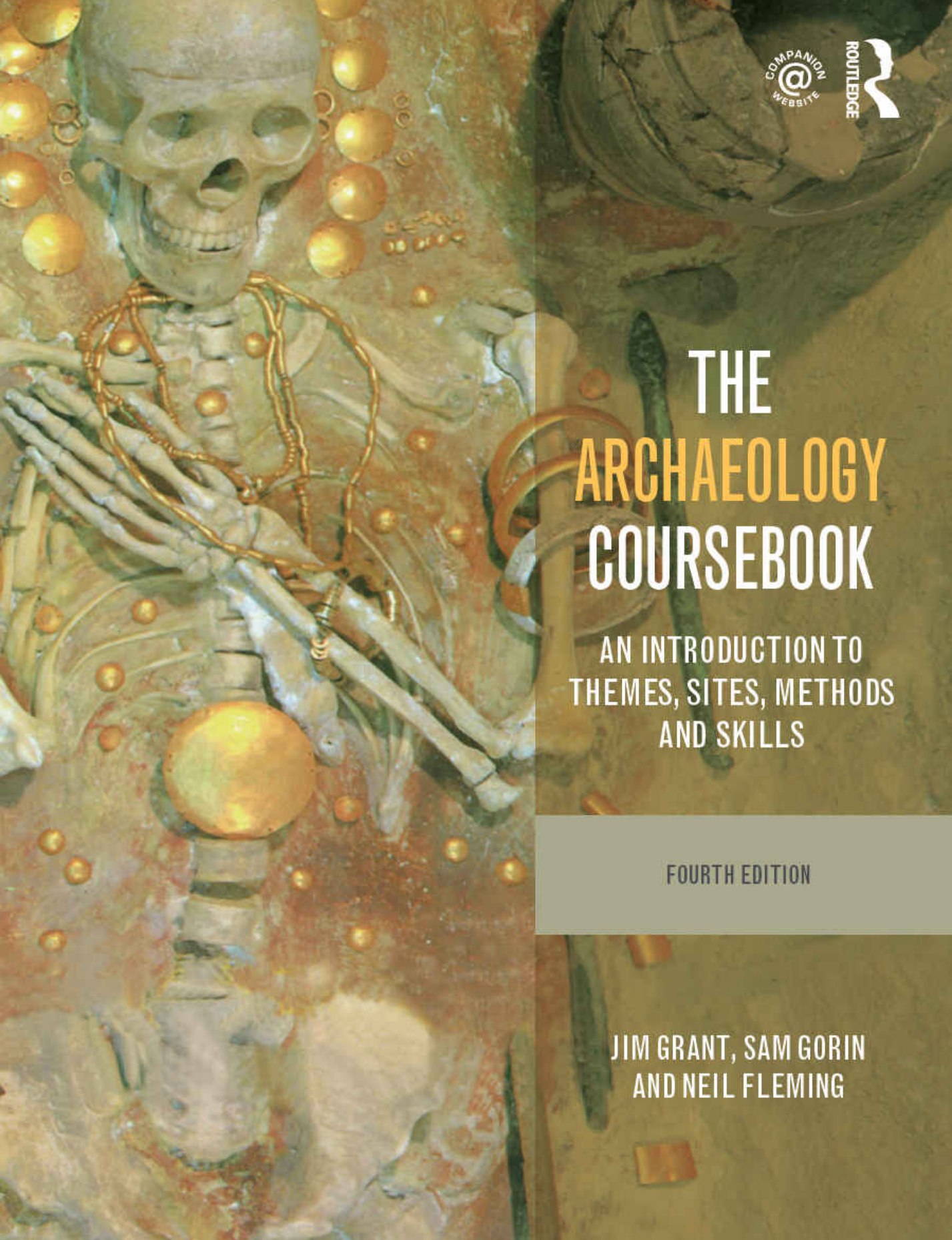
COMPANION @ WEBSITE
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THE
ARCHAEOLOGY
COURSEBOOK
AN INTRODUCTION TO
THEMES, SITES, METHODS
AND SKILLS
FOURTH EDITION
JIM GRANT, SAM GORIN
AND NEIL FLEMING

The Archaeology Coursebook

Fourth Edition

This fully updated and revised edition of the best-selling title *The Archaeology Coursebook* is a guide for students studying archaeology for the first time. Including new methods and key studies in this fourth edition, it provides pre-university students and teachers, as well as undergraduates and enthusiasts, with the skills and technical concepts necessary to grasp the subject.

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All three authors have considerable experience in teaching archaeology, examining and field archaeology. **Jim Grant** is Vice Principal at Cirencester College. **Sam Gorin** was formerly a Curriculum Director at Newark and Sherwood College. He has been widely involved in field archaeology in the East Midlands. **Neil Fleming** is Upper-Sixth House Master at Christ's Hospital, Horsham.

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The Archaeology Coursebook

Fourth Edition

An introduction to themes, sites, methods and skills

Jim Grant, Sam Gorin and **Neil Fleming**

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Brief Contents

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Thanks and love to Sally for support and patience during this project.

