# Introduction

## SECTION 1 – INTRODUCTION

'Every age has the Stonehenge it deserves or desires' (Jacquetta Hawkes 1967, 174)

# BACKGROUND, NEED, AND PURPOSE

For centuries, Stonehenge and the monuments that surround it have been central to the understanding and interpretation of Britain's ancient past. Ever since Geoffrey of Monmouth wrote his *History of the kings of Britain* in AD 1139, Stonehenge has been a chronological anchor-point for histories and prehistories alike. For while the exact date of the monument has been much discussed over the years, the idea of an 'Age of Stonehenge' is deeply embedded in both popular and academic literature. Each new generation has interpreted what it sees in a different way as a result of different social conditions, a tradition of change perceptively encapsulated and mirrored back on the archaeological world and its followers by Jacquetta Hawkes in her oft-cited remark set out above.

Research has been at the heart of these changing approaches. The first excavations were carried out at Stonehenge on behalf of the Duke of Buckingham in AD 1620, with many more investigations in the area over the following centuries. Throughout, Stonehenge has remained an enigma, regarded as self-evidently important and yet never fully understood. As a result it has become the most written-about

and most photographed prehistoric monument in Europe (Illustration 1), an icon of the idea of prehistory and the challenge of archaeological inquiry. The results of archaeological investigations in the region, and considerations of the finds from them, have provided the basis for numerous analyses, studies, classifications, and interpretative models that run right to the heart of our understanding of prehistoric communities of northwest Europe. The Bush Barrow dagger series, the Wessex Culture, and the wide-ranging debates about possible connections between Bronze Age Wessex and Mycenaean Greece are amongst the most memorable of the many matters debated over the years. Less widely recognized, but significant on an international scale, is the much more recent role of Salisbury Plain in the early development of aviation and the training of the armed forces. Moreover, the place of Stonehenge as a symbol of the ancient past in contemporary culture has provided a rich field for the investigation of modern social relations and the value of our heritage to a range of communities.

Research also lies at the heart of managing Stonehenge and its environs. The importance, significance, quality, authenticity, and legal protection of the physical remains at and around Stonehenge led, in 1986, to its inscription on UNESCO's World Heritage List, as half of the site formally known as the *Stonehenge, Avebury and Associated Sites* 



#### Illustration 1

Aerial view of Stonehenge and the Avenue looking northeast. The site is under a light snow cover which enhances the circular earthwork enclosure and the ditches of the Avenue. [*Photograph:* @*Skyscan Balloon Photography. English Heritage Photo Library.*]

World Heritage Site (WHS number C373). Such designation is intended not to fossilize the areas to which it applies, but rather to provide for effective, robust, and sustainable management. Conserving the outstanding universal value of a World Heritage Site takes place within the context of maintaining visitor access and experience, retaining a sustainable working agricultural economy, and supporting the long-term social, economic, and amenity needs of the local community. Archaeological research linked to conservation and management policies is explicitly referred to in the World Heritage Convention (UNESCO 1972, art.5) and is implicit to the key task of presenting the heritage to the public. The management guidelines published by ICOMOS for world cultural heritage sites note that 'every World Heritage Site contains a wide range of elements deserving of research, much of which is purely academic' (Feilden and Jokilehto 1993, 28). It goes on to urge that research should be planned and programmed.

Locally to the Stonehenge sector of World Heritage Site C373, all these matters are extensively dealt with in the *Stonehenge management plan* (English Heritage 2000). A complementary management plan also exists for the Avebury sector (English Heritage 1998). Both recognize that archaeological research is an important strand of the management regime of any World Heritage Site. For Stonehenge the management plan notes that 'the current state of our knowledge about the cultural landscape of Stonehenge as a whole is still incomplete' (English Heritage 2000, 4.7.1), a theme that is developed in Objective 26 of the plan which states that:

Research should be encouraged and promoted to improve understanding of the archaeological, historical and environmental value of the WHS necessary for its appropriate management.

It then proposes the development of a **research agenda** for the Stonehenge World Heritage Site, which, in due course, will form an appendix to the Management Plan itself. This document is the first published iteration of such an agenda, prepared in line with the definition and structure recommended in *Frameworks for our past* (Olivier 1996) and accordingly hereafter referred to as a **research framework**. A research agenda for the Avebury area has already been published (AAHRG 2001), the first such document for a World Heritage Site in the UK.

The overall importance of developing, discussing, and agreeing an archaeological research programme for Stonehenge, as anywhere else, is emphasized in the review document Power of place which notes that (English Heritage 2001, para. 12):

Before we do anything, we need knowledge ... We need targeted, integrated research and regular 'State of the historic environment' reports to identify priorities and provide the basis for informed decisions.

These sentiments find further expression in the Government's response to the Power of place review which looks to a future in which, amongst other things (DCMS 2002, 9):

The full potential of the historic environment as a learning resource is realized ... the historic environment's importance as an economic asset is skilfully harnessed.

The overarching aim of the Stonehenge Archaeological Research Framework is therefore to recognize the importance of research in the World Heritage Site and actively to encourage, within a conservation ethic, well-planned, clearly focused, and closely targeted research. Such work will lead to increases in knowledge, enhance understanding of the past, and both respond to and inform management efforts. It is not intended to be over-regulatory or highly prescriptive, and it seeks both to recognize and to embrace a wide range of approaches to research and the theoretical and philosophical positions that lie behind them. Through the summary accounts, position statements, illustrations, and maps it is hoped that new and innovative research questions will be identified and acted upon: in this sense the research framework may act as a practical stimulus to new ways of looking at and thinking about the data.

Because of the nature and sensitivity of the World Heritage Site it is proper that all research carried out there should be compatible with World Heritage Site values. In practical terms the archaeological research framework is intended to:

- underpin curatorial work in relation to the management of the archaeological resource in the area, allowing decisions to be firmly based and fairly judged;
- maximize the return in terms of archaeological knowledge and insight that arises from routine land management works, property development, and landuse change;
- stimulate dynamic and innovative approaches to the study of archaeological deposits and materials in the area through problem-orientated and curiosity-driven research initiatives in order to expand the knowledge-base and increase public understanding and awareness of the past;
- inform the presentation and interpretation of the World Heritage Site to the public.

Crucial to the attainment of these is the creation of a long-term sustainable approach to research, meeting today's need for improved knowledge and understanding within the World Heritage Site and its hinterland without jeopardizing the ability of future generations to continue the tradition of research and investigation.

## TOWARDS AN ARCHAEOLOGICAL RESEARCH FRAMEWORK

Attempts to define research questions and align efforts to solve recognized problems have been a feature of the archaeological landscape since the mid-twentieth century, many of which were published as 'strategy' or 'policy' documents of various kinds (see Darvill and Fulton 1998, 292–6 for a summary list). Together, these documents provide a secure basis for the rational and communally endorsed selection of sites and themes to investigate. They also allow relatively scarce resources to be deployed effectively.

Wiltshire has been the subject of a number of reviews leading to the definition of problem-orientated research strategies since the late 1960s, the most comprehensive early examples being the series of papers by Derek Roe on the Palaeolithic (Roe 1969), Jeffrey Radley on the Mesolithic (Radley 1969), and Stuart Piggott on the Neolithic and Bronze Age (Piggott 1971). Roughly a decade later the Wessex Archaeological Committee published *A policy for*  archaeological investigation in Wessex (WAC 1981) which took a thematic approach, well grounded in the prevailing processualist thinking, to the structuring of future investigations and included proposals for work around Stonehenge under the theme of 'Subsistence, population, and social organization' (WAC 1981, 14). This work subsequently took place and represents a major contribution to present understandings of the distribution, nature, and relative intensity of activity in the landscape around Stonehenge (Richards 1990).

In 1997, CBA Wessex and the Forum for Archaeology in Wessex convened two seminars to discuss research strategies for archaeology in the twenty-first century AD; contributions to the seminar dealing with prehistory were later published (Woodward and Gardiner 1998). More recently still, the *Archaeological research agenda for the Avebury World Heritage Site* (AAHRG 2001) provides a wellinformed synthesis of current knowledge and an agenda for future research within the Avebury sector of the Stonehenge, Avebury and Associated Sites World Heritage Site. Many of the issues and research questions posed for the Avebury area are also relevant to the Stonehenge Landscape, and in due course it might be appropriate to produce a single research framework covering both sectors of the World Heritage Site.

Several period-specific and thematic research agendas have been published which are relevant to the Stonehenge Landscape and which have been taken into account in later discussions (e.g. Gamble 1999: Haselgrove et al. 2001: James and Millett 2001). Stonehenge and its surrounding landscape have also been the subject of a number of forward-looking discussions that helped structure and scope future work. Suggestions about further work were made by the surveyors of the Royal Commission on Historical Monuments following their study of Stonehenge and its environs (RCHM 1979, xv) and more recently in the detailed publication of the twentieth-century excavations at Stonehenge (Wainwright et al. 1995), and as a contribution (Wainwright 1997) to the conference entitled Science and Stonehenge held under the auspices of the British Academy and the Royal Society in March 1996. Some of the themes identified in these papers were incorporated into the Stonehenge management plan as potential areas for research, especially: environment reconstruction; understanding ritual, ceremony, and sacred use; documenting settlement patterns, land-use, and land division; and enhancing details of the chronology of particular monuments (English Heritage 2000, 4.7.6).

The last 50 years have also seen substantive changes in the way that research policy documents and strategies are formulated and framed. A strategic review of the subject by Adrian Olivier for English Heritage (Olivier 1996) found that:

There is fundamental agreement that in order to make longer term objectives sustainable, regional frameworks are needed in which all those active in archaeological work can participate, and on which curatorial decisions can be firmly based and fairly judged.

Whereas earlier documents emphasized the inter-linked

ideas of 'policy' and 'priorities', since Olivier's work a more

staged or nested approach has developed in which the

overarching structure is that of a 'research framework' in

a systematic and structured way. The main users of such

frameworks are archaeological curators, planners, and

which different interests can be advanced and evaluated in

Illustration 2

Schematic representation of the main components of an archaeological research framework showing the relationships with other kinds of framework. [*Based* on Olivier 1996, figure 1.] decision-makers, and those involved in the development and execution of structured research programmes.

## WHAT IS A RESEARCH FRAMEWORK?

In an archaeological context, a *research framework* is essentially a tool for promoting and facilitating a wide range of research in such a way as to make the best of opportunities to extend knowledge and understandings of the archaeology of an area. It comprises three main components:

**Resource Assessment:** A statement of the current state of knowledge and a description of the archaeological resource. Effectively, a critical review of existing achievements linked to a series of maps and listings of key investigations and publications.

**Research Agenda:** A list of perceived gaps in current knowledge, work which could usefully be done, linked to explicit potential for the resource to answer the questions posed. Essentially, a statement of the main identifiable issues and priorities for systematic incremental investigation over the next decade or so.

**Research Strategy:** A statement setting out priorities, methods, and a selection of initiatives that can be pursued to address the agenda. Essentially, proposals for progressing all archaeological research by matching needs to anticipated operations and providing a structure to link recognized objectives with unanticipated opportunities in the future.

These components fit together in a tightly structured way (Illustration 2) so that the resource assessment relates to what has happened (i.e. past research). Defining the research issues or setting the agenda is very much a contemporary exercise (i.e. present research), while taking these issues forward involves the formulation of new programmes and initiatives (i.e. future research).

Sections 2, 3, and 4 of this document relate to the principal elements of a research framework and follow through the logical sequence already outlined. The remainder of this introductory section sets the parameters on the study and describes the practical and theoretical context for existing and anticipated work in the area.

Throughout, it is recognized that research happens in a variety of ways, two of which dominate. **Problem-orientated** 



research is the main focus of this document as it relates to matters, generally formulated as questions, that can be recognized and defined as worthwhile endeavours likely to lead to new knowledge. Stress is placed not only on the way questions are framed, but also on the source of the questions, the specification of appropriate methods, and the standardization of practices (Binford 1964; Daniels 1972). One of the major ongoing debates about the way problemorientated research is carried out revolves around the relationship between identifiable 'problems' or 'questions' and the data-sets or materials used to answer them (Binford 2001; Odell 2001). Scientific approaches tend to focus on data generated from the study of the subject matter itself to answer the question in the form of an 'explanation' of some kind. In contrast, humanities-based approaches typically impose a problem onto a body of data in order to generate an 'understanding' of the matter under scrutiny.

A second kind of research is what in Britain is commonly called **curiosity-driven** research, and this also needs to be taken into account and encouraged because it is often extremely productive and can yield major advances. In this the questions are not pre-formed but rather emerge out of an ongoing relationship between researchers and the material that is the subject of study. Such work is essentially opportunistic, and is typically linked to the recognition of significance in newly revealed evidence or fresh observation of existing evidence. This makes it difficult to plan and programme. However, there are two main stimuli to such research. First is the purely serendipitous conjunction of unforeseen discoveries, ideas, or approaches that provide new insights or make sense of previously intractable patterns. Second is the exploitation of opportunities provided by non-archaeological activities such as land-management, property development, or construction works of some kind. Both of these are relevant to future research within the Stonehenge Landscape.

## CONSTRUCTING THE STONEHENGE WORLD HERITAGE SITE ARCHAEOLOGICAL RESEARCH FRAMEWORK

This document is the end product of a process of construction and consultation, and the starting point for an ongoing self-critical research programme (see below). The work of assembling the document was commissioned by English Heritage from the Archaeology and Historic Environment Group in the School of Conservation Sciences at Bournemouth University in April 2001 following a series of earlier discussions and meetings. The research team was led by Professor Timothy Darvill, assisted by Vanessa Constant and Ehren Milner. This team was responsible for drafting, compiling, and editing the present document, drawing on original work and commissioned sections (the authors of which are identified in the text), as well as on material, comment, and suggestions supplied by others. The approach used here, which differs slightly from that used in earlier published research frameworks, evolved during early meetings with officers of English Heritage and the working party of the Stonehenge Interpretation Panel who guided and steered the progress of this project.

Central to the construction of this research framework has been the wide circulation and discussion of draft sections and earlier iterations of the whole document. In addition to input from the working party of the Stonehenge Interpretation Panel already mentioned, three publicly advertised open focus-group sessions were held, two in London and one in Salisbury. Hard copies of the document were circulated widely, and all the documentation was placed on a dedicated World Wide Web site to ensure the greatest possible opportunity for anyone interested in the subject to read and comment. Appendix IV provides a summary of the main elements of the consultation process. The overall aim was to promote discussion at local, national, and international levels.

Because of the multiplicity of sources that have been drawn on during the construction of this framework it is hoped that it can be owned and pursued by the archaeological community and others as a whole. In presenting a series of identified issues and objectives in Sections 3 and 4 respectively, all the matters raised which fall within the scope of research defined in a fairly broad way have been included. In a few cases specific proposals have been amalgamated, but it is hoped that they have gained strength as a result. The only proposals specifically excluded were one or two relating explicitly to the display/presentation of Stonehenge itself which, it was felt, were essentially management matters rather than research questions.

## DEFINITIONS, SCOPE, AND GEOGRAPHICAL CONTEXT

The Stonehenge World Heritage Site does not exist in isolation either physically or intellectually. Although geographically separate, the two landscapes centred on Stonehenge and Avebury respectively are included in the same World Heritage Site designation. Thus when reference is made to the Stonehenge World Heritage Site it should be read as meaning the southern part of the *Stonehenge*, *Avebury and Associated Sites World Heritage Site*.

What is presented here is an explicitly archaeological research framework, recognizing that the area occupied by the World Heritage Site might also allow for the development of research interests in a wide range of other matters, for example the contemporary natural environment (fauna, flora etc.). These, however, are matters that need to be considered and set out by other discipline-specific communities. The following definitions and parameters set the scope of this archaeological research framework.

