The Thames through Time

The Archaeology of the Gravel Terraces of the Upper and Middle Thames

Early Prehistory: to 1500 BC

Part 1 – The Ice Ages: palaeogeography, Palaeolithic archaeology and Pleistocene environments

by Anthony Morigi, Danielle Schreve and Mark White

Part 2 – The Mesolithic, Neolithic and early Bronze Age and the establishment of permanent human occupation in the valley

by Gill Hey, Paul Garwood, Mark Robinson, Alistair Barclay and Philippa Bradley

Illustrations prepared by Sarah Lucas

with Magdalena Wachnik and Peter Lorimer

Oxford Archaeology
Thames Valley Landscapes Monograph No. 32
2011

The preparation and publication of this volume has been funded by English Heritage from the Aggregates Levy Sustainability Fund

Published for Oxford Archaeology by Oxford University School of Archaeology as part of the Thames Valley Landscapes monograph series

Designed by Oxford Archaeology Graphics Office

Part 1 edited by Anne Dodd
Part 2 edited by Chris Hayden
Thames Through Time series editor Anne Dodd

This book is part of a series of monographs about the Thames Valley Landscapes
For more information visit www.thehumanjourney.net

ISBN 978-0-9549627-8-4

Typeset by Production Line, Oxford
Printed in Great Britain by Information Press, Eynsham, Oxford

Contents

PART 2: THE MESOLITHIC, NEOLITHIC AND EARLY BRONZE AGE AND THE ESTABLISHMENT OF PERMANENT HUMAN OCCUPATION IN THE VALLEY

CHAPTER 8: AN INTRODUCTION TO THE HOLOCENE OF THE THAMES *by Gill Hey with Chris Hayden*

CHAPTER 9 – THE THAMES AND ITS CHANGING ENVIRONMENT IN OUR ERA *by Mark Robinson*

CHAPTER 10 – MESOLITHIC COMMUNITIES IN THE THAMES VALLEY: LIVING IN THE NATURAL LANDSCAPE *by Gill Hey with Mark Robinson*

CHAPTER 11 – NEOLITHIC COMMUNITIES IN THE THAMES VALLEY: THE CREATION OF NEW WORLDS *by Gill Hey with Mark Robinson*

Figures

CHAPTER 3

CHAPTER 4

CHAPTER 5

CHAPTER 6

CHAPTER 7

CHAPTER 8

CHAPTER 9

CHAPTER 10

CHAPTER 11

CHAPTER 12

CHAPTER 13

CHAPTER 15

CHAPTER 16

Tables

Preface

This volume is the third in our series The Thames through Time, funded from the Aggregates Levy Sustainability Fund, which seeks to provide an accessible and up to date synthesis of the large quantity of archaeological data recovered over more than a century of quarrying and other development on the gravel terraces of the river Thames. Previous publications have covered the later prehistoric, Roman and Anglo-Saxon periods, from *c* 1500 BC to AD 1000. A final volume, covering the period AD 1000-2000, is currently in preparation.

The present volume reviews knowledge of the earlier prehistory of the Upper and Middle Thames Valley. Archaeological syntheses very often take the Neolithic period as their point of departure, with only a brief and wary glance back over the shoulder at the daunting and unfamiliar world of the Palaeolithic and Mesolithic. This imbalance has, however, been significantly redressed by a number of projects carried out via the Aggregates Levy Sustainability Fund, not least because quarrying has often provided the means by which these ancient deposits and remains can be accessed. In the present volume, therefore, we have been delighted to work with specialists in Quaternary geology and palaeontology, as well as Palaeolithic archaeology, in order to extend the coverage of The Thames through Time as far back as the evidence currently allows, over a period of half a million years and more. As well as introducing fascinating material that may up to now have remained very unfamiliar to most of us, this also enables us to set the Mesolithic and subsequent human occupation of the valley in a much longer (and truer) context. In particular, it illustrates the close relationship between the climate and the environment and natural resources of the valley, which have seen extreme fluctuations over the period covered by this volume. It also points up starkly how fast change happens in modern human societies, and how much we ourselves, only relatively recent arrivals in the region, have moulded and changed its landscape and environment to meet our material and cultural needs.

As in previous volumes, we use colourful double page spreads to summarise and illustrate important aspects of the evidence covered in detail in the main text. For Part 1 this is supplemented by a series of inset pages explaining some of the more specialised techniques and approaches used in Quaternary science and Palaeolithic archaeology, and a glossary of technical terminology is provided at the end of the volume.

Anne Dodd, Series Editor
January 2011

A NOTE ON RADIOCARBON DATES

Any volume dealing with the transitions from the Palaeolithic to the Mesolithic, and from the Mesolithic to the Neolithic, faces the problem of reconciling the different ways in which the scholars of these periods express radiocarbon dates. Radiocarbon dating is effective only for the later part of the Palaeolithic (covered in Part 1, Chapters 6 and 7), and for this period, to avoid potential confusion, we have wherever possible given each date firstly in uncalibrated form and secondly in calibrated form expressed in years BP (Before Present) and years BC. For the Neolithic and later periods, dates are conventionally expressed as calibrated dates BC, and we have followed this practice in Part 2. It is the intervening period – the Mesolithic – which presents the greatest difficulties. For this period, which is covered in Part 2 of this volume, although we have generally cited radiocarbon determinations as calibrated dates BC, in a few cases, especially those concerning the earlier part of the Holocene, we have cited dates as both cal BP and cal BC.

The radiocarbon dates cited in Part 1 have been calibrated using CalPal and the CalPal 2007 Hulu calibration data (www.calpal.de/). (Absolute dates for the earlier parts of the Palaeolithic are obtained using methods other than radiocarbon dating which do not require calibration, and are cited as calendar years BP.)

In Part 2 no attempt has been made to recalibrate dates, which are cited as they are given in the publications from which they have been obtained. Although this means that the calibrated dates have been produced using a range of different calibration data, the differences are usually slight. Where dates have been calibrated for Part 2 of this volume, we have used OxCal (v. 4.1; Bronk Ramsey, C, 2009 Bayesian analysis of radiocarbon dates, *Radiocarbon* **51** (1), 337-360) and the IntCal04 calibration data (Reimer *et al*. 2004, IntCal04 terrestrial radiocarbon age calibration, 0-26 cal kyr BP, *Radiocarbon*, **46** (**3**), 1029-1058). All calibrated dates have been rounded outwards to the nearest 10 years. In Part 2, some dates are cited which have been estimated using Bayesian models. Since discussion of these models is beyond the scope of this volume, we have not attempted to distinguish such estimated dates from simple calibrated dates. Where possible, the laboratory number and the uncalibrated radiocarbon determination is also given, although, especially in older publications, this information is sometimes not available.

