

CHRISTIANE L. JOOST-GAUGIER

The Iconography of Sacred Space: A Suggested Reading of the Meaning of the Roman Pantheon

"To say with any precision what the Pantheon meant to Hadrian and his contemporaries will probably never be possible."¹

The words of William MacDonald, a regarded scholar of the Pantheon of our time, suggest the mystery with which this awesome and inspiring structure has traditionally been viewed [Fig. 1]. Scholars have concentrated their efforts on studying archaeological evidence and written sources which have, in combination, provided considerable illumination respecting the structural and historical characteristics of this most important surviving work of Roman architecture. Yet its meaning is still described as "enigmatic" and "problematic." From 1923, when Arturo Graf suggested the Pantheon was dedicated primarily to Saturn; to 1968, when Kjeld DeFine Licht thought it might be a monument to the *gens Julia* and its divine ancestors; to 1984, when Henri Stierlin viewed it as a solar temple; to 1989 when Giangiacomo Martines argued that its cupola is a unique example of ideal geometry, no consensus has been achieved.² Recently MacDonald indicated that the meaning of this extraordinary and unique structure lies—beyond its dedication to all the gods—in its role as the temple of Rome and all things Roman, the Empire, and the whole world.³

While all these suggestions have been useful to this study, this paper will attempt to pursue a different avenue of inquiry

that will suggest that the Pantheon—a building about whose meaning even its earliest known describer, a century after its construction,⁴ was uncertain—was designed by Hadrian for a very specific purpose. His purpose in erecting in the center of the city of Rome in an area dedicated to the cult of the emperor not just another temple, but the most grand, innovative, difficult, and complex secular temple of Roman antiquity, must have been intended to convey to the Roman intelligentsia if not to the Roman people a very carefully crafted and distinct meaning. In order to discover this meaning it will be necessary to review what is now generally agreed, in order to underline that the building in its entirety was built by Hadrian and to show that it survives essentially intact as his structure. Subsequently, in reading the structure as a Pythagorean composition that is orderly, beautiful and symbolic, it will be suggested that a Pythagorean scheme of numbers as known and admired in Hadrian's time was used to create a sophisticated formulation that would have been better understood to contemporary observers than it can be to us today. Not only Hadrian's own interests, but also peculiar events and circumstances in his life, will be brought together to suggest some reasons why Hadrian designed and built such a stunning and novel structure. It is hoped that introducing this new avenue of study will suggest some clues regarding the possible original

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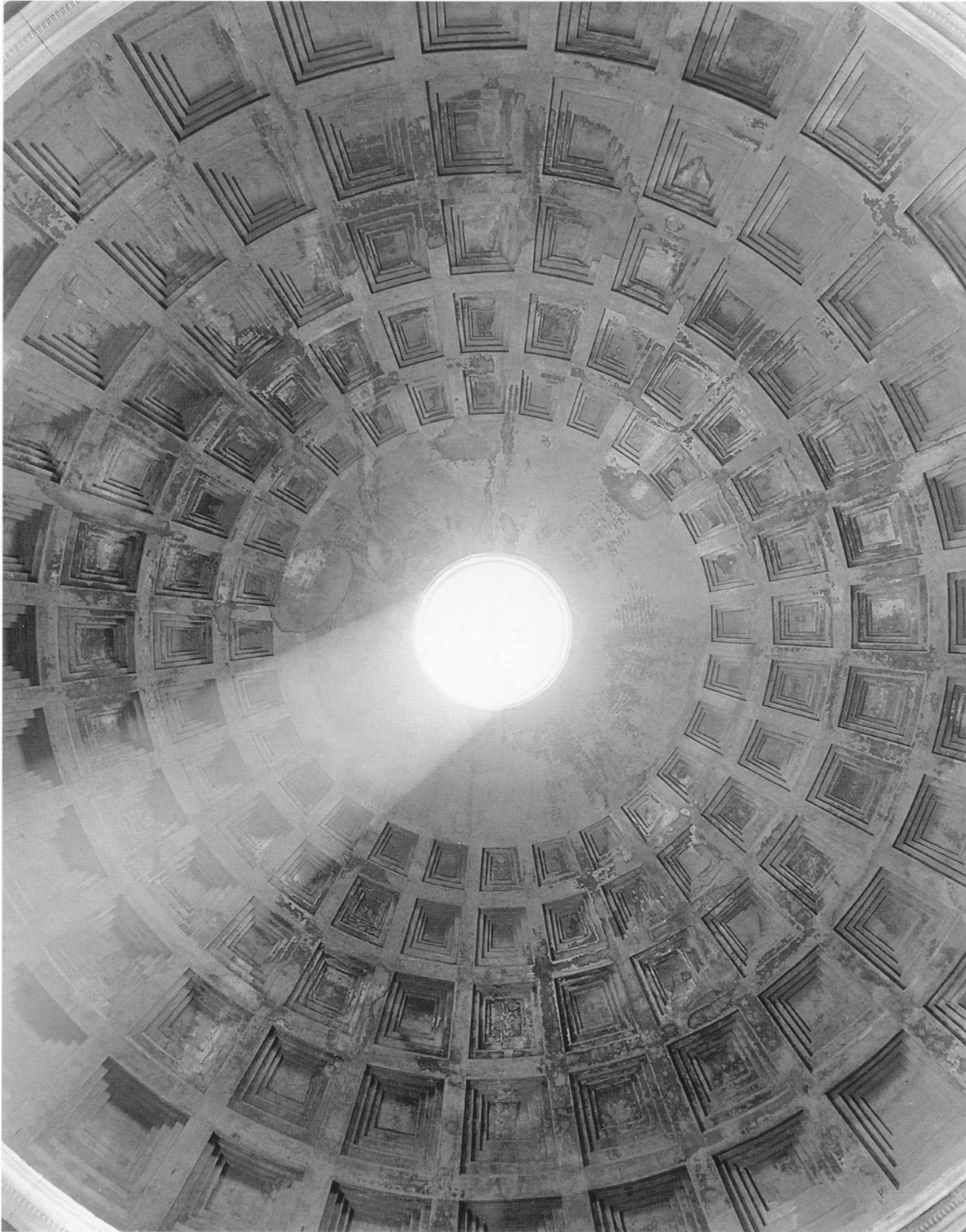


1) The Pantheon, exterior. Photo: Robert Reck.

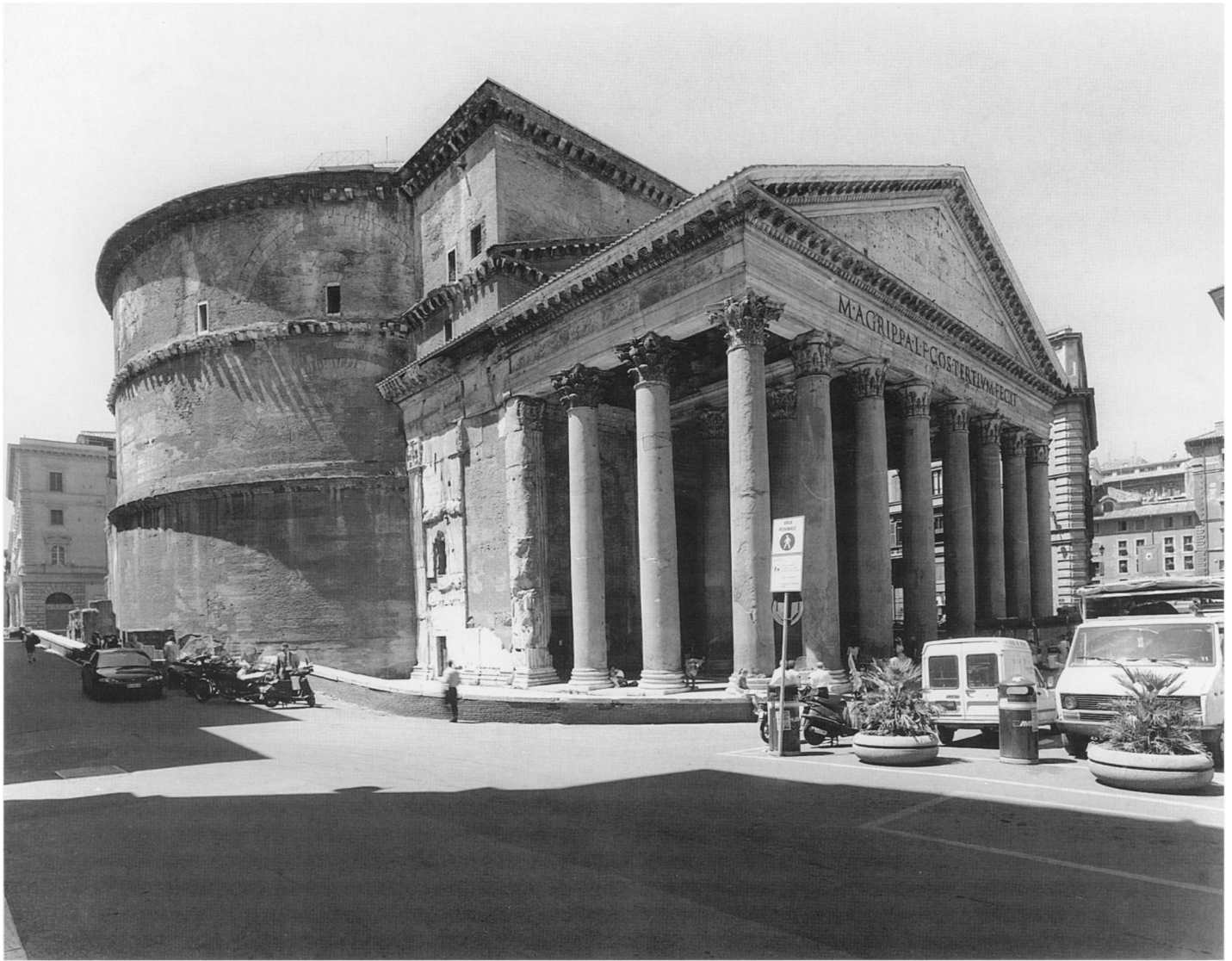
meaning of the building and that these in turn may broaden the discussion of its particular architect, who has remained as elusive as its meaning.

* * *

Ancient literary evidence offers little information respecting the original temple that formed part of a complex built by Marcus Vipsanius Agrippa in the Campus Martius, which contained numerous other temples, altars and public buildings in the time of Augustus. Pliny the Elder, who saw Agrippa's temple in the time of Vespasian's rule, refers to it as *Pantheum*.



2) The Pantheon, interior view to oculus. Photo: Robert Reck.



3) The Pantheon, exterior. Photo: Robert Reck.

From his brief references, we know that this temple, completed in about 25 B.C., was embellished with sculpture, including caryatids, and figures on the angles of the pediment in addition to a sculpture of Venus in the interior.⁵ Though Appian has much to tell us about Agrippa's close friendship with Octavian as well as his military and political activities, he, together with

Suetonius, fails to provide information about the building of the original Pantheon. Writing after its destruction, Dio Cassius (who appears to have been relying partly on tradition and partly on his knowledge of the Pantheon as rebuilt by Hadrian, a fact of which he was unaware) tells us that a figure of Mars accompanied that of Venus and that a statue of Julius

Caesar had also been placed inside, while statues of Augustus and Agrippa were in the pronaos; because of his use of the past tense, there is little reason to believe that these statues survived in Hadrian's building.⁶ Nonetheless it is clear that from the time of its origin this temple had a civic as well as a religious function and that its original purpose was linked to the *gens Julia*.

Archaeological evidence tells us a great deal more. We now know that Agrippa's temple was a rectangular building whose facade, one of its two long sides, faced south. The travertine foundations reveal that the structure was a decastyle temple, with ten columns on each long side.⁷ In front of the temple (to the south) opened a large round space enclosed by a non-supporting edge. The pavement of this space was not horizontal; its pavonazetto marble slabs sloped from the center downwards towards the circumference of the circle.⁸ This slightly conical open circle, most likely the site of its altar, was to become the site of the future rotunda. Directly to the east was the Saepta Julia, dedicated by Agrippa in 26 B.C., while to the west lay the Stagnum Agrippae and the Horti of Agrippa. To the south, beyond the large circular space, were the thermae of Agrippa, the first great Roman public baths.⁹

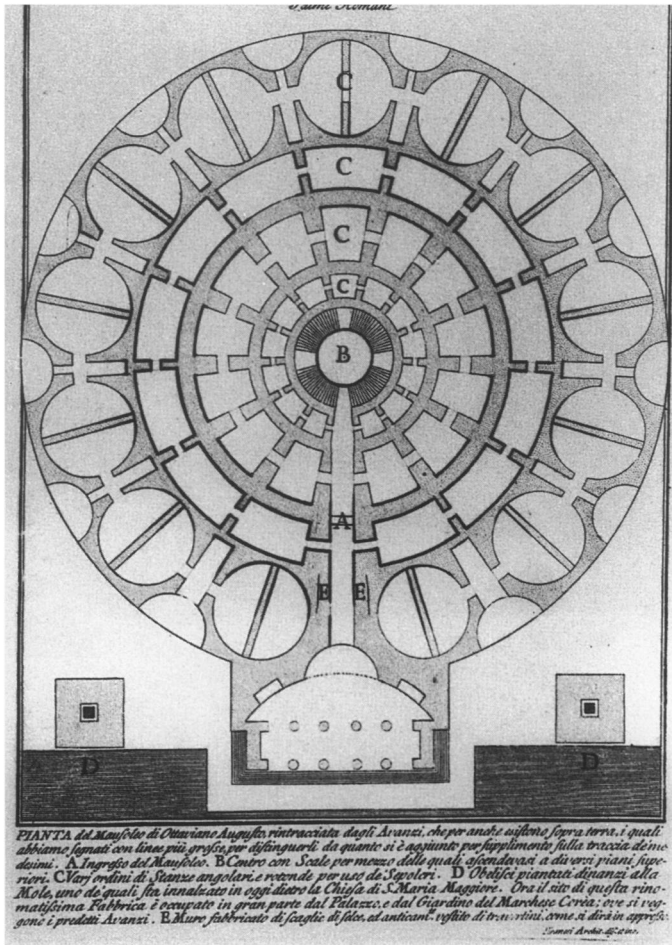
Excavations have also revealed traces of an intermediate pavement above Agrippa's, that of Domitian who restored the Pantheon after its destruction in the great fire of 80 A.D.¹⁰ Some years later, in 110, the building was struck by lightning and again burned down.¹¹ Seven years later the profligate and 'best of emperors,' Marcus Ulpius Traianus (Trajan), who ruled the Empire at the time, was to die on his way back to Italy from Syria, giving his successor, Publius Aelius Hadrianus (Hadrian), who was at the time governor of Syria, the opportunity to rebuild on this site.¹²

