

Archaeological Research Methods (HPAR7004)

Methods of Archaeological Investigation



Methods of Archaeological Investigation

Learning Outcome:

- Critically review methods of archaeological investigation, how and why archaeological materials/ data are recovered

Indicative Content:

- Research techniques and approaches relevant to archaeological practice and specific archaeological specialisms

Methods of Archaeological Investigation

Knowledge

- **K1:** How to recognise and understand archaeological site types, periods, artefacts and ecofacts and site formation processes.
- **K2:** Methods of archaeological investigation, how and why archaeological materials/ data are recovered
- **K4:** Understanding of how established techniques and methodologies can be practically employed in the research area of their specialism, and how they are used to create and interpret knowledge.
- **K8:** Legal requirements, professional standards, relevant procedures and guidelines relevant to archaeological investigation and the processing, publication and storage of data and materials

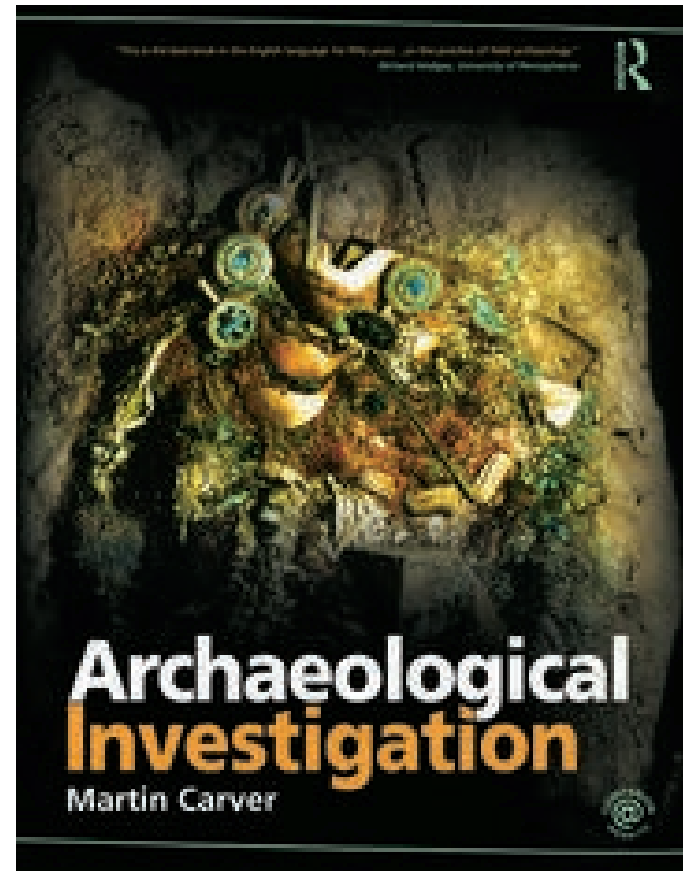
Methods of Archaeological Investigation

Skills

- **S1:** Research, access and apply relevant primary and secondary data relating to Archaeology
- **S5:** Evaluate the relevance of research methodologies, techniques and background information to the investigation in question

Carver, M. (2009). Archaeological Investigation (1st ed.). Routledge.
<https://doi.org/10.4324/9780203523124>

1. The Stuff



Prodigious Variety

- All human materiality decays
- Remains of human activity immensely variable from the ephemeral to the enduring
- Burial environments can radically impact the nature of the surviving remains (e.g. chalky soils, anaerobic conditions)

Site Formation Processes – Schiffer / Carver

- “systemic context” – the site when occupied, and the “archaeological context” – the site when buried and then rediscovered by us.

Factors that affect the formation of archaeological deposits

Pre-deposition

SUBSOIL: pH – porosity

TOPOGRAPHY: strata traps

CULTURE: stone/ceramic vs. timber/leather

Post-deposition

NATURAL ATTRITION: bacterial – chemical – vegetation –
burrowing animals – frost – flood

HUMAN ATTRITION: curate behaviour – vandalism – stone robbing –
cultivation – digging (all kinds including archaeology)

Carver – Itinerary of Decay

- “Here I propose five stages for this hypothetical journey:
- (1) before anything happens
- (2) during occupation,
- (3) at abandonment,
- (4) when the site gets buried, and
- (5) after that.
- This model is not so much a straight transformation from one state to another, as a continuous itinerary of decay, suffered by all sites everywhere, in which at a given moment archaeologists may intervene with their trowels and shovels.”

