THE CENTER FOR PALLADIAN STUDIES in America, Inc., is a non-profit national membership organization founded in 1979 to research and promote understanding of Renaissance architect Andrea Palladio and his influence in the United States.

In furtherance of its goals, the Center organizes symposia, lectures, and study tours on Palladian subjects, publishes books and periodicals, sponsors exhibitions, and makes grants to scholars and others.



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For 30 years CPSA has provided its members a vehicle for appreciating and learning more about how Renaissance architect Andrea Palladio changed the way the world looks today. CPSA offers a diverse program for members at all levels of knowledge and interest.

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Publications by CPSA include the Building by the Book series (three vols., 1984, 1986, 1990) edited by Mario di Valmarana; Bremo: The Establishment of a Virginia Plantation (1988), by C. Allan Brown; and Palladio and America: Selected Papers Presented to the Centro Internazionale di Studi di Architettura Andrea Palladio (1997), edited by Christopher Weeks. Grants have been made in support of other books, exhibitions and historical studies.

CPSA co-sponsors Virginia Commonwealth University's annual architectural history symposia and offers its own program of symposia, lectures and newsletters at regular intervals. With this issue, its journal, Palladiana, completes its third year of publication.

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CENTER FOR PALLADIAN STUDIES IN AMERICA 



events.

2009

🗆 April 4

□ Nov. 13

► George Washington: Palladian



Mount Vernon shows Washington's creative Palladianism .....2

► Palladio's optical illusion



Palladian ratio . . . . . . . . . . . . . . . . . 6



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JOURNAL OF THE CENTER FOR PALLADIAN STUDIES IN AMERICA INC

# Event calendar for new year features tour of Annapolis-area Palladianism

A Palladian home tour and a symposium headline CPSA's 2009

April tour. A one-day tour on April 4 will explore fascinating Palladian houses built in the Annapolis, Maryland, area before and after the Revolutionary War. At the Wye House in Talbot County, a member of the Tilghman family, descendants of the original owner, will lead the group through their private residence. The day will offer an opportunity to learn more about architectural pioneers William Buckland and Robert Key and the creative ways they adapted pattern book designs from Abraham Swan, Isaac Ware and others to spread Palladian motifs in America.

#### **Plan Now for Coming Events**

One-day Palladian tour of Annapolis, Md., area

Palladian Session VCU Architectural Symposium Richmond, Va. co-sponsored by CPSA

The tour program is chaired by CPSA board member Judith Proffitt. A complete description of the day's events will be mailed to CPSA members when the schedule is completed.

Spring 2009

For background information on Annapolis houses and architects, see the essays in volume 2 (1986) of CPSA's Building by the Book series, edited by Mario di Valmarana.

Richmond symposium. On November 13 the annual symposium presented by Virginia Commonwealth University and co-sponsored by CPSA will return to Richmond. A session devoted to the Palladian window will trace its origins (long before Palladio) and its surprising appearance in Colonial Revival attics.

The symposium, as always, is under the direction of CPSA board member Charles Brownell. A descriptive brochure will be mailed to CPSA members later in the year.

Veneto tour. See page 8 for a snapshot reminder of last fall's tour of Palladio's buildings in Italy's Veneto region, taken in cooperation with the Virginia Center for Architecture.

### Mount Vernon and pattern books

# Washington was an American Palladian with the confidence to break rules

#### By Justin Gunther

This article is adapted from a paper presented at Virginia Commonwealth University's 16th Annual Symposium on Architectural History, co-sponsored by the Center for Palladian Studies in America, in Richmond, Virginia, on November 14, 2008.

As he renovated and enlarged his iconic estate at Mount Vernon, primarily in three major building programs, George Washington was acutely aware of prevailing trends in architectural fashion. Yet Mount Vernon is, more than anything else, a reflection of Washington himself. His humility, practicality, honesty, and complexity are revealed in every element of the mansion and its landscape.

