

Architecture of the Early Christianity

Constantine and Christianity

- Constantine's rule from 306 to 337 marked a great turning point in the role of religion, particularly Christianity in the Empire.
- He defeated Maximian's son, the current ruler of Rome, in 312 after allegedly having a dream in which he was instructed to have his men paint a Christian emblem, (the first 2 letters of the Greek Word for Christ) on their shields.
- In 313, he issued The Edict of Milan that assured tolerance for Christianity and restoration of their lost property.
- Most significant was the founding of the Eastern capital of Rome in Byzantium and renaming it Constantinople (the city of Constantinople) in 330.

-Before Christianity was acknowledged by the Roman empire, Christian community had owned some apartment blocks, private houses, garden halls, small bathhouses and, perhaps some warehouses.

-Externally these buildings were unobtrusive, hidden in the urban fabric.

Christian community house, AD 231

House Church

- this house church in Syria was purchased by a Christian group in 200 and was altered in 231
- a courtyard house typical in Syria was adapted to a church
- the rectangular hall on the south measures 5 m by 13 m, accommodating about 60 people
- the short east end was raised to operate as the Bishop's dais
- the small room right next to it is the storage space for sacred objects and tools

- During the service those who were not yet baptized remained in the large room to the west of the meeting hall and the room to the west of the courtyard.
- They could hear the sermon, but was not allowed to watch the mystery of transubstantiation
- After a certain period of instruction passed, they were considered for initiation. They were baptized in a small rectangular room at the northwest corner of the house

Catacomb

- the Christian cemetery

- the cemetery for the early Christians were a special place because of Christianity's belief in the resurrection of the faithful in the Second coming of Jesus

- While cremation was a more popular form of treating bodies of the dead, the belief in resurrection led the early Christians to bury the bodies in their original condition

- The early church also owned burial grounds along the roads outside the city walls, where martyrs were venerated

- For the shortage of space in open-air cemeteries, the early churches developed underground tombs for the burial of the faithful

Rome, the catacomb of Domitilla,
in use as a Christian cemetery
since ca. AD 200

- This slide shows the layout of one of the most famous catacombs in Rome
- It must have started in a well-organized fashion that has a major spine and branches.
- Yet, as time went on, catacombs developed into a maze-like, and even multi-level, system
- The paths were dark and somewhat dismal (next slide)

Rome, catacomb of San Panfilo,
third or fourth cent. AD

Rome, catacomb of SS Peter and Marcellinus,
wall painting depicting *Jonah Cast into the
Sea*, 3rd century AD

-Yet, the early Christians these qualities were countered by
lively and bright paintings depicting Biblical stories

- Whether the catacombs were used for service is unclear.
- Kostof says it was probably not the case because the space was too cramped for such purpose.
- Another interesting reason was the cultural conception of Rome that considered the cemetery as impure.
- This was the reason why the Romans had their grave yards built outside the city limits.

General tendency in Early Christianity regarding architecture

-As we can see here, the early Christians did not seem to have any special intention to create specifically Christian architecture.

-In other words, they did not look at architecture as a way of firmly clarifying their identity and of spreading and propagandizing their belief.

Approval of Christianity and Architecture

- This attitude changed rapidly after Christianity was officially permitted by the Roman state in 313.
- At this point, the Christians did not choose the Greek and Roman temples as the starting point of their architecture (only later in the Renaissance period).
- Why?

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- Why?
- There was a somewhat theological reason for this.
- Christianity did not require any specific building
- because church was not a building but the community of believers.
- Jesus simply said wherever two or three people would gather under his name He would be there, too.
- The pagan temples were the places where gods or goddesses resided.
- Yet, for the early Christians, church did not mean where God resided, but simply the place where believers gathered together to worship God. (next slide, quote from Kostof)

“To the first generations of believers, the church was where the Christians were. The word *ecclesia*, “church,” signified the community of Christ that had no need for prescribed buildings to proclaim its faith and reaffirm its bonds. The people were the architecture.” (Kostof, 264)

Then, how can we define a Christian church?

-In the history of Christian architecture, we have various positions about what the church is.

