One Introduction

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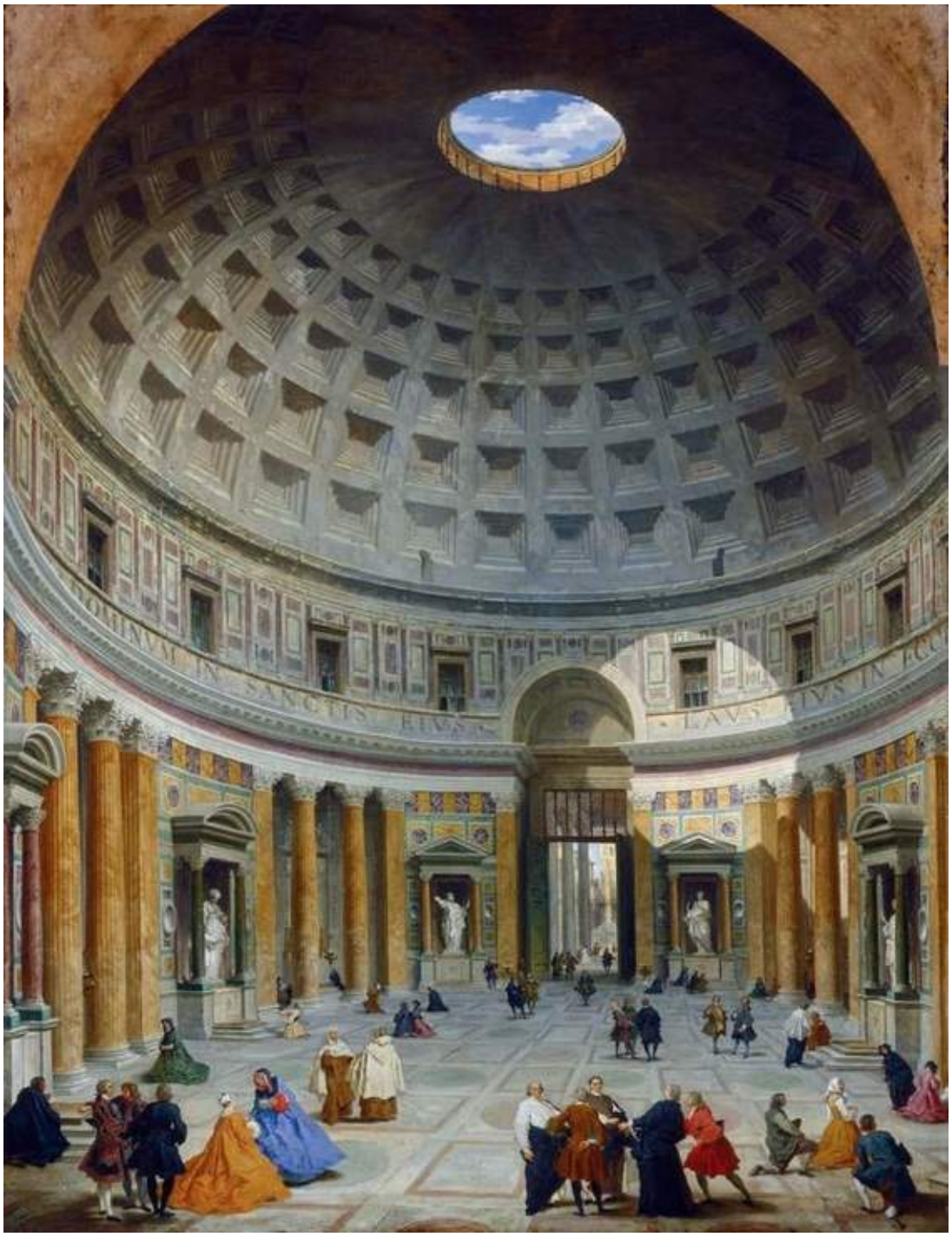
Astonishing for its scale and magnificence as for its preservation, rich in history and meanings, the Pantheon exerts a perpetual fascination. Written accounts, visual representations, and architectural progeny from late antiquity to our day combine to create a presence at once unique and universal in the Western architectural tradition. The Venerable Bede declared that whoever leaves Rome without seeing the Pantheon leaves Rome a fool, and this dictum seems no less valid for our time than when it was first uttered, according to legend, in the eighth century. Visitors may marvel at its unexpected majesty even as they experience a sense of déjà vu, having already encountered its resonant reflection in buildings from other epochs on different continents. Indeed, the Pantheon straddles the history of Western architecture like a colossus, its influence perhaps more pervasive than for any other single building in history (Fig. 1.1, Plate I).[1]

1.1. View of Pantheon facade, piazza, and fountain. (The Bern Digital Pantheon Project, BERN BDPP0101)

I. Exterior view of the Pantheon. (Photo Roberto Lucignani)

This influence has been generous and elastic, inspiring not only copies but creative reinterpretations like Hagia Sophia in Istanbul, St. Peter's in Rome, the Capitol in Washington, and the Parliament of Bangladesh. No less diverse are the associations that such projects exploit, which can be sacred or secular, political or religious. Simultaneously a symbol of cultural stability or revolutionary change, the Pantheon is a remarkably vigorous and mutable icon.[2]

The fame of the Pantheon is of course bound up with its imagery, and its imagery with its structure. It can be appreciated as much for its technical as for its aesthetic achievements, insofar as these aspects may be separately considered. In the fourth century BC, Ammianus Marcellinus likened the space embraced by the dome to a whole city district, so capacious was its visual effect (see Plate II). In the mid fifteenth century, John Capgrave thought that the dome must have been constructed over a vast mound of earth, as had been proposed for the Cathedral of Florence. In both instances, we are told, coins would have been embedded in that mound so as to ensure its removal by the greedy populace.[3] A medieval tradition held the Pantheon to be a work of the devil – since it so clearly exceeded the reach of mortal capabilities, who else could have built it? From a Renaissance perspective more in tune with ancient ideals, Michelangelo arrived at the opposite conclusion: for him, the design was "angelic, not human" and thus divine. In truth, there is something about both pronouncements that makes us think of the Pantheon as if it were, sui generis, a work of nature (even divine nature) like an alpine peak or chasm, appealing as much to those with romantic or religious sensibilities as to those favoring unemotional analysis.



II. Interior of Pantheon; painting by Giovanni Paolo Pannini, 1747. (Washington, DC National Gallery of Art, Samuel H. Kress Collection 1939.1.24)

The Pantheon is miraculous, too, in its state of preservation; as a totality it is the best preserved of any ancient Roman monument with a significant interior space. While it is tempting to explain its survival as a result of its Christian rededication, its compelling scale and aesthetic qualities were arguably the agents that attracted worshipful Christians in the first instance, not to mention antiquarians and architects, both dilettante and professional, throughout the ages. Thus, while countless Roman structures were pillaged for building materials with scant regard for their survival, the Pantheon enjoyed a degree of protection as much due to its intrinsic architectural values as to its ecclesiastical status.

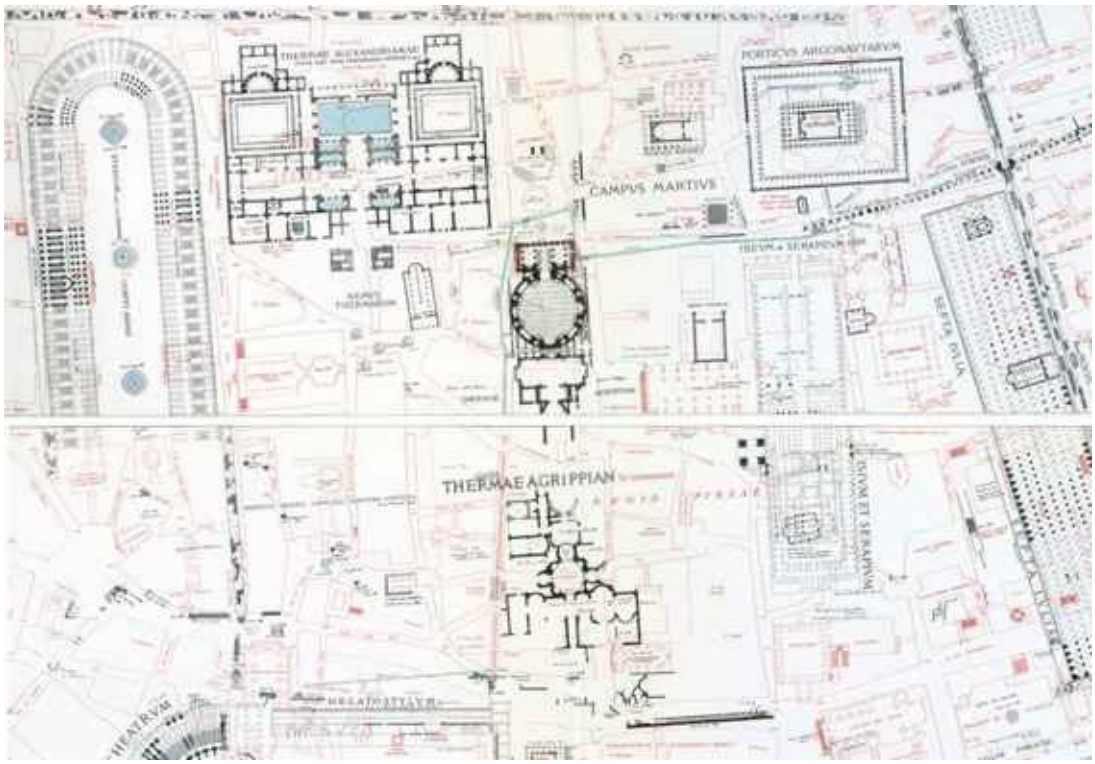
Despite its unique stature, however, the Pantheon continues to pose enigmas in design and intention, and many of its basic historical and technical premises remain uncertain, debated, or simply

unexplained. Unlike the Parthenon in Athens, San Vitale in Ravenna, Notre Dame Cathedral in Paris, or St. Paul's in London, there is relatively little to say that is absolutely certain and indisputable about the origins, chronology, and construction of the Pantheon. Even its very name and purpose are still subject to discussion; so too are formal and symbolic readings of the building.

The present volume thus addresses an enticing but daunting prospect as it seeks to make or consolidate progress over these questions, while setting out the current state of research on major aspects of the Pantheon's fabric and its history for the benefit of a wider public. The dual focus is, accordingly, the physical structure of the monument and its reception down to the present day.

First Concerns

The building known as the Pantheon is located in the neighborhood of Rome called the Campus Martius, or in modern Italian Campo Marzio. Literally the field of the war god Mars, the place where military exercises were once held, this district was progressively urbanized in the late Republic. By the end of the first century BC, various public structures serving religious cults and secular entertainments, including temples and altars, theaters, stadia, baths, and parks, were located here. Situated in the heart of today's historic center in the most densely inhabited part of Rome in the Middle Ages and the Renaissance, the Pantheon still dominates Piazza della Rotonda, whose irregular shape has been molded over the ages by the public and private forces that typically strain urban geometry. Running mostly north–south and east–west, the narrow streets leading to the piazza offer varied frontages dating from early modern times, yet preserving all the while the basic ancient urban pattern, as is apparent when superimposed on a modern plan (see Plate III).[4]



III. Plan of Pantheon and urban context. (Lanciani repr. 1988)

The name "Pantheon" probably derives from the Greek *pantheion*, a term that conveyed different but related meanings, whether a temple of all the gods, a temple of the 12 Olympian gods, or a temple in which the image of a ruler stood in the company of such divinities. For although there are textual

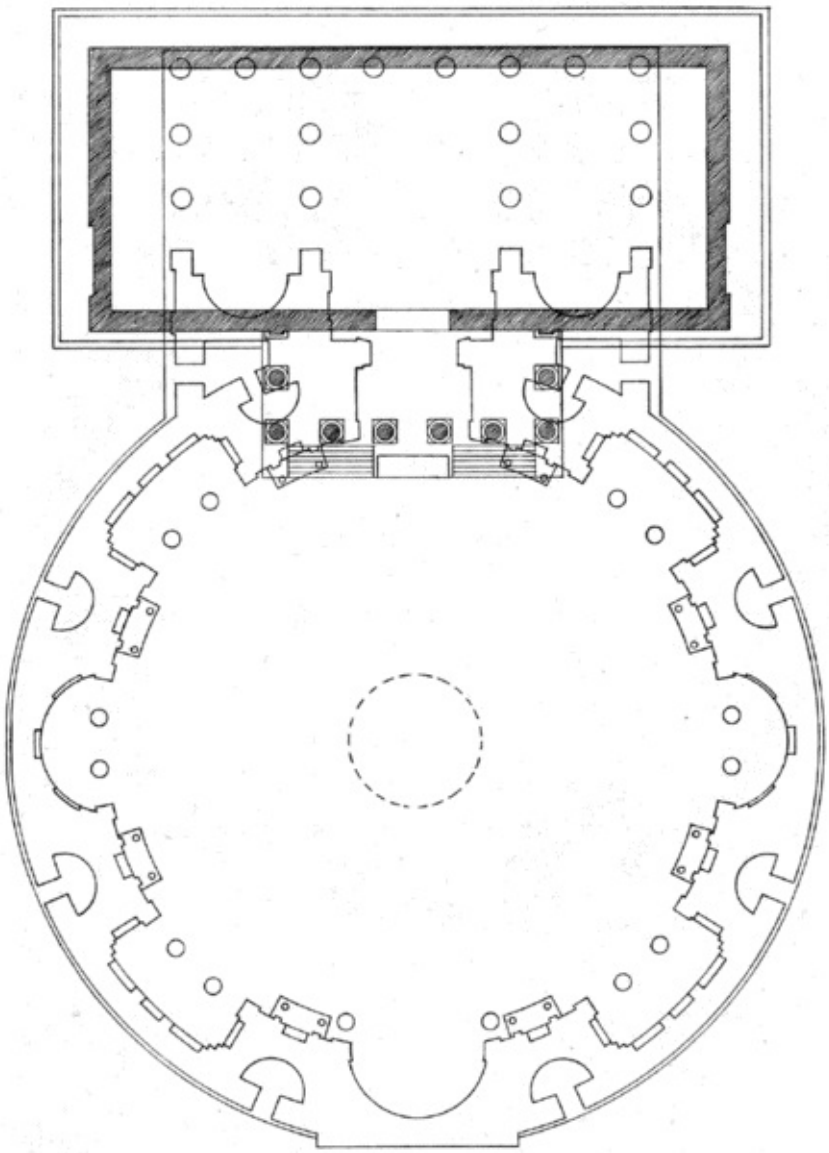
clues, it is tradition more than anything else that explains our use of this name for a structure whose original purpose remains uncertain. In truth, we cannot even be absolutely sure that the Pantheon was a temple, as most scholars believe on account of some temple-like characteristics, most notably the great pedimented front. It is also significant that several ancient sources do refer to the building as a temple, and yet a passage from the life of Hadrian cites buildings that he restored, and it includes the Pantheon with wording that could be read to mean that it was not in the category of temples.[5] Roman temples typically had altars in front of them, but no altar has ever been discovered in front of the Pantheon. In 1986, Paul Godfrey and David Hemsoll offered a series of further observations that question the temple label. The great domed interior, for example, has similarities to the halls of imperial baths and palaces, while later buildings that imitated it were often mausolea.[6] Few Greek or Roman temples are circular, and those are relatively small in size; moreover, Roman temples generally honor one divinity per room, explaining why temples of multiple deities (for example, the Capitoline temple) have multiple cellae. Given its shape and size, the Pantheon can therefore be seen, at the very least, to stand outside normal temple typologies.

Part of the problem of pinning down the function of the Pantheon is bound up with that of correctly interpreting the first building constructed on the same site. This was completed in either 27 or 25 BC by Marcus Agrippa, the great consul, general, and statesman who served under the first de facto emperor, Augustus, as we can deduce from the inscription below the pediment of the present monument: “M(arcus)·AGRIPPA·L(uci)·F(ilius)·CO(n)S(ul)·TERTIVM·FECIT” (Marcus Agrippa, son of Lucius, thrice consul) (Fig. 1.2).[7]

1.2. View of the Pantheon from the front, at high level. (The Bern Digital Pantheon Project, BDPP0114)

From the beginning of the twentieth century Agrippa’s Pantheon was generally thought to be a rectangular building that faced south rather than north as does the present structure (Fig. 1.3). More recent scholarship suggests instead that the Agrippan fabric was in fact oriented toward the north, and that its plan likewise combined a round space with a portico. This being the case, the Agrippan plan,

discussed in Eugenio La Rocca's chapter, would have forecast the outline of the present building. Although it would become one of the staples of architectural typology, at the time the combination of three distinct geometric elements was relatively novel: a circular rotunda, a rectangular portico, and a fabric that mediated between them (generally known in English as the transitional or intermediate block). It is possible that this scheme developed from precedents in the Greek East; in particular, La Rocca discusses the possibility that the Tychaion, a sanctuary in Alexandria named after Fortune, may have inspired Agrippa's building. Knowledge of it may have come to Rome in the wake of the defeat of Anthony and Cleopatra by Augustus (then called Octavian) and his admiral Agrippa at the battle of Actium in 31 BC.[8] This notion would be consistent with the suggestion by Filippo Coarelli that the Pantheon was sited on the ancient palus Caprae, where according to one tradition Romulus, legendary founder of Rome, became the god Quirinus and ascended to the heavens. Agrippa would therefore have intended a programmatic connection between the founder of the city and a new Rome in the age of Augustus.[9]



1.3. Plan of Agrippa's Pantheon facing south, orientation now in question. (Kähler, *Der römische Tempel* 1970, after Beltrami 1898)

This much can be said with certainty: with its north-facing orientation, Agrippa's Pantheon was aligned axially with the entrance to the Mausoleum of Augustus about half a mile away, a critical relationship that encourages its interpretation as a dynastic sanctuary (see Plate XVI). This pairing

accords with a passage by Dio Cassius, a consul of the third century, which states that Agrippa intended to honor the emperor by dedicating the building to him and erecting his statue inside, but Augustus disapproved. Agrippa therefore placed a statue of the deified Julius Caesar (Augustus's adoptive father) in the building along with those of the Olympian gods, including Venus and Mars, whereas statues of himself and Augustus were set up in the porch, presumably in the two great niches. As La Rocca's chapter argues, Dio's remark and other evidence show that the Pantheon had a special place in a sophisticated program celebrating Augustus and anticipating his future divinization. None of the statues has survived, nor do we have later notice of them. It is safe, though, to assume that Venus, Mars, and Julius Caesar were accompanied by other statues disposed in the exedras and aedicules of the rotunda. It is also likely that the statues of divinized members of the imperial family were added to the original deities from time to time, as the initial dynastic aspect of the program evolved into a celebration of the imperial institution and its divine authority.

Agrippa's Pantheon was damaged by fire in AD 80, restored to some unknown extent by the emperor Domitian (AD 51–96), struck by lightning and burned again in AD 110, before being rebuilt in its present form and completed around AD 125–128 during the reign of Hadrian (AD 117–138). This building was then refurbished in AD 202 under Septimius Severus (AD 193–211) and Caracalla (AD 211–217), as is indicated in an inscription on the facade carved in small letters under the Agrippan inscription.

