

# THE TEMPLE OF OLYMPIAN ZEUS

**Tatiana SYROVATSCAIA**

*Foreign Languages, ARH-223, Faculty of Urbanism and Architecture,  
Technical University of Moldova, Chisinau, Republic of Moldova*

Corresponding author: [tatiana.sirovatscaia@arh.utm.md](mailto:tatiana.sirovatscaia@arh.utm.md)

**Coordinator:** Svetlana ARMAȘ, univ. assist., Department of Foreign Languages, TUM

**Summary.** *The Temple of Olympian Zeus, located in Athens, Greece, is a remarkable example of ancient Greek engineering and architecture. Despite suffering significant damage over the centuries, including destruction by earthquakes and pillaging by conquerors, the temple's ruins remain an important archaeological site and tourist attraction. This article discusses the reconstruction efforts and scientific research that has been conducted on the temple, including geotechnical investigations, architectural analysis, material analysis, historical research, and laser scanning. By studying the temple's construction, design, and historical significance, researchers can gain a better understanding of ancient Greek technology and culture, and use this knowledge to inform preservation efforts for the remaining columns and architectural features.*

**Keywords:** *Athens, Ancient Greek architecture, Reconstruction, Geotechnical investigations, Architectural analysis, Material analysis*

## **Introduction**

The Temple of Olympian Zeus, located in Athens, Greece, is one of the most impressive and iconic structures of ancient Greek architecture. Built over a period of more than 600 years, the temple was intended to be the largest in Greece, and was dedicated to Zeus, the king of the gods in Greek mythology. Despite suffering significant damage over the centuries, the temple's ruins continue to be an important site for archaeological research and tourism, attracting visitors from all over the world. In recent years, scientists and archaeologists have conducted extensive research on the temple, using advanced techniques and technologies to gain a better understanding of its construction, design, and historical significance. This article provides an overview of the history of the construction of the Temple of Olympian Zeus, and examines the various scientific studies and reconstruction efforts that have been conducted on the temple over the years.

## **History of construction**

The construction of the Temple of Olympian Zeus began in the 6th century BC, but it was not completed until the 2nd century AD, over 600 years later. The temple was built to honor Zeus, the king of the gods in ancient Greek religion, and was intended to be the largest temple in Greece. "The Temple of Zeus at Olympia is one of the earliest examples of fully developed temple design in Greece, and is considered a model of Doric temple architecture" - N. Yalouri.<sup>3</sup> The original architect of the temple is believed to be Libon of Elis, a renowned Greek architect of the 5th century BC. However, the temple underwent several design changes and setbacks throughout its construction, including financial difficulties and political turmoil, which delayed its completion. The temple was finally completed in the 2nd century AD during the reign of the Roman Emperor Hadrian. Hadrian was a great admirer of Greek culture and sponsored the construction of many new buildings and monuments in Athens during his reign, including the Temple of Olympian Zeus. The completed temple consisted of 104 Corinthian columns, each standing over 17 meters tall and weighing approximately 60 tons. The columns were made of Pentelic marble, a high-quality marble quarried in the mountains near Athens. The temple was also adorned with intricate sculptures and decorations, many of which have been lost over time. Despite its grandeur, the Temple of Olympian Zeus suffered significant damage over the centuries, including destruction by earthquakes and pillaging by conquerors. Today, only 15 of the original 104 columns remain standing, but the temple's ruins remain an important archaeological site and tourist attraction.

## **Reconstruction**

The Temple of Olympian Zeus underwent several reconstructions throughout its history. After the initial construction in the 6th century BCE, the temple was destroyed during the Greco-Persian Wars in the 5th century BCE. It was then rebuilt by the Athenians, but construction was halted due to lack of funding. In the 2nd century BCE, the Macedonian king Antiochus IV Epiphanes offered to fund the completion of the temple. The Athenians accepted the offer, and construction resumed. However, the temple was once again destroyed during the Roman invasion of Greece in the 2nd century CE.

The Roman Emperor Hadrian later undertook the reconstruction of the temple in the 2nd century CE, which was completed in approximately 131 CE. Hadrian's design included several modifications, such as the addition of Corinthian capitals and an intricate relief decoration on the architrave. The temple was also surrounded by a large enclosure wall, creating a large sacred precinct. Despite the impressive reconstruction by Hadrian, the temple suffered damage over time due to natural disasters, looting, and neglect. Many of the temple's columns were removed and used in other construction projects in Athens, and the temple was eventually abandoned and fell into ruin. In the modern era, several restoration and reconstruction efforts have been made to preserve and restore the Temple of Olympian Zeus. In the 19th century, Greek architect Panagiotis Kalkos conducted the first significant restoration of the temple, which involved stabilizing the columns and preserving the remaining architectural features.

In the 20th century, the Greek government undertook further restoration efforts, including the reconstruction of several of the temple's columns using modern materials. Today, visitors to the Temple of Olympian Zeus can see both original features and reconstructed elements, providing a unique glimpse into the temple's rich history and the efforts to preserve it for future generations.

## **Researches**

1. Geotechnical Investigations - In 2013, a team of researchers conducted geotechnical investigations of the Temple of Olympian Zeus to assess the stability of the remaining columns. Using ground-penetrating radar and other geophysical methods, the team was able to identify areas of potential instability and recommend measures to preserve the remaining columns.
2. Architectural Analysis - In 2014, a team of archaeologists and architectural historians conducted an analysis of the Temple of Olympian Zeus to better understand the temple's construction and design. By studying the remaining architectural features and historical records, the team was able to reconstruct the temple's original design and construction techniques.
3. Material Analysis - In 2016, a team of materials scientists conducted an analysis of the Pentelic marble used to construct the Temple of Olympian Zeus. By studying the composition and microstructure of the marble, the team was able to better understand the durability and weathering properties of the material. This research can be used to inform preservation efforts for the remaining marble columns.
4. Historical Research - In 2018, a team of historians conducted research on the Temple of Olympian Zeus to better understand the temple's significance in ancient Greek society. By examining historical texts and other archaeological sites, the team was able to reconstruct the role of the temple in religious and political life during the Hellenistic period.
5. Laser Scanning - In 2020, a team of engineers used laser scanning technology to create a 3D model of the Temple of Olympian Zeus. By scanning the remaining columns and architectural features, the team was able to create a highly detailed and accurate model of the temple. This model can be used for virtual tours and other educational purposes.

## **Conclusion**

The Temple of Olympian Zeus stands as a testament to the ingenuity and skill of the ancient Greek architects and builders who constructed it over the course of more than six centuries. Despite suffering significant damage over the centuries, the temple's ruins continue to fascinate researchers and tourists alike, providing valuable insights into ancient Greek culture, technology, and architecture. Through the use of advanced scientific techniques and technologies, including geotechnical investigations, architectural and material analysis, laser scanning, and historical research, scientists and archaeologists have been able to gain a deeper understanding of the temple's construction and design, as well as the broader historical and cultural context in which it was built. Despite the challenges of preservation and restoration, ongoing efforts to protect and restore the remaining columns and other features of the temple are a testament to the enduring cultural significance of this iconic structure. As we continue to study and learn from the Temple of Olympian Zeus, we are reminded of the rich history and enduring legacy of ancient Greece, and the ongoing importance of preserving and celebrating our shared cultural heritage.

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