Definition of Christian Church

1. congregation, community of believers, not any building

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Pre-architectural, but at the same time, the communal aspect of the church is not secondary, but its fundamental dimension (later, the emergence of mysticism and Protestant individualism)

2. then, arose the spatial need to accommodate the gathering – protection from the whim

3. church must be a temple, because it is a place where the Christians witness and perform a sacrifice (temple: bounded place)

Definition of Christian Church

4. it must be a dining hall centered on a table because the liturgy is a meal shared by the Christian community

5. As the Christian community considers itself the mystical body of Christ, so the church building in which it is gathered must give countenance to this belief. In some way, it must represent a complete human being

6. At the same time, the Christians sees himself as traveling through the world in a ship, captained by St. Peter, as Noah traveled over the flood in his ark.

-This again should be demonstrated by some association established in the church building

-This does not mean that the church should look like a man or a ship, but that its form should be of such a kind that these images can be associated in some way with the building

-Among these different interpretations, the one picked up by the early Christians was the one which saw church as the congregational place of believers.

The Basilica adopted as the Christian Church

- This explains why the early Christians were attracted to the architectural type called basilica.

- Basilica was erected by the Romans for transacting business and disposing of legal matters.

- Rectangular in form with a roofed hall, the building usually contained an interior colonnade, with an apse at one end or at each end.

- The central aisle tended to be wide and was higher than the flanking aisles, so that light could penetrate through the clerestory windows.

Imperial Fora, Rome

Basilica Ulpia, plan

Basilica Ulpia

The Imperial Mausoleum adopted as Christian church

-The other type of architecture that attracted the early Christians was imperial mausoleum.

-The imperial mausoleum was usually centralized sometimes in circular shape.

-Augustus' mausoleum (begun 28 BCE), Hadrian's mausoleum in Rome (135-139).

-This type of architecture was attractive for the Christians in particular when they built a martyrium, or the memorial grave for martyrs.

Other Circular Buildings adopted as Christian church

1. Nero's Golden House
2. Caldarium in the Bath of Caracalla (212-216),
3. "Temple of Minerva Medica" (around 300 or early 4th century).
The domed cylinder has at its bottom a ring of nine apses.
The dome is perforated by arches to reduce its weight as well as to introduce light to the central space
4. Pantheon (118-125)

Pantheon, Rome, 118-126

1. The Basilica versus
2. The Imperial Mausoleum and Other Circular Buildings

-These two types of Roman architecture that were to be adopted by the Christians were contrasting with each other: the basilica was long and linear, while the mausoleum was central.

Lateran Basilica, Rome

- Constantine, the first Christian emperor, built several important churches in Rome.
- His first church was a basilica, the Lateran basilica
- This Church was intended as an ex-voto to Christ for his victory over Maxentius.
- It is a landmark in the history of Western architecture since it is the first of many churches to have been sponsored by emperors, aristocrats and other persons of substantial means

Lateran Basilica, Rome

- Its location is worth discussing
- Curiously, the whole complex was located in the green belt near the Aurelian Walls, just inside the Aurelian Walls on land controlled by Constantine.
- This location far from the center of the city, yet not at the outside the limit of the city was to avoid any political conflict with the powerful aristocracy staying in the crowded center of Rome
- Thus the location of the first Christian cathedral was apparently determined by politics (Krautheimer, 1983).

Churches built by Constantine

- It was large enough to accommodate 2000 worshippers and a sizable clergy.
- It was constructed as a timber-roofed basilica consisting of a tall nave terminating in a semicircular apse.
- It was flanked on either side by a pair of lower aisles.
- There was a free-standing octagonal baptistery.

St. Peters

-Constantine erected a splendid basilica over the shrine of St. Peter on the Vatican Hill

Rome, Old St.Peter's, ca.320-30, with later additions to ca. 500

St. Peters

-In AD 64 the Apostle Peter was executed at the base of an obelisk in the center of the spine of the Circus of Nero built in the Vatican fields.

-He was buried on the north-west side of the Circus

-Owing to the circumstances of his death by crucifixion, St. Peter's first burial place would have been an earth tomb.

-The exact location must have been known in the early 4th century, when the emperor Constantine decided to build a basilica directly over the site of the tomb.

