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The Pantheon in Rome

A short report on the architectural marvel



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Assignment for skills for professional practice

Introduction

The Pantheon in Rome is one of the most iconic and well-kept structures from ancient Rome. Originally built as a temple for the Roman gods, it has lasted centuries and continues to captivate visitors with its architectural ingenuity and historical significance.

The purpose of this report is to examine the architectural and historical significance of the Pantheon in Rome. By analysing its design, construction techniques, and enduring influence, the report aims to provide insights into how this ancient structure has impacted architectural methods and continues to inspire modern design and engineering.

Background

The original pantheon located in Piazza della Rotonda in Rome and was built around 27 BCE by Marcus Agrippa, a close friend of emperor Augustus. However it burned down twice and was later rebuilt in its current form around 118-125 CE by Emperor Hadrian. Despite its pagan history the building was used as a Christian church in the 7th century, which played a key role in its preservation over the years.

The Pantheon as it stands today was commissioned by Emperor Hadrian around 126 CE, although it is often credited to the original architect Apollodorus of Damascus (under Emperor Trajan). Hadrian oversaw its construction, including its design, which revolutionised Roman architecture with the large concrete dome and oculus. Hadrian himself was deeply involved in Roman architectural projects.

Key Design features

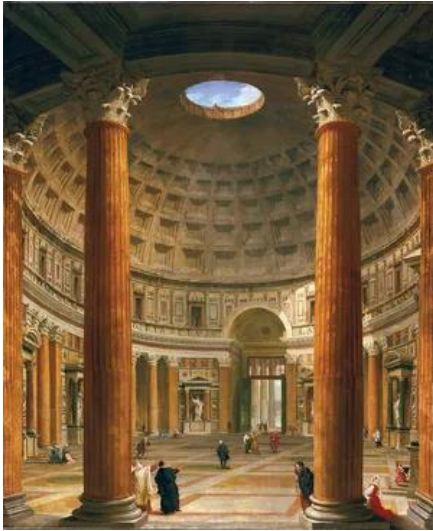
The Portico: The entrance of the Pantheon is the Grand Portico, which consists of 8 large Corinthian columns made from Egyptian granite. The columns support a triangular pediment with intricate sculpted details.

The Dome: The dome is one of the largest ever built, measuring 43 metres in diameter and 22 metres high above the base. It was constructed using bricks and a type of stone called tufa, which is formed from volcanic dust.

The Oculus: The oculus, or 'Eye', is an 8-metre-wide circular opening at the centre of the dome that serves as the only source of natural light. This opening not only brings light into the building but also creates a symbolic connection between the temple and the heavens above.

Interior Design: The Pantheon's interior design features ornate marble walls, geometric floor patterns, and recessed coffers in the dome, which help reduce the weight of the structure while adding to its aesthetic brilliance.

Images of the design



The interior and The Oculus



The Marble flooring

Construction Process

The first Pantheon was built as a temple dedicated to all the gods of Ancient Rome, Commissioned by: Marcus Agrippa. It was completed around 25BCE. The original Pantheon was destroyed by fire, along with many other buildings in Rome, during a massive fire in 80 CE.

The Pantheon was rebuilt from the ground up. Commissioned by: Emperor Hadrian, Hadrian's version transformed the original design, introducing a massive circular domed structure with a central oculus and a grand portico supported by 16 columns. The rebuilding process took approximately eight years, with the new building completed around 126 CE.

The extensive use of *opus caementicium* (Roman concrete) allowed the builders to create complex, durable forms like the dome. A deep, stable foundation was built using concrete and stone aggregates to support the weight of the structure.

The dome was constructed using layers of lighter concrete and a wooden formwork system, with the oculus reducing structural pressure.

The portico was constructed with Egyptian granite columns and a massive stone roof supported by those columns.

Surveying, geometry, and mathematical planning were crucial to ensure the Pantheon's symmetry and alignment.

Marble floors, niches, and coffered ceilings added beauty and symbolic meaning to the structure, reflecting its religious significance.

The Pantheon's massive dome was an unprecedented architectural challenge. The creation of such a large, non-reinforced concrete dome was a feat never attempted and required the Romans to develop new techniques and materials. To address this challenge, the Romans used concrete (opus caementicium) in a progressive manner, with heavier materials like basalt used at the bottom of the dome and lighter materials such as pumice used at the top. The weight distribution was crucial to maintaining the structural integrity of the dome.

The construction of the Pantheon required vast quantities of building materials, some of which were sourced from distant parts of the Roman Empire. For instance, the massive columns of the portico were made of Egyptian granite, and the decorative marbles came from various regions of the empire, including Greece, Africa, and Asia Minor. Transporting these materials to Rome, especially the large blocks of granite, would have posed a major logistical challenge. The Romans used an extensive network of roads, river transport, and possibly even ships to bring the materials to the construction site. Specialized cranes and manpower were required to transport and position the large columns.

Conclusion

The Pantheon in Rome stands as both an architectural masterpiece and a symbol of Roman innovation and its lasting connection to the divine. Its groundbreaking use of concrete, the engineering feats required to construct it, and its profound symbolic meaning establish it as one of the most significant structures of the ancient world. Whether regarded as a temple dedicated to all gods or later as a Christian church, the Pantheon serves as a lasting testament to the legacy of Roman architecture, influencing generations of architects and engineers. The building's remarkable preservation, enduring through centuries of change in both time and the city of Rome, underscores the timelessness of its design and the vital importance of safeguarding cultural heritage.

Reference list

MLA Etlin, Richard. "The Pantheon in the modern age." *Marder and Wilson Jones* (2015): 380-422

<https://www.britannica.com/topic/Pantheon-building-Rome-Italy>