

Building a Legacy: Byzantium and its Roman Heritage

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Thesis/Hypothesis

To what extent was Byzantine architecture drawing on its Roman predecessors? Did it evolve smoothly from the Roman architecture becoming what Roman buildings could have been or was it a unique style that drew not on a Roman past but a distinctive Byzantine style? The Byzantine Empire was the inheritor of a glorious past. The Roman Empire at its height was a superpower beyond compare and it has left a legacy in countless areas of Western culture. The true glory of Rome was not won by its armies or written down by its philosophers but was instead built by its engineers and architects. Their armies were defeated and their writings were very nearly lost but their buildings endured. They are marvels of construction that still overawe us some two millennia later but to the people of the Medieval period they were seen as wonders. In England the Anglo-Saxons believed that the works of the Romans were not the works of men but were instead the ruins of buildings built by a race of giants. *Eald enta geweorc* is the phrase used in the poem “The Wanderer” from the 10th Century to refer to a ruined Roman town but translated that phrase means *works of cunning giants*¹. It is easy to forget however that the Roman Empire did not die as we think it did, a whole half of the empire not only survived but flourished in the eastern Mediterranean for centuries after what we think of as the fall of Rome. The Byzantine Empire like the Roman Empire was one with a proud and breathtaking architectural tradition. They built amazing works for the same reasons the Romans did for defence, for religion, and to celebrate the glory of their nation. Like the Romans some of their most impressive works were those we would class as utilitarian, roads, bridges, and aqueducts that made Byzantium, like Rome, the envy of the world.

Sources/Limitations of Study

Our resources deal with the nature of Byzantine architecture in the specific areas of infrastructure, defense, and religious buildings. The Byzantines themselves wrote rarely about their construction and instead much of the sources on the subject are secondary sources. The real sources of their architecture are the massive edifices that remain and can be studied by modern architects and so we relied heavily on secondary sources.

Secondary Sources

B., Mitchell, and Fred Robinson. *A Guide to Old English*. Seventh Ed. Oxford UK: Blackwell Publishing, 2007. Print.

¹ Mitchell, B. and Fred Robinson. “A Guide to Old English.” Blackwell Publishing. Oxford: 2007. 285.

Jodi Magness, *spolia, The Church and Fortress of Justinian, Early Christian and Byzantine Architecture*

Bassett, Sarah Guberti. "The Antiquities in the Hippodrome of Constantinople," *Dumbarton Oaks Paper* 41, (1991), pp. 88-89. <http://www.jstor.org/stable/1291694>.

W., Lawrence. "A Skeletal History of Byzantine Fortification," . " *Annual of the British School at Athens* . 78. (1983): Print.

Coates-Stephens, Robert. "The Walls and Aqueducts of Rome in the Early Middle Ages, A.D. 500-1000." *Journal of Roman Studies* . 88. (1998): Print.

Parker, Freda. "The Pantheon - Rome - 126 AD." *Monolithic*. 12 May 2009. Monolithic, Web. 1 Mar 2010. <<http://www.monolithic.com/stories/the-pantheon-rome-126-ad>>.

"Deciphering the "Eighth Wonder of the World"." *Turizm net*. 2005. Turizm net, Web. 2 Mar 2010. <<http://www.turizm.net/turkey/history/hagiasophia.html>>.

"The free dictionary by Farlex." *encyclopedia farlex*. 2009. Helicon Publishing, Web. 2 Mar 2010. <<http://encyclopedia.farlex.com/church+building>>.

Argument/Discussion/Evidence

The Eastern Empire, Byzantium, like Rome was an empire maintained through military strength. Surrounded by the enemies which had destroyed its Western counterpart defence was paramount to the Byzantines and fortifications were an architectural work that was spared no expense. Stout walls were all that stood between Byzantium and the collapse of their empire on a number of occasions.

When examining fortifications from the Roman Empire and the Byzantine Empire, several comparisons and differences can be observed. For the purpose of this research, we will examine the design, the materials used, the manner of construction, and the purpose of the construction of those fortifications.