Hadrian's ancient biographers are in agreement that at the time of Trajan's sudden death in August of 117, Hadrian did not rush back to Rome. Rather he remained in Syria, accepting the imperial power which came to be his largely through the influence, if not manipulation, of Trajan's wife, Plotina, from his post in Antioch.¹³ Hadrian appears to have remained in Syria until July of 118, when he finally returned to Rome to placate a Senate that regarded his choice as emperor with ambiguity and suspicion and to establish himself as the authoritative power in the imperial city.¹⁴ Between this time and 120, when Hadrian travelled to Gaul, the Rhineland and Spain, followed by an extended trip to Greece and the East until 127, is thus the likely moment in which plans for the new temple to be built on the site of the former ones were drawn up and construction begun. It is thus appropriate to assume the building was designed and begun in 118-19, essentially constructed during the seven years Hadrian was absent from Rome (120-

27), and dedicated in about 127 when he returned. As suggested by the later testimony of Spartianus,¹⁵ archaeological evidence indicates this supposition is true, based on the identification of bricks used in various parts of the monument that bear stamps (*bolle*) of the time of Hadrian and are of the particular composition used in Rome between 115 and 127.¹⁶ Archaeological evidence has also discovered the name of Julia Sabina, the Empress of Hadrian, engraved on the columns of pavonazetto in the apse. These supported a bench on which Hadrian sat in the Pantheon to administer justice, as we are told by Dio Cassius.¹⁷

The temple as rebuilt by Hadrian has been described and analyzed many times.¹⁸ It is not the purpose of this paper to add anything to the well established facts of its constructional and stylistic features. Most significantly, it was completely different from its predecessors on the site in that, approached by five marble steps elevating the structure from the forecourt,¹⁹ the octastyle porch, or pronaos, which supports an unusually high triangular pediment, leads to a barrel-vaulted entrance-way. A separate rectangular intermediate block as high as the entire building and as wide as the porch leads into the third geometric area, the primary space of the temple. Defined by brick and concrete structural elements and resting on a foundation of concrete that contains large travertine fragments, this space forms a large circular ring corresponding in diameter and circumference with the formerly open paved space of Agrippa. The heart of Hadrian's structure is therefore clearly new in that it was not built on the foundation of any pre-existing building.²⁰ A great cylinder rises from the circular foundation and this in turn supports the largest domed rotunda ever built, equal in height and radius to the cylinder below. The exterior of the dome was originally covered with glittering gold in the form of gilded bronze tiles,²¹ while its interior, whose controlling geometry is based on a perfect central axis, is marked off by coffers that are aligned horizontally and vertically over the sloping surface which culminates in an oculus of unprecedented dimension. Centrally located, over the interior space and poised over the central circle in the pavement below [Fig. 2], the single source of light for the entire building was originally crowned with an elaborate bronze, most likely also gilded, cornice.

Among those who have suggested the pronaos is unrelated to the rotunda some have considered that, because its dimensions roughly correspond with those of the foundation of the entire temple of Agrippa below, it might incorporate remaining parts of Agrippa's temple; others have debated whether it might have been constructed at a later date [Fig. 3].²² The archaeological evidence is, again, steadfast showing that the entire structure as we know it, including the temple-



4) Piranesi, plan of the Mausoleum of Augustus. Negative courtesy of Bibliotheca Hertziana.



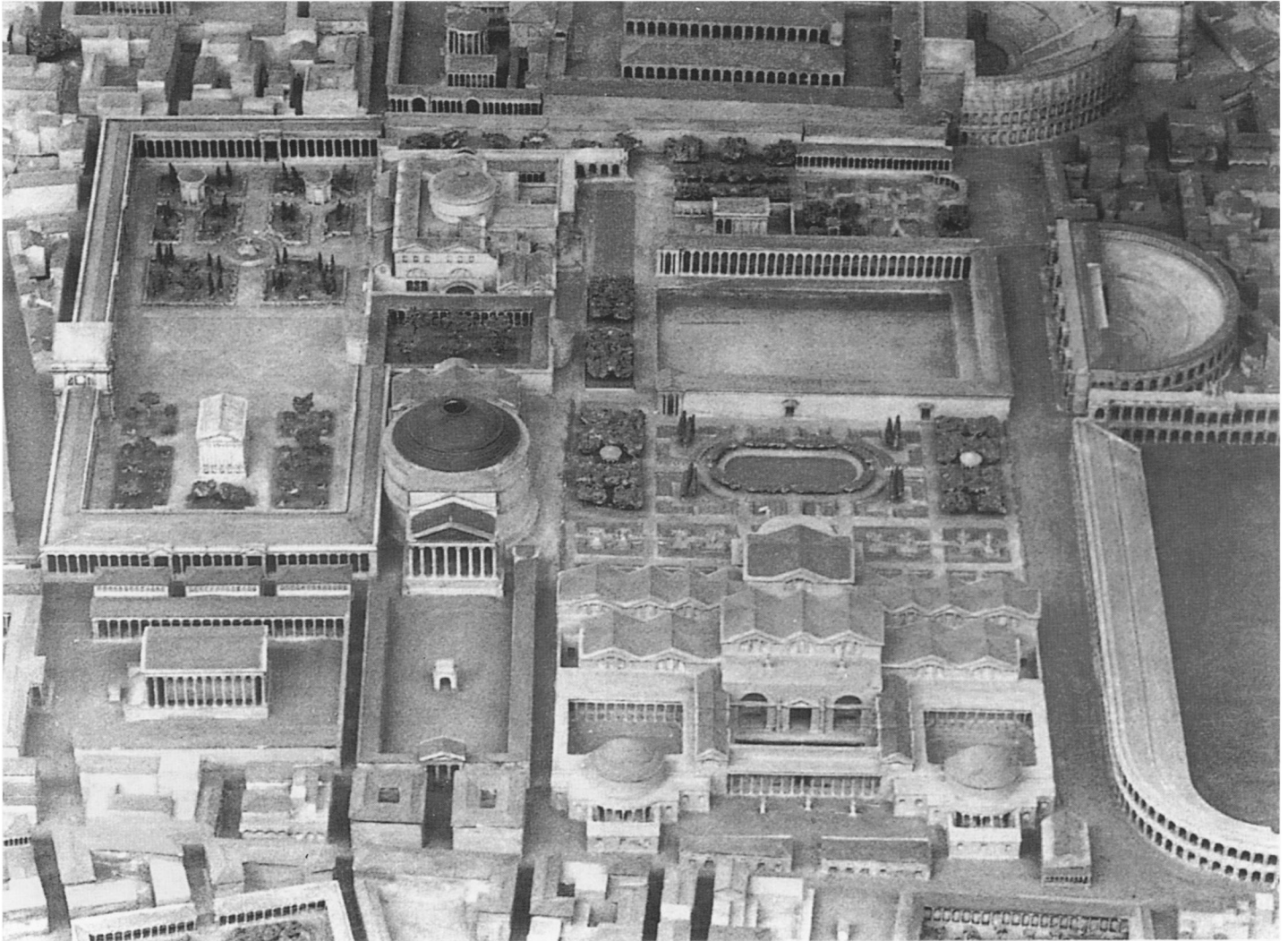
5) Mausoleum of Augustus. Photo: Robert Reck.

ed in the Mausoleum of Augustus [Figs. 4, 5],²⁴ a pedimented porch and a circular construction, an event that in size, scale and grandeur was completely new for a temple structure. There is nothing like it in Vitruvius' description of circular temple types, composed in the late first century B.C.²⁵

From its exterior, the new temple incorporated the conventional elements of a monumental trabeated pedimented temple front. Because the building was nestled between civic structures to east, west and south, the exterior view that Roman citizens enjoyed incorporated this traditional feature, crowned by a most unusual golden dome that could best be viewed from afar [Fig. 6]. Reflecting the rays of the sun in a stunning focal point for the city, this visible image, crowned with glistening golden and bronze sculptures and decorations, must have been a most impressive sight. Indeed, it formed a most unusual and sumptuous interior space of equally extraordinary dimension which must have inspired astonishment and awe in its early visitors. Apart from all Hadrian's other constructions, this was the one where he both worshipped and held court as Emperor.²⁶ Since the vicissitudes of fate have granted us neither description nor mention from the century of its construction, we can only assume that it continued to be known by its old name—*Pantheon*—in Hadrian's time.

Destiny was to prove relatively kind to the Pantheon. Based on information from a variety of sources, a summary of

front porch, the intermediate block and the rotunda, were all built at once and by Hadrian.²³ That the new temple had nothing to do constructionally with the old is underlined by the fact that its orientation was reversed, obviously for practical reasons. While Agrippa's temple faced south, Hadrian's facade is to the north, the only available space for a forecourt and altar. The articulation of the interior space of the new temple makes it clear that the structure was oriented to the four cardinal directions. Not only was Hadrian's the grandest temple ever built, also it was the most original in that it brought together, perhaps inspired by an idea that had earlier been demonstrat-



6) Reconstruction of Pantheon area by Flaminio Lucchini.
(From *Pantheon*, Rome, 1996. Negative courtesy of Bibliotheca Hertziana).

its fortune can be reconstructed. A third century restoration by Septimius Severus and Caracalla is recorded in a surviving inscription on the architrave, suggesting the attic (where their restoration was concentrated) had begun to deteriorate at that time.²⁷ From that moment until 609, when the structure was ceded by Emperor Phocas to Pope Boniface IV to be transformed into the Christian church of Santa Maria ad Martyres,²⁸

little is known, though a fourth century document suggests the Pantheon had come to be dedicated to civic use during this time.²⁹ During the next thousand years the building was exploited for its spoils starting in 663, when Emperor Constantinus II tore off the gilded bronze roof tiles of the dome, and culminating in 1625, when Pope Urban VIII removed the bronze roof over the porch in order to make

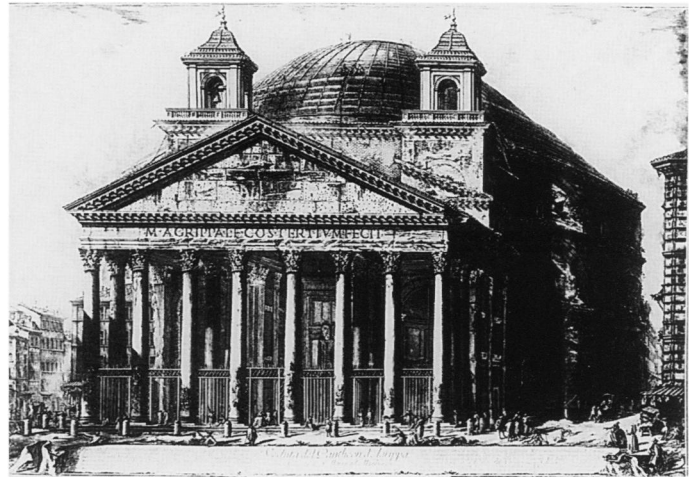
canons for the Castel Sant'Angelo—ironically, Hadrian's tomb—only to discover that the 440,887 pounds of beams (and 9,374 pounds of nails) in the apostolic foundry were so copiously mixed with gold and silver that they were to prove unsatisfactory for artillery.³⁰

The history of the Pantheon as a Christian church was, however, to prove its salvation.³¹ Not only was the monument preserved and appreciated, a number of useful restorations and repairs were made starting with those of Pope Martin V who in the 1420s rebuilt the lead sheets covering the rotunda that had, since their installation by Pope Gregory III in 731-41, fallen into disrepair.³² Early archaeological appreciation for this “*chiesa piu bella di tutte l'altre*” was voiced by Flavio Biondo, who recorded that in about 1434 Pope Eugenio IV cleared the portico of the shops and shanties that had accumulated there, an event that revealed three missing columns on the east side of the pronaos.³³ Nicholas V repaired the monument following the severe damage inflicted to its roof, portico and columns by a Roman insurrection of 1442.³⁴ Later in the same century Pomponio Leto recorded several notices indicating his esteem for this monument.³⁵

Additional restorations were made by Clement VII in 1524, primarily in the form of repairs to the roof; in about 1560, Pius IV had the original bronze doors, which had deteriorated, restored.³⁶ During this time Bartolomeo Marliani of Milan described his great respect for this “*opus admiratione summa dignum*,” which he introduced as “*hodie nobilissimum*.”³⁷ Shortly thereafter, in the flood of 1598, the greatest flood ever recorded in Rome, the water from the overflowing Tiber accumulated to a depth of 6.5 metres inside the Pantheon, causing damage to the pavement that would not be repaired until the nineteenth century.³⁸

Early in the next century, and despite his destructive acts to the monument—or perhaps to appease his angry critics—Urban VIII replaced one of the missing columns of the portico; he also removed the booths that had accumulated between the columns of the pronaos and had the old medieval belfry demolished and replaced with two bell towers designed by Carlo Maderno [Fig. 7].³⁹ The structure was cleaned in the 1660s by Pope Alexander VII who restored the piazza, cleared the portico of new shops that had accumulated there, replaced the other two missing columns using two that had been found elsewhere in the city,⁴⁰ and made substantial repairs to the roof and the oculus.⁴¹

In the mid-eighteenth century the interior attic story was transformed, incorporating its present blind windows, a ‘restoration’ undertaken by Benedict XIV for unknown reasons.⁴² During the nineteenth century the Pantheon was cleaned and restored a number of times,⁴³ culminating in



7) Piranesi, view of Pantheon showing Maderno's towers. Negative courtesy of Bibliotheca Hertziana.

important archaeological excavations that were undertaken in 1880-81 by Guido Baccelli.⁴⁴ During the course of these excavations, the interior pavement was restored retaining, for the most part, the original materials—enormous cuttings of porphyry, pavonazzetto, giallo antico and granite—and preserving the original design.⁴⁵ Last but not least, Maderno's bell towers were demolished in 1883.⁴⁶

The foregoing summary shows that despite serious losses to its exterior and interior ornamentation which decidedly diminish its sumptuousness, the Pantheon survives today essentially intact as it was conceived and constructed by Hadrian. The restoration of its integrity has not, however, lifted the veil of mystery that remains respecting the enigma of its meaning. Many questions remain that may or may not affect this problem.