Sam Gorin, June 2014

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I'm dedicating this book to my father, William – who passed away aged 94 just as I was completing it. He was a Coal Miner and RAF Navigator and passed on to me his love for maps and the countryside. His bomber squadron was one of many that flew photo reconnaissance missions after the Second World War which left us with an amazing archive of vertical aerial photographs of monuments and field systems before modern development obscured them. A great legacy for archaeology and one I'm always reminded of whenever students use RAF Aerials from the late 1940s.

Jim Grant, January 2015

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Introduction

The Archaeology Coursebook is about archaeological literacy. Whether you are a student or someone who wants to know more about archaeology, you probably have never studied it previously. This means that there is a whole new technical language and set of concepts to grasp. This text will enable you to get to grips with them. It cannot pretend to cover the whole of a degree programme nor is it a field guide to archaeological methods. A fantastic array of books and websites is already available to fulfil these functions. The aim of this book is to get you started with understanding archaeology.

WHAT IS NEW?

As authors, our collective experience includes professional and amateur archaeology and teaching in both state and private schools and in colleges. We also have extensive experience of successfully preparing students of all ages on A level, IB, Access and HE programmes. In writing this new edition, we have responded to feedback from students, teachers and general readers of *The Archaeology Coursebook* about what they liked and what was less useful. Amongst these changes are:

- Introducing a major new range of detailed and up-to-date key studies. In some instances we have included two or more from the same period to enable comparisons to be made.
- Improving and adding to the range of diagrams and illustrations used to explain ideas.
- Adding a new chapter on human origins.
- Introducing Harvard referencing for key sources for new material and significantly expanding the bibliography.
- Moving chapters on examination success and studying archaeology to the companion website so that it is easier to update and to make use of hyperlinks.

Each chapter has had a major overhaul to reflect continuing changes in archaeology, including excavation and managing the past. The large economics chapter has been divided in two to make it manageable. Most chapters have been totally rewritten. Archaeology is a rapidly evolving discipline. While great discoveries continue to be made in the field, our understanding is also being revolutionised by rapid advances in science. Since the third edition these have included:

- Publication of studies into ancient human fossils from Chad, Croatia, Georgia and Siberia which challenge the way we understand our human family tree.
- The widespread use of Bayesian modelling to refine radiocarbon dates, resulting in much greater precision in understanding events in later prehistory.
- A growing body of genetics data which is radically revising our understanding of

population movements in the past and the origins of present populations.
- The widespread use of biochemical techniques to analyse excavated materials and which are unlocking secrets on topics as wide-ranging as diet, herding and marriage partners in the past.
- Far greater emphasis on scientific analysis reflecting the increasing importance of the lab in generating archaeological knowledge.

For those of you studying archaeology, we hope this book will be of use at every stage of your course, from understanding new terminology to producing assignments. The explanations and the key studies are pitched at a level which covers both A level and the first half of most degree courses. If it equips you to produce good essays and to understand what is being discussed in lectures and seminars, it will have done its job. You will, of course, need other sources too, including specific key studies for your course, and to look at examples of fieldwork reports. Directions are provided on the companion website to point you in the direction of additional resources for topics you may want to investigate further. By your final year of university, you will need far greater depth of material. However, by then you will know everything that is in this book! For those of you approaching archaeology from interest, the book provides a detailed insight into the techniques used by archaeologists to investigate our buried past and a survey of what they have revealed.

HOW THE BOOK IS STRUCTURED

The structure of previous editions followed the A level Archaeology course studied by students in England and Wales. This is due to be revised and we have taken the opportunity to significantly broaden the book beyond that course to make it more accessible to a wider readership. This means that some very specific material on religion and ritual and examination preparation has been moved onto the website. While overall organisation is not chronological, each thematic chapter has been reordered to follow the broad outlines of European prehistory.

Throughout the book we have introduced the most commonly examined archaeological methods, concepts and themes. Whole books have been written on the meanings of particular terms and there may not be consensus on their use. We have largely concentrated on providing you with working definitions and examples rather than debating meaning. The book is organised into three broad sections:

- *Part I: Understanding archaeological resources* is an introduction to how archaeologists work – how they find sites, excavate them and analyse, date and interpret the material they recover. It will help you understand how we get archaeological knowledge.
- *Part II: Studying themes in archaeology* begins with a new chapter on human origins and then covers the broad topics of settlement, economics and material culture, society and religion and ritual. We have concentrated on defining key terms, providing examples and highlighting the sources and methods used to explore these themes. These are relevant to all periods and regions of study. However, our own expertise and the main focus of many of our readers are on Europe, including the British Isles, so most of the examples are drawn from that region.
- *Part III: Issues in world archaeology* covers the protection and management of our archaeological heritage. It addresses the social and political role of archaeology and introduces a number of current debates. It also looks at who does what in archaeology and how archaeological knowledge is presented. While these topics are universal, legislation is specific to different states so we have largely used examples from England or the UK for illustration.