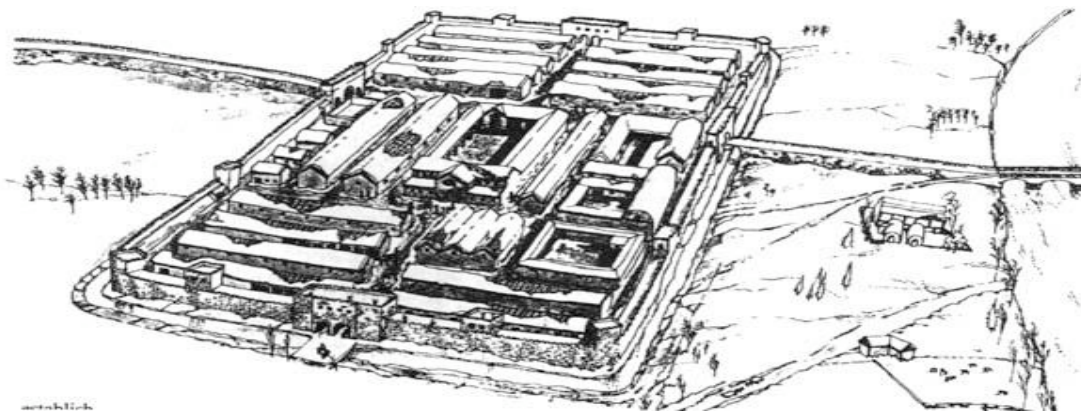
A system of forts was developed by the Romans in an effort to guard their frontier. Some of these Roman forts were big enough to accommodate an entire legion in the neighbourhood of 6,000 men. The fortification were arranged and built in a way that would allow the soldiers to the walls that surrounded the fortifications. A similar formation could be observed when Roman troops were on the move and camped for the night. Settlements of civilians often developed around the forts in which soldiers' girlfriends lived; even though soldiers were not allowed to marry.

Usually a large ditch surrounded the outer edge of a fort. Dirt from that ditch was then used to build a rampart, on top of which wooden walls would be built. Although, if the Romans thought the fort would be permanent, the wood would be replaced by a stone wall. The towers of the forts' gates were guarded on both sides. To make the walls harder to approach by the infantry, the Roman dug deep holes in which they placed sharpened wood and also made shallow ditches.

Inside the forts, specialized buildings were erected. One of those special rooms was the barracks which usually consisted of eleven rooms; one of which was reserved for

the centurion (army officer). The barracks near the main gate was usually the one with the most elite or veteran soldiers. The middle of the fort consisted of two large buildings: the principia and the proetorium. The proetorium housed a unit's commander and his family (only Generals and high commanders were allowed to marry in the Roman army). The administrative office (in which the soldiers' pay was held) was inside the principia. Other buildings in the fort were for blacksmiths, butcher, carpenters, storage, and a stable for horses.

Roman fortifications (walls or barriers) were usually built in high risk areas. For example, Emperor Hadrian built a 75 mile wall to keep out the people from the northern part of England that took eight years to build. In central Europe, the limes (a series of ditches, forts and towers) were constructed to protect the northern empire. These barriers were built along the Rhine and Danube rivers.



Fortifications in the Byzantine Empire were somewhat different than they used to be in the Roman Empire. The Byzantines kept the square design inherited from the Romans. They varied on their age, where they were located, what type of settlement they were protecting, the environmental conditions, where the funding was coming from and what materials were used when building the fortifications. The Byzantine military works did undergo some changes, but was largely adapted from the Romans. For example, the Roman's military dominance over their opponents was partly due because of regular layouts and low-lying occupancy of Romans towns. However, several settlements were first fortified and also moved up to hilltops which provided a better defensible location. Furthermore, because the enemy were getting more sophisticated and aggressive, towers were added to certain walls.

They were changes in the materials used when building fortifications. Historically, Roman walls were made from "ashlar masonry or bricks facing a core of lime mortar and stone rubble²." Stability was provided by bands of bricks that went through the core of the walls. Starting from the sixth century A.D., the main component in the facing of the walls became mortared rubble. Then, easily accessible material (same could be said about Roman fortifications) such as reused marble architectural or sculptural fragments and old bricks faced the walls. A coat of lime plaster covered the walls' surface after small stones were used to fill the small gaps in the walls.

