

POLITECNICO DI TORINO
SECOND SCHOOL OF ARCHITECTURE
Master of Science in Architecture (Rehabilitation and Revaluation)
Honors theses

'Per Ragion di Musica'

Architectural Space and Musical Performance in St.Barbara's Basilica

by Emanuela Vai

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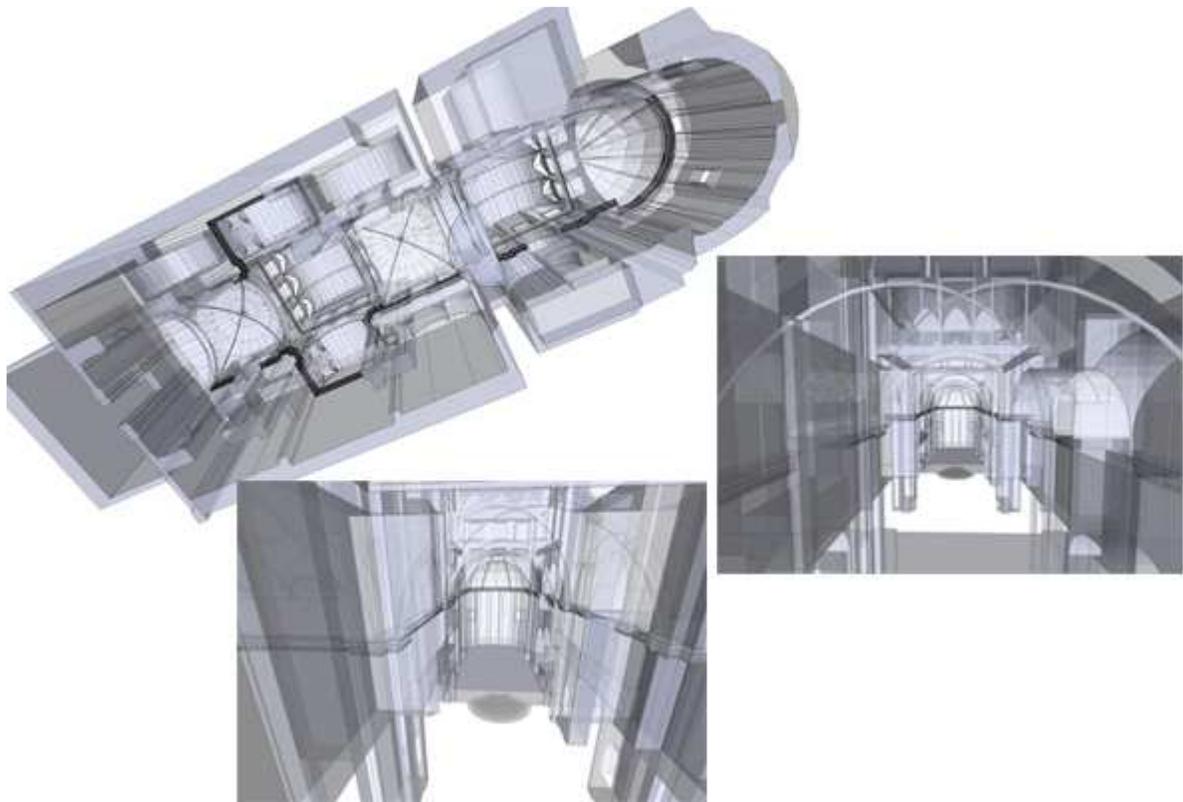
The thesis investigates the role of music in the architectural development of St.Barbara's Basilica in Mantua where the construction and the particular liturgical organization show up as an example of art development with a combination of architecture and music. The research carried out is an interdisciplinary analysis concerning the relationship between Architecture and Music, in order to recognise patterns and historical, artistic and social relations and to highlight all their possible connections, both through a critical study of the divergent views and dissenting opinions, and through material sources. The goal is to render the value of Architecture as a "*place-document*", which is crucial for determining and maintaining identity and memory. The research is therefore considered as a sort of *practical hermeneutics*, to know, improve and return to the spaces the peculiarity of its design origins.

The architectural design of the Basilica, built in the second half of the 500, must have taken into account the institutional traditions both in the liturgical and architectural choices. So I tried to trace the correspondences between the architectural design and the musical project, in order to highlight the existence of common lines of research.

The need to celebrate special religious and state rituals, spiritual and temporal, at the court of Mantua stimulates the demand of musical virtuosity. It is possible that this need has also led to the request for certain spatial characteristics, that the architectural shape is due to musical reasons and that the two disciplines have influenced each other.