Acknowledgements

We are very grateful for the help we have received in preparing this monograph from a large number of people. Particular thanks are due to Rob Poulton and his colleagues at the Surrey County Archaeological Unit for providing information, text and images, and for reading and commenting on our work as it progressed. We are grateful to Nick Ashton for reading Part 1 of the volume in draft and providing many helpful comments, and to Kate Scott and Christine Buckingham for their help in presenting the work of the Hanson Mammoth Project. Anthony Morigi would like to thank his many colleagues at the British Geological Survey who have assisted him in contributing to this book, especially Steve Booth and John Powell for reviewing the manuscript, and Jon Lee for his invaluable advice and for providing some of the figures. In Part 2 of this volume we have also benefited in particular from advice, information, reports and illustrations from Tim Allen, Martin Barber, Richard Bradley, Jon Cotton, Steve Ford, Frances Healy, Phil Jones, John Lewis, Paula Levick, Paul McCulloch, Stuart Needham, Fiona Roe and Karen Walker. We are grateful also to Adrian Havercroft (of the Guildhouse Consultancy), acting on behalf of Cemex UK Materials Ltd, for allowing us to use information and illustrations of Horton prior to publication.

Our thanks are also due to the many colleagues and institutions, listed in the picture credits, who have been so helpful in providing us with images and allowing us to make use of copyright material, and also to Kelly Powell of OA who carried out the associated administration for us. The French and German summaries were translated by Nathalie Haudecoeur-Wilks and Markus Dylewski respectively and the index was compiled by Chris Hayden.

The preparation and publication of this volume has been funded by English Heritage with grants from the Aggregates Levy Sustainability Fund, and we are grateful to the commissioning team at English Heritage and to the Project Officer, Helen Keeley, for their support and encouragement. Anne Dodd would also like to thank Ian Williamson and Natalie Bennett, then of English Nature, for encouraging us to expand our remit for Palaeolithic archaeology to encompass the palaeontological and geological research that provides its regional context.

Anthony Morigi publishes with the permission of the Executive Director of the British Geological Survey, and the work of Danielle Schreve and Mark White for this volume is a contribution to the AHOB (Ancient Human Occupation of Britain) project.

Summary

The Thames Valley is a rich source of evidence for understanding past climate and environmental change, the effects on plant and animal populations, and the challenges and opportunities these presented for early humans. Much of this evidence has come to light in the course of gravel quarrying on the terraces of the Thames and its tributaries. This volume provides an up to date overview of the early prehistory of the Upper and Middle Thames Valley, set within its wider regional context. The first part of the volume focuses on the geological, palaeontological and archaeological evidence for the Pleistocene, or the epoch of the Ice Ages. This information is synthesised by the authors in chronologically-ordered chapters, beginning more than half a million years ago, and ending with the rapid climatic amelioration that marked the onset of the Holocene epoch, the period of warmer conditions within which we are still living today. Each chapter reviews the evidence for successive glaciations and interglacials, their effects on the course of the river Thames itself, the contemporary climatic and environmental conditions, and the plants, animals and hominins present.

The second part of the volume takes up the story from the beginning of the Holocene, around 11500 years ago. Two chapters introduce this era, describing its topography and its changing environment, the character of its archaeological remains and the history of research. The authors review the evidence for early hunter-gatherer populations in the Mesolithic and the transition to a 'Neolithic' way of life at *c* 4000 cal BC, with the introduction of domesticated plants and animals, pottery and different ways of making stone and flint tools and treating the dead. Three chapters outline present knowledge of the changing character of settlement from the Neolithic to the end of the early Bronze Age, and the creation and development of ceremonial and funerary monuments. The volume ends with three chapters presenting more detailed considerations of the evidence for Neolithic and early Bronze Age ritual, ceremony and cosmology; funerary practices; and procurement, production and exchange of materials throughout the period. An overlying theme is the rich social lives and belief systems of the inhabitants and their gradually increasing impact on the environment.

Zusammenfassung

Das Tal der Themse ist eine reichhaltige Nachweisquelle für das Verständnis früherer Klimate, ökologischen Wandel, die Auswirkungen auf Flora und Fauna sowie die Herausforderungen und Möglichkeiten die diese für die frühen Menschen darstellten. Viele dieser Nachweise kamen beim Kiesabbau in den Flussterrassen der Themse und ihrer Nebenflüsse zutage. Dieser Band beschreibt einen Überblick des aktuellen Forschungsstandes des prähistorischen oberen und mittleren Tals der Themse im regionalen Kontext. Der erste Teil des Bandes befasst sich mit den geologischen, paläontologischen und archäologischen Zeugnissen des Pleistozän, der Eiszeit.

Diese Informationen wurden vom Autor in chronologisch geordnete Kapitel gegliedert, mit dem Beginn vor mehr als einer halben Millionen Jahre und endend mit der rapiden Melioration, welche den Übergang ins Holozän beschrieb, die warme Periode in der wir heute noch leben. Jedes Kapitel überprüft die Nachweise aufeinanderfolgender Vereisungen und Zwischeneiszeiten, ihre Auswirkungen auf den Verlauf der Themse, die herrschenden Klimate und Umweltbedingungen, sowie die anzutreffenden Flora, Fauna und die Hominiden.