A series of frontier posts, the renovation of fortifications of old settlements was an initiative of Justinian I and his successors in order to protect the Byzantine empires'

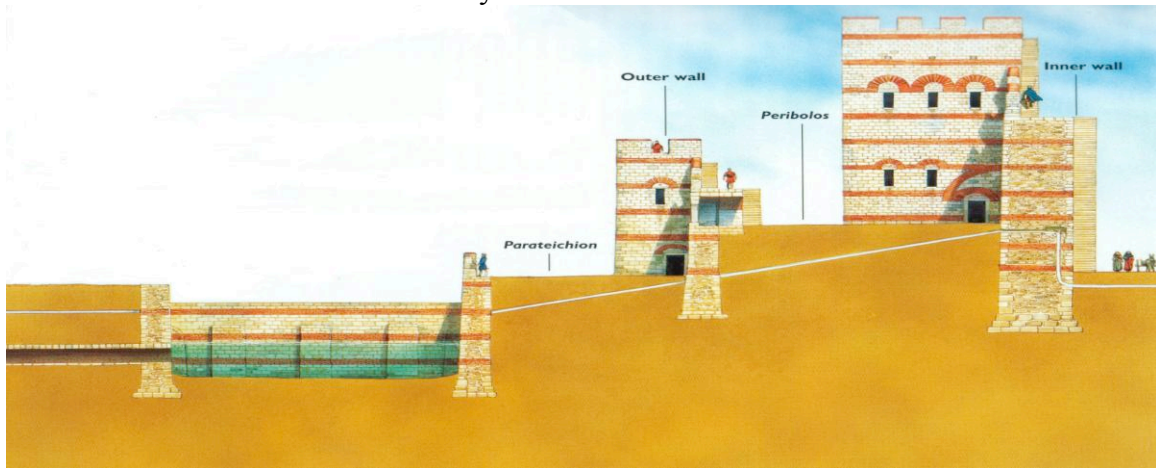
² Jodi Magness, *spolia*, *The Church and Fortress of Justinian, Early Christian and Byzantine Architecture*

borders. While often serving as monasteries, frontier posts were usually a rectangular area of about 61 by 79 m. The fortifications walls were about 8 m tall and ranged from 3 to 10 m thick. Its main gate was usually located in the centre of the walls north side.

One of the best kept examples of Byzantine fortification is the land walls of Constantinople.

“They were constructed during the reign of Theodosius II in 412/413 A.D., and their 41/2-mile (2.8 km) course effectively isolates the peninsula on which the city is located³.”

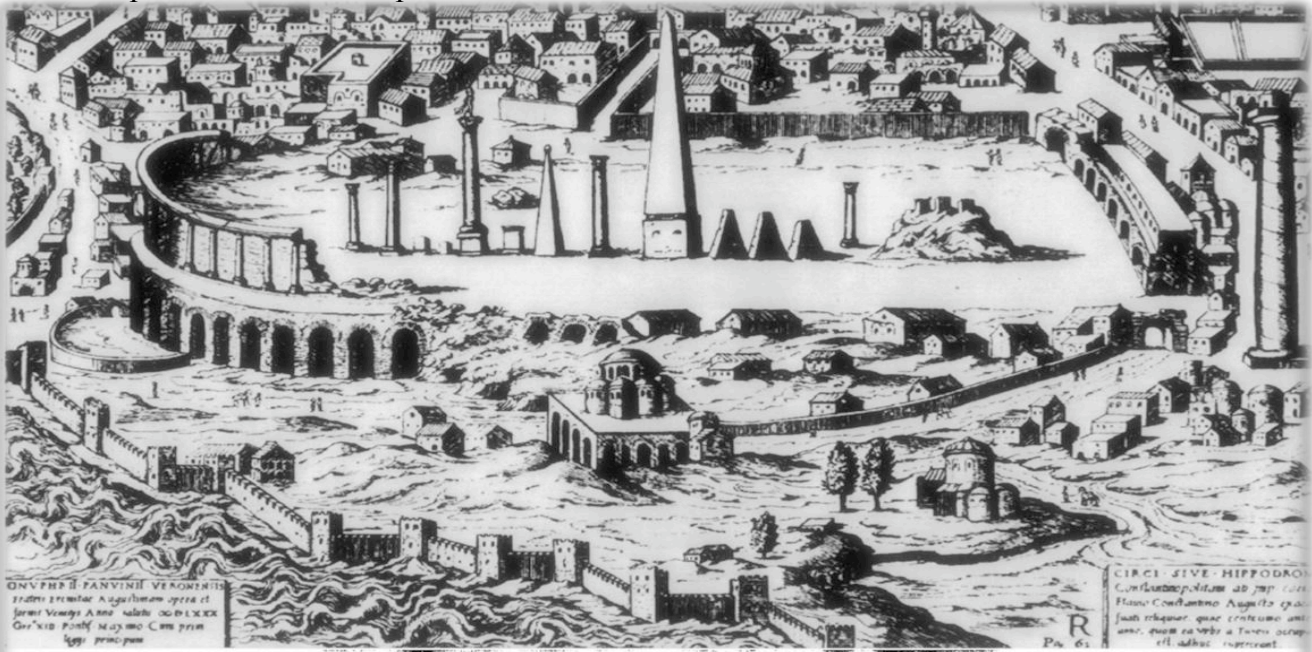
The walls sustained no significant changes, during the Byzantine period, other than adaptation to warfare techniques. The walls consisted of 96 towers, six main gates with inner walls 9 m high and about 5 m thick. The windowless lower-story of the towers was used for garrisoning soldiers or for storage. The tower's upper stories had windows from which soldiers could fire at the enemy.