<i>Stage</i>	<i>Factor</i>	<i>Properties</i>	<i>Affecting</i>
Stage I: Before deposition	Topography, subsoil	Steepness and shape of slope, pH, porosity	Depth of deposit Preservation
Stage II: During occupation	Culture	Structures Burials	Preservation Visibility of behaviour
Stage III At abandonment	Curation, recycling, scavenging, weathering	Removal, dispersal, erosion	Reduction of diagnostic assemblage Visibility of features
Stage IV The site gets buried	Sediment transport, humus, dumping	Glacial wash, alluvium	Burial, addition, displacement or removal of layers
Stage V: After burial	Biochemical degradation	Differentially, of organic and inorganic materials	Preservation of materials
	Deflation	Uncovers a site through wind action	Displacement or removal of layers
	Tree-roots and plant roots	Dislodge walls and alter deposits	Reduced understanding of features
	Burrowing animals	Make tunnels through deposits	Reduced understanding of features
	Ploughing	Scrambles strata, pulls artefacts and biota to the surface	Destruction or reduced understanding of features
	Digging	Cuts into strata, redeposits finds	Destruction or reduced understanding of features
	Looting	Damages features and removes finds	Destruction or reduced understanding of features
	Archaeological excavation	Removes, but records strata and finds	Destruction, but increased understanding of features

FIGURE 1.6 What happens to history: the decay and dispersal of human settlements.

Defining archaeological strata

- Archaeological cf geological: dynamic
- “vast majority are dumped by people, who are anything but natural or uniform in their actions”

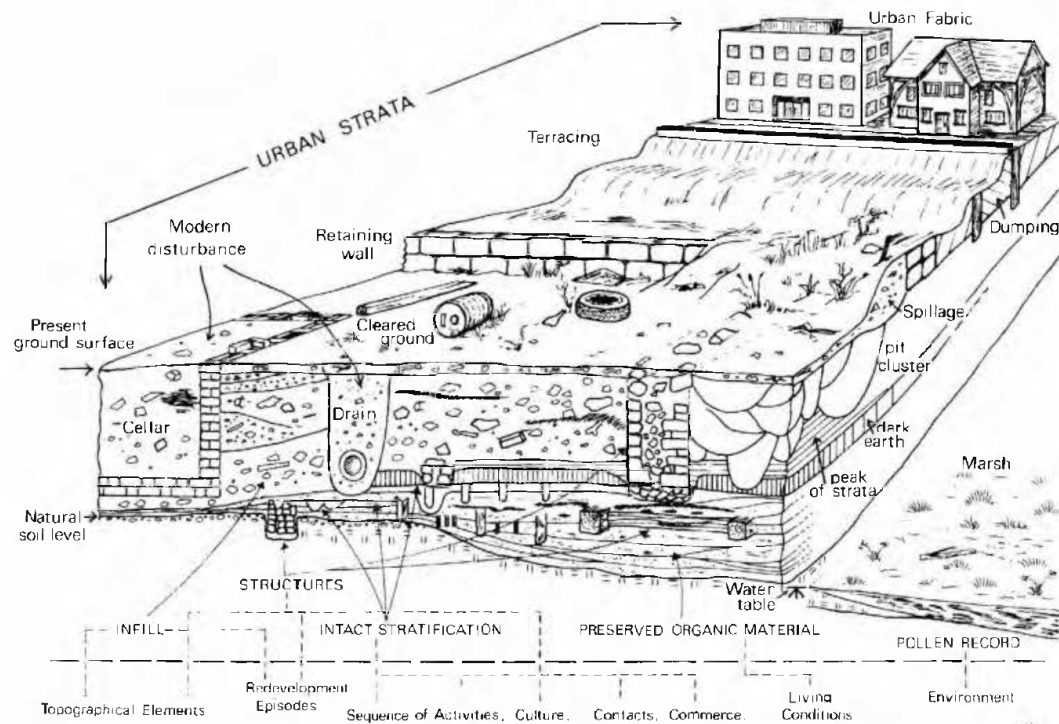


FIGURE 1.13 A slice of urban strata (drawn by Liz Hooper).

