

MUSEUM ACOUSTICS

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1. INTRODUCTION

The project is a master thesis at the acoustical department at the Technical University of Denmark. The supervisor of the project was professor Jens Holger Rindel.

In this project acoustics at museums are to be examined and the objective is to define optimal acoustical conditions for a museum.

Research was done at three different museums in Denmark and their acoustical conditions were analysed in detail. Employees at The Danish National Gallery, Aros and Arken were interviewed and acoustic consultancy company Jordan Akustik was also collaborated with.

The National Museum of Iceland was collaborated with for further research. Reverberation time measurements were carried out at the museum and results showed some problematic acoustical locations. One particular location at The National Museum of Iceland, The Arc Hall was chosen for further acoustical examination. It was modelled in the room acoustic software Odeon in four different acoustical versions.

In order to assess subjectively the listening conditions at The Arc Hall, two independent listening tests were prepared. They were designed so they would imitate the two most important situations present at a museum. In the former test the subjective parameters intelligibility, listening effort and noise distraction were assessed in different source combination in varying acoustical settings. The latter listening test was aimed for privacy and the subjective parameter speech privacy was evaluated in three source combinations in four varying acoustical settings. A rating scale method was used in the listening tests with a five point evaluation scale. Both the listening tests gave good results in terms of correlation and the trend was clear. In some cases central tendency error was though seen.