Byzantium drew on its Roman heritage in another area, infrastructure and public works. The Romans were masters of water, their cities had water which flowed in man made aqueducts rather than relying on rivers alone. This was true with Byzantium as well, while much of Europe floundered in filth in the ‘Dark Ages’ in Constantinople the citizens could bathe regularly. Rome had been a centre of entertainment and today one of the most impressive sights of that city is the Coliseum. Constantinople too had a great work of public entertainment, the Hippodrome a massive chariot racing arena. These types of buildings ensured that the people of Byzantium had a lifestyle without parallel in their age.

³ Jodi Magness, *spolia, The Church and Fortress of Justinian, Early Christian and Byzantine Architecture*

The architecture of Byzantium was definitely something to be desired as the major city of Constantinople which was named after the popular emperor Constantine. The architectural aspects of Byzantine have helped to create some of the modern day aspect that are now used today. These would include such aspects as; road systems for transportation, a system to transport water throughout the city, and fortifications that aided the city during attack. These architectural aspects that are seen in Byzantium are also seen similarly in Rome at the same time. When you look at successful cities in the ancient world Byzantium is one that is commonly overlooked but could be easily compared to Rome. One piece of architecture that can be seen in both of these cities is the



1 Constantinople, the Hippodrome, from Onofrio Panvinio, *De ludis circensibus* (Venice, 1600)

Circus Maximus in Rome and then the Hippodrome in Byzantium. Although in Rome the Circus Maximus is of a larger scale than the Hippodrome they both implore many of the same uses. These two buildings both served as buildings for entertainment and with this they also had many architectural advances within this time period. As it can be seen from this picture of the Hippodrome in Constantinople it has many similar features to that of the Circus Maximus in Rome and it was used in much the similar fashion. This Hippodrome was first created by the emperor Constantine and later finished by some of the preceding emperors including Constantius, Theodosius I, Arcadius, and Theodosius II⁴. Some the architecture that can be seen in the Hippodrome is the use of the arch in the wall structure and the use of tunnels throughout the structure. The Hippodrome was actually built based on another structure from this era called the Circus Maximus⁵. Within both of these buildings there were many different statues and buildings for different purposes. These statues were mainly said to be idols for the gods and places in which people worshiped and were mainly of animals and other gods such as Zeus⁶.

⁴ Bassett, Sarah Guberti. "The Antiquities in the Hippodrome of Constantinople," *Dumbarton Oaks Paper* 41, (1991), pp. 88-89. <http://www.jstor.org/stable/1291694>.

⁵ Ibid, p.88

⁶ Ibid, p.87

The Hippodrome and Circus Maximus were not the only pieces of infrastructure in Rome and Byzantium they both had many styles of fortification. In Byzantine they had a full wall of fortification that surrounded the whole city with towers in many areas to help protect the city. In only a few areas the walls opened to allow their armies and other traffic to flow through but these were heavily fortified⁷. As the Byzantines were a part of the Roman Empire they used many of the same structures and technologies in their cities. As it has been studied throughout the years the Romans had more than one use for mostly everything. In the case of their fortifications and city walls they were also used as aqueducts to be able to get fresh water throughout the city for many different purposes. It can be seen in many different pictures how the Roman architecture had the used their fortifications. Through these pictures it is able to be seen that the arch shape within the walls and the overall design allowed for many of these technological advances such as the aqueduct⁸. Byzantium was also a city which had the same sort of technology as they too were a strong part in the Roman Empire even after it had fallen.