**Philosophically**, the construction of an archaeological research framework can only take place within the prevailing traditions of the discipline of archaeology even though much of the evidential basis of the subject that can be drawn upon at any one point in time will have been created within quite different interpretative schemes. Current approaches can perhaps most easily be summarized as being post-processual in the very general sense of being characterized by a wide-ranging mixture of different, and sometimes conflicting, approaches, many of which are grounded in critical theory. Such plurality of endeavour is something the *archaeological research framework* will seek to encourage, recognizing the interests and aspirations of a whole range of diverse research orientations and respecting the rights of each to have

physical access to relevant research materials provided that this does not compromise the ability of other researchers to pursue their inquiries. Attention is given to the historical development of approaches to the recovery and processing of data and to the understanding and interpretation of Stonehenge and its associated structures in later sections.

**Chronologically**, the Stonehenge World Heritage Site is best known for its archaeological remains dating to the Neolithic and Bronze Age, the 'Age of Stonehenge', for it is these that form the basis of the designation. The environs of Stonehenge have, however, been exploited more or less continuously since the end of the last glaciation of Britain and both the emergence of the spectacular monuments and the subsequent use of the area after their abandonment are very much part of the overall history of the landscape. In more recent times the area has been especially significant in terms of its military history. Thus, although greatest emphasis will be placed on the periods best represented by the currently known archaeology, attention will be given to all periods from the late Pleistocene through to the late twentieth century AD (cf. English Heritage 2000, 4.7.5; AAHRG 2001).

**Geographically and temporally**, the boundary of the World Heritage Site, which covers about 2000ha, is an artefact of modern mapping, contemporary landscape features, and the differential survival of archaeological monuments in surrounding areas. As such it is an arbitrary slice of earlier patterns, however they may have been defined. Equally, it is accepted that the world that was known to those who lived in, worked, and used the landscape around Stonehenge was a continuous space that extended out in all directions to limits that today we can only surmise and which were never constant. While Stonehenge itself now provides the focus for a great deal of attention, it is fairly certain that for much of its existence Stonehenge as we know it today was not the centrepiece of the world in which it stood.

Stonehenge lies on the chalk downs of central southern England, to the west of the River Avon and about 63km from the mouth of the Avon on the English Channel coast at Christchurch (Illustration 3). For the purposes of this study, and to provide a reasonable archaeological context for the material within the World Heritage Site, an arbitrarily defined rectangular study area of 135 square kilometres is used, the southwest corner being at SU 405000 138000, the northeast corner being at SU 405000 147000 (Map A). This study area is referred to as the 'Stonehenge Landscape', a term that has some academic basis since it broadly reflects the visual envelope extending out from Stonehenge and its main associated monuments (Batchelor 1997, Plan 9), although it must ultimately be seen as no more than a convenient and manageable study-space.

The Research Framework will simultaneously look inwards from the boundary of the Stonehenge Landscape in a detailed way, and outwards into wider worlds in a general way. Summarized as a nested series of geographically scaled spaces, the following terminology has been adopted even though the reality of boundless spaces and seamless timescales is recognized:

- Stonehenge World Heritage Site: The roughly square designated World Heritage Site centred on Stonehenge, currently covering about 2000ha.
- *Stonehenge Landscape*: A rectangular territory of 135 square kilometres centred on and fully containing the World Heritage Site (Map A).
- Stonehenge Region: A broadly defined area represented archaeologically as the main catchment from which materials, people, and ideas were drawn when building and using the sites and structures known. This region



#### Illustration 3

Location map showing the position of the Stonehenge Landscape within northwest Europe and the topographical form of the Stonehenge Landscape. The highlighted circle centred on Stonehenge has a radius of 200km. [Reproduced courtesy of NASA – Visible Earth, and ESRI. ESRI® Data & Maps, 2004.] includes the northern part of Salisbury Plain and the Marlborough Downs in which Avebury lies, but includes more geographically remote areas too.

• *Stonehenge World*: The wider context within northwest Europe (Illustration 3) and beyond that provides the broader socio-cultural setting for what was happening within the Stonehenge Landscape.

All these terms should be seen simply as a vocabulary with which to conceptualize and communicate ideas about space, time, and social relations: they are not intended as fixed geospatial classifications. Functionally, views of the Stonehenge World Heritage Site have tended to focus on what are widely regarded as ritual and ceremonial monuments such as Stonehenge itself and the barrow cemeteries round about. Investigations over the last 50 years have shown that there is much more than this in the area: Bronze Age settlements, fieldsystems, and multi-period flintscatters, for example, have all now been recognized. Moreover, archaeological theory has emphasized the absurdity of thinking in simplistic terms about ritual or domestic sites in a prehistoric context. All of what might be regarded as recognized strands of life should be seen as deeply, and in many senses inextricably, embedded in each other.

Interest in Stonehenge itself and the monuments around it is wide and diverse, and extends well beyond the traditional boundaries of archaeology. Archaeoastronomy is one area with a substantial literature and considerable achievement that will be considered, as too the appreciation of the wide range of values that recognize a contemporary interest in the sacred nature of place. It is recognized that matters such as ley-lines, geomancy, earth-magic, and druidism, amongst many others, also interest sectors of the community who visit and respect the Stonehenge landscape, and who draw on its content for inspiration and insight. These are not explicitly considered here although it is recognized that each could be the subject of separate interest-group-prompted considerations in future.

### HISTORY OF RESEARCH

Investigations have taken place within the Stonehenge Landscape for more than four centuries, and for a wide range of different reasons. In some respects this work represents a microcosm of archaeological endeavour in Britain across the centuries, but in other respects it is unique in terms of the opportunities taken and the way that the results influenced developments in method and interpretation elsewhere in northern Europe. Work at and around Stonehenge includes many 'firsts' in the application of new techniques and approaches: milestones in the history of archaeological field practice and analysis. Sometimes this results from a genuine desire to find out more about the monument and its setting, in other cases it can be suspected that such a world-famous site is used as a case study in the hope that something of its perceived importance will pervade the results of the new work.

Four broad phases or eras can be identified in the history of research, the main elements of which are briefly summarized below. As a result of these studies it is possible to assess the contribution that has been, and continues to be, made by a series of key data sets and the techniques applicable to their recovery and analysis. These are considered in the following sub-section, headed 'Finding the archaeology of the Stonehenge Landscape'. The investigations and research implicit in the work described here provide the raw material for developing interpretations and understandings of Stonehenge and its landscape; the changing nature of this knowledge is discussed further in a later section entitled 'Interpreting the archaeology of the Stonehenge Landscape'.

#### The Antiquarian era (before 1900)

The idea of investigating archaeological sites by digging into them started early at Stonehenge when, in 1620, George, Duke of Buckingham, had a hole dug in the middle to see what was there (Chippindale 2004, 47). Later reports suggest that the 'heads and horns of stags and oxen, charcoal, arrowheads, rusty armour and rotten bones' were found (quoted in Long 1876, 49) and there is more than a suspicion that the diggings were directly responsible for the fall of Stone 55 on the 3 January 1797. The Duke also examined some of the round barrows on King Barrow Ridge, in one of which was found a 'bugle-horne tip't with silver at both ends' (Long 1876, 39). This work so intrigued the monarch of the time, James I, that he commissioned the well-known neoclassical architect Inigo Jones to make a survey and study of the site (Illustration 4). As it turned out, much of the fieldwork was done after the king's death in 1625, mostly during visits to Wiltshire between 1633 and Jones' own death in 1652. The work of producing the publication was completed by John Webb, Jones' assistant (Jones and Webb 1655).

Further surveys and descriptions followed during the later seventeenth century, notably by John Aubrey in the 1660s (Aubrey 1693a; 1693b). However, it was William Stukeley's five seasons of fieldwork in the early eighteenth century that represent the next major investigation. Starting in about 1720, the work included drawing and describing Stonehenge



#### Illustration 4

Idealized plan and elevation of Stonehenge by Inigo Jones published in 1655. To make the site fit his model he has added an extra trilithon and arranged the two innermost settings as a regular hexagon. [*from* Jones and Webb 1655.]



and its landscape setting. In 1721 he found the Stonehenge Avenue, and on 6 August 1723 he discovered the long narrow embanked enclosure north of Stonehenge that he called the *cursus* (Piggott 1985, 93). In 1722 and 1723 he investigated 13 barrows (12 round and 1 oval), most of them in Amesbury and Wilsford parishes. His published account (Stukeley 1740, 81–93) represents the first illustrated excavation report in British archaeology (Atkinson 1984).

Relatively little work took place during the later eighteenth century, although two barrows within Vespasian's Camp were excavated in 1770, probably in the course of landscaping works (RCHM 1979, 22). However, from about 1800 onwards interest seems to have been rekindled, the early nineteenth-century investigations being dominated by the work of Sir Richard Colt Hoare and William Cunnington. These notable, eminent, and some would say destructive, antiquarians individually or together investigated more than 200 barrows around Stonehenge using the shaft technique (Meyrick 1948; and see Cunnington 1975, appendix IV for a list of sites investigated). This popular, and in retrospect rather economical, approach involved digging a pit in the centre of the mound, the investigations continuing downwards until a burial was found or the old ground surface under the mound was reached. Cunnington began work about 1802, being sponsored by the Revd William Coxe and H P Wyndham, and employing Stephen Parker and his son John as labourers (Illustration 5). From March 1804 the costs of employing Cunnington and the Parkers were assumed by Richard Colt Hoare, who assisted with the work and took control of its overall direction. The results of this fieldwork were published in two volumes as The ancient history of Wiltshire (Colt Hoare 1812 and 1821). Stonehenge and its surroundings are included in the first volume (Colt Hoare 1812, 113–78), the account being accompanied by numerous high-quality illustrations, made by Philip Crocker, and the first detailed map of the archaeology of the Stonehenge environs (Colt Hoare 1812, op. 170). Both Cunnington and Colt Hoare deposited a coin or specially made token in their excavation trenches to alert future archaeologists to the fact that they had been forestalled, a tradition started by William Stukeley (Grinsell 1978, 11).

The most spectacular discovery made by Cunnington was the richly furnished Wessex I burial at Bush Barrow (Wilsford 5) uncovered in September 1808. It contained an inhumation with accompanying grave goods. These included a bronze axe, three daggers, one of which had a pommel decorated with gold, a stone sceptre, and two gold lozenges (Colt Hoare 1812, 203–5). But Colt Hoare and Cunnington did not confine their investigations to barrows. Cunnington excavated at Stonehenge at least three times before his death in 1810. Work also took place at Rox Hill, and numerous other sites described in *The ancient history of Wiltshire* were tested by the spade in various ways.

Cunnington and Colt Hoare's work naturally inspired others to engage in excavation. Amongst them was the Revd Edward Duke (1779–1852) who inherited Lake House in 1805. In 1810 he excavated barrows within the Lake Cemetery, the Wilsford Down Cemetery, and the Lake Down Cemetery. Although these excavations were small scale Duke attempted grand interpretations on a wide canvas, elaborating the ideas of Stukeley in maintaining that the early inhabitants of Wiltshire had portrayed in their monument-building a vast planetarium or stationary orrery. He saw the earth being represented by Silbury Hill while the sun and the planets revolving around it were marked by a series of earth and stone 'temples' in which Stonehenge was supposed to represent Saturn (Duke 1846).

After a lull of about 40 years, investigations of sites around Stonehenge continued in the later nineteenth century with the campaigns of John Thurnam, medical superintendent at the Devizes Asylum (Piggott 1993). He opened long barrows and round barrows in the Stonehenge



#### Illustration 5

Watercolour by Philip Crocker showing William Cunnington and Sir Richard Colt Hoare (left) supervising Stephen and John Parker opening a round barrow in the Normanton cemetery. [*Reproduced courtesy of the Wiltshire Archaeological and Natural History Society, copyright reserved.*]

#### Illustration 6

Plan of Stonehenge by Flinders Petrie, completed in 1877, with the stone numbers and provisional geological identifications noted. [From Petrie 1880, plate II.] Landscape between 1850 and 1873, mainly because of an interest in human remains and the anthropology of early populations. His results were published in site-specific reports, in two more general papers (1868; 1871), and in the *Crania Britannica* (Davies and Thurnam 1865).

In 1874 and 1877, Professor Flinders Petrie surveyed Stonehenge in detail and published his enumerated plan in *Stonehenge: plans, description, and theories* (1880). Characteristic of the positivist traditions behind his investigations is the fact that the sections of his book are divided into two blocks: facts and theories. His numbering system of the stones and the Aubrey holes within the monument remains in use today (Illustration 6).

By the end of the nineteenth century a significant proportion of sites and upstanding monuments within the Stonehenge Landscape had been sampled using the techniques of the day. The volume of literature generated was considerable, so that by the beginning of the twentieth century W Jerome Harrison (1902) was able to list nearly 950 items in his bibliography of Stonehenge and Avebury.

#### The early professional era (1900–1945)

Compared with the early nineteenth century, the first half of the twentieth century was a period of relative quietude for investigations around Stonehenge. The work that was carried out took place under the direction and leadership of a range of professional experts, often under the auspices of an established committee set up by a learned society or government department.

The purchase of large tracts of land on Salisbury Plain by the army in 1897 fundamentally changed the character of the area, and access to it. There were also considerable advantages to having a military presence nearby, and in 1906 Stonehenge became the first archaeological site in Britain to be photographed from the air (Capper 1907; Wilson 1982, 10–11).

In 1901 Professor William Gowland excavated around Stone 56 at Stonehenge (Illustration 7), prior to its restoration to the upright position (Gowland 1902). Following the presentation of Stonehenge itself to the State in 1918 a further campaign of works was initiated with the combined purpose of exploring the site and assisting in the periodic consolidation of the standing remains. This work was directed by William Hawley and took place between 1919 and 1926, with further work by Robert Newall and George Englehart in 1929. In all, about a half of the ditch circuit and approximately 40 per cent of the interior was examined.

Investigations in connection with management works around the monument also took place: a section of waterpipe trench along the A344 was watched by Newall in 1919, an investigation of the Avenue close to the Stonehenge– Amesbury Road was carried out by R Clay in 1927, and in 1935 W E V Young excavated in advance of the construction of the first of a long series of car-parks on the north side of the A344 (see Cleal et al. 1995, table 2, for a listing of recorded twentieth-century investigations at Stonehenge).

In the surrounding landscape the emphasis shifted from a preoccupation with barrows to include an interest in other classes of site. Mr P Farrer observed sections cut by pipetrenches through the bank of Durrington Walls and the central part of the Stonehenge Cursus in 1917. The discovery of Woodhenge through aerial photography in 1926 led to very extensive excavations by Mr and Mrs B H Cunnington (last of three generations of archaeologically inclined Cunningtons) between 1926 and 1928 (Cunnington 1929). In addition, they excavated four ring-ditches/barrows immediately south of Woodhenge and the middle Bronze Age enclosure known as the Egg (Cunnington 1929, 49). At Upavon, the construction of military facilities revealed the remains of a Roman villa in 1907 (Anon 1930). Barrow excavations were, of course, still carried out from time to time. The investigation of Amesbury 101 in the 1920s by Passmore and Hawley, for example, revealed a collection of oddly shaped natural flints rather improbably interpreted as a witch-doctor's outfit (Passmore 1940). At Boscombe Down, the creation of an airfield led to the excavation in 1930 of Amesbury G85, probably a twophase monument (Newall 1931).

Dr J F S Stone, a chemist based at Porton Down with a great passion for archaeology, excavated at numerous sites along Countess Road and around Ratfyn that were brought to light in the 1920s and 30s through property development, road-widening, or the laying of pipelines. Many other sites no doubt went unrecorded to judge from the incidence of stray finds and poorly provenanced accounts.

Research investigations of various kinds were undertaken during the early part of the twentieth century. Aerial photography, for example, played an increasingly important role in the documentation of sites in the Stonehenge Landscape as the twentieth century unfolded, Crawford and Keiller including images of Ogbury Camp, Bush Barrow, Amesbury Down, and Stonehenge in their now classic volume entitled Wessex from the air (1928). Surface collections were also assuming a more prominent place in archaeological research, evident for example in the work of Laidler and Young (1939) on King Barrow Ridge. Excavations were carried out at, amongst other sites, Casterley Camp in 1912 (Cunnington and Cunnington 1913) and Winterbourne Stoke in 1925 (Newall 1926). In 1938 J F S Stone directed the excavation of a mini-henge monument in Fargo Plantation, a site revealed by potsherds collected by Boy Scouts from a rabbit scrape in November 1937 (Stone 1938). Research into the origins of the bluestones at Stonehenge and several nearby sites (including the Fargo mini-henge) expanded earlier theories, helping to fuel what has since become a long-running controversy on the relative merits of human agency as against glacial action as the means by which the stones were transported from southwest Wales to Salisbury Plain (Thomas 1923; see Thorpe et al. 1991, table 5).