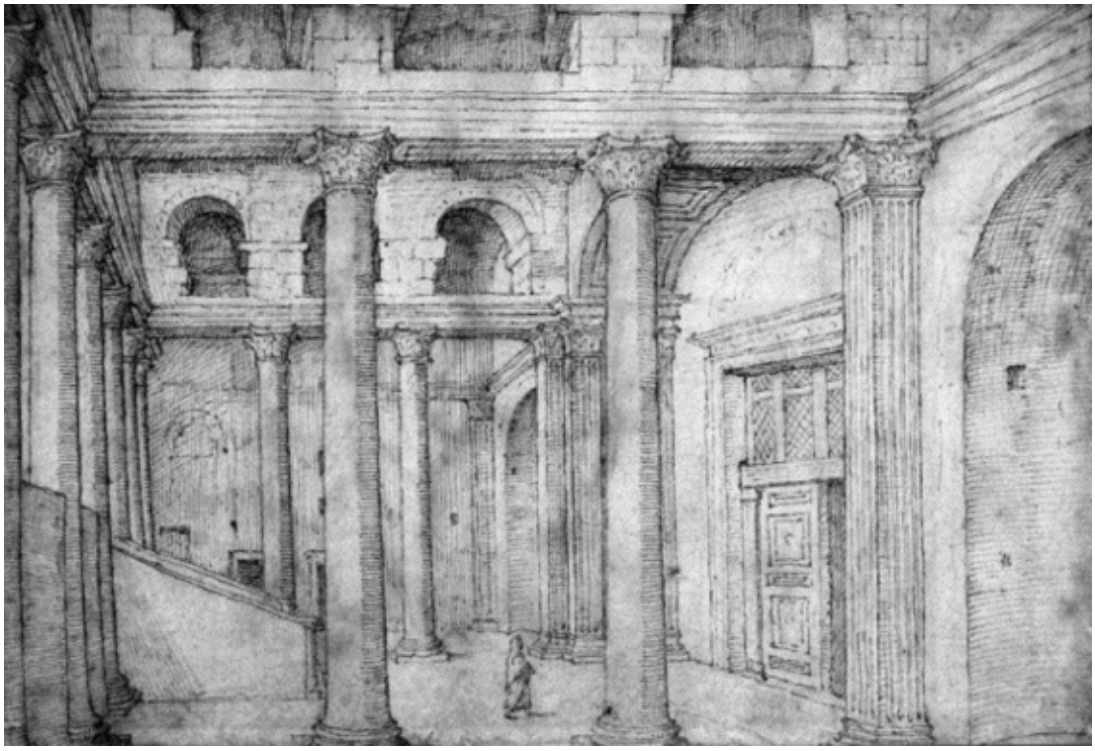
Given the inscription's prominence, Agrippa's patronage of the present building was generally accepted until 1891–1892, when excavations revealed traces of an earlier building under the porch and a polychrome marble pavement under the rotunda. The impetus for these excavations came from the work of a young French architect, Georges Chédanne, a *pensionnaire* at the French Academy in Rome, who overturned prevailing assumptions by assigning the Pantheon to Hadrian's reign on the basis of brickstamps belonging to the structure.[10] (Roman brickmakers often stamped one brick per batch with information that in effect yields a date range and sometimes the precise year of manufacture.) This drastic revision resituated the building firmly in the period of the Roman Empire during a time of great architectural innovation in the use of the very sort of concrete technology that the Pantheon exemplified. The inscription below the pediment was newly understood as a gesture of respect recalling the earlier Agrippan fabric, thus commemorating the original builder as Hadrian supposedly did in other rebuilding or restoration projects. Chédanne's conclusions met with a sympathetic echo at the time in the research of Heinrich Dressel, the first systematic scholar of brickstamp evidence, and they were confirmed in the major modern study of brickstamps by Herbert Bloch in 1948.[11]

Lately, a new interpretation has emerged, questioning the data and proposing that many of the bricks from the Pantheon previously thought to be Hadrianic are in truth datable to the end of the reign of Trajan (98–117). Indeed, on the basis of a rigorous reappraisal of the facts, presented in this volume by Lise Hetland and already the subject of scholarly excitement, it now seems that just one of the 90 stamps from the monument catalogued by Bloch can be dated to Hadrian's reign with absolute confidence. Thus, we face some forceful evidence for attributing the planning and inception of the Pantheon earlier, to Trajan's reign, with only its completion owed to his successor Hadrian.

The Porch

As Rome declined and the city shrank from the boundaries of its ancient walls after the fourth century AD, the decay and collapse of buildings, the repeated flooding of the Tiber, and the demise of

drainage systems produced an inexorable rise of the ground level. As a result, instead of standing proud of its surroundings as it once did, the Pantheon now lies somewhat depressed in the urban tissue. Excavations carried out in the Piazza della Rotonda in front of the porch in 1997–1998 revealed the ancient pavement level lying some two meters below the modern level.[12] The disparity between the ancient and modern pavement levels was, as we shall see, even more pronounced in the Renaissance, when visitors had to descend about seven steps from the surrounding ground level to reach the floor of the portico (Fig. 1.4).



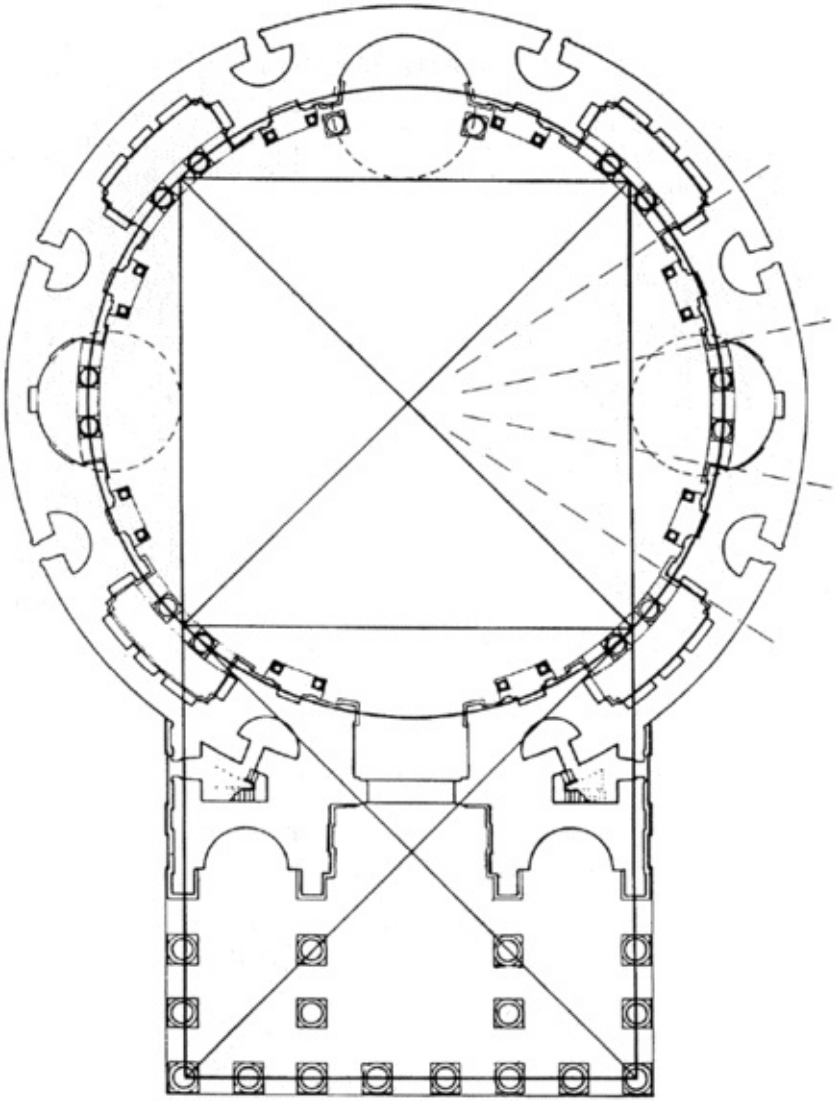
1.4. View of portico interior; drawing by Maarten van Heemskerck, ca. 1532–1536. (Berlin, Kupferstichkabinett, Roman sketchbooks, vol. 2, fol. 2 recto)

The eight columns that define the facade of the Pantheon stand in front of eight more columns arranged so as to form two aisles and a central passage. The total of 16 columns, together with the four square antae that mediate between the portico and the transitional block, support an entablature and a tile-covered roof that is fronted by the imposing pediment.[13] All stonework divides into two kinds: near-white marble from the quarries on Mount Pentelicon near Athens (the same marble that was used to make the Parthenon and its sculptures) and granite from Egypt. The granite came, in turn, from two quarries, the rose or pink granite from Aswan and the gray granite from the more remote quarry at Mons Claudianus, located between the Red Sea and the Nile. The eight columns of the front have shafts of the gray hue, while the other eight have shafts of pink, though due to patination and grime, the chromatic variation can seem marginal in some light conditions. In both cases, the shafts are each of a single piece (save for a few repairs), that is to say, monoliths weighing 50 tons. The pediment carried by the columns and the entablature with the inscriptions no doubt displayed a symbolically charged decoration in bronze, as implied by the presence of numerous fixing holes. Their pattern has led to the inspired yet unprovable reconstruction of a civic honor in the shape of a crown of oak leaves (*corona civica)*, combined perhaps with an eagle alluding to the apotheosis of mortals to the immortal realm.[14]

The roof over the portico runs back to interrupt a secondary pediment applied to the surface of the transitional block, creating a compositional oddity that inspired the invention of a new kind of church

facade in the sixteenth century. This unusual configuration, together with certain anomalous characteristics in different parts of the portico, especially the unhappy resolution of its meeting with the rotunda at the transitional block, represents a long-standing source of puzzlement. A controversial recent theory, advocated here on the basis of fresh corroborative evidence in Chapter Seven, proposes that the initial plan called for columns of even greater size, each weighing no less than 100 tons. For some unexplained reason (possibly a disaster such as a shipwreck), the columns originally intended were lost, and construction proceeded with the smaller-size columns we see today, a change that could help to explain the various anomalies of the portico as executed.[15]

Analysis of the design of the portico and its geometry and proportions is rendered more complex by this theory, but either way, it is possible to observe the harmonious numerical simplicity of proportions that is an enduring hallmark of monumental Roman architecture. As built, for example, the columns conform to the conventional rhythm known as *systyle*, in which the space between the columns is double their diameter, whereas the originally intended rhythm would have been *pycnostyle*, with the space between the columns being one and a half times their diameter. The overall scheme for the portico and transitional block meanwhile is one of archetypal simplicity, with a total height that matches its width (as measured between the centers of the corner columns) (Fig. 1.5).[16]

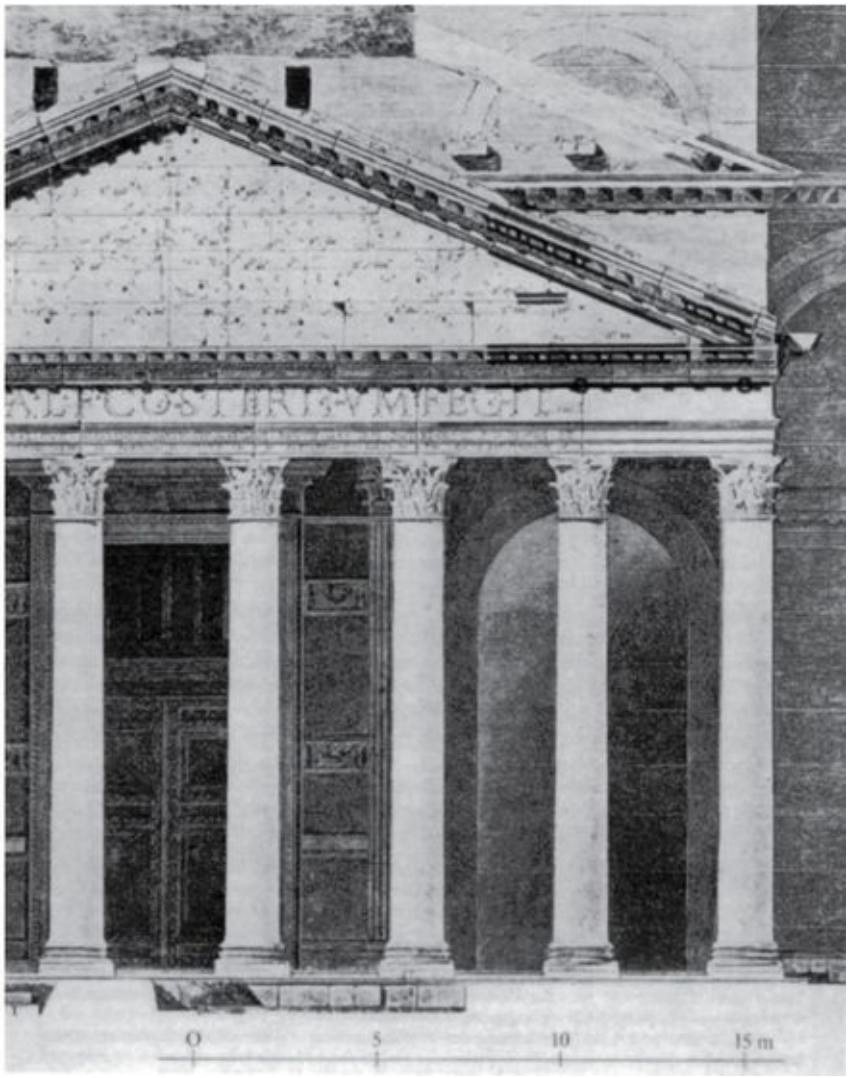


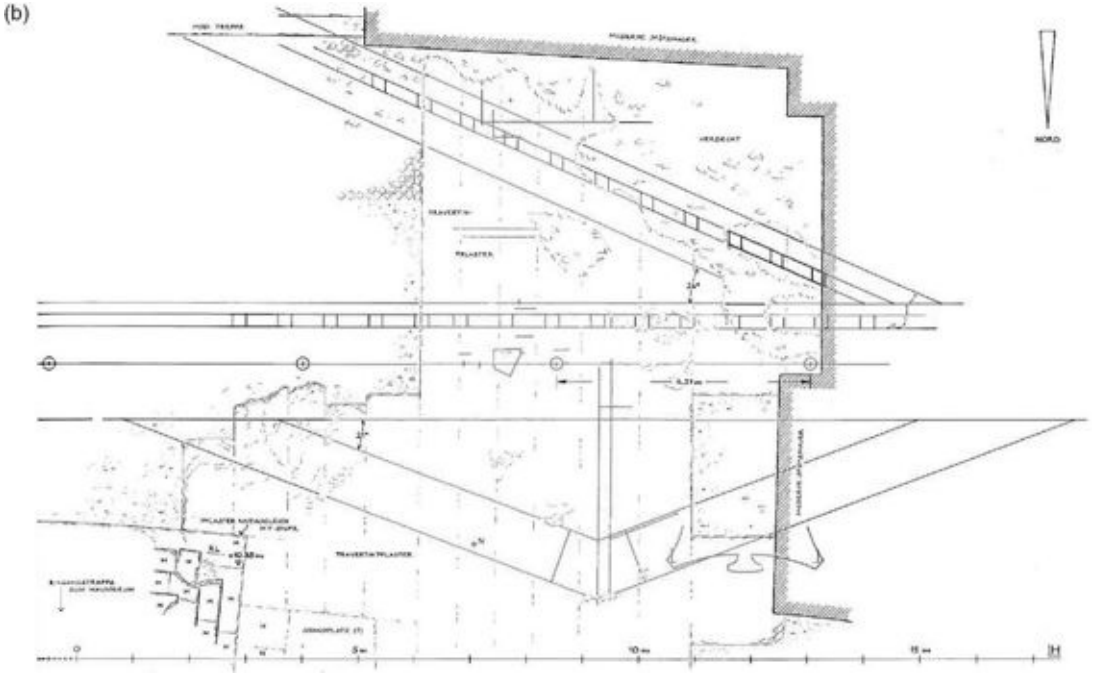
1.5. Schematic geometry of the Pantheon. (Wilson Jones 2000, Fig. 9.11)

Such observations come from a scrutiny of surveyed measurements understood in the light of surviving ancient textual evidence, above all the treatise on architecture by the Roman architect and

writer Vitruvius (ca. 80–70 BC–after 15 BC) that was completed not long after the building of Agrippa's Pantheon. We also have direct physical evidence for explaining how the actual design of the present building was carried out, how its stones were measured, and how they were cut. This evidence, which is another recent discovery, takes the form of a set of ancient Roman profiles for the portico etched full scale into the limestone paving that lies in front of the Mausoleum of Augustus (Fig. 1.6, a and b). As Lothar Haselberger has shown, parts of these templates match the features of the Pantheon pediment so closely that we can presume they were used in the process of shaping the stone and other materials unloaded from barges at this site, which had long hosted docking facilities for commodities that moved up and down the Tiber River.[17] The templates include such details as the exact column spacing of the portico according to the executed dimensions and the configuration of the bracket-like modillions punctuating the cornice. The profiles seem to forecast the use of the Corinthian capitals, although, if truth be told, the size indicated is too big with respect to those of the actual building and yet, by an uncanny coincidence, just the right measure for the original columns posited for the project.