Mount Vernon must be studied alongside Washington's life. As he made the gradual ascension from frontier surveyor to first President and father of his country, Washington remodeled Mount Vernon to express his societal position. Although a reflection of British tastes, Washington's desire for a 'republican style of living' created a uniquely American interpretation. Mount Vernon began as a simple double-pile Georgian, was transformed into a mansion in the five-part British Palladian mode, and ended as one of early America's grandest houses complete with Adamesque decoration. FIG. 1. In examining the house's evolution, discussing the influence of prevailing tastes along the way, one sees how Washington drew from personal experience and from pattern book plates to produce a work of architecture distinctly his own.

The plantation, first known as Little Hunting Creek, had been in the Washington family since 1674. George's elder half brother, Lawrence, named the property Mount Vernon in honor of his former naval commander. Around 1743, Lawrence constructed a one-and-a-half-story house on the Potomac bluff. The main floor contained a wide central passage with two rooms on either side. Pairs of outbuildings, set at an angle to the house and connected by fences, framed the approach and created a forecourt with a circular drive.

Tuberculosis claimed Lawrence's life in 1752. and the property passed to his widow. George Washington started leasing Mount Vernon from his sister-in-law in 1754, but he quickly became entrenched in his military career, serving as commander of the Virginia regiment in the French and Indian War. The position took him far afield, exposing him to significant architecture throughout the colonies. Washington quickly realized that Mount Vernon was both outdated and far too small Political aspirations and his courtship of Virginia's richest widow, Martha Dandridge Custis, were further motivation to improve his outmoded seat.

In 1757-58, Washington started a major campaign of improvements to Mount Vernon. He raised the roof and created a full second floor and a new attic. In the central passage, the walls were paneled and the staircase rebuilt in black walnut. The small dining room was covered with an embossed crimson paper and the west parlor

Continued on page 3



FIG. 1. George Washington's Mount Vernon, west façade, as completed by 1787.

#### Continued from page 6

constant diameter for the lower 3/7 of the column shaft. Above endpoints of these line segments, Serlio uses a semicircle as a that point, which he calls the 'belly' of the column, the profile of guide. Equally spaced horizontal lines are intersected with the the shaft begins to slope inward in a single straight line to the circumference of the semicircle and then projected vertically up column's capital.<sup>4</sup> FIG. 4A. Of course, the junction of these two the column shaft to produce the endpoints of the line segments. lines at the belly would be smoothed out. The main point for our Palladio's approach, working in brick, is far more pragmatic. purposes is that the profile consists of two straight lines, a After constructing the first one-third of the shaft with vertical vertical line for the lower part of the column up to the belly, and sides, he suggests, place a long thin ruler against it and press the a non-vertical, inward slanting, line from the belly to the top. top of the ruler inward the desired distance--producing a smooth Sebastiano Serlio describes a refinement of Alberti's profile, continuous curve to shape the top two-thirds of the shaft. As for with the column constant for the lower one-third of the column the amount of diminution, my measurements in 2007 confirmed shaft. The more important difference between the two, however, that the diameter of the Ionic columns at Villa Cornaro is oneis that the upper two-thirds of Serlio's column is composed of a eighth less at the top of the shaft than at the bottom, the same number of straight line segments, each slanting progressively ratio prescribed by Palladio for columns of their height.

more inward.<sup>5</sup> FIG. 4B. The actual number of line segments can be decided by the architect: Serlio shows four. To place the



FIG. 3. The temple of Athena at Paestum, in southern Italy, built c. 500 B. C., shows the highly pronounced entasis used by ancient Greeks for Doric columns.

Palladio points out (bk. I, chap. 13) that short columns require more entasis (reduced diameter at the top) than colum of medium height, and that tall columns need the least reduct Then he gets into trouble with his arithmetic, stating in effect that the amount of diminution should be 15.4% for short columns, 7.4% for medium ones, and 12.5% for tall columns Obviously the 7.4% for medium columns does not fall betwe the other two fractions, as Palladio's rule dictates. One can assume what a modern day Palladio's explanation of the errar middle value would be: Typo!