Among these is the matter of the forecourt whose dimensions remain unknown, and that of the exterior trabeation (now removed) which was articulated in three stories as confirmed by sixteenth century engravings.⁴⁷ Perhaps the most important uncertainty respecting the interior concerns the problematic attic story, whose original ornamental elements, a veneer of decoration, were removed for unknown reasons in 1747. A section of this upper stage was restored in the 1930s by Alberto Terenzio in accordance with a drawing left us by Raphael.⁴⁸ From this drawing, now in the Uffizi, which has

The rotunda, the central and most important part of the design, is dominated by the number one, known by Pythagoreans as the unit or monad because of its indivisible character and because it is the only number perfect in power. Thanks to its ineffable nature, the number one is pure celestial light, which as the sole source of illumination spreads throughout the building unimpeded and rules with authority over everything.⁵⁴ Most importantly, this number, which is represented by the oculus, is the Sun for Pythagoreans. More specifically, the sun was Apollo, the Sun God, whose very name, A-Pollo, had a precise meaning: free of multiplicity (or oneness).⁵⁵ Radiating from the oculus are twenty-eight ribs that form the planetary vault reaching down to the supporting cylinder below. For Pythagoreans twenty-eight was the number of the Moon, for it symbolized the number of days in the lunar month. In this context it was, as Michael Allen has recently shown, the final hidden part of the 'fatal' number put forward by Plato in Book VIII of the *Republic*.⁵⁶ Correspondingly and attached both to one (the Sun) and twenty-eight (the Moon) are the five coffered rings of the vault—suggesting a highly unusual combination by antique standards. The number five, the proportional arithmetic mean of the Decad according to the Pythagorean Theon of Smyrna, was also the first fully circular number. Because it encompasses two, the first even number, and three, the first odd number, it was both male and female, and therefore known through Aristotle and Anatolius (both considered Pythagoreans by Pythagoreans) as the marriage or wedding number.⁵⁷ Thus if we accept that the domed rotunda—which forms the height and heart of the structure around and below which everything else is carefully organized—symbolizes the dominant theme of the 'marriage,' or accord, of the sun and the moon, we may proceed to the supporting structure below.

The cylinder is characterized by three large semi-circular niches and four large rectangular niches, together forming seven large aediculae suitable for sculptures. As the trigon, three is the first of the rectilinear figures, it is both a line and a surface, and it is the principle of triplicity or the triangle, which in fact the three semi-circular niches form.⁵⁸ The apex of this triangle lies in the apse where Hadrian sat as judge in the niche opposite the entrance.⁵⁹ Significantly, for Pythagoreans, Apollo was the apex of a given triangle. Three was also an ideal number for Pythagoreans since having a beginning, a middle and an end, it signified totality.⁶⁰ Four, the first square number, symbolized many things to Pythagoreans, as Theon explained—primarily, perhaps, the four seasons and the four elements; Pythagoreans held the quaternary in highest esteem "because it seems to outline the entire nature of the universe."⁶¹ According to Pythagorean cosmology, the

numbers three and four together represent the cosmos and the key to the universe: three, the mean between two extremes, unfolds into four, the first number to produce a solid form.⁶² The sum of seven refers to a number widely known through antiquity but especially revered by Pythagoreans through Plato's *Timaeus* (regarded by Pythagoreans as a Pythagorean work)⁶³ and through Cicero's *Somnium Scipionis*, which commemorated Pythagoras' hallowed seven-stringed lyre as symbolizing the order of the cosmos through the number of the planets and their modes. Seven also symbolized the birthday of Apollo. The sequence from the monad to the heptad totals twenty-eight, the number of dividing ribs above,⁶⁴ and seven numbers doubled yield sixty-four, the number of panels in the intermediate level.⁶⁵

The smaller aediculae, evenly spaced between the seven 'cosmic' ones, number eight. For Pythagoreans the number eight symbolized egalitarian justice: the octave was invented by Pythagoras by adding the eighth string to the seven-stringed lyre in order to obtain *harmonia*, or equilibrated tuning, proportion and balance. The Pythagoreans called the number eight 'Justice' because it is the first number that may be divided into two equal even numbers and divided again into two more equal even numbers.⁶⁶ Together with the entrance opening, the total number of aediculae in the circle of the rotunda is sixteen. For Pythagoreans sixteen was an ideal number for as the double octave it was also the product of four, the first number with three-dimensional extension, times four, making an equilateral and prime cube. As such, it is the only geometrical form whose perimeter is the same on all four sides, comparable with the circle whose diameter is the same in all directions. In addition, Pythagoreans regarded sixty-four (as noted above, the number of pilasters in the upper story which brings together the parts of the lower story in preparation for the springing of the dome) as the great unifying number because it was the product of eight (octaves) times eight (octaves).⁶⁷

Thus it is not surprising to find a design exclusively composed of squares inscribed within squares and circles inscribed within squares within the larger circle of the whole on the pavement of the rotunda [Fig. 9].⁶⁸ Bearing in mind that the circle of the rotunda can be contained within a square and transposing this possibility to an elevation of the building, we discover that the half sphere of the dome if continued below makes a whole sphere. This too could fit into a cube since the horizontal and vertical axes are the same.⁶⁹ One of the greatest mysteries of Pythagorean arithmetic was the squaring of the circle, which therefore came to be a goal for many of its practitioners. Antiphon had tried in vain in the fifth century B.C. to square the circle as Aristotle noted in the *Physics*.⁷⁰



9) Pantheon, interior view. Photo: Robert Reck.

Hippocrates of Chios, on the other hand, had falsely thought, in the following century, that he could square the circle.⁷¹ Indeed Bryson of Heraclea, a pupil of Socrates or Euclid, who inscribed a square around the circle and a square within a square in order to prove that the circle is intermediate between two squares, was thought to have achieved the goal of demonstrating the quadrature of the circle,⁷² an idea that would be powerfully developed by Archimedes.⁷³ Later Pythagoreans, for example Simplicius, believed that the solution to the problem of the squaring of the circle had been discovered by Pythagoreans of the past who had “received” the method from early traditions.⁷⁴ Looking up at the (original) attic, the number of its panels, sixty-four, may in this light be interpreted as the only number which is both circular and

a cube. A circular number is one whose power ends in the same digit—thus the number four leads, intercepted by the number sixteen, to its cube of sixty-four, which also ends in the number four. At the same time the number sixty-four represents the cubic solid of the number four, the first square which is also a cube.⁷⁵ Thus in this number the circle and the square might be considered to be reconciled.

Last but not least, the pronaos of the Pantheon is linked to the interior space in that it consists of sixteen Corinthian columns arranged in such a way that the temple front facade presents eight columns, thus suggesting a link between sacred and juridical functions. The other eight are arranged in a $2 \times 2 = 4 = 2 + 2 = 4$ arrangement to either side of the entrance passageway. Such equations, totaling eight, suggest in Pythagorean terms the balance and equality of the law.⁷⁶

Though this paper will not attempt a complete numerical analysis, which is impossible given our limited information about Pythagorean arithmetic, it will suggest that this arrangement was purposeful for another reason, that is, that it incorporated ‘perfect’ numbers. According to Anatolius, the number sixteen is the perfect number because it is the only number whose area is equal to its perimeter as the product of 4×4 (which in turn refers to the fact that 2×2 and $2 + 2$ are equal). Thus also 2×2 and $2 + 2 = 8$, which forms the internal range of pronaos columns, is evenly even. Sixteen is also perfect in that it is the sum of the dividers of twelve, the Pythagorean perfect ‘super’ number. Thus $1 + 2 + 3 + 4 + 6 = 16$. It is also dependent on doubling the properties of eight, which connote security, harmony and therefore justice.⁷⁷ Carrying this notion into the interior of the Pantheon, we meet the perfect number sixteen again, as noted above, in the articulation of the circle of the plan. Above hover the twenty-eight coffer which according to Anatolius represent another perfect number because of the dependency of the number twenty-eight on the number four: the four weeks of the moon times its seven appearances or phases (crescent, half, three-quarter, full, three-quarter, half, crescent) equal twenty-eight. Proof that the number twenty-eight is perfect lies in the fact that all numbers up to seven equal twenty-eight ($1 + 2 + 3 + 4 + 5 + 6 + 7 = 28$), a proof published by Euclid and well known to Boethius.⁷⁸

Anatolius received his information, Iamblichus tells us later, from earlier Pythagoreans.⁷⁹ Indeed Iamblichus’ own *Theology of Arithmetic* depends in large part, as he himself acknowledges, on another treatise, the *Introduction to Arithmetic*, by Nicomachus of Gerasa, a contemporary of Hadrian and outstanding mathematician of his time. For Nicomachus (one of the select group of Pythagorean *mathematici*), Iamblichus reminds us, number one is the sun, number five is marriage, number seven is respect as well as the

number of planetary spheres, and number eight is panharmonic justice.⁸⁰ Though only two works by Nicomachus survive (the *Introduction to Arithmetic*, the most influential work on arithmetic from the time it was written, about 100, to the Renaissance, and the *Manual of Harmony*, a work dedicated to explicating the harmony or agreement between numbers), other works—including an *Introduction to Geometry*, an *Introduction to Astronomy*, and a *Life of Pythagoras*, are lost.⁸¹ Because they were very influential, his works lent themselves to interpretation by others. Iamblichus and later writers speak of Nicomachus' great fame. Proclus, who died in 485, believed through the revelation of a dream that the soul of Nicomachus was incarnate in himself.⁸² It is largely through this tradition that the elements of Greek arithmetical science, its reliance on the mystique of numbers, and its relation to the occult sciences (such as astrology) can be deduced.

Given the incomplete state of our information about Nicomachus, whose birth and death dates are unknown (though he flourished in the late first and early second centuries), there is no reason to hold that he was in any way directly connected with the Pantheon. Indeed there is no specific evidence in his surviving writings for this. However, given the facts that he was a Greek from Syria, a country in which Hadrian had spent considerable time and of which he was governor just prior to building the Pantheon; that, like Hadrian, Nicomachus was well known and traveled extensively; that Hadrian, who was fluent in Greek and admired Greek culture, had strong interests in arithmetic, geometry and astrology; and that Hadrian prided himself on the number and variety of his learned friends,⁸³ it is not unreasonable to wonder if Hadrian, who thought of himself as an architect (a field for which Vitruvius tells us the adequate preparation included the study of arithmetic and astrology)⁸⁴ might have known or consulted Nicomachus. Indeed, in his dedication of the *Manual of Harmonics*, Nicomachus makes it clear this work was written at the request of "Your Noble Majesty," an illustrious lady of exalted rank, perhaps an empress, whose name is unknown.⁸⁵ Because we know Nicomachus mingled with the upper classes in the Roman world of his time and because we know from Philostratus, who lived shortly after Hadrian, that Hadrian was an avid Pythagorean,⁸⁶ it is tantalizing to speculate that the mysterious recipient of Nicomachus' famous dedication might have been Plotina, Hadrian's adoptive mother, protectress and advocate with whom some believe Hadrian may have been in love.⁸⁷

In hypothesizing that the Pantheon was constructed by Hadrian with a specific Pythagorean cosmological language incompletely known to us but centering on an accord between

the sun and the moon over the rest of the universe as represented by the sphere, the most perfect Pythagorean form, we are led to wonder why this temple, so extraordinary for Rome and so unusual even among Hadrian's many other building creations in Rome, Greece, Syria, North Africa and Gaul, should have captivated his interests in this manner. For a suggested answer to this question, Hadrian's biography contains, perhaps, important clues that have been insufficiently explored in reference to the Pantheon.

