Chapter 11
San Pietro di Deca in Torrenova: Integrated Survey Techniques for the Morphological Transformation Analysis

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ABSTRACT
In this chapter San Pietro di Deca represented an opportunity for scientific knowledge process experimentation applied to a small building with a great past, an unknown monument standing in north west of Sicily that recently has been studied by a team of Austrian archeologists. The first scientific survey carried out by the authors by means of the latest technology as well as all the stages of the research are presented: the historical research, the laser scanner survey, the critical analysis leading to the interpretation of the architecture’s masonry structures, and an accurate analytical representation of the transformation processes experienced by the structure from its origin until today. The evaluation of the survey and its comparison with similar Byzantine Sicilian buildings were major steps confirming the hypotheses inferred on the morphological evolution of the structure.

INTRODUCTION
In Italy the role that the cultural heritage must play in the next future is the subject of an increasingly intense subject. The issue of the architectural and archeological heritage is high on the cultural and political agenda and the Italian observatory concerned plays a key role deeply rooted into three adjoining historical grounds: the very high density of the in-situ heritage, the close relation between the latter and its landscape.
Nevertheless one more ground exists, not less important, that is related to the so-called Italian model of heritage culture and conservation stemming from the presence of a lot of little known architectural and archeological settlements scattered all over the peninsula.

Retracing a historical memory is like remembering. Remembering and telling starting from an event, a date, a turning point in the history of a city and its community. The importance of constructing and, even more, reconstructing the past of a place generates a story, set in physical and mental spaces housing and mirroring a community.

Over the last twenty years the diffusion and development of digital techniques have contributed to this kind of story through the definition of some scenarios considered unimaginable until today.

The multimedia (K.T.) representation stimulated the applications to very different interacting and overlapping fields of knowledge (K.T.). Particularly, it has become an increasingly useful tool for a wide variety of possibilities concerning the knowledge, fruition, and promotion of the historical and cultural heritage. Therefore, the reconstruction of the memory is not a mere focused-inward process as it is rather the starting point for a new multidisciplinary approach.

The experience accrued through the different stages made it possible to highlight the main issues involved: on one hand, the identification of the conceptual, visual, metric, and materic aspects of an architectural structure and on the other hand the results visualization through a 3D interactive model.

In this chapter some results of a study carried out by some archeologists, compared with a high-definition survey for the interpretation and analysis of a whole structure. The assessment of the architecture surveyed in the perspective of its very important historical background and landscape highlighted the close relationship between the ground morphology, the presence of a river and the surrounding settlements.

Nevertheless, on a greater scale it was possible to find out how the association with the near eastern culture was important to identify the typological and morphological characteristics of some religious buildings scattered all over southern Sicily. Moreover, it was clear that as far as architecture and urban planning are concerned, the word Mediterraneo means, once more, stratification and reuse of buildings with their functions and significance. (see Figure 1)

**BACKGROUND**

Between the 18th and the 19th century Hittorff, Zant, Viollet Le Duc, and Du Fourny, in respect to southern Italy and Sicily in particular, dedicated themselves to the Italian treasures, showing their documentary interest in an incommensurable monumental patrimony still to be discovered. Nonetheless, while cultivating that interest, those scholars got into a precise professional and pedagogic habit: observing, studying, representing through drawings in order to didactically visualize the design process embodied by the stone architecture itself. Survey is the representation of the architecture’s essence so that the observer can grasp it correctly interpreting the shape, the use and the layout is the explication by the surveyor of the relationship between himself and the art work as cultural work taking into account its historical setting and value perception context (De Simone, 1985).

The quote by Margherita De Simone, although is a quote used more than thirty years ago, touches the crux of the matter which regulates “Measurement and Knowledge” between “Survey and Monument”, between “historical process and cultural project”. It is an essential asset that invests the research, teaching and the spill-over effects in the economic fields of cultural heritage for their enhancement. Through the