

# Ph.D. THESIS OUTLINE

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**Institution:** University of Ljubljana, Faculty of Arts, Department of Archaeology

**Programme:** Interdisciplinary doctoral programme in the humanities and social sciences

**Area of studies:** Archaeology

**Ph.D. title:** The Use of Three-Dimensional Documentation for the Archaeological Analysis of Standing Vernacular Architecture.

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The main objective of the proposed Ph. D. thesis is to assess the various possibilities (conceptual and practical) of three-dimensional (3D) technologies for documenting and analysing vernacular architecture. The leading premise of the research is that the 3D data acquisition is not only an effective substitution for many conventional approaches used in archaeology, but can also broaden the nature of archaeological enquiry and expand the potential of archaeological interpretation.

The case study presented in the thesis is the still standing vernacular architecture built in the dry-stone technique from the Slovenian Kras region. This type of architecture is especially interesting for its longevity, as the dry-stone walling was in use since prehistory and is well preserved in the traditional architecture of Kras today.

The relation between society and built environment is recursive: people shape the environment that reflects back and enables or limits human activities. The material remains can therefore be understood as the material indication and medium of past life. Since the buildings were built according to a certain usage, differences in form, size, composition, texture, location, building techniques... can be recognized, analysed and compared in the synchronic and the diachronic dimension. The questions that follow are “To what extent is the form of a structure a functional concern and to what extent is it a consequence of cultural norms?” and “What is the biography of the structures (from construction through use, possible reuse and finally abandonment) and how are the structures connected to each other?”

3D data acquisition allows the most complete documentation of architectural geometry. Furthermore the analysis of 3D data enables a more accurate and diverse examination of structures (surface, building techniques, traces of usage, quantification of several geometrical parameters) and in this manner contributes to the understanding of the past social activities.

To create the necessary 3D models, 3D image-based modelling will be employed. The procedure of data acquisition, post-processing and the 3D model itself will be documented in a database following the CIDOC (Committee on Documentation) CRM (Conceptual Reference Model) guidelines. Afterwards, a variety of applications and techniques will be used to extract useful information from these 3D models.