In conclusion the city of Byzantium was a city very similar to Rome and it used many of the same technological advances. The use of road systems and aqueducts was well beyond its time and was one of the large factors that allowed the cities to be dominant for so long. The saying that all roads lead to Rome is something that will be further looked at but also the fact that maybe many roads lead to Byzantium as well.

Constantinople unlike Rome was a city that grew with Christianity as its dominant spiritual force. Where Rome had temples dedicated to the ancient Gods Constantinople's skyline was dominated by grand churches and basilicas dedicated to this new religion.

The specific type of architecture seen in Constantinople had developed greatly over the decades between Roman and Byzantine rule, but is often seen as having a multitude of similarities. It is the similarities between the Roman church architecture and Byzantine church architecture that we must look at examples from both time periods, in order to gain a true understanding of how the church architecture evolved and why it is still important in today's modern world.

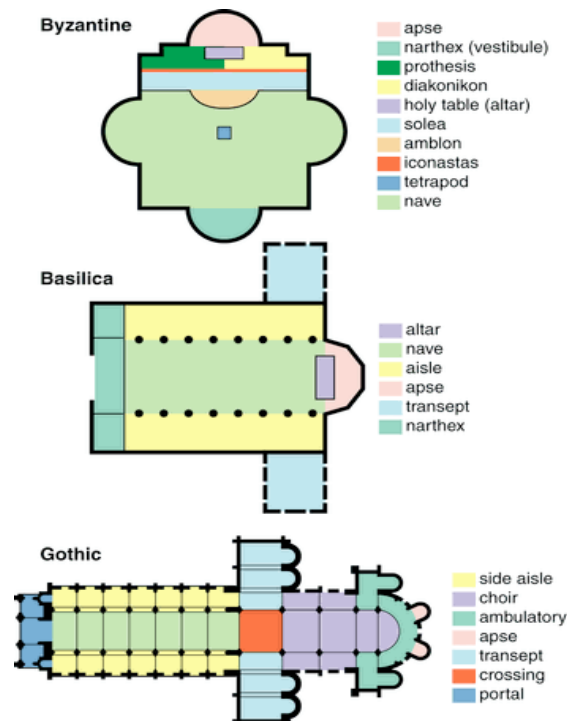
As a result of the Holy Scriptures not saying how a church was to be laid out or built, there have been multiple types of layouts used during the Roman and Byzantium time periods. Even though this meant that there was a great deal of freedom when building a church, there were two main layouts that were used. The two most commonly used layouts were the basilica layout and the centralized layout.

The basilica layout comes from the Roman period, as "their general form resembles that of the secular basilicas used in Rome...as covered places of assembly for

⁷ Lawrence, A. W. "A Skeletal History of Byzantine Fortification," *The Annual of the British School at Athens* 78, (1983), p.175.

⁸ Coates-Stephens, Robert. "The Walls and Aqueducts of Rome in the Early Middle Ages, A.D. 500-1000" *The Journal of Roman Studies* 88, (1998), pp.163-166.

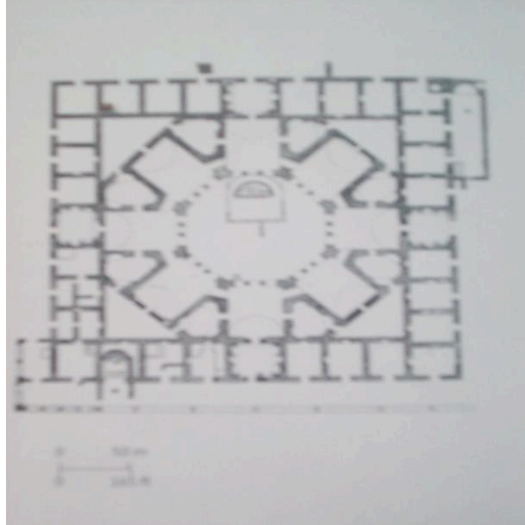
the transaction of legal and commercial business.”⁹ The traditional basilica church which dates back to the fourth century was built and inspired by Roman civic architecture. The traditional layout has an aisle running down the centre of the church, separated from the two side aisles by a range of columns or arches. The roof of the centre aisle is higher than the roof of the side aisles so the light will come through the round-headed windows in the wall above which helps light the centre of the church. There is an altar at the east end of the church which is usually curved and an apse at the east end of the church as well. The large entrance hall is located at the west end which is often separated from the body of the church by a vestibule or narthex. As a result of the three aisles and the way the seating was set up, basilicas were often seen as being easily divided into three pieces. As a result, basilicas were seen as being built three spans wide with no limit to its length, which is why many basilicas are quite large. Basilicas are traditionally built facing east-west. Below you will find a map of the traditional basilica layout in the middle of the image. You will be able to see how the traditional layout was adapted during the Gothic period and Byzantine period. There are quite a few similarities but some striking differences as well.



