



Preserving and Managing the Sonic Heritage of Performative Spaces of the Past.

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ABSTRACT

The ongoing SONIC HERITAGE project aims to develop a new multidisciplinary analytical approach that models the relationship between the intangible aspects and the spatial configuration of performative spaces of the past in order to assess the risk of sonic heritage of particular case studies in Italy and to contribute to the monitoring of present-day sound and noise for the future management and preservation of historical cultural heritage.

This project also concerns the risk assessment of sonic heritage in ancient theatrical spaces as well as the modern reuse of these theatrical structures and the relationship with their intangible aspects and environment. This paper will present some issues raised by the Sonic Heritage project concerning on how the study of the sonic fabric of extant buildings and their surrounding environment can allow us to investigate on sonic identities and spaces where sound - as a set of music, voices, ambient sounds and noises -, was produced and perceived and to speculate on how their sonic heritage can be preserved and managed in the future.

Keywords: Sonic Heritage; Modern Reuse of Ancient Theatres.

1. INTRODUCTION

Ancient theatres are spread in a large territory that embraces three continents. Their presence bears witness to belonging to common roots, contributing to promote mutual understanding and intercultural dialogue. Their preservation and their continued use as spaces for cultural activities allow us to promote the encounter of cultures, recovering the memory and awareness of a shared history through the arts and architecture [1].

International community has urged the commitment to preserve the ancient theatres from the ravages of time and the action of human beings, given that disastrous natural events, pollution or improper uses of these buildings and their related performative spaces are progressively damaging this cultural heritage, demonstrating urgency of an effective preservation planning policy based on the prevention and mitigation of vulnerabilities and dangers. Despite its relevance to this field, no study has focused on the risk assessment of acoustic features as sonic heritage of ancient theatres and the related performative spaces, some of which are now used as location for concerts and modern performances.

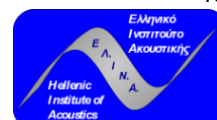
2. THE SONIC HERITAGE PROJECT

The ongoing project “Sonic Heritage. Risk Assessment and Sustainable Development of Acoustic Environments of Ancient Theatres” carried out at the Institute of Heritage Science, National Research Council of Italy aims to develop a new multidisciplinary analytical approach that models the relationship between the intangible aspects and the spatial

configuration of ancient theatrical structures in order to contribute to the monitoring of present-day sound and noise for their future protection and preservation and their modern reuse. Despite significant past and current work on the acoustics of ancient theatres, no project up until now has approached these issues with a systematic and interdisciplinary effort. For the first time, all the results will be integrated into an innovative research method from which experimental interpretative 3D reconstructions integrating acoustic models can be created. As such, this research presents a model for future integrative scientific studies in the fields of digital heritage and of sound environment in sustainable theatrical spaces, and will provide a new approach to reconstruct sound phenomena and auditory experience in ancient performative spaces [5], stimulating the understanding of the role that sound plays in all aspects of society.

Moreover, this project aims to explore the risk assessment of sonic heritage in theatrical spaces of particular case studies in Italy (the theatres of Syracuse and Segesta) and the relationship with their intangible aspects. Indeed, as something that does not tend to leave direct material traces, sound is not often considered in archaeological work [5]. However, it was an important aspect of ancient life that can be investigated using a new approach to archaeological remains [5]. When taking this understanding of sound into account, it seems surprising that important public spaces in antiquity, such as, ancient theatres have been investigated in archaeological field almost exclusively with a focus on their visual function as performative spaces in which individuals or groups display and experience their collective or

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personal identities and status. Approaches such as these often fail to take into account the full range of sonic experiences in the performative spaces may have provided [5].

3. SONIC HERITAGE OF ANCIENT THEATRES

Preserving ancient theatres as an important part of cultural heritage, it is possible to hand down not only the developments of theatrical architecture in the ancient world, but also to interpret the signs that different cultures have brought to the original model. Investigations into the geometric design and sonic dimension of these structures may help us to understand the wide variety of uses and functions that sound fulfilled in ancient buildings and to enhance our knowledge on the links between the form and sonic function of ancient theatres and their transformation from generic or conventional built structures to buildings that can amplify the active sound properties of architecture.

Sonic dimension of theatrical structures involves these performative spaces as places for interaction and communication in the natural and human sonic environment. Indeed, architectural structures, decoration, and surrounding landscape created specific sonic features which influenced the soundscape of theatrical structures; these soundscapes consisted not only of music and recitations, but also natural elements, such as geophony and biophony [5]. The survey on these elements is useful to evaluate how sound in a landscape is a fundamental aspect of the complex relationship between spaces, social interactions, and the natural environment, as well as to assess how soundscape refers to human-environmental interactions and consists of all sounds present in any given environment, and how these sounds interact within that environment. This investigation provides critical information about sound in archaeological contexts and how sound is a valuable means of becoming better informed on the many different ways in which sound pervades spaces, architectural places, social interactions, and also human-animal relationships.