Der zweite Teil des Bandes beginnt mit dem Anfang des Holozän, vor etwa 11500 Jahren. Zwei Kapitel stellen die Epoche vor, indem sie die Topografie und die sich ändernde Umwelt beschreiben, sowie auf die Beschaffenheit der archäologischen Hinterlassenschaften und die Geschichte deren Erforschung eingehen. Die Autoren begutachten Indizien, die auf frühe Jäger und Sammler Bevölkerungen im Mesolithikum hinweisen und gehen auf den Übergang zur neolithischen Lebensart um etwa 4000 v.Chr. ein, welche durch die Einführung von domestizierten Pflanzen und Tieren, Keramik und der andersartigen Herstellung von Stein- und Flintwerkzeugen, sowie dem Umgang mit den Toten, ihren Ausdruck findet. Drei Kapitel widmen sich dem heutigen

Wissensstand über sich ändernden Siedlungsstrukturen am Übergang vom Neolithikum zur frühen Bronzezeit, sowie der Herstellung und Weiterentwicklung von zeremoniellen und begräbnisorientierten Monumenten. Der Band endet mit drei Kapiteln, welche sich detaillierter mit den Nachweisen neolithischer und früh bronzezeitlicher Rituale, Zeremonien und Kosmologie, Begräbnissitten sowie deren Anwendung auseinandersetzen. Des Weiteren werden Beschaffung, Produktion und Austausch von Materialien während dieser Epoche untersucht. Überspannende Themen sind das reichhaltige Sozialleben und das Glaubenssystem der Einwohner und wie diese sich zunehmend stärker auf die Umwelt auswirken.

Résumé

La Vallée de la Tamise constitue une source riche de témoignages nous aidant à comprendre les changements climatiques et environnementaux passés, leurs effets sur les plantes et les populations animales, ainsi que les défis et les opportunités qu'ils ont présenté pour les premiers humains. Beaucoup de ces témoignages sont apparus lors de l'exploitation des terrasses gravières de la Tamise et de ses affluents. Ce volume fournit une vue d'ensemble de la préhistoire ancienne de la Moyenne et Haute Vallée de la Tamise, présentée dans son contexte régional plus large. La première partie du volume est centrée sur les témoignages géologiques, paléontologiques et archéologiques du Pléistocène, ou de l'ère glaciaire. Cette information est synthétisée par les auteurs dans des chapitres classés chronologiquement, commençant il y a plus de 500 000 ans et s'achevant avec l'amélioration climatique rapide qui a marqué le début de l'Holocène, période aux conditions climatiques plus chaudes durant laquelle nous vivons encore aujourd'hui. Chaque chapitre réexamine les témoignages de glaciations successives et interglaciaires, leurs effets sur le cours même de la rivière de la Tamise, les conditions climatiques et environnementales contemporaines ainsi que les plantes, animaux et hominiens présents.

La seconde partie de ce volume enchaîne sur l'histoire du début de l'Holocène, il y a environ 11500 ans. Deux chapitres introduisent cette ère, grâce à la description de sa topographie et de son environnement en cours de mutation, du caractère de ses vestiges archéologiques et de l'histoire de la recherche. Les auteurs revoit les preuves des populations des premiers chasseurs-cueilleurs au Mésolithique et la transition vers un style de vie `Néolithique' environ 4000 ans av. J.-C., avec l'introduction de plantes et d'animaux domestiqués, la céramique et les différentes manières de fabriquer des objets en pierre ou en silex et de traiter ses défunts. Trois chapitres résument la connaissance actuelle du caractère changeant de l'habitat du Néolithique à la fin du Bronze ancien, ainsi que la création et le développement de monuments cérémoniaux et funéraires. Le volume s'achève par trois chapitres présentant d'autres réflexions détaillées sur les indices recueillis relatifs aux rituels, aux cosmologies et aux pratiques funéraires du néolithique et du Bronze ancien; ainsi que sur l'obtention, la production et l'échange de matériaux tout au long de cette période. Le thème prédominant est celui des vies sociales et des systèmes de croyances riches des habitants et leurs impacts de plus en plus marqués sur l'environnement.

Picture credits

Where illustrations have been sourced from works that are cited in the main text of this volume, the relevant publication is identified in the following list by a short reference and full details can be found in the corresponding entry in the bibliography. Full references are only given in this list for works that are not otherwise cited in the main text.

