

POLITECNICO DI TORINO
SECOND SCHOOL OF ARCHITECTURE
Master of Science in Architecture for the Built environment
Honors theses

THE SUN, THE TITURGY, THE CHURCH
The holy space in San Costanzo al Monte

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The present study has as its objective the interpretation of the holy space in a global vision analyzing the connections between architecture, geometry, astronomy, anthropology and symbolism in medieval Christian churches. The research starts with the study of the cultural context in which they were conceived, with particular attention to the cosmic symbolism and symbolic meanings of the Christian liturgy, monastic background and technical and scientific knowledge of this period.



San Costanzo al monte (Villar San Costanzo – Cuneo)

The case study concerns the monastic Church of San Costanzo al Monte and consists of a careful analysis of the historical sources designed to frame its articulated architectural phases. Geo-referenced surveys by the 3D laser scanner technology integrate the interpretation and allow to represent realistically the architectural object in most appropriate scale in function of the analyzes.

Geometric-compositional anomalies found in many inspections are thus verified and become object of archaeoastronomical study. In this way, the these is characterized by the experimental application of the 3D laser scanning technology into this branch: astronomical components – azimuths and altitudes of each tracked alignments – are indirectly measured on the virtual model of the church, adding to the analysis with light beams simulations into the building and the ancient sky reconstruction.



The ancient sky on San Costanzo al monte simulated during the foundation period of XII century' church

Specifically, the archaeoastronomical study of San Costanzo al monte allowed to better understand each architectural phases, often not documented from other sources, and to explain, with a conscious perspective of cultural history, some of architectural elements so far remained unresolved.

Windows curiously off-axis, asymmetrical inserts, splayed gap with obvious signs of change and special lighting effects make the hypothesis that the design of medieval buildings, especially the holy one, is not random but inspired by deeper symbolism. For a long time, the Middle Age was distinct as a dark age, almost as if it was deleted the ancient knowledge based on geometry and proportions. Recent studies are clarifying these centuries, rich in symbolism, culture and technology, explaining each inconsistencies such as geometric and compositional choices dictated by precise motivations of learned monks and master builders. Therefore, the objective of archaeoastronomical and formal geometries analysis is fulfilling these carefulness in medieval building of the holy space.

The richness of symbolic elements and the complexity of the construction phases dictated the choice of this case study. Many question remained unresolved, despite the considerable literature and numerous studies concerned San Costanzo al Monte.

These analyzes provided valuable information in order to capture a more complete profile about its millenary history and the culture of the monks who settled on this mount.



Graphical representation of light beams crossing the calendar window during the local noon (the sixth hour) in different seasons

In the broader context, this study wanted to emphasize the complexity of medieval buildings and the essential contribution made by archaeoastronomy to the knowledge and promotion of cultural heritage. The interpretation of symbolic components – geometric, astronomic or artistic one – found in medieval hole architecture allows to prove that the form of the built environment are not only determined by the Vitruvian principles, but they are often regulated by meanings: in many cultures the symbolism is the main aspect dictates the composition, location, orientation, geometry and proportion of the architecture. In medieval culture, we can easily search out the notion of architectural form as *imago mundi*, it expresses the word view into that specific historical and geographical context. Learn to observe deeply holy space – to interpret it – allows us to understand its true meaning and perceive the context in which it was conceived.

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