

Special issue from the Symposium on the acoustics of ancient theatres

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Ancient theatres are some of the most significant cultural and architectural masterpieces of the ancient world. The Greeks and Romans developed these spaces for entertainment, political and social commentary, religious rituals and artistic expression. They were built with great attention to acoustics and sightlines. The use of materials such as marble, stone, and brick helped to reflect and amplify sound, while seating arrangements and other architectural features were used to optimize the audience's listening experience. Today, many ancient theatres have been restored or preserved and are often still used for public performances including opera, drama, speech and music. Furthermore, researchers continue to study the acoustic properties of these ancient spaces, seeking to better understand the technical and artistic innovations that enabled the creation of such remarkable buildings.

These aspects, as well as more interdisciplinary studies, were presented and discussed during the Symposium on The Acoustics of Ancient Theatres, held in Verona from 6 to 8 July 2022. The Symposium, organized by the Acoustical Society of Italy (AIA) and the European Acoustics Association (EAA), with the collaboration of the Hellenic Institute of Acoustics (HELINA), was the second on this topic after the one held in Patras (Greece) in 2011.

The program of the Symposium included keynote speeches, presentations in structured sessions, posters, technical visits to the Verona Arena and Roman Theatre, workshops and demos. The visit to the Verona Arena was particularly inspiring, as it was possible to enter the technical areas and backstage usually closed to visitors, thanks to the Stage Director who guided the visit.

The evolution and development of new technologies for the multichannel measurement systems, together with acoustic simulations, auralisation methods and virtual reconstructions, have generated renewed interest in these ancient spaces and it is commendable that the Rivista Italiana di Acustica (RIA) is devoting an entire issue to publish some of the works presented during the Symposium.

The special issue includes 10 papers, divided into 5 invited contributions, 3 scientific papers and 2 technical notes. Papers dealing with issues related to Italy and its theatres were prioritised.

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Invited contributions

The first paper, by Alessandro Cocchi, present a short survey on the meaning of reverberation time in theatres from roman age to renaissance, considering the different behaviour between open and closed spaces and how the parameter was used in the evaluation of their acoustical characteristics.

In the second paper, Riccardo Rudiero et al. discuss on the conservation, transformation, and enhancement of Classical theatres and amphitheatres, suggesting strategies for its enhancement and fruition according to their cultural and geographical landscape.

Kalliopi Chourmouziadou then analyses, in the third paper, the function of the First Ancient Theatre of Larissa with historic information, evolution through the centuries, acoustic investigations, contemporary soundscape, application of design proposals and future use.

The fourth paper, by Angela Bellia, present some issues raised by the "Sonic Heritage" project concerning the study of sound and noise of ancient theatrical spaces as well as the modern reuse of these structures and the relationship with their intangible aspects, environment, and landscape.

In the fifth paper, Marco Francini illustrate his research path "The Voice in the Ancient Spaces" developed using voice and musical instruments in places that have particular acoustics and singular geographical locations, establishing relationship with the history and the surrounding landscape.

Scientific papers

In his paper, Francesco Martellotta discuss the issue of the acoustical reconstruction of ancient spaces, illustrating the potentials of the softwares but also the needs concerning the knowledge of the simulation process in order to obtain reliable results.

Chiara Bartalucci et al., in their paper, present the AURA project (Auralisation of acoustic heritage sites using Augmented and Virtual Reality) illustrating the potential of the auralisation process and the procedure used with different target groups.

The following paper, by Simone Secchi et al., illustrates briefly the history of the Theatre of Arts Academy in Tirana and the acoustic analysis during the restoration, including the results with the newly designed Orchestra pit.

Technical note

Andrea Cerniglia, in his paper, presents the first results of some acoustic measurement inside the Greek Theatre of Siracusa, their comparison with computer simulations and some unexpected behaviour in two position showed by on-field measurements.

In the last paper, Guido Diamanti discuss some issues related to the design, installation and setup of an audio system in a large outdoor space subject to artistic and archaeological constraints.

As general chair of the symposium, we are grateful to the authors who provided the RIA with an extended version of their papers presented at the Symposium. Inevitably, some contributions, which could have presented interesting perspectives, were not included due to space restrictions.

We would like to thank the reviewers who have generously contributed to this Special Issue and we hope you will enjoy the reading.