Palladio is innocent of another apparent typo, however. A first glance, his elevation drawing for Villa Cornaro seems to that the diameter of the Corinthian columns on the upper floo 16  $7\frac{1}{2}$  (with the '16' written above the '7<sup>1</sup>/<sub>2</sub>')--an impossible w either in feet or in inches. In fact, the '6' turns out to be an ea form of ampersand.<sup>6</sup> Indeed, 1 foot & 7<sup>1</sup>/<sub>2</sub> inches is correct.

*Entasis* may supply a reason for the 16:13 ratio between the diameters of Villa Cornaro's Ionic columns on the lower

PHOTO: CHRISTOPHER V. TRINACTY



FIGS. 4A, 4B, 4C. Alberti, Serlio and Palladio each propose different entasis systems, with Palladio's providing the smoothest profile.

nns tion. t	floor and Corinthian columns on the upper floor. Perhaps the inward sloping profile of the lower columns, if visually extended upwardpast the entablature and past the pedestals of the upper columnspointed Palladio to a suitable bottom diameter for the upper columnsand 1-5/8 feet fit the bill. This is not a precise mathematical argument, but a possible explanation nonetheless.
een	Notes:
nt At o say or is	<ol> <li>Branko Mitrović and Stephen R. Wassell, eds., Andrea Palladio: Villa Cornaro in Piombino Dese (New York: Acanthus Press, 2006).</li> <li>Andrea Palladio, Book 1, chapter 1 [1997, p. 7].</li> <li>Leon Battista Alberti, Book 6, chapter 13 [1988, p. 188].</li> <li>Alberti, Book 6, chapter 13 [1988, pp. 187-188].</li> <li>Sebastiano Serlio, Book 4, chapter 5 [1996, v. 1, p. 257].</li> <li>This point was brought to my attention by Lionel March.</li> </ol>
vidth arly	STEPHEN R. WASSELL, Ph. D., Professor of Mathematical Sciences, Sweet Briar College, is co-author of <i>Andrea Palladio:</i> <i>Villa Cornaro in Piombino Dese</i> (Acanthus Press, 2006).

## Palladio's typo Entasis research offers insights into Palladio's design theory

### by Stephen R. Wassell

The persistent appeal of Andrea Palladio's architectural designs across centuries and continents has prompted much study and debate as to the design theories on which Palladio relied to produce such universally pleasing results. In his masterwork, The Four Books on Architecture (Venice 1570), Palladio himself freely states his pragmatic preferences on a variety of issues, but is largely silent as to broad underlying principles. Consequently, scholars are left to deduce his design concepts from the evidence of his constructed work. The full set of 'as built' architectural drawings now available for Palladio's Villa Cornaro in Piombino Dese is already proving to be an important new resource to facilitate such work.<sup>1</sup>

One of the most striking facts discovered in the new data is that one of the key ratios in the floor plan of Villa Cornaro appears again as a key ratio in the villa's elevation. This is particularly noteworthy because so much Palladian scholarship in the past has focused on Palladio's floor plans, without an equal emphasis on his elevations and the relationship between those two planes. The particular ratio here, namely 16:13, represents both (i) the ratio of length to width in the villa's main sala, probably the most prominent proportion of the entire villa, and (ii) the ratio between the diameters of the Ionic columns on the villa's lower floor and the diameters of the Corinthian columns on the upper floor. FIGS. 1 AND 2.

The dimensions of the main sala are central to the villa's floor plan because the other rooms in the core of the villa key to it. (Rooms B, C, E and F, combined, substantially equal the sala in

size, as--less closely--do Rooms A and G.) Similarly, the column diameter (at the bottom of the shaft, unless otherwise specified) represented for Palladio the module that determined the dimensions of the other façade elements. (For example, the height of a column is a specified multiple of its diameter.) It is striking that Palladio used the same ratio in both instances, but not surprising in light of his perception of the nature of Beauty:

Beauty will derive from a graceful shape and the relationship of the whole to the parts, and of the parts among themselves and to the whole, because buildings must appear to be like complete and well-defined bodies, of which one member matches another and all the members are necessary for what is required.<sup>2</sup>

However, the actual ratio used for this double purpose, 16:13, is a surprise, because it has no apparent relationship to the ratios with which Palladio is normally associated. Study of this choice has led me back to a consideration of entasis and its possible influence on the dimensions at Villa Cornaro.