Fig. 1.1 adapted from Westaway *et al*. 2002, fig 5; Fig. 1.2 *Globorotalia menardii* from *Late Quaternary Environmental Change* by Martin Bell and Michael J C Walker 2nd ed. 2005 Pearson Education Ltd, fig 2.11; Specmap and Gisp2 ice core from Grootes *et al*. 1993 reprinted by permission Macmillan Publishers Ltd; pollen, British Geological Survey; *Aphodius holdereri* from an original image by Scott Elias, Royal Holloway, University of London; mammoth excavation image courtesy of Kate Scott and Christine Buckingham, the Hanson Mammoth project; magnetostratigraphy diagram adapted after Lowe and Walker 1997 fig 5.26; Fig. 1.3 from Gibbard 1988 fig. 2; Fig. 1.4 palaeogeography of the pre-Anglian 'Ancient' Thames after J Rose, Early and Middle Pleistocene landscapes of eastern England, *Proc Geologists' Assoc* 120 (2009), fig. 8; Fig. 1.5 sea-level/orbital forcing after *Global environments through the Quaternary: exploring environmental change*, by D E Anderson, A S Goudie and A G Parker (2007), fig. 7.11 modified after Chappell and Saddleton 1986, by permission of Oxford University Press; maps after K. Lambeck 1995 Late Devensian and Holocene shorelines of the British Isles and North Sea from models of glacio-hydro-isostatic rebound. *Journ. Geol. Soc*. London, Vol. 152, 437-448, fig 3; Fig. 1.6 after Gibbard 1988 fig. 3; Fig. 1.7 after Gibbard 1988 fig. 4; Fig. 1.8 British Geological Survey Make a Map; Fig. 1.9 IPR/117-40C British Geological Survey. © NERC 2009. NEXTMap Britain Elevation Data from Intermap Technologies. All rights reserved; Fig. 1.10 from M G Sumbler *British Regional Geology: London and the Thames Valley* (4th edition), British Geological Survey, 2006; Fig. 1.11 adapted from Bridgland 2000; Fig. 1.12 stratigraphy adapted from Bridgland 1994, pollen diagram from Bridgland 1994 after Turner 1983; Fig. 1.13 photo Danielle Schreve; Fig. 1.14 adapted from Preece and Parfitt 2000; Fig 1.15 photo S Parfitt; Figs 1.16, 1.17, 1.18 adapted from Parfitt *et al*. 2005 reprinted by permission Macmillan Publishers Ltd; Fig. 1.19 adapted from Bridgland 1994; Fig. 1.20 hominin skulls adapted from C Scarre *The Human Past*, London, 2005; Fig. 1.21 from M B Roberts, S A Parfitt, M I Pope and F F Wenban-Smith, Boxgrove, West Sussex: Rescue excavations of a Lower Palaeolithic Landsurface (Boxgrove Project B, 1989-91), *Proceedings of the Prehistoric Society* 63, 303-358, figs 24-26, 1997 with permission; Fig. 1.22 from Ashton *et al.* (eds) 1992, figs 3021 (plate 5), 3047 (plate 10), 3094 (plate 21), 3078 (plate 17) British Museum; Fig. 1.23 from Wymer 1999, 51, fig. 13, with permission Wessex Archaeology; Fig. 1.24 core types from Ashton *et al*. 1998, 291, fig. 4, flake tools from Ashton *et al*. (eds) 1992, figs 3010 (plate 2), 3131 (plate 29), 3147 (plate 33) and 3137 (plate 31) British Museum, handaxes from J Evans On the occurrence of flint implements in undisturbed beds of gravel, sand and clay, *Archaeologia* 38, 280-307, 1860; Fig. 1.25 main image reconstruction by Peter Lorimer Oxford Archaeology, flints from Wymer 1999, fig. 13 with permission Wessex Archaeology; Fig. 2.1 British Geological Survey; Fig. 2.2 BGS 2005 Beaconsfield: England & Wales Sheet 255 Solid and Drift geology 1:50000 (Keyworth Notts, British Geological Survey), after Gibbard 1985; Fig. 2.3 background images Sarah Lucas Oxford Archaeology, schematic map as Fig 2.2, Skilak Lake US Fish and Wildlife Service, Steve Hillebrand, Greenland ice sheet Hannes Grobe (Creative Commons CC-BY-SA-2.5), steppe mammoth Sam Brown, Norfolk Museums and Archaeology Service; Fig. 2.4 map courtesy of S Elias, specimen image courtesy of S Kuzmina; Fig. 2.5 photo Danielle Schreve; Fig. 2.6 from Schreve 2004; Fig. 2.7 adapted from Bridgland 1994; Fig. 2.8 photo Danielle Schreve; Fig. 2.9 photo Danielle Schreve; Fig. 2.10 from White 2000, 3, fig. 1; Fig. 2.11 from Wymer 1968, fig. 49 objects 107, 108, 113, 114, with permission; Fig. 2.12 after Hardaker 2001, fig. 19.1; Fig. 2.13 adapted from Gibbard 1985 Cambridge University Press with permission; Fig. 2.14 from White and Plunkett 2004, 108, fig. 7.11; Fig. 2.15 Swanscombe waterhole painting and the Clacton spear © Natural History Museum London, reconstruction of straight-tusked elephant – artwork by Mauricio Anton, Southfleet Road Ebbsfleet elephant under excavation photo Oxford Archaeology © Union Railways (North) Ltd, flint core and handaxe photos F Wenban-Smith © Union Railways (North) Ltd; Fig. 3.1 British Geological Survey; Figs 3.2, 3.3 from Schreve *et al*. 2002; Figs 3.4, 3.5, 3.6 photos Danielle Schreve; Fig. 3.7 from Wymer 1968, fig. 56 nos 123 and 126 and fig. 57 no 129, with permission; Fig. 3.8 adapted from Bridgland 1994; Fig. 3.9 from Roe 1981, 120-1, fig. 4.12 objects a1-3, images © Pitt Rivers Museum Oxford; Fig. 3.10 photos © Natural History Museum London, drawing after Wymer 1968 fig 79 no. 215, with permission; Fig. 3.11 after Wymer 1968 fig 74 no. 203, fig 78 no 214 and plate ix, with permission;