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Dio Cassius' account is replete with references to extraordinary dreams that motivated Hadrian [Fig. 10], and to his interest in astrology, divination and magic.⁸⁸ On one of his trips to Greece Hadrian was admitted to the highest grade at the Eleusinian Mysteries. He was also very interested, Dio tells us, in literature, painting and architecture.⁸⁹ Working from Hadrian's autobiography, Spartianus has more to say. Hadrian consulted astrologers; indeed, his great uncle was a master of astrology. Hadrian took prophecies and omens seriously, and all these related to his rise to power and fame. Spartianus clarifies that Hadrian was twice initiated into the Eleusinian mysteries, first into the lower grade, then the higher (as Dio had noted). Hadrian consulted oracles—and, Spartianus elaborates, he probably wrote some of them himself, at least so thought the Roman people. He was extremely proficient in astrology, to the point that he kept journals even to the hour of his death. Among his friends were musicians, geometricians and astrologers, and he himself was expert in arithmetic and geometry as well as painting and letters. (It should be noted that in Rome astrologers were called 'mathematicians,' since mathematics was important for the construction of horoscopes.⁹⁰) Premonitions of Hadrian's death were accompanied by miracles.⁹¹ Aside from the fact that he owned a primary Pythagorean text, Hadrian believed in the immortality of the soul and cultivated other Pythagorean interests that influenced his view that the universe was regulated by laws of harmony and arithmetic.⁹² This image of Hadrian survives in the biography of Aurelius Victor; because it is well established, it must be taken into consideration in pondering Hadrian's interpretation of the cosmos.⁹³

* * *

The concept of the celestial sphere and the spherical earth had been well established in Greek antiquity, at least from the end of the fifth century B.C.⁹⁴ Among those interested in constructing astronomical schemes that might explain

the activities and purpose of the celestial sphere were the Pythagoreans. Long after the death of Pythagoras, they assumed that all heavenly bodies are spherical in shape and that these shapes move around a central fire. The most novel aspect of their beliefs, however, was their insistence on the importance of number. For them the abstract concept of number was determined by the arrangement of points in a given form, a theory that gave rise to a diverse body of schemes that attached secondary meanings to numbers. In this construct the supreme being was equivalent to the monad. For most Pythagoreans, Apollo occupied this position.

By the late first century B.C., when Pythagoreanism—which had come to be divided into obscure sects—merged with Platonism (because it was believed Plato derived his doctrines from Pythagoras), Pythagoreanism experienced a resurgence. Its diffusion was accompanied by an association with the pseudo-sciences, particularly astrology, the interpretation of dreams, and divination. Its eclectic character included an interest in vegetarianism and modes of behavior, as exemplified by Pythagoras' 'speech' in Book XV of Ovid's *Metamorphoses*. As it established cults in various parts of the Roman world, it attempted to attach itself to Roman traditions, for example in the claim that Numa Pompilius, the first king of Rome, had been a pupil of Pythagoras;⁹⁵ thus Pythagoreanism continued to be regarded as an esoteric form of Greek learning. Because it was never a 'pure' philosophy or a religion, its adherents, having no single codified set of beliefs, attached themselves to a variety of notions including Egyptian, Chaldean and Persian as well as Greek beliefs. At the same time its adherents maintained a continuing rapport with contemporary developments in astronomy, which came to be perhaps the most important ingredient in the formation of an imaginary cosmology that was connected with the idea of the immortality of the soul. Thus the first century B.C. astronomical poem of Manilius proceeds from the essentials of this cosmology. It introduced the Roman world to the details of zodiacal signs, influences at birth, and casting horoscopes.⁹⁶ Borrowed from eastern sources,⁹⁷ the importance of the sun emerged, by the early second century (A.D.) as primary, for example in the astronomical text of Hyginus,⁹⁸ because it governs the zodiac.

As the Pythagorean notion of cosmic order and universal harmony developed side by side with the increasing interests of Romans in astrology,⁹⁹ it was inevitable that some Roman emperors who maintained close ties with astrologers, many of whom came from the East, would seize upon the opportunity to represent themselves, as had their Persian and Chaldean predecessors, as the immortal sun of heaven in a cosmic setting—thus as deified supreme beings.¹⁰⁰ It has been shown



10) Bust of Hadrian, Greek, marble, from Heraklion, Crete. Paris, Louvre. Photo Lewandowski, Courtesy of Réunion des Musées Nationaux.

that Nero, who is known to have consulted astrologers, was thus inspired to present himself as the incarnation of the sun god, in his golden (or 'sun') palace, the Domus Aurea.¹⁰¹ At the same time, in a number of official images Nero is represented as Apollo or Helios, thus ensuring his celestial immortality as a cosmocrator. From his cosmic dome, the Emperor-God sets the lower planets in motion and directs the order of the world below.¹⁰² A great deal of visual evidence exists to show that other Roman emperors were represented as sun god, either with rays emanating from their heads or with the

horse-driven chariot of the sun god, in statuary, shields, medallions, coins, jewelry and painting.¹⁰³

The apotheosis of Nero may have been equaled, if not surpassed, as Karl Lehmann suggested, by Hadrian in the ceiling decorations of his Villa at Tivoli. However, these decorations are lost. Lehmann's hypothesis that they showed the globe of the firmament surrounded by the belt of the zodiac relied on eighteenth century engravings which are now recognized as fabrications. Nonetheless, two rotundas at Tivoli suggest a cosmic space.¹⁰⁴ A fragment from Dio Cassius tells us that after Hadrian's death, a gigantic sculpture representing him in a four-horse chariot (the chariot of the sun god) was constructed.¹⁰⁵

Recalling Greek precedent for solar temples and certainly symbolizing the unitary nature of Apollo as the sun,¹⁰⁶ the oculus of the Pantheon may then be interpreted as a visible sign of Hadrian himself. Indeed there is further good reason for this suggestion.

According to a papyrus fragment published separately by Ernst Kornemann and Franz Cumont, the succession of Hadrian, which was much resented by the Romans who believed it was the result of Plotina's manipulation, was announced by none other than Apollo himself on the very day of Trajan's death. In this document, Apollo speaks: "I, Phoebus, have just risen with Trajan on a chariot drawn by white horses, and I... announce that a new prince, Hadrian has made all things subject to his deified father."¹⁰⁷ Thus was Hadrian called and sanctioned by the supreme god of the Pythagorean monad and deified from the moment of his accession as the representative of the sun god who reigns on earth.¹⁰⁸ Though it is not unimaginable that Hadrian authored the document himself,¹⁰⁹ this oracle corresponds with a prediction made by Aelius Hadrianus, the grand uncle of Hadrian, who was a master of astrology. Aelius Hadrianus is reported to have forecast the imperial nativity of his grand-nephew, that is, to have prophesied that the newborn was to rule the world.¹¹⁰ The works of Suetonius who, though dismissed by Hadrian, was a member of his court until about 120, document the importance of astrological forecasts and their ties with natal predictions for some of Rome's rulers.¹¹¹ Indeed, the horoscope of Hadrian's father contains such a prediction. This recently identified document predicts the birth of an illustrious son who would punish many (as Hadrian did) and whose birth was subject to the influence of the moon. Its data allow us to know the age of Hadrian's father (forty-five) at the time of the birth of his illustrious son on January 24, 76.¹¹²

More importantly, Hadrian's own horoscope is known with absolute certainty, and, as the longest exposition of its kind that survives, it has been published several times with exten-

sive commentaries by scholars of classical astrology.¹¹³ At the very beginning, the horoscope demonstrates in what is also its longest section, the imperial destiny of Hadrian. It calculates the position of the moon and the sun in relation to the other planets and shows, essentially, that the two celestial luminaries, the sun and the moon, were equally "attended" by the five other planets; thus, since they were both at an equally critical point whereby they were attended by all the other planets, their conjunction was accompanied by the result that the person born under this configuration (Hadrian) was destined to become the ruler of the world.¹¹⁴ The horoscope, whose astronomical data refer to the birthdate and birthplace of Hadrian, also predicts his wisdom and education, his childlessness, and his death from illness. Its contents suggest a synchronism with the Pythagorean doctrine of immortality which identified the sun and the moon as the guarantors of that immortality.¹¹⁵

Assuming that Hadrian received this type of horoscope from his grand uncle or from another astrologer,¹¹⁶ we may now understand some otherwise obscure comments made by Spartianus, who tells us that when Hadrian went to Sicily (in about 126) he climbed Mount Etna to view the sunrise;¹¹⁷ later, while in Syria, Hadrian climbed Mount Casius by night in order to see the sunrise from its summit. There he sacrificed, and the sacrifice was attended by a storm in which a flash of lightning struck the victim.¹¹⁸ Nor is it surprising, in this light, to learn that after consecrating a statue to the Sun, Hadrian planned, together with the architect Apollodorus (which suggests a large monument was involved), to make a companion piece dedicated to the Moon.¹¹⁹

Hadrian's devotion to the sun and the moon is, no doubt, reflected in the importance he placed on his birthday.¹²⁰ Dio Cassius tells us that to celebrate his birthday Hadrian staged grand spectacles, free to the people, in which as many as two hundred lions and lionesses were killed at once.¹²¹ Spartianus tells us more. He describes (perhaps using Hadrian's autobiography that he cites in several places as one of his sources) gladiatorial combats that lasted for six days in honor of Hadrian's birthday, in which a thousand wild beasts were slaughtered.¹²² Though he reputedly refused circus games, Hadrian made a special exception to celebrate his birthday.¹²³ Two premonitions of his death occurred in connection with his last birthday: on one of these occasions his toga miraculously fell down baring his head; on the other a mysterious wailing occurred in the Senate.¹²⁴

Hadrian's biographers insist on his consuming ambition: Dio tells us this ambition was insatiable and that Hadrian wished to surpass everybody in everything.¹²⁵ Spartianus elaborates: Hadrian allowed the Athenians to build an altar to him; throughout Asia he consecrated temples to himself.¹²⁶

The Greeks deified Hadrian at his request; and oracles were given through him.¹²⁷ Hadrian ridiculed and humiliated professors and philosophers to demonstrate his superiority;¹²⁸ and he wrote and distributed his autobiography in order to ensure his reputation throughout the world.¹²⁹ He gave his name to many cities (Hadrianopolis), including Carthage and a part of Athens, and to innumerable adqueducts.¹³⁰ He commemorated the place where he once killed a bear by founding a town named after himself (Hadrianotherae) on the spot.¹³¹ After his defeat of Jerusalem he renamed that city Aelia after his own first name.¹³² He was obsessed with hatred for all those who aspired to succeed him and compelled several aspirants to kill themselves.¹³³

Hadrian's orders to the Roman people, described by Spartianus, to celebrate the 9th of August annually as the anniversary of the day he received the news of Trajan's death were certainly not meant to rejoice in commemoration of the death of Trajan.¹³⁴ More than likely, they were intended to demonstrate and remember the prophecy about his imperial birth, which had come true. Thus his exalted destiny sanctioned by Apollo himself had been fulfilled, an appropriate occasion for celebration. Hadrian's biographers are dubious about his appointment as Trajan's successor and they all suspect foul play. Hadrian's elevation to the rank of Emperor did not take place on August 9. In fact, it was a highly irregular elevation. Trajan had died suddenly without a legal successor. The biographers point to Plotina and to her use of her considerable influence to secure the empire for Hadrian.¹³⁵ The Senate, the only body authorized to confer the *imperium*, never formally did so. Hadrian assumed the title of Emperor in Syria without returning to Rome. His early biographers are in agreement that instead of returning he sent his excuses in a carefully worded letter (or letters) to the Senate claiming that his troops had made him emperor by acclamation.¹³⁶ Because the state could not be without an emperor Hadrian had, supposedly supported by the army, thus become the *de facto* emperor. In remaining away for almost a year after the death of Trajan, Hadrian displayed the arrogance that was to follow him to his death and cause him to die hated by the Roman people and by the Senate which even attempted to revoke his deification.¹³⁷

When Hadrian finally arrived in Rome to win over public opinion which was against him, the city was hostile to him. A plot to murder him failed only because Hadrian successfully evaded it. He was decidedly unpopular. Many were outraged

because he put four men of consular rank to death. Thus the hostility to him increased. At this point, Hadrian began to use every means to gain popularity, including the remission of debts, assistance to public officials, special allowances to Senators, appropriations for those with children, and donations to many individuals and causes.¹³⁸ These crucial two years, before Hadrian was to absent himself for another seven, correspond precisely with the time the Pantheon was designed.

* * *

What better symbol of Hadrian's imperial power and majesty could have been designed than a temple where he exerted his administrative and judicial powers—a temple built as a symbol of his imperial nativity, a time of the conjunction of the sun and the new moon, and proclaiming his destiny to rule the Roman world. Most likely the greatest oculus ever constructed was surrounded by a painted belt of the zodiac referring to his horoscope in the upper zone of the dome, at the point of conjunction between the sun and the moon. Just as the two celestial luminaries—the sun and the moon—give the times of day and night, together they memorialize the special occasion of his birth.

As Apollo, his divine father who in an oracle had established Hadrian's imperial authority, was his annunciator and protector, Hadrian—the same man who requested the Greeks to deify him and who built at least two temples to Apollo in Greece—¹³⁹could legitimize his reign as a sovereign god in the doubtful and suspicious political climate of Rome. In so doing he could exert his all-consuming ambition and express his world-wide reputation far more effectively than could the mere words of the autobiography he distributed. As Plato had noted, perfect numbers referred to divine creatures.¹⁴⁰ This language would have been understood by Romans of his time and would, no doubt, have been more effective than a mere sculpture. As the apex of the triangle, Hadrian became Apollo when he sat in judgment in the apse of the Pantheon. In the authority of a spectacular golden temple whose glittering golden dome (perhaps crowned with a quadriga)¹⁴¹ could be seen throughout the city, Hadrian's solar immortality as king of the universe was guaranteed forever. Indeed no matter what the Roman Senate thought, Hadrian would become a god after his death because he had been one since his birth.