Illustration 7

Professor William Gowland (second from the left) supervising the excavation of Stone 56 in 1906. [Reproduced courtesy of the Wiltshire Archaeological and Natural History Society, copyright reserved.]

#### The rescue era (1945–1980)

Although investigations prompted by property development, engineering works, and agricultural change had been a feature of investigations during the early twentieth century, the post-war period down to about 1980 saw a massive increase in this kind of activity. One of the first within the Stonehenge Landscape was the work at Boscombe Down West, directed by Mrs K Richardson and others in 1948-9 in advance of the construction of the Boscombe Down RAF station. Such was the scale of the work that a dragline excavator was used to remove ditch fills (Illustration 8): one of the earliest cases in Britain of major plant being used in an archaeological excavation (Richardson 1951, figure 5).

The range of sites recorded expanded, and the opportunities for small-scale investigations at known monuments increased greatly. Flint mines were discovered and recorded east of the Stonehenge Inn in 1952 (Booth and Stone 1952). A pipe-trench through Durrington Walls in 1950-1 revealed deposits to the south of the enclosure that were explored in further detail in 1952. It was charcoal from this excavation that provided material for radiocarbon dating, as it turned out the first two radiometric dates on archaeological material from the British Isles (Piggott 1959).

At Stonehenge itself a new campaign of excavations, again linked to the needs of restoration, began in 1950. Work was carried out in 1952-4, 1956, 1958-9 and 1964, under the auspices of Richard Atkinson, Stuart Piggott, and J F S Stone, and in 1950 and 1952 by R Newall (Cleal et al. 1995, 11–12). Although this was relatively modest compared with Hawley's earlier work, a number of important relationships were explored and documented. Two further excavations were undertaken in 1978, one involving Alexander Thom at one of the Station Stones, the other a cutting through the ditch by John Evans in order to recover environmental samples. By far the largest excavations in the immediate vicinity of Stonehenge were those connected with the construction of extensions to the car-park in 1966 and 1979, the creation of an underpass and associated works in 1967, and a whole range of pipe-trenches and cable-laying in 1968 and 1979-80. Faith and Lance Vatcher undertook much of this work, with later seasons undertaken by Mike Pitts and the Central Excavation Unit of English Heritage (formerly the Department of the Environment). In total, these investigations added considerably to what was known about the area immediately around Stonehenge, and included major discoveries that have fundamentally changed understandings of the monument: a partner for Stone 96 (the Heel Stone); the Mesolithic postholes and early tree pit in the western end of the car-park; and the so-called Palisade Ditch north and west of Stonehenge (see Section 2). There were also opportunities to explore the eastern end of the Avenue near the Avon west of Amesbury in advance of house-construction (Smith 1973).

Post-war decommissioning of military installations and increases in demand for cultivated land led to large tracts of landscape around Stonehenge being ploughed up between

were amongst round barrows (see for example Grinsell 1978,

5) and the Stonehenge Cursus. Campaigns of excavations

were launched, in most cases after sites had already been

heavily damaged. Amongst the barrows there were major

investigations at G51–54 on Wilsford Down and Normanton

in 1958–60 (Green and Rollo-Smith 1984); Wilsford G2–5 in

Down in 1958 (Smith 1991); eighteen barrows near Shrewton

#### Illustration 8

A dragline excavator and lorries being used in the excavation, directed by Miss K Richardson, of the inner ditch of the Iron Age enclosure at Boscombe Down West in 1949. [Photograph: RAF Station, Boscombe Down. Crown Copyright/MoD.]

1959 (Grimes 1964); twelve barrows in Amesbury and Winterbourne Stoke between 1959 and 1961 (Gingell 1988); Wilsford cum Lake 1, 33, and 33a in 1960 (Field 1961); Amesbury 51 in 1960 (Ashbee 1978a); and Amesbury G70 and G71 in 1961 (Christie 1964; 1970). A few of the sites explored at this time remain unpublished, but the discoveries made during the early years of this flurry of barrow excavation within a limited geographical area contributed much to the shaping our understanding of Bronze Age round barrows in Britain as a whole (see Ashbee 1960).

The excavation of the Wilsford Shaft between 1960 and 1962 was an unexpected consequence of investigating pond barrow Wilsford G33a that was being eroded by ploughing at the time (Ashbee et al. 1989). Excavations around the west end of the Cursus, and at barrows Winterbourne Stoke G5 and G30 within the Cursus (Christie 1963), have since allowed the restoration of the Cursus's western terminal and barrow G30 to their pre-1950 appearances.

An early geophysical survey using a Megger Meter took place on the so-called long mortuary enclosure on Normanton Down in 1957-8, no doubt encouraged by Richard Atkinson's enthusiasm for remote sensing prior to excavation. The site was subsequently excavated and dated to the middle Neolithic, but remains difficult to interpret (Vatcher 1961, 160; and cf. Clark 1990, 12–13).

Alterations to the road network around Amesbury in the later 1960s provided numerous opportunities for archaeological investigation. Works included the construction of a dual carriageway along the A303 in the eastern part of the Stonehenge Landscape, the creation of a bypass around the north side of Amesbury (also A303), construction of a roundabout and modification to the road alignments at Winterbourne Stoke Crossroads, and the realignment of the A345 through Durrington Walls. All revealed important finds and structures. The single largest operation was at Durrington



Walls where extensive excavations took place between 1966 and 1968. As at Boscombe Down earlier, earthmoving machinery was extensively used by Geoffrey Wainwright to uncover a large area for excavation, here using highly manoeuvrable JCBs to remove topsoil and clear the site (Wainwright and Longworth 1971, 10). It was an approach that caused much disquiet in the archaeological community at the time, but set a precedent much followed since (Wainwright 2000b, 913). Amesbury barrow G39 excavated in 1960, in advance of widening works on the A303, was subsequently reconstructed with a revetment to support the underlying chalk (Ashbee 1980). The most unexpected finds associated with the A303 widening was probably the so-called plaque-pit west of King Barrow Ridge (Harding 1988): a small chalk-cut pit containing two rather unusual decorated chalk plaques datable to the later third millennium BC.

An essentially research-driven excavation was carried out at Robin Hood's Ball in August 1956 to assess the age and nature of the earthworks (Thomas 1964). Elsewhere, a wide range of construction works, pipe-trenches, and cable-laying led to numerous watching briefs and small-scale excavations, as for example at Amesbury 25 and 103 barrows in 1978–9 (Pitts 1980). Rather more substantial excavations took place in advance of tree-planting on the later prehistoric and Roman site southwest of Durrington Walls in 1970 (Wainwright 1971).

The flow of stray finds reaching museums and local collections continued throughout the post-war period, many being reported in the annual register of archaeological finds published in the *Wiltshire Archaeological and Natural History Society Magazine*.

## The management and conservation era (since 1980)

A switch from the re-active approaches of rescue archaeology to the pro-active approaches inherent to conservation archaeology around 1980 also saw changes in the nature of the investigations carried out in the Stonehenge Landscape.

The need for investigations directly related to site management and conservation works can be seen in the excavation of new visitor routes within Stonehenge (Bond 1982), the recording of barrows on King Barrow Ridge and in Luxenborough Plantation damaged by storms in 1987 and 1990 (Cleal and Allen 1994), and extensive geophysical work at Durrington Walls and in the Stonehenge Triangle (David and Payne 1997, 73–113). Strategic planning needs (for both development control and site management) and detailed contextual information to set alongside the work at individual monuments was provided by the extensive Stonehenge Environs Survey directed by Julian Richards between 1980 and 1986. This work included systematic fieldwalking over available cultivated land (c.750ha), sample excavations at 15 sites ranging in date from the early Neolithic through to the later Bronze Age, and the sampling of dry valley fills (Richards 1990). Alongside this work there were strenuous efforts in many quarters to publish the excavations carried out in previous decades, well exemplified in the publication dates of work from the rescue era. The single most substantial contribution in this area was the publication of the twentiethcentury investigations at Stonehenge itself, including work on the Avenue and other monuments in close proximity to the main site (Cleal et al. 1995).

Survey work in the area north of that investigated by the Stonehenge Environs Project, within the Salisbury Plain Training Area, has been in progress since the mid 1980s, encouraged by Dai Morgan Evans, Roy Canham, and the late Bob Smith (DLA 1993). A detailed survey of the field archaeology of the training area was carried out by the RCHM during the 1990s (McOmish et al. 2002). Building on these baseline studies an Integrated Land Management Plan for the Salisbury Plain Training Area has been approved, and includes within its coverage much of the northern part of the Stonehenge Landscape. It sets out an approach to the management of the archaeological, ecological, and other environmental resources within the context of military training activities.

Central Wessex is an area that has attracted a great deal of archaeological interest in recent decades. The northeast corner of the Stonehenge Landscape, for example, falls within the study area of an extensive survey of linear earthworks, the Wessex Linear Ditches Project, carried out between 1988 and 1991 (Bradley et al. 1994). The southeastern corner of the Stonehenge Landscape overlaps slightly with the study area of the Danebury Environs Programme (Palmer 1984; Cunliffe 2000). Much of the Stonehenge Landscape also lies within the study of the Salisbury Plain Project undertaken between 1992 and 1994 to review the evidence for Romano-British settlement in the area (Entwistle et al. in prep.).

The application of approaches to the assessment and evaluation of sites prior to the determination of planning permissions, as set out in PPG16 (DoE 1990), but widely used before this time, introduced new kinds of archaeological investigation to the roster. Field evaluations associated with private developments are summarized in the annual gazetteers of archaeological investigations published as supplemental volumes to the British and Irish Archaeological Bibliography, but two schemes deserve special mention because of the extent of the work involved: the Stonehenge Visitor Centre proposals; and the A303 roadline improvements. In their current form (summer 2004), these two schemes form what is known as the 'Stonehenge Project', details of which were outlined in a document published in April 1999 known as the Stonehenge master plan (English Heritage and National Trust 1999). Since July 1999, progress with the project has regularly been reported in a newsletter initially entitled Stonehenge Master Plan Newsletter (issues 1-4), renamed *Stonehenge Vision* in March 2002 (issues 5-9), and most recently relaunched as The Stonehenge Project Update (Issue 1, Autumn 2004). However, both elements of the Stonehenge Project originated long before the emergence of the Stonehenge Master Plan and represent one of the longest-running sagas in conservation archaeology.

#### Stonehenge visitor centre

The idea of improving visitor access to, and facilities for, Stonehenge has been discussed for decades, as too the associated closure of the A344 that cuts through the north side of Stonehenge and the Avenue (DoE 1979; Heritage Projects 1984; Chippindale 1985a; 2004, 259–77; LH 1997). Map Q shows the position of the dozen or so possible sites considered for the relocation of the visitor centre and the extents of the various archaeological investigations carried out to inform the selection of sites and the development of proposals. Table 1 lists the main approaches applied to the assessment and evaluation of each.

By 1990 extensive consultations and researches focused on a site adjacent to Durrington Down Farm at Larkhill for a new visitor centre. In addition to the block of land for the visitor centre itself and car-parks, the works required an access road from the west and minor works to Durrington

| Sit | e name  | Desk-based<br>Assessment | Geophysics | Fieldwalking | Auger transects | Test-pitting | Linear trenching | Targeted trenching | EIA | Reports   |
|-----|---|--------------------------|------------|--------------|-----------------|--------------|------------------|--------------------|-----|---|
| А   | Countess Farm   | ~                        |            |              |                 |              |                  |                    |     | Darvill 1993b, 55–72  |
| В   | Countess Road East/<br>Countess Roundabout                  | V                        | V          | V            | V               | V            | V                | V                  | V   | Darvill 1993b, 55–72;<br>Bartlett 1994; WA 1995;<br>WA 2003a; 2004; Chris<br>Blanford Associates<br>2004, vol. 2, Appendices<br>A5.3, 5.5, 5.6, 5.7, 5.9,<br>and 5.10 |
|     | Countess Road to<br>Stonehenge area<br>transportation links | V                        | V          |              |                 |              |                  |                    | ~   | Darvill 1993b, 55–72;<br>Bartlett 1994 ; Reilly et<br>al. 1996; Chris Blanford<br>Associates 2004, vol. 2,<br>Appendices A5.4 and 5.8                                 |
| С   | Fargo North   | V                        | V          |              |                 | ~            |                  |                    |     | Bartlett 1993a; WA<br>1993c; Darvill 1993b,<br>19–54; Burton 1998; WA<br>1998b  |
| D   | Fargo South   | ~                        |            |              |                 |              |                  |                    |     | Darvill and Timby 1993c   |
| Е   | Larkhill  | ~                        | ~          | ~            |                 | ~            | ~                | ~                  | V   | Darvill 1991a; WA 1992  |
|     | Western Access routes<br>(Larkhill to A344)                 | ~                        | ~          | ~            |                 | ~            | ٢                | ~                  | ~   | WA 1991; 1993c;<br>Bartlett 1993a; 1993b;<br>Darvill 1993c; 1994  |
|     | Durrington Down Farm<br>infrastructure changes              | ~                        | ~          |              |                 | ~            | ~                |                    |     | Darvill 1991b; 1992a;<br>1992b  |
| F   | New King Barrows<br>(north of A303)                         | ~                        |            |              |                 |              |                  |                    |     | Darvill 1993b, 73–118   |
| G   | Old King Barrows  | V                        |            |              |                 |              |                  |                    |     | Darvill 1993b, 119–50   |
| н   | Strangeways   | ~                        |            |              |                 |              |                  |                    |     | Darvill 1993b, 119–50   |
| I   | Stonehenge Bottom   | ~                        |            |              |                 |              |                  |                    |     | Darvill and Timby 1993a   |
| J   | Pedigree Stock Farm   | ~                        |            |              |                 |              |                  |                    |     | Darvill and Timby 1993b   |
| к   | New King Barrows<br>(south of A303)                         | ~                        | ~          | ~            | ~               | ~            | ~                | ~                  |     | Darvill and Timby 1993d;<br>WA 1993a; Darvill 1995  |
| L   | Stonehenge car-park   |                          |            |              |                 |              |                  |                    |     | See Heritage Projects<br>1984; Addyman 1989   |

Down Farm itself. All these areas were subject to deskbased assessments and field evaluations (Illustration 9) before the results were brought together as a full Environmental Statement (Darvill 1991).

Following the withdrawal of this scheme in December 1991 further possible sites were reviewed (Darvill 1993a) and two were subject to field evaluation: the A303 roadline site south of the New King Barrows (WA 1993a) and the Countess Road East site also known as the Countess Roundabout Site (Darvill 1995; WA 1995). It is the last-mentioned of these that is now moving forward for development. A full listing of all the work undertaken in relation to the selection of sites to help guide the planning of visitor circulation and site management between 1990 and 1996 has been circulated (Darvill 1997b). More recently, a study of military archaeology in the area has been prepared (WA 1998a), and further evaluations took place on the Countess Road East site in 2003–4 in order to inform the detailed design and layout of the facilities (WA 2003a; 2004).

The Countess Road East site was purchased by English Heritage in December 2000. In April 2001 it was announced that Denton Corker Marshall, an international architectural practice based in Melbourne (Australia) and London, had been appointed to design the new visitor centre. A planning application and accompanying environmental statement (Chris Blandford Associates 2004) for the scheme was

#### Table 1

Summary of the main archaeological techniques used in the field evaluation of possible sites for a new Stonehenge Visitor Centre.



submitted to the Local Planning Authority in August 2004 and validated by them in September 2004. Much debate still continues about whether Countess Road East is the best site for a visitor centre, how it will be used, and how exactly visitors will circulate within the landscape around Stonehenge (Baxter and Chippindale 2002; Chippindale and Baxter 2003; Pitts and Richards 2003).