Fig. 3.12 photos N Branch; Fig. 3.13 handaxes from Glasshouse St and Yiewsley © Museum of London, handaxe from Lower Clapton - Bromley Museum Service (Bromley Museum, Orpington) photo C Juby; Fig. 3.14 idealised Levallois core and preparation from Wymer 1999, 9, fig. 3 (1) and (3) with permission Wessex Archaeology, Boeda's Levallois concept modified after Boëda 1995; Fig. 3.15 Sonning Railway Cutting and Creffield Rd from Wymer 1999, 81, fig. 26, 83, fig. 28 with permission Wessex Archaeology; Butt's Hill Pit and Hillingdon Pits after Wymer 1968, fig. 63 no 152 and fig. 85 nos 223-5 and 230, with permission; Fig. 3.16 main image reconstruction by Peter Lorimer Oxford Archaeology; Levallois core and flake from Baker's Hole, Kent © Trustees of the British Museum, Levallois core from Yiewsley, © Museum of London; Fig. 4.1 British Geological Survey; Fig. 4.2 Mark White; Figs 4.3, 4.4 photos Danielle Schreve; Fig. 4.5 © Natural History Museum London; Fig. 4.6 photo Jeff Veitch; Fig. 4.7 Natural History Museum, photo courtesy of Beccy Scott; Fig. 4.8 adapted from Kennard 1944; Fig. 4.9 photo Danielle Schreve; Fig. 4.10 adapted from Scott and Buckingham 1997; Fig. 4.11 Stanton Harcourt from Hardaker 2001 fig. 19.4, Berinsfield from Macrae 1982, figs 1-3, reproduced by permission of the Oxfordshire Architectural and Historical Society; Fig. 4.12 photo Danielle Schreve; Fig. 4.13 Dix Pit Stanton Harcourt information and images courtesy of Kate Scott and Christine Buckingham, the Hanson Mammoth Project; Fig. 5.1 British Geological Survey; Fig. 5.2 from Hardaker 2001, fig. 19.8(a) and 19.9 (a, b); Fig. 5.3 US Fish and Wildlife Service, Tim Bowman; Fig. 5.4 photo Danielle Schreve; Fig. 5.5 from M R Bates, Pleistocene sequences at Norton Farm, Chichester, West Sussex, in J B Murton *et al*. (eds), *The Quaternary of Sussex*, Field Guide. London: Quaternary Research Association, fig. 5.14; Fig. 5.6 Mary Evans Picture Library; Fig. 5.7 adapted from Preece 1999; Fig. 5.8 photo Danielle Schreve; Fig. 5.9 from Trimmer 1813; Fig. 5.10 adapted from Maddy *et al*.,1998, fig 9a; Fig. 5.11 Sarah Lucas Oxford Archaeology; Fig. 6.1 British Geological Survey; Fig. 6.2 after Grootes *et al*., 1993 reprinted by permission Macmillan Publishers Ltd; Fig. 6.3 adapted from Coope *et al*., 1997; Fig. 6.4 Marlow from Wymer 1968, 58, fig. 25, with permission, Coygan Cave from White and Jacobi 2002, 111, fig. 2; Fig. 6.5 background mapping IPR/117-40C British Geological Survey. © NERC 2009. NEXTMap Britain Elevation Data from Intermap Technologies. All rights reserved. Archaeological data after Tyldesley 1987, 19; Fig. 6.6 Ancient Human Occupation of Britain (AHOB) project; Fig. 6.7 reconstruction by Peter Lorimer Oxford Archaeology; Fig. 6.8 flint images courtesy of Roger Jacobi: leaf point, Kent's Cavern Torquay Museum, Joanna Richards; blade points, Kent's Cavern lhs Natural History Museum, rhs Torquay Museum, Joanna Richards; nosed scraper, Kent's Cavern Torquay Museum, Hazel Martingell; busked burin Ffynnon Beuno Cave Natural History Museum, Hazel Martingell; Gravettian Font Robert point Mildenhall British Museum, Hazel Martingell; Creswell Point Gough's Cave Cheddar Man Museum, Hazel Martingell; Cheddar points Gough's Cave Cheddar Man Museum, Hazel Martingell; Penknife points Risby Warren British Museum Hazel Martingell; backed blade Pin Hole Manchester Museum, Hazel Martingell; Fig. 6.9 *Homo sapiens sapiens and Homo neanderthalensis* skeletal comparisons adapted from C Scarre (ed.) *The Human Past*, London, 2004, 147; Fig. 6.10 burial of the Red Lady of Paviland Amgueddfa Genedlaethol Cymru National Museum of Wales; Fig. 7.1 adapted from Lowe and Walker 1997 fig 7.22, Pearson Education Ltd © Addison Wesley Longman Ltd 1997; Fig. 7.2 all photos © Natural History Museum London; Fig. 7.3 Specimens from Gough's Cave photo © Natural History Museum, modern antelope photo Xavier Bayod, FLIKR; Fig. 7.4 © Surrey County Council (Surrey County Archaeological Unit); Fig. 7.5 from Barclay *et al*. 2003, 54-5, figs 4.11, 4.12 Oxford Archaeology; Fig. 7.6 background image Sarah Lucas Oxford Archaeology, all other images © Surrey County Council (Surrey County Archaeological Unit), Church Lammas text courtesy of Phil Jones, SCAU; Fig. 8.1 background mapping IPR/117-40C British Geological Survey. © NERC 2009. NEXTMap Britain Elevation Data from Intermap Technologies. All rights reserved; Fig. 8.2 Oxford Archaeology; Fig. 8.3 portrait of William Camden National Portrait Gallery, London; Fig. 8.4 John Aubrey, 1665-96, *Monumenta Britannica*; Fig. 8.5: from Plot 1677; Fig. 8.6: from Lambrick 1988. Reproduced by permission Ashmolean Museum, University of Oxford; Fig. 8.7 Rolleston 1884; Fig. 8.8 Thurnham 1860a; Fig. 8.9: English Heritage National Monuments Record; Fig. 8.10: Reproduced by permission Ashmolean Museum, University of Oxford; Fig. 8.11: English Heritage National Monuments Record; Fig. 8.12: Oxford Archaeology; Fig. 8.13 English Heritage National Monuments Record; Fig. 8.14: Google Earth; Fig. 8.15: Data provided courtesy of NERC, ARSF, The Natural Environment Council's Airborne Research and Survey Facility, and processed by Paula Levick; Figs 8.16, 8.17 Oxford Archaeology; Fig. 8.18 mace head Ashmolean Museum, University of Oxford, Atkinson *et al*. 1951; polished flint axe Prehistoric Society, Robertson-Mackay 1987; Carinated and Plain Bowls Benson and Whittle 2007; Grooved Ware Barclay 1999b; Leaf-shaped arrowheads, Decorated Bowl and Collared Urn CBA/Ashmolean Museum, Case and Whittle 1982; flat axe reproduced by kind permission of the Bristol and Gloucestershire Archaeological Society, Needham and Saville 1981; Mesolithic flint: we are grateful to the Society of Antiquaries of Scotland for permission to reproduce the image of the early Mesolithic microliths from Barton and Roberts 2004, fig. 18.2 (© Society of Antiquaries of Scotland); Mesolithic flint Butler 2005; Beakers Clarke 1970; Shafthole Axe