A key feature of this book is that it is designed to be used alongside the companion website. We have retained a couple of suggestions for further reading for each of the technical chapters but all web links have been transferred to the website so that they can be updated. Part of the website mirrors the structure of the book and provides access to a huge range of websites to look for examples and illustrations. Archaeology is such a visual subject and so well served by many excellent sources on the Internet that it is foolish not to use it. The significantly revised website also contains additional activities and material for those studying archaeology and updated information on higher level study.

HOW TO USE THIS TEXT

There are so many different ways in which lecturers can structure courses that it is unlikely you will follow the exact order of our contents sequence in your own study. We have taken this into account by providing a full index and a contents list that includes all the main subheadings. For those of you who want to follow 'the story' chronologically, signposts are provided in Figure 0.1. We have also used a system of cross-referencing throughout the book from one topic to related topics. Content, skills and resources are all linked. Look out for the ▶ signposts which guide you to related material on another page. We have introduced and defined key terms as they have arisen in the text. Where this is not possible, a short working definition is provided with the  symbol. The glossary contains a working definition of words printed in **bold** in the text and more.

In addition to examples for most of the points, a new range of major key studies is provided to deepen your understanding of the ideas and methods discussed. Where they are relevant to your course (they are about the right length and detail for essays up to the second year at university), you can use them as content to support your written work. **Key studies** are situated within a chapter where they are particularly valuable but all of them will be useful and provide insights and additional detail on topics in other chapters. For example, all of them are relevant for Chapters 3 and 5. We have included the following icons in the study boxes to indicate where a key study from these selected chapters would also be useful in another:

 Reconnaissance (Chapter 1)

 Excavation (Chapter 2)

 Settlement (Chapter 7)

 Economics A (Chapter 8)

 Economics B (Chapter 9)

 Social archaeology (Chapter 10)

A complete list of links for all the chapters is summarised in Figure 0.1. Clusters of broadly contemporary key studies have been selected to enable you to explore links between them or to use them to compare and contrast in essays, for example Ipswich and Dorestad.

CONVENTIONS

A variety of abbreviations are used in archaeology for dating and measurement. We have tried to use the following:

- BP – Before Present (1950) for most of prehistory
- BC – for later prehistory where dating is more precise
- 3rd millennium BC etc. – when discussing broad changes over several hundred years e.g. 3000–2000 BC

Key studies	Period						Chapters												
	Palaeo	Meso	Neo	Bronze	Iron	Medi	1 reconn	2 exc	3 post-ex	4 dating	5 interp	6 origins	7 settle	8 eco A	9 eco B	10 social	11 religion	12 manage	13 present
Scottish Coastal Archaeology and the Problem of Erosion (SCAPE)							■											■	
Surveying an abandoned landscape on St Kilda							■												
Contrasting approaches: Empingham and East Kent Access Road							■	■										■	
The Chester Amphitheatre project								■										■	■
Boxgrove	■							■			■	■		■					
Eulau: human remains and Neolithic relationships			■					■	■							■	■		
The decline of the Maya						■		■		■			■			■			
Lipids, cheese and the European Dairying Project			■						■		■			■					■
Dating the destruction of Minoan Crete				■						■						■			
The Vézère valley and Neanderthal replacement	■							■				■	■	■		■			
Dolni Vestonice and the Moravian Gate	■											■	■	■		■			
Lewis Binford and Nunamiut ethnoarchaeology											■		■	■					
Oronsay, Sand and seasonal movement around the Inner Hebrides		■					■				■		■	■					
Head Smashed In	■	■											■	■		■			■
Minoan settlement hierarchy				■									■			■			
Star Carr revisited: changing interpretations of a classic site		■						■			■		■	■				■	
Pincevent, Mask and site structure	■										■		■	■					
Mashkan Shapir				■			■						■			■			
Tracing the early development of Ipswich						■		■					■		■	■			
Stellmoor and specialised reindeer hunting	■							■			■		■	■					
Tybrind Vig and late Mesolithic foragers in the Baltic		■						■					■	■	■				
Ohalo II and the Palaeolithic origins of food production	■							■			■		■	■					
Tell Abu Hureyra and the transition to farming		■	■					■			■		■	■		■			
Karanovo and early farming villages in the Balkans			■								■		■	■		■			
Vaihingen and pioneer farmers in central Europe			■					■	■		■		■	■		■			
Hallstatt and the organisation of salt mining				■											■	■			
Dorestad and the birth of medieval trade in the North Sea zone						■		■			■		■		■				
Varna, gold and social status in Copper Age Europe				■							■		■		■	■			
Hochdorf and hereditary chiefdoms in the Iron Age					■			■	■							■	■		
Mead halls and power: Gudme, *Beowulf* and Sutton Hoo						■		■			■		■			■			
Vucedol and the birth of inequality at the dawn of the Bronze Age				■									■		■	■			
Knossos and the emergence of Minoan palace civilisation				■									■	■	■	■	■		
Military technology and organisation: the Illerup Hoard					■			■							■	■			
Was there an Anglo-Saxon invasion?						■							■			■			
Newgrange																	■		
The Biddenham Loop: modern developer-led archaeology in action				■	■		■	■	■									■	
Ancient and modern Celts																			■
Archaeology, conservation and the medieval fishing industry						■			■		■				■				■

Figure 0.1 *Table showing which key studies are the most useful to different chapters*

- C12th AD (e.g. twelfth century AD) for broad changes within the historic period.
- mya – million years ago.

