

## Priene, an Aegean monumental disaster

### Digital approaches to the Doric Stoa and the Theatre lost evidence

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#### Introduction

Priene, located in modern-day Turkey, has a long history, being one of the many interesting samples of Aegean urban settlement defining the architecture and the urban setup that will become a reference for all the classic age. It is known to have experienced earthquakes throughout the centuries. One notable ancient earthquake occurred in the region in the IVth century BCE. During the Hellenistic period, Priene was struck by a devastating earthquake in 312 BCE. The earthquake caused significant damage to the city, including the destruction of many buildings and structures. Several ancient historians, including Pliny the Elder and Strabo, mention the event. Strabo, a Greek geographer and historian, described the earthquake as follows:

"In the time of Seleucus, king of Syria, there was a violent earthquake, by which not only the city of Priene was overturned, but also the ground on which it stood sank, and another city was laid out at a distance of twenty stadia from it."

This earthquake was so significant, bringing Priene's relocation and reconstruction to a new site, approximately twenty stadia (around 3,7 kilometres) away from the original city.

The city was discovered in 1673 by English merchants, and it has subsequently attracted numerous archaeologists from Germany who have carried out and performed multiple scientific excavations. Carl Humann carried out the first excavations in 1894 with the permission of the Ottoman authorities. Between 1895 and 1899, excavations were carried out by archaeologists Theodor Wiegand and Hans Schrader, who focused on the ancient part of the city. This area integrates the doric Stoa (IInd century BC), which has a large part of the base wall still standing. The Theatre was built in the second half of the IVth century BC but it was renovated at the beginning of the IInd century BC, in the middle of the IInd century BC and finally in the 2nd century AD. Between 1992 and 1998, architect Jens Misiakiewicz elaborated a restoration and maintenance intervention of the ruins, leading to the current configuration of the theatre. The interventions carried out included: the repair of minor damage, the relocation of recognizable elements within their context, a better legibility of the architecture of the proscenium to ensure its overall image and stability. The excavations brought to light very important and interesting buildings, two, in particular, were analysed in deep from the point of view of their history of violent transformation and slow decay: the Wall of the doric Stoa and the Theatre.

The Theatre of Priene is considered a typical example of a Hellenistic theatre due to the reduced modifications it underwent in the Roman period, unlike most Greek theatres in Anatolia. From 1911 to 1912, the archaeological campaign was carried out by Armin von Gerkan, who conducted detailed studies of the theatre. This study used their published drawings as a reference for the 3D reconstructive hypothesis. During the period of the two world wars, excavations were suspended and then

resumed by numerous scholars: Wolfgang Muller-Wiener (1977-1982), Wolf Koenigs (1990), Wulf Raeck (2013), Hasibe Akat (since 2014).

The Wall of the doric Stoa is made of huge stones, partially refined and well preserved despite the heavy impact of earthquakes and the centuries of abandonment. The stones, in their positioning and clear alterations, allow the interpretation of the “movement” received by the original structure.

### **Digital Intervention and Interpretation**

The presented study and in-situ considerations were part of the outcomes of the International Summer school "Priene, Architecture and Archaeology. Survey, Documentation and Design, 20-27 July 2022, Priene, Turkey". The interdisciplinary team addresses the issues of virtual reconstructions of both architectural complex and structural considerations in relation with the different historical techniques and historical damage that can be observed in Priene.

The analysis followed an acquisition campaign which involved an integrated survey: the UAV acquisition was carried out by specialized operators. At the same time, the terrestrial photogrammetric acquisition campaign was part of the educational experience offered to the participants by the international summer school.

The generation of 3D models allowed operating analysis and reasoning on accurate representations of both sites, with a detailed representation of shapes, dimensioning and alterations, which supported well the analysis and understanding of the transformations caused by striking events, transformations due to nature reappropriating the sites, human interventions for reuse and transformations and human interventions for archaeological operations and for moving and storing the fragments for the most various reasons.

The interpretation of the structural evidence of the ancient remains took advantage of different sources. From one side, the available historical information and the previous studies on the development of the Priene were acquired. Hence, these information have been combined with the outcomes of the integrated survey campaigns and the in-situ evidence of damages, vernacular constructive techniques and building typologies.

The city of Priene represents nowadays an important opportunity to deal with different issues related to the conservation and preservation of cultural heritage and archeological sites. In fact, although the physiological lack of information justified by the historical gap between the current times and

Priene's era, the integration of new digital technologies together with historical sources and constructive appraisals, allow to propose new insights related to several disciplines, dealing with ancient natural disasters, past restoration interventions, the management of archeological ruins.

The research presented here will share procedures, results and ongoing directions in the interpretation of the architectural transformation of these two important archaeological sites.

## **References**

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