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¹ William L. MacDonald, *The Pantheon: Design, Meaning and Progeny*, London, 1976, 76.

² See Arturo Graf, *Roma nella memoria e nelle immaginazioni del Medio Evo*, Turin, 1923, 103 (this would be in accordance with Cicero's statement in *De natura deorum* III.xvii.44 that Saturn was held in the highest reverence by people in the west—surely meaning Italy as opposed to Greece); Kjeld DeFine Licht, *The Rotunda in Rome*, Copenhagen, 1968, 202; Henri Stierlin, *Hadrien et l'Architecture Romaine*, Fribourg, 1984, 106-11; and Giangiacomo Martines, "Argomento di Geometria antica a proposito della Cupola del Pantheon," *Quaderni dell'Istituto di Storia dell'Architettura*, N.S. XIII, 1989, 3-10.

³ MacDonald, op. cit., 90-92. See also Idem, *The Architecture of the Roman Empire* (1965), New Haven, rev. ed. 1982, 24 and 120-21.

⁴ Dio Cassius wondered if the Pantheon was dedicated to the many gods remembered in its statues. He went on to say that in his opinion its circular shape reminded him of Heaven (Dio Cassius, *Roman History*, LIII.27). Although many of Dio's lives are lost, including the one of Hadrian, his life of Hadrian (which will be frequently cited below) survives through a later summary known as an *Epitome*.

⁵ Dio Cassius suggests this date (loc. cit.). Regarding the sculptures see Pliny the Elder, *Historia Naturalis*, XXXVI.38 for discussion of the caryatids and pediment figures and IX.121 for the mention of Venus. In both cases, Pliny calls the building *Pantheon*. Pliny died in 79 A.D., the year before Agrippa's Pantheon burned down (cf. n. 10 infra).

⁶ Dio Cassius, loc. cit. Respecting Dio's apparent lack of knowledge that it was Hadrian who had rebuilt the Pantheon, it is important to note that he mentions the statues of Venus and Mars in the past tense, while he refers to the 'vault of heaven' (clearly Hadrian's structure) in the present tense.

⁷ See the report of the excavations undertaken in 1880-81 in Guido Baccelli, *Il Pantheon e le Terme di Agrippa*, Rome, 1881-82. See also the extensive discussion of the study of these excavations in Rodolfo Lanciani, *The Ruins and Excavations of Ancient Rome*, Boston and New York, 1897, 473-86, and esp., regarding the characteristics of Agrippa's temple, 480-81.

⁸ Lanciani, op. cit., 481. See also Luca Beltrami, *Il Pantheon: La Struttura organica della cupola e del sottostante tamburo; le fondazioni della rotonda, dell'avancorpo, ...*, Milan, 1898, esp. 69-75.

⁹ On the complex of Agrippa as a whole see the study of Frederick W. Shipley, *Agrippa's Building Activities in Rome*, St. Louis, 1933, esp. 13-14, 49, and 53-65. For reconstructions of the complex see Paola Virgili, "Il Campo Marzio centrale in epoca romana: Pantheon e Dintorni," in *La Fontana del Pantheon*, ed. Luisa Cardilli, Rome, 1993, 25-31; also Flaminio Lucchini, *Pantheon*, Rome, 1996, esp. figs. 7, 9 and 10. On the baths of Agrippa see Heinrich A. Geymueller, *Documents inédits sur le Thermes d'Agrippa, le Pantheon et les Thermes de Diocletien*, Lausanne, 1883, 11-24; also Luigi Respighi, "Identificazione di un capitello del 'Lanconicon' delle Terme di Agrippa conservato nei musei vaticani," in *Atti della Pontificia Accademia Romana di Archeologia: Rendiconti*, VII, 1931, 109-17. See also Dio Cassius, op. cit., LIII.23 on the construction of the Saepta Julia by Agrippa in 26 B.C.

¹⁰ Regarding the fire that burned for three days and three nights devastating much of Rome in 80 A.D., just after the eruption of Vesuvius, see Dio Cassius, op. cit., LXVI.24 (Dio says the Pantheon and its surrounding structures including the Saepta Julia and the Baths of Agrippa were among the structures consumed by the conflagration). On this see also Suetonius, *Titus* VIII.3-4. Since Martial (*Epigrams*, III.xx.15-16 and III.xxxvi.5-6) indicates these buildings were in use again at the time of his writing (ca. 88) it can be assumed they were rebuilt soon after the fire.

¹¹ "Pantheon Romae fulmine concrematum." The source of this information is Paulus Orosius and the quote from *Historiarum adversum paganos libri VII*, VII.12 (ca. 417), ed. C. Zangemeister, Hildesheim, 466.

¹² See Dio Cassius, op. cit., LXIX.2, and Aelius Spartianus, who is considered to be one of the more reliable authors of the compilation known as the *Scriptores Historiae Augustae* and who obtained some of his information from Hadrian's autobiography (now lost), in S.A.H. Hadrian IV and V. On this vita, written in about the late third century, see Ronald Syme, *The Historia Augusta*, Bonn, 1971, 92; also Idem, *Emperors and Biography: Studies in the Historia Augusta*, Oxford, 1971, 113-26. Trajan had good reason to need a governor stationed in Antioch for that Syrian city had just two years before the death of Trajan suffered (in 115) a devastating earthquake which essentially destroyed the city (for a description of this earthquake and its consequences see Dio Cassius, op. cit., LXVIII.24-25) which was in dire need of reconstruction. In his 3rd century summary of Roman history Aurelius Victor refers to this earthquake as having ravaged Antioch and all of Syria (Aurelius Victor, *Liber de Caesaribus*. XIII); it is also remembered by Orosius in op. cit., VII.12. On the value of Aurelius Victor as a source see Pichlmayr's Introduction in *Sexti Aurelii Victoris Liber de Caesaribus*, ed. Franz Pichlmayr (1912), rev. ed. R. Gruendel, Leipzig, 1966; and P. L. Schmidt, "S. Aurelius Victor, *Historiae Abbreviate*," in *Paulys Real-Encyclopaedie der classischen Altertumswissenschaft*, Supp. V, Munich, 1978, cols. 1660-71. On Trajan's title 'best of emperors,' see Dio Cassius, op. cit., LXVIII.18. These sources are all taken into account in the excellent recent biography of Hadrian by Anthony Birley (*Hadrian*, London and New York, 1997).

¹³ Dio Cassius suggests that Plotina, being in love with Hadrian, secured his appointment (op. cit., LXIX.I). Spartianus holds that it was through Plotina that Hadrian was appointed in that he was—after the death of Trajan—supposedly adopted by Trajan through a person impersonating the dying emperor "in a tired voice." (S.H.A., op. cit., Hadrian IV). Aurelius Victor notes that Hadrian achieved his position through the manipulations of Plotina (op. cit., 13).

¹⁴ Dio Cassius refers to letters that Hadrian sent to the Senate while still in Syria after the death of Trajan (op. cit., LXIX.2-6), while Spartianus remembers the considerable time that passed, and the various intrigues that were devised in his absence, before Hadrian put Catilius Severus in charge at Antioch and finally returned to Rome (S.H.A., op. cit., Hadrian IV-VI). Aurelius Victor too refers to this period of time (op. cit., XIV). Respecting the exact time of Hadrian's return see Julius Duerr, *Die reisen des Kaisers Hadrian*, Vienna, 1881, 68-70.

¹⁵ S.H.A., op. cit., Hadrian XIX.

¹⁶ As early as 1804 an investigation revealed that certain bricks in the structure could be identified as bearing the stamp of the time of Hadrian (Carlo Fea, *Conclusione per l'integrità del Panteon di M. Agrippa ora S. Maria ad Martyres rivendicata al principato*, Rome, 1807, 27). This was confirmed by Heinrich Dressel, a specialist in brick stamping, in *Pantheon concrematum vel subsersum* cited by Beltrami in op. cit., 36). On this see also Herbert Bloch, "The Roman Brick Industry and its Relationship to Roman Architecture," in *Journal of the*

Society of Architectural Historians, I, 1941, 3-8. For further discussion and sources see MacDonald, *The Architecture...*, op. cit., 96, n.5; Idem, *The Pantheon...*, op. cit., 13; and Idem, "Roman Architects," in *The Architect*, ed. Spiro Kostof, New York and Oxford, 1977, 42 and fig. 12 for photos of three *bolle* from the 120s.

¹⁷ On this discovery see Lanciani, op. cit., 479. Cf. Dio Cassius, op. cit., LXIX.7. Spartianus (S.H.A., op. cit., Hadrian XVIII and XXII) emphasizes Hadrian's interest in judicial matters and his activity as a judge and legislator.

¹⁸ For a basic bibliography see Ernest Nash, *Pictorial Dictionary of Ancient Rome*, II, New York, 1962, 170-71; also MacDonald, *The Architecture...*, op. cit., 95, n.4. More recent significant works must include DeFine Licht, op. cit.; MacDonald, *The Pantheon...*, op. cit.; Susanna Pasquali, *Il Pantheon: Architettura e antiquaria nel Settecento a Roma*, Modena, 1996; and Lucchini, op. cit.

¹⁹ Regarding the forecourt of Hadrian's Pantheon, whose dimensions are unknown, see the proposed reconstruction in the model in the Museo della Civiltà Romana. See also Emma Marconcini, "La costruzione della Fontana," and "La piazza nelle immagini e nei documenti," both in *La Fontana del Pantheon*, ed. Luisa Cardilli, Rome, 1993, 49-57 and 31-49 respectively.

²⁰ See the discussion and very clear conclusions of Lanciani in op. cit., 480-81. Cf. also the reconstruction of the new temple (of Hadrian) vis a vis the older temple (of Agrippa) in *ibid.*, fig. 185 and plan facing 474. See also the reconstruction of Lucchini (op. cit., figs. 7 and 10) which is similar.

²¹ The gilded bronze tiles were removed in 663 as will be noted in the text *infra*. The golden dome of the Pantheon was already legendary in the late 12th century when the *Mirabilia Urbis Romae* was composed; however it seems that traces of the gold still remained—perhaps referring to the gilded (?) tiles of the pronaos: "On top of the Pantheon, that is to say Santa Maria Rotonda, stood the golden Pine Cone that is now in front of the door of Saint Peter's. The church was all covered with tiles of gilded brass, so much so that from afar it seemed to be a mountain of gold. *The beauty of this is still discerned in part.* (ital. mine) And on top of the front of the Pantheon stood two bulls of gilded brass." trans. F.M. Nichols, *The Marvels of Rome*, 2nd ed., New York, 1986, 37; cf. *ibid.*, 22, which refers to a gilded image set at the top of the temple above the oculus and the roof of gilded brass.

²² E.g., Josef Durm hypothesized (in *Baukunst der Roemer*, Leipzig, 2nd ed., 1907, 556-58) that Hadrian's rotunda had a facade of its own directly attached to it. For the reconstructions of Lanciani and Lucchini see n. 20 *supra*.

²³ See the conclusions of Lanciani, op. cit., 480-81, and the important analysis of the porch and its relation to the rotunda in A.M. Colini and I. Gismondi, "Contribuiti allo studio del Pantheon: La parete frontale dell'Avancorpo e la data del portico," *Bullettino della Commissione Archeologica Comunale di Roma*, LIII, 1926, 67-91, who show that the rotunda and the pronaos rest on one continuous travertine foundation.

²⁴ On the Mausoleum of Augustus, or 'Augustea,' erected in about 29 B.C. by Augustus as a burial place for himself and his family, see the ancient description of Strabo in *Geography* V.III.8. When Piranesi studied this building in the mid 1700s some of the columns of its porch were still standing (see John Wilton-Ely, *Giovanni Battista Piranesi: The Complete Etchings*, I, San Francisco, 1994, fig. 418). Though these columns have since disappeared, the porch foundation still survives. On this monument, see Egon Kornemann, *Mausoleum und Totenbericht des Augustus*, Leipzig, 1921; Carlo Pietrangeli, "Augustea," *Enciclopedia dell'arte antica*, I, Rome, 1958, 916-17; and Nash, op. cit., II, 38 and figs. 719-25. Respecting its planimetric rela-

tion to the Pantheon see Carlo Pavia, "La Planimetria del Pantheon," *Forma Urbis*, I (6), 1996, 20-24.

²⁵ Vitruvius Pollio, *M. Vitruvii De architectura libri decem*, IV.v. On Roman circular temples, known in limited number in the Republican age and the first age of the Empire, see Louis Hauteceur, *Mystique et Architecture: Symbolisme du Cercle et de la Coupole*, Paris, 1954, 76-100; and Luigi Crema, "L'architettura romana," in *Enciclopedia Classica III: Archeologia e storia dell'arte classica*, XII.I, Turin, 1959, 375-81.

²⁶ Admirable recent accounts of Hadrian's building activity may be found in Stierlin, op. cit.; Mary Taliaferro Boatwright, *Hadrian and the City of Rome*, Princeton, 1987; and MacDonald and John A. Pinto, *Hadrian's Villa and its Legacy*, New Haven and London, 1995.

²⁷ The inscription reads: IMP. CAES. L. SEPTIMIUS SEVERVS. PIVS PERTINAX. AVG... TRIB. POTEST X... ET EMP. CAESAR.M. AVRELIVS ANTONINVS PIVS FELIX... PANTHEVM VETVSTATE CORRVPTVM CVM OMNI CVLTV RESTITVERVNT. (Donald R. Dudley, *Urba Roma: A Source Book of Classical Texts*, Aberdeen, 1967, 187). On this see Lanciani, op. cit., 481.

