

The Inexorable Influence of Christopher Wren and the Design of the US Capitol Dome

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Although American colonists proclaimed their political independence from Great Britain in 1776, it would be another century before the architects of the United States would seek their freedom from British tradition. During the early nineteenth century, the first sizable group of self-described professional architects in America sought foreign masters who exemplified high standards of cultural achievement and simple good taste to compensate for their isolation in a land that they believed showed little evidence of either. Such was certainly the case for Thomas U. Walter, one of the most famous young architects in America. A highly patriotic citizen who deeply valued the independence of his country, Walter sought no overt American quality in his practice, but instead traced his professional lineage through several English immigrants who he perceived to be the founding fathers of architecture in America, and who directed his study to revered British buildings and architects. Among them, Christopher Wren would be central to Walter’s design for the project that was not only the most significant of his career, but also the most important in the country as a whole: the Capitol in Washington.

Philadelphia

Walter’s appointment as the architect of the Capitol was the culmination of a prosperous career that began with the convergence of several auspicious circumstances. Born in 1804 into a family of Philadelphia masons, Walter had just begun an apprenticeship as a bricklayer when architect William Strickland, then at work on the Parthenon-inspired Second Bank, invited him to join his office as a pupil. Such an opportunity was rare, but not unprecedented, in America. Strickland himself had been similarly “discovered” as an apprentice carpenter by English-born Benjamin Henry Latrobe. Trained in the offices of John Smeaton and S. P. Cockerell, Latrobe emigrated to America in 1796 and within three years had set up shop in Philadelphia. He set new standards for professional practice and Neo-Classical taste, both of which were adopted by Strickland to shape his architecture and the experiences of his own students, including Walter.

The third most significant and immediate influence on Walter's early professional development was John Haviland. Born in Sussex, Haviland apprenticed under James Elmes before emigrating in 1816 to Philadelphia, where he established an active office. He was also one of the first appointees to the faculty of the state-supported Franklin Institute. Organized on the model of mechanics' institutes in Scotland and England, the Franklin opened in 1825 in this building of Haviland's design, based on the fourth-century Monument of Thrassylus. It was here that Haviland met Walter as a student on the verge of launching an independent office. Haviland instructed Walter in architectural drawing methods and nurtured his intellectual development by introducing him to architectural publications, including many written by his former master, Elmes.

With this unusually comprehensive preparation for architectural practice, much of it colored by English tradition, Walter quickly found success among both private and corporate clients. As revealed in a review of his early works, Walter was swift to adopt the Greek taste that had already swept Great Britain and that was becoming increasingly popular in America, with his mentors leading the charge. Walter learned this manner of design directly from his teachers and from the sources they shared with him: he traced the lines laid down by Stuart and Revett, and understood their significance from Elmes' interpretations. From the latter's *Lectures on Architecture, Comprising a History of the Art*, of 1821, Walter learned that under the Greeks, architecture had risen to "perfection," having achieved an "imposing grandeur united to pleasing simplicity, elegance of ornament, and harmony of proportion."¹ Although Walter believed that the grandeur, simplicity and elegance of Grecian architecture was especially appropriate to Republican institutions and citizens in his country, he was more concerned that his buildings would be in good taste than that they would make specific political statements.

Walter's early success and fame was secured when he was named the architect of Girard College for Orphans, which was soon to achieve the status of the most expensive architectural project in America to date. In addition to raising his professional status, Girard College also allowed him an opportunity to travel that

was rare among his peers in the nascent profession. But rather than the lengthy and artistic Grand Tours that would be the indulgence of American architects in the later nineteenth century, Walter's voyage was a shrewd investment by members of the building committee of the college, who were rightly concerned about the unprecedented scale and technology of their building, which was to be clad entirely with marble. The first marble quarries in America were opened in a few colonies during the last decades of the later eighteenth century, but it remained a rarely-used material. Even in Walter's hometown of Philadelphia, one of the most architecturally advanced cities in the country, the oldest marble-clad building was less than forty years old. Because the cost of Walter's travels was projected to be a small percentage of the estimated million-dollar budget for the building, it only made sense to send the architect to a place where he could witness the longevity and durability of marble on buildings that matched the scale of the college.