-Excavations in grottoes beneath the present St. Peter have confirmed the existence of a tomb, which must have been the tomb of St. Peter

-the basilica was built between 324 and 330 to provide a monumental superstructure for the memorial to the apostle and to encourage the practice of his cult

-this basilica was to be martyrium, sanctuary that enclosed the original burial place and the apostle's remains

-To accommodate the new building it was necessary to bury the necropolis and to cut into the hillside to the north

- It had nave with four aisles, divided by rows of twenty-two reused ancient columns supporting a richly decorated architrave
- the nave and each pair of aisles were separately roofed in timber
- the nave was well-lit, with windows in the facade as well as in the side walls (slide next)
- there was a continuous transept at the west end, internally divided into three by colonnades

(Top) St.Peter's

- the aisles ended in pairs of trabeated columns, but the nave opened to the transept through a triumphal arch
- the building terminated to the west in a semicircular apse and to the east with the narthex
- the facade was fronted by an atrium. The entrance was approached by a flight of steps, leading directly from the square in front of the church
- a fountain stood in the center of the atrium

- the focal point of the building was the memorial of the apostle. The tropaeum was encased in a tabernacle.
- The basilica was lavishly decorated with frescoes, mosaics and papal monuments
- It drew religious pilgrims from across Europe (later it was the site of the crowning of Charlemagne as Holy Roman Empire by Leo III)
- the structural deterioration of the basilica became a matter of urgency in the 15th century, and Nicholas V decided it would be rebuilt

S. Sabina (Rome, 422-432)

-The interior layout is simple.

-It has a nave with high ceiling and
an aisle on each side

-In the end lies an apse

S. Sabina, Rome (422-432)

-If we compare this with the Basilica Ulpia, two changes

1. downscaling of the scale

2. removal of one apse and changing of the position of the entrance from the long side to the short side

-Because of these changes, the inhuman and gigantic atmosphere of the Roman imperial basilica shifts to a more human scale with a strong directionality towards the single altar.

-This symbolizes the teaching of Christ as the single path towards salvation, Jesus Christ as the path and the human life in this world as fundamentally being on the path, rather than its being a final destination

-What is impressive in the interior is the adoption of the nave colonnade with Corinthian order.

-Yet, what is extremely interesting is the way by which the order is conjoined with its upper parts.

-In Greek architecture, the capital supports the architrave.

-Instead of following this traditional syntactic rule of Greek architecture, the capital is joined with the arch as if the Greek vocabulary and the Roman vocabulary were brought together (This kind of treatment already appeared in the peristyle of the Deocletian imperial palace)

-the nave acquires light from clerestories, while the side aisles are left relatively dark

Santa Maria Maggiore, Rome, 432-40

- Another Basilica style church with a semi-circular apse
- But, unlike St. Sabina, this one is of classical orders with architraves

Santa Costanza, Rome, ca. 350

-This building was erected as the mausoleum of Constantine's daughter Constantia (d. 354).

-Its original usage was transformed into a church later.

-At its center stood the sarcophagi of Constantia, who commissioned the project, and her sister Helena.

-The sarcophagus of Helena was removed during the 17th century (1606) and the sarcophagus for Constantia, in late eighteenth century (1791)

-the building was circular in plan with a narthex (destro.)

-the interior was subdivided with two concentric rings by a circle of twelve pairs of (twenty four double) columns with an architrave on composite capitals. The dome and its tall drum was perforated by sixteen windows.

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-a barrel vaulted ambulatory wraps around the arcades.

(-there was a colonnaded outer ambulatory (destro.)

-And the interior ambulatory is articulated by alternate rectangular and semicircular niches)

Churches in Jerusalem

-Rome versus Jerusalem

-Jerusalem: where Jesus was crucified and resurrected –
the Holy Sepulcher

-Rome: where St. Peter was martyred, also St. Paul the
Apostle

–St. Peter's built upon his tomb at the Vatican cemetery

Jerusalem, plan

Holy Sepulcher, Jerusalem

- the church built on the spot where Jesus was crucified and buried
- Constantine's mother the Sainted Helena, who is believed to have found the True wooden cross of Christ's passion, was the major patron for the complex

Holy Sepulcher in Jerusalem, 345

Holy Sepulcher, Jerusalem

- F. spot where Jesus was crucified. The rock on which the cross stood was cut into a square with a huge cross on it
- G. Holy Sepulcher surrounded by a rotunda (H) to accommodate the circumnavigating movement of the pilgrims. The rotunda had an upper gallery for the overflow of people. In the process of joining the sepulcher and the Rock of the Crucifixion together, the centrality of the sepulcher is juxtaposed with a corridor connecting to the Rock of Crucifixion. This gives an axuality to the complex which is to be respected by the basilica
- D. Basilica with apse. C. Narthex, B. Atrium

Holy Sepulcher, Jerusalem

- Between the memorial and the basilica stands a courtyard
- this church responds to two demands: to memorialize Jesus and to accommodate pilgrims who want to stay in the church for a while and participate in service.
- It combines centrality of memorial with the linear axuality of basilica.