²⁸ On this see the pertinent summary presented by Pasquali in op. cit., 24-26. See also the comments of Lanciani, in *La distruzione dell'antica Roma* (1901), ed. M. Marcaccini, Rome, 1986, 71. For an interesting Jesuit commentary on this event, written in Counter-Reformation times, see Pietro Lazeri, *Della consecrazione del Pantheon fatta da Bonifazio IV. Discorso di Pietro Lazeri...*, Rome, 1749.

²⁹ Regarding the document of 13 November 370 see Christian Huelsen, "Note di topografia romana antica e medievale," *Bullettino della Commissione Archeologica Comunale di Roma*, LIII, 1926, esp. 64-66.

³⁰ In his diary, Giacinto Gigli, a contemporary of Urban VIII, describes Urban's need for arms and artillery and his stripping of the Pantheon in a moving and detailed entry for December 1625 (Giacinto Gigli, *Diario di Roma*, ed. Manlio Barberito, I [1608-1644], Rome, 1994, 152-53). It was Fea who (in op. cit., 5) traced the fate of the metal in the papal archives. On the significance of Urban's destruction of the roof of the portico see esp. Lanciani, *The Ruins...*, op. cit., 481-83.

³¹ On this history during medieval times see Richard Krautheimer, "Sancta Maria Rotunda," in *Arte del Primo Millennio: Atti del II Convegno per lo studio dell'alto Medioevo*, ed. Edoardo Arslan, Pavia, 1950, 21-27.

³² Francesco Cerasoli, "I restauri del Pantheon dal Secolo XV al XVII," in *Bullettino della Commissione Archeologica Comunale di Roma*, XXXVII, 1909, 280-81.

³³ For Flavio Biondo's comment, and the quoted passage, see Flavio Biondo, *Roma Ristavrata di Biondo da Forlì*, Venice, 1558 (printed D. Giglio, trans. Lucio Fauno), III.62-66.

³⁴ Respecting the insurrection see Stefano Infessura, *Il diario della città di Roma*, in *Fonti per la storia d'Italia*, ed. Oreste Tommasini, Rome, 1890, 41-42. On the repairs by Nicholas V, see Cerasoli, op. cit., 282-83.

³⁵ For the descriptions of Pomponio Leto see *Pomponius Laetus de Romanae Urbis vetustate noviter im pssus/ acp Marianu Blache...* (*De Vetustate Urbis*), Rome, 1515, under Pantheon and Antipathen (n.p.); *Pomponii Laeti de Antiquitabvs vrbis Romae libellus longè utilissimus*, pr. Tomam Plattervm, Basel, 1588, 7; *Pomponio Leti viri claris*, Rome, 1511, fol. XIIr; and *L'Antiquità di Roma di Pomponio Leto dalla Latina alla volgar Lingva tradotte, per leqvali, Qval Roma si fvsse anticamente...*, ed. Gabriel G. di Ferrarii, Venice, 1550, 7r. In all his descriptions, Pomponio refers to the then legendary former roofing in

gold and silver. He believed the pronaos was built by Agrippa, though he knew the rotunda was constructed by Hadrian.

³⁶ Cerasoli, op. cit., 283-84.

³⁷ See Bartolomeo Marlini, *Topographiae Veteris Romae, Io Bartholomaei Marliani Patricij Mediolanensis*, Basel, 1588 (a work frequently published between 1534 and 1688). The quoted passages are from 207 and 206 respectively.

³⁸ Regarding the great flood of 1598, which began on Christmas Eve, see Lanciani, *The Ruins...*, op. cit., 11.

³⁹ De Fine Licht summarizes the efforts of Urban VIII to repair and clear the building (op. cit., 241). Regarding the attribution of the bell towers (formerly thought to be by Bernini) to Maderno see Howard Hibbard, *Carlo Maderno and Roman Architecture 1580-1630*, University Park, Pa. and London, 1971, 230-31.

⁴⁰ The two columns, of red granite, were found in the Alexandrine Baths near San Luigi dei Francesi. On this see De Fine Licht, op. cit., 241-42.

⁴¹ On the restorations of Alexander VII see Krautheimer, *The Rome of Alexander VII, 1655-1677*, Princeton, 1985, 3, 74, 78, 104-09, and 185-87; also Cerasoli, op. cit., 286-87.

⁴² On this 'restoration' which took place in 1747 see Lanciani, *La distruzione...*, op. cit., 70; Idem, *The Golden Days of the Renaissance in Rome*, London, 1907, 21; and Pasquali, op. cit., 75-77.

⁴³ For details on these restorations see De Fine Licht, op. cit., esp. 114-15 and 243-45.

⁴⁴ Baccelli, op. cit. On this see also Lanciani, *The Ruins...*, op. cit., 474-76 esp.

⁴⁵ Lanciani, *The Ruins...*, op. cit., 474-82. For a description of the materials (marbles, porphyrys and granites) used in the Pantheon—which came from various places in the Empire, primarily Egypt, Algeria, Tunisia, and Turkey, see Giorgio Orotani, "Lavorazione di pietre e marmi nel mondo antico," and Patrizio Pensabene, "Amministrazione dei marmi e sistema distributivo nel mondo romano," both in *Marmi Antichi*, ed. Gabriele Borghini, Rome, 1989, 19-43 and 43-55 respectively.

⁴⁶ On this see Alberto Terenzio, "Pantheon," in *Enciclopedia dell'arte antica*, VI, Rome, 1965, 856.

⁴⁷ MacDonald, for example, suggests the forecourt may have extended as far as the present church of the Maddalena. This would mean a distance, as he points out, of three or four hundred feet (*The Pantheon...*, op. cit., 27). On this area see also n. 19 supra. The exterior trabeation can be seen, e.g., in two engravings published in Antoine Lafrère, ed., in *Speculum romanae magnificentiae...*, Rome, 1566 (plates 46 and 47) as well as in Palladio's engravings (e.g. plates LII and LIII as cited in n. 49 infra). Because of the loss of these pilasters it is impossible to know for certain if their number was, as in the case of the interior attic storey, sixty-four.

⁴⁸ On the removal of the original decorative elements by Benedict VIX see De Fine Licht, op. cit., 117-18 and 242. Raphael's pen drawing of the lower interior of the Pantheon is number 164A in the Uffizi. On this see Paul Joannides, *The Drawings of Raphael*, Berkeley and Los Angeles, 1983, 181 and fig. 196r. Terenzio published the report on his investigations in Alberto Terenzio, "La restaurazione du Pantheon de Rome," *Museion*, XX, 1932, 52-57.

⁴⁹ See Terenzio, loc. cit., and De Fine Licht, op. cit., 117-121. In Book III of his *Tutte l'opere d'architettura et prospetiva*, published in 1540, Serlio noted the arrangement of pilasters in the attic story in two engravings (*Sebastiano Serlio on Architecture*, ed. V. Hart and P. Hicks, New Haven and London, 1996, IX [52r] at 103 and XV [54v] at 109). In 1540 Palladio recorded the same arrangement (Andrea Palladio, *The Four Books of Architecture* [1570], ed., Isaac Ware

[1738], rep. Adolf K. Placzek, New York, 1965, LVII and LVIII). Antoine Desgodetz also records the sixty-four pilasters of this story (in *Les Edifices Antiques de Rome Dessinés et Mesurés très Exactement par Antoine Desgodetz Architecte*, Paris, 1682, VI and VII. The engraving of the Pantheon interior by Piranesi, which shows clearly the articulation of the upper story, is reproduced in De Fine Licht, op. cit., fig. 129.

⁵⁰ Both Serlio and Palladio noted the "vestigia" in the coffers of the dome in their texts (see Serlio, op. cit., 103; and Palladio, op. cit., 101). For bibliography on the discovery of metal fasteners see De Fine Licht, op. cit., 145, n. 10. Karl Lehmann suggests the coffers of the dome may have been decorated with stars, though he stresses the lack of documentation for this belief. However he does offer precedents in structures built by Nero and Domitian ("The Dome of Heaven," *Art Bulletin*, XXVII, 1945, esp. 22). MacDonald, on the other hand, is almost certain that each coffer carried a large gilded rosette anchored in its center (*The Pantheon...*, op. cit., 38).

⁵¹ This idea was put forward by Konstantin Ronczewski, in *Roman Architecture*, Oxford, 1925, 125 (see also fig. 140). Lehmann (loc. cit.) believes that either a painting or a canopy may have existed in this area.

⁵² For an expression of this see, e.g., MacDonald, *The Pantheon...*, op. cit., 77: "What we perhaps most need to know about the meaning of the Pantheon, the gods' names and positions, is lost. In all likelihood forever."

⁵³ There is a vast literature in many diverse places about Pythagoreanism (which came, after its revival in Roman times when it was thoroughly merged with Neoplatonism, to be known as Neopythagoreanism). For an overview see esp. the important work by Walter Burkert, *Lore and Science in Ancient Pythagoreanism* (1962), trans. E.L. Minar, Jr., Cambridge (Mass.), 1972 (esp. Ch. VI on Pythagorean number theory and Greek mathematics and 466, n. 2 and 467, n. 3 for important bibliography on ancient number symbolism); also J. A. Philip, *Pythagoras and Early Pythagoreanism*, Toronto, 1966. For a useful summary on the transformation of ancient Pythagoreanism from Greece to Rome see Franz Cumont, *Lux Perpetua*, Paris, 1949, esp. 149-50. See also Frank E. Robbins and Louis C. Karpinski, "The Sources of Greek Mathematics," in *Nicomachus of Gerasa Introduction to Arithmetic*, ed. Martin L. D'ooge, New York, 1926 (hereinafter D'ooge, op. cit.), esp. 18-20 and 74. On the development of Pythagoreanism in antiquity see S.K. Heninger Jr., *Touches of Sweet Harmony: Pythagorean Cosmology and Renaissance Poetics*, San Marino, 1974, esp. 19-45.

⁵⁴ In referring to the authority of Nicomachus of Gerasa (late 1st century — early 2nd century), the later Pythagorean Iamblichus explains the monad as the most authoritative of numbers because it is the sun that rules. Iamblichus, *The Theology of Arithmetic* [partial English text], ed. and trans. R. Waterfield, Grand Rapids, 1988, esp. 37-38. So also does Macrobius describe the number one (Macrobius, *Commentary on the Dream of Scipio*, ed. W.H. Stahl [1952], New York, 1990, 100-01).

⁵⁵ On the origins of Apollo's assimilation with the Sun, master of the universe (which occurred in Hellenistic times) see Cumont, *Recherches sur le Symbolisme Funéraire des Romains*, Paris, 1942, 259-60, esp. n. 7. Apollo's role in the divine structure of the universe was central, a fact which leads in turn to his other role as a unifier, a role implicit in the Pythagorean explanation of the etymology of his name, A-Pollo, or Alpha (denying) and Pollo (multiplicity). As Plato first explained in the *Cratylus* and Plutarch later reaffirmed, the name Apollo refers to Oneness and Unity. The fact that Apollo was the god central to Pythagoreanism is connected with the Pythagorean belief that Pythagoras was named after Pythian Apollo since he was born on

the seventh day of the month and the principal feast days of Apollo fell on the seventh day of any given month (thus the number seven was consecrated to Apollo). See Plato, *Cratylus*, 404.E-406.C; cf. Plutarch, *De E apud Delphos*, 393C and 394A, where he defines the name Apollo as meaning the abjuration of multiplicity and symbolizing one and one alone or unity simple and pure; also Idem, *De Iside et Osiride*, 381F; and Plotinus, *Fifth Ennead*, V, where Plotinus discusses the Pythagorean concept of Apollo meaning the negation of plurality or the repudiation of the multiple. Respecting the descent of Pythagoras from Pythian Apollo see Iamblichus, *De vita Pythagorica in Iamblichus On the Pythagorean Way of Life Text, Translation and Notes*, eds. John Dillon and Jackson Hershbell, Atlanta, 1991, 35-37, 155, and 159. Iamblichus explains that Pythagoras' earthly father knew that his son was the son of a god and in gratitude for his birth built a temple for he did not doubt that the soul of Pythagoras was sent to mankind from Apollo himself. On Apollo as the father of Pythagoras see Cumont, *Recherches sur le symbolisme...*, op. cit., 197, n. 4. On the birth of Apollo (on the seventh) see Hesiod, *Works and Days* 770-71. Regarding the tradition of Apollo's birthday and its symbolism in the number seven, see Nicomachus of Gerasa, *Manual of Harmonics of Nicomachus the Pythagorean*, ed. Flora R. Levin, Grand Rapids, 1994, 74. The tradition of connecting the seventh of the month with Apollo is discussed by Stefos Anastase, *Apollo dans Pindare*, Athens, 1975, esp. 21 and 256.

⁵⁶ See Iamblichus, *The Theology...*, op. cit., 65-66. See also Michael J. B. Allen, *Nuptial Arithmetic: Marsilio Ficino's Commentary on the Fatal Number in Book VIII of Plato's Republic*, Berkeley, Los Angeles, London, 1994, 79. See also Macrobius, op. cit., 109-10.