Metric measurements are used with m = metres (m^2 = square; m^3 = cubic) and km = kilometres used as abbreviations.

Amongst the geographic terms we have used are:

- Eurasia (Europe and the adjoining regions of Asia)
- Iberia (Spain and Portugal)
- Anatolia (Turkey)
- Near East (the region containing Syria, Israel, Iraq and western Iran)
- Britain (the island comprising England, Wales and mainland Scotland)
- British Isles (all the islands of the archipelago including Britain and Ireland).

GETTING STARTED

Archaeology is the study of our human past from the material people have left behind. These physical remains include the buildings and objects they made, environmental evidence and the bones or bodies of people themselves. This evidence is always incomplete. Archaeology tries to explain human behaviour in the past. In particular it examines the way people in the past adapted to their environments and the way in which human societies changed over time. Explaining our past contributes to our understanding of humanity today.

Archaeology and related subjects

Archaeology is sometimes thought of as the period before history. It is but it is much more than just 'prehistory'. Archaeology covers a period of over six million years. At one extreme, archaeologists excavate the fossils of our earliest ancestors to study human evolution while others excavate the battlefields of the C20th to understand the nature of warfare for ordinary soldiers. History (the period for which there are written records) overlaps with less than 1 per cent of archaeology. It is more useful to see the difference in terms of sources and methods. Historians rely largely on collating and interpreting written documents which are particularly useful for understanding specific events and the lives and views of elites in past societies. Archaeologists use physical evidence to interpret the economy, social structure and technology of the past and to shed light on the lives of ordinary people. In many cases the two disciplines complement each other; for example, when investigating the Roman army or medieval towns.

In Europe many C19th archaeologists worked within an evolutionary framework to classify their finds. As a result, archaeology is often associated with earth sciences. In the USA, by contrast, archaeologists worked with anthropologists to study the native peoples who still lived in North America. As a result, archaeology there is seen as a branch of anthropology. In fact archaeology has close ties with many other disciplines. It is a magpie subject that borrows techniques and insights from both social and natural sciences, from mathematics to linguistics and from computing to history. As a result, archaeology is highly dynamic with new ideas and techniques, constantly providing new ways of studying physical remains from the past. We have highlighted many examples of these in this new edition. What unites these eclectic sources is the way archaeologists use them to help answer questions about people in the past. For example, archaeologists draw on information gathered by palaeoclimatologists from ice cores taken from glaciers in Greenland. They do this not because they are interested in past weather patterns but because information on temperature and rainfall may help explain why some people in Syria and Israel decided to plant crops at the end of the last ice age. The focus is always upon human behaviour.

Some key archaeological concepts

The Glossary (▶ p. 629) contains a detailed list of technical terms used by archaeologists and which we introduce in this text. However, there are a number of fundamental terms which crop up so frequently that you need a working knowledge of them before you start:

Artefacts are things made or modified by humans. They are usually portable and examples include a stone axe, a pot or a wooden spear.

Ecofacts is a term given to all the environmental data or natural items which provide clues into past human behaviour. Examples include pollen, human remains and food waste such as

Figure 0.2 *Ecofact or artefact? Inside this Egyptian cat-mummy are the remains of an animal (natural material). However, it has been transformed by human activity including mummification, wrapping and painting into a ritual object.*

Figure 0.3 *Sites contain, and are made up of, features. These dug features are the remains of massive post-holes from a Neolithic longhouse at Bylany (▶ p. 499). Photo Archives of the Institute of Archaeology ASCR, Prague, No. FT-40257. www.bylany.com*

butchered animal bones. A bone processed for meat is an ecofact, a bone carved to make a spear point or needle is an artefact.

Features are marks or materials left in the ground by human activity. Sometimes only the trace remains such as a dark circle of earth where a post once stood, while in other circumstances there might be a complete stone wall. Examples of features include hearths, ditches and buildings. Features are generally non-portable but some larger artefacts such as sunken ships are sometimes also described as features.

Assemblages are clusters of distinctive artefacts and sometimes ecofacts which are repeatedly found together. For example, pottery beakers, flint arrowheads and copper daggers buried with crouched human skeletons in Britain are known as the Beaker assemblage. Sometimes different assemblages are used to distinguish different cultural groups of people.

Archaeological sites are locations where evidence of human activity has been found. Traces might include ecofacts, artefacts or features. Examples range from shipwrecks to burials, campsites to entire landscapes. Where a single artefact such as an arrowhead or coin is found, archaeologists tend not to classify that place as a site but as a find-spot. However, archaeologists have become increasingly interested in the pattern of use of the wider landscape or 'off-site areas'.

The **archaeological record** is the raw data for archaeology. The physical remains of past activities include features, artefacts and ecofacts (including human remains). The archaeological record comprises these remains in the contexts in which they come down to us. It is not static and constantly changes through the impact of natural forces and modern human activity.