London

During the four-month, multi-country tour that Walter commenced in July 1838, he spent fifteen days in London, taking rooms on Trafalgar Square. On his first night in the capital, he was welcomed at the Royal Institute of British Architects where he met, among other architects and engineers, John Claudius Loudon, who remarked on Walter's visit in the pages of the *Architectural Magazine*, and included a lengthy description of Girard College in its fifth volume.²

Sometimes in the company of other architects, oftentimes on his own, Walter fanned across the city to visit venerable and modern buildings. In addition to fulfilling his College-sponsored mission, his tour also provided a profound opportunity to practice his burgeoning theory of taste, which rested on the careful selection and use of historic precedents. He found little to appreciate in John Soane's Bank of England, which he found to be "so cut up with little features as to destroy all idea of grandeur, repose and harmony."³ Henry and William Inwood were culpable for different errors at St. Pancras Church, where Walter criticized Ionic capitals with angled volutes that failed in please in spite of their Attic pedigree. Walter observed,

The corner capitals look very bad although they are *à la Grec*, they are on this account above

criticism, but I never can be persuaded to follow the Greeks in this barbarism.⁴

For Walter, the projects were disappointing exercises of Greek beauty not because they strayed from precedent *per se*; they failed either by departing too capriciously from sound precedent (Soane), or by following an unfortunate, if venerable, model too closely (Inwood).

Walter turned these critical parameters on Christopher Wren upon his visit to St. Paul's, which he engaged in a serious study across hours that he spent wandering within the cathedral and clambering across its roof. His official duties required his consideration of technicalities of the church, and he dutifully made note of the affects of coal soot and humid weather on the exterior, recorded the insufficiency of certain cornice details to properly shed water, and drew diagrams of clever gutter details. Although Walter, an American Baptist Republican with great love for the simple Greek style, had little to learn from the liturgical planning and aesthetic effect of the great domed Baroque Anglican cathedral, the architectural design of the church could hardly escape his attention.

Like others of his generation, Walter's Grecian taste could not abide the excesses of Wren's Baroque compositions. Even so, he could accommodate Wren's significance within the history of architecture and the profession by focusing on the simpler, allegedly "Grecian" aspects of his designs, and their structural clarity. Admiring the "science" of the cathedral rather than its art, Walter's assessment reflects the interpretation he had read in Elmes' *Lectures*. Walter observed that although the general proportions of the cathedral were "graceful," and its overall profile at a distance made a beautiful impression, he could "say but little in favor" of Wren's general "architectural taste," for:

upon closer inspection the multiplicity of breaks and incongruous forms with which the whole composition abounds . . . is found to destroy all repose and harmony . . . [it] produces a confused effect that interferes with every idea of beauty.⁵

However, this criticism applied only to the body of the church. The one portion of Wren's design that was not subject to Walter's censure was the dome. Walter considered the dome almost as a completely different

building, designed under distinct parameters that produced much finer results; its “breadth of parts” afforded “repose to the eye,” as did the “beautiful girdle around its base.”⁶

Although other chroniclers, critics, architects and artists found much about the cathedral’s design worthy of praise, Walter extolled the dome’s simplicity and its structural design, filling pages of his journal with a lengthy description of it. He praised the extreme lightness of its masonry structure, its fusion of metal and brick, and Wren’s general “judicious adoption” of structural forms that resulted in its great strength.⁷ Walter deeply admired this work of undeniable engineering brilliance that far exceeded the accomplishment of its aesthetic design; his response echoes Elmes’ assessment that “St. Paul’s cathedral may perhaps strike some critics to be faulty in design; but, as a perfect piece of scientific *construction*, it stands without a rival.”⁸

While celebrating Wren’s scientific prowess, Walter was willing to excuse his aesthetic excess that, while lacking grace, was still “the best specimen of Roman Architecture in London, and probably the world.” (And, it is worth noting, that Walter awarded this praise after traveling through Italy and studying actual, real Roman buildings.) Further, the shortcomings of the cathedral were not actually Wren’s fault, as Walter explained,

Its defects are not to be attributed to want of taste in the Architect; but to the tasteless system of Architecture that almost universally prevailed in the days of Wren, under the name of the Roman style and which is now happily sinking into oblivion before the chaster canons of Grecian art.⁹

The march of time kept pace with the advance of civilization, meaning that some architects—even truly great ones—might have been trapped in the degraded taste of their day. Walter mused that, had Wren only survived farther into the eighteenth century, he too might have seen the light of Grecian design and turned his back on his aesthetic sins of the past.¹⁰

Philadelphia, again

Returning to Philadelphia, Walter continued to practice mostly in the Grecian vein, with the occasional Gothic or even Egyptian exercise—but Roman and Renaissance-inspired designs remained an extreme rarity due to their perceived tastelessness and unfortunate associations with the Catholic church. By the late 1840s, Girard College was complete, with several of its features improved by Walter’s travels in Great Britain and Europe. Many of his overseas experiences settled into his memory as sublime architectural encounters with little likely application for his practice in the United States. Domes are rare in architectural design, and certainly were so in early nineteenth-century America. And although they did appear in many public and private buildings through the first decades of the nineteenth century, when Walter designed similar civic structures, he instead preferred the pure profile of a Greek temple, sometimes ornamented with tall staged towers.