Gerloff 1975; Fig. 8.19 flat axe reproduced by kind permission of the Bristol and Gloucestershire Archaeological Society Needham and Saville 1981; flanged axe reproduced courtesy of Surrey Archaeological Society, Needham 1987; Beaker and early Bronze Age daggers Gerloff 1975; spearheads Ehrenberg 1977; other artefacts: Oxford Archaeology; Fig. 8.20 calibration data from: Reimer, P J, Baillie, M G L, Bard, E, Bayliss, A, Beck, J W, Bertrand, C J H, Blackwell, P G, Buck, C E, Burr, G S, Cutler, K B, Damon, P E, Edwards, R L, Fairbanks, R G, Friedrich, M, Guilderson, T P, Hogg, A G, Hughen, K A, Kromer, B, McCormac, G, Manning, S, Bronk Ramsey, C, Reimer, R W, Remmele, S, Southon, J R, Stuiver, M, Talamo, S, Taylor, F W, van der Plicht, J, and Weyhenmeyer, C E, 2004 IntCal04 terrestrial radiocarbon age calibration, 0-26 cal kyr BP, *Radiocarbon* 46(3), 1029-58. Prepared using OxCal v. 4.1: Bronk Ramsey, C, 2009 Bayesian analysis of radiocarbon dates, *Radiocarbon* 51(1), 337-60; Fig. 9.1 Oxford Archaeology; Fig. 9.2: after D E Anderson, A Goudie, and A Parker, 2007 *Global environments through the Quaternary: exploring environmental change*, by permission of Oxford University Press; Data from the World Data Centre for Paleoclimatology and NOAA Paleoclimatology Program; Fig. 9.3 background mapping IPR/117-40C British Geological Survey. © NERC 2009. NEXTMap Britain Elevation Data from Intermap Technologies. All rights reserved; Fig. 10.1 Early Mesolithic microliths: We are grateful to the Society of Antiquaries of Scotland for permission to reproduce the image of the early Mesolithic microliths from Barton and Roberts 2004, fig. 18.2, © Society of Antiquaries of Scotland; all other artefacts Butler 2005; Fig. 10.2 Oxford Archaeology; Fig. 10.3 Oxford Archaeology; Fig. 10.4 Newbury and District Field Club, J Wymer, 1962, Excavation at Thatcham (second interim report), *Trans Newbury and District Field Club* 11, 2, 41–52; Fig. 10.5 Prehistoric Society, Healy *et al*. 1992; Butler 2005; Fig. 10.6 artist's reconstruction Wymer 1991; bone and antler from Thatcham, Prehistoric Society, Wymer 1962; flint Newbury and District Field Club, Wymer 1958; animal bone Prehistoric Society, Ellis *et al*. 2003; Fig. 10.7 Oxford Archaeology; Fig. 10.8 Newbury and District Field Club Sheridan *et al*. 1967; Fig. 10.9 reproduced by permission of the Oxfordshire Architectural and Historical Society Bradley and Hey 1993, figs 5 and 11-12; Fig. 10.10 Oxford Archaeology; Fig. 10.11 Framework Archaeology; Fig. 10.12 Oxford Archaeology; Fig. 10.13 RCHME Lambrick 1988; reproduced by permission Ashmolean Museum, University of Oxford; Fig. 10.14 Runnymede British Museum, Needham 2000a; reconstructions of tools David 1998; Fig. 10.15 Upper left and centre Wymer 1991; others Oxford Archaeology; Fig. 10.16 English Heritage, after Saville 1990a; Fig. 10.17 Berkshire Archaeological Society Froom 1972; Fig. 10.18 Prehistoric Society, Wymer 1962; Fig. 10.19 reproduced by permission of the Oxfordshire Architectural and Historical Society, Boismier and Mepham 1995, fig. 3; Fig. 10.20 © Museum of London; Fig. 10.21 Wessex Archaeology, Barnes *et al*. 1997; Fig. 11.1 after Holgate 1988, with additions; Fig. 11.2 © Museum of London; Figs 11.3, 11.4 Oxford Archaeology; Fig. 11.5 Horton reconstruction courtesy of CEMEX UK Materials Ltd and Wessex Archaeology, copyright reserved Wessex Archaeology; Yarnton Oxford Archaeology; Figs 11.6, 11.7 Oxford Archaeology; Fig. 11.8 Hey and Barclay 2007; Horton courtesy of Wessex Archaeology and CEMEX UK Materials Ltd; Fig. 11.9 Benson and Whittle 2007; Fig. 11.10 Benson and Whittle 2007; Fig. 11.11 Wessex Archaeology, courtesy of CEMEX UK Materials Ltd; Figs 11.12, 11.13 Oxford Archaeology; Fig. 11.14 British Museum, courtesy of Stuart Needham; Fig. 11.15 Wessex Archaeology, Butterworth and Lobb 1992; Figs 11.16, 11.17 Oxford Archaeology; Fig. 11.18 British Museum, courtesy of Stuart Needham; Fig. 11.19 Benson and Whittle 2007; Fig. 11.20 reproduced by permission of the Oxfordshire Architectural and Historical Society, Pine and Ford 2003, fig. 3; Figs 11.21, 11.22, 11.23, 11.24 Oxford Archaeology; Fig. 11.25 after Holgate 1988a, with additions; Fig. 11.26 Oxford Archaeology; Fig. 11.27 after Benson and Whittle 2007; Figs 11.28, 11.29, 11.30 Oxford Archaeology; Fig. 12.1 Benson and Whittle 2007; Fig. 12.2 Oxford Archaeology; Fig. 12.3 photos Alistair Barclay; Fig. 12.4 Daniel 1950; Figs 12.5, 12.6 Benson and Whittle 2007; Fig. 12.7: HMSO, Grimes 1960; Fig. 12.8 Smith and Brickley 2006, radiocarbon determinations calibrated using OxCal v4.16; Bronk Ramsey, C, 2009 Bayesian analysis of radiocarbon dates, *Radiocarbon* 51(1), 337-60, with IntCal09; Reimer, P J, Baillie, M G L, Bard, E, Bayliss, A, Beck, J W, Blackwell, P G, Bronk Ramsey, C, Buck, C E, Burr, G S, Edwards, R L, Friedrich, M, Grootes, P M, Guilderson, T P, Hajdas, I, Heaton, T J, Hogg, A G, Hughen, K A, Kaiser, K F, Kromer, B, McCormac, F G, Manning, S W, Reimer, R W, Richards, D A, Southon, J R, Talamo, S, Turney, C S M, van der Plicht, J, and Weyhenmeyer, C E, 2009 IntCal09 and Marine09 radiocarbon age calibration curves, 0-50,000 years cal BP, *Radiocarbon* 51(4), 1111-50; Plan: HMSO Grimes 1960; Fig. 12.9 HMSO, Piggott 1962; Fig. 12.10 British Museum, Kinnes 1992; Fig. 12.11 Berkshire Archaeological Society, Wymer 1965-6; Fig. 12.12 © English Heritage Photo Library; Fig. 12.13 Oxford Archaeology; Fig. 12.14: Prehistoric Society, Bradley 1992; Fig. 12.15 Thames Valley Archaeological Services, Ford and Pine 2003; Fig. 12.16 photo Jeff Wallis, Abingdon Area Archaeological and Historical Society; Fig. 12.17 Prehistoric Society, Whittle *et al*. 1992; Fig. 12.18 Oxford Archaeology; Fig. 12.19 English Heritage National Monuments Record; Fig. 12.20 CBA/Ashmolean Museum, Case and Whittle 1982; Fig. 12.21 reproduced courtesy of Surrey Archaeological Society, Jones 1990; Fig. 12.22 aerial photographs and plans of Sites I and II, Ashmolean Museum, University of Oxford, Atkinson *et al*. 1951; artefacts and burial