Figure 0.4 *And this one?*

Archaeological sites are unique and non-renewable. Excavation destroys sites so the record then becomes the plans, photographs and reports made by archaeologists and the archive of finds they have preserved.

Archaeological research has been likened to that of detectives using clues to piece together past human behaviour. Another analogy is that it is like putting a jigsaw together but with no picture on the box and many pieces lost or damaged. The challenge is to find techniques to squeeze the maximum information from material remains (artefacts, ecofacts and features) in order to understand human behaviour in the past.

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Part I

Understanding Archaeological Resources

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Chapter 1

Archaeological Reconnaissance

This chapter introduces the key methods used by archaeologists to locate sites and to reveal and investigate the details of known sites without excavation. We have outlined some strengths and limitations of the most important techniques and identified the way in which different techniques are used for locating and investigating sites in particular circumstances. Reconnaissance is developed in other chapters, including Chapter 7 and the Biddenham Loop key study in Chapter 12.

HOW SITES ARE FOUND

Archaeologists use a wide range of reconnaissance techniques to locate new archaeological sites and to investigate known sites without excavating them. Some archaeologists predict that future advances in non-invasive, and non-destructive, methods will see them become a viable alternative to excavation, not least because of the costs of digging. Reconnaissance techniques are also used to map evidence of human activity across a landscape (▶ p. 229). The particular methods chosen will depend on the question being investigated, the terrain and the scale of the study. The time and resources available are also key factors.

Every year hundreds of new sites are located in the UK and many thousands worldwide. Some result from organised landscape surveys or from the discovery of artefacts by metal detectorists or divers. The 2009 Staffordshire Hoard of Anglo-Saxon metalwork is a significant example of the latter. Some sites are spotted from the air or even from satellites in space. Google Earth has proved a valuable tool in finding sites as diverse as coastal fish traps, Roman villas and hundreds of prehistoric tombs in the Arabian Desert. Some of the most important archaeological discoveries have come about completely by chance. The discoveries of the body of Ötzi the Ice Man by skiers and of the Altamira cave art by children are classic examples. A Neolithic tomb at Crantit in Orkney was found when a digger fell through the roof! Farming and industrial extraction processes such as quarrying, dredging and peat cutting all regularly produce finds of material or features. Some named sites which were documented in the past were located by using written sources. Schliemann's discovery of Troy is the classic example but many battlefields and shipwrecks also fall into this category. Of course some archaeological sites were never 'lost' to begin with. Stonehenge and the Pyramids were well known before the development of archaeology. Then there are buildings from the last 200 or more years which are still in use and the traces of our industrial heritage in both urban and rural landscapes.

Most field archaeology in the UK is developer-led and before any project, large or small, planners demand that an archaeological evaluation (▶ p. 573) is carried out to reveal the impact

development proposals might have on the historic environment. Such evaluations have the potential to reveal new sites as well as review earlier evidence. Similarly, research excavations will start with an evaluation of what is already known about a site or landscape from existing records. However, reconnaissance should not be seen simply as the precursor to the real business of digging. In some cases sound survey and evaluation is capable of providing all or most of the evidence needed.

There are many reasons for archaeologists to undertake reconnaissance work including evaluations for developers, major university or government projects, amateur local society investigations and students involved in personal studies or as a piece of extended research for a degree or for a post-graduate thesis.

Figure 1.1 *Factors influencing the choice of reconnaissance methods*

Reconnaissance methods

To locate or explore sites during research or ahead of development there are four broad and complementary categories of methods that are commonly used:

- desktop study
- surface survey
- geophysical or geochemical survey
- aerial survey and, increasingly, remote sensing.

Technically speaking an archaeological site can only be discovered once. All subsequent investigations are designed to add information to the initial discovery. Primary methods at the archaeologist's disposal are capable of making that first identification of a new site; for example, aerial photography or fieldwalking. Other methods can be viewed as secondary (in sequence not importance); for example, some geophysical surveys are better suited to developing understanding of details on known sites. However, this distinction is not rigid. 'Primary methods' are also deployed in a secondary context: a site which has been identified from aerial photography may still be investigated later by fieldwalking or vice versa.

A classic case of survey, reconnaissance and targeted excavation can be seen in the pioneering Shapwick Project in Somerset which investigated the development of an estate owned by Glastonbury Abbey. Here a battery of reconnaissance methods including evidence from maps, historical sources and environmental data were combined with limited sampling of deposits through shovel pit testing, geochemical survey and excavation. The results when all sources of evidence were brought together enabled the production of regression maps (▶ p. 8) showing the development of settlement in the area.