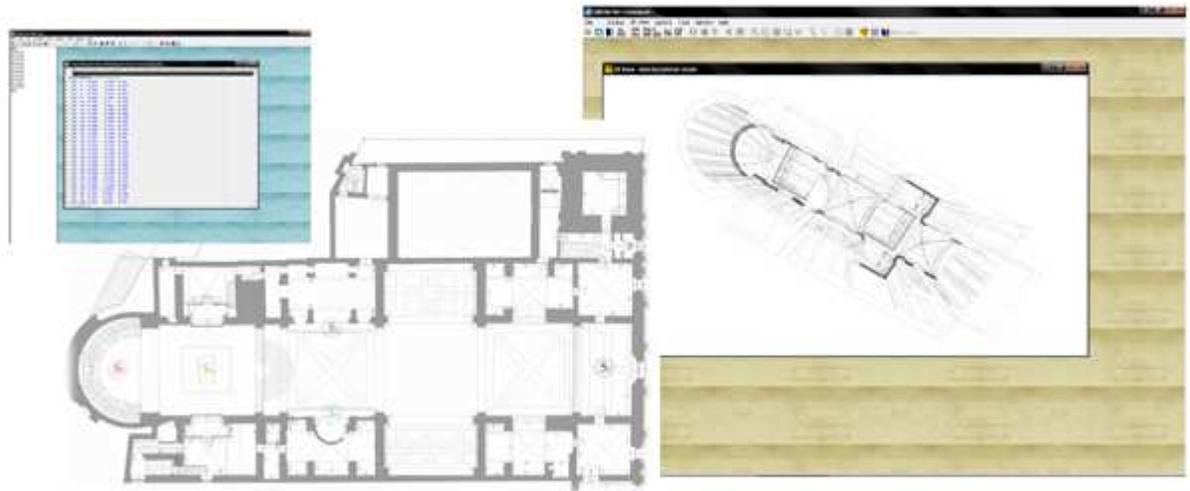
The survey has gone through three phases:

1. Analysis of the original ***Architectural Archive Documentation*** in order to highlight the design *iter* of the Basilica through a three-dimensional rendering of the presumed construction phases and the surveys of the current state. This virtual reconstruction of the Basilica, is based on historical documents, containing information about its shape, dimensions and construction material.



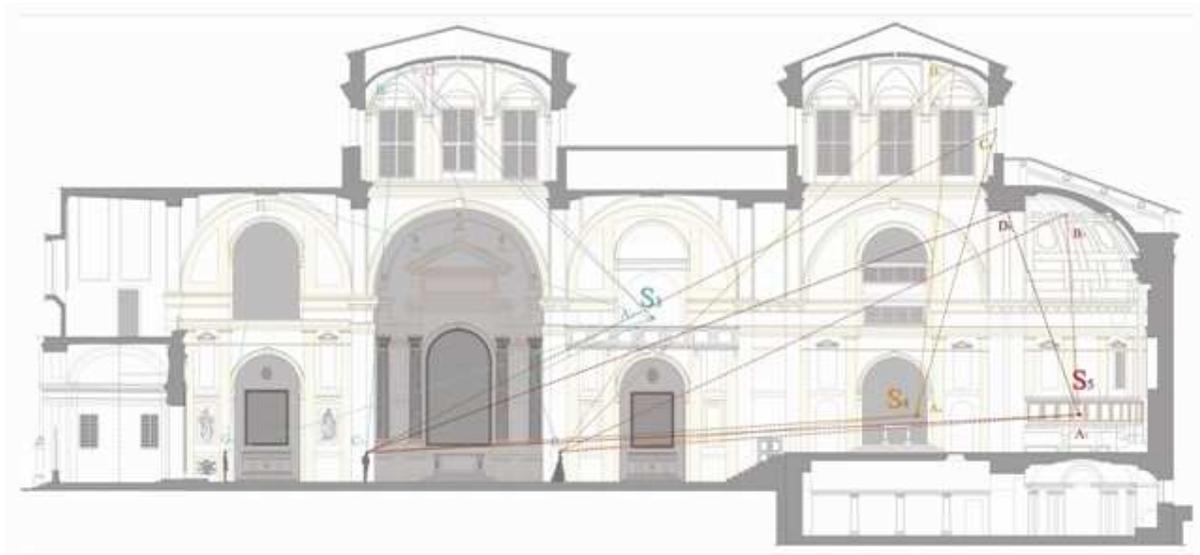
2. Analysis of the ***Liturgical Repertoire***, the *cantus firmi* and the *cantus figurato*, which were commissioned in the same years that saw the construction of the Basilica. The overall survey of this repertoire has shown its importance and articulation in relation to the simultaneous/contemporaneous architectural events.
3. The analysis of the archive documentation, in particular an unpublished portion of *The Diary of Santa Barbara*, which includes descriptions, comments and notes about the events and the ceremonies of the basilica, allowed to gain knowledge of some additional fundamental elements to carry out an ***Acoustic Investigation***.

An acoustic description of the basilica has been done, with the assistance of the acoustic prediction software Odeon®. By this way it is possible to recreate the experience of listening in St. Barbara through the technique of auralisation.



3D model in Odeon® with point sources and receivers

Then I proceeded to analyse *reflections* and *temporal delays* by virtually positioning “sources” and “receivers” in all the locations resulting from the analysis of the documentation.



Reflected sound in the nave section: sound sources and receivers

From the documentation examined it is clear how the musical function was an essential component of the edification project of the new basilica, of the internal spatial arrangement and also of the ceremonial and representative purposes that it was destined to. It is therefore a set of architectural solutions and musical compositions together cohesive in the performance; we can understand, in this context, the desire to give to a precise place of cult, the basilica, a unique soundscape which is definitely characterised; a musical “backcloth” which was immediately recognizable and could emphasize the institution itself that it represented. Voices and places become together protagonists thus enhancing the audio and acoustic potentialities that were conceived for that space just “*per ragon di musica*”.

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