Poster 246

A PUZZLE IN 4D: Digital Preservation and Reconstruction of an Egyptian Palace

Austrian Academy of Sciences

Edeltraud Aspöck, Karin Kopetzky, Barbara Horejs, Manfred Bietek

OREA Institute for Oriental and European Archaeology

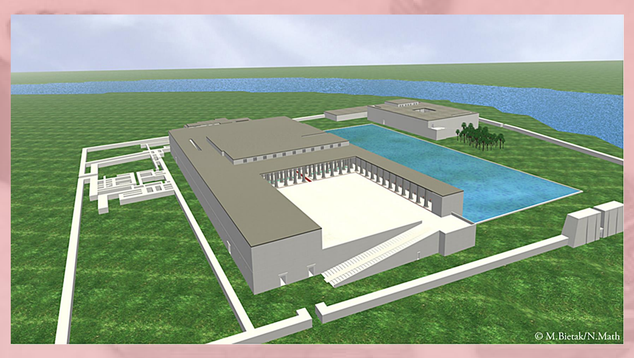
Ludwig Boltzmann Institute ArchPro

Matthias Kucera, Wolfgang Neubauer

LBI Archaeological Prospection and Virtual Archaeology

INTRODUCTION

„A puzzle in 4D“ is a new project that deals with the general problem of integration of heterogeneous and incomplete analogue and digital records of archaeological long-term excavations in Tell el Daba (Egypt), in order to prepare them for future spatio-temporal analysis, standardized long-term archiving and open-access online publication.



The aim of the project

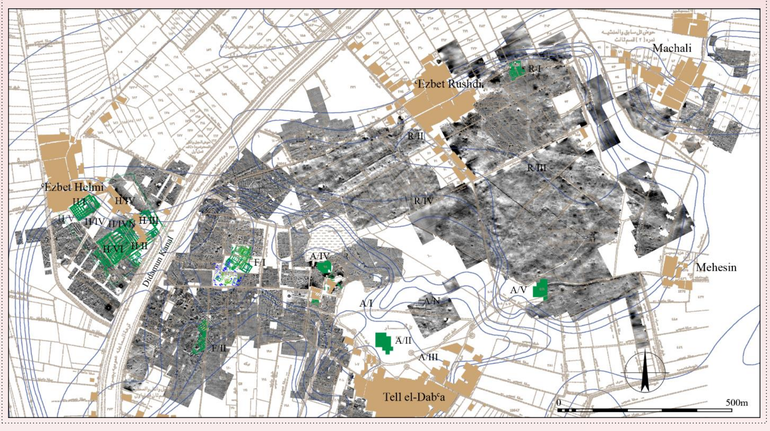
- Creation of an standardized, open-access archive to ensure the preservation of analogue and digital resources, including the digitization of analogue resources enriched with metadata.
- Development of a tool for the integration of data according to their spatio-temporal relationship and for 4D post-excavation processing of excavation legacy data.

The case study – Tell el Daba (Egypt)

The project is based on the resources from the Austrian excavation project at Tell el Daba (TED) in Egypt, where altogether 88 fieldwork campaigns were carried out since 1966.

TED, ancient Avaris, which was the capital city of the *Hyksos* was situated in the Nile delta region and was occupied from the 12th to the 18th dynasty (early 2nd millennium BC).

Excavations uncover residential buildings, tombs and temples, which show a wealthy society with contacts to eastern Mediterranean including the Minoan culture.