Prehistoric Society, Whittle *et al*. 1992; Fig. 12.23 aerial photograph English Heritage National Monuments Record; plan English Heritage, Oswald *et al*. 2001; Fig. 12.24 English Heritage National Monuments Record; Fig. 12.25 Prehistoric Society, Robertson-Mackay 1987; Fig. 12.26 English Heritage, after Oswald *et al*. 2001; Fig. 12.27 English Heritage, Oswald *et al*. 2001; Fig. 12.28 CBA/Ashmolean Museum, Case and Whittle 1982; background map reproduced from the Ordnance Survey on behalf of the controller of Her Majesty's Stationery Office, © Crown Copyright, AL 1000005569; Fig. 12.29 Whittle *et al*. 1999; Fig. 12.30 Oxford Archaeology; Fig. 12.31 Framework Archaeology; Fig. 12.32 aerial photograph Ashmolean Museum, University of Oxford; plan and section CBA/Ashmolean Museum, Case and Whittle 1982; Fig. 12.33 Framework Archaeology; Fig. 12.34 Oxford Archaeology; Fig. 12.35 Prehistoric Society, Whittle *et al*. 1992; Fig. 12.36 Oxford Archaeology; Fig. 12.37 © English Heritage Photo Library; Fig. 12.38 Gillings *et al*. 2008; Fig. 12.39 Mark Fearon Photography, www.pitmatic.com; Fig. 12.40 Oxford Archaeology; Fig. 12.41 Ashmolean Museum, University of Oxford, Atkinson *et al*. 1951; Fig. 12.42 plan Ashmolean Museum, University of Oxford, Atkinson *et al*. 1951; artefacts HMSO, Clarke *et al*. 1985; Fig. 12.43 Gillings *et al*. 2008; Fig. 12.44 Prehistoric Society, Pollard 1992; Fig. 13.1 Oxford Archaeology; Fig. 13.2: after English Heritage Stonehenge World Heritage site website; Figs 13.3, 13.4, 13.5 Oxford Archaeology; Fig. 13.6 © GeoPerspectives; Figs 13.7, 13.8, 13.9 Oxford Archaeology; Fig. 13.10 reproduced by permission of the Buckinghamshire Archaeology Society, Richmond *et al*. 2006; Fig. 13.11 © Museum of London; Figs 14.1, 14.2 Oxford Archaeology; Fig. 14.3 Staines, Prehistoric Society, Robertson-Mackay 1987; Devils's Quoits, Oxford Archaeology; Fig. 14.4 Wayland's Smithy photo Paul Garwood; Windmill Hill English Heritage National Monuments Record; Fig. 14.5 Staines, after Robertson Mackay 1987; Dorchester, after Atkinson *et al*. 1951, Ashmolean Museum, University of Oxford; Fig. 14.6 The Sanctuary, Prehistoric Society, Pollard 1992; others, Oxford Archaeology; Fig. 14.7 Anon; Fig. 14.8: Windmill Hill, after Whittle *et al*. 1999; Eastleach, English Heritage, after Oswald *et al*. 2001; Staines, Prehistoric Society, after Robertson Mackay 1987; Drayton, Oxford Archaeology; Dorchester-on-Thames, Prehistoric Society, after Whittle *et al*. 1992; Avebury, after Gillings *et al*. 2008; the Big Rings, Prehistoric Society, after Whittle *et al*. 1992; Westwell, Condicote and Cutsdean, Oxford Archaeology; West Kennet, after Whittle 1997b; Barrow Hills, Radley, Oxford Archaeology; Figs 14.9, 14.10 Oxford Archaeology; Fig. 14.11 Upper Kennet Valley, after Gillings *et al*. 2008; Drayton-Abingdon-Dorchester area, Oxford Archaeology; Fig. 14.12 Avebury after Gillings *et al*. 2008; Dorchester, Prehistoric Society, after Whittle *et al*. 1992; Fig. 14.13 Oxford Archaeology; Fig. 14.14 photo Gill Hey; Fig. 14.15 Benson and Whittle 2007; Fig. 14.16 Oxford Archaeology; Fig. 14.17 Prehistoric Society, Whittle 1991; Fig. 14.18 after Gillings *et al*. 2008; Fig. 14.19 English Heritage, after Oswald *et al*. 2001; Fig. 14.20 Whittle *et al*. 1999; Fig. 14.21 Framework Archaeology; Fig. 14.22 Oxford Archaeology; reconstruction by Mark Gridley Oxford Archaeology; Fig. 14.23 Standlake, CBA/Ashmolean, Case and Whittle 1982; Hodcott Down, Berkshire Archaeological Society, Richards 1986-90; Radley Oxford Archaeology; Fig. 14.24 Oxford Archaeology; Fig. 14.25 Ashmolean Museum, University of Oxford; Fig. 14.26 Oxford Archaeology; Fig. 14.27 base plan, Berkshire Archaeological Society, after Case 1956a; additional information Paul Garwood; Fig. 14.28 Oxford Archaeology; Fig. 14.29 reproduced by permission of the Oxfordshire Architectural and Historical Society, after Boston *et al*. 2003, fig. 1 with additions; background map reproduced from the Ordnance Survey on behalf of the controller of Her Majesty's Stationery Office, © Crown Copyright, AL 1000005569; Fig. 14.30 aerial photograph, Ashmoean Museum University of Oxford; Plan, CBA/Ashmoleam Museum, Case and Whittle 1982; Figs 14.31, 14.32 Oxford Archaeology; Fig. 14.33 courtesy of Museum of London Archaeology; Fig. 14.34: Dorchester, Ashmolean Museum University of Oxford, Atkinson *et al*. 1951; Barrow Hills, Radley, Oxford Archaeology; Fig. 14.35: skull, Oxford Archaeology; mace heads, Smith 1918; all other artefacts © Museum of London; Figs 14.36, 14.37,14.38 Oxford Archaeology; Fig. 15.1 Ascott-under-Wychwood, Benson and Whittle 2007; Wayland's Smithy, Prehistoric Society, Whittle 1991; Hazleton North, English Heritage, Saville 1990a; West Kennett, HMSO, Piggott, S, 1962 *The West Kennet long barrow: excavations, 1955-56*, London; Fig. 15.2 Windmill Hill, Whittle *et al*. 1999; Shepperton, Jones 2008; Radley and Eton, Oxford Archaeology; Fig. 15.3 Whittle *et al*. 1999; Fig. 15.4 Oxford Archaeology; Fig. 15.5 Linch Hill Corner, reproduced by permission of the Oxfordshire Architectural and Historical Society, after Grimes 1943-4, fig. 14; Newnham Murren, CBA/Ashmolean Museum, after Moorey 1982; Radley and Mount Farm, Oxford Archaeology; Fig. 15.6 Linch Hill Corner, reproduced by permission of the Oxfordshire Architectural and Historical Society, Grimes 1943-4, fig. 15; Barrow Hills, Radley, Oxford Archaeology; Fig. 15.7: Prehistoric Society, A Barclay, N Beavan, P Bradley, G Chaffey, D Challinor, J I McKinley, A Powell and P Marshall, 2009 *Past*, 4; Fig. 15.8 Oxford Archaeology; Fig. 15.9 Hemp Knoll, Prehistoric Society, after Robertson-Mackay 1980; Radley, Stanton Harcourt, Yarnton, Oxford Archaeology; West Overton, Prehistoric Society, after Smith and Simpson 1966; Dorchester, Prehistoric Society, after Whittle *et al*. 1992; Winterbourne Monkton, Wiltshire Archaeological and Natural History Society, after Pollard 1994; Fig. 15.10 West Overton, Prehistoric Society, Smith and