The second most commonly used church layout was the centralized layout. This layout is more straightforward than the basilica layout as it is based on a round or polygonal form. The centralized layout is based on the martyr ion or grave of a saint. Like previously stated, the church was built round in form and symmetrical on all sides

⁹ "The free dictionary by Farlex." *encyclopedia farlex*. 2009. Helicon Publishing, Web. 2 Mar 2010. <<http://encyclopedia.farlex.com/church+building>>.

without a well defined orientation. The main focus point was the centre of the building, with lots of room for walking inside. Just like the basilica layout, the round headed windows helped light the centre of the church. Even though these two plans were the most common it is important to point out that many churches have been designed to utilize both the basilica and centralized plan. Below is a centralized layout from the fifth century AD that was based off the tomb of a martyr.



In order to gain a better understanding of how and why church architecture from the Roman and Byzantine time periods are significant, we must look at an example from each. The most memorable and magnificent of all the Byzantine churches is the Hagia Sophia and is the most famous surviving structure from the Byzantine world. The church was designed by Anthemios of Tralles and Izidorus of Miletus. Hagia Sophia was originally built in 360 under the rule of Constantine's son Constantius II, but was burned in a riot. We will look at the construction of the second Hagia Sophia which was started in 532 by the order of the Emperor Justinian I, as this is the church that stands today.

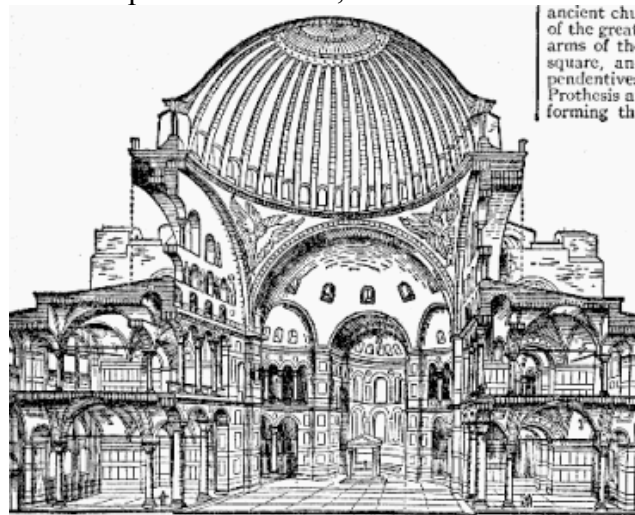
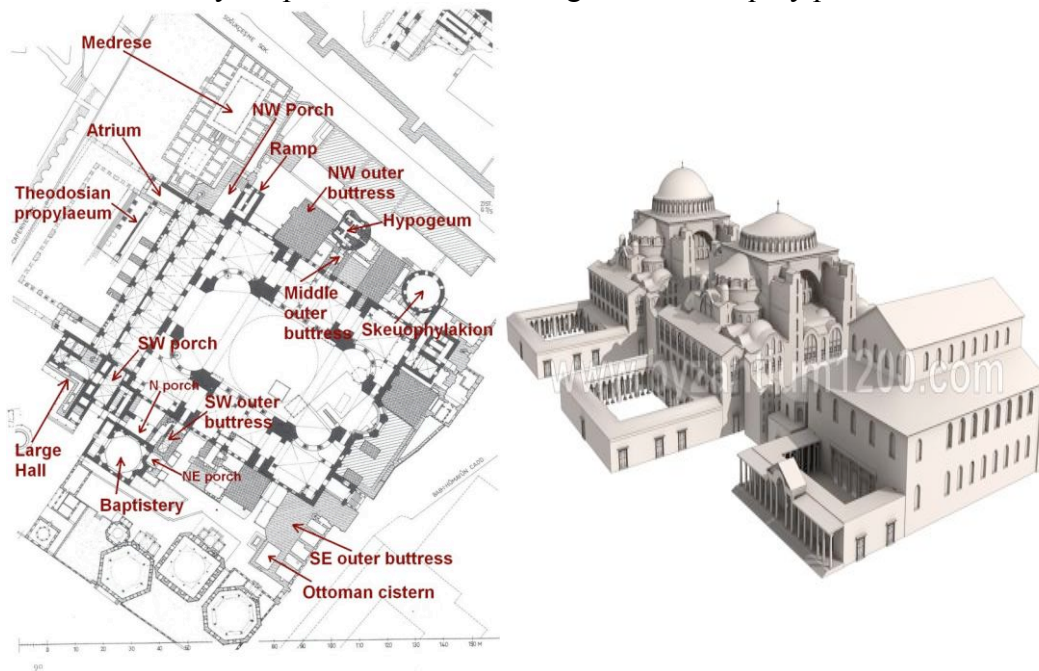