#### Improving the A303

Plans for the up-grading and improving of the A303 from King Barrow Ridge through to Berwick Down have been debated almost as long as the visitor centre proposals. Although English Heritage has commissioned various studies to assist in discussions about alternative routes, the majority of the work has been co-ordinated by the Highways Agency. More than 50 possible routes and associated permutations involving cuttings and tunnels were examined between 1991 and 1999. Desk-based studies were carried out for almost all proposals, and field evaluations have been carried out on some. A summary of activity up to 1996 has been circulated (Darvill 1997b, 30-9). Further field evaluations for an on-line solution involving a combination of above-ground improvements and a tunnel were taking place at the time of preparing the first iteration of this Research Framework. Map R shows the main route-options investigated for the realignment of the A303 between Amesbury and Berwick Down, together with the position and extent of the main archaeological investigations carried out to help inform the selection of a preferred route and the design of the carriageways and related infrastructure.

In June 1999 Transport Minister Lord Whitty announced the Government's preferred route for the improvement of the A303, a mainly on-line solution for the eastern section with a tunnel 2km long south of Stonehenge itself and a northern bypass for Winterbourne Stoke. Autumn 1999 saw the appointment of Mott MacDonald as the lead consultants on the development of the improvement proposals. One of the main areas of contention to be addressed was the nature of the tunnel, with many fearing that a relatively cheap, short, cut-and-cover solution would be adopted. However, in December 2002 the Government announced that a bored tunnel 2.1km long would be included in the scheme. On 5 June 2003 the Department of Transport published draft orders and an environmental statement relating to the proposed A303 improvements around Stonehenge, initiating a period of public consultation.

A Public Inquiry into the proposals opened in Salisbury on 17 February 2004 and sat for 37 days until its close on 11 May 2004. The inspector's report was expected in early September 2004 with the Government's announcement shortly afterwards. However, at the time of writing (December 2004), the report and recommendations resulting from the Public Inquiry had still not been published. Assuming that the proposals are approved in the spring of 2005, construction work could commence early in 2006 and the road would be open for traffic by the autumn of 2009.

The conclusions to be drawn from the various field evaluation projects undertaken to date for both the road scheme and the visitor centre proposals include the fact that very few previously unrecognized major monuments have been discovered, although some small structures and features have been recognized. The general proposition that major areas of colluviation and valley fill are very rare has been confirmed on several occasions. The extensive and destructive nature of ploughing and agricultural improvement schemes in the 1950s, and engineering works in the 1960s, has been revealed in many of the areas that were subject to field evaluation.

An exercise in site sampling rather similar to a field evaluation was carried out at the Netheravon Roman villa site in July and August 1996, the first part in connection with the making of an episode of *Time Team* for Channel 4 (Rawlings 2001).

Excavation and recording works specified in connection with development control have led to some important and extensive archaeological work in the Stonehenge Landscape. Interestingly, much of it relates to remains that fall outside the Neolithic and Bronze Age periods for which the area is most famous. At Butterfield Down, Amesbury, excavations in advance of a housing development revealed a possible late Neolithic pit-ring, a ring-ditch, and an early Bronze Age burial, a pit containing Beaker pottery, a large boundary ditch of the late Bronze Age, and Roman occupation from the first to fifth centuries AD (Rawlings and Fitzpatrick 1996). At Figheldean excavations and watching briefs for pipeline schemes allowed the excavation of later prehistoric and Romano-British enclosures and occupation sites (Graham and Newman 1993; McKinley 1999). Field evaluation followed by targeted excavation of selected areas revealed pits containing Beaker pottery at Crescent Copse, Shrewton (Heaton and Cleal 2000). In the far northwest corner of the Stonehenge Landscape a pipeline scheme revealed, and then permitted the excavation of, an area of Romano-British settlement and part of a small cemetery of the same date (McKinley and Heaton 1996). And most recently, rich Beakerperiod burials have been found at Amesbury in advance of constructing a new school (Fitzpatrick 2002; 2003a) and on Boscombe Down as a result of renewing a water-pipe (Fitzpatrick 2004a). Both discoveries have contributed to fundamental changes in thinking about the nature, wealth, and relationships of communities living in the Stonehenge area in the late third millennium BC.

Purely research-orientated investigations have been relatively few in number since 1980. Small-scale excavations were carried out at Vespasian's Camp in 1987 (Hunter-Mann 1999), and various pieces of survey work and excavation were in progress at the time of preparing this iteration of the Research Framework (e.g. Parker Pearson et al. 2003; and see Section 4).

One important new area of research that has developed since the early 1990s is that of exploring the phenomenology of the landscape and the natural and humanly created elements of it in an attempt to understand how it was

#### Illustration 9

Field evaluation using test-pits for the proposed Stonehenge Visitor Centre at Larkhill. [*Photograph: Timothy Darvill. Copyright reserved.*] experienced and how people engaged with it (see Tilley 1994). Following these ideas a team based at Birmingham University has developed an interactive CD-ROM-based visualization of the landscape around Stonehenge allowing journeys through real and imagined worlds (Exon et al. 2001).

## FINDING THE ARCHAEOLOGY OF THE STONEHENGE LANDSCAPE

The investigations and studies carried out to date allow a general overview of the achievement and potential of a range of archaeological techniques and major sources which can be expected to help find out about the archaeology of the Stonehenge Landscape in future. These are reviewed in the following sub-sections, starting with non-interventional approaches. Statistics about the number and extent of surveys and interventions are taken from the Stonehenge Landscape GIS (see below).

#### Ground-based geophysical surveys

Contributed by Andrew David

In recent years, geophysical survey has played a major role in mapping and unravelling the archaeology of the Stonehenge Landscape. The applications of geophysical survey in the WHS were reviewed in 1996 (David and Payne 1997) and a number of specific recommendations and targets for future work were proposed (David and Payne 1997, 107–10). That review, and its proposals, remain substantially unchanged at the present time of writing and should be a starting point for consideration of geophysical applications to archaeological research in the WHS. In the light of experience in the Stonehenge area, the opportunity is taken here to provide a brief critical overview together with a much-abbreviated assessment of the further contributions that these methods can add to a better understanding of this landscape and its monuments.

At current reckoning, the total area surveyed using geophysical prospective methods up until 2001 within the Stonehenge Landscape amounts to 3.1602 square kilometres, about 2 per cent of the total area (Map B). Of this, 0.6891 square kilometres of surveyed ground lie outside the World Heritage Site, 2.4710 square kilometres inside. This is mostly magnetometer survey, a substantial proportion of which has been commissioned as part of the evaluation of the several options for visitor centres and road corridors. Magnetometer survey has been the technique of choice, not only because it is relatively rapid and hence cost-effective, but also because it is particularly responsive, with proven efficacy for the detection of features such as pits and ditches on chalkland geology (Illustration 10). This reputation has been vindicated many times in the Stonehenge area where, for instance, the Greater and Lesser Cursus, Coneybury henge, and the interior of Durrington Walls have all produced distinct magnetic signatures. At Durrington Walls, no fewer than four new enclosures and an abundance of pits have been found within the earthwork enclosure. At Coneybury it was a magnetometer survey that located the remarkable early Neolithic pit, now familiarly known in the literature as 'The Anomaly'.

Earth resistance survey, which is a more time-consuming method and at the mercy of seasonal variation in soil moisture, has been applied very sparingly and only on specific monuments, such as Stonehenge itself, where its ability to locate pits, ditches, and remnant bank material was apparent. The method has an advantage over magnetometry on account of its superior ability to locate buried megaliths and megalith settings, which is best



#### Illustration 10

Plot of the results from a geophysical survey of the Lesser Cursus in 1993. [Survey by Alastair Bartlett for English Heritage.] demonstrated at Avebury and Beckhampton (Ucko et al. 1990; David 2001). Such survey has nonetheless failed to determine conclusively whether or not part of the Stonehenge Avenue once included stone settings.

Earth resistance and magnetometer survey probably remain the most appropriate geophysical methods for extended reconnaissance survey within the WHS. Magnetometry holds the greater appeal for wide coverage of the landscape and, with the use of multiple arrays of sensors. total coverage of all accessible land can be contemplated. Use of highly sensitive (alkali vapour) magnetometers and of reduced sampling intervals offers greater potential for the identification of weakly magnetized features and those buried below colluvium or alluvium. However, wooded areas will remain impractical to survey, and those areas where ferrous interference is severe (e.g. former military installations) present significant problems. Topsoil magnetic susceptibility survey could be extended widely across the landscape, helping to identify areas of former settlement or industrial activity. Earth resistance survey will also become increasingly mechanized, using wheeled electrodes or mobile electrostatic arrays, each capable of much greater rates of ground coverage than formerly, and with the ability to gather data from varving depths. Use of 'slingram'-type instruments offers the benefits of rapid measurement of both conductivity and magnetic susceptibility.

Such extensive reconnaissance survey can thus be undertaken at a scale formerly only considered feasible for aerial survey and with the advantage that areas of pasture, not so amenable to the latter, may also be productive. Large tracts of landscape can be explored both for previously unrecognized features and to extend knowledge of those only partially known, such as the Palisade Ditch. Advantage will need to be taken of the complementary nature of the available methodologies, and survey strategies will of course integrate as many sources of evidence as possible, both from the ground surface itself, from excavations, coring, and remotely sensed data, and from documentary records. The use of GIS to store, integrate, and analyse such multiple data sets is already established.

Aside from reconnaissance, geophysical techniques can also continue to be focused on particular features, sites, or monuments and have an obvious bearing both on academic research and on site management. Ironically this potential is perhaps least realizable at Stonehenge itself where the level of complexity and later disturbance is counterproductive. However, more highly detailed surveys of the unexcavated portions of the circle might clarify knowledge of sub-surface features; and the use of resistivity and radar tomography might provide crude information on depth and morphology. Ground penetrating radar has been used at pond barrows in the Wilsford Group (Cole 1997), but with applications possible at ever-greater spatial scales, and assisted by sophisticated data visualization, it offers an increasing potential. This is probably greatest on monuments where structural information survives at some depth: barrows, earthworks, monumental ditches, and buried stone structures would be appropriate targets. The further examination of pond barrows to test for the presence of shafts provides an instance where further research could be pursued.

Taking into account the results of the now numerous surveys within the World Heritage Site it is clear that geophysical survey methods, and magnetic techniques in particular, are amongst the most powerful tools available for furthering knowledge of Stonehenge Landscape. Everyone concerned with research and conservation at Stonehenge and its environs should pause to give them thought.

#### Aerial photography

#### Contributed by Simon Crutchley

Aerial survey of the Stonehenge landscape can be divided into two separate elements, the actual taking of photographs for both archaeological and non-archaeological purposes and the mapping, recording, and interpretation of the sites visible.

Although it is difficult to assess how many photographs cover the precise area of the World Heritage Site, the National Mapping Programme covering the nine OS quartersheets encompassing the WHS viewed some 3500 specialist photographs taken for archaeological purposes and a further 1900 vertical photographs taken mainly by the RAF in the 1940s, 50s, and 60s. The large number of nonspecialist photographs for such a small area is due to the presence of several airfields on Salisbury Plain just to the north that provided bases for reconnaissance training flights in the area. The actual site of Stonehenge has always been a magnet for aerial photographers and the kilometre square in which the stones themselves sit has some 400 specialist aerial photographs alone.

As well as the large numbers of photographs (which equate to about 24 photos per kilometre square) there is also a great chronological depth to the material available. The earliest photograph held by the NMR in Swindon is of Stonehenge taken from a war-balloon by Lieut. P H Sharpe in July 1906, arguably the first aerial photograph ever taken of an archaeological site (Capper 1907). There follow photographs of the stones from every decade until the present, and many notable views of related and nearby monuments and features. Among these are the two views of the Stonehenge Avenue included in Crawford and Keiller's Wessex from the air (1928, 222). The surrounding area is not covered in as great detail as the immediate vicinity of the stones, but it still has specialist photographs dating to the 1930s as well as the non-specialist cover. Although the benefit of photographs taken for non-archaeological reasons might not be immediately apparent, they are most helpful. Sometimes they happen to have been taken at the right time of year to reveal cropmarks, but their date range is useful also as they show changes in land-use and also some features which have since been destroyed. Amongst the earliest vertical photographs were some taken by the USAAF in December 1943, when low winter sunlight helped to highlight slight earthwork features that have since been destroyed by ploughing.

The second aspect of aerial survey relates to the mapping, recording, and interpretation of features visible on available photographs. Such work also has a long history in the area of Stonehenge. Some of the earliest landscape mapping in the country was carried out for parts of Salisbury Plain by O G S Crawford, at the time intending to produce a series of maps on the *The Celtic fields of Salisbury Plain*. Unfortunately, only one map, *Old Sarum*, was ever published (Crawford 1934), though that for Amesbury reached the proof stage. The rest never progressed beyond his original annotated OS maps as the outbreak of war in 1939 put a stop to his work. More recently aerial photographs were used as the basis for much of the work for the 1979 publication *Stonehenge and its* 



environs and between 1991 and 1993 detailed survey was carried out by the Air Photography Unit of RCHME (now the Aerial Survey section of English Heritage) in advance of plans for the proposed visitor centre and with reference to changes to the route of the A303. In 1994–5 these plots were superseded by the Salisbury Plain Training Area (SPTA) Mapping Project (English Heritage 2000), which was itself superseded by the Stonehenge World Heritage Site Mapping Project, the mapping and recording phase of which was completed in 2002. Each of these new projects has recorded information that had not been found before and Map C shows the position and extent of the features recorded up until the end of 2003 (Barber et al. 2003). Conventional aerial reconnaissance in the area by English Heritage and others will no doubt continue and, in due course, allow further information to be added.

Stonehenge and surrounding sites have also been a testing ground for new approaches to airborne remote sensing. Satellite images are one area that has seen rapid growth since military and civilian sources became more widely and more rapidly available from the late 1980s. Martin Fowler has charted the increased resolution and improved data processing over the years from the SPOT Panchromatic and LANDSAT images of the 1990s with typical ground-equivalent pixel sizes of 10m and 30m respectively (Fowler 1995) to the Russian KVR-1000 data sets with a ground-equivalent pixel size of 1.4m (Fowler and Curtis 1995; Fowler 2002). More recently still, the QuickBird satellite launched in October 2001 now circles the earth at an altitude of 450km and provides a ground resolution of 0.61m for panchromatic images (Fowler 2002). Using such images it is possible not only to locate previous unrecorded sub-surface anomalies but also regularly to monitor land-use change and monument condition.

LiDAR images derived from an airborne laser scanner that can pan across the ground and return high-resolution digital data relating to immensely detailed surface topography is amongst the latest battery of potentially useful techniques. Evaluation based on sections of the Stonehenge landscape recorded by the Environment Agency suggests that it will prove invaluable for mapping, recording, and monitoring earthwork and landform features, and has already shown that it can reveal low-relief earthworks that have previously escaped recognition from conventional aerial photography and visual observation (Illustration 11).

## Field survey, surface collections, and stray finds

An extremely wide range of field survey techniques and approaches has been deployed in the Stonehenge Landscape. Amongst the earliest is simple straightforward descriptive recording and drawn illustration. These have proved extremely important in documenting the former condition of monuments and in some cases the position of sites now lost to view or destroyed. There is also important information about the land-use patterns obtaining at monuments which helps in the understanding of monument decay processes; a good example is Stukeley's view of the central section of the Stonehenge Avenue with cultivation across the monument and more extensively to the south (Stukeley 1740, Tab XXVII; Illustration 12).