⁵⁷ On the unusual nature of the number of coffer rows (five) in respect to the twenty-eight vertical divisions see De Fine Licht, op. cit., 140 and 200-01; Martines, op. cit., 8; and Lucchini, op. cit., 109. Respecting the circularity of number five see Theon of Smyrna, *Expositio rerum mathematicarum ad legendum platonem utilium*, ed. Eduardus Hiller, Leipzig, 1878, 100-02. (Theon was, according to his own admission, a Pythagorean: "For us, it is sufficient to have, according to the method of Pythagoras, a condensed outline of these principles [numbers] in order to summarize the exposition of mathematics." Trans. R. and D. Lawlor, in Theon of Smyrna, *Mathematics Useful for Understanding Plato*, San Diego, 1979, 77). See also the description of five as a circular number by Severus Boethius, who in *De arithmetica libri duo* explains his debt to "Pythagora duce" above all as well as to such famous Pythagoreans as Plato, Philolaus, and Nicomachus (*Boetii... Opera Omnia*, in *Patrologiae Cursus Completus Series Latina*, ed. J.P. Migne, LXIII, Paris, 1860, xola. 1137-38). On this number as the marriage number see Burkert, op. cit., 467; Heninger, op. cit., 242; and Allen, op. cit., 66.

⁵⁸ Tri (three) + gonia (angle). On its circularity see Theon of Smyrna, *Expositio...*, op. cit., 38. On this number in other Pythagorean texts see Allen, op. cit., 65.

⁵⁹ Respecting this niche, which served as the apse, see n. 17 supra.

⁶⁰ On Apollo as the apex of the triangle see Plutarch, *De Iside et Osiride*, 381.F; and Plotinus, *Sixth Ennead*, V. For Theon's description see Theon of Smyrna, *Expositio...*, op. cit., 45. The perfection of the triad was explained by Anatolius and elaborated by Nicomachus of Gerasa, both cited by Iamblichus in *The Theology...*, op. cit., 51-52.

⁶¹ Theon of Smyrna lists ten categories which are organized according to a quadripartite system, including these, in *Expositio...*, op. cit., 93-99. See also Heninger, op. cit., esp. 148-87, esp. 152-53. Plutarch's comment is quoted by Heninger (op. cit., 151-52). The Pythagorean principle of the four elements is reaffirmed by Vitruvius

in op. cit., VIII.Pref.1. On the significance of the number four for Pythagoreans see also Heninger, *The Cosmographical Glass*, San Marino, 1977, 102.

⁶² See translation of R. and D. Lawlor in op. cit., 62. Cf. also Heninger, *Touches of Sweet Harmony...*, op. cit., 151. Macrobius too notes the dual power of binding possessed by the number seven in that it inherits the qualities of three and four (Macrobius, op. cit., 106).

⁶³ Though Cicero had translated a part of the *Timaeus*, it came to be widely known to the medieval world through the 5th century version with extensive commentary by the Pythagorean philosopher Proclus (*Commentarius in Platonis Timaeum*, ed. E. Trewendt, Vratislaviae, 1847). On the significance of the *Timaeus* for Pythagorean doctrine see Heninger, *Touches of Sweet Harmony...*, op. cit., esp. 21-22 and 47-49.

⁶⁴ Cicero also discussed this concept elsewhere (e.g., in *De Republica* VI.xvii-xviii). On the cosmic importance of the number seven in Pythagorean theory see n. 55 supra. See also Burkert, op. cit., 351-52; and Christiane L. Joost-Gaugier, "Sappho, Apollo, Neopythagorean Theory, and Numine Afflatur in Raphael's Fresco of the *Parnassus*," *Gazette des Beaux-Arts*, CXXI, October 1993, passim.

⁶⁵ Iamblichus, *The Theology...*, op. cit., 87.

⁶⁶ The Pythagorean view of the number eight as Justice (as the product of equals: two times two times two) is described by Macrobius in op. cit., 98-99. On eight as the number of egalitarian justice see also Allen, op. cit., 69. On the double octave see Nicomachus, *The Manual of Harmonics*, op. cit., 73 and 107. Respecting the octad see Iamblichus, *The Theology...*, op. cit., 101. The number eight representing universal harmony is discussed by Heninger (*Touches of Sweet Harmony...*, op. cit., 179-87 passim).

⁶⁷ On four as the proper number for the cosmos see Heninger, *Touches of Sweet Harmony...*, op. cit., 160; on sixteen as a prime cube see Allen, op. cit., 60-62; this number is also the subject of nn. 61-62 supra. On the importance of sixty-four as the great unifier see Boethius who, relying on Pythagoras as the 'greatest source of philosophical knowledge,' explains this in *De musica libri quinque* in Migne, op. cit., cols. 1177, 1195 and 1218.

⁶⁸ The design of the pavement is discussed by Tons Brunés, in *The Secrets of Ancient Geometry and its Use*, II, Copenhagen, 1967, 38-56. Though he concludes that a sense of geometry in the design of the pavement is clear (which is incontrovertible), his study is somewhat flawed by his uncertainties about the history of the building (for example, Brunés assumes the Pantheon was constructed without entrance steps and that the pronaos was a later addition).

⁶⁹ The perfect correspondence of the height and breadth of this structure was admired by both Serlio (op. cit., 99-100) and Palladio (op. cit., 99). The diameter of the vault at its base is 142 (English) feet, exactly the same as the height of the oculus from the center of the pavement. On this see Dudley, op. cit., 189; and MacDonald, *The Architecture...*, op. cit., 103-04.

⁷⁰ Aristotle, *Physics* I.II.185a.

⁷¹ On Hippocrates of Chios, supposedly a merchant who fell in with a pirate ship and came to Athens where he became a Pythagorean mathematician, see the excerpt from Philoponus' *Commentary on Aristotle's Physics* in *Greek Mathematical Works: The History of Greek Mathematics*, ed. Ivor Thomas, I, London and Cambridge, 1957, 235.

⁷² Alexander Aphrodisiensis, in his *Commentary on Aristotle's Sophistic Refutations*, speaks about Bryson in a passage quoted in Thomas, op. cit., I, 315-17.

⁷³ Archimedes is the author of a work entitled *Measurement of a Circle*. He was praised for his achievement by the Pythagorean

Proclus in a work entitled *On Euclid*, quoted in excerpted form in Thomas, op. cit., I, 317.

⁷⁴ "The circle is squared when we construct a square equal to the given circle. Aristotle, it would appear, did not know how to do this, but Iamblichus says it was discovered by the Pythagoreans, as is plain from the proofs of Sextus the Pythagorean, who received the method of the proof from early tradition..." The quoted passage is from Simplicius, *Commentary on Aristotle's Categories*, in Thomas, op. cit., I, 335. Further Pythagorean texts on squaring the circle are reproduced in *ibid.*, I, 257-363 passim. Regarding Pythagorean arithmetical texts see also *ibid.*, I, 67-141, and for Pythagorean geometrical texts, *ibid.*, I, 173-225. On Pythagorean squaring of the circle, which was "golden," see Heninger, *The Cosmographical...*, op. cit., 184-86.

⁷⁵ On this see Iamblichus, *The Theology of Arithmetic* [full text], ed. Peter Gravinger, Athens, 1983 (an annotated edition of Iamblichus' work, which is largely dedicated to quoting textual materials from his predecessors), 20-21, 86-90, and 108. On the number four as the first square which is also a cube see the wording (quoted from Anatolius) in Iamblichus, *The Theology...*, ed. Waterfield, op. cit., 87. Vitruvius notes the special interest of Pythagoreans in the cube (op. cit., V.Pref.4) and recommends that architects take note of Pythagorean instructions (op. cit., X.Pref.6).

⁷⁶ Theon of Smyrna, *Expositio...*, op. cit., 114. It should be noted here that the number four had another function than those noted above in Pythagorean arithmology. Like eight, it also signified justice. According to this tradition four is justice because it is equal times equal; on this see Burkert, op. cit., 467. Thus the arrangement of the pronaos columns as eight in the exterior range and four and four in the interior range strongly suggest the juridical function of the building combined within the format of its temple (or religious) front..

⁷⁷ See Iamblichus, *The Theology...*, Gravinger ed., 20-21.

⁷⁸ *Ibid.*, 72-73. Iamblichus credits this information to Nicomachus of Gerasa's *Introduction to Arithmetic* of ca. 100 (A.D.). In his *Manual of Harmony* (cited supra n. 55), Nicomachus refers to the number sixteen as the double octave in harmonics (153-56). For Euclid's reference to twenty-eight as a perfect number see the *Elements*, IX. Regarding Boethius' comment on twenty-eight as a perfect number see *De arithmetica...*, op. cit., in Migne, op. cit., cols. 1097-99. The perfect nature of this number forms the centerpiece of Martines' argument (op. cit., 8) that the cupola is a unique example of ideal geometry.

⁷⁹ Iamblichus, *The Theology...*, Gravinger ed., esp. 17-20.

⁸⁰ See Iamblichus, *De Vita Pythagorica...*, op. cit., 109; and *Idem*, *The Theology...*, Gravinger ed., 108.

⁸¹ See D'oooge, op. cit., 79-87. On Nicomachus and his importance for Pythagorean philosophy, arithmology and harmonics, see Levin, op. cit.; George Johnson, *The Arithmetical Philosophy of Nicomachus of Gerasa*, Lancaster (Pa.), 1916; Leonardo Taran, "Asclepius of Tralles: Commentary to Nicomachus' Introduction to Arithmetic," in *Transactions of the American Philosophical Society*, LIX, Part 4, 1969, 5-89; and D'oooge, op. cit., passim.

⁸² D'oooge, op. cit., 77.

⁸³ On Hadrian's many active and varied intellectual interests and his association with philosophers, teachers and intellectuals, see the biographies of Dio Cassius, Spartianus, Aurelius Victor and Orosius. On Hadrian's rewards to intellectuals, e.g., providing them with membership in the Museum at Alexandria (an Academy founded in imitation of Plato's Old Academy), see Philostratus, *Lives of the Sophists*, VIII (*Favorinus*) and XXV (*Polemo*). Hadrian was especially fond of the Greek-speaking east. His passion for Greek culture is well documented by his biographers from his youth, when he was known as

'Greekling,' to the end of his life. His artfully curled beard formed a contrast with his predecessors who had been clean shaven for some time and constituted part of his Hellenizing image (on this see Paul Zanker, *The Mask of Socrates: The Image of the Intellectual in Antiquity*, trans A. Shapiro, Berkeley, Los Angeles, Oxford, 1995, 202, 217-26). In 112 or 113 he was honored by being elected Archon in Athens. Hadrian enlarged Athens and covered it with sumptuous monuments including a grand gymnasium and a magnificent library. On his trips to Athens and his activities there, and regarding statues and inscriptions of him there see esp. Paul Graindor, *Athènes sous Hadrien*, Boulac (1934), rep. New York, 1973. Towards the end of his life, Hadrian founded the Atheneum at Rome, considered by some to be the first seed that would later develop into the Sapienza. On this see Boatwright, op. cit., esp. 207-08.

⁸⁴ On the preparation of an architect see Vitruvius, op. cit., I.c.1.

⁸⁵ For the text of the dedication see Levin, op. cit., 33.

⁸⁶ Philostratus, *The Life of Apollonius of Tyana*, VIII.XX. According to Philostratus, the most complete and pure philosophical text, the tenets of Pythagoras, were kept by the Emperor Hadrian together with certain letters of Apollonius, in one of his palaces. Evidence of Hadrian's Pythagoreanism can also be found in his early biographies. For example, Spartianus quotes a poem that Hadrian wrote as he lay dying, which describes his soul flying from his body of clay (S.H.A., op. cit., Hadrian XXV). For Pythagoreans belief in the immortal soul that flew away from the body after death was important. On Hadrian's address to his 'little soul,' see Birley, op. cit., 300.

⁸⁷ Plotina is mentioned frequently by both Dio Cassius and Spartianus in their biographies of Trajan (whose wife and widow she was) and Hadrian. Plotina was without doubt very important for Hadrian and appears to have been responsible for the fact that he succeeded her husband as Emperor (see n. 13 supra). When she died, in 122, Hadrian dedicated a basilica at Nimes in her honor as well as a building at Rome. From what little we know of Hadrian's own wife, Sabina, no evidence exists to suggest she led an active public or intellectual life. On the women connected with Hadrian see Max Wegner, *Hadrian, Plotina, Maciana, Matidia, Sabina*, Berlin, 1956; and Hildegard Temporini, *Die Frauen am Hofe Trajans*, Berlin, 1978, esp. 78-142. On Plotina's philosophical interests see Graindor, op. cit., 204-07. The historical rumor that Hadrian was the paramour of Plotina was started by Dio Cassius (op. cit., LXIX.I and 10).

⁸⁸ On the history of oracles, divination, the interpretation of dreams and associated rituals in classical antiquity see Auguste Bouché-Leclercq's monumental work, *Histoire de la Divination dans l'Antiquité*, 4 vols., Paris, 1879, esp. IV.III.

⁸⁹ Dio Cassius, op. cit., passim.

⁹⁰ See esp. Bouché-Leclercq, *L'Astrologie Grecque* (Paris, 1899), Darmstadt, 1979, esp. 5; see also, generally, *Idem*, *L'Astrologie dans le Monde Romain*, Paris, 1897. Foreign astrologers and 'imposters' were frequently put to death. Regarding this see Guillaume Libri, *Histoire des Sciences Mathématiques en Italie*, I, Bologna, 1966, 54.

⁹¹ S.H.A., op. cit., Hadrian, passim. On the death of Hadrian and events accompanying the bitter end of his life, see esp. Birley, op. cit., 279-300.

⁹² See n. 86 supra.

⁹³ Aurelius Victor, op. cit., passim. Among the modern biographies of Hadrian, several merit citation here: Bernard W. Henderson, *The Life and Principate of the Emperor Hadrian*, London, 1923; Stierlin, op. cit.; Boatwright, op. cit.; and Birley, op. cit.