FIG. 29.—Cross section of the interior of St Sophia.

Justinian got the architects to build over the ruins of the earlier structure and the new materials were brought from Ephesus, Athens, Rome, and Delphi. The church was

completed five years later in 537 and was opened to the public. Since Byzantium was strongly under the influence of Rome at the time of the construction of the Hagia Sophia, it is a mixture of the magnificence of Roman architecture with the standard church architecture of the Byzantines. Hagia Sophia has the traditional rectangular shape. The vast square nave, which is the central part of the church, is 31 meters and is covered with a central dome that is carried on four pendentives. The arcade, which is a series of arches that have columns supporting them, around the dome are continuous with 40 arched windows that help bring the light inside. Not including the two narthexes and the large atrium, the basilica measures 70 x 75 metres. The atrium alone measures 48 x 32 metres and the total length of the construction measures 135 metres. The narthex that is outside by the eastern part of the atrium is enclosed, and the inner narthex can be entered by five doors. There are an additional nine doors to the nave from this inner narthex. There are numerous upper galleries that can be accessed by ramps which are considered a traditional feature of a Constantinopolitan church plan. The most significant aspect of this particular church that makes it unlike any other basilica plan is the large dome that was commissioned by Emperor Justinian I during the late antiquity period.



For hundreds of years, architects have tried to understand how the scientists and artists working in the 6th century were able to construct a freely suspended dome measuring almost 56 meters high and 31 meters wide, supported by four pillars. However, when they look at the equipment that was available at the time of its construction, many people regard this building as one of the boldest acts of construction ever to have been achieved by the human hand. The dome that appears on churches is often referred to ‘the dome of heaven,’ because when you look up to witness the architectural marvel, you are gazing into the sky where God and heaven are commonly believed to exist. When it comes to the dome of Hagia Sophia, it is also referred to as the ‘dome of heaven’ but it is considered this because the entire design of Hagia Sophia was based on an analemma, which is a scale on sundial. As a result of this design, it was “possible to interconnect the earth and the canopy of heaven on accordance with the view

of the world at the time: the sphere representing the sky, god and the church, and the cube representing the earth with its four directions.”¹⁰ Considering that the large dome was the most significant architectural feature of Hagia Sophia, we will take a close look at the Pantheon as it was famous for its dome as well and is considered one of the most magnificent Roman buildings.



The Pantheon is one of the most famous buildings of ancient Rome for a vast number of reasons. One reason that it is so famous is because it stands as the most complete Roman structure on earth, having survived over twenty centuries of plunder, pillage and invasion. Another reason that this Roman building is so famous is because of its architecture. We will take a close look at the Pantheon that Hadrian rebuilt around 125 AD after a fire destroyed the original Pantheon that Marcus Agrippa had built. Even Though the Romans had been building with concrete since 200 BC, the Pantheon was difficult and was built in gradual stages.

Hadrian had begun designing the Pantheon in 120 AD, a building that would resemble some features of Greek temples but far more complex than anything Rome had ever seen. Hadrian's plans called for a structure with three main parts: a pronaos or entrance portico, a circular domed rotunda or vault, and a connection between the two. The Pantheon was made perfectly harmonious as the distance from the floor to the top of the dome was equal to its diameter of 43.30 meters. Shrines that are recessed into the wall combined with the sunken panels are known to have cleverly reduced the weight of the dome. The dome gets thinner as it approaches the oculus, which is the eye in the very top of the dome with a circular opening, which is used as the only light source for the interior. The thickness of the dome at that point is only 1.2 meters. Overall, the oculus is 8.2 meters in diameter. Rain and snow occasionally falls through the hole, but the floor is slanted so any water that does get in will drain. The large columns that support the entrance each weigh 60 tons. Each column is 11.8 meters tall, 1.5 meters in diameter and made from stone that was quarried in Egypt. The giant dome that dominates the interior is

¹⁰ "Deciphering the "Eighth Wonder of the World"." *Turizm net*. 2005. Turizm net, Web. 2 Mar 2010. <<http://www.turizm.net/turkey/history/hagiasophia.html>>.