Archaeological vocabulary

- Component – a grain of sand, a fragment of charcoal
- Context – groups of components. “Deciding that a bunch of mud and stones makes a context is not just the result of observation or recognition, it is an act of definition.”
- Strata – “*stratification* for the physical pile of strata and *stratigraphy* for the act of working out (and drawing up) what we believe the sequence was.”
- Feature – “One action generates many contexts (the grave, the body, the fill), so the human action we seek to define is a property underlying a *set of contexts*.”
- Structure
- Settlement
- Landscape

Carver: Principles continued

Approaches

- Empirical – Barker, objective recording
- Processual
- Historical
- Reflexive, ‘multi-vocal’
- Evaluative

Carver: Principles continued

Field Research Procedures: A Framework

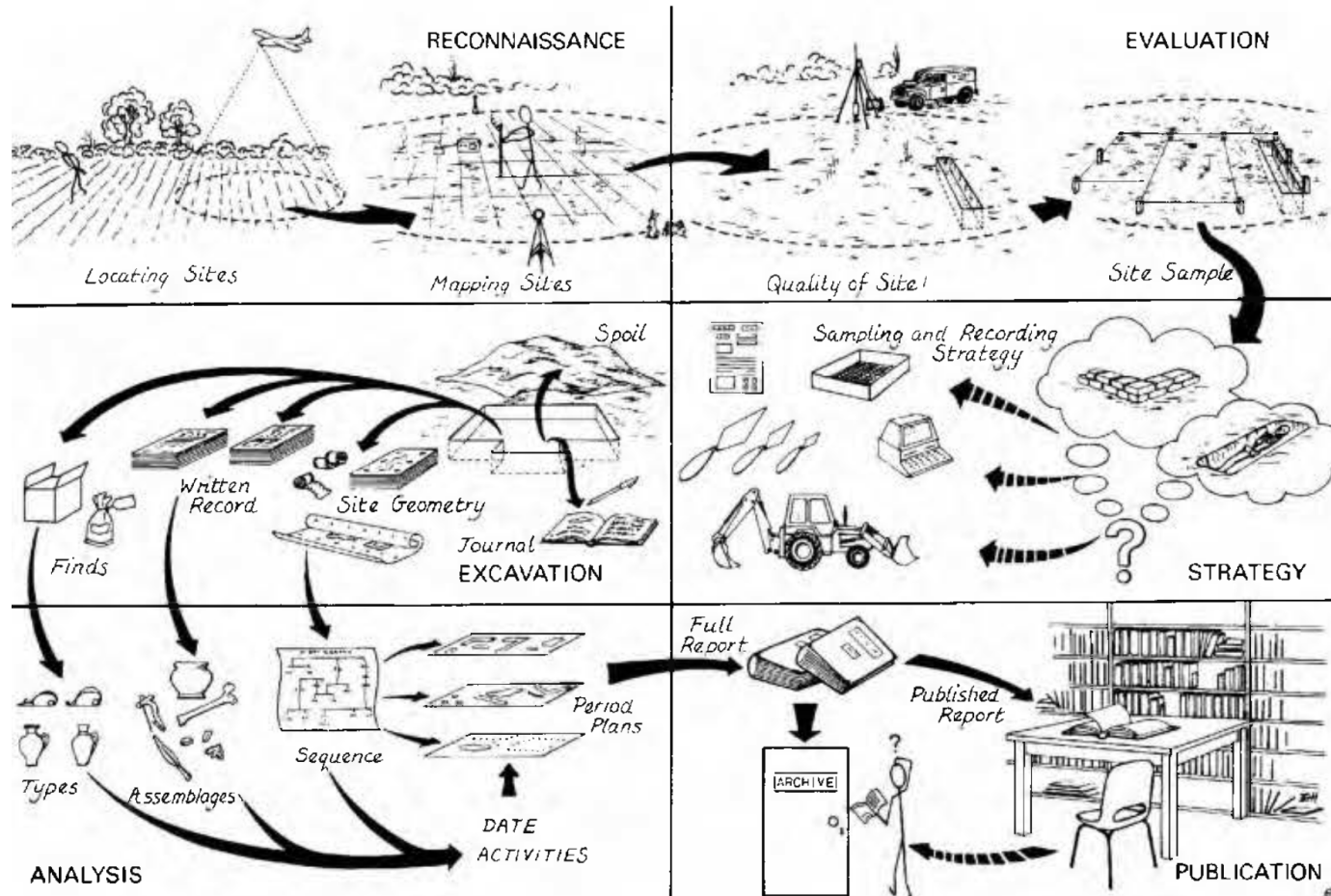


FIGURE 2.9 Field Research Procedure: a framework (drawn by E. Hooper).

Carver - Landscape Survey

Landscape survey

FIGURE 4.12 Techniques and applications for landscape survey

Techniques

- FROM MAPS
 - Placenames
- FROM THE AIR
 - Aerial survey
 - Satellite
- ON THE GROUND
 - Surface collection/mapping
 - Shovel testing

Applications

- *Reconnaissance*: finding sites (all periods = inventory survey)
- *Evaluation*: Potential for finding sites
- *Field Research*: settlement patterns (selected periods)



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Landscape Survey

We do landscape survey in poorly understood parts of rural and urban England that are vulnerable to change in order to increase understanding, enjoyment and extend protection of the heritage.