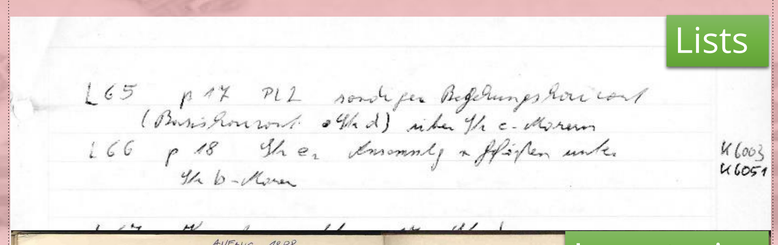


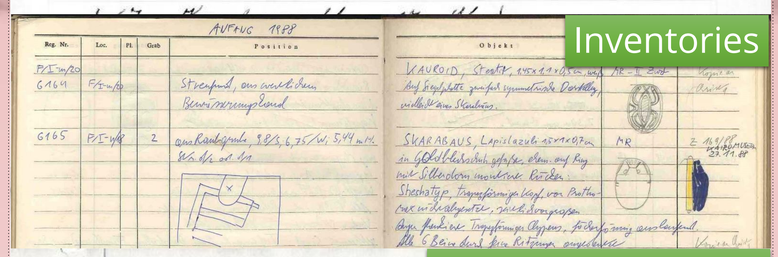
RESOURCES

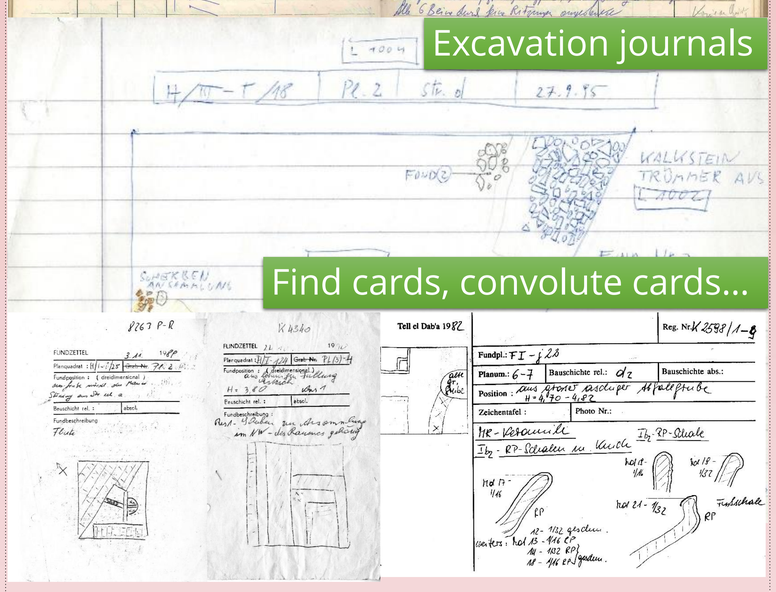
Technological and methodological changes

1996 – introduction of the locus system
2000 – from analogue to digital photos
2002 – digitizing field plans, first 3D reconstruction of the palace ᶜEzbet Helmi
2004 – total station was introduced
2004/05 – Access database
2003 – geophysical survey
2007 – drillings
2008 – GPS survey

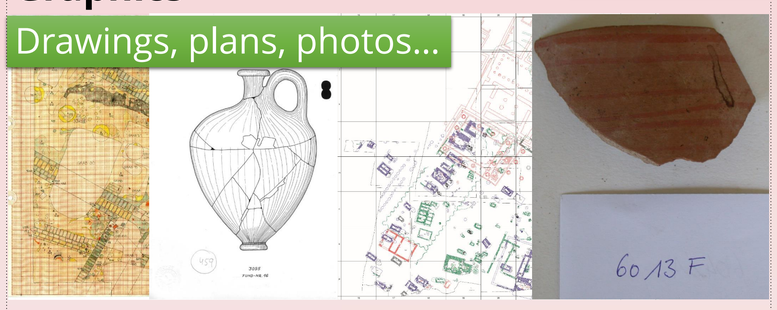
Texts



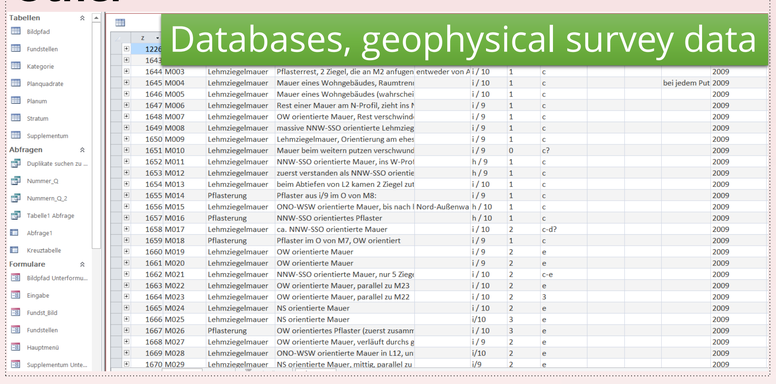




Graphics



Other



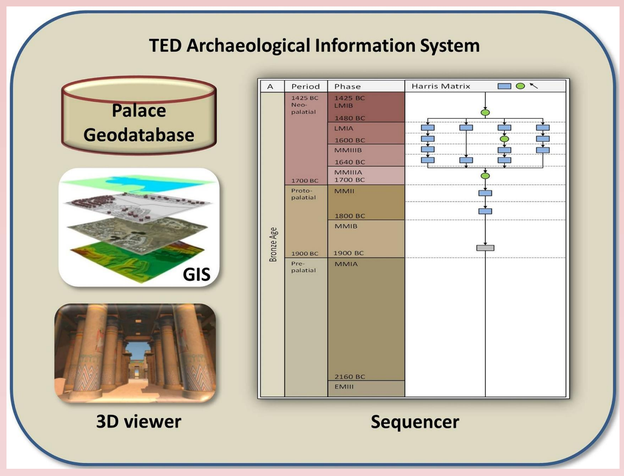
4D ARCHAEOLOGICAL INFORMATION SYSTEM (AIS)

Square j-21 in area F/I with a representative number of small and large architectural features, tombs and pits will be used to develop the AIS.

The aim is to examine the possibility of reconstructing undocumented and missing stratigraphic information through reverse excavating, i.e. reconstructing the order of deposition of stratigraphic units.

In a first step, all existing datasets (e.g. plans, drillings, photos, aerial imagery) were gathered in a Geographical Information System (GIS), rectified and georeferenced.

Archaeological features were redrawn and attributes added in a geodatabase. The different levels of excavation (z-values) were gathered from field drawings and added to the features, which makes it possible to redefine superposition of features and structures, visualizing different levels of excavation.



In the future the deposition order will be reconstructed and the sequence of stratigraphic units (SU) will be defined. Archaeological entities will be arranged in their relative position through time using digital stratigraphic sequencing tools (ArcGIS in combination with the Harris Matrix Composer) in order to provide a powerful tool to combine and analyze different datasets in space and time.

Acknowledgments

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ARIADNE www.ariadne-infrastructure.eu

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