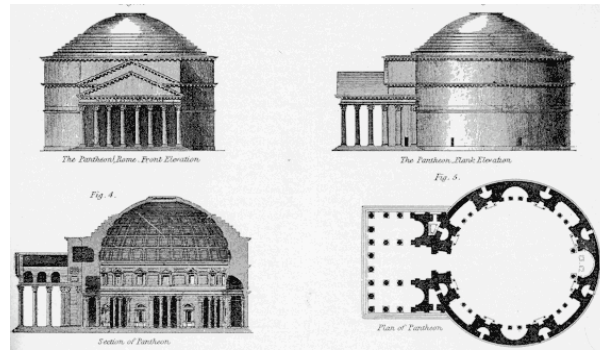
43.30 meters in diameter. The Pantheon is still the largest masonry dome in the world, and the dome is a triumph of Roman engineering.



While the dome on the Pantheon was famous for an architectural reason, Hadrian had his own reason for building it as he said, “My intentions had been that this sanctuary of All Gods should reproduce the likeness of the terrestrial globe and of the stellar sphere...The cupola...revealed the sky through a great hole at the center, showing alternately dark and blue. This temple, both open and mysteriously enclosed, was conceived as a solar quadrant. The hours would make their round on that caissoned ceiling so carefully polished by Greek artisans; the disk of daylight would rest suspended there like a shield of gold; rain would form its clear pool on the pavement below, prayers would rise like smoke toward that void where we place the gods.”¹¹

One popular question that is often asked today is why, after nearly 2000 years, is this structure, built on marshy land, with a dome whose span was not surpassed for hundreds of years, still standing? The only answer that is commonly accepted is because the architects built the Pantheon with a very strong concrete with pozzolona cement, and the gradation process that was used so that the structure is heavier at the bottom and much lighter at the top. Whatever the reasons are, the Pantheon is the only structure of its age, size and span that has successfully survived the curse of time and gravity and has come down to us, intact, and in all its magnificence and beauty. Even though the Pantheon is known as a ‘temple to all the gods’ the architectural layout resembles that of the centralized layout as the dome is the main focus and is located in the centre. It also has the narthex, apse and nave features of a basilica.

¹¹ Parker, Freda. "The Pantheon - Rome - 126 AD." *Monolithic*. 12 May 2009. Monolithic, Web. 1 Mar 2010. <<http://www.monolithic.com/stories/the-pantheon-rome-126-ad>>.



Relation/Significance for Contemporary Society or Education

Architecture on the scale of the Byzantines and Romans teaches us that no matter how large and powerful a nation may be, no matter how far science and learning advances there is always the danger of such things being undone. It is in the enduring monuments of civilization that can long outlive a man that a people can be remembered. The language of the Egyptians was nearly lost but even without the Rosetta Stone we could never forget them so long as the Pyramids remained as their legacy. It would do us well to remember that our buildings too will one day be studied and tell the story of the age in which they were built and how we lived.

Conclusions

Byzantine architecture is unique amongst the architectural works of the Middle Ages. It draws on a past lost to the rest of the world and adds to and improves upon what was already one of the most impressive architectural traditions in the history of mankind. The Byzantines like their Roman predecessors built their empire to last for millennia, wondrous buildings of a scale not seen anywhere in the world for centuries after them. Buildings for defense, impressive in scale that make the world tremble at the might of these two empires. Buildings for the people that gave them a lifestyle not surpassed until the modern age that made them the envy of the world. Finally there are the buildings made to glorify God, which the Byzantines like the Romans and every other nation in the middle ages saw as paramount to their survival. When combined we see a pattern, Byzantine buildings were initially based quite closely on their Roman counter-parts but as time rolled by their architecture grew and expanded to become a style found nowhere else. The Byzantines were therefore not only inheritors of a Roman legacy but took that legacy and made it their own.