More recent work has used rather different techniques. The open and predominantly arable nature of the landscape south of the Packway has facilitated a great deal of fieldwalking and surface collection. Large collections resulting from such activity are preserved in Devizes and Salisbury museums, and there is no doubt more in private hands. Systematic fieldwalking really began with the Stonehenge Environs Survey (Richards 1990) and is concentrated in the central and northern part of the World Heritage Site (Map B). Additional fieldwalking to the same specification has been done as part of the field evaluation works for the Stonehenge Conservation and Management Programme during the early and mid 1990s (Darvill 1997b). A total of 9.2851 square kilometres has been systematically walked within the World Heritage Site (35 per cent of the land area) and a further 0.5308 square kilometres in the Stonehenge Landscape beyond, giving an overall survey sample of 7 per cent of the Stonehenge Landscape as a whole. Much arable land is rotational and becomes available for fieldwalking at intervals. A programme of fieldwalking prior to their conversion from arable to pasture has been

#### Illustration 11

LiDAR image of a section of the Stonehenge Landscape near Fargo Plantation. [English Heritage. Copyright reserved.]



established as part of the Countryside Stewardship Scheme for the area. It must be recognized, however, that nearly 35 square kilometres of the Stonehenge Landscape are currently uncultivated, essentially permanent grassland and this is not available for fieldwalking.

Fieldwalking, whether opportunistic or systematic, does have an impact on preserved ploughzone assemblages if material is removed for further study. Over time, assemblages have no doubt been depleted as a result of repeated collection. The argument for restraint where assemblages are under no direct threat has been voiced on a number of occasions (Richards 2002). English Heritage has issued guidance on the management of lithic scatters for planning authorities and developers generally (Schofield 2000), while a draft policy on fieldwalking methodologies for the Stonehenge and Avebury World Heritage Site was circulated for comment in Autumn 2003 (Pomeroy-Kellinger 2003).

Topographic and earthwork surveys by measured drawings have long been an important part of the recording and analysis of monuments in the Stonehenge area. The RCHM survey carried out in the late 1970s provides characteristically detailed plots of many monuments (RCHM 1979). Another type of field survey is the monument condition survey. Examples in the Stonehenge Landscape include the work by Julian Richards in connection with the Stonehenge Environs Survey (1986), a study of monument condition by the National Trust in 1999 (National Trust 2001), and a more extensive condition survey by Wessex Archaeology on behalf of English Heritage in 2002–3 (WA 2003b).

Stray finds from casual collection and as a result of everyday activities provide an important strand of valuable evidence about the nature and extent of past land-use and can occasionally lead to the identification of major sites. As early as 1635, a hoard of pewter was discovered in a field near Normanton to the south of Stonehenge and sold for five pounds (Long 1876, 39), a very considerable sum of money at the time. Subsequently, many worked flints, stone axes, pieces of pottery, coins, and metal tools and ornaments have come to light and been variously lost, sold, or given to local museums. Many stray finds have been noted and published in the annual volumes of the *Wiltshire Archaeological and Natural History Magazine*, between 1971 and 1983 as a formal 'Wiltshire Archaeological Register'. Metal detecting has contributed to the flow of finds coming from the area in recent years, many of which no doubt disappear without trace without coming to the notice of archaeologists. With the extension of the Portable Antiquities Scheme to all parts of England in 2003, however, there are greater opportunities for reporting and logging stray finds from the Stonehenge Landscape.

#### **Field evaluation**

This is not so much a single technique but the application of a group of interventional techniques that almost always includes trenching of various kinds and test-pitting, but may also incorporate geophysical survey, fieldwalking, and auguring which are described elsewhere in this sub-section. The main purpose of field evaluation is to sample an area of land in order to locate and define the nature and extent of any archaeological remains and deposits that might be present. In a research context such an approach is sometimes known as 'trial trenching', but since the later 1980s field evaluation has become a well-developed process that provides good results for use in the decision-making processes associated with management initiatives and, within the planning system, development control (Champion et al. 1995).

Most field evaluations undertaken within the Stonehenge Landscape have taken place since 1985 and have been carried out in connection with developing plans for a new visitor centre and the realignment/improvement of the A303 (see Maps Q and R). A summary of the work carried out before 1996, and references to the reports on each investigation, has been circulated (Darvill 1997b). Information about work undertaken between 1996 and 2004 is contained in the environmental impact statements for the A303 Stonehenge Improvement Scheme (BBCHG 2003) and the Stonehenge Visitor Centre (Chris Blandford Associates 2004). Details of the studies undertaken for each of the 12 sites considered as possible locations for the new visitor centre are summarized on Table 1 (and see Map Q).

Test-pitting is a technique that has been increasingly widely used in the Stonehenge Landscape since the mid 1980s, mainly as a robust way of systematically evaluating areas under differential land-use. The aim is to allow the quantification of artefact densities within the topsoil so that concentrations of material and spatial clusters of distinctive finds can be identified (e.g. Richards 1990, 66–72). In this, the technique has proved remarkably successful. Up until

#### Illustration 12

Ploughing across the eastern section of the Stonehenge Avenue, east of King Barrow Ridge, in the 1720s. The barrows shown on the skyline are the New King Barrows (left) and the Old King Barrows (right). [From Stukeley 1740, Tab. XXVII.] 2001, the area subject to test-pitting within the World Heritage Site totals 0.5205 square kilometres, with 0.4451 square kilometres in the surrounding areas of the Stonehenge Landscape. The total area test-pitted amounts to just less than 1 per cent (0.9658 square kilometres) of the total area available (135 square kilometres. As part of the Stonehenge Environs Survey test-pitting was used to help evaluate extensive surface scatters defined by fieldwalking (Richards 1990). Attention focused on four sites: W83 at Robin Hood's Ball; W59 on King Barrow Ridge; W32 at Fargo Wood I; and W31 on Wilsford Down. Of these, two produced sub-surface features that could plausibly be linked to the presence of the ploughzone assemblages.

Sample-trenching (linear trenches arranged to provide a representative sample of an area) has been extensively applied (see Map B). Typically, 1–2 per cent of the land area has been examined during work around Stonehenge, although the extent to which this can be regarded as representative remains an open and important question.

Targeted sample trenches are aimed at investigating possible and known features and anomalies revealed through some kind of remote sensing (usually aerial photography or geophysical survey). In general they have been successful in locating sub-surface features, although their small size and limited objectives can make the results frustrating, tantalizing, but essentially inconclusive for much research.

Overall, field evaluation has proved extremely useful in identifying and defining archaeologically sensitive areas within the Stonehenge Landscape, and in providing information about the nature of known and unknown sites and monuments.

#### Excavation

Archaeological excavation is the single most powerful way of exploring buried deposits and, while inherently destructive, is able to provide relatively high-quality and detailed information. Excavations have taken place within the Stonehenge Landscape for more than 400 years but the techniques and approaches used have been continually developing so that each generation tends to look back on the work of earlier excavators with a rather critical eye. How the work of the later twentieth century with its concern for standardized methods of investigation and recording will be regarded in future only time will tell. It is fair to say, however, that all the excavations undertaken to date have contributed something to current knowledge in one way or another.

In general, the preservational quality of the deposits and remains uncovered has been good, at least within the range of materials that can be expected to survive within neutral and alkaline environments. The existence of localized microenvironments under mounds and within rock-cut features occasionally yields complementary materials.

The Stonehenge Landscape GIS contains a total of 603 separate recorded excavations – others may well have been carried out for which no records exist or no records have yet been found. Looked at geographically, this can be broken down into 397 (66%) carried out within the World Heritage Site excluding the Stonehenge Triangle, 46 (8%) excavations inside the Stonehenge Triangle, and 160 (27%) excavations outside the World Heritage Site.

About 7 (1%) excavations were carried out within the study area during the seventeenth century, 18 (2%) during the eighteenth century, 360 (60%) during the nineteenth century, and the remaining 208 (34%) during the twentieth century.

The high level of activity in the nineteenth century is mainly attributable to William Cunnington and Sir Richard Colt Hoare who together or individually were responsible for the investigation of 218 sites within the study area, 169 (77%) of which were round barrows. Although numerous, these early excavations were limited in their impact. The reinvestigation of sites previously examined by antiquaries has proved extremely useful where it has been done in recent years, often providing a more secure context for known groups of artefacts. A good example is Amesbury G39 opened by William Cunnington probably in the summer of 1808 and reexcavated by Paul Ashbee in 1960 (Ashbee 1980).

The range of monument classes that have been subject to excavation in the Stonehenge Landscape is not great, and there are many classes that have never been examined or have hardly been considered at all. Prehistoric barrows, especially round barrows, represent the single most common target for excavation, perhaps because they are amongst the most conspicuous features of the landscape. Out of the 603 recorded excavations, about 370 (61%) related to the investigation of round barrows. Looked at another way, there are about 640 round barrows recorded within the Stonehenge Landscape, of which 257 (40%) have been excavated at some time. Of these excavated sites, 184 (72%) lie within the World Heritage Site excluding the Stonehenge Triangle, 9 (4%) lie inside the Stonehenge Triangle, while 64 (25%) lie outside the World Heritage Site. The total number of individual excavations at barrow sites is higher than the amount of excavated barrows as some barrows have been excavated on more than one occasion. Overall, of the 257 excavated barrows within the Stonehenge Landscape approximately 213 (83%) were investigated during the eighteenth and nineteenth centuries, the remainder during the twentieth century.

Excavations undertaken during the twentieth century can be classified according to the purpose for which they were undertaken: management, rescue, or research. Rescue work constitutes the biggest single group, accounting for nearly two-thirds (64%) of the total. Much of this work concentrates around Boscombe, southeast of Amesbury, where targeted trenches together with SSR style excavation (strip, sample, and record) provides information about more than 10ha of former downland east of the River Avon (Fitzpatrick 2004b). Managementprompted projects account for 23 per cent of excavations with only 13 per cent of twentieth-century excavations being connected to research-driven projects. This contrasts with the previous century when all excavations were essentially research-driven.

#### **Environmental archaeology**

A wide range of palaeoenvironmental evidence in many different forms is preserved in archaeological deposits and other accumulative sediments in the Stonehenge Landscape; much of it was recovered during twentieth-century excavations. General reviews providing the regional context have been published for plant microfossil and macrofossil evidence (Scaife 1987) and archaeozoological material (Coy and Maltby 1987). A catalogue of prehistoric plant remains from Wiltshire including charcoal identifications, seed impressions on pottery, species identified from preserved pollen, and carbonized plant remains has been published (Grose and Sandell 1964). Allen (1997) provides a critical review of the environmental evidence for the earlier prehistoric phases, but there is little by way of review or synthesis for the Iron Age and later evidence. That such material is relatively plentiful is demonstrated by the recovery of human remains, faunal remains, charred plant remains, and sediments containing environmental indicators at, amongst other sites, Figheldean (McKinley 1999, 24–30) and Butterfield Down (Rawlings and Fitzpatrick 1996, 35–6).

Much of what is known of the Holocene environment derives from samples taken from archaeological contexts, details of which are usefully listed with references by Allen (1997, 116, and Allen et al. in Richards 1990, 253). These include major contributions from the car-park postholes at Stonehenge; the ditch of Stonehenge itself; the ditch and 'anomaly' at Coneybury; Durrington Walls; the Amesbury 42 long barrow: the Stonehenge Cursus: the Lesser Cursus: the Wilsford Shaft; Woodhenge; and the fills of 'Wessex Linear' ditches on Earl's Down. From these, land-snails provide information about the overall vegetation structure while charred plant remains (including seeds, fruit remains, charcoal etc.) and faunal assemblages give species-level information about the flora and fauna. The nature of the contexts from which these samples are derived inevitably means that they reflect either socially constructed assemblages or highly localized niches within the broader environment.

Pollen sequences are extremely rare on the chalklands, but two have been found in the Stonehenge Landscape. One spans the Boreal and Sub-boreal and derives from a post-pit uncovered in the Stonehenge car-park (Allen 1995; Scaife 1995). The second comes from the Avon floodplain and produced a long sequence starting around 7950-7030 BC (GU-3229: 8460±200 BP). Ten boreholes were examined along a transect on the northern side of the river. A maximum depth of 1.68m of monocot peat and organic silt was recorded towards the centre of the transect, resting on late Devensian or early Flandrian sands and gravels (Allen 1997, 120; Scaife in Cleal et al. 2004, 228–34). The pollen sequence derived from samples taken from the boreholes suggests four main phases to the vegetational history of the valley, designated Durrington 1-4. Phase 1, the basal zone, shows largely open herbaceous communities of grasses and sedges in the damper valley bottom around 8000 BC, followed by the appearance of birch and pine with an increasing importance to oak, elm, and hazel through the early Flandrian. Phase 2 begins with a period of erosion, perhaps connected with forest clearance, with markedly fewer trees and shrubs represented. Birch and pine are present still, and lime appears for the first time. Some 95 per cent of the total pollen deriving from herbs suggests that the floodplain was again dominated by grasses, sedges, and other fen plants. Alder is also present. Cereal-type pollen is present as well as evidence for segetals and weeds typical of cleared land. This phase probably spans the period from about 4000 BC down to perhaps 1500 BC, after which there seems to be a hiatus in the sequence. During Durrington 3, the Roman and early post-Roman period, tree and shrub pollen becomes dominant in these fen carr peats. Tree species include alder and birch, elm, lime, and a little ash. Durrington 4 shows a return to an open floodplain environment with the demise of the alder carr, perhaps reflecting the intensification of landuse in medieval times.

The poverty of colluvial deposits in the small valleys and dry valleys in the area has long been noted as puzzling within what appears to be a fairly densely occupied landscape (Allen 1997, 120). A sampling programme undertaken within the context of the Stonehenge Environs Project failed to identify significant deposits (Richards 1990, 210–11). However, in 1993 shallow deposits up to 0.75m thick were recognized on Coneybury Hill immediately south of New King Barrows (WA 1993a), perhaps suggesting that persistence in making further searches will be rewarded. A shallow colluvial profile was also identified at Folly Bottom northwest of Amesbury during pipeline observation in 1991 (Cleal et al. 2004).

Buried soils sealed beneath later monuments provide one of the largest yet so far under-exploited sources of environmental evidence. Biases in the data available certainly exist (Allen 1997, 127), but can increasingly be dealt with.

The potential of alluvial deposits and floodplain archaeology along the Avon and the Till is very considerable and amply illustrated by investigations near Lake in the Woodford Valley in 1996 (McKinley 2003). Field evaluations, watching briefs, and excavations here revealed a rich alluvial sequence with prehistoric, Roman, and later artefacts stratified along the valley margins. The waterlogged conditions below the alluvium preserved a mid-firstmillennium AD burial complete with its wooden plank cover.

As a result of the study of the various strands of evidence recovered to date a basic picture of the changing physical environment has emerged and has been fully discussed on several occasions by Michael Allen (in Richards 1990, 254–8; in Cleal et al. 1995, 470–91). Most recently, attempts have been made to map land-use and environment in relation to a series of distinct phases (Allen 1997). To set alongside these studies of the evolving natural vegetation, Mark Maltby (in Richards 1990, 247–9) has provided an extremely useful summary of the exploitation of animals in the Stonehenge environs during the Neolithic and Bronze Age based on samples from numerous archaeological contexts.

#### **Preservation of artefacts and ecofacts**

In very broad terms, three scales of preservational context can be identified with reference to artefactual and ecofactual materials. Each is briefly reviewed in the following paragraphs.

**Mega-scale:** This relates to the largest-scale environmental indicators and preservational contexts known to exist, of which the most extensive are the alluvial and colluvial deposits of the Avon and Till valleys. These include sections of buried prehistoric landscape and old river channels. Field evaluations at the new visitor centre site in Countess Road revealed alluvium to a depth of about 2.5m over an old surface adjacent to the Avon (Darvill 1995, figure 3.4). These and other comparable deposits will be critical for understanding the use and role of the River Avon in earlier times. Smaller areas of hill-wash and other superficial deposits exist in dry-valleys and along the smaller streams in the Stonehenge Landscape, but none of these has been fully mapped and only a few have been sampled (but see Richards 1990, 210–11).

Augering provides rapid insights into the buried soil profile and is especially useful to locate and plot areas of deeper soils, colluvium, and alluvium. Augering can also be used to take samples for geochemical studies and environmental analysis. The total area which has been augered amounts to 0.0938 square kilometres, with 0.0016 square kilometres inside the World Heritage Site and 0.9224 square kilometres in the Stonehenge Landscape beyond (Map B).

