

INTEGRATED SURVEYS AND DIGITAL TECHNOLOGIES FOR THE KNOWLEDGE AND THE ENHANCEMENT OF CULTURAL HERITAGE. THE CAVE OF ST. MICHAEL OF TANCIA (ITALY)

Assoc. Prof. Daniela Patti

University Kore of Enna, **Italy**

ABSTRACT

The cave sanctuary of St. Michael of Tancia is a natural cave located at a strategic point along a major road between the Lombard dukedom of Spoleto and Rome. The sanctuary has been the subject of multidisciplinary research within the framework of the Italian FIRB Project (2012–17). This research included a 3D survey to create a comprehensive 3D representation of the cave and its surroundings. This methodology enabled the delineation of surfaces, including frescoed plaster and incised elements associated with the Archangel cult, contrasting with pre-existing pagan devotion. Range-based techniques were employed alongside a TOF laser scanner (Leica), integrated with image-based and digital photogrammetry, to capture the sanctuary's most significant components, generating an integrated point cloud. This point cloud facilitated the extraction of precise geometric information, which was imperative for the three-dimensional modelling of the examined environment. The tri-dimensional polygonal models obtained from the 3D survey offer a clear view of, and insight into, the inner sanctuary. They also facilitate a more profound understanding of the dual pathways within the cave, which are associated with the original dichotomy between Christian and pagan devotion. Furthermore, they provide the academic community with updated multidimensional information. A virtual tour of the cave sanctuary has been created using these models. The aim of this project was to improve the promotion and accessibility of this heritage site.

Keyword: 3D survey; multidisciplinary research, Michaelic cult, Knowledge, enhancement of cultural heritage.

INTRODUCTION

The cave-sanctuary on Mount Tancia¹ (Fig. 1a) has been also investigated through a typological, topographical and archaeological analysis, which implied a 3D survey. More traditional archaeological research, in fact, can be hard to carry out in the case of rock settlements, due not only to their building technique ('in negative'), but also to the distribution of the spaces, which show irregular surfaces, causing difficulties during the survey and the geometric representation.

In the Middle Ages, as highlighted above, the 'passage' of Tancia was a strategic area to control the road-network across the Farfa Valley and the Tancia Mountain (Fig. 1b); as a consequence, and as it is confirmed by the above mentioned dispute between the bishop

¹ The site is included in the sheet 144, section Northwest, of the Topographical maps officially issued by the Italian Military Geographical Institute (I.G.M.).