Entasis refers to the diminution in the diameter of a column shaft upwards towards the capital so as to achieve a convex profile for the column shaft. Because of this convexity, entasis is often described as a 'swelling' in the middle of the shaft (even though the maximum column diameter is typically at the bottom of the shaft). The vast majority of columns in classical architecture exhibit this reduction in diameter, or tapering, upward along the shaft. The most common rationale is the optical one: that without entasis columns look top-heavy and thin in the middle, that is, that they appear to have concave sides.

The mechanics of entasis have varied through history. The ancient Greeks applied highly pronounced entasis on many Doric columns (FIG. 3); more subtle effects were used on Ionic and Corinthian. Roman architects favored the subtle approach overall, and Renaissance architects and theorists followed suit. But how, mechanically, is the reduction in diameter to be achieved? Leon Battista Alberti, the Renaissance theorist, offers a detailed formulation, which he states is based not on ancient writings but on 'careful and studious observation of the works of the best architects.<sup>13</sup> Alberti recommends maintaining a

Continued on page7



FIG. 1. On Villa Cornaro's lower floor, the main sala measures 32 feet by 26 feet, an uncommon ratio of 16:13.



Fig. 2. The south façade of Villa Cornaro's central block. The diameter of the lonic columns (lower floor) and Corinthian columns (upper floor) are 2 feet and 1-5/8 feet, respectively, a ratio of 16:13.

Continued from page 2





paneled from floor to ceiling. The alterations did have one negative effect, however: the width of the passage and the layout of the landside rooms resulted in window asymmetry.

While Washington's pragmatism allowed him to compromise symmetry on the exterior, he spared no expense on interior furnishings and modifications. For decorative motifs, Washington consulted popular British pattern books. These widely-circulated publications promoted the neo-Palladianism adopted by Whig Britain. Colonial Virginia's tastes followed those of Britain, and Washington incorporated details from these sources to conform to trends.

For the west parlor, Washington consulted Batty Langley's Treasury of Designs. The entablatures of the elaborately pedimented door frames were taken from the 'Ionick Entablature' illustrated on plate VI. The capitals, based on Palladio's rendition of the Ionic, were derived from another source, possibly Batty and Thomas Langley's Builder's Jewel, plate 23. FIG. 2. Palladio's capital was not illustrated in *Treasury of Designs*, which instead followed Inigo Jones's precedent at the Banqueting House, combining Scamozzi's capital with Palladio's entablature. The use of Palladio's capital in colonial architecture was rare, and why it showed up at Mount Vernon is unclear.

Perhaps it was the limited skill of the craftsman, for the angled volutes, or threedimensionality, of Scamozzi's required greater expertise than the more twodimensional Palladian capital. Inspiration for the fireplace and overmantel of the west parlor came from

mix styles and motifs.

With respect to the other first-floor rooms, pattern books were minimally at play. However, in an attempt to unify and enrich the exterior, Washington directed the installation of wood siding cut to simulate rusticated stonework. The likely source was Builder's Jewel, plate 75. FIG. 4. Mount Vernon's cornice profile is identical to that of the 'block cornice' shown at the upper right, and the 'V' joints of the quoins match the rustication on the house. Although the concept for rusticating the entire façade may have originated elsewhere, such as Washington's exposure to Newport's Redwood Library, the similarities suggest this plate was the direct source for the house's overall vertical profile.