Upon his return from Europe, the only opportunity Walter had to make use of his experience at St. Paul’s was not in architectural design, but rather, in architectural scholarship. Named the new Professor of Architecture at the Franklin Institute in 1840, Walter wrote a comprehensive history of architecture that, in its subject matter, format, and even occasional word choice, was clearly modeled on Elmes’ *Lectures* of twenty years earlier. St. Paul’s appears in Walter’s fifth lecture, “On Modern Architecture,” in which he used Wren’s design to illustrate his sharpened understanding of distinctions between Greek and Roman taste. Unlike other writers, and audiences, that divide those two classical cultures by the basic architectural forms associated with them—like the Greek peripteral temple and the Roman hemispherical vault—Walter sought other qualities. The Greeks refined the ideals of grace and simplicity; the Romans commanded richness and majesty. Because of this interpretive approach, Walter could see Wren’s dome as more “Greek” than “Roman,” as he wrote:

Its gracefulness, oneness of effect, and majestic bearing, indicate a loftier and more *Greek-like* train of thought than we find in any other work of Sir Christopher Wren; and one is almost ready to conclude that the great Architect himself had become satiated with the

frippery of Roman taste before he designed the embellishments of this beautiful ... feature .
.. [It] exhibits a unity of design—a breadth of light and shade, producing a harmony and
repose seldom found in Roman Architecture.¹¹

A dozen pages later in his lecture, Walter similarly assessed the design of another dome in which Latrobe
“turned [a Roman feature] to Greek account.”¹² Walter’s critique leans as much on the overall aesthetic
sensibilities of a classical building being more in line with either Roman richness or Greek purity than on the
particular architectural elements that comprise it.

According to Walter’s history, it was an unfortunate accident for American architecture that many of
its earliest cultural monuments were constructed when Roman taste was prevalent. For example, Walter
explained that the US Capitol in Washington, seen here in an early photograph,

unfortunately . . . presents a mixture of Greek and Roman features in the details of its
architecture which will ever deprive it of the reputation of being a monument of pure taste.

This was especially true of its dome, completed by Charles Bulfinch in 1824 in the form you see here, and
which Walter called a “most striking deformity.”¹³ Although Walter wrote this line in 1841 as one of many
people who criticized the ponderous and inelegant dome, ten years later he found himself in the unique
position of being able to do something about it.

Washington

In 1851 Walter emerged as the winner of a competition to expand the eighteenth-century Capitol,
which could no longer accommodate the growing numbers of representatives from newly-created states. He
designed symmetrical wings to flank the original building, each of them comprising a large legislative chamber
surrounded by hundreds of additional offices. As seen in Walter’s projected perspective, the elevations
blended with the aesthetic of the existing, eighteenth-century building—even though he disdained its Roman
design.

After nearly doubling the building's length, Walter recognized the need, and opportunity, to replace the original dome with one that would be proportional to the Capitol's longer profile. To direct his design for a new dome that was proposed to reach a height of some 250 feet, he sought, within the historic tradition of great domes, a model of appropriate scale and quality—something as Roman as the building from which it was to rise, but which could be “Greek” in its ultimate character. He found his guide, of course, in London, where Wren had already revealed how to perch a monument of Grecian simplicity on top of a magnificent Roman pile.

As he developed the exterior of the new Capitol dome, Walter followed the contours of Wren's design: a slightly tapered dome, topped by a lantern, rests on a windowed drum rising from a continuous peristyle. Walter's most significant changes to his model included dispensing with Wren's peristyle-level niches and adding oval windows in the dome; he heightened its sculptural quality by including rich window frames and by adding consoles at the base of the dome. At a distance, Walter's dome achieved the general Greek quality that he so admired in Wren's design, while, upon closer view, he enhanced the Roman sculptural richness that aesthetically links the nineteenth-century dome to its eighteenth-century base.