⁹⁴ Much has been written on the history of Greek astronomy. Among the most useful sources for this paper were: Otto Neugebauer, "The History of Ancient Astronomy," *Journal of Near Eastern Studies*,

IV, 1945, 1-38; Thomas L. Heath, *Aristarchus of Samos*, Oxford, 1913; Neugebauer, *The Exact Sciences in Antiquity*, Copenhagen, 1951; and D.R. Dicks, *Early Greek Astronomy to Aristotle*, Ithaca, 1970.

⁹⁵ The story, based on a 'miraculous' discovery, is told by Livy in *Ab urbe condita*, XL.xxxix.4-14. According to Livy it is but confirmation of the belief popular in his time that Numa was a pupil of Pythagoras. Ovid, too, reminds us that Numa received his education at Croton, the city where Pythagoras' school was located (*Metamorphoses* XV.5-10).

⁹⁶ This work, begun while Augustus was still alive and completed after his death, was regarded in the Renaissance. See Marcus Manilius, *Astronomicum ad caesarem Augustum*, publ. Ioannes Tornaesivm, Lugduni, 1566.

⁹⁷ On this see esp. Hauteceur, op. cit., 148-67.

⁹⁸ For the complete text see *Hyvinvs astronomvs (Scriptorvm Romanorvm quae extant omnia)*, ed. Franciscus Semi, Pisa, 1975.

⁹⁹ Romans first came into contact with this pseudo-science when it arrived in the Latin world ca. 250 B.C. Although not all emperors were to be interested in astrology, astrologer-advisors became popular between the time of Augustus and Domitian. Roman interest in the effects on the course of life by the twelve signs, the five planets, and the sun and moon and the calculations they inspired is documented by Vitruvius in op. cit., IX.vi.1. On the rise of astrology in the Hellenistic world, the conversion of Republican Rome to astrology and the interest in astrology by certain emperors, see esp. Frederick H. Cramer, *Astrology in Roman Law and Politics, Memoirs of the American Philosophical Society*, XXXVII (1954), rep. Chicago, 1996. The diffusion of astrology which accompanied the decline of the ancient world has been studied, more generally, in a number of important works. See esp. Paul Tannery, *Recherches sur l'Histoire de l'Astronomie Ancienne*, Paris, 1893; Bouché-Leclercq, *L'Astrologie Grecque*, op. cit., (esp. 3-14); Idem, *L'Astrologie dans le...*, op. cit.; Cumont, *Les Religions Orientales dans le Paganisme Romain*, Paris, 1909, esp. VII; Idem, *Astrology and Religion Among the Greeks and Romans*, London and New York, 1912; Idem, "Les Noms des Planètes et l'Astrolatrie chez les Grecs," *L'Antiquité Classique* IV, 1935, 5-43; Idem, *Lux Perpetua*, op. cit. (esp. useful re: the relation of astrology to Pythagoreanism); Franz Boll, *Kleine Schriften zur Sternkunde des Altertums*, Leipzig, 1950; Boll, Carl Bezold, Wilhelm Gundel, *Stern Glaube und Sterne deutung*, Stuttgart, 1966 (with an excellent bibliography on Greek and Roman astrology); Georg Luck, *Arcana Mundi*, Baltimore and London, 1985, esp. 309-58; and André Le Boeuffe, *Le Ciel des Romains*, Paris, 1989. These authors discuss Pythagorean aspects of cosmic order in the setting of astrology as a highly technical subject in antiquity.

¹⁰⁰ Respecting the history of this idea in the Near East and its dissemination and development in the antique world, see Cumont, *Les Mystères de Mithra*, 3rd ed., Brussels, 1913 (esp. 197-98); Idem, *After Life in Roman Paganism*, New Haven, 1922 (esp. 156-57); Lehmann, op. cit.; E. Baldwin Smith, *The Dome: A Study in the History of Ideas*, Princeton, 1950 (esp. 70-93); and Hans P. L'Orange, *Studies on the Iconography of Cosmic Kingship in the Ancient World*, Oslo, 1953.

¹⁰¹ On the astrologer Balbillus and his relations with Nero see Cumont, "Astrologues Romains et Byzantins," in *Mélanges d'Archéologie et d'Histoire*, XXXVII, 1918, esp. 33-38.

¹⁰² On the development and diffusion of the idea of celestial immortality see Cumont, *After Life...*, op. cit. On Nero's celestial imagery see Lehmann, op. cit., passim; and L'Orange, op. cit., 29-30. For a description of Nero's Domus Aurea, see Suetonius, Nero. XXXI and XXXVI.

¹⁰³ On this see esp. Otto Brendel, "Der Schild des Achilles," in *Die Antike*, XII, 1936, 272-88. This important article contains abundant

images of Roman emperors with the sun over their heads, with rays emanating from their heads, with the chariot of the sun god, etc.

¹⁰⁴ Cf. Lehmann (op. cit., 3-6) and Stierlin on the Villa of Hadrian as an image of the cosmos (op. cit., esp. 127-81). Cf. both to the recent work of MacDonald and Pinto (op. cit.), which is of fundamental importance to the study of this complex, esp. 71-73, 156-58, 213-14 and 235-37 on the Heliocaminus and Larger Baths. Respecting the 18th century engravings of Nicholas Ponce, which were incorrectly published and then accepted unquestioningly, see Hetty Joyce, "Nicholas Ponce's *Arabesques antiques*: A Problem in Eighteenth-Century Archaeology," *Gazette des Beaux-Arts*, CXIV, November 1989, 183-200 and, further, Idem, "Hadrian's Villa and the 'Dome of Heaven,'" *Römische Mitteilungen*, XCVII, 1990, 347-81. (I am grateful to John Pinto for this information.)

¹⁰⁵ Very likely this was an expression of gratitude by Antoninus Pius who had been adopted by Hadrian just prior to the latter's death (see S.H.A., op. cit., Hadrian XXVI). Thus the emperor Antoninus no doubt had a debt to repay. Since this monument to Hadrian was not built in his lifetime we may assume that it honored him as he would have preferred. Dio's description of this monument describes it as so large that a bulky man could walk through the eye of each horse. It was apparently seen from far below because of the extreme height of the foundation. (Dio Cassius, Fragment, in *Dio's Roman History*, ed. Earnest Cary, VIII, London and New York, 1935, 467.)

¹⁰⁶ An example of a Greek solar temple with a central open oculus was in the sanctuary of Sabazios in Thrace. As Hauteceur notes, this certainly would explain the familiarity of Dio Cassius with this type of building so as to give reason for his comment (see n. 4 supra). See Hauteceur, op. cit., 167.

¹⁰⁷ The text of this papyrus fragment, found in Egypt, was published in Greek (with German translation) by Ernst Kornemann ["Papyrus Gissenis No. 20] in *Klio: Beiträge zur alten Geschichte*, VII, no. 2, 1907, 278-88. Subsequently it was published by Cumont in *Études Syriennes*, Paris, 1917, 98 and n. 3; see also Idem, *After Life...*, op. cit., 156-57; and Idem, *Lux Perpetua*, op. cit., 292.

¹⁰⁸ On the Pythagorean arithmetical correspondence of Apollo with the monad see nn. 54 and 55 supra. See also Bouché-Leclercq, *L'Astrologie...*, op. cit., 7 and n. 1.

¹⁰⁹ Kornemann (op. cit., 282) dates the papyrus 117/18. Given Hadrian's literary interests and writing abilities, and given the fact that Spartianus reports (S.H.A., op. cit., Hadrian XIV) that the Roman people suspected Hadrian of authoring the oracles he claimed to receive, it is certainly possible that Hadrian—about whose adoption by Trajan there was much doubt, as will be discussed in the text below—and possibly in complicity with Plotina, authored this 'oracle' himself.

¹¹⁰ S.H.A., op. cit., Hadrian II. See also Cramer, op. cit., 153 and 163.

¹¹¹ Although astrologers were regularly banned from the capital in his time, nonetheless Augustus was sensitive to predictions, and astrology began from his time to exert a firm hold on rulers. See, e.g., Suetonius, *Augustus* XCI-XCVII; *Claudius* II; *Nero* VI. On the dawn of astrological forecasting among Rome's imperial families see esp. Cramer, op. cit., 44-146.

¹¹² See Cramer, op. cit., 162-64 and nn. 121a and 121b.

¹¹³ The early 2nd century horoscope is known through at least three manuscripts as cited by Cramer in op. cit., 164, n. 136. It is the only imperial horoscope authored by Antigonos of Nicaea that has survived, since it was excerpted and copied by Hephestion of Thebes in the 4th century. On this see Cramer, op. cit., 164-65; also Wilhelm Kroll, "Antigonos," in *Paulys Real-Encyclopaedie der classischen Altertumswissenschaft*, Supp. V, Stuttgart, 1931, col. 2. The horoscope was

published (with photographs of the original text in figs. 15a, b, and c) in Cramer, op. cit., 162-78; also in Neugebauer and H.B. van Hoesen, *Greek horoscopes, Memoirs of the American Philosophical Society*, XLVIII, Philadelphia, 1959, I and 90-91. Both Cramer and Neugebauer — van Hoesen offer English translations (essentially the same) of its contents as well as useful scholarly commentaries. See also the discussion of Hadrian's birth in Jean Richer, *Géographie Sacrée dans le Monde Romain*, Paris, 1985, 179-80.

¹¹⁴ See Cramer, op. cit., 164-70; and Neugebauer — van Hoesen, op. cit., 90-91, including the comparative diagram of W. Kroll showing the computation from the text. On Hadrian's horoscope as a good example of practical astrology see Luck, op. cit., 314.

¹¹⁵ Cumont discusses the orthodox answer to the eternal Pythagorean question (as posed and answered in Iamblichus, *De Vita Pythagorica...*, op. cit., 107) respecting where the immortal soul goes after death. To the question "What are the Isles of the Blessed?" the orthodox answer is "The Sun and the Moon." For discussion of this important concept see Cumont, *After Life...*, op. cit., 96-99; Idem, *Lux Perpetua*, op. cit., 146; and Burkert, op. cit., 363.

¹¹⁶ This assumption is in accord with the comments of Cramer in op. cit., 169.

¹¹⁷ S.H.A., op. cit., Hadrian XIII.

¹¹⁸ S.H.A., op. cit., Hadrian XIV.

¹¹⁹ S.H.A., op. cit., Hadrian XIX.

¹²⁰ Cf. Suetonius, who tells us that Domitian converted the house of his birth into a temple (Suetonius, *Domitian* I).

¹²¹ Dio Cassius, op. cit., LXIX.8.

¹²² S.H.A., op. cit., Hadrian VII and XIX.

¹²³ S.H.A., op. cit., Hadrian VIII.

¹²⁴ Both these incidents are reported in S.H.A., op. cit., Hadrian XXVI.

¹²⁵ Dio Cassius, op. cit., LXIX.3.

¹²⁶ S.H.A., op. cit., Hadrian XIII. Two of these (those at Cyzicus and at Ephesus) are discussed by Margaret Lyttelton, in "The Design and Planning of Temples and Sanctuaries in Asia Minor in the Roman

Imperial Period," *Roman Architecture in the Greek World*, ed. S. Macready and F.H. Thompson, London, 1987, 39 and 44-45.

¹²⁷ S.H.A., op. cit., Hadrian XIV.

¹²⁸ S.H.A., op. cit., Hadrian XV.

¹²⁹ "So desirous of a wide-spread reputation was Hadrian that he even wrote his own biography; this he gave to his educated freedmen, with instructions to publish it under their own names." S.H.A., op. cit., Hadrian XVI (trans. Magie in *The Scriptores Historiae Augustae*, ed. David Magie, I, London and New York, 1921, 49).

¹³⁰ S.H.A., op. cit., Hadrian XX.

¹³¹ Loc. cit.

¹³² Dio Cassius, op. cit., LXIX.12 and Orosius, op. cit., VII.13.

¹³³ S.H.A., op. cit., Hadrian XXIII-XXV.

¹³⁴ S.H.A., op. cit., Hadrian IV.

¹³⁵ See the discussion of this in Bouché-Leclercq, *Les Pontifes de l'Ancienne Rome* (1871), rep. New York, 1975, 365-66.

¹³⁶ S.H.A., op. cit., Hadrian VI. See also Bouché-Leclercq, *Les Pontifes...*, loc. cit.; and the editorial comment of Magie in op. cit. (as cited in n. 129 supra), 18, n. 4. Dio Cassius reports that he was told by his father that Plotina signed the letter(s) sent to the Senate (Dio Cassius, op. cit., LXIX.I).

¹³⁷ On this Dio Cassius and Spartianus are in agreement. See Dio Cassius, op. cit., LXIX.23 and S.H.A., op. cit., Hadrian XXVII. On the lack of deification in the case of Hadrian see Birley, op. cit., 294.

¹³⁸ See the extensive description of Hadrian's pains to gain popularity in Rome in S.H.A., op. cit., Hadrian XXVII.

¹³⁹ On this see Pausanias, *Description of Greece*, I.xlii.5 and X.xxxv.4.

¹⁴⁰ Plato, *Republic*, VIII.546b. For ordinary humans, Plato explains, for whom the quality of birth was less high, the fatality of number applies.

¹⁴¹ Hadrian appears with the quadriga on numerous coins. See, e.g., Gisela Foerschner, *Die Muenzen der Roemischen Kaiser in Alexandrien*, Frankfurt, 1988, esp. nos. 347, 361, 457 and 458.