Byzantine Architecture

-Byzantium had a special context in which Byzantines believed that their empire had arisen from the happy coincidence of the foundations of Roman empire under Augustus with the incarnation of Jesus Christ

-The 'Byzantine empire' was a name never used by its inhabitants, who thought of themselves as Romans, and certainly did not need a term to describe the eastern provinces of Roman Empire

- For modern historians, the empire had a clear end (1453, when the city fell to the Turks) but no clear beginning
- In 330, Constantine, the first Christian emperor, moved the capital to Byzantium, renaming it Constantinople
- In 395, Theodosius divided the Roman empire into two, and had their two sons rule.
- The Western empire declined rapidly.
- Western empire suffered from invasions by many Barbarians (“Barbarian” was coined by the Greeks for all foreigners whose uncouth speech sounded to them “Ba-ba-ba”: Angles, Saxons, Jutes, Franks, Huns, Goths and Vandals
- In 404, Emperor Honorius moved the capital to Ravenna (probably from Milan, before Milan, the capital was Rome)
- In 476, the emperor was dethroned.
- The Western empire fell down.

Eastern empire

- Unlike the Western empire, Eastern empire had strong political leaders.
- During the rule by Justinian (527-565), it became a strong empire.
- The 6th century has been called the age of Justinian.
- He reconquered North Africa (533-4), Italy (535-55) and Spain (554). (map next slide)
- Eastern empire was relatively stable and peaceful.
- The emperor also played the role of the guardian of Christianity (unlike Western empire based upon Rome)
- It lasted until 1453 (about 1000 yrs)

Theological Debates in the Eastern empire

-In the relatively peaceful milieu, theological debate arose.

-In 380, Arianism (the divine nature of Christ was denied)

-In 431, Council of Ephesus declared the Mariah.

-In 451, Council of Chalcedon declared Jesus as the son of God and the Son of Man.

-In this context, iconoclasm and mysticism emerged

Iconoclasm

-iconoclasm marks one of the most interesting aspects in Byzantine art and architecture

-Up until the 8th century, the holy man, relics and painted images had become the focus of belief in supernatural power, thus leading to changes in their use in worship and an ambivalence between explicitness and symbolism that characterized Early Christian art

-another essential factor in the development of Byzantine religious life was the icon.

What is icon?

-In the context of Byzantine art the word is used to refer to a holy image worthy of special veneration, the honor paid to it passing on to its prototype.

-The icon is seen as a link between the material and spiritual worlds, a window on the divine

-a special visual language was developed.

-For example, the painting of shadows is avoided as being indicative of the mundane world of space and time

Iconoclasm

-the icon became of the object of attack, as iconoclasm was instituted in the 7th century during the reigns of Leo and Constantine V Kopronymos

-the icon became of the object of attack

-The justification for iconoclasm came from the teachings of the bible

-in the Old testament, the self-definition of God in a tautological phrase of "I AM WHO I AM" as well as His command not to make "a carved image or any likeness of anything in heaven above or on earth beneath or in the waters under the earth," for fear of falling to idolatry, demanded emptiness in the space of worship.

-for fear of replacing the invisible God with idolatrous images of gentile gods and goddess.

-This iconoclastic argument was further supported by New Testament passages, such as "No one has ever seen God."

-Paul the Apostle's lamentation on the exchange of the invisible and immortal God "for images made to look like mortal man and birds and animals and reptiles," a replacement of the Creator with created things, further supported the iconoclastic perspective

Mysticism

-another topic in Byzantine's theological debate

St Gregory Nazianzen (329-390)

1. communal versus individualistic (Protestantism as a version of mysticism)
2. Theology-reason, mysticism – feeling and experience. Direct unison with God. The logic of *via-negativa*
3. Developed the metaphysics of light. God a light without any speckle of darkness

Byzantine Architecture

-The first golden period in Byzantine art came with the rule of Justinus (527-565).