On the other hand, architecture reacted to musical developments as well as to vocal practices by designing and constructing new shapes for these buildings [5]. In this regard, it is necessary to take into account how the preservation of acoustics of ancient theatres as well as a deeper knowledge of their original sonic features could be one of the most important issues to revive not only the ancient tragedies and comedies in these performative spaces, but also of musical and dance activities and modern performances in the theatrical locations. Moreover, it is crucial to identify risk factors related to their acoustics in order to minimise damage should they occur, thereby managing their future protection.

4. THE CASES OF SYRACUSE AND SEGESTA

In this debate, the theatres of Syracuse (5th c. BCE) (Figure 1) and Segesta (3rd c. BCE) (Figure 2) play a pivotal role due to the importance of performances related to

modern concerts and festivals, in which sonic heritage of these buildings is subjected to high risk. The preservation of these monuments has urged institutions to host two important meetings on safeguarding of ancient theatres in the Mediterranean area. These two conferences aimed to the application of the “Convention for the Protection of the European Architectural Heritage” (Granada, 1985) and of the “European Convention for the Protection of the Archaeological Heritage” (Malta, 1992). The results of the first meeting (Segesta, Trapani, Palermo, 17-20 September, 1995) have been formulated in the “Declaration of Segesta” (1995) [5], where there is a generic reference to acoustic issues and to the need “to limit the number of decibels emitted in order to avoid harmful vibrations to the monuments and to respect the peace of the local people”.

The second meeting “Ancient Theatres in the Mediterranean Area” took place in Syracuse (13-17 October, 2004). One of this conference’s stated goals has been the approval of the Charter of Syracuse. This is a political declaration reiterating the international community’s commitment to the preservation and enhancement of cultural heritage and of ancient theatres [5]. In this Charter, a short paragraph is devoted to the preservation of acoustic features of ancient theatres; however, no technical guidance has been provided as well as detailed references to the sonic characteristics of ancient theatres as heritage to be of safeguarding and protecting.



Figure 1 - The theatre of Syracuse (5th c. BCE)



Figure 2 - The theatre of Segesta (3rd c. BCE)

5. SOUND AS HERITAGE

Given its evocative potential of the original spatial configuration, acoustics of ancient theatres is a valuable cultural asset to be protected. In this regard, the “Sonic Heritage” project is developing a new approach to the knowledge of the acoustic design of theatre buildings obtained through 3D virtual reconstructions and the creation of acoustic models, taking in consideration the philological reading of the original system and the theoretical verification of available data. Performing analysis on the best sound effects in ancient theatres will help significantly in establishing more precisely the nexus sound-in-space in performative spaces, combining their acoustic model with a new method for generating 3D models and for exploring the sonic properties of any performative space in the future.

It is worth noting that, the application of new technologies to cultural heritage research has led to important methodological changes in the protection and enhancement of monuments. This new approach is stated in the objectives of the “International Council on Monuments and Sites” [5], an organisation which aims to restore meaning and preserve the memory of historic buildings, promoting the application of technology in the assessment of monuments: this is particularly interesting with regard to the recovery the evidence of sonic aspects in the archaeological heritage [5]. Within this context, new methods for the analysis of the historical sonic heritage of ancient theatres should be used, enabling the evaluation of their sound quality by using auralisation techniques [5] that allow cognitive and physical elements to be reproduced and combined.

Moreover, by combining the detection of acoustic emissions with computer processing, it should be assessed with particular attention the acoustic impact of electronic sound amplification instruments on the theatrical buildings, and the sonic stresses of these instruments on these ancient buildings [5],[5]. In this regard, it should be defined not only the acoustic parameters of sustainability of modern performative activities in ancient theatres through specific vibrometric analysis, but also it should be identified the critical issues of theatrical buildings [5], evaluating the data of vibrations produced by the acoustic sources in relation to the different types of performances.

6. FINAL REMARKS

The “Sonic Heritage” project will provide a new path of investigation in terms of the digital preservation of acoustic models of historical spaces and their sonic heritage. It will be, therefore, possible to critically explore the links between the propagation of sound and the shape evolution of the theatres as well as the role of the architectural elements configuration in featuring the sonic characteristics of these ancient buildings [5]; these data will be able to provide suitable suggestions to optimize the acoustic performance of the theatre architecture, or to define the most suitable solutions for modern performances. Moreover, acoustical measurements and models of ancient theatres offer a robust additional layer to their preservation, especially for

locations that are at-risk, thereby managing their future protection and their modern reuse.

In summary, a rediscovery of the influence of sound on ancient theatres could help to increase the well-being of modern societies and protect the environment from noise pollution of human origin. The results of the “Sonic Heritage” project could provide the potential to better understand the current sonic environment and ecosystem and their meaning to human beings as well as the physiological responses to a sound environment.

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