Abraham Swan's British Architect, plates 50 and 51. FIG. 3. The executed design is a simplified blend of the two. This fireplace inserts an element of Rococo into the space, which initially may seem to conflict with the straight Palladianism of the doorways but reconciles itself as an expression of Washington's willingness to

By the end of 1758, the remodeling was nearing completion. With victory at Fort Duquesne securing British control of the frontier, Washington resigned from his military career and married Martha Custis. The wealth she brought into the union placed the Washingtons in a small circle of Virginians at the pinnacle of society. In 1761, Washington's lease of Mount Vernon ended with his inheritance of the property after the death of his brother's widow. Throughout the 1760s, Washington adopted the lifestyle of a Virginia planter and transformed Mount Vernon into a gentry seat.

In 1773, Washington started planning another sweeping remodeling, one that would give the house its present size and principal features. A rather rudimentary drawing done by Washington shows a doubling in length, an increase in height, and the addition of a pediment and cupola. To determine the overall form, Washington

Continued on page 4



FIG. 3. Abraham Swan, The British Architect (1758), Plate 50.

Washington the Palladian Continued from page 3



FIG. 4. Batty and Thomas Langley, Builder's Jewel. Plate 75.



62.

relied on the geometry of simple mathematical proportions, basing the pediment's width and its height off the ground on one-third the house's length. The start of the Revolution soon forced Washington to leave Mount Vernon to command the Continental Army, so management of the alterations was left in the hands of Lund Washington, a cousin.

Construction began with an addition to the south containing a study on the first floor and master bedroom above. Then, the small dining room was updated by

stripping its crimson wallpaper and installing an ornate mantel, overmantel and new decorative ceiling plaster. Washington specified Swan's British Architect for the chimneypiece, the same source he used for the one in the west parlor some sixteen years earlier. At that time the carver, Going Lanphier, had simplified and flattened the design. This time Washington expected the skilled William Bernard Sears to execute a more exact copy from Plate 50. FIG. 3. Stylistically, the design was out-of-date, but it did provide a direct tie between the two formal rooms of the first floor.

For the ceiling of the small dining room, Lund noted that Sears recommended a plan, which means the craftsman probably had access to William Pain's recently published Practical Builder. Executed by the unnamed French stucco worker formerly employed by Washington's brother-in-law at Kenmore, components of the ceiling were derived from Plate 62. FIG. 5.

Framing of the large dining room addition to the north started in 1776, and Washington wrote, 'I would have the whole executed in a masterly manner.' The house's most architecturally ambitious room, the large dining room, when completed twelve years later, would be a reflection of Washington's stature and wealth. For the north wall of this room, Washington had his carpenter Going Lanphier install a Venetian window, rather faithfully derived from Plate 51 of Treasury of Designs. FIG. 7.

Although the interior arrangement, with its wide central passage and grand staircase, was rooted in Georgian tradition, Washington departed from the house's past for the exterior, which he expanded with British Palladian influence to give Mount Vernon a five-part plan. He called for the demolition of Lawrence Washington's axially-aligned dependencies and had a new kitchen and servants' quarters constructed in 1775-76 with orientations perpendicular to the main house.

What makes Mount Vernon's five-part plan unusual is the transparency of the arcaded quadrant wings. Traditionally, such wings had at least one closed side, specifically to hide services. As Scott Owen points out in his graduate thesis, the opening up of the arcades was Washington's solution to provide 'a beautiful framed view of the river.' The wings conform to the British Palladian

five-part form, but they do so with an originality and uncommon purpose. More than just covered walkways linking the main block to the service blocks, Mount Vernon's quadrant wings express Washington's love of nature and desire to highlight the prospect, one which Polish nobleman Julian Ursyn Niemcewicz described as 'perhaps the most beautiful view in the world.'

The open arcades' square Tuscan piers also connect stylistically to the main house. Their form is very similar to the pilasters of the Venetian window, and Washington expanded upon this form, elongating it for the columns of the piazza. Added in 1777, the piazza, or porch, was yet another Washington solution to enjoy the magnificent Potomac view. Its great height, broad sweep, and stretched proportions were a clear departure from popular classical tastes.