-However, works of this period are not easily found in Constantinople since they were mostly destroyed later from invasions by the Islam and Turks

S. Apollinare Nuovo, Ravenna (504)

- Plan: narthex, a nave, a side aisle on each side, and a semi-circular apse
- nave is lit by clerestory windows
- elevation of the nave: orders and arches (next slide for comparison)
- The altar is framed by a single arch

Santa Sabina, Rome, 422-30

Santa Maria Maggiore, Rome, 432-40

-compared to the St. Sabina.

-St. Sabina (orders and arch) in comparison with Santa Maria Maggiore (432-40)
(order and lintel)

S.Apollinare in Classe,
Ravenna

San Vitale (526-547), Ravenna

-its construction initiated during the rule by the Ostrogoth, then completed during the Byzantine period under the emperor Justinian

-During the Byzantine period, it was financed by a wealthy local banker, Julianus

Ravenna, San Vitale, int. view
toward the sanctuary

- its plan is a centralized one.
- It has eight wedge-shaped piers.
- there is an outer ring in the shape of octagon. It is two storey high and reaches up to the base of the drum
- The piers are connected by arches and carry a drum on top of which a cupola sits
- the dome was constructed with earthenware tubes, not with brick

-Pantheon in Rome can be seen as its ancestral work.

-Coupled columns and niche.

-The niche is formed by partially excavating the wall.

Comparison with St. Costanza

-St. Costanza (the mausoleum of Constantia, daughter of Emperor Constantine): the coupled columns acquire more significance structurally.

-They create an inner ring that supports the dome

-San Vitale: eight giant piers. Between the piers stand two columns creating a niche

-One intriguing fact about the church is the existence of the longitudinal path towards the apse.

-Therefore, the church presents a combination between the vertically-oriented central dome and the linear axis from the entrance to the apse

Hagia Sophia (532-537)

- “divine wisdom” or “sacred wisdom.” One of the most splendid works in the history of Christian architecture
- built in five years, a relatively short period of time by Anthemios of Tralles (mathematician, structural engineer and architect), and Isidoros of Milet
- built for Emperor Justinian

- the 1st dome collapsed because of an earthquake
- rebuilt in 558 with a dome of less slant
- the four minarets were added when it became a mosque after the fall of Constantinople to the Turks in 1453
- now used as a museum

-The dome: 71 meter by 71 meter in plan, the diameter of the dome is 30 meter, and as high as 55 meters

-starting from a circle, then break it into two halves, separate them, and position a square between the two.

-This was as a matter of fact a cube surmounted by a dome, which was the symbol of the universe in the Byzantine mind.

-Then, create another circle inside the square, which defines the shape and size of the main dome

Two achievements of Hagia Sophia

1. Structural Achievement
2. Spatial Achievement

1. Structural Achievement

-The revolutionary aspect of the Byzantine dome is that it was set on a building of a square plan.

-First, what was devised by an unknown genius in Persia was squinch.

-Squinch is an arch or a system of concentrically wider and gradually projecting arches, placed at the corners of a square base to act as the transition to a circular dome placed on the base. (next slide)

-Example: the eleventh century church of Santa Fosca at Torcello

Problems of Squinches

-Squinches did not provide the answer, especially where, as in a cruciform church, the dome would rest not on four solid walls but on the four arches which gave entry to the arms of the cross.

-The weight of a large and heavy dome not only bears down with crushing weight on the supporting pillars, but it also tends to push those pillars outwards.

Pendentive

- The solution was what was called pendentive. -Pendentive is a spherical triangle which acts as a transition between a circular dome and a square base on which the dome is set.
- Pendentives bring down the vertical thrust of the dome to corner points where solid piers are
- This way, they also create ample void spaces.

-In the case of Hagia Sophia, the central dome sits on four pendentives

-In addition, two side half-spherical domes further receive the vertical thrusts of the main dome.

-To the axis of north and south, four giant piers receive the vertical thrust.

-But, these piers become part of the linear rhythm along with other intermediary small piers.