Perhaps the biggest and most significant large-scale environmental resource in the Stonehenge Landscape is that represented by the buried soils preserved beneath archaeological monuments, especially barrows, banks, and lynchets. The wide distribution across the Stonehenge Landscape of buried soils preserved in this way means that, at least for the Neolithic and the Bronze Age, it may be possible to map land-use zones and changing patterns of exploitation in the way initiated by Allen (1997). Depending on the exact circumstances of burial, the nature of the buried soil itself, and the character of the underlying bedrock, such deposits may preserve pollen, charcoal, and molluscan remains, provide opportunities for micromorphological studies and geochemical analysis and, in some cases, incorporate direct evidence of land-use such as cultivation marks, manuring debris, or burnt material. The preservation of pottery, flint, stone, and bone is generally good within these contexts.

Substantial peat deposits or sediment accumulations likely to preserve long-term pollen sequences are extremely rare on or around the chalklands of Wessex. Work in the Avon floodplain has, however, revealed a long pollen sequence, the base of which dates to about 8200–7000 BC (GU-3239: 8460±200 BP) (Allen 1997, 120; Cleal et al. 2004). Waterlogged deposits that include preservation of ancient timber have been recorded in the Avon Valley near Lake (McKinley 2003).

**Macro-scale:** At a medium scale the environmental record is dominated by the analysis of fill sequences in individual features on archaeological sites. These have proved remarkably revealing. In some, for example the postholes in the Stonehenge car-park, both pollen and molluscan remains survived and therefore provided insights into different sectors of the local environment (Cleal et al. 1995, 41–56). Elsewhere only molluscan remains are represented, as, for example, in the fills of the ditch of the Amesbury 42 long barrow (Richards 1990, 105–9), the ditch of Coneybury henge (Richards 1990, 154–8), the ditch at Woodhenge (Evans and Wainwright 1979), the ditch around Stonehenge (Evans 1984), and the ditch of the Stonehenge Cursus (Allen 1997, 130). Soil particle size studies, soil geochemistry, and soil micromorphology have all been tried on these deposits with varying degrees of success.

Ecofacts represent a major category of material recovered from excavations of all periods, especially bone, which is generally well preserved except where localized soil conditions cause its accelerated decay.

Human bone has been recovered from the inhumations and cremations variously found in most of the barrow excavations undertaken to date. Much of this has been subject to detailed osteoarchaeological and anthropological studies, but to date there has been relatively little forensic examination (but see Brothwell et al. in Ashbee 1978a, 43-55; Ashbee 1984a, 84-7; Pitts et al. 2002). Chemical analysis of tooth enamel has enabled population movements to be tracked (Pitts et al. 2002, 137-9; Fitzpatrick et al. 2004) and there is clearly abundant scope for more work of this kind using extant human remains from burials in long, round, and oval barrows especially. To date no genetic fingerprinting or DNA studies have been reported. Before much further work can be done, however, there is an urgent need to compile a register of the human remains that are extant, their whereabouts, their condition, and the availability of documentation relating to their discovery and subsequent treatment.

Faunal remains are also widely represented, although current evidence suggests that little has survived from pre-1950s excavations. Again, the early prehistoric components of the data have been explored (Maltby in Richards 1990, 247–9), and this now needs to be complemented by a review of evidence for the presence and exploitation of animals in later periods. The value of tight chronological control over the main components of placed faunal deposits is emphasized by the realization that some of the non-human skeletal components in the ditch at Stonehenge had been curated for perhaps 200 years or more before being deposited (Cleal et al. 1995, 529–30). The potential for re-examining extant assemblages from previous excavations is well illustrated by the results of work by Albarella and Serjeantson (2002) on animal bone from the late 1960s excavations at Durrington Walls. Metrical data from this study is available on line through the Archaeology Data Service catalogue at http://ads.ahds.ac.uk/ catalogue/projArch/pigsdurham\_2004/.

Other macroscopic environmental remains from excavations within the Stonehenge Landscape include the rich assemblage from the Wilsford Shaft, the bottom 2.5m or so of which was waterlogged. As well as a selection of inorganic material, environmental remains included animal bone, pieces of worked and unworked wood, plant fibre cord, pollen, seeds and a range of plant macrofossils, mosses, charcoal, fungi, insect remains, land-snails, skin and hair fibres, and dung (Ashbee et al. 1989). Equally unusual is a calcium-phosphate-replaced coprolite recovered from a pit of later Romano-British date at Figheldean (McKinley 1999, 28). The presence of shells, especially sea-shells, has sometimes been noted (e.g. Ashbee 1984a, 81) but the incidence, context, and origins have not been explored. Pottery, flint, and stone are also well preserved in most excavated features.

Micro-scale: At the very small scale the majority of evidence relates to conditions in a select area within part of a specific feature or deposit. This is perhaps most often seen within graves where the microenvironments caused by the decay of one kind of material allow the preservation of others. At Amesbury barrow G58, a copper dagger in the central grave provided a highly localized context for the preservation of organic material. This included wooden (yew) rivets attaching two horn hilt-pieces to the metal blade, traces of a hide sheath, and evidence that the blade and hilt had been encased in sphagnum moss and wrapped in cloth (Ashbee 1984a, 67-73). A dagger in a burial associated with Beaker pottery at Shrewton had also been encased in moss and wrapped in cloth, perhaps a bag (Moore and Rowlands 1972, 42). Traces of wood have been found on a bronze dagger from the Bush Barrow, while traces of cloth are visible on an axe-blade from the same barrow (Annable and Simpson 1964, items 170 and 178). Other examples from the Stonehenge Landscape could be cited.

#### Scientific dating

The main scientific dating technique hitherto applied to sites and monuments in the Stonehenge Landscape is radiocarbon dating. Indeed the first radiocarbon determinations made on samples of archaeological material from the British Isles used charcoal from the old land surface under the rubble examined in 1952 on the south side of the bank of Durrington Walls (Stone et al. 1954, figure 4 where the source of the samples is marked 'charcoal'). The two dates of 3650–3000 BC (GRO-901: 4584±80 BP) and 3510–3090 BC (GRO-901: 4575±50 BP) were famously declared 'archaeologically inacceptable' (*sic*) by Stuart Piggott (1959, 289). Since that time about 100 further determinations have been made, the accumulating body of ages and their calibrated dates being deployed in various ways to shed light on the phases and sequences represented at individual monuments and the place of those phases in wider British and European contexts. Richards (1990, 259–62) provides a valuable compendium of determinations and their calibrated dates available up until that time, while Allen and Bayliss (in Cleal et al. 1995, 511–35) list and discuss all the dates available for Stonehenge and its associated structures available up until 1995.

The most comprehensively dated monument is undoubtedly Stonehenge itself, not least because this site has benefited from the development of a bespoke dating programme using available samples as an integral part of the post-excavation programme relating to all the twentiethcentury excavations at the site (Bayliss et al. 1997). However, even with 52 acceptable and reliable dates available, there are still many outstanding issues relating to the sequence of events and associations between particular elements of the structure. Phases that include the main stone settings are the least well dated, the phasing of which has prompted fairly vigorous debate (e.g. Case 1997).

A robust series of dates is available from samples taken from the Wilsford Shaft, some of which date actual artefacts (e.g. wooden buckets), while others relate to defined horizons within the fill. The stratigraphic position of the samples accord well with their date (Ashbee et al. 1989). Although 14 dates are available from Durrington Walls they relate to widely scattered contexts and provide only a general chronology for the site as a whole. Few duplicate samples from the same context were dated, and some determinations are known to have derived from bulked samples. The remaining dates are isolated determinations or small groups relating to a site or deposit. These are useful in providing a broad horizon within which to set the recorded evidence, but are of little help in resolving the detail of what happened when and where in the landscape. Some of the determinations are associated with important categories of artefacts and styles of monument construction, notably the few determinations from round barrows which have been discussed by Ashbee (1986, 84-5) in relation to the publication of his excavations at Milton Lilbourne.

Great caution must be exercised when using some of the early determinations, especially in the light of Ashmore's findings that multi-year samples tend to give older than expected dates (1999). The use of combining routines and averaging methods must also be treated with caution. Recent developments in the application of radiocarbon dating to cremated remains (cf. Aerts et al. 2001) has great potential to shed light on the chronology of the putatively later Wessex Culture graves which often contain cremations (see Grinsell 1957, 231–8 for a provisional list of possible samples).

There are no documented cases of thermoluminescence (TL) dating being used on ceramics or refractory materials from sites within the Stonehenge Landscape. Chlorine 36 dating has been applied to igneous rock from Stonehenge and surface outcrops around Carn Menyn in the Preseli Hills (Bowen et al. 1994; Bowen 1994) to reveal that the surface of the rock examined had been exposed for 14,000±1900 years and 5400±400 years respectively. The interpretation of these results as evidence for the human transportation of bluestone to Stonehenge has been challenged (Williams-Thorpe et al. 1995).

#### Scientific analysis of objects and materials

The importance of Stonehenge and its associated materials have attracted attention for use as case-studies for generations. H H Thomas' investigation into the

petrology of the stones forming the main monument was not the earliest such study, but it is one of the best known and most widely cited works because it set new standards for the application of petrological techniques in archaeology (Thomas 1923). Subsequent studies of the stones and related stone artefacts have continued the use of petrological examination (Ixer 1997a) and also applied other physical and chemical methods of characterization and compositional analysis including laboratory-based xray fluorescence (XRF), portable x-ray fluorescence (PXRF), and magnetic susceptibility (MS) (Thorpe et al. 1991; Williams-Thorpe et al. 2004). It is now recognized that the so-called 'bluestones' at Stonehenge, and the artefacts and bluestone fragments from other nearby sites, comprise a variety of rock types. These include: spotted blue dolerite, unspotted blue dolerite, green dolerite, grey rhyolite, and rhyolitic ignimbrite (Thorpe et al. 1991, 139-42). While it is generally agreed that all these rocks ultimately derive from outcrops in the Preseli Hills of Pembrokeshire, how exactly the expanded range of rock types maps onto the established petrological groups from the area (Group VIII, a silicified tuff; Group XIII, spotted dolerite; Group XXIIIa, graphic pyroxene granodiorite: and Group XXIIIb guartz dolerite) is a matter that requires further investigation.

Isotope analysis has been used to investigate the early residence areas of prehistoric and later burials from the area. The Anglo-Saxon adult male who had been decapitated and buried beside Y-Hole 9 at Stonehenge seems to have spent his childhood in the area northeast of his final resting place according to the analysis of oxygen, lead, and strontium in his tooth enamel (Pitts et al. 2002, 137–9). Similar studies of the Amesbury Archer suggest that he spent a good deal of his life in continental Europe, perhaps in the Alps (Fitzpatrick 2003a), while the Boscombe Bowmen seem to have originated in southwest Wales (Fitzpatrick 2004a; Fitzpatrick et al. 2004). Clearly there is great potential for further studies of suitable preserved burials from around the area as an aid to understanding the nature and extent of population movements at different times. The results of such work will also have implications for thinking about the likely sources of inspiration for some of the monuments and the possible meanings that attached to them.

Grounded in the biological sciences, lichenology has been applied to Stonehenge in 1973, 1994, and, most recently, 2003 when Peter James, Vince Giavarini, and Oliver Gilbert undertook a detailed week-long survey. As a result of this new work 18 previously unrecorded species were added to the list of 66 already documented. These included maritime lichens which may have arrived because westerly gales blow salt and propagules inland (Rose and James 1994; Giavarini and James 2003).

Laser scanning provides an economical means of creating high-resolution digital 3-dimensional images of the surfaces of objects or structures. These images can then be used as models for analysis under different lighting conditions, can be viewed from any angle, and can be used to create scaled replicas. An experimental programme of laser-scanning was undertaken at Stonehenge in 2002, focusing on stones 3, 4, and 53 which were already known to carry engravings of axes and daggers, as well as relatively modern graffiti (Goskar et al. 2003). Two previously unidentified carvings of axes were found on the inner face of Stone 53. Clearly the technique has much potential for the systematic study of stone surfaces at the monument (Illustration 13).





#### **Museum collections**

The two main museum collections containing artefacts, ecofacts, records, and relevant archival material from fieldwork and excavations in the Stonehenge Landscape are at Devizes and Salisbury. Together these account for more than 80 per cent of holdings relevant to the Stonehenge Landscape.

At Devizes the collections are maintained in the Wiltshire Heritage Museum (formally known as Devizes Museum) run by the Wiltshire Archaeological and Natural History Society. There is a long tradition of producing published catalogues (Cunnington and Goddard 1896; 1911 (revised edition 1934); Annable and Simpson 1964) that provide invaluable information about the context and origins of objects as well as descriptions of the objects themselves.

At the heart of the museum is the Stourhead Collection amassed by Sir Richard Colt Hoare and William Cunnington and formally acquired by the museum through purchase in 1883. Some of the objects from this collection, including the goldwork from the Bush Barrow, were on loan to the British Museum between 1926 and 1988. However, the vigorous cleaning of some pieces while on loan caused considerable controversy (Corfield 1988; Kinnes et al. 1988; Shell and Robinson 1988), and they have since been returned to Devizes. It is current policy that the Stourhead Collection remains in one location (Devizes) for the benefit of researchers.

Devizes Museum holds many items found in the Stonehenge area either during archaeological excavations or deriving from surface collections since the 1880s. Since 1971 annual lists of accessions have been published in the *Wiltshire Archaeological and Natural History Magazine* as part of the Wiltshire Archaeological Register. Amongst the excavated material in the collections are the finds and archives from Woodhenge. The collections include paintings and drawings, prints and photographs relating to Stonehenge. The associated library houses archaeological archives, including the archaeological papers of Sir Richard Colt Hoare and William Cunnington, amongst them those relating to their barrow excavations around Stonehenge.

At Salisbury, the collections are maintained by the Salisbury and South Wiltshire Museum, established in 1860 (Willoughby 1960; see 309-10 on Stonehenge finds). Part of the very extensive collections relevant to the Stonehenge Landscape have been published in catalogue form (Moore and Rowlands 1972). The collections include most of the finds and archives from the twentieth-century excavations at Stonehenge itself (for details see Cleal et al. 1995, 17-20), as well as the finds and archives from the excavations at Boscombe Down West, the Stonehenge Environs Survey, and the 1966-8 excavations at Durrington Walls. The collections also include pictures and other material relevant to Stonehenge, as well as finds and archives from other sites in the Stonehenge Landscape. Since 1971 new accessions to the collection have been reported in the Wiltshire Archaeological Register published annually in the Wiltshire Archaeological and Natural History Magazine. A new Stonehenge gallery was opened in 2000.

Numerous other museums also have finds and archives relating to sites in the Stonehenge Landscape, including: Ashmolean Museum (Oxford); British Museum (London); University Museum, Manchester; Lukis Museum (Guernsey, Channel Islands); and Hull Museum. The British Museum collections include 148 accessions from the parishes of Amesbury, Bulford, Durrington, Wilsford cum Lake, and Winterbourne Stoke (see Kinnes and Longworth 1985 for listing of some material). To what extent other museums in southern England and beyond have small amounts of material from the area is not known, neither is the extent of private collections beyond what can be gauged from the annual Wiltshire Archaeological Register. The discovery in

#### Illustration 13

(left) Laser scanner in action recording rock art on the surface of Stone 53 at Stonehenge. (right) Digital image of part of the surface of Stone 53 showing carvings of axes and a dagger as well as modern graffiti. [Photograph and image reproduced courtesy of Wessex Archaeology and Archaeoptics. Copyright reserved.] 2000 of human remains from Stonehenge itself, previously believed to be lost (Pitts et al. 2002), shows the potential for surveying collections and trying to track down items that have been recorded but since lost from view.