Back on the west front, Washington added the Tuscan doorway, the pediment, and the cupola by 1778. The front door surround, copied from Batty Langley's plates, strengthened the Tuscan theme of the exterior. The pediment, adorned with an ocular window copied from Plate 54 of Treasury of Designs, formalized the façade and defined the center of the house. Washington incorporated the atypical feature of a cove to give the pediment more prominence. FIG. 6. The window asymmetry prevented him from using a more common solution, such as installing a pair of pilasters or projecting outward the entire central block under the pediment. To complete his composition Washington crowned Mount Vernon with a cupola. Symbolically, the feature defined the house's societal importance. Practically, the cupola helped draw out hot summer air. And Washington positioned it a few feet off center to the south, a last ditch effort to alleviate the window asymmetry.

With the house largely finished, Washington demonstrated a clear understanding of classical orders by presenting the decoration of the house in a logical hierarchy. The exterior was designed to be purely Tuscan, the most rustic and strongest of the orders. Entering the central passage, the Tuscan was continued in the doorway pediments and cornice, providing a link between external and internal space. The flow of the house then progressed into the Ionic west parlor and culminated in the large dining room,

Continued on page 5

#### Continued from page 4



FIG. 6. Mount Vernon's pediment is projected on a coved cornice.

which Washington planned to be the most ornate and public space.

When Washington returned home after the Revolution in 1783, only the large dining room still required substantial work. He planned the room to measure 32 feet long by 24 feet wide by 16 feet high. With a coved ceiling, a Venetian window, and a 16-foot height half the 32-foot length, Washington was clearly intending the space to follow a basic British Palladian motif-the double cube room.

The interior decoration was executed by John Rawlins, an English stucco worker out of Baltimore who was well versed in the new Adam style. The dignified restraint and lightness of the Adamesque ornament must have appealed to Washington, not to mention the inclusion of agricultural motifs in door friezes and in the four panels of the ceiling plasterwork. FIG. 5. The decoration of this room inspired Washington to update the west parlor ceiling, and in 1787 an associate of Rawlins installed an Adamesque ceiling there.

Washington's willingness to incorporate the Adam style further conveys his desire to keep Mount Vernon modern. He was keeping abreast of trends, accepting a Neoclassicism that was moving away from Palladian traditions. And although Washington did not realize it, he had been practicing the mode of Adam for over a decade. As architectural

and his craftsmen revised and orthodox.'

In April 1789, the Presidency took Washington from Mount Vernon once again. When he returned to retire in March 1797, he found a home in serious need of repair and updating. Rooms were repainted, the central passage faux finished to look like mahogany, and the



historian Sir John Summerson states, 'to an architect of the Palladian School [an architectural element] was more or less an inflexible thing ... To Adam, on the other hand, it was a thing whose qualities could be abstracted and then rendered back with an infinity of variation.' With almost all the principal features that make Mount Vernon recognizable—its piazza, its quadrant wings, its asymmetry, and its manipulation of proportions—Washington reconstituted the antique into unique and

pleasing solutions. As Washington would write in a letter to architect William Thorton, it was within his 'rules of Architecture' to 'make small departures from strict rules' to create 'things not quite Washingtons' bedchamber decorated with an American paper indicative of the emerging, and more republican, Federal style.

Washington died in 1799, but what he left behind is an essay in architecture that is truly one of a kind and one that mirrors his life. Yes, Washington was an amateur, but he successfully transformed a modest farm into one of the great estates of the eighteenth century. As British historian John Harris writes, 'the pleasure in studying these amateurs is less in trying to categorize them, than to enjoy the diversity of their architectural accomplishments. Their work rises to distinction owing to an untrammeled attitude to design.'

JUSTIN GUNTHER is Curator of Frank Lloyd Wright's Fallingwater and adjunct faculty in the historic preservation department at Savannah College of Art and Design. He was formerly Manager of Restoration at Mount Vernon.



FIG. 7. Large dining room, as completed with John Rawlins' interior decoration.