Overview

One of the fathers of local history, W G Hoskins, famously noted that ‘the landscape is the

Airborne Remote Sensing Methods Explained



Aerial Reconnaissance

Aerial reconnaissance is used by archaeologists to discover new sites and record changes in the historic landscape



Aerial Investigation

Interpretation and mapping of archaeology on aerial photographs provides better understanding of past landscapes to inform research and management



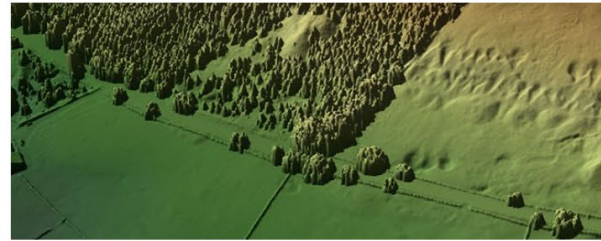
Aerial Photographs

The use of aerial photographs in archaeological landscape survey.



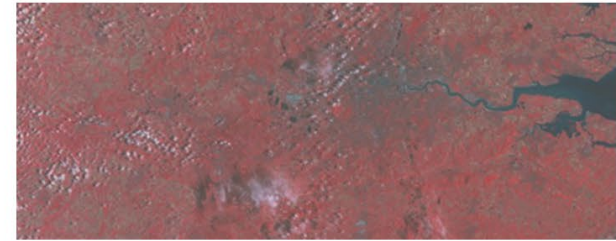
Formation of Cropmarks

Find out how cropmarks of archaeological sites are formed.



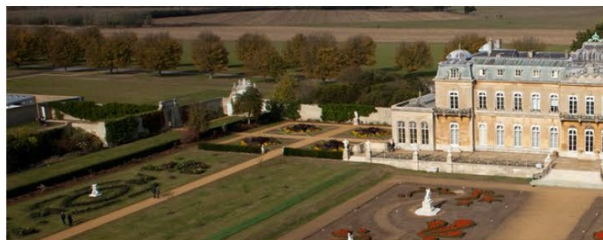
Lidar

Lidar is capable of measuring the ground surface with a very high degree of accuracy enabling the recognition and recording of hard to detect features



Satellite and Multi-Spectral

The use of satellite imagery and multi and hyper-spectral data has potential for the identification of new sites and for heritage management purposes



Drones for Heritage Uses

Within the Heritage sector drones are a remotely controlled, low-level, aerial platform for carrying a range of sensors that are getting increased use

Carver - Site Survey

- USING MAPS and DOCUMENTS
- SURFACE MAPPING
 - Topography
 - Vegetation
- SURFACE COLLECTION
- GEOPHYSICAL SURVEY
 - Metal detector
 - Resistivity
 - Magnetometry
- SAMPLE EXCAVATION
 - Shovel testing
 - Bore holes
 - Quadrats and trenches
 - Strip-and-map

FIGURE 5.1 Techniques for site survey.