DESKTOP STUDY OR 'DESK-BASED ASSESSMENT'

As its name suggests, this is an activity largely conducted indoors using a range of documents and records including those available online. All archaeological research starts here. Some archaeologists, usually concerned with shipwrecks, aircraft crash sites or historical individuals, may gain most of their answers from such sources

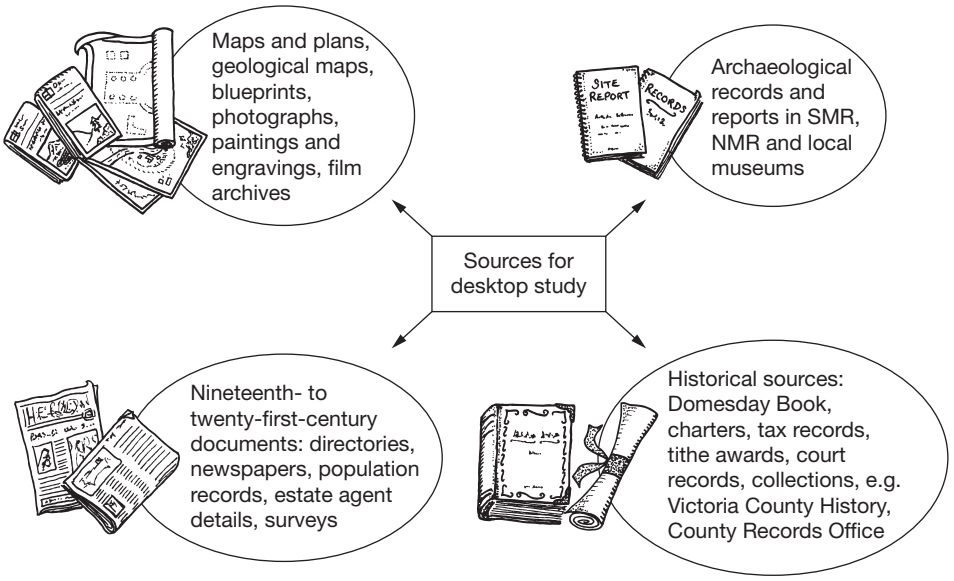

Figure 1.2 *Archive sources commonly used for desktop study*

because there may well be relevant information already capable of answering their question. More commonly archaeologists want to understand what information may be accessible and to interrogate those records as a precursor to fresh investigation. It is quite remarkable how much original research does indeed take place but more often than not it links to earlier finds or discoveries and helps to extend and develop our knowledge and understanding. In some cases desktop work makes fieldwork unnecessary. A recent example was where the Trent and Peak Archaeological Unit was contracted to carry out an evaluation ahead of the new A46 dual carriageway on the Fosse Way in Nottinghamshire. Desktop research enabled them to advise the contractors to avoid two significant Romano-British settlements in favour of a route which only impacted on some minor sites. These were excavated ahead of the road building.

Desktop study involves researching maps and historical or archaeological documents including aerial photographs about the area under investigation. If they are not in private hands, these are most likely to be held in planning departments, county records offices, Historic Environment Records (HERs), local Sites and Monuments Records (SMRs) or the National Monuments Record (NMR) offices. Details of previous archaeological work and records of stray finds for much of Britain are held in local HERs. These records are increasingly digitalised and a national version is being built up at the various NMR offices. Printouts which include lists of earlier research can be made by inputting grid references.

The Portable Antiquities Scheme (PAS) (▶ p. 579) has been in existence since the late 1990s and is moving towards recording 1 million finds. Its website allows archaeologists to search for finds

KEY TERM

Historic Environment Record (HER)

The new name for SMRs. The local authority archive of records and databases covering archaeology and the built environment.

NOTTINGHAMSHIRE SITES AND MONUMENTS RECORD Site No. 03055

Cross-refs. N75174 T4416 OS SW 38
District Newark NGR SK 7350 5125 ← Precise locations on OS map with 8 figure grid reference
Parish Fiskerton cum Morton

Site Name

Class. Type Round barrow Linear feature ← What the site is and how it appears
Period General BA Period Specific
Form cropmark excavation

Site Status Area Status

Description
Circular enclosures, linear features. (1)
Ring ditch, thought to be a barrow, excavated 1975 in advance of development. Situated on a slight knoll on the flood plain terrace, it survived only as a cropmark. The circle is 25.0m in diameter, the flat bottomed ditch 2.0m wide and 70cm deep. 12 sections were made. In the infill, there were layers of iron panning and traces of iron stain in the deposits of natural silts. The only finds were 4 flint waste flakes, and a small fragment of handmade pottery, possibly a fragment of an early BA collared urn or food vessel. No burials were found (destroyed by ploughing?) Looks like a BA barrow (2) See 03055a for adjacent cropmark. ← Key information on the site

Descriptive Type
circular enclosure linear feature

Finds
worked flint pottery

Location of finds

Archaeology History (Event, Name, Date, Source)
Full excav, O'Brien C, 1975 (2)

} Other material from the site and where it is held or recorded

Sources
No. 1 Type AP Pickering J, 7351/1
No. 2 Type Desc Text TTS, 1979, vol 83, pp 80–2
No. Type
No. Type
No. Type

} Written records or accounts of the site

Visits

} When the local archaeological service inspected it

Compiled/Revised
24/08/1987 VB

Figure 1.3 *How to read an SMR/HER printout*

by date and place. The distribution patterns may primarily reflect the distribution of metal detectorists who report their finds but PAS can still have a role to play in providing a picture of past human activity in an area. Other archives may be found at some universities, archaeological societies, cathedrals, museums and libraries, although these vary widely across the country. Increasingly documents, including archaeological site reports, are being digitised and made available online. A major source of information is English Heritage's website PastScape, which gives easy access to over 400,000 records. Other key resources include the Archaeology Data Service at the University of York and the Heritage Gateway, which provide free online digital resources including searchable databases and many reconnaissance and excavation reports.