The structural design of the Capitol dome reveals Walter's debt to Wren even more. He had been fascinated by Wren's economical use of material that improved the Renaissance invention of double-shell domes. Wren designed a three-part structure, which comprises a cone between two structurally subordinate hemispheres. The thin masonry cone, bolstered with metal, was enclosed between a dependent timber-framed shell above and an independent brick vault below. Lightening the structure while maintaining its rigidity and strength, Wren could shape each shell differently, so that the pragmatic ugliness of the inner cone could be concealed by visible hemispheres, each of which was appropriately scaled to its position on the exterior or interior of the cathedral.

The weight of the dome was a significant matter for Walter who, unlike Wren, did not have the advantage of designing the structural support beneath his dome. Inheriting a decades-old brick drum as his foundation, Walter had to design an exceptionally light structure to accommodate a huge new dome that could rest lightly on a building that was originally constructed to support a much smaller dome built of timber. Marrying Wren's scientific approach to America's new industrial possibilities, Walter recast the basic triple-shell concept into a wholly metallic design: thirty-six vertical open-web cast-iron ribs comprise the true structure; from them, thin sheets of cast iron are suspended to form the shape of a coffered dome that opens with a wide oculus, and on which rest bowstring trusses that shape the exterior profile, formed of cast iron sheathing. These views reveal details of the iron dome's interior coffering and exterior ornament (which is, by the way, the subject of a vast restoration project this year).

As Wren had improved upon the Renaissance masters, Walter improved on Wren. In further efforts to enhance Wren's model, Walter integrated inspiration from other domes, drawing the idea of an interior "apotheosis" fresco from Ste.-Genevieve in Paris, and certain technical details of iron construction from St. Isaac's in St. Petersburg—apparently the only other similar iron structure in the world. Thus in addition to following the formal and structural model of Wren's dome, Walter also learned from the English architect's ability to skillfully synthesize multiple sources in a single new design; Wren's method was as much precedent for Walter as the physical nature of his dome.

Within a decade or so of the completion of the Capitol dome in 1866, a younger generation of American architects began to question the first professionals' determination to follow ostensibly "foreign" models for their designs of buildings on American soil. Their anxieties were prompted, in part, by the country having emerged from the Civil War with great industrial and political promise, as well as with the self-consciousness associated with the country's Centennial celebrations of 1876. Yet the person they called their "Dean," Thomas U. Walter, scorned such attempts to manufacture a new style. His design of the Capitol dome exemplifies his efforts to bring American architecture in line with the great achievements of

established cultures; here his skillful adoption and adaptation of an Anglican cathedral for the model of the US Capitol is proof of the continued influence of British architecture even in the most apparently American setting. Walter maintained that his approach, like Wren before him, was as Elmes described: “bold and original” improvements on earlier sources; not “plagiarism, but skillful . . . adaptation, bearing proofs of legitimate and inventive talent.”¹⁴ For Walter, the promise of American architecture was not in creating its own language of expression, divorced from and unintelligible to, the cultures that had established the models of good taste across the centuries. Rather, its promise was in the architect’s potential to absorb aesthetic lessons, command established styles, and indeed adopt their best precedents, and, in Walter’s words, throw them into the shade.

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- ¹ James Elmes, *Lectures on Architecture, Comprising the History of the Art* (London, 1821): 141.
- ² John Claudius Loudon, ed., *The Architectural Magazine*, no. 5 (1838): 446-58.
- ³ Thomas U. Walter, Journal from Europe, Walter Collection, Athenaeum of Philadelphia.
- ⁴ Walter, Journal from Europe.
- ⁵ Thomas U. Walter, Report to the Building Committee of Girard College, Walter Collection, Athenaeum of Philadelphia, 26-27.
- ⁶ Walter, Journal from Europe.
- ⁷ Walter, Report to the Building Committee, 26.
- ⁸ Elmes, *Lectures*, 266.
- ⁹ Walter, Report, 28.
- ¹⁰ Elmes, *Lectures*, 394-5 & Walter, Report, 26-27.
- ¹¹ Walter, Lecture V, Lectures on Architecture (1841-53): 20-21.
- ¹² Walter, Lecture V, 36.
- ¹³ Walter, Lecture V, 32-3.
- ¹⁴ Elmes, *Lectures*, 79-80 and James Elmes, *Memoirs of the Life and Works of Sir Christopher Wren* (London: Priestly & Weale, 1823): 320.