Terrestrial Remote Sensing

Historic England experts investigate how geophysics and other specialist survey techniques can be used to learn more about heritage assets.

Archaeological remains still buried under the ground can be revealed by geophysical techniques such as magnetometry, resistivity and ground penetrating radar.

Laser scanning and various forms of photogrammetry are used to accurately record in three dimensions buildings, monuments and artefacts. The 3D data is used to create plans, elevations and visualisations to help management, research and illustration.



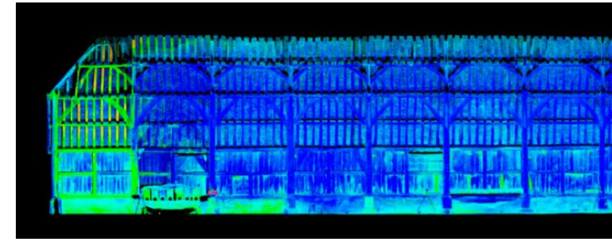
Geophysical Survey

Geophysical survey detects past human activity beneath the ground and plays a vital role in the discovery and understanding of archaeological sites.



Geophysical Techniques

A range of geophysical methods are used in archaeology: magnetometer survey, earth resistance and ground penetrating radar.



Specialist Survey Techniques

Historic England use a range of specialist survey techniques (Photogrammetry, SfM and laser scanning etc) as an essential part of any heritage project

Carver - Excavation

- On method: three ways of dissecting strata
- On procedure: Recovery Levels
- Recording
- The course of an excavation

Archaeology

Archaeology is the investigation of the physical remains of the past. This section describes the methods we use to excavate sites (intrusive investigations) and techniques we use to interpret the deposits and features we discover and the samples and finds that we recover.

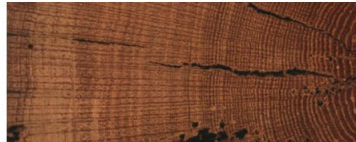
You can find out more about non-intrusive archaeological methods (survey techniques) on the [landscape survey](#) and [remote sensing](#) pages.

You can follow our work on the Historic England Archaeology Twitter account [@HE_Archaeology](#) and search for our reports on the [Research Reports Database](#).



Excavation

Archaeological excavation is the controlled examination and removal of the buried deposits and features that make up archaeological sites,



Scientific Dating

Scientific dating uses biological and physical methods for assessing the time when things happened in the past. We offer advice and conduct research.



Archaeological Conservation

Archaeological conservators carry out investigative and remedial conservation from well-equipped laboratories. We offer advice and conduct research



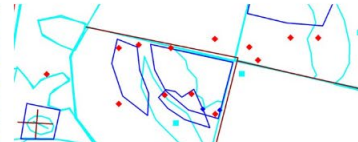
Materials Science

Our experts study the production of metal and glass objects and associated waste (slag). We curate reference collections and offer advice



Archaeological Archives

Archaeological archives consist of the records and finds made during an archaeological project



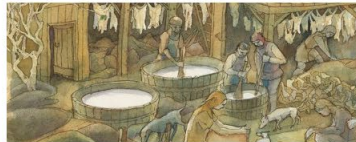
Computers & Archaeology

An overview of how Historic England use computers for their archaeological excavations.



Zooarchaeology

Zooarchaeologists study archaeological animal bones. We develop methods, conduct analyses and curate a modern comparative collection.



Environmental Archaeology

Our environmental archaeologists include experts in the disciplines of archaeobotany, geoarchaeology, palaeoecology, zooarchaeology and human remains



Geoarchaeology

Geoarchaeologists use earth sciences to understand archaeology. We develop methods, conduct analyses and offer advice



Archaeobotany

Archaeobotanists study archaeological plant remains. We develop methods, conduct analyses and curate modern comparative collections



Human Osteoarchaeology

Osteoarchaeologists study archaeological human bones. We offer advice, conduct research and curate collections of Roman and medieval remains

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Excavation

Archaeological excavation is the controlled examination of the buried deposits and features that make up archaeological sites and monuments. These are carefully dug and recorded along with the finds they contain, to build up a picture of a site and its people. Archaeology can help us to understand past society and how it influences us today.