Simpson 1966; Hemp Knoll, Prehistoric Society, Robertson-Mackay 1980; Yarnton and Stanton Harcourt, Oxford Archaeology; Stanton Harcourt, Clarke 1970; Fig. 15.11, Oxford Centre for Gene Function, reproduced by permission of the Oxfordshire Architectural and Historical Society, after Boston *et al*. 2003, fig. 5; Mount Farm and Gravelly Guy, Oxford Archaeology; Fig. 15.12: Hemp Knoll, Prehistoric Society, after Robertson-Mackay 1980; Lambourn, Berkshire Archaeological Society, after Case 1956a; West Overton, Prehistoric Society, Smith and Simpson 1966; Radley, Oxford Archaeology; Fig. 15.13 Oxford Archaeology; Fig. 15.14 Dorchester, Prehistoric Society, after Whittle *et al*. 1992; Linch Hill Corner, reproduced by permission of the Oxfordshire Architectural and Historical Society, after Grimes 1943-4, figs 14 and 17; Fig. 15.15 Lambourn, Berkshire Archaeological Society, after Case 1956a; Gravelly Guy, Oxford Archaeology; Fig. 15.16 Prehistoric Society, Smith and Simpson 1966; Fig. 15.17 Oxford Archaeology; Fig. 15.18 Shorncote, reproduced by kind permission of the Bristol and Gloucestershire Archaeological Society, Barclay and Glass 1995; Radley Oxford Archaeology; Fig. 15.19 Eynsham, Case 1977; Cassington, reproduced by kind permission of the Society of Antiquaries of London from the *Antiquaries Journal*, Recent Bronze Age discoveries in Berkshire and Oxfordshire, E T Leeds, 1934 ©; Fig. 15.20 Oxford Archaeology; Fig. 15.21: Field Farm, Wessex Archaeology, Butterworth and Lobb 1992; City Farm, reproduced by permission of the Oxfordshire Architectural and Historical Society, Case *et al*. 1964-5, fig. 5; Burn Ground, HMSO, Grimes 1960; Radley, Oxford Archaeology; Figs 15.22, 15.23 Oxford Archaeology; Fig. 15.24 artefacts, Wiltshire Archaeological and Natural History Society (©Wiltshire Heritage Museum, Devizes); burial, Cunnington 1907; Fig. 15.25 Hodcott Down, Berkshire Archaeological Society, after Richards 1986-90; Stanton Harcourt, Oxford Archaeology; Fig. 15.26 Stanton Harcourt and Radley, Oxford Archaeology; Snowshill, Gerloff 1975; Fig. 15.27 Field Farm, Wessex Archaeology, Butterworth and Lobb 1992; Aldbourne, British Museum, Kinnes and Longworth 1985; Fig. 16.1 Ros Lorimer Oxford Archaeology; Fig. 16.2 HMSO, Clarke *et al*. 1985; Fig. 16.3: Manton artefacts, Wiltshire Archaeological and Natural History Society (©Wiltshire Heritage Museum, Devizes); Yarnton and Radley, HMSO, Clarke *et al*. 1985; Gravelly Guy, Oxford Archaeology; Fig. 16.4 Oxford Archaeology; Fig. 16.5 Wiltshire Archaeological and Natural History Society (©Wiltshire Heritage Museum, Devizes); Fig. 16.6 © Museum of London; Fig. 16.7 photos, Alistair Barclay Oxford Archaeology; lower right, Michael Dudley Ashmolean Museum, University of Oxford; Figs 16.8, 16.9 Oxford Archaeology; Fig. 16.10 Ascott-under-Wychwood, Benson and Whittle 2007; Oxford Centre for Gene Function, reproduced by permission of the Oxfordshire Architectural and Historical Society, Boston *et al* 2003, fig. 5; Radley, Oxford Archaeology; Fig. 16.11 Gerloff 1975; Fig. 16.12 Chelsea 'club', © Museum of London; Horton bark container, Thames Valley Archaeological Services, Pine and Preston 2004; Yarnton, Oxford Archaeology; Dagenham idol, Colchester Castle Museum (Colchester and Ipswich Museum Service); Fig. 16.13 Oxford Archaeology; Fig. 16.14 Ascott-under-Wychwood, Benson and Whittle 2007; Abingdon, reproduced by kind permission of the Society of Antiquaries of London from the *Antiquaries Journal*, A Neolithic site at Abingdon, Berks (second report), E T Leeds, 1928 ©; Fig. 16.15 Pierowall, we are grateful to the Society of Antiquaries of Scotland for permission to reproduce the image of the decorated stone from Pierowall, from N Sharples, 1984 Excavations at Pierowall Quarry, Westray, Orkney, *Proceedings of the Society of Antiquaries of Scotland*, vol. 114, illus. 28 (© Society of Antiquaries of Scotland); Knowth, Royal Society of Antiquaries of Ireland, Eogan and Richardson 1982; Barrow Hills, Radley, Oxford Archaeology; Fig. 16.16 reproduced by kind permission of the Bristol and Gloucestershire Archaeological Society, Needham and Saville 1981.