Archive collections including publications, printed matter, drawings, paintings, maps, plans, and notebooks of various kinds are held by the National Monuments Record in Swindon and the Society of Antiquaries of London. Julian Richards has published a personal selection of old photographs of Stonehenge which vividly illustrates many aspects of the monument's recent history (Richards 2004). The National Monuments Record also has an extensive and fairly complete collection of the 'grey' literature relating to the assessments, evaluations, and management plans prepared over the last 20 years of so. The guide catalogue to an exhibition entitled 'Visions of Stonehenge 1350-1987' mounted in Southampton City Art Gallery in September 1987 to coincide with the first meeting of the World Archaeological Congress provides a useful summary of the main pictures and illustrations of Stonehenge (Chippindale 1987). Others are listed by Hatchwell (1969).

## Historical and cartographic sources

Contributed by John Chandler

Local historical sources, including maps, are generally catalogued and retrievable according to the parish(es) to which they relate. The Stonehenge Landscape embraces, in whole or part, no fewer than 18 modern parishes formed from 23 ancient parishes. Although few have surviving Saxon boundary charters, most are named in Domesday Book (1086), and some may be coterminous with Saxon or earlier land units.

The Victoria History of Wiltshire has, between 1962 and 1995, published modern scholarly accounts, embracing, inter alia, the topographical, tenurial, and agricultural

history of all these ancient parishes apart from four (which all happen to be peripheral). These treatments, including their detailed annotation to primary sources, supply the researcher's first resort.

The Ordnance Survey mapped the area at small scale in 1817 (surveyed 1807–10) and at large scale *c*.1887–9 (surveyed *c*.1877–86), with subsequent revisions published irregularly to the present. Before 1800, the most useful printed map is that of Andrews and Dury published in 1773. Maps by Crocker for Colt Hoare's *The Ancient History of Wiltshire* (1812), and engraved views by Stukeley for his *Stonehenge* (1740, but executed 1721–4) provide important landscape information (Illustration 14).

Manuscript estate maps, usually of the period 1700–1850, depict portions of the study area, notably (for part of Amesbury parish) a fine atlas of 1726. Two series of manuscript maps, accompanying parliamentary enclosure and tithe commutation, are of paramount importance. Twelve enclosure maps (*c*.1790–c.1866) describe approximately half the area, while tithe maps (all *c*.1837–43) cover each ancient parish except one (Netheravon). Using tithe maps and apportionments it is generally possible to discover ownership, occupancy, name, acreage, and use of each land parcel *c*.1840.

Most relevant maps, as well as other archival sources (of which estate, manorial, and taxation records, glebe terriers, farm accounts, and sale particulars provide the most useful landscape and toponymic information), are held in the Wiltshire and Swindon Record Offices. Certain key historical sources have been published in the Wiltshire Record Society series or elsewhere.

Catalogues of historical sources, and in some cases complete texts, are becoming increasingly available on the internet, and this is a trend which will doubtless facilitate historical research in future. Likewise, the technique of linking detailed map regression to evidence from other archival sources has advanced since its pioneering use in



Illustration 14 Early map of the Stonehenge landscape from Sir Richard Colt Hoare's *The ancient history of Wiltshire*. [*From Colt Hoare* 1812, opp. 170.] the RCHM study of *Stonehenge and its environs* (1979), and offers further potential for understanding the evolution of the Stonehenge Landscape, especially over recent centuries.

#### Personal and institutional archives and records

The pre-eminence of Stonehenge in the ranks of archaeological sites means that many individuals and institutions hold collections of material relevant to understanding the site and its surroundings. These range from memorabilia collected from visits to the area, correspondence, objects, and personal photographs and drawings of Stonehenge, nearby sites, and the landscape generally. These can be very informative, especially any that show early investigations or now-lost features. In a few cases such personal collections may derive from investigations carried out prior to strict controls on the deposition of archives and records in public repositories. One such collection is that assembled by Denis Grant King in the course of his excavations at sites in Wiltshire as well as visits to the Avebury and Stonehenge area. Following his death in February 1994 this material, which included photographs and notebooks, was widely dispersed by a house clearance dealer and has since been found in car-boot sales and second-hand shops across central southern England. As mentioned above, human skeleton 4.10.4 from Stonehenge came to light nearly 60 years after it was throught to have been lost when the Royal College of Surgeons in London was bombed in 1941 (Pitts et al. 2002). Yet another example represented by the pieces of antler found at Stonehenge by William Hawley during his excavations in the 1920s came to light amongst the collections of the Society of Antiquaries of London in March 2002 (The Guardian 5:3:2002). There is much potential for the recovery and assembly of personal collections of this sort.

#### Sites and Monuments Record and GIS

Although the Stonehenge Landscape is well served by a series of consolidated records assembled from the early nineteenth century onwards, the first extensive county-based systematic retrievable record was the Wiltshire County Sites and Monuments Record (SMR) established in the early 1970s as part of the field archaeology service provided by the County Council's Library and Museum Service. The early role of this facility has been described by Ford (1973) and sets the context for the creation of the record. Based initially on the Ordnance Survey's archaeological record, the Wiltshire county SMR has since grown considerably in its breadth and depth of coverage so that by early 2002 it contained more than 20,500 individual record entries (about 1700 relating to the Stonehenge Landscape) for all periods down to the twentieth century AD. Although its primary purpose relates to the provision of planning advice, its also has a major role in underpinning management initiatives.

In 1994 English Heritage established a dedicated GIS record for an area of 135 square kilometres centred on the Stonehenge World Heritage Site. The record is complementary to, and compatible with, the Wiltshire SMR. It is maintained at Fort Cumberland in Portsmouth and provides an aid to the management and interpretation of the World Heritage Site and its surroundings (Batchelor 1997). A similar record also exists for the Avebury area (Burton 2001).

The English Heritage Stonehenge GIS record contains about 1700 database items, with graphical representation

using points, lines, and areas as appropriate for different classes of monument and types of evidence. In addition, the GIS provides opportunities for analysis and research such as the mapping of archaeological sensitivity and importance, and inter-monument visibility analysis (Batchelor 1997, 66–71).

The maps that accompany this Research Framework were produced from the English Heritage GIS record and reflect its content as at May 2002, although some recently recognized sites have been added. As with all such records its origin, development, and content are subject to a series of parameters and limitations, and the maps have to be viewed in that context. One of the most fundamental in this regard is the fact that negative evidence has not been plotted. Thus the distribution of sites is a map of where particular things have been positively identified and recorded; the relationship between the patterns represented and the original distribution of such things is a matter for further research. GIS-based analysis of the Stonehenge Landscape is not confined to the English Heritage system; GIS-based research in archaeology is a rapidly expanding field and one for which the quality of data in the Stonehenge Landscape is highly attractive. Wheatley (1996) has investigated the distribution of lithic scatters using GIS modelling to predict the density of finds in areas not covered by the Stonehenge Environs Project. The same author has used Cumulative Viewshed Analysis to examine the visual relationships of long barrows around Stonehenge and Avebury (Wheatley 1995). More recently, a team based at Birmingham University has used GIS to develop virtual landscapes that can be explored from almost any computer (Exon et al. 2001).

## INTERPRETING THE ARCHAEOLOGY OF THE STONEHENGE LANDSCAPE

Finding and investigating the archaeology of the Stonehenge Landscape is one thing, interpreting it, explaining it, and developing an understanding of it at a scale greater than that of the individual site is guite another. Just as the history of research in the Stonehenge Landscape represents in microcosm the history of archaeology generally, so too the interpretation of Stonehenge and its surrounding monuments reflects the changing philosophical traditions and theoretical positions characteristic of the discipline as a whole. Richard Atkinson explored such things in the last chapter of his classic work Stonehenge (Atkinson 1979, 182-202), as did Christopher Chippindale in Stonehenge complete (Chippindale 2004; see also Chippindale 1989). In a wider context, Andrew Sherratt has proposed a useful model through which to analyse changing attitudes to the interpretation of historic landscapes, what he called the European Cultural Dialectic (1996a, 142). This identifies two broadly parallel trajectories of thought, each drawing upon wider prevailing perspectives, but not necessarily wholly in kilter with the implementation of these perspectives in other disciplines such as philosophy, art history, and literature. Indeed, with reference to Stonehenge. the development of competing interpretations reveals an idiosyncratic pattern of thought that probably owes much to the maverick characters of those responsible for the various successive contributions (Illustration 15).

The first trajectory in Sherratt's model is predominantly 'enlightenment' in its attitude, providing essentially



evolutionary narratives in which order, hierarchy, and progression are paramount, models of change are deterministic, and analysis is largely comparative. These attitudes can be traced from the classical revivals of the Renaissance in fourteenth-century Europe through the Age of Enlightenment in the seventeenth and eighteenth centuries to Positivist science from the early nineteenth century, and, most recently, modernist and processualist views from the mid twentieth century onwards.

The second trajectory is predominantly 'romantic' in its attitudes, with genealogical narratives focused on meaning, action, growth, and descent. The whole approach is grounded in contextualist and relativist modes of thinking to produce interpretations and 'understandings' rather than explanations. This line of approach starts with the Reformation in Europe in the 1520s and its concern for the roots of northern peoples. It develops through Romanticism in the eighteenth century, Nationalism in the late nineteenth and early twentieth century, and, currently, post-modernism and its counterpart in postprocessual archaeology from the late 1980s onwards.

While each of these trajectories unfolds in parallel, the dialectical element of Sherratt's model emphasizes the periodic shifts in dominance between the two trajectories as phases of stability and contentment with one line of thinking eventually lead to revolt, disenchantment, and a consequent shift across to the other way of seeing the world. Thus although, at any one time, the dominant tradition is to be found on one trajectory, research within the traditions characteristic of the parallel trajectory take place albeit with a reduced significance and impact until the next shift in dominance. For Stonehenge, these changing approaches can be seen not only in the descriptive written discourses available, but also in the way the site and its surroundings are mapped and drawn. These themes are explored in the following sub-sections which are arranged to plot the course of the dominant attitudes to cultural history and intellectual position.

#### The age of myth and legend

Stonehenge is sometimes tentatively associated with the circular temple to Apollo in the land inhabited by the Hyperboreans that is referred to originally by Hecateus of Abders (*c*. 300 BC) in a lost work that was later quoted by the Greek historian Diodorus Siculus in his *Bibliotheca historica* (Book V). However, Atkinson (1979, 183) found insufficient justification for the link, and Burl (2000, 205) plausibly suggests that Hecateus' temple was the great stone circles and avenues of Callanish on Lewis.

The earliest explicit reference to Stonehenge is that by Henry of Huntingdon in his *Historia Anglorum* written about AD 1130. In describing the wonders of Britain, he said (quoting Atkinson 1979, 184):

The second is at Stonehenge, where stones of an amazing size are set up in a manner of doorways, so that one door seems to be set upon another. Nor can anyone guess by what means so many stones were raised so high, or why they were built there.

About six years later, in AD 1136, Geoffrey of Monmouth gave a more rounded account of Stonehenge in which he rehearsed a legend that became the principal account of the monument for centuries. This is the story of Aurelius Ambrosius, king of the Britons, who sought to commemorate his nobles slain in battle by Hengist the Saxon. Aurelius consults the wizard Merlin as to what a fitting memorial might be. Merlin advises acquiring a stone structure, known as the Giant's Dance, from Ireland. Using his supernatural powers he then transports the structure across the water to Salisbury Plain.

The tale of Aurelius and Merlin was widely repeated through the later twelfth and thirteenth centuries: in the Anglo-Norman translation of Geoffrey by Wace of about 1171, in the Topographia Hibernica by Giraldus Cambrensis of about 1187, and in a work by Robert of Gloucester dating to about 1278 (see Barclay 1895, 131–2 for a useful list of early sources, and Legg 1986 selected for transcriptions). Indeed, the story may embody a genuine folk-memory of the actual building of Stonehenge and the acquisition of stones from a distant source in the west of Britain (now known from scientific evidence to be west Wales) which survived as oral tradition down to the twelfth century AD (Piggott 1941; Atkinson 1979, 185). The picture is complicated by the fact that interest in the site during medieval times seems to have focused on the great size of the stones and this has led Burl (1985) to suggest that perhaps Geoffrey misunderstood contemporary stories about large standing stones in County Kildare in Ireland.

Two illustrations of Stonehenge are known from fourteenth-century manuscripts. One shows Merlin building the monument much to the amazement of mere mortal onlookers; the other depicts a rather squared-up perspective view of the monument (Chippindale 1983a figures 14 and 15). Here, as with the oral traditions, Stonehenge is the real-world incarnation of something created in a mythical world; a place where worlds collide.

#### **Renaissance revisionism**

The move away from the medieval world towards the modern order represented by the revival of learning and fresh interests in classical antiquity that characterized the Renaissance from around AD 1400 led to the first challenge

#### Illustration 15

Andrew Sherratt's European dialectic model adapted to changing interpretative models of Stonehenge. [Based on Sherratt 1996, figure 1.] to Geoffrey of Monmouth's account. It is found in the anonymously authored *Chronicle of England* compiled in the mid fifteenth century and published by William Caxton at Westminster in 1480 (Atkinson 1979, 186; Chippindale 2004, 25). Here the retold version of Monmouth's tale is represented as just that, a story. The questioning, inquiring intellect inherent to Renaissance thinking can also be seen in the comments made by John Rastell (1530) to the effect that some of the stones at Stonehenge were of artificial cement.

#### The Reformation and Stonehenge

Religious revolution and the reconstruction of western Christendom in northern Europe from the early sixteenth century engendered an intellectual detachment from the classical world and a new focus on the origins and autonomy of northern peoples. John Leland was at the heart of the early development of such thinking with reference to the antiquities of England as the King's Antiquary in the service of Henry VIII from 1533 onwards. Although the site of Stonehenge is not included in Leland's Itinerary, elsewhere he repeats Geoffrey of Monmouth's story with a variant in which Merlin obtains the stones not from Ireland, but from a place on Salisbury Plain (Leland 1709)

A young Protestant German scholar, Herman Folkerzheimer, came to England in 1562, and in the company of Bishop Jewel of Salisbury visited Stonehenge. Interpretation was a challenge to both men, but the bishop ventured the opinion that the stones had been set up as trophies by the Romans because the actual positioning of the stones resembled a yoke (Chippindale 2004, 30). This was the first recorded proposal that the Romans might be responsible for the structure.

Other commentaries of the period include that by Luca de Heere, a Flemish Protestant who fled to England in 1567. Between 1573 and 1575 he prepared a guide to Britain that includes a detailed account of Stonehenge and a picture (Chippindale 2004, 33 and figure 21) which is the earliest known to have been drawn on the site itself, and interestingly includes two barrows as well as Stonehenge (see Bakker 1979). Only slightly later in date are a watercolour by William Smith published in 1588 and a rather unreal stylized print by an unknown artist with the initials 'RF' dated 1575. The foreground of this print includes two men digging into a barrow from which they have already removed some giant bones.

Within the same tradition was William Camden's history and topography of Britain first published in Latin in 1586 as the *Britannia*, and subsequently enlarged and reprinted many times. The edition of 1600 included an illustration of Stonehenge (an incompetent re-engraving of the RF print of 1575 already referred to) and a description. Camden refers to Stonehenge as 'a huge and monstrous piece of work' and in a comment redolent of the age he laments 'with much grief, that the Authors of so notable a Monument are thus buried in oblivion' (see Legg 1986, 60–1).

#### **Enlightenment and the English Renaissance**

The Enlightenment of the seventeenth and early eighteenth centuries in Britain returned the focus of interpretation to the scientifically based trajectory. Two problems relating to Stonehenge began to command attention: where did the stones come from, and how did they get to Salisbury Plain? William Lambarde (1580) addressed both by emphasizing

what can be achieved by dedicated groups of people who in this case brought the stones from north Wiltshire (Chippindale 2004, 36-7 for summary). Developing interest in detailed description may have resulted in the idea that the stones were difficult to count; the removal of stones may also have been contributory to this idea. Speed's map of Wiltshire published in 1625 shows the beginnings of a more geographically aware view of the land, and Chippindale (2004, 46 and figure 30) has speculated that a picture dated 21 June 1716 which shows people exploring the monument may reflect an early interest in Stonehenge astronomy. The spirit of inquiry is reflected in the Duke of Buckingham's diggings in the centre of the site in the 1620s, and King lames' decision to commission an expert study of the site by Inigo Jones in the 1630s and 1640s (Jones and Webb 1655). In his interpretation of the site, and in the spirit of the Renaissance. Jones was adamant that the structure was built by Roman architects using Tuscan proportions.