Spatial Achievement

- Spatially, the linear axis of the basilica plan and the centralized plan of Pantheon
- The first example that combines these two spatial themes successfully.
- Linear axial composition comes from the basilica from the entrance to the apse guided by lines of columns on both sides.
- This was also preferable for it allowed the procession of believers for the Eucharist, the climax of the service bread and wine transubstantiated into the body and blood of Christ

If we compare this with the Holy Sepulcher in Jerusalem, 345, Jerusalem (image, Kostof 260, Klassen 81)

Built by Emperor Constantinus

The linear juxtaposition of the centrally-planned space and the basilica is first perceived

The first part comes from the need to commemorate two sacred spots: the site of Crucifixion, the Rock of Calvary, and the tomb, or the holy Sepulcher, where the body of Jesus was laid for three days. The Holy Sepulcher had an ambulatory to accommodate the circumnavigating movement of pilgrims. and the second part, basilica, to accommodate pilgrims who wanted to participate in services

Not yet inseparable integration of the two spatial themes, but more of a juxtaposition

In contrast, the Hagia Sophia did not have any specific relic to commemorate. “The urge to have relics in churches of standard use never became pressing in the East. It was common to deposit such inestimable treasures in an adjoining structure or in portable reliquaries. . . . If anything, then, the thought of crowning Hagia Sophia with a dome related to the sanctity of the whole building as an earthly analogue to heaven.” (Kostof, 264)

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Istanbul, Hagia Sophia, 532-37

More of a spatial synthesis

The central presence of the main dome with its light effect. the spatial quality as characterized by the distinctive light. Here comes again a clear distinction between Roman and Byzantine treatments of space and light. Where the Romans hid arches in the structure of concrete walls and vaults, the Byzantines opened up arches into apses, dome or semi-dome. They gave impression that the architect have tunneled into space itself, rather than building up walls and roofs to mark off and enclose stretches of usable space

- 40 clerestories

- the dome appears as if it were levitating, contradicting our conventional expectation of a light thing on top of a heavy thing. (if the light is what makes the dome levitates, the same light is wrapping the perceiver. levitating – corporeal sensation as it one would levitate on water)

- pendentives appear not as heavy massive piers, but as sublimating into a point on which the huge dome sits on

- the presence of the heavy piers that support the dome is minimized as its side-section is not perceived from the main space. The small columns standing between the piers further modulates the heavy scale of the piers into.

-“[The parts] fitted together with incredible skill in the mid-air and floating off each other and resting only on the parts next to them, producing a single and most extraordinary harmony in the work.” Procopius (a historian of the time)

-In his inaugurating sermon, Paul the Silentiary said the dome appeared to be “suspended from heaven by a golden chain.”

-As for Justinian, when he saw the masterpiece, he declared, “O Solomon, I have outdone thee.”

-the material nature of light is transcended to express its spiritual nature. In a way, it is a dematerialized light and spiritualized light. Mysterious light (a different from the dialectic between light and shade)

-light spills in from the outside, yet the window is not for seeing through, but fully for the introduction of light to the inside

-block the eye, but open it to the perception of the invisible light. In contrast, in Pantheon, the light is still because of the visual perception to the sky

-influence upon Gothic architecture

- This political and religious development changed the role of religious Architecture in Western Europe
- Architecture is now made available to individual worship unlike the temples of Rome and Greece created to house statues of gods accessible mainly to the priests.
- Roman architecture concentrated primarily on longitudinal emphasis as well as vertical simultaneously.
- Byzantine architecture was based on these principles but is characterized by the interpenetration of horizontal axes and centralized vaulted and domed spaces.
- Longitudinal emphasis was reserved for congregational purposes
Vaulted and dome spaces were reserved for Baptismal, memorial and mortuary purposes.

Rome, ca.300, showing the line of the
walls of Aurelian begun in AD 270-71

Early Basilicas, Rome and the Holy Land

(Right) Jeruzalem, ground plan of the
Church of the Holy Sepulchre 1149

As a matter of fact, in the course of the construction, the architects Anathemios of Tralles and Isidore of Miletus told Justinian that they doubted that it would hold up. With the courage of faith, Justinian told them to continue. The spatial effect created by the adoption of pendentives can be illuminated through a comparison with the Pantheon. The PANTHEON MAINTAINS IGLOO-SHAPED WALLS, STRONG, SMOOTH, CLEAR-CUT MOULDINGS, EXACT TRIANGULAR ARCHITRAVES OVER NICHEs. It adopts every kind of buttressing known to Rome to ensure safety. In contrast, Hagia Sophia shows the ability to take a risk. The removal of solid masonry walls through pendentives allows the ample introduction of light through clerestories to the interior. Darkness pierced by many shafts of light, compared to Pantheon that illuminates itself with a uniform suffusion of light

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Centrally-planned and domed cases in Roman architecture: the octagonal room in the Esquiline wing of Nero's Golden House (image in Klassen 6-13), and the Pantheon, and continues from there