Historical documents

A diverse assortment of documents may be of value to the archaeologist. These will vary by county, area and period. In much of the country, known documents are archived or recorded in the County Records Office. In many areas, useful sources have also been catalogued in a volume of the Victoria County History (VCH). Based at the University of London, the VCH has been recording and publishing detailed county and parish histories since 1899 and covers most of England. This is often the first resource researchers turn to.

Type of record	Examples and content	Useful for understanding
Legal documents	Records of ownership, charters or court records of disputes often included physical description of property. Wills and inventories which can be linked to particular buildings may provide lists of contents.	Boundaries and occasionally land use Clues to that building's use
Tax records	Tax surveys, tithe awards and the Domesday Book	Landowning units and the economic uses of land
Economic records	Order and sales books and C19th directories e.g. Kelly's Estate agents' bills	Functions of buildings and industrial archaeology Changes in historic buildings
Pictorial records	Paintings, engravings and photographs Aerial photography archives	Identification of sites and tracing changes to standing buildings and landscapes
Written accounts	Descriptions of places in books, diaries, newspapers and travelogues	The function, construction methods and identity of many sites
Antiquarian records	Reports of early antiquarians such as Stukeley on Avebury	Descriptions of monuments as they were before the modern period
Archaeological journals	National journals such as *Archaeologica*, published by the Society of Antiquaries, go back to the C18th. Many regional or specialist period journals go back to the C19th.	Previous excavations and illustrations and descriptions of artefacts

Figure 1.4 *Historical sources for desktop study*

Only a fraction of early records have survived and those that have need translation and interpretation. Amongst the potential range available, the categories shown in Figure 1.4 are important.

Maps

Maps are amongst the most basic tools and sources used by archaeologists. They are used to locate and explore sites and to answer questions about previous use of the landscape. They are of particular value in tracking changes through time (settlement shape and location, boundaries, land units, fields and hedges). They can also be used to relate sites to geology and topography. Medieval archaeologists are often able to produce their own maps for periods before mapping began. They do this by working back from the oldest available map and cross-referencing historical sources and fieldnames. This technique is known as regression. Medieval fieldnames provide a kind of oral map of the landscape as seen by farmers of that time while post-enclosure fields often refer to nearby features such as woods, mills and lime kilns. Those researching archaeological sites need to be able to use scales, at least six-figure grid references and to 'read' contours and hachures (the marks used to indicate earthworks). They may also use other evidence such as photographs and written accounts to interpret maps and plans. A wide variety of maps are used by archaeologists, including the following.

Early maps

Maps from the C16th tend to show the properties of the rich. They are not always to scale but may