Contrary views circulated alongside those of lones. In 1661 Dr Walter Charleton, physician to Charles II, proposed that the builders of Stonehenge were the Danes of the ninth century AD, noting analogies with ancient megalithic structures in Denmark. Especially important in view of the prevailing political situation was the proposal that Stonehenge had been the coronation place of the Danish kings (see Chippindale 2004, 61). Further evidence of Renaissance interest in the debate and resolution of intellectual questions in relation to Stonehenge comes from the work of John Aubrey (1626–97). Commanded to investigate the site by Charles II, Aubrey worked at Stonehenge in 1666, using fieldwork, surveys, planning, and observation to create a new plan of the site that challenged Jones' idealized classically inspired reconstructions. Aubrev's Monumenta Britannica was incomplete and unpublished at the time of his death, but survived in manuscript form until its eventual publication in 1980 (Aubrey 1693a; 1693b). Aubrey's contribution to an understanding of the stones was to invoke, in a rather confused way, the ancient Druids as mentioned by Caesar, Tacitus, and others, as the architects and users of Stonehenge and all the other stone circles in Britain. This conclusion, reached in old age after decades of discussion and speculation, perhaps reflected the shifting intellectual climate that by about 1700 was favouring a more romantic, interpretative, vision of the past (see Piggott 1937).

#### **Romantic visions**

In 1705 Samuel Gale was perpetuating the idea that Stonehenge was a rude and barbarous British monument (Nichols 1790, 24). Bridging the transition from the intellectual traditions of the Restoration to those of Romanticism was one of the great antiquaries of the eighteenth century, William Stukeley (1687-1765). His upbringing meant that for the first half of his life he continued the style of fieldwork, travelling, measuring, and observing on the ground so central to the work of Aubrey. Stuart Piggott (1981, 24) has argued that Stukeley's continuation of these traditions well into the 1730s was because he was provincial, old-fashioned, and out of date. In the second half of his life, from the late 1730s onwards he was drawn into the changed intellectual mood of the metropolis. In his book Stonehenge: a temple restor'd to the British druids published in 1740 he used the results of his fieldwork from the 1720s to look outwards from the monument into the surrounding

landscape, depicting barrows and other earthwork structures in relation to the central structure. It was Stukeley who first recognized the Avenue and the Cursus. Together with Lord Pembroke he dug into a range of barrows in the area (Atkinson 1984), and suggested that the occupants of the barrows were the people who built and used Stonehenge. But in the text his newly found Romantic leanings reveal themselves. He dismissed the idea of Roman, Danish, Saxon, Phoenician, or any other overseas involvement, instead arguing with almost religious zeal for the primary contribution of native Britons and in particular the crucial role of the Druids. The sub-title of his study shows his desire to overturn existing, and by then intellectually inferior, explanations of the site and 'restore' it to its place in history. In discussing his discovery of the Avenue, Stukeley also noted its alignment on the rising sun on midsummer day; here was a connection between the human world and the natural world that so interested the Romantic thinkers of the mid eighteenth century. As Piggott (1985, 153) observed, 'Stukeley's delight in the English countryside is an endearing feature ... an almost sensuous pleasure in the mild English landscape of the Wiltshire Downs.

Belief in Druidical origin for Stonehenge and connections with astronomy can be traced through the later eighteenth century, and indeed beyond. John Smith suggested that the site could be astronomically explained and that it was a temple for observing the motions of the heavenly bodies (1771). The internationally renowned English astronomer Edmund Halley visited the site in 1720, probably in the company of Stukeley (Lockyer 1909, 54).

The Romantic visions of Stonehenge created by the mid eighteenth century come through most clearly in the depictions of it made in the later eighteenth and early nineteenth centuries (Chippindale 1987, 18-21). The Sublime tradition is represented by an astonishing number of fine paintings of Stonehenge. The works of Thomas Hearne, Thomas Rowlandson, Thomas Girtin, William Turner of Oxford, James Bridges, and many others provide marvellously theatrical pieces that stand up well alongside the watercolour masterpieces by J M W Turner (c.1825-8) and John Constable (c.1835). Thomas Cole's narration of landscape history published in 1836 shows Stonehenge in Arcadia replete with nymphs and shepherds (Chippindale 2004, figure 68). Druidical images also come through with great force. In 1815 a view by Samuel Rush Meyrick and Charles Hamilton Smith entitled The Costume of the original inhabitants of the British Isles shows a grand conventional festival with banners carrying snake designs draped over the trilithons, the ark of the covenant from Old Testament traditions, and the costumes themselves from medieval Europe (Chippindale 2004, figure 61). Other illustrations in similar vein abound, some focusing on what might be considered religious or ceremonial themes while others can be interpreted as more nationalistic in the messages they convey.

Even as these images were being prepared, however, the pendulum of radical thinking was swinging back towards the more explanatory traditions that built on the discipline of Renaissance observation and by the later nineteenth century revealed itself in positivist science.

#### Positivism and the emergent sciences

The art of excavation was revived in the Stonehenge Landscape by William Cunnington (1754–1810) who in 1798 dug under the stones of the trilithon that fell in 1797 (stones

57, 58, and 158) and found Roman pottery (Cunnington 1975, 10-11). This was reported by the young topographer John Britton in his Beauties of Wiltshire as proof of a Roman date for the monument, but others were more cautious. Cunnington himself started working for H P Wyndham, MP for Wiltshire, on the excavation of barrows; by 1801 he had opened 24 examples around Stonehenge. In 1802 Cunnington excavated at Stonehenge, and soon after came to be employed by Sir Richard Colt Hoare (1758–1838). a well-connected wealthy landowner living at Stourhead (Sandell 1961). Colt Hoare's travels in Europe and extensive network of contacts brought him to want to write a new history of Wiltshire, which he did between 1808 and his death in 1838. The spirit of the age is reflected in the motto he cited at the head of the introduction to the first volume: 'we speak from facts, not theory' (Colt Hoare 1812, 7), the facts in question for the prehistoric period at least being the results of Cunnington's excavations. Colt Hoare's volume is well illustrated with plans and maps, including the first detailed map of the archaeological monuments of 'Stonehenge and its environs' (Colt Hoare 1812, op. 170).

Colt Hoare's achievements were considerable, but it was not until the second half of the nineteenth century that their value could really be appreciated as the results of intellectual and theoretical scientific thinking in spheres such as stratigraphy, evolution, and artefact sequences came to the fore. John Lubbock's book Prehistoric times was first published in 1865 and applied to Britain the so-called Three-Age sub-division of the prehistoric past that had been developed 50 years earlier in Denmark. Lubbock placed Stonehenge and most of the barrows around about into a period back beyond the Bronze Age, a more ancient period than even the most adventurous antiquaries had previously ventured to suggest (Lubbock 1865). Ironically, as prehistorians were attempting to fit Stonehenge into an essentially evolutionary model of the ancient past, Charles Darwin himself was at Stonehenge in June 1887 studying the way that fallen stones became buried and suggesting that earthworms played a major role (Darwin 1888, 154).

Scientific approaches were not confined to chronology, sequence, construction, and decay of monuments. In the mid nineteenth century, John Thurnam's excavations were a search not for grave goods but for human remains (Marsden 1974, 57-64; Piggott 1993). Thurnam and others suggested that the skulls from barrows divided into two types: dolicocephalic from long barrows and bracycephalic from round barrows. These he associated with different and successive racial or ethnic groups. Meanwhile, in 1868, Sir A C Ramsey was the first geologist to point out the similarity of some of the bluestones of Stonehenge to the igneous rocks of Pembrokeshire (Ramsey et al. 1868; see also Maskelyne 1878). Subsequent work by J W Judd (1902) suggested a glacial origin for the bluestones, while 20 years later H H Thomas (1923) confirmed the earlier identifications using optical petrology and attributed their movement to human agency.

Astronomical lines of inquiry prompted earlier by Stukeley also submitted to science, with observational work by Lockyer in 1901 following nearly two decades of studies elsewhere in the world. His findings led him to make various connections between Stonehenge and the temples of ancient Egypt, and to endorse, in a scientific sort of way, earlier suggestions that Stonehenge had been a solar temple serviced by astronomer-priests (Lockyer 1909, chapter 44). By contrast, E H Stone used astronomical data and the orientation of the axis of Stonehenge to propose that the stone structures were built about 1840 BC (Stone 1923, 131), a good estimate at the time but a few centuries later than current thinking suggests.

Surveys were also a feature of the prevailing currents of thought in the later nineteenth century, one of the most significant and accurate being that carried out by Flinders Petrie in June and September 1877 (Petrie 1880). Petrie suggested the need for detailed excavations at Stonehenge to find evidence that would date accurately the construction of the stone circles. He suggested excavating a stonehole while supporting the stone in a wooden cradle, an idea implemented in 1901 by Professor William Gowland (Gowland 1902). Gowland's work at Stone 56 was the first recorded scientific excavation at Stonehenge itself and allowed the suggestion that Stonehenge was constructed in the later part of the Neolithic or the period of transition from stone to bronze (Gowland 1902, 86). He also proposed that the 'purpose for which Stonehenge was erected ... [was] a place of sanctity dedicated to the observation or adoration of the sun' (1902, 87). In support of this Hawley includes an illustration of a Japanese print showing sun-worship in Japan (1902, plate vi), an early example of using comparative ethnology to aid archaeological interpretation.

#### Nationalism and cultural histories

Romantic interpretations of Stonehenge and its surroundings did not die out during the nineteenth century, although they were fairly well eclipsed by the brash authoritative scientific inquiries of the age. In the early twentieth century there was renewed interest in interpretative studies partly in reaction to the scientific focus of the previous century and partly because of the political climate in Europe and beyond with its inherent concern for nationalism and identity. Attention shifted away from questions such as when Stonehenge was built, and for what purpose, towards an interest in who built it and what influenced them. Culture histories were favoured, recognizing the distinctiveness of communities in time and space and seeking interpretations based on migration, colonization, and invasion.

Gordon Childe was the most notable exponent of the cultural historical approach to European prehistory. He suggested (1940, 106) that

like the fabric of an English cathedral, the stones of Stonehenge mirror the fortunes of a community. Neither the construction of the Aubrey Circle nor even the erection of Lintel Circle and Horseshoe ... would be beyond the power of a prosperous pastoral tribe profiting from the grazing of Salisbury Plain and the products of its flint-mines.

Who those communities were can be found in the work of another great scholar of the period, Stuart Piggott, who, in 1938, defined the Wessex Culture in classic Childean terms (Piggott 1938; Illustration 16). Childe himself (1940, 135) described them as a 'small ruling class expending their accumulated surplus wealth on luxury trade with far-flung connections', but disagreed with Piggott's proposal that they were invaders from Brittany (Childe 1940, 141–3).

Investigations of the cultural associations of all the various elements of Stonehenge and its neighbouring monuments, the sequences of events represented there, and the local and long-distance associations demonstrated by finds and replicated ideas formed the main fields of inquiry between 1910 and the mid 1960s. These approaches influenced the campaigns of early professional archaeologists in the area and underpinned the need to rescue as much material as possible from endangered sites in the 1950s (see above). Atkinson (1979, 201) reflected on the achievement of these approaches, noting in the words of Sir Mortimer Wheeler that in the early twentieth century Stonehenge was dug up 'like potatoes' with rather little result, but that later work (with which he was himself associated) was planned to answer a limited number of quite definite questions.

Until 1995 (Cleal et al. 1995), the results from the campaign of excavations at Stonehenge in the 1920s were only available in published form as interim accounts in the *Antiquaries Journal* (Hawley 1921; 1922; 1923; 1924; 1925; 1926; 1928). R S Newall, who worked at the site with Hawley, published an interpretative account of the work in 1929, describing the stones and associated features, and suggesting parallels between the form of the stone structures and the arrangement of portals and chambers in a range of Neolithic tombs (Newall 1929a). It may be noted that it was during this period that seemingly authentic rock art was noted on a number of stones (Crawford 1954; see Thurnam 1866 for a discussion of the possibility that such art may be present).

The 1950s and early 1960s in particular were a period characterized by works of synthesis and review, triggered by the new excavations of Atkinson, Piggott, and Stone which began in 1950 and continued fairly continuously for about a decade. Atkinson's volume Stonehenge, first published in 1956, appeared before the excavation was finished. although it was later updated (Atkinson 1979). One of the most important, but generally rather ignored, studies was that by Stuart Piggott published in 1951 and thus pre-dating Atkinson's well-known volume by five years. Taking Newall's account and the interim reports from Hawley, Piggott examined the 'two-date theory' and broadly accepted it, developing a three-stage sequence for the construction of the monument as Stonehenge I, II, and III (Piggott 1951). It was this sequence which Atkinson used in modified form in 1956 (Atkinson 1956, 58-77) and which was widely adopted until being superseded by the full publication of the twentieth-century excavations in 1995. Following the publication of Atkinson's Stonehenge, R S Newall provided a detailed and highly useful critical review (Newall 1956).

By the mid 1960s the cultural-historical approaches to Stonehenge and its surrounding sites, fuelled by decades of



#### Illustration 16

Stuart Piggott's map of Wessex Culture graves in central southern England. [From Piggott 1938, figure 24, reproduced courtesy of the Prehistoric Society.] excavation and fieldwork, began to run out of steam. A resurgent interest in more scientific, explanatory approaches again surfaced and served to redirect attention.

#### Modernism and processualism

Two lines of inquiry about Stonehenge that had lain dormant for a period came back to life in the mid 1960s. In 1966 Gerald Hawkins published a book entitled Stonehenge decoded in which he speculatively expanded the astronomical aspects of Stonehenge, suggesting that it was in effect a giant computer used for the prediction of eclipses and other astronomical events. Although it was a line of argument that built on similar statements 60 years previously, it hit the mood of the times and generated a lot of interest that continued for many years (Hawkins 1966a; 1966b; Newham 1966; 1972; Colton and Martin 1967; 1969; Thom 1974; 1975; Thatcher 1976). It caused much debate at the time, both in relation to the astronomy itself and its use for interpreting archaeological features (e.g. Atkinson 1966; 1982; Hoyle 1966; 1973; Hawkins et al. 1967; Hawkins 1973; Moir 1979), and in terms of the challenges it posed to the more traditional, essentially Romanticist, views of the past (e.g. Hawkes 1967). A recent review by Ruggles (1997; and see below) picks up the fall-out from these various debates.

A second area of debate was rekindled by G A Kellaway who argued that the bluestones from southwest Wales arrived at Stonehenge by glacial action rather than human agency (Kellaway 1971). Again, this was a controversy that continued through the later 1970s and beyond (e.g. Atkinson 1974; 1979, 105–16; Kellaway 1991; 2002; Thorpe et al. 1991; Darrah 1993; Ixer 1997a; 1997b; Burl 2000b; Castleden 2001).

Although the dating of Stonehenge itself and the surrounding monuments, and the chronological relationships between them, had been at the focus of research efforts for centuries, it was not until the application of radiocarbon dating that absolute dates became available. By the late 1960s enough had been obtained to show that traditional models based on cross-dating and diffusion were fundamentally flawed. Renfrew's paper entitled 'Wessex without Mycenae' published in 1968 started the demolition of many longcherished ideas, a process continued with increasingly devastating effect when the calibration of radiocarbon ages to calendar years allowed greater ease of comparison between radiometric determinations and historically documented events (Renfrew 1968; 1973b). By the mid 1970s it was not only the chronologies that were being called into question but the whole purpose and nature of archaeological interpretation. Renfrew suggested that the future lay in the study of cultural process through the analysis of different fields of activity, different sub-systems of the cultural system to use a cybernetic analogy, which if properly understood should give the information needed to understand the workings of the culture as a whole (Renfrew 1974, 36). Stonehenge and its associated monuments have been widely used in exