Research Infrastructures for Digital Heritage: Challenges of Preservation and Access

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Lecture outline

• Challenges of Preservation and Access:
  – Digital Preservation
  – Resource Discovery and Interoperability – finding & joining up fragmented and diverse data sets
  – Political (& Economic) Context of Open Data

• Research Infrastructures:
  – UK: Archaeology Data Service
  – Europe: ARIADNE, E-RIHS
Digital Preservation Challenges:

• Digital data are fragile
• They are often still archived as objects rather than computerised information
• Defining digital data standards
• What are the significant properties of our data?
Digital Data and Archaeology

- Archaeology is **destructive**
- Comprehensive records of field work are imperative
Media Types

- Experience rapid change
Information Entropy

Trusted Digital Repositories: NASA - Open Archival Information System
Digital Data and Archaeology

- Published data are limited
- Majority of data recorded in grey literature
- Data are not easily searchable
- Access to data is difficult
G8 Open Data Charter 2013

1. Open Data by Default
2. Increase Quality and Quantity for re-use
3. Usable by All
4. Releasing Data for improved Governance
5. Releasing Data for Innovation

“a new era in which people can use open data to generate insights, ideas, and services to create a better world for all.”
FAIR principles

- 2014: Leiden workshop
- Sept 2017: endorsed by G7 Science Ministers, Turin
The Archaeology Data Service

- Set up in 1996
- Based within the University of York
- 12 staff
- Business model based upon charging policy
- Trusted Digital Repository: Data Seal of Approval
- Received Digital Preservation Coalition’s Decennial Award in 2012
- Oct 2016: 12Tb; 2,143,497 files; 21,327 recorded processes
The Archaeology Data Service

“Supporting research, learning and teaching with free, high quality and dependable digital resources”

• Collects and preserves datasets

• Provides easy and free access to datasets

• Provides guidance and support to data creators
Guides to Good Practice

- GIS
- CAD
- Geophysics
- Aerial photography and Remote Sensing
- Marine survey
- Laser scanning
- Photogrammetry
- UAV survey

Archaeology Data Service / Digital Antiquity
Guides to Good Practice

This new and revised series of Guides to Good Practice have been produced as the result of a two-year collaborative project between the UK Archaeology Data Service and Digital Antiquity in the US. The project has encompassed important revisions of the existing ADS Guides as well as the development of entirely new Documents covering areas such as marine survey, laser scanning, close-range photogrammetry, digital audio and digital video. The project has involved previous Guides authors revising existing content alongside new authors, from both Europe and the US, also contributing to the development of the guides into new themes and areas.

The project has been undertaken in collaboration with the Digital Antiquity initiative, a US-based project with the aim of enhancing the preservation of and access to digital records of archaeological investigations. A major aim of the Guides is to provide the basis for archaeological project workflows that will create digital datasets that can be archived and shared effectively by Digital Antiquity’s tDAR archive and repository in the US and by the Archaeology Data Service in the UK. The development of the Guides involves close collaboration with teams in the US at both the University of Arkansas and Arizona State University.

Other ADS projects have also fed into the revision and development of the Guides. ADS involvement in the European VENUS project has formed the basis of a guide focussed on marine survey. In addition, the incorporation of findings from the ADS Big Data project, together with the revision of the existing guide on aerial photography and remote sensing data, has seen a significant contribution to the guides from English Heritage funded projects.

Previous versions of the ADS/ADS Guides to Good Practice have been archived and are still available on the old Guides to Good Practice page.

View the full new Guides to Good Practice Table of Contents

The Andrew W. Mellon Foundation
Digital Access Challenges:

• Finding and joining up fragmented datasets
• Interoperability
• Lack of data standards
• Need for controlled vocabularies
• Permanence – Digital Object Identifiers (DOIs)
• Identifying quality data
• Making heritage data visible for the creative sector
1.35m records to 70 reports in 3 clicks
Assessment of an Archaeological Excavation at 551 Old Kent Road, London Borough of Southwark


Title: Assessment of an Archaeological Excavation at 551 Old Kent Road, London Borough of Southwark

Series: Pre-Construct Archaeology Ltd (London) unpublished report series

DOI: https://doi.org/10.5284/1016952

Abstract:

An archaeological field excavation followed an earlier evaluation of the site. The earlier evaluation of the site demonstrated archaeological preservation in trench 1 and further archaeological work was undertaken with the excavation of trenches 3 and 4. Natural sandy brick earth was found across the excavation area at a level of 0.65m OD to the south in trench 3 and gradually sloping downwards at a level of 0.20m OD to the north in trench 4. An E-W prehistoric ditch, already observed during the initial evaluation, truncated the natural sandy brick earth and presented a terminus to the west in trench 3. Another possible curvilinear prehistoric cut feature was observed just next to the ditch but unfortunately no cultural material was found in its fill. A peat layer, sealing the prehistoric cut features, contained a single cattle bone and few burnt flints. Although the near absence of cultural material, this layer, occasionally disturbed by rooting, indicates that the study site was marshy, marshland possibly during the Iron Age and Medieval periods. The post-medieval activity on the study site was represented by two postholes asserted by a sequence of homogeneous clay layers, largely devoid of cultural material, indicating the site had been largely flooded and abandoned in the post-medieval period until the beginning of the ground works associated with the construction of the Georgian terrace house and of the N-S sewer to the west of the study site.

Author: I. Grosso

Publisher: Pre-Construct Archaeology Limited
Research Value

ADS: % respondents

• 84% - ADS has had an impact on data sharing
• 79% - reduced time required for data access and processing
• 51% - New intellectual opportunities
• 56% - Permitted new types of research
• 94% - Data very or quite important for their research
Economic Impact of ADS

Beagrie/ Houghton 2014:

- Investment value £1.2m pa
  - £698,000 pa funding from sponsors
  - £465,000 pa indirectly contributed by depositors
- Direct use value £1.4m pa
- But efficiency impacts £13m-£58m per annum
- Research efficiency gains = 7 hours per person per week
- £1 investment provides up to £8.30 return
European Research Infrastructures

The European Research Infrastructure for Heritage Science (E-RIHS) supports research on heritage interpretation, preservation, documentation and management. It comprises: E-RIHS Headquarters and National Hubs, fixed and mobile national infrastructures of recognized excellence, physically accessible collections/archives and virtually accessible heritage data.

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Number 1 Poultry (ONE 94)

The site of 1 Poultry is located near the Bank of England, in the heart of the City of London. During the 1990s, one of the largest excavations in the City recovered a remarkable archaeological sequence from the 1st to the 20th century AD. This was augmented by findings from nearby sites at Bucklersbury, Lothbury, Lombard Street, 72-75 Cheapside, 76-80 Cheapside 36-37 King Street and Mansion House. 1 Poultry lies immediately west of the point where the main east-west road through Roman London bridged the Walbrook stream and uncovered an unparalleled sequence of buildings, roads, and open spaces.

A timber drain of AD 47 beneath the main road is the earliest, securely dated structure yet known from Londinium, and a pottery store, destroyed in the Boudican revolt, gives a snapshot of life in AD 60/61. A 2nd-century AD writing tablet preserves the only evidence for the sale of a slave found in Britain to date, while the 3rd- and 4th-century AD buildings on the site provide a rare demonstration of the continuities and changes that occurred in Roman urban life.

Translation into Mandarin

 Getty AAT subject terms

 Getty AAT subject terms

 Getty AAT subject terms

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Number 1 Poultry (ONE 94)
Museum of London Archaeology, 2013

Introduction
The site of 1 Poultry is located near the Bank of England, in the heart of the City of London. During the 1990s, one of the largest excavations in the City recovered a remarkable archaeological sequence from the 1st to the 20th century AD. This was augmented by findings from nearby sites at Bucklersbury, Lombard Street, 72-76 Cheapside, 70-80 Cheapside, and Mansion House.

1 Poultry lies immediately west of the point where the main east-west road through Roman London bridged the Walbrook stream and uncovered an unparalleled sequence of buildings, roads, and open spaces. A timber drain of AD 47 beneath the main road is the earliest, securely dated structure yet known from Londinium, and a pottery shop, destroy the Boudiccan revolt, gives a snapshot of life in AD 60/61. A 2nd-century AD writing tablet preserves evidence for the sale of a slave found in Britain to date, while 3rd- and 4th-century AD buildings on site provide a rare demonstration of the changes and continuity that occurred in Roman urban life.

Poultry occupied a prominent position at the eastern end of Cheapside, the city’s principal medieval street, integrating documentary evidence with the archaeological record has provided an outstanding detailed account of this area. Reoccupation of the site in the later 10th century AD began with the construction of scattered sunken-floor buildings; a more regular pattern of settlement, characterised by narrow-fronted timber buildings along the roadsides, had developed by the early 11th century. Occupancy became progressively denser up to the 13th century, when large stone-built houses began to be constructed in previously open areas along the street frontages. Metalworking evidence from the excavated buildings indicates early economic activity, corresponding with later documentary evidence smiths, ironmongers and other metalworkers in the area. The Great Conduit, the City’s first piped water supply, was established in the 13th century; its vaulted lower chamber survived at the junction of Bucklersbury and Cheapside.

This project was published following a joint venture between English Heritage and Museum of London Archaeology as:


Resource identifiers

- ADS Collection: 1297
- DOI: https://doi.org/10.5284/1020244
Conclusions:

• Digital data preservation has a cost – but data collection / data loss is more expensive
• Digital data is re-used – and studies show research and economic return
• Importance of research infrastructures for preservation and access
• Need to work at international level
Thank-you for listening

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