Excavations at Tel Kabri, Israel: A Case Study in Data Management for Archaeological Research

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EXCAVATIONS AT TEL KABRI, ISRAEL
A CASE STUDY IN DATA MANAGEMENT FOR ARCHAEOLOGICAL RESEARCH
Elizabeth Christian, Simmons College, School of Library & Information Science

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- OBJECTIVE
This case study aims to identify data management needs in archaeological research by examining one project's current practices.

- CONTEXT
Tel Kabri was a Middle Bronze Age palace near the Mediterranean coast. Excavations started in the 1980s, and apply a range of technologies and methods to gain a holistic understanding of daily life and trade at Kabri.

- MODULES FOR RESEARCH DATA

  **Types, Formats, and Storage of Data**
  - Data stored in paper notebooks, databases, and spreadsheets
  - Extremely large quantities of raw and processed data

  **Data Storage, Backup, and Security**
  - Strict long-term data storage requirements from Israel Antiquities Authority, which pose access issues

  **Data Sharing & Reuse Policies**
  - Use of cloud-based applications for data sharing

  **Repositories, Archiving, and Preservation**
  - Need to digitize data from 30+ years and standardize formats
  - Material will be permanently held by foreign government agency

- METHODS
An interview instrument, based on the Digital Curation Centre’s Checklist for a Data Management Plan 4.0, was developed and used in an interview with lead staff to focus on understanding the project's data workflow throughout the data lifecycle.

- ARCHAEOLOGICAL RESEARCH PRODUCTS

  **Documents**
  - Field reports
  - Articles and presentations
  - Lab notes

  **Data Sets**
  - Artifact catalogs
  - Locus sheets
  - C-14 dating results
  - Chemical analysis results

  **Images**
  - Photographs & orthophotographs
  - Technical drawings
  - Artifact illustrations

  **Virtual Archaeology**
  - Remote sensing data (e.g., LiDAR)
  - 3D scans and models
  - GIS datasets

  **Cultural Material**
  - Pottery sherds
  - Mosaics
  - Reconstructed vessels

- RECOMMENDED DATA MANAGEMENT PLAN

  **Types, Formats, and Stages of Data**
  - Data will be imported to software that can manage multiple file types, assign metadata, and provide versioning control

  **Data Storage, Backup, and Security**
  - All data will be duplicated and stored in a U.S.-based repository or cloud-based storage service

  **Data Sharing & Reuse Policies**
  - Re-use is subject to approval of the PIs and may be requested by contacting the PIs or the Israel Antiquities Authority

  **Repositories, Archiving & Preservation**
  - Data in paper notebooks will be digitized
  - Data will be stored in open-source formats where possible
  - Israel Antiquities Authority will be responsible for storing, archiving, and preserving all materials

- CONCLUSIONS
Archaeology as a discipline is centered on the importance of context and data preservation. Partnering with archaeologists may allow LIS professionals to pursue a model for global data services that addresses the complexities of collecting data in foreign countries, incorporating legacy data, and preserving multiple data types.

- ACKNOWLEDGEMENTS
- Alex Ratzlaff & the Tel Kabri Archaeological Project
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- ARCHAEOLOGICAL DATA WORKFLOW

<table>
<thead>
<tr>
<th>Data Collection In the Field</th>
<th>In the Onsite Lab</th>
<th>Post-Excavation</th>
<th>Consultation</th>
<th>Publication</th>
</tr>
</thead>
<tbody>
<tr>
<td>Locus data recorded in Excel, accessed on a tablet and stored in the cloud</td>
<td>Graduate students build excel spreadsheets to catalog artifacts</td>
<td>Artifacts processed; packed for storage and preservation</td>
<td>Specialists produce additional data from remote sensing, chemical analysis, 3D modeling, and dating</td>
<td>Preliminary field report written and published on institutional website</td>
</tr>
<tr>
<td>Architectural features are excavated, numbered, and drawn to scale</td>
<td>Artifacts pre-processed for laboratory analysis</td>
<td>Selected vessels reconstructed</td>
<td></td>
<td>Season reports and copies of collected data submitted to Israel Antiquities Authority as required by permit</td>
</tr>
<tr>
<td>Files are synced twice per day using mobiles as hotspots for offsite collaborators to use</td>
<td>Data from across seasons is reviewed, compared, and analyzed</td>
<td>Data made available to other researchers upon request</td>
<td></td>
<td>Articles written and submitted for publication</td>
</tr>
<tr>
<td>High-resolution images (up to 1,000/day) are taken and later transferred to portable hard drives</td>
<td></td>
<td>Funding applications for the next season submitted</td>
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<tr>
<td>Artifacts are collected, labeled, and sent to onsite lab</td>
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<tr>
<td>Samples for residue analysis, floatation, and dating are collected, labeled, transported to the onsite lab</td>
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