Carver – Writing Up: Analysis

- The tasks: manage, assess and analyse
- The analytical programme
- Case Study: Saddler Street, Durham

Reassessment	Management
Assemblage – Artefacts: metal, wood, stone leather, pottery, glass – Biota: human bone, animal bone Chronology – Stratification – Dating sequence Spatial – Contexts to features – Features to structures – Structures to site	Records – Digital records – Context cards/feature cards – Maps, plans, sections – Photographs – Programme of analysis Objects – Conservation – Packing and storing – Programme of analysis Samples – Storage – Programme of analysis

FIGURE 8.2 Re-assessment and management.

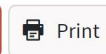


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The Matrix: Using Archaeological Stratigraphic Data



Keith May



Dr James Taylor



Ceri Binding



The Archaeologist's Guide To Good Practice - Handbook

Lead Research Organisation: [Historic Bldgs & Mnts Commis for England](#)

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Overview

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Abstract

Work on The Matrix project (AH/T002093/1) has identified a number of issues with the way archaeological information is deposited in digital archives. Consultation carried out during the Matrix project has delivered feedback that a collective approach to tackling these issues would be most effective in delivering a sustainable and FAIR outcome. The Matrix project has also established a current lack of the use of Data Management Plans (DMPs) by the commercial archaeological sector (and even largely by academics) and identified a need for a cross sector set of common procedures to reflect and enshrine best practice in post excavation analysis.

Funded Value:

£80,277

Funded Period:

May 23 - Apr 24

Funder:

AHRC

<https://gtr.ukri.org/projects?ref=AH%2FX006735%2F1#/tabOverview>

Carver – Writing Up

- Analysis
 - Assemblage
 - Space
 - Chronology
 - Synthesis
 - Publication
-
- Design

Regulations

- [Code of conduct: professional ethics in archaeology](#)
- [Professional conduct](#)
- [Regulations for the registration of organisations](#)
- [Membership regulations](#)
- [Area and Special Interest Groups](#)
- [Board of Directors](#)
- [Advisory Council](#)
- [Regulations for the Equality Diversity and Inclusion \(EDI\) committee](#)
- [Regulations for the accreditation of degree programmes](#)
- [Regulations for the assessment of vocational qualifications](#)
- [Regulations governing membership of the Forensic Archaeology Expert Register and Panel \(FAEP\)](#)
- [Procedure at General Meetings](#)

Standards and guidance

- [Standard and guidance for archaeological advice by historic environment services](#)
- [Standard and guidance for the creation, compilation, transfer and deposition of archaeological archives](#)
- [Standard and guidance for the archaeological investigation and recording of standing buildings or structures](#)
- [Standard and guidance for the collection, documentation, conservation and research of archaeological materials](#)
- [Standard and guidance for commissioning work or providing consultancy advice on archaeology and the historic environment](#)
- [Standard and guidance for desk-based assessment](#)
- [Standard and guidance for archaeological excavation](#)
- [Standard and guidance for field evaluation](#)
- [Standard and guidance for forensic archaeologists](#)
- [Standard and guidance for geophysical survey](#)
- [Standard and guidance for nautical archaeological recording and reconstruction](#)
- [Standard and guidance for stewardship for the historic environment](#)
- [Standard and guidance for an archaeological watching brief](#)
- [Appendices](#)

Toolkits to support Standards and guidance

- [Toolkit for specialist reporting](#)
- [Toolkit for finds reporting: roman coinage](#)
- [Toolkit for recording archaeological materials](#)
- [Toolkit for selecting archaeological archives](#)
- [Toolkit for managing digital data](#)



CIfA Area and Special Interest Groups

- [Archaeological Archives](#)
- [Buildings Archaeology](#)
- [Community Archaeology](#)
- [Diggers' Forum](#)
- [Finds](#)
- [Forensic Archaeology](#)
- [Early Careers](#)
- [Graphics Archaeology](#)
- [Heritage Crime](#)
- [Human Osteoarchaeology \(OsteoSIG\)](#)
- [Information Management](#)
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Methods of Archaeological Investigation: Ongoing and wider reading

- Historic England Guidance
- eJournals
 - see Moodle for suggestions

 Taylor & Francis Online

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