hall, *HABS*, diagram 8

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