(a)



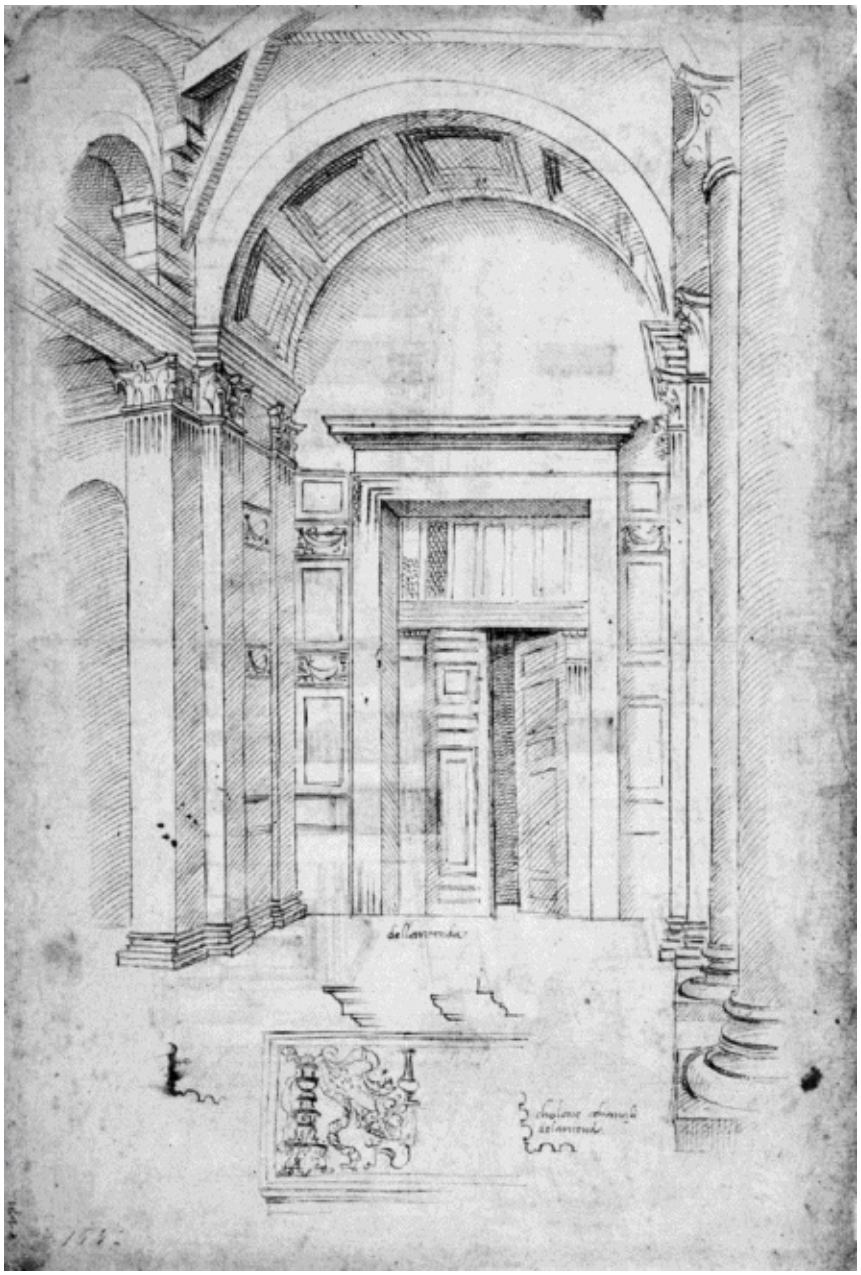


1.6. a) West corner of pediment (Haselberger 1994, Abb. 5), and b) full-scale etching of profiles for portico elevation, limestone paving in front of Mausoleum of Augustus. (Haselberger 1994, Abb. 1)

By means of the same template, we can restore the original outline of the capitals, nearly all of which have suffered serious damage over time. Here, as is generally the case, damage to the fabric of the Pantheon has been more the result of human intervention than time or natural causes. The whole portico was colonized, mutilated, and added to repeatedly down the centuries, culminating in the disappearance of the three east columns at some as yet unknown date (Fig. 1.7). Popes Urban VIII Barberini (1623–1644) and Alexander VII Chigi (1655–1667) replaced the columns in campaigns with their own historical contexts. That of the Barberini also involved the stripping of bronze trusses from the roof of the portico and their replacement with timber, leading to the famous pasquinade, *Quod non fecerunt barberi, fecerunt Barberini* ("What the barbarians didn't do, the Barberini did"). The fuller context is recounted in the following and more extensively in the chapter on the Pantheon during the seventeenth century.

1.7. Exterior view of Pantheon; anonymous sixteenth-century drawing. (Louvre inv. 11029 recto)

Suspended from the original bronze trusses there may have been great barrel-vaulted ceilings likewise made of bronze, with a larger vault for the central nave and smaller ones for the flanking aisles.[18] The effect of the central vault can be visualized most easily by imagining the coffered barrel vault presently over the entrance portal extending across the vestibule as it was depicted in the sixteenth century (Fig. 1.8). The only ancient assembly of bronze that does survive at the Pantheon is the grandiose portal made of two opening leaves slung on vertical pivot hinges framed by fluted pilasters at the sides, with an open grille overhead.[19] All of this fits within the 20-by-40-foot opening in the masonry, while the threshold is one of the largest single pieces of stone in the whole edifice, a slab of highly prized blood-and-black *africano*, 20 feet long, 5 feet wide, and of unknown depth. The fact that the door leaves do not fill the opening without the grille, along with some stylistic clues, suggests that they could have been reutilized from some earlier building. While this may not have been the Pantheon of Agrippa itself on account of the two intervening destructive fires, an allusion of continuity may nevertheless have been intended, in keeping with the restitution of Agrippa's name in the main inscription. This notion is strengthened by the presence of candelabra, festoons, ribbons, and religious utensils carved in the friezes that run at intervals around the walls of the transitional block, as these second-century AD decorations recall comparable motifs used for the first time on Augustan monuments.[20]



1.8. Door and vault in portico; drawing by Raphael. (Uffizi A 164 verso)

The Intermediate Block

The link between the porch of the Pantheon and the rotunda is formed by the so-called intermediate or transitional block. These names reflect the fact that its form had to mediate between the rectilinear geometry of the portico and the circular geometry of the rotunda.[21] This is the main explanation for the very existence of the intermediate block; it had no known use other than to house a pair of staircases that rise up the full height of the structure to give access to the roof. At a high level, the stairs also provide the means of entry to a group of rooms later occupied by the Accademia dei Virtuosi, an association of artists that was based here since the sixteenth century. In antiquity, these spaces were no doubt put to use, but there is nothing to tell us how that use factored into their creation.

The intermediate block is built of brick-faced concrete, whose exterior is still covered in some places by dressed stone and decorative elements (Fig. 1.9). These decorations consist of fluted pilasters and the series of friezes already mentioned that are carved in relief on three-foot-tall slabs of marble varying in length and arranged as two horizontal bands on the intermediate block, as well as three bands to either side of the entrance portal. Originally 28 in number (10 on both flanks and 8

by the entrance), each of the reliefs shows a garland slung between two candelabras, with small religious utensils represented as though hovering over the garlands in the center.[22]

1.9. Exterior of intermediate block, west side. (Photo Mark Wilson Jones)

The top of the intermediate block is capped by a cornice with simple S-shaped modillions that continues around the rotunda as a unifying device. However, other aspects of the composition in this area of the building undermine its unity. The superimposed outline of a pediment with raking cornices bearing similar modillions on the front (north) face of the block is cut into by the roof of the portico and rendered incomplete, as already observed. Meanwhile, the marble entablature over the columns, with its more elaborate smaller modillions, runs down the sides of the intermediate block and dead-ends unceremoniously at the rotunda without any corresponding architectural feature on the curved body of the building.

The formal distinctions between the rotunda and portico and their imperfect resolution in the intermediate block were so pronounced in the eyes of Renaissance viewers that they believed the rotunda and the porch to have been conceived at different times, with the intermediate block usually being associated either with one or the other. An evident interruption in the structural bonding of the transitional block with the rotunda supported this notion. Some informed observers dated the rotunda to the Republic and considered the portico a later addition under Agrippa. Still others thought that Agrippa must have built the rotunda during the reign of Augustus, while the portico should be attributed to later emperors, either Hadrian or Antoninus Pius or Septimius Severus, for all of whom there was some epigraphic and literary testament. Yet a third camp of observers insisted that the portico was Agrippa's and so came first, the rotunda having been somewhat clumsily added to it.[23] These theories help to explain why the dating of the transitional block and indeed the entire monument has oscillated from one era to another in the eyes of different scholars.

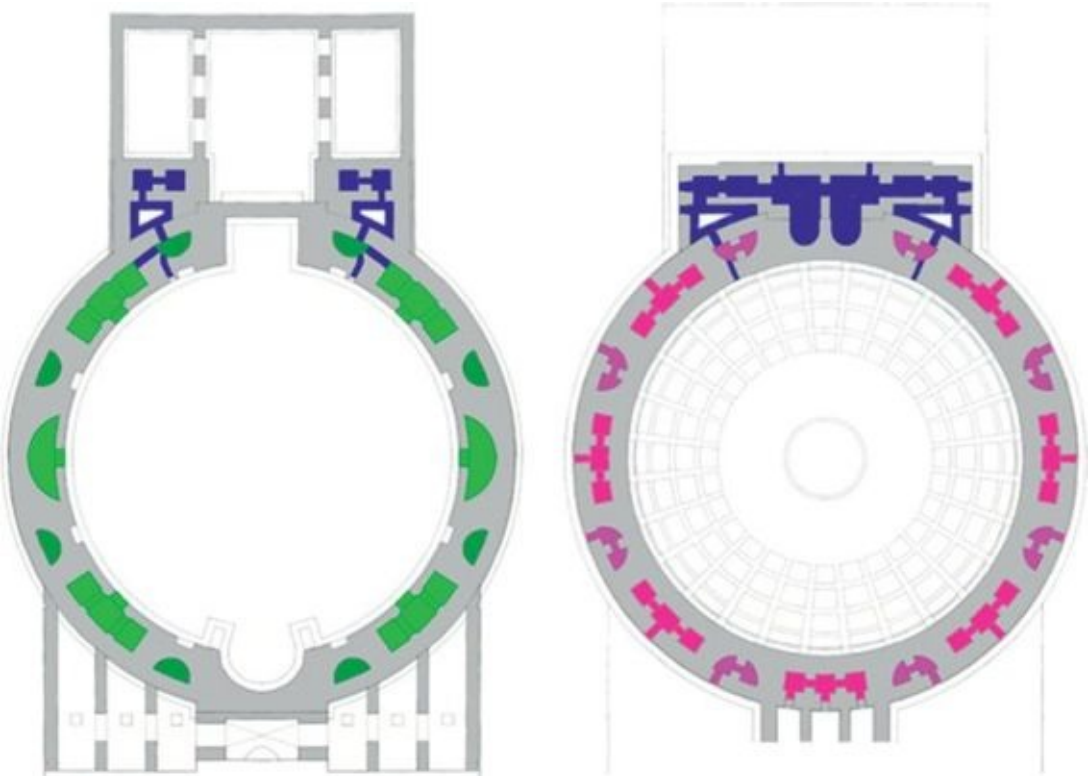
After the 1890s, all this had to change with the arrival of the brickstamp analyses of Chédanne and Dressel, which seemed to date the whole building firmly to the reign of the emperor Hadrian.[24] Momentarily leaving aside the question of the starting date, Hetland's review of the evidence is significant in confirming that the construction of the rotunda and intermediate block were

contemporary, at least at lower levels. This conclusion is clinched by a detail that escaped earlier publications of the building: the presence in the staircase of so-called bonding courses of large, double-size bricks, or *bipedales*, that traverse the tissue of the rotunda on one side and the intermediate block on the other (see Chapter Seven and Plate XXIII).[25] Despite past interpretations, one thing is now clear: the transitional block belonged to a single project along with the rotunda and the portico.

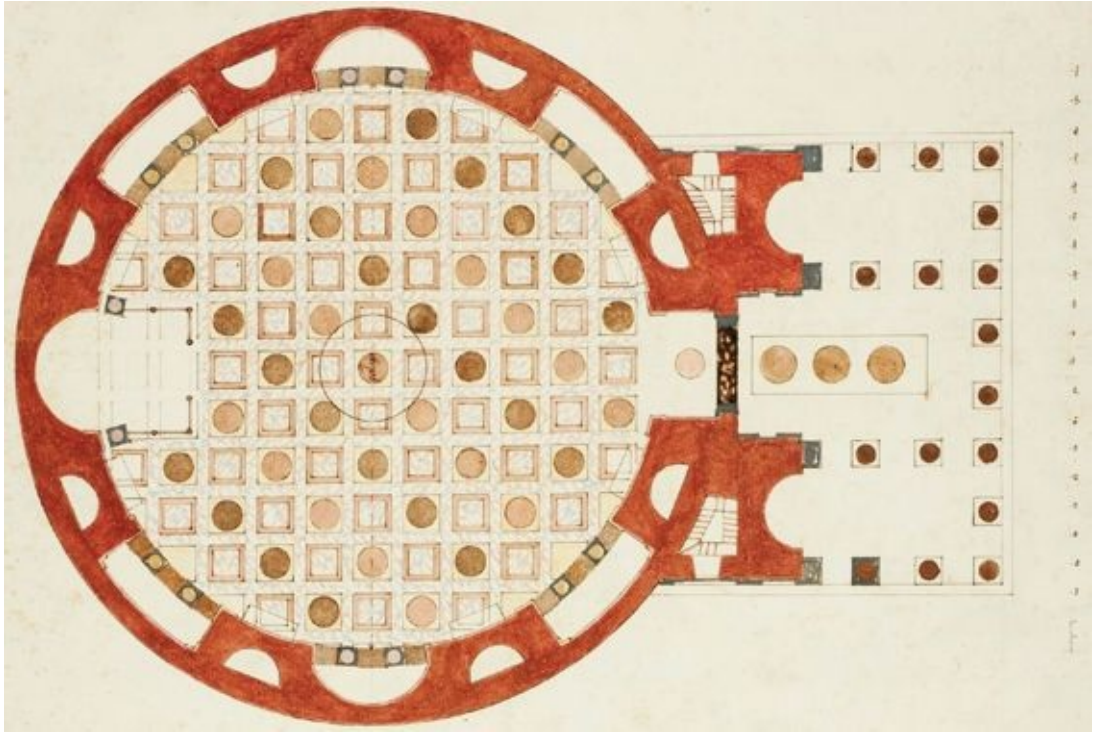
The Rotunda and Dome

It is fair to say that most modern visitors find the expansive domed interior of the Pantheon to be its most impressive feature, and its crowning open oculus to be its most surprising. This gaping hole, 30 feet (about 9 meters) in diameter, admits light and air and even rain, but most importantly the ever-changing illumination created by the motion of the sun. There were precedents such as the so-called Temple of Mercury at Baiae, but the effect in the Pantheon is unrivaled as a sensory architectural experience (see Plate IX). Had the interior been built when the canonic Seven Wonders of the World were formulated, it surely would have been among their number.

The rotunda is a domed cylinder 55 meters in diameter, with an interior space nearly 44 meters wide spanned by a hemispherical dome. As was common in Roman centralized buildings, the circular geometry of the plan is articulated by two main orthogonal axes and two diagonal axes so as to create eight sectors like slices of a pie (see Plate V). The perimeter is articulated by large alcoves, or exedras, that seem as though they are carved out of the 20-foot-thick (6 meter) drum, leaving eight structural “piers” between them (see Plates IV and VI). On the cross axis, the exedras are semicircular, while on the diagonal axes their plan follows the curve of the rotunda. The main axis runs through the rectangular entrance space and terminates at the semicircular exedra that is the main apse (Fig. 1.10).

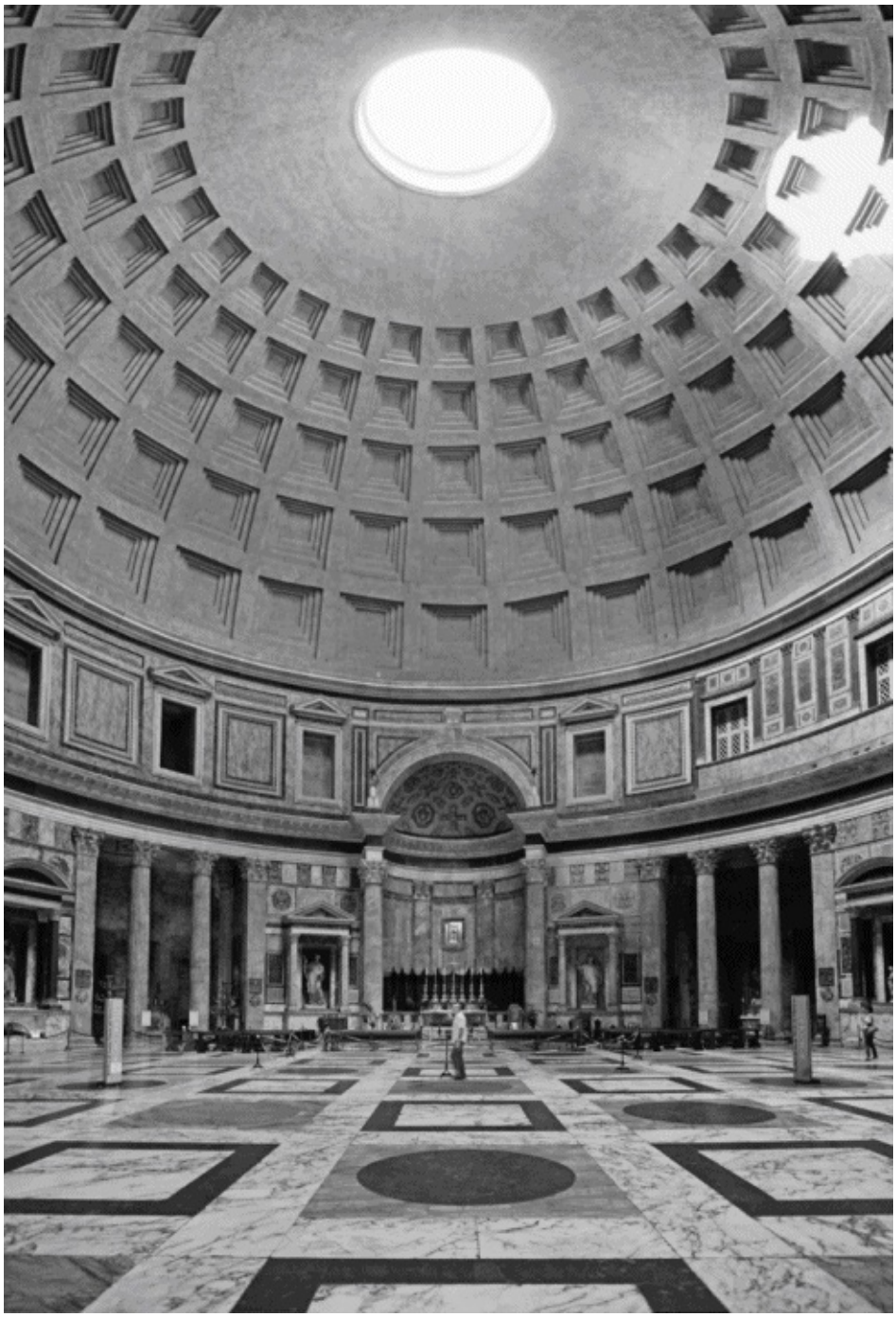


IV. Diagrams of cavities in the wall. (The Bern Digital Pantheon Project, BERN BDPP0087, drawn from information in Licht 1968)



V. Plan of pavement, niches, and high altar; anonymous seventeenth-century drawing associated with the Bernini workshop. (Biblioteca Apostolica Vaticana, Chigi P VII, 9, 108 recto)

VI. Interior view featuring pier with Raphael's tomb and flanking niches. (The Bern Digital Pantheon Project, BERN BDPP0069)



1.10. Interior seen along main axis. (Photo Maxim Atayants)

The paving of the interior consists of a pattern of circular disks and squares that reinforce the essential geometrical themes of the whole building. Framed within 10-foot squares and separated by 3-foot bands, these squares and circles alternate with each other on the cardinal axes, as they do in all rows parallel to the cardinals. As a result, sequences of either squares or circles run along diagonal rows with a line of disks traversing from one diagonal exedra to its opposing mate, and with a single roundel suitably locating the absolute center of the composition.

The interior elevation consists of three zones, or ranges. The lowest incorporates the main columns and pilasters standing on the pavement and capped with a full entablature, and its prominent cornice extending around the girth of the fabric, broken only at the entrance arch and the main apse. The middle, or attic level, occupies the rest of the wall up to the springing of the dome. Finally, the uppermost zone consists of the coffered dome. A major unifying compositional feature is the use of prestigious colored marbles. The eye revels in what is in effect a “pantheon of marbles.” Their varied

and distant provenance – from modern-day Egypt, Greece, Turkey, and Tunisia – provides a visual reminder of the ample reach of Rome's imperial dominion, its unity, and its collective wealth.[26] The majestic Corinthian order provides another unifying theme for the interior and for the entire building. Corinthian columns with monolithic shafts measuring 30 feet high – three-quarters the height of those in the portico – screen the exedras from the central space. But rather than the smooth granite of the exterior shafts, these are fluted and made of colored marble: purple-veined ivory-colored *pavonazetto* from Turkey and salmon-honey-colored *giallo antico* from Tunisia in alternate exedras.[27] Pilasters rather than columns are employed to face the edges of the structural piers, in the middle of which are aedicules that must originally have housed some of the statuary in the building. In keeping with a sophisticated play of symmetries, the aedicules are of two types: those with triangular pediments were made of paler marbles while those with segmental pediments had a deep-hued polychromy. The columns and their pilasters carry Corinthian capitals whose marble, like that of the small pediments, comes from Carrara, the only stone employed in the Pantheon to come from Italy. The choice of this particular marble reflected its ability to hold very fine detail; indeed, these capitals are wrought with exquisite workmanship and such extraordinarily crisp finishing that they convey an almost metallic quality (Fig. 1.11).[28]

1.11. Corinthian capital from the interior. (Photo Maxim Atayants)

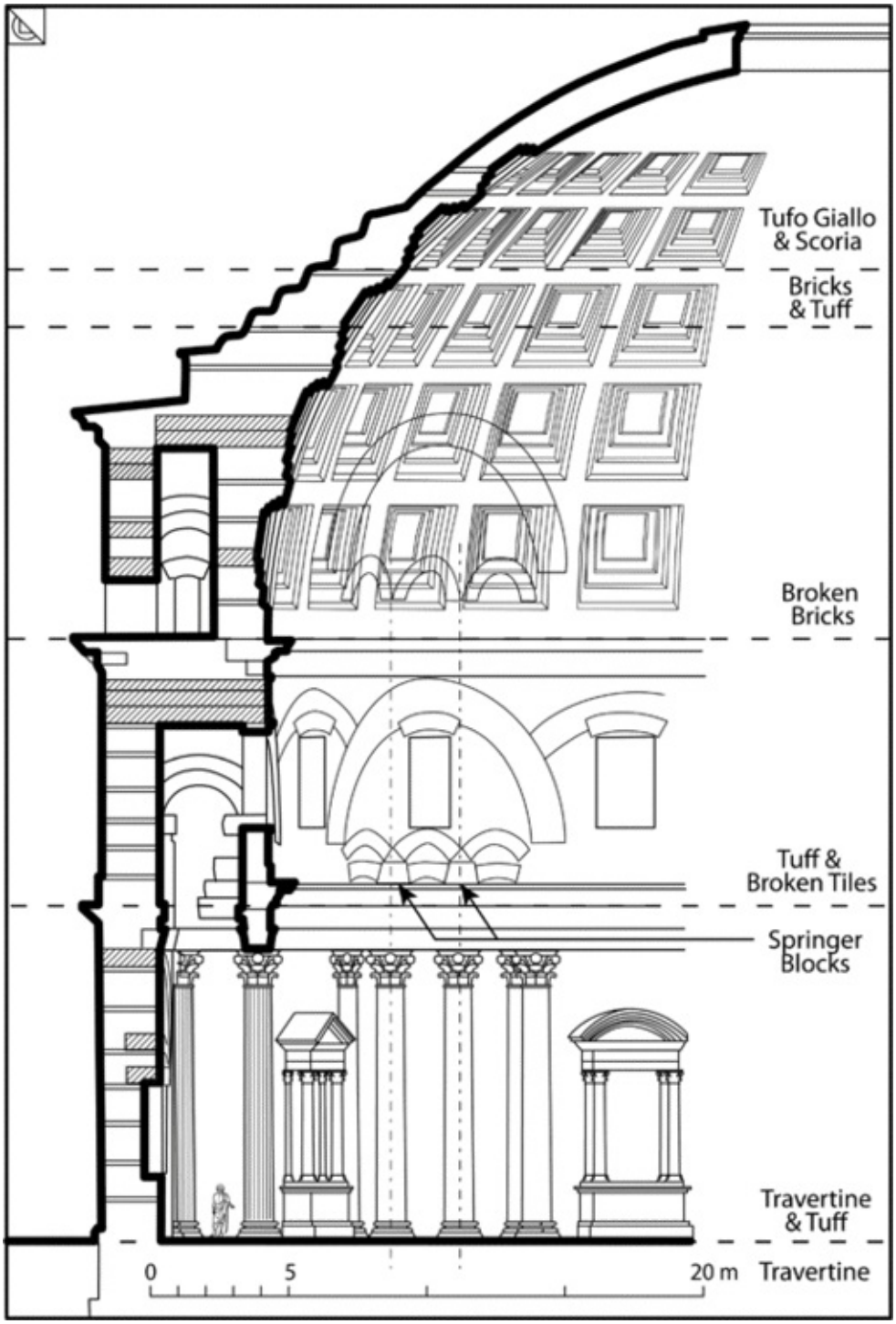
It is important to remember that the Pantheon presents today's visitor with a mixture of ancient materials and modern repairs and replacements. Some of these interventions are easy to identify, such as the coffering and other embellishments in the principal apse and of course any feature related to Christianity. In other cases, the ancient elements and their subsequent replications are less easy to distinguish. Detailed inspections and technical analysis during a campaign of conservation under the direction of Mario Lolli Ghetti in the 1990s have revealed the full extent of the renovations of the seventeenth and eighteenth centuries, when a substantial proportion of the ancient revetment was replaced with thinner sheets of marble (often reworked ancient material) bonded to backing slabs of coarser stones. In Lolli Ghetti's estimation, roughly two-thirds of the floor is either modern or ancient material that has been relaid in modern times. Here and there are stones not known to antiquity, such as pieces of *giallo senese* from the environs of Siena, which replaced damaged

portions of the more fragile giallo antico. Nonetheless, the general pattern of the pavement and its polychromy have been faithfully maintained.

Sadly, this is not true of the elevation of the rotunda. Ancient materials were removed not just because they had become damaged but also because they were wanted elsewhere. As Arnold Nesselrath's Chapter Nine makes clear, the prized porphyry shafts on the aedicules of the piers have been robbed and replaced with columns of either paler reddish *rosso antico* or gray granite, the latter representing a rupture with the intended color scheme. Similarly, revetment made of serpentine, also known as green porphyry, was substituted with the more common but less intense *verde antico*. The most radical modifications occurred on the attic level of the interior. Here, the alternating panels framed by ornamental moldings and pediments over window-like recesses can be firmly dated to 1753, when the ancient composition was heavily altered. The original scheme, which appears in the sketches of early modern antiquarians and in Giovanni Paolo Pannini's views, as well as a small section of the present attic reconstructed in the 1930s, consisted of little pilasters (or "pilastrini") arranged in groups of four to either side of the "windows" above the exedras of the building. The fact that the pilastrini were not aligned in predictable fashion either with the columns below or the ribs of the dome above contributed – like the junction of the portico and rotunda on the exterior – to the theories about successive building campaigns in completing the Pantheon (see Plates II, VIII, and X, as well as Chapters Ten, Eleven, and Twelve). The ancient materials from the attic have been lost, save for some pieces that ended up in museums and antiquarian collections.[29]

Construction and Proportion

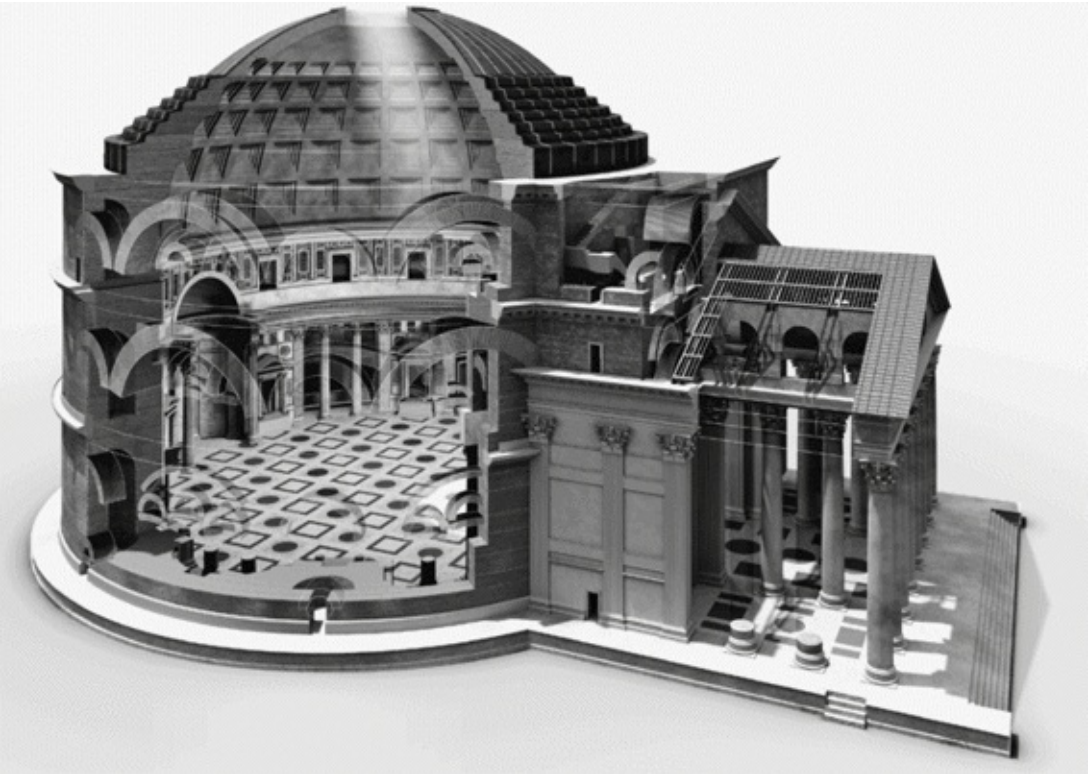
Perhaps nothing about the Pantheon is so much studied and yet so inscrutable as its structure and construction, especially that of the dome. Brick facing was used to contain the concrete, and relieving arches (arches over voids) enabled the thickness of the walls to be honeycombed with cavities that made the structure lighter and hastened the curing of the concrete (see Plate IV). The honeycombing of the rotunda's walls extends into the zone of the springing, where the vault begins to curve inward, and up to the stepped rings at the base of the dome on the exterior. Investigations associated with conservation works have also been able to determine that the aggregate materials used in the concrete of the rotunda and dome are graded into at least six different strata, from the travertine-laden concrete at floor level to a mixture using light volcanic scoria (like pumice but denser) at the top toward the oculus (Fig. 1.12).[30]



1.12. Section showing gradations of heavy-to-light concrete from bottom to top. (Lancaster 2009, Fig. 8)

On the other hand, we cannot assume that the relieving arches extend as solid brick throughout the full thickness of the drum, as frequently shown in modern reconstructions. It seems more likely that in the guts of the structure, bricks are toothed to bond with the concrete (Fig. 1.13; see Chapter Five by Gene Waddell). Similarly, the foundations of the rotunda have yet to be adequately investigated, and so we remain unsure of the extent to which ground settlement might have contributed to some of the vertical cracks that punctuate the structure. The original decoration of the coffering of the dome is likewise a matter of conjecture: Did the coffers contain stellar or floral motifs? Were they elaborated with ornamental moldings? Were they painted or gilded? Was there once a system of stone or stucco facing the exterior of the rotunda, perhaps incorporating pilasters? The projections of artists and experts from the Renaissance onward may provide plausible answers, but none can be indisputably

legitimized by literary, pictorial, or archaeological evidence.



1.13. Cutaway of the Pantheon showing its construction. (Conception Mark Wilson Jones, realization Robert Grover)

One of the most intellectually compelling aspects of the Pantheon is the simple proportional scheme that underlies its form. The interior diameter of the rotunda is equal in dimension to the height of the interior from pavement to oculus, while the cornice marking the division between wall and dome exactly bisects this height (see Plate XII). A hemisphere, therefore, hovers over a cylinder of the same radius and the same height, which means that a sphere can be inscribed in the whole space. Furthermore, if a square is inscribed in the circular plan of the rotunda and is then replicated (or "flipped") to the north (Fig. 1.5), it will define the limits of the portico. Since the height of the intermediate block is the same dimension as the sides of this square, these parts of the project together compose a cube. Thus, simple relationships govern the volumes of sphere, hemisphere, cylinder, and a cube that can be imposed on the Pantheon in the mind's eye. These relationships suggest both a generative and a visual function for the measurements employed. In other words, the composition of the building is governed by a coherent set of dimensions, which facilitated its design and execution, as well as contributing to its essential formal aspect. Further analysis reveals how simple ratios, above all 1:1 and 1:2, resonate also in the relationships between various smaller parts of the composition (see Plate X). This, then, is a scheme of elemental beauty and simplicity redolent of Greek mathematics, a connection that Giangiacomo Martines proposes here. Indeed, the fact that the circle defining the centers of the rotunda columns has a diameter of 150 Roman feet, or 100 cubits, naturally invites speculation on a design method rooted in philosophical intent.[31]

Such correspondences continue to inspire theories to explain both the genesis of the design and its intentions, theories that presume the agency of a thoroughly trained and competent ancient architect. One of his skills was the ability to construct accurate technical drawings to scale. On the basis of numerous extant examples, such as a marble plan of the Temple of Castor and Pollux near the Circus Flaminius (which includes details like column bases and steps), it is clear that Roman architects used

scaled plans and models, a common scale being 1:240, or 1 inch to 20 feet.[32] The architect of the Pantheon may perhaps have used diagrams at this and other scales, such as 1:120 and 1:24, for the purpose of composing plans, elevations, and details. At a later stage in design, relevant information from such drawings, augmented by dimensional and proportional calculations, would have been used to construct full-scale templates, such as the set located near the entrance to the Mausoleum of Augustus, of which some, as mentioned, happen to relate to the Pantheon itself.

The Architect of the Pantheon

Unlike the Parthenon in Athens, Amiens Cathedral, St. Peter's in Rome, Hagia Sophia, or the Taj Mahal, for the Pantheon we have no name for the architect(s) responsible. In the period under scrutiny, however, one name stands out from the prevailing anonymity, the architect-engineer Apollodorus of Damascus. Ancient sources allude to him as Trajan's preferred designer and the author of three major projects in Rome: Trajan's Forum, an unidentified odeon, and a gymnasium that can be presumed to be Trajan's Baths.[33] The attribution of the Pantheon to him cannot be proven, but it makes sense in several ways. He was a master architect-engineer with extensive expertise in constructing timber structures of a kind needed to provide initial support for the concrete dome. Moreover, the marble decoration in the Pantheon shares several stylistic traits with that of Trajan's Forum by Apollodorus, including the handling of the Corinthian capitals and the disposition of the polychrome floor pattern.[34] The open-air half rotundas of Trajan's Baths also offer several points of similarity. The coffering of an exedra presents the closest-known parallel for the coffering of the Pantheon dome (see Fig. 5.7)

It is also significant that the elevations of the exedras of Trajan's Baths present a rhythmic "syncopation" kindred to that of the interior elevation of the Pantheon, where the contrasting treatments of the three main zones (main order, attic, and dome) align only on the axes but not otherwise (see Fig. 5.3). Quite possibly this sophisticated type of treatment was a hallmark of Apollodorus or architects in his circle. Finally, with the inception date of the monument in question once more, the possibility of a Trajanic start gives added strength to the association with Apollodorus, for we know Trajan to have been his appreciative patron and supporter. By contrast, the well-known disagreements between Hadrian and his inherited architect Apollodorus, which according to one tradition proved literally fatal for the latter, would have arisen after Hadrian's accession to power.[35]

The Pantheon in the Middle Ages and the Renaissance

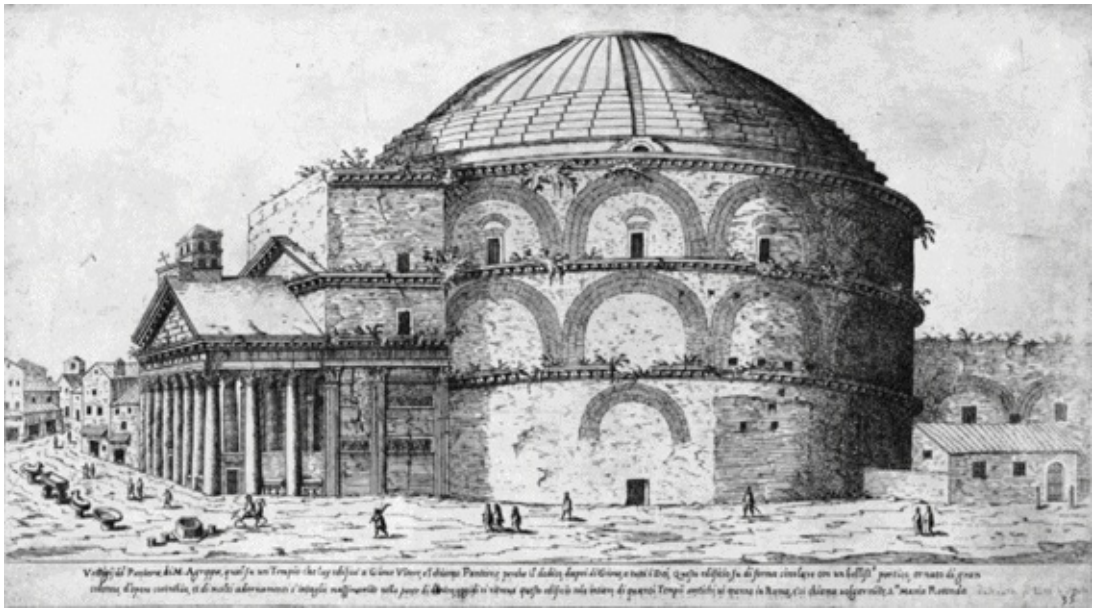
That the Pantheon still stood in impressive condition in late antiquity is well attested in the fourth century BC by the Roman historian Ammianus Marcellinus. It was he who left that felicitous image of the rotunda resembling a city, thus calling attention to the articulation of the interior in a mode that evoked the character of urban facades. Hyperbole may have entered into his writing, yet the Pantheon must have been an extraordinarily captivating building, even by the grandiose standards of Imperial Rome. This fact more than any other must have inspired Pope Boniface IV to ask the Byzantine emperor Phocas in Constantinople to cede the "temple" to the Church in the early seventh century. Phocas ruled from 602 to 610 and Boniface IV from 608 to 615. The date usually cited for the donation is 609, but a recent analysis suggests that the event took place on May 13, 613, after the death of Phocas (see Chapter Eight by Erik Thunø).[36] This would suggest that the "conversion" of the

building should be contextualized in the politics of the Byzantine-dominated papacy in Rome, and not in those of the deceased Byzantine emperor.

Richard Krautheimer dismissed as legend the oft-repeated story that Boniface IV brought 28 cartloads of unnamed martyrs' bones here from the catacombs, as it would have had little to do with contemporary customs.[37] In the mid seventh century we discover the Pantheon being called Sanctae Mariae ad martyres. At the turn of the seventh–eighth centuries, the Venerable Bede likened the dedication of the Pantheon of all the ancient gods to all the martyrs of the Church, although the English monk probably had no firmer basis than tradition for doing so.[38] In the latter half of the eighth century it is referred to as Sanctae Mariae Rotundae.

The twelfth-century Roman guidebook, the *Mirabilia Urbis Romae*, stated that the dedication to Mary supplanted an original dedication to Cybele, the mother of all of the pagan gods. The English pilgrim John Capgrave repeated this story in the early 1450s, recounting how the ancient general Agrippa had seen a vision of Cybele and vowed a church to her and all of the gods if his campaign against the Persians was successful.[39] None of these dedications – not even the Christian function of the building – guaranteed it immunity from depredation. The Byzantine emperor Constans II (AD 641–668) despoiled the dome of its gilded bronze roof tiles, which were ultimately lost. Other changes to the exterior came much later. In 1270, a bell tower was constructed on the peak of the portico's roof, and it remained in place throughout the sixteenth century, as Renaissance drawings attest.

At some unspecified moment in the medieval era, the columns on the east side of the portico were lost or severely damaged. To avoid collapse, a brick wall was erected on a portion of its front and east-facing sides. Most of the wall was eventually removed when the columns were repaired and replaced in the seventeenth century, although remnants of the brick are visible in the uppermost reaches on the east side. The elevated grade of the piazza also restricted access to the porch, reinforcing this separation between the portico and the urban space it once dominated. To descend to the ancient level of the building, three doors and side entrances were established on the perimeter of the colonnade. Their locations are indicated in sixteenth-century engravings, like Etienne Dupérac's, and are also evident from the notches for lintels that were hacked into the porch columns, as may still be seen on site (Fig. 1.14).[40] Like the date of the brick walls, that of these passages is uncertain and may be much earlier than the thirteenth-century bell tower.



1.14. Exterior view of the Pantheon; sixteenth-century engraving by Etienne Duperac. (Avery Library, Columbia University)

The state of the interior during the Middle Ages is also discussed in Chapter Eight. Thunø points out that the much-venerated image of the Madonna and Child, celebrated at the high altar and supposedly painted by St. Luke himself, can be traced no earlier than the eighth century and, thus, well after the dedication of the edifice to St. Mary and all martyrs. The high altar itself was subject to many changes. In 1270, it was marked by a *ciborium* composed of porphyry columns, and a low stone parapet surmounted by six more porphyry columns surrounded the altar precinct. The surrounding "pergola" must have been an integral part of the altar complex because it was restored by Pope Innocent VIII (1484–1492), who moved it toward the center of the building in order to facilitate access to the relics of the martyrs interred under the altar. These arrangements of 1491 were complemented by a fifteenth-century maiolica relief of the Assumption of the Virgin, which hung within a painted gloria of saints in the half dome of the apse.[41]

In general, the Pantheon received greater respect in the Renaissance than most ancient monuments in Rome, which were often plundered for their building materials and decorative stone. Rodolfo Lanciani catalogued such acts of pillage of ancient architecture in his famous four-volume work, *Storia degli scavi di Roma* (1902–1912; a fifth volume appeared in 2000). The Pantheon did better than escape spoliation for the most part and was occasionally the beneficiary of these campaigns.

Under Popes Martin V (1417–1431), Eugene IV (1431–1447), Nicholas V (1447–1455), Pius II (1458–1464), and Paul II (1464–1471), efforts were devoted to shoring up the masonry of the structure, replacing or repairing the lead tiles of the dome, attending to the roof of the portico, and clearing the market stalls from the portico, the last more notable for its "squalor," according to Flavio Biondo, than its grandeur.[42] A pair of ancient Egyptian lions and a large granite urn are documented on the piazza from the later Middle Ages, and these were maintained by Eugene IV, who took the then-extraordinary step of paving the Piazza della Rotonda. Under Leo X (1513–1521), pedestals were installed under the lions and the urn to raise them above the activity of the square and preserve their integrity. Eugene's intervention was later cited in an ordinance issued by Clement VII (1523–1534) for the maintenance of the piazza. At the beginning of the sixteenth century, their predecessor, Julius II (1503–1513), was too busy with the construction of St. Peter's and the Vatican Palace to be interested in the Pantheon. That he left it untouched in the search for building materials

for the Vatican is remarkable. Respect for the building is eloquently suggested by Raphael's request to be buried there.

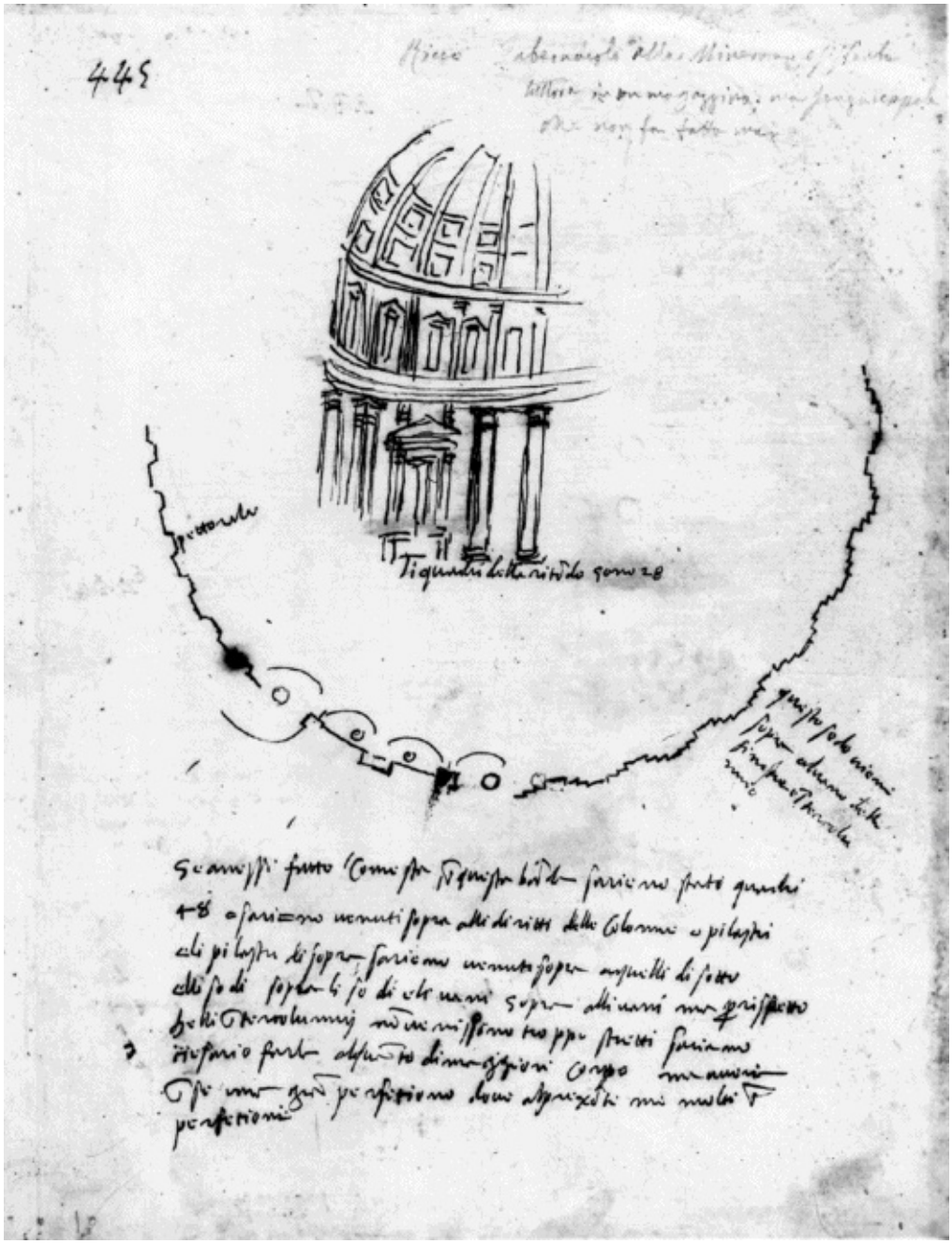
Raphael's tomb in the Pantheon was the realization of a provision in the dying artist's will. Although the will has not survived, a letter by an associate in the same year of his death, 1520, indicates that he left ample funds for the construction of a tomb, an altar, and their maintenance. In May of 1523, the Venetian ambassador Marino Sanudo wrote that the altar at the tomb "is being worked on as we speak, of serpentine, porphyry, and marble, and it will be very beautiful." Giorgio Vasari recorded the program as follows: "He [Raphael] then ordered that they should restore one of the ancient tabernacles in Santa Maria Rotonda at his expense, using new stones, and that an altar be created with a statue of Our Lady in marble; this was erected after his death for his sepulchre and place of repose." The statue of the Madonna and Child, executed by Raphael's pupil and collaborator Lorenzetto, reflected the dedication of the church, and his treatment of the Madonna as an ancient matron referred to the heritage of the site.[43]

As Nesselrath points out, there is good evidence of earlier burials in the Pantheon, for which medieval and early Renaissance tomb slabs are still preserved, having been removed from the floor during restorations. Nevertheless, Raphael's tomb established a conspicuous precedent for Renaissance artists that was much emulated. After the burial of Raphael's consort, Maria Bibiena, came that of Baldassare Peruzzi, according to Vasari, near Raphael's tomb where "all the painters, sculptors, and architects of Rome" were interred. (The inscribed tablet honoring Peruzzi in the Pantheon today was placed there by his proud Sienese compatriots in 1921.) Under Paul III (1534–1549) in 1545, it became the prerogative of the Pantheon-based Confraternity of St. Joseph of the Holy Land, whose members were composed exclusively of artists, to grant the privilege of burial in the Pantheon. Thus, in the ensuing years it became the final resting place of Perino del Vaga (1547), Taddeo Zuccaro (1566), Giacomo Vignola (1573), and others. The importance of Raphael's tomb is that it linked the notion of burial, traceable back to the Christianization of the monument, to the outstanding artists of Rome. Beyond that, Raphael may have given impetus to the restoration or renewal of the damaged and despoiled niches in the great piers of the rotunda.

From the period of the Renaissance onward, architects and antiquarians left innumerable studies of the fabric in drawings and engravings. Representations from the Renaissance can be separated into two general groups: those images that attempted to record the monument as it stood and those that tried to "improve" or complete features of the building that were lost, damaged, or incomprehensible. In fact, the reception of the Pantheon down to the twenty-first century has paradoxically oscillated between praise of its merits and sympathetic analysis or criticism of features deemed unworthy of the original architect or architects, and therefore not authentic to its origins.[44] Today, by contrast, we interpret the chronology of the building, apparent discontinuities in the fabric, and elements of design on the basis of evidence and understanding that were not available in the early modern period.

Those who attempted to critique the composition and improve it in their drawings famously include Francesco di Giorgio Martini (1439–1502) and Antonio da Sangallo the Younger (1484–1546). Francesco di Giorgio left no detailed textual commentary pertaining to the drawing, in which he increased the height of the interior by inserting an additional attic register, modified the number and rhythm of the pilasters belonging to the existing attic, and rearranged the coffering of the dome (see Fig. 10.4). These alterations served one purpose: to bring vertical elements of the elevation in line with one another. Thus, Francesco imaginatively redeemed the monument from violating a crucial tenet of Renaissance composition in which solid-above-solid and void-above-void was the rule.

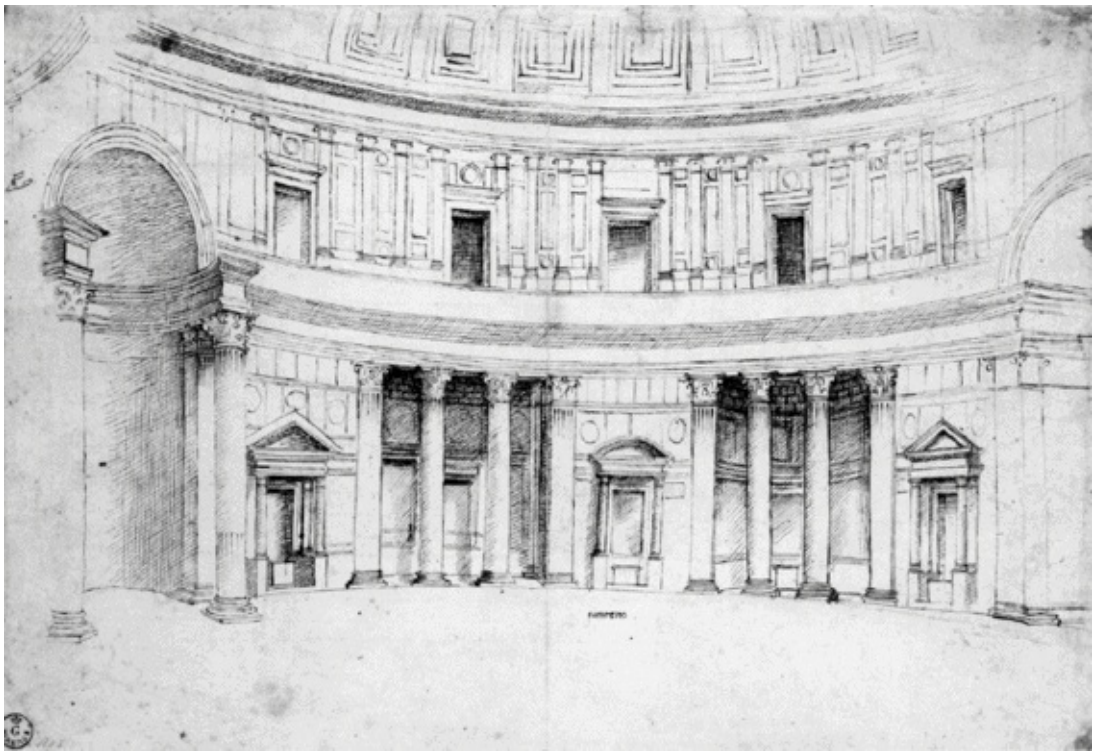
Around 1535 Antonio da Sangallo the Younger addressed this issue (and several others) in drawings and written commentary (Fig. 1.15). He “corrected” the lack of vertical congruity between the columns and pilasters of the main order and the small pilasters of the attic, aligning them with the ribs of the dome to rectify “a most pernicious thing” about the original composition. In other drawings, he changed the position and number of columns in the porch because of a supposedly “erroneous” relationship to the niches and surrounded the temple with columns, producing, as Nesselrath puts it, something of a “caricature” of the original.



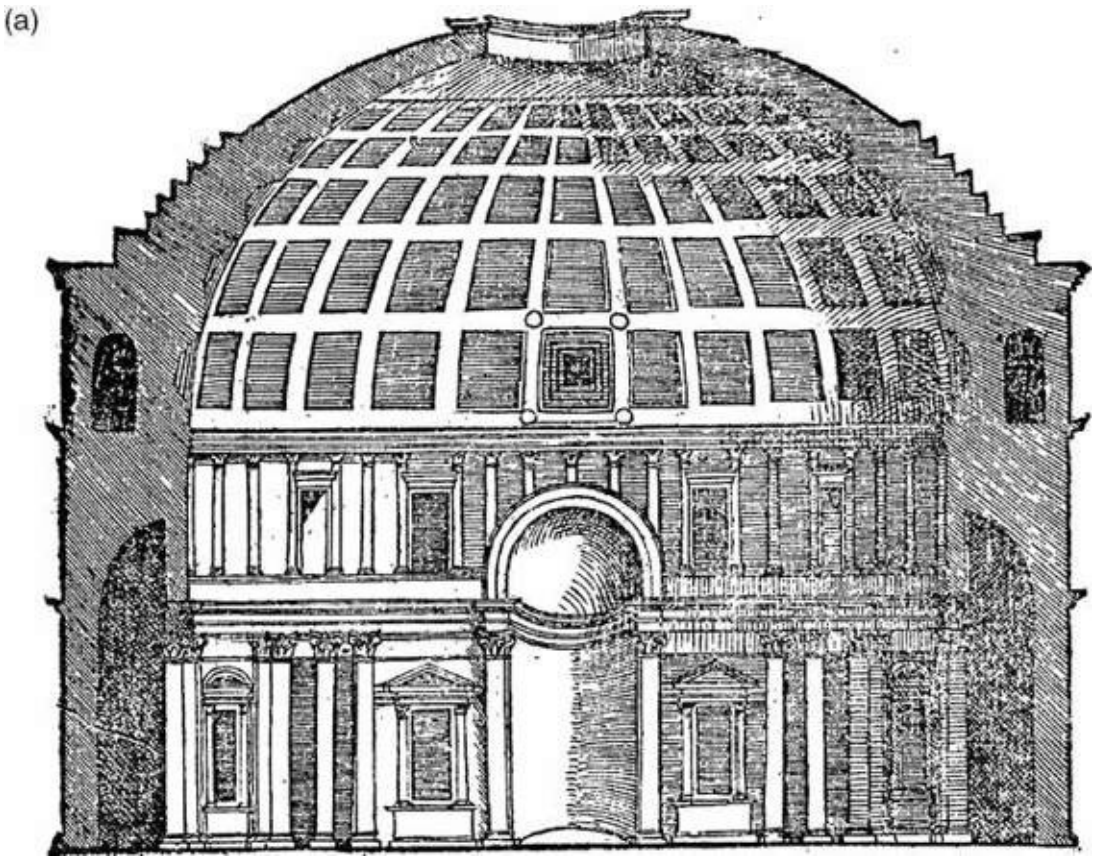
1.15. Proposed refashioning of the Pantheon elevation; sixteenth-century drawing by Antonio da Sangallo the Younger. (Uffizi A 874 recto)

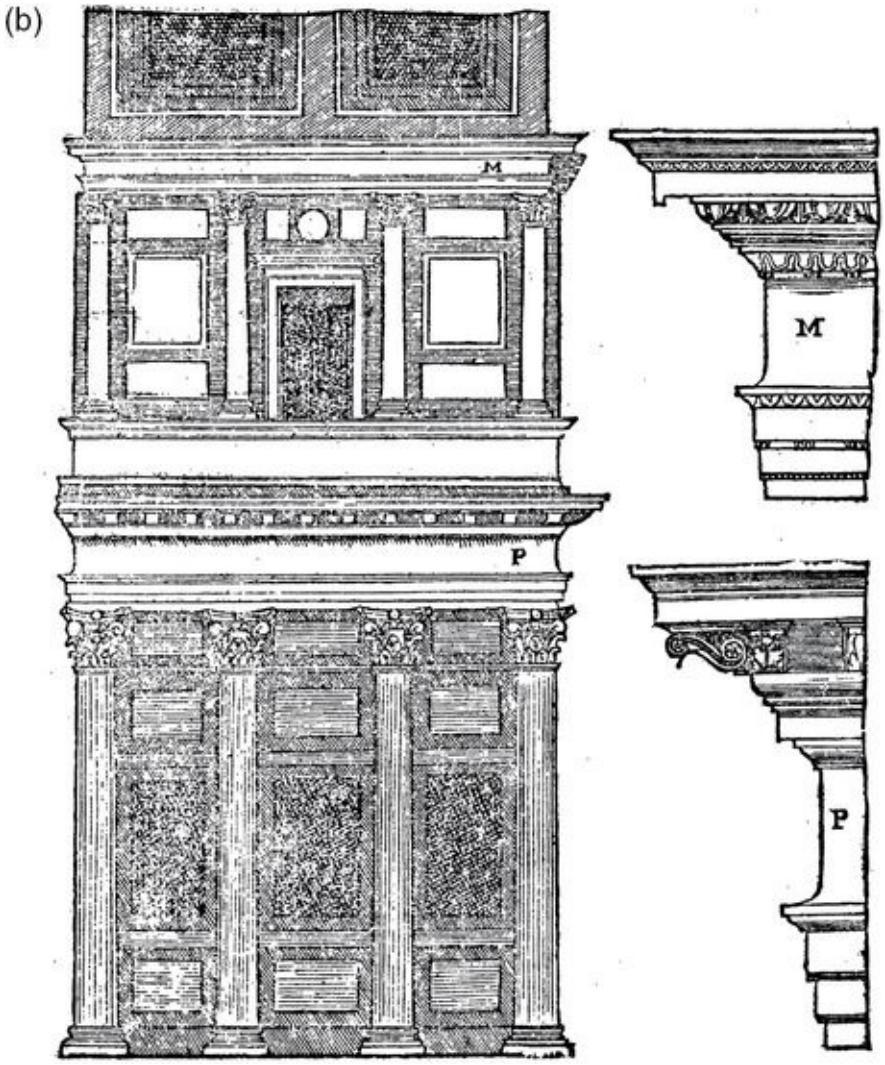
By contrast, Raphael’s drawings seem almost reverent in their fidelity, although they too present significant challenges of interpretation (Fig. 1.16). Why, for example, has one of the three exedras (or alcoves) been omitted in his rendering of the view embracing the entrance and altar bays? Perhaps, as Nesselrath proposes, Raphael was responding to impediments at the site, such as the medieval high altar that was refashioned in the 1490s. Nothing of the sort prevented Sebastiano Serlio from issuing his book with woodcuts showing the attic pilasters neatly aligned over the columns and pilasters

below them, in evident contrast to the realities on site (Fig. 1.17, a and b). (He also represented the exterior facade without the second pediment over the roof of the portico, another conscious "improvement" of the building he wished to record for posterity.)[45] By contrast, Andrea Palladio returned to Raphael's paradigm in showing the elevation just as it stood (Fig. 1.18, a and b). Something about this layering of the composition must have suggested authenticity to him, an authenticity that escaped others of the period. Certainly Palladio showed no reticence in supplying the exterior with a network of channeled masonry and pilaster orders for which there was no evidence in the monument.[46]



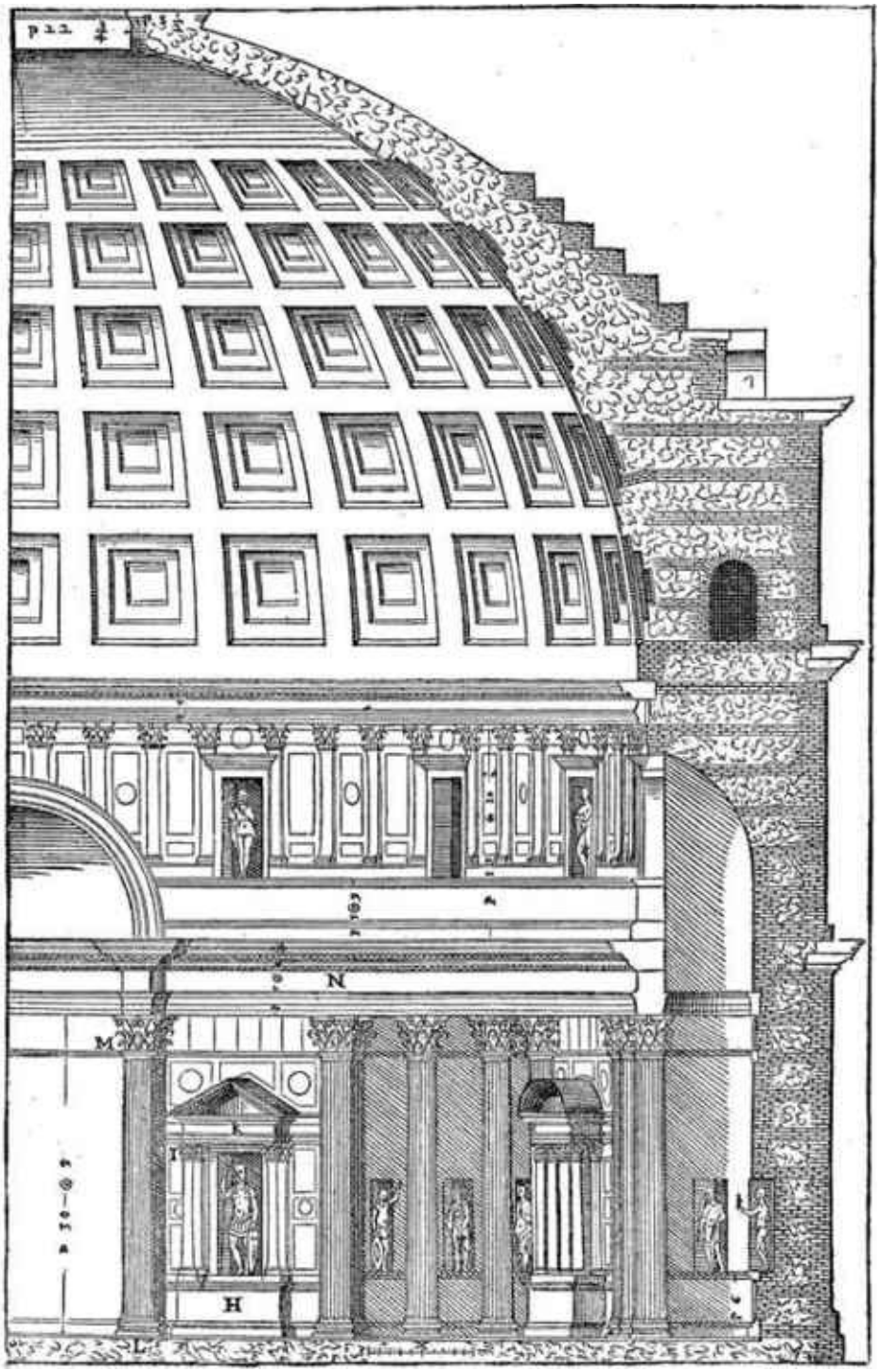
1.16. Interior view of Pantheon; sixteenth-century drawing by Raphael. (Uffizi A 164 recto)

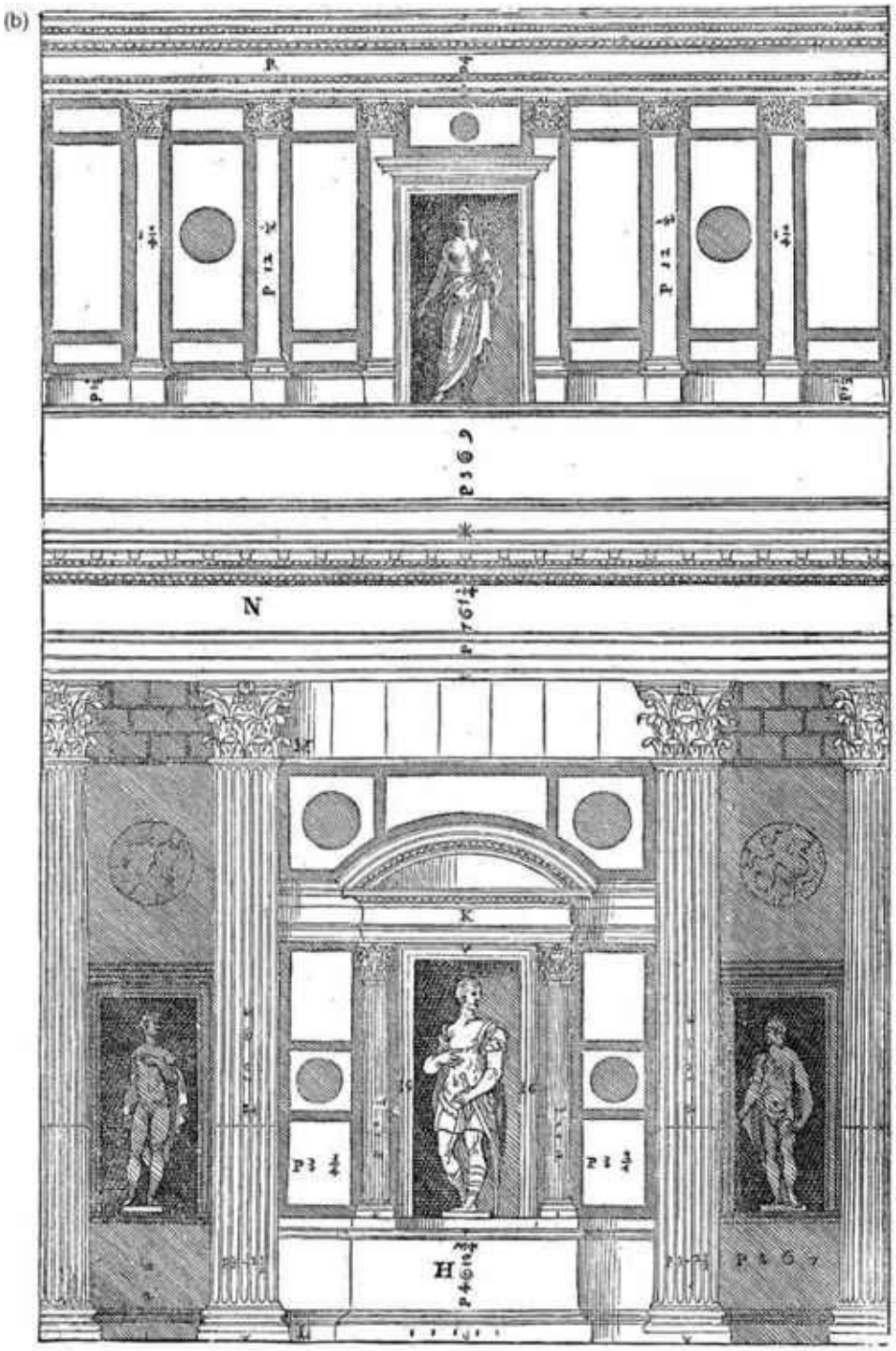




1.17 a and b. Section and detail of interior elevation; sixteenth-century woodcut engravings by Sebastiano Serlio. (Serlio 1584)

(a)





1.18 a and b. Section and detail of interior elevation; sixteenth-century woodcut engravings by Andrea Palladio. (Palladio 1570)

The lack of vertical congruity of interior components induced Michelangelo to suppose that the rotunda had been built up to the main cornice by one architect; another was responsible for the attic, its windows, and the dome; and a third ancient architect had added the portico.[47] In all likelihood, he was not the first to reach this conclusion, and it certainly did not dull his enthusiasm forthe Pantheon. He judged the windows of the attic to be "most graceful," the portico was a *cosa rarissima* ("a most rare thing"), and from the pavement to the cornicione a *disegno angelico, e non umano* (an "angelic, and not human design"), as we have already mentioned. In the Baroque era, Bernini concurred with these judgments but, stepping beyond his predecessors, also recognized how the pilasters of the attic story formed a contrapuntal or syncopated rhythm in diminished proportion to the vertical elements

rising from the pavement.[48] Thus, the wider and narrower bays that compose the cadence of the main order rising from the pavement were repeated on a smaller scale in the attic. In this reading, Bernini reenvisioned the integrity of the composition through the commensurability of its horizontal rhythms, in opposition to privileging the strict code of vertical alignment. (See Fig. 10.6 and Chapter Ten.)

Today we can also appreciate how the elevation repeatedly severs vertical connections and encourages the perception of an attic floating over the main order and, in turn, the dome floating over the attic. At the same time, there are deliberate alignments that arise like major beats in a musical composition on the main axes and to a lesser degree on the diagonals. In fact, the checkerboard design of the floor, the main order with its exedras and piers, and the attic and coffered dome all participate in a kind of rhythmical swelling and contracting, pushing and pulling.[49] The result is a more dynamic experience than the static formulas so often deployed in Renaissance and Neoclassical interpretations of the rotunda theme.

The Pantheon in the Seventeenth and Eighteenth Centuries

Only partly inherited from the Renaissance, Bernini's high regard for the composition of the Pantheon had no doubt been sharpened by the widespread and hostile reaction to the removal of the ancient bronze trusses from the portico under Urban VIII in 1625. The impetus for this act of official vandalism was the need for metal to cast cannon for the protection of Castel Sant'Angelo, but the negative response was apparently so overwhelming that the pope subsequently claimed to need the materials for Bernini's Baldacchino in St. Peter's. In recent publications, Louise Rice has revisited and exposed this maneuver, which had given rise to the already cited pasquinade "What the barbarians didn't do, the Barberini did." The use of the bronze for a liturgical ensemble was evidently more acceptable than for cannon, although in truth, none of the metal was used at St. Peter's. Instead, the metal from a number of cannon at Castel Sant'Angelo can be traced to the Pantheon bronze beams, the very antiquities that had so often been admired by draftsmen and antiquarians in the previous century.[50]

In apparent compensation for this "barbarous" pillaging of the ancient monument, Urban VIII made reparations to its fabric. He replaced the missing column on the northeast corner of the portico and had the Barberini bee carved on its capital for all to see (Fig. 1.19). He replaced the bronze trusses with the structure of timber rafters, collars, purlins, struts, and braces apparently implemented by Francesco Borromini, whose working drawings are preserved in the Albertina Museum in Vienna. (see Fig. 10.1). The thirteenth-century bell tower had to be dismantled to remove the trusses, and to replace it Urban VIII commissioned a pair of twin towers on the flanks of the facade where they could be better supported than at the peak of the portico (Fig 1.20). The towers were designed under the auspices of the papal architect, Carlo Maderno, again with the aid of Borromini, as is also recorded in drawings now at the Albertina Museum (see Fig. 10.2).

1.19. Northeast capital of portico with detail of Barberini bee and, on cornice, the later Chigi stars and mounts. (Photo William Rutledge)

1.20. View of Piazza della Rotonda after removal of vendors, repair of the portico, and rebuilding of the Chapter house; engraving by G. B. Falda, ca. 1665. (Giovanni Battista Falda, *Vedute delle fabriche, piazza, e strade fatte fare nuovomente in Rome dalla Santità di N.S. Alessandro VII*, Rome 1665, unpaginated)

These operations were published decades ago.[51] Nevertheless, the bell towers are still often and incorrectly referred to in the literature as Bernini's "asses' ears," even though Bernini had nothing to do with them or the operations leading up to their construction. When he later drew the Pantheon, Bernini never included the towers, which were finally taken down only in 1892 in the effort to restore the facade to its original, ancient aspect. Ironically, the towers are almost never correctly attributed to his rivals Maderno and Borromini.

The next major campaigns on the Pantheon took place in the 1660s, during the reign of Alexander VII, a great builder and an enthusiastic antiquarian, who sought to restore the glories of the ancients to the modern city of Rome. It was he, for example, who hired Bernini to remodel Piazza San Pietro. Not surprisingly, Alexander also aspired to restore the original dimensions of Piazza della Rotonda in front of the Pantheon. Portions of the ancient *platea* had been discovered in Urban VIII's time during excavations for the foundations of the church of Santa Maria Maddalena. Alexander knew this and aspired to purchase and demolish the city block between Piazza della Maddalena and Piazza della Rotonda, to grade the piazza to its ancient level, and to regularize its boundaries. In the event, however, financial and practical realities overtook these ambitions. Regularizing the Piazza della Rotonda proved to be as difficult as freeing the Pantheon of the buildings built against it. Even ridding the piazza of vendors proved exhausting and ultimately insurmountable.[52] In the end, he did grade the piazza modestly, situated the vendors behind the fountain, and replaced the last two missing columns and the entablature (decorated with his Chigi family arms) on the east side of the portico. He had the old brick wall on the east side of the portico demolished and the columns freed of attached buildings. But he then had to rebuild the Chapter house of the canons of Santa Maria della Rotonda on the east flank of the rotunda well behind the newly restored columns (Fig. 1.20).

Financial constraints and compromise with entrenched forces also limited Alexander's work on the interior of the Pantheon. Three times he was said to have asked Bernini to decorate the venerable interior, and three times his favorite artist and confidante refused. Part of the work requested by the pope pertained to the attic; other parts involved decorations for the coffers of the dome. Drawings from circa 1662 to 1667 indicate that the pope wanted to decorate the coffers with his family emblems (six mounts, six-pointed stars, entwined laurel; see Fig.10.8). Some of the stuccoes were installed, as we know from reports of their removal under the following pontificate, while some bits apparently survived until Pannini's day (see Chapter Eleven). Other proposals, like the inscription dedicated to the pope that was to be installed around the oculus in a field of stars, remained unexecuted (see Fig. 10.8).[53] A degree of egomania seems to have inflected these projects, but fortunately, tradition prevailed and little of consequence was done to the Pantheon for the balance of the century.

At the beginning of the eighteenth century, Clement XI (1700–1721) sponsored a redesign of the whole altar area. The new altar, the work of Alessandro Specchi (1668–1729) was probably inspired by a report of 1714 on the history of the only two saints known by name – Anastasius and Rasius – from among the 28 martyrs reportedly brought to the Pantheon in the seventh century. (During routine repairs in anticipation of the Holy Year 1675, their remains had been discovered behind an iron grating at the back of the altar.) Thus, in 1715, a scheme was developed to refashion the high altar, which included a large tabernacle that may have utilized the older porphyry columns on site. On the altar mensa, Specchi planned a sculpture of the Madonna and Child, which would have obscured a view of the medieval miracle-working Madonna image, the Renaissance maiolica Assumption relief, and older frescoes on the walls of the apse. In any event, the scheme was significantly changed and finally unveiled in 1725, during the pontificate of Benedict XIII (1724–1730).[54]

This work obliterated the frescoes of Saints Anastasius and Rasius (date uncertain) located on the right wall of the tribune. Henceforth, the saints were commemorated in the pier niches flanking the apse with over-life-sized statues by the artists Bernardino Cametti (1669–1736) and Francesco Moderati (ca. 1680–1729). Contracts for these marble figures in 1725 and 1727 tell us that St. Rasius by Moderati was located to the left of the high altar and St. Anastasius by Cametti to the right, where they are seen today (Fig. 1.10). On the other hand, Specchi's high altar was completely dismantled and rebuilt in 1934 during the Fascist era. At that time, nearly all vestiges of the medieval, Renaissance,

and eighteenth-century elaborations of the altar and the apse disappeared. The gilded coffering pattern in the apse and the Albani emblems (three mounts and stars) on the projecting entablatures flanking it are the only notable remains of Specchi's work.[55]

For the Pantheon, Specchi also produced an unexecuted project circa 1710 to remodel the Chapel of St. Joseph of the Holy Land (San Giuseppe di Terra Santa), which is the second chapel at the left on entering (see Fig 11.4). The confraternity of St. Joseph of the Holy Land was established in 1542 by a canon of Santa Maria ad martyres named Desiderio di Adiutorio (1481–1546) and approved the following year.[56] Membership in the confraternity soon became exclusive to artists of the day and came to be called "I Virtuosi al Pantheon." Desiderio had been to the Holy Land twice and wanted to exhibit his collection of relics at the Pantheon, ultimately hoping to be buried there too, following Raphael's precedent. In 1545, the confraternity was granted the right to extend permission for burial there to deserving members of the group.[57] Before this time, there was no consistent tradition for burial in the Pantheon apart from its consecration to all of the martyrs of early Christianity and the few tomb slabs we have mentioned in passing.

In 1713, the privilege of visual artists to burial at the Pantheon was expanded to include the composer Angelo Corelli. This event corresponded to the decision to locate commemorative niches and busts around the entire circumference of the building, as Pannini's paintings show (Plate II). Many of the niches remained empty throughout much of the eighteenth century. Then, around 1780, an effort was made to provide busts for Nicholas Poussin, Anton Raphael Mengs, and J. J. Winckelmann, thus an older artist and two who were recently deceased. In turn, these inspired the sculptor Antonio Canova (1757–1822) to propose the installation of a new series of commemorative busts of the "illustrious and most important men in Italy." The first of them were Dante, Tasso, Michelangelo, Palladio, Correggio, Titian, and Veronese; others followed, all commissioned by Canova at his expense from fellow sculptors. At the time, 1809, Canova occupied essential offices for Pope Pius VII (1800–1823), and then, after the Napoleonic invasion of Italy and occupation of Rome in later 1809, for the French. In fact, the French prefect of Rome, Camille de Tournon, encouraged Canova's idea, perhaps inspired by Ste-Geneviève in Paris. Canova had been to Paris in 1802, less than a decade after the church had become the Panthéon and turned into a national mausoleum.[58] Thus, the Roman Pantheon inspired a French Panthéon, which in turn affected thoughts about the use of the original building.

After 1814, the expulsion of the French from Rome, and the reestablishment of papal governance, a number of observers, including the reigning pope, Pius VII, realized that Santa Maria ad martyres was now celebrating heroes of a secular world.[59] Susanna Pasquali describes how, in a midnight raid in 1820, all of the busts in the Pantheon were removed to a new collection at the Vatican Museums, with papal officials eventually reinstating only those monuments directly relevant to church history. By 1833, doubts even arose about the true location of Raphael's remains, giving occasion for a dramatic exhumation by candlelight.[60] It revealed that Raphael was indeed buried at the site, a notion that still reverberates among today's visitors.

In aesthetic matters, the Pantheon has often been a magnet for contemporary opinion. When inadequately anchored bits of the dome began falling in 1753, a massive and controversial "restoration" was undertaken. This episode – again fully documented by Pasquali and thus not datable to 1747 as often claimed – is one of the richest testaments to the reception of the building.[61] The consolidation effort was directed by Antonio Baldani, a papal official, noted scholar, and proponent of neoclassical aesthetics. Included in his charge was the repair of the attic, where much of the

placage had become dangerously detached and in need of refurbishing. Rather than doing so, however, he had the attic stripped of the marble pilasters and other decorations that had inspired so much Renaissance debate. In spite of Bernini's admiration, Baldani was convinced that the composition of the attic must have been due to alterations imposed on the ancient building after its Christian consecration. We have already encountered the reason: the attic register simply did not follow the received view of classical rules of design dictating the placement of solid above solid and void above void.

Although informed scholars opposed him – Giovanni Gaetano Bottari, for example, maintained that the building had been rededicated to Christianity "without moving a stone" – Baldani hired the young architect Paolo Posi (1708–1776) to replace the composition. The original pilastrini disappeared forever. The new scheme remains in the building for all visitors to see: a remarkably dull combination of rectangular fields and pedimented window frames (see Plate VIII). There is, of course, no antique precedent for Posi's composition, and critics were quick to react. In 1756, the polymath, essayist, critic, and collector Francesco Algarotti (1712–1764) described how "they have dared to ruin that magnificently august fabric of the Pantheon, which alone among the works of antiquity remained complete." Writing from Venice in 1777, the artist and critic Antonio Visentini (1688–1782) called it a disaster that should never have occurred. The historian Francesco Milizia (1725–1798), noted for his bias against the baroque, was a little charitable at first, characterizing Posi's "talento grande, senza buona architettura" but later accused him of "the new fashion of thumbing one's nose at antiquity."[62]

The Pantheon from the Nineteenth Century to Our Day

If Baldani and Posi had anticipated future praise for their resolution of a historic feature of the Pantheon, they were sadly mistaken. In 1807, Carlo Fea termed the remodeling of the attic "an unpardonable barbarism" and called Posi "nefarious, reckless, and arrogant." Giovanni Eroli, writing in 1895, termed the scheme "bestial." From the Fascist period, Alberto Terenzio's judgment may seem comparatively mild, merely calling the work "deplorable." It was during Benito Mussolini's rule that Terenzio was commissioned to return the Pantheon as much as possible to its ancient state, and for this purpose in 1929–1934 he restored a small section of the attic to the right (west) of the main exedra with the pilastrini that Posi had obliterated (see Plate VII).[63] Because it is such a small portion of the attic circumference, it looks somewhat lost – a gesture too tentative to allow the eye easily to sense the virtues of the original.

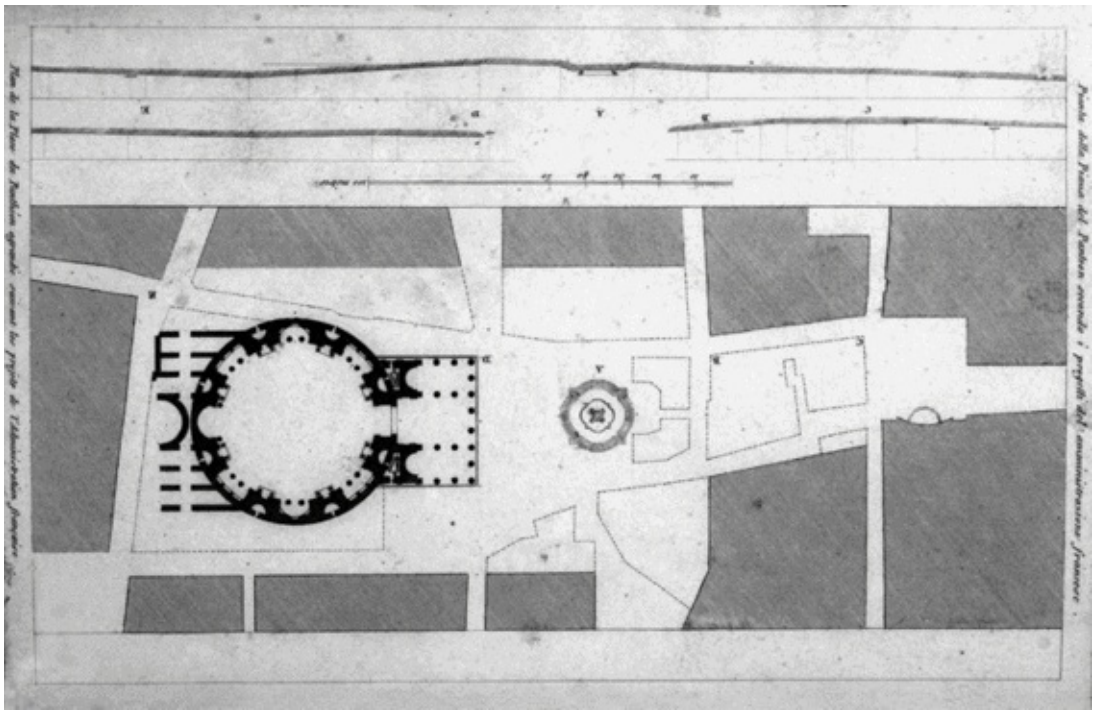
VII. Portion of attic register of Pantheon interior that was restored to original design by Alberto Terenzio in the 1930s. (The Bern Digital Pantheon Project)

VIII. Attic register of Pantheon interior as renovated beginning in 1753 by Paolo Posi. (The Bern Digital Pantheon Project)

Nearly every administration in charge of the Pantheon over the centuries sought to liberate the structure from the accretion of buildings around it and to limit the activity of vendors. Alexander VII's success in confining the market stalls behind the fountain must have encouraged Clement XI to embellish the Fontana del Pantheon in 1710–1711. By adding an ancient obelisk on a rocky base in the

center, Filippo Barigioni (1690–1753) gave emphasis to Giacomo della Porta's preexisting basin and spouts of circa 1575 (Fig. 1.1). The inspiration was surely Bernini's Fountain of the Four Rivers on nearby Piazza Navona, which sits in front of Sant'Agnese, a centralized, two-towered church like the Pantheon. Barigioni's additions succeeded in pulling the fountain into a much more forceful relationship with the Pantheon, even if the axes are not precisely aligned (see Figs. 10.10 and 10.12).[64]

The presence of the vendors, merchants, and markets on the piazza persisted into the early nineteenth century when, under the Napoleonic regime of Prefect Camille De Tournon, the problem was once again addressed. Between 1809 and 1813, orders were issued "in the name of Napoleon" to remove the new accretion of stalls and booths "which detract the admiration of visitors from a part of the most beautiful monument of antiquity."[65] The famous neoclassical architects Raffaele Stern (1774–1820) and Giuseppe Valadier (1762–1839) were commissioned to identify, evaluate, and demolish houses attached to the flanks of the Pantheon and to fix the space in front of it as a "piazza rettangolare." The fishmongers were to be transferred to a new location near Sant'Eustachio. In 1813, it was proposed to tear down the Pantheon's bell towers, but this did not happen. A plan approved by De Tournon's commission also projected the extension of Piazza della Rotonda to Piazza Maddalena, almost exactly as had Alexander VII (Fig. 1.21).[66] This plan, was published in the atlas of De Tournon's schemes for revitalizing the historic centers of Rome.[67] In a different political climate after Napoleon's demise, Popes Pius VII (1800–1823) and Pius IX (1948–1978) took up identical campaigns, again without success.[68]



1.21. Scheme for enlarging Piazza della Rotonda during the Napoleonic occupation of Rome under Camille De Tournon. (De Tournon 1855, Plate 30)

Since the unification of Italy and the designation of Rome as its capital in 1860–1861, the Pantheon had been the target of many restorations and ephemeral embellishments. In the first Master Plan of Rome in 1873, the complete liberation of the building from all structures attached to it was foreseen, as was the extension of Piazza della Rotonda. The second Master Plan of Rome of 1883 dropped the idea of extending the piazza but maintained the desire, eventually fulfilled, to expose all of the ancient parts of the south side of the monument. Ironically, as Allan Ceen has argued, such isolation was not desired by the ancient architects, nor in all probability anticipated. This vision was, rather, an

invention of the Renaissance and the seventeenth century, which was nurtured to fruition in the nineteenth and twentieth centuries.[69]

The twin campanili built on the facade by Maderno and Borromini were removed in 1882–1883 (Figs. 1.22 and 1.23). The context for this demolition was highly politicized and not merely an attempt to return the prospect of the Pantheon to its ancient state. Because the towers had assumed the role of marking a church, their removal signaled a return to its pre-Christian origins, a change not welcomed by the Vatican (see Chapter Twelve). It was indeed a baldly anticlerical gesture. This was followed by a host of other restorations of a less conspicuous nature, which took place with such frequency in the late nineteenth and early twentieth centuries that a complete list defies our limits of space and patience. Yet each is important in identifying what is and is not truly ancient in the fabric today. For example, the pavement of the rotunda was restored in 1872 and many times thereafter, right up to the 1990s as mentioned earlier. Large areas of brick pavement in the portico were replaced in white marble and granite in the period 1883–1885. In 1911, Antonio Muñoz restructured Raphael's tomb and altar.[70]

1.22. Facade of Pantheon before 1882–1883; period photograph. (Photo archive, National Gallery of Art, Washington, D.C.)

1.23. Facade of Pantheon after removal of bell towers in 1882–1883; period photograph. (Photo archive, National Gallery of Art, Washington, D.C.)

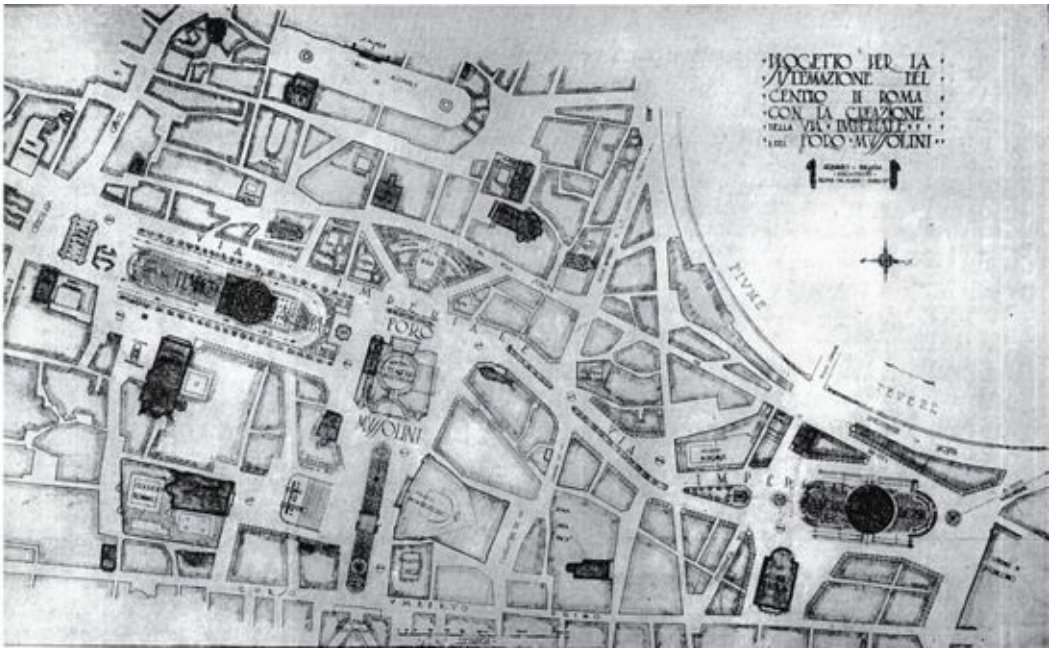
By the early 1890s, both Dressel and Chédanne had come to realize that bricks from the Pantheon bore evidence of Hadrian's reign. An excavation directed by Luca Beltrami, assisted by the young Pier Olinto Armanini in the years 1892–1893, added fuel to the debate. Robin Williams's chapter explains how, in a bit of unfortunate timing, Chédanne's drawings were exhibited in Rome in 1895, just months after the new minister of public education, Guido Baccelli, had restored the Agrippan inscription on the facade at great expense. Baccelli responded furiously, "Yet I have placed in bronze letters on the frieze of the Pantheon AGRIPPA FECIT; until I shall be with Minerva, vivaddio! Hadrian has nothing to do with it!"[71] This reaction deserves to be recalled as we evaluate Hetland's redating of bricks to the Trajanic period in Chapter Three.

The death in 1878 of the first king of a united Italy, Victor Emmanuel II of Savoy, inspired a project drawn up by Pietro Comparini (1833–1882) for a huge "Foro Vittorio Emmanuele" in 1881 (Fig. 1.24). Under the direction of Baccelli, Comparini's project would have restored the piazza to the dimensions anticipated in the earlier projects of Alexander VII and the Napoleonic regime, in the service of yet another politicized vision of antiquity.[72] Yet again, this was not to be. Instead, the definitive design for the well-known monument to Victor Emmanuel was selected for the more conspicuous site on Piazza Venezia in 1882 (see Fig. 12.8 and Plate XXIV). In 1884, Victor Emmanuel's son and successor Umberto I ordered the king's tomb located in the lateral niche on the west side of the Rotunda's interior. Upon Umberto's death in 1900, his own tomb was arranged in the eastern niche of the Pantheon in the years 1904–1911. Under the Lateran Accords of 1929, the Pantheon became the Palatine basilica of the Savoy family, a reprise of dynastic intentions that can be traced back to the days of Augustus and Agrippa.

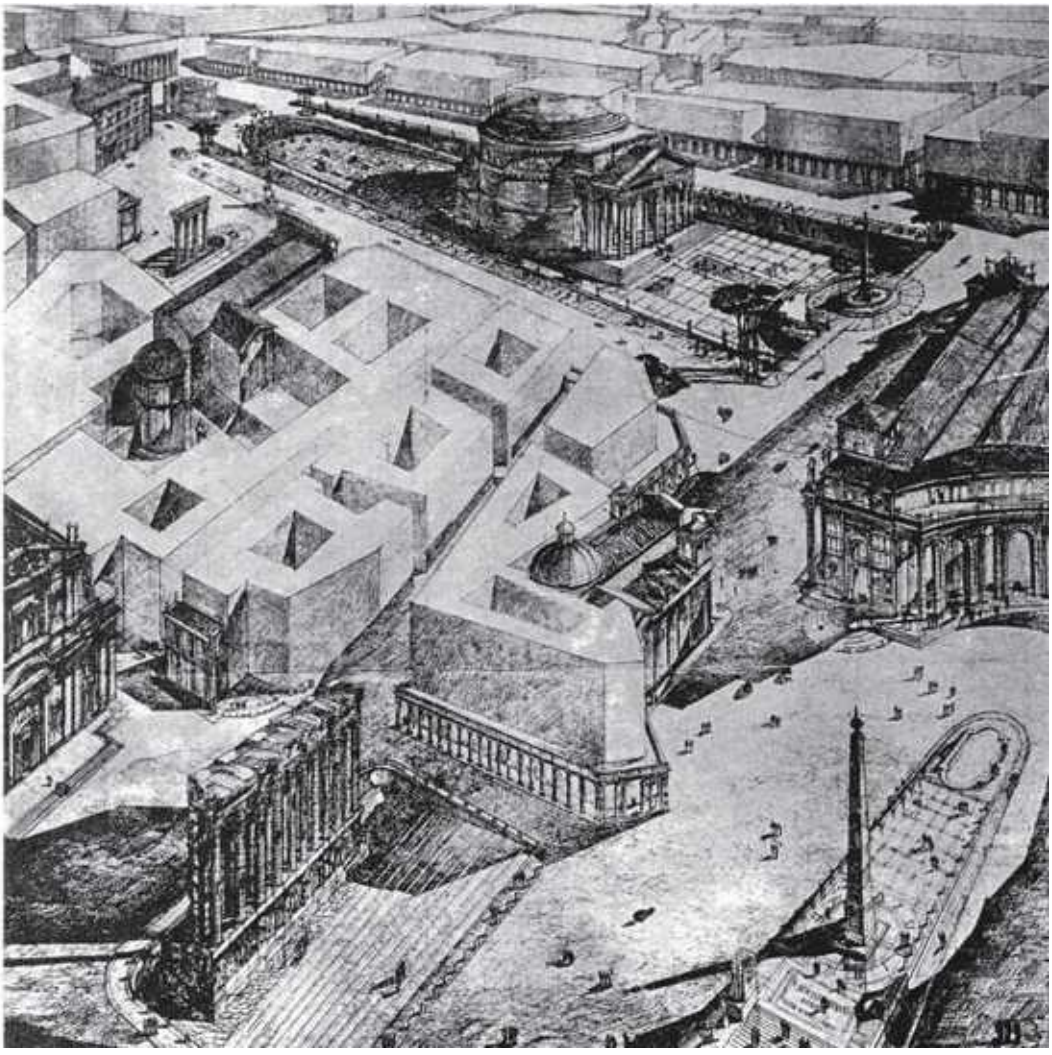
1.24. Scheme by Pietro Comparini for enlarging Piazza della Rotonda to commemorate King Victor Emmanuel II, 1882. (Racheli 2000, p. 356)

We have already referred to the Fascist era restorations between 1929 and 1934 under the aegis of the Sopraintendenza ai monumenti di Lazio and directed by Alberto Terenzio. At this time, much of the exterior brickwork was repaired and repointed, its surfaces hammered to distinguish their texture from the ancient masonry. In the same campaign, the revetments of the interior were consolidated, and the high altar was replaced by a spare modernist counterpart, which must have seemed more appropriate to the imagined severity of the ancient building. In 1928, the niches and altars in the Rotunda were reconstructed to eliminate most vestiges of baroque decoration. For a time, Mussolini or his advisors must have hoped to capitalize on the imperial associations of the Pantheon for their own purposes, as the House of Savoy had done. Armando Brasini (1879–1965) designed a "Foro Mussolini," borrowing heavily from the earlier schemes with which we are familiar. His vision included a forecourt graded to the ancient level and extended around and behind the Pantheon as a vast sunken piazza, which was to be surrounded by famous ancient statues brought to the site from Rome's museums (Fig. 1.25, a and b).[73]

(a)



(b)



1.25. a) Plan for a Foro Mussolini uniting Piazza Colonna and Piazza della Rotonda by Armando Brasini, 1927; and b) bird's-eye view. (Racheli 2000, p. 357)

The problem of integrating the "living Rome" with monumental Rome has long been an issue of debate. In response, the architect and historian Gustavo Giovannoni (1873–1943) advocated the

preservation of ancient sites within the context of the evolving urban tissue. In the end, his views prevailed, not perhaps out of universal acceptance but due also to Mussolini's ambivalence toward the power of monumental art and urbanism to support his regime.[74] The Pantheon survived, significantly restored, and another chapter in the history of its "preservation" ended with relatively minimal damage.

In a concluding chapter to this volume, Richard Etlin discusses the various associative values that the Pantheon has embodied in the modern era. As an architectural form to be emulated and almost endlessly quoted, it could serve as a symbol of Christianity, divinity, or religion itself. It could inspire the monumentalization of nature, knowledge, education, rulership, democracy, fame, or patriotism. For some, the Pantheon encapsulates the notion of eternity, for others truth, and others still a perfection that is at once formal and spiritual. Frank Lloyd Wright called his Guggenheim Museum "my Pantheon." For Louis Kahn, the "Pantheon is really a world within a world."

Such ideas represent a beginning, not an end, of broader studies of the fabric that arose sometime in the second century AD. Today we may take comfort from a greater degree of legislative protection and oversight for Rome's architectural heritage and the jewel in its crown that is the Pantheon. The structure of the portico was consolidated in 1954; from the mid-1960s to the early 1970s, the roof tiles were reset and drainage improved; other works of maintenance and cleaning were pursued almost uninterruptedly from the latter half of the 1970s into the 1980s. Some of the most impressive preservation efforts took place beginning in 1992, under the direction of Mario Lolli Ghetti: cleaning, repairing or replacing, and repatinating much of the marble encrustation of the interior.[75] After more than two centuries when just the one leaf of the great bronze doors could be opened, and incompletely at that, we can now enjoy the full generosity of both leaves functioning anew, thanks to conservation works carried out in 1998.[76]

Just as maintenance and conservation continue and will continue, so does research. Aided by countless photographs available on the Internet and laser-scanned surveys of the building, such as those produced by the Karman Center of the University of Bern, new information offers new insights on matters of construction and issues of stability. On the other hand, there is still no extensive published survey of the building that would guide our appreciation for what is original, added, or restored in the fabric. Who knows, for example, what mysteries lie concealed beneath the smooth interior surfaces of the coffered dome as restored in 2004–2005? The situation epitomizes, literally and figuratively, the deeper fascination of the Pantheon. The building is no simple archaeological artifact awaiting forensic dissection but a living monument. Unknowns and apparent contradictions will continue to puzzle, enchant, and defy definition or full comprehension. Our goal in this volume has been to gather new research on the Pantheon, and to present it interwoven into a fabric of considerations, past, present, and future. Inevitably, there is more still to be learned, but as we do so, the lure of the monument and its layered history can only continue to grow.

1 The main scholarly monograph on the Pantheon is Kjeld De Fine Licht's *The Rotunda in Rom: A Study of Hadrian's Pantheon*, Copenhagen 1968, recently joined by Gene Waddell, *Creating the Pantheon: Design, Materials, and Construction*, Rome 2008. For a brief but excellent introduction, see William L. MacDonald, *The Pantheon: Design, Meaning, and Progeny*, London 1976 (repr. 1981, 2002). See also Roberto Vighi, *The Pantheon*, Rome 1964, and F. Lucchini, *Pantheon*, Rome 1996.

2 On the progeny of the Pantheon, see MacDonald 1976, a topic which also recurs in the chapters in the second half of the present volume.

3 Francesco Paolo Fiore and Arnold Nesselrath, *La Roma di Leon Battista Alberti: umanisti, architetti e artisti alla scoperta dell'antico nella città del Quattrocento*, Milan, 2005, p. 191.

4 Allan Ceen, "The Urban Setting of the Pantheon," in Gerd Grasshoff, Michael Heinzelmann, and Markus Wäfler, eds., *The Pantheon in Rome: Contributions to the Conference, Bern, November 9–12, 2006*, Bern 2009, pp. 127–138.

5 Scriptores Historiae Augustae (S.H.A.), *Hadrian*, 19.10. For this and other ancient sources see Licht 1968, pp. 180–184, and for recent defense of the Pantheon as a temple see Fabio Barry, "The Pediment of the Pantheon. Problems and Possibilities," in *Scritti in onore di Lucos Cozza*, ed. Robert Coates-Stephens and Lavinia Cozza, London and Rome 2014, pp. 89–105, esp. 95–98.

6 Paul Godfrey and David Hemsoll, "The Pantheon: Temple or Rotunda?" in *Pagan Gods and Shrines of the Roman Empire*, ed. Martin Henig et. al., Oxford 1986, pp. 195–209. However, the Asklepieion at Pergamon, a religious structure, does repeat the basic form of the Pantheon.

7 Eugenio La Rocca, s.v. "Pantheon (fase pre-Adriana)," in E. M. Steinby, ed., *Lexicon Topographicum Urbis Romae*, Rome 1995–1999; vol. 5, 1999, pp. 280–283.

8 For this connection, see Edmund Thomas, "From the Pantheon of the Gods to the Pantheon of Rome," in Richard Wrigley and Matthew Cracke, eds., *Pantheons: Transformations of a Monumental Idea*, Aldershot, 2004, pp. 11–33. However, Thomas was of the opinion that the Tychaion stood in Antioch in Syria, whereas Alexandria is identified as the site by La Rocca in his chapter here, as confirmed by Judith. S. McKenzie and Andres T. Reyes, "The Alexandrian Tychaion, a Pantheon?" *Journal of Roman Archaeology* 26, 2013, pp. 36–52.

9 Filippo Coarelli, *Il Campo Marzio: dalle origini alla fine della repubblica*, Rome, 1997, pp. 17–59.

10 William C. Loerke, "Georges Chedanne and the Pantheon: A Beaux Arts Contribution to the History of Roman Architecture," *Modulus* 1982, pp. 40–55

11 Heinrich Dressel, *Inscriptiones urbis Romae latinae*, Berlin 1891; Herbert Bloch, *I bolli laterizi e la storia edilizia romana. Contributi all'archeologia e alla storia romana (1936–1938)*, Rome 1947. For further background, see Chapter Three in this volume.

12 Paola Virgili and Paola Battistelli, “Indagini in piazza della Rotonda e sulla fronte del Pantheon,” *Bullettino della Commissione Archeologica Comunale di Roma* 100, 1999, pp. 137–154.

13 Licht 1968, pp. 35–58; Mark Wilson Jones, *Principles of Roman Architecture*, New Haven 2000, Chap. 10.

14 The idea came to Lucos Cozza during restoration work in 1954, as reported in Licht 1968, pp. 45–46.

15 Paul Davies, David Hemsoll, and Mark Wilson Jones, “The Pantheon: Triumph of Rome or Triumph of Compromise?” *Art History* 10, 1987, pp. 133–153; Wilson Jones 2000, Chap. 10.

16 Wilson Jones 2000, pp.184 and 208.

17 Lothar Haselberger, “Ein Giebelriss der Vorhalle des Pantheon. Die Werkrisse vor dem Augustusmausoleum,” *Mitteilungen des Deutschen Archäologischen Instituts, Römische Abteilung* 101, 1994, pp. 279–308.

18 Licht 1968, pp. 48–58.

19 Licht 1968, pp. 126–132; Doris Gruben and Gottfried Gruben, “Die Türe des Pantheon,” *Mitteilungen des Deutschen Archäologischen Instituts, Römische Abteilung* 104, 1997, pp. 3–74; Giovanni Belardi, ed., *Il Pantheon: storia, tecnica, e restauro*, Viterbo 2006, pp. 181–193.

20 Gruben and Gruben 1997; Pieter Broucke, “The First Pantheon: Architecture and Meaning,” in Gerd Grasshoff, Michael Heinzelmann, and Markus Wäfler, eds., *The Pantheon in Rome. Contributions to the Conference, Bern, November 9–12, 2006*, Bern 2009, pp. 27–28.

21 Licht 1968, pp. 59–84; Mark Wilson Jones, “The Pantheon and the Phasing of Its Construction,” in Grasshoff, Heinzelmann, and Wäfler 2009, pp. 68–87, esp. 75–81.

22 Licht 1968, pp. 79–84; Broucke 2009, p. 28.

23 Davies, Hemsoll, and Wilson Jones 1987; Wilson Jones 2000, pp. 200–202.

24 Dressel 1891; Bloch 1947; Lise Hetland, “Dating the Pantheon,” *Journal of Roman Archaeology* 20, 2007, pp. 95–112, and Chapter Three in the present volume.

25 Romans measured bricks by the *pes*, or foot (about 29.5 cm). Bipedales were approximately 59 cm x 59 cm x 6 or 7 cm.

26 Wilson Jones 2000, pp. 184 and 211.

27 Today the distinction between the pavonazetto and giallo antico is not obvious, since the ivory hue of the former has been discolored due to the use of acidic cleaning agents.

28 Wolf-Dieter Heilmeyer, "Korinthische Normalkapitelle: Studien zur Geschichte der römischen Architekturdekoration," *Mitteilungen des Deutschen Archäologischen Instituts, Römische Abteilung.* Supplement 16, 1970, pp. 158–161.

29 The Vatican Museums and Sir John Soane's Museum both have capitals from the attic pilasters, for which see A. Uncini, "Due capitelli dal Pantheon nella collezione del Museo Gregoriano Profano ex-Lateranense," *Bollettino dei monumenti musei e galerie pontificie* 8, 1988, pp. 55–63.

30 Alberto Terenzio, "La Restauration du Panthéon de Rome," *Museion* 20, 1932, pp. 52–57; G. De Angelis d'Ossat, "Le rocce adoperate nella cupola del Pantheon," *Atti della Pontificia Accademia della Scienze, Nuovi Lincei* 83, 1930, pp. 211–215; William L. MacDonald, *The Architecture of the Roman Empire*, vol. 1: *An Introductory Study*, London 1965 (2nd ed. rev. New Haven 1982), Chap. 5; Licht 1968, pp. 94–100; 133–142; Lynne Lancaster, "Materials and Construction of the Pantheon in Relation to the Developments in Vaulting in Antiquity," in Gerd Grasshoff, Michael Heinzelmann, and Markus Wäfler 2009, pp. 117–125.

31 Mark Wilson Jones, "Principles of Design in Roman Architecture: The Setting Out of Centralised Buildings," *Papers of the British School at Rome* 57, 1989, pp. 106–151; Wilson Jones 2000, Chapter 4 and pp. 184–186, and 208. See also Gerd Sperling, *Das Pantheon in Rom*, Neuried 1999; Giangiacomo Martines "Argomenti di geometria antica a proposito della cupola del Pantheon," *Quaderni dell'Istituto di Storia dell'Architettura* 13, 1989, pp. 3–10, and Chapter Four in the present volume.

32 Lothar Haselberger, "Architectural Likenesses: Models and Plans of Architecture in Classical Antiquity," *Journal of Roman Archaeology* 10, 1997, pp. 77–94; Wilson Jones 2000, Chapter 3, including Fig. 3.3 for the Temple of Castor and Pollux plan.

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54 Tod A. Marder, “Specchi’s High Altar for the Pantheon and the Statues by Cametti and Moderati,” *Burlington Magazine* 122, 1980, pp. 30–40. Along with other recommendations for the commission, Specchi had just published his book of engravings of *Disegni di vari altari e cappelle nelle chiese di Roma* in 1713.

55 Marder 1980.

56 Susanna Pasquali, “From the Pantheon of Artists to the Pantheon of Illustrious Men: Raphael’s Tomb and Its Legacy,” in Wrigley and Craske 2004, pp. 35–56.

57 Pasquali 2004 pp. 36–38; Giuseppe Bonacorso and Tommaso Manfredi, in *I Virtuosi al Pantheon 1700–1758*, Rome 1998, give the statutes of the confraternity (pp. 8–11) and a full account of its activities of the period.

58 See Pasquali 2004 for this paragraph. Also see Eveline G. Bouwers, “A Papal Pantheon? Canova’s ‘Illustrious Italians’ in Rome,” in *Public Pantheons in Revolutionary Europe: Comparing Cultures of Remembrance, c. 1790–1840*, ed. Eveline G. Bouwers, New York 2012, pp. 132–160.

59 Pasquali 2004, p. 48, quotes Stendhal writing in 1817: “Sooner or later it will no longer be known as a church, which in times past protected it against the spirit of Christianity. It would be a sublime museum.”

60 See the 1836 painting of the event by Francesco Diofebei in the Thorwaldsen Museum, Copenhagen.

61 Susanna Pasquali, *Il Pantheon: architettura e antiquaria nel Settecento a Roma*, Modena 1996.

62 All citations are from Pasquali 1996a, and included in Tod A. Marder, “Symmetry and Eurythmy at the Pantheon: The Fate of Bernini’s Perceptions from the Seventeenth Century to the Present Day,” in *Antiquity and Its Interpreters*, ed. Alina Payne, Ann Kuttner, and Rebekah Smick, New York 2000, pp. 217–226.

63 Marder 1989; Pasquali 1996a; Marder 2000.

64 In connection with that work, the ministers of Clement XI once again rebuilt the booths and stands of the street merchants within restricted boundaries, for which see Tod A. Marder, “Piazza della

Rotonda e la Fontana del Pantheon: un rinnovamento urbanistico di Clemente XI," *Arte illustrata* 7, 1974, pp. 310–320.

65 Attilio LaPadula, *Roma e la regione nell'epoca napoleonica*, Rome 1969, pp. 121–122.

66 LaPadula 1969, docs. 260–261 and Plates XLII, XLIV, and XLV.

67 Camille De Tournon, *Etudes statistiques sur Rome et la partie occidentale des états romains*, 2nd ed., Paris 1855, pp. 277 and 306, and Plate 30. Carlo Fea, *Dei diritti del principato sugli antichi edifizj publici sacri e profani in occasione del Panteon di Marco Agrippa: memoria,* Rome 1806; and Fea, *L'integrita' del Panteon di M. Agrippa ora S. Maria ad martyres rivendicata al principato*, Rome 1807, provide additional documentation.

68 Emma Marconcini in Luisa Cardilli, ed., *La Fontana del Pantheon*, Rome 1993, pp. 31–45; Alberto M. Racheli, *Restauri a Roma 1870–1990. Architettura e città*, Venice 1995, pp. 354–357.

69 Ceen 2009, pp. 127–138. Directed by Alessandro Viviani, the Master Plan (Piano Regolatore) of 1873 sought to render the "intricate labyrinth of narrow streets" more "permeable." The 1883 Piano Regolatore, which again included the participation of Viviani, anticipated widened streets between the Maddalena and the Pantheon, but no demolition of the intervening city block. Under the direction of Edmondo Sanjust di Teulada the 1909 Piano Regolatore sought to minimize the necessity of crossing the historic center, much of which was to remain intact. In the 1931 Master Plan for Mussolini, drawn by a committee that included Marcello Piacentini, Gustavo Giovannoni, and Antonio Muñoz, the intervening city block was again to be demolished.

70 Alberto M. Racheli, *Restauro a Roma 1870–2000*, Milan, 2000, pp. 354–357.

71 Published as Luca Beltrami, *Il Pantheon; la struttura organica della cupola e del sottostante tamburo, le fondazioni della rotonda, dell' avancorpo, e del portico, avanzi degli edifici anteriori alle costruzioni adrianee. Relazione delle indagini eseguite dal R. Ministero della Pubblica Istruzione negli anni 1892–93, coi rilievi e disegni dell' architetto Pier Olinto Armanini*, Milan 1898.

72 Our thanks to Carla Trovini for clarifying the career of Comparini.

73 Racheli 2000, p. 356; Gian Paolo Consoli, "Dal primato della città al primato della strada: il ruolo del piano di Armando Brasini per Roma nello sviluppo della città fascista," *L'architettura nelle città italiane del XX secolo. Dagli anni Venti agli anni Ottanta*, ed. Vittorio Franchetti Pardo, Milan 2003, pp. 203–11. Our thanks to Carla Trovini for this reference.

74 Racheli 2000, p. 356.

75 Racheli 2000, p. 357.

76 Belardi 2006, pp. 181–194.