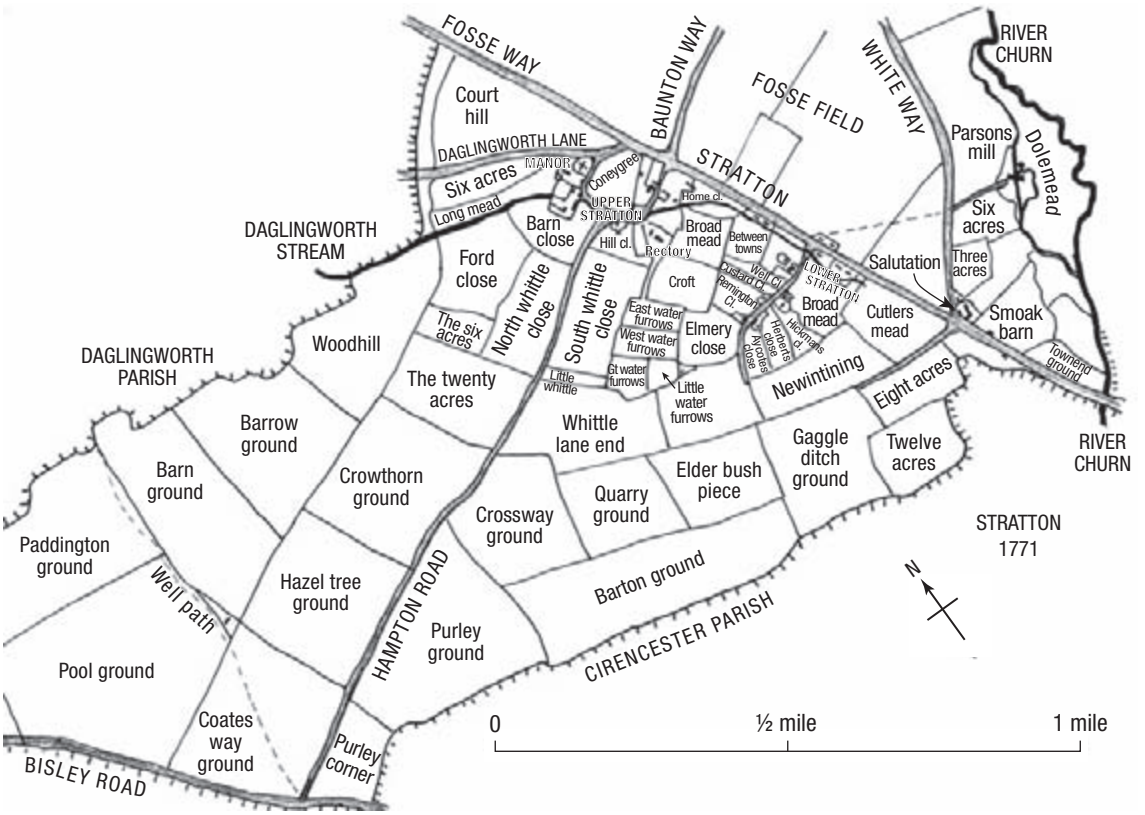

Figure 1.5 *1771 enclosure award map*

provide visual information such as illustrations of specific buildings. John Speed's maps of the early C17th are classics and his town plans are often the first visual records of these sites. From this century too there are route maps such as Ogilvy's Road Book, which is a series of linear strips. Maps were produced to show the proposed routes of turnpikes, canals and railways in order to gain permission from parliament for building to take place.

Changes in rural landownership from the C18th onwards were recorded on enclosure award maps, while taxes owed to the church by landowners were sometimes written on tithe award maps. Sometimes these can be cross-referenced and both can provide information about fieldnames, routes and boundaries, which are vital for landscape archaeology. Other maps show landscaped gardens and battlefields or provide plans of factories and mines. These early maps are often held in county record offices but some may be in private hands or belong to churches.

Ordnance Survey (OS) maps

During the early C19th the OS mapped each county at 1 inch to 1 mile (corresponds to 1:50000 today). From the 1880s OS 6 inch to 1 mile maps (corresponds to 1:10000 today) provided more detail of individual buildings and even hedge species. OS maps established a new standard in accuracy and a comprehensive system of coding and keys for features. A grid system was used which covered the whole country and enabled precise references to be given. By examining a succession of maps for any area,

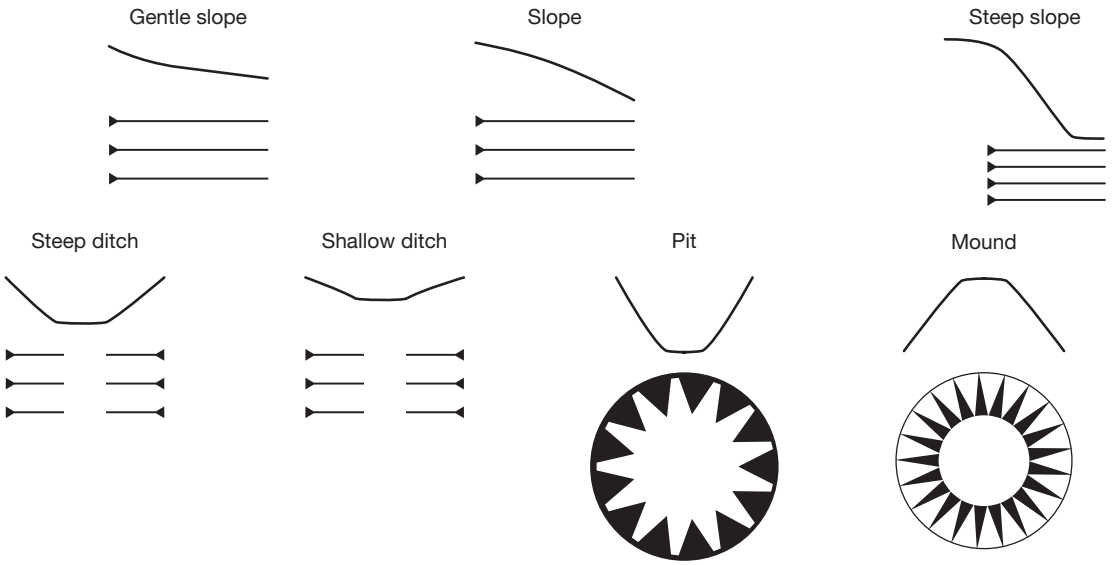

Figure 1.6 *How to read hachures on a map*

Hachures are used on maps and plans to indicate the presence of slopes. Shown wider at the top of a slope and reducing in thickness towards the bottom of the slope they indicate both the steepness and length of the slopes. Short and thick hachures represent a short and steep slope whereas a long and gentle slope is depicted by long and thin hachures. The closer hachures are clustered, the steeper the slope. Some surveyors use elongated triangles or 'T-shapes' while others draw symbols rather like tadpoles where the wider 'head' end can be remembered as being to the top – as in a pond – and the tail wiggles downwards. To read hachures off site plans, learn to look for the thicker ends of the marks which are the tops of slopes so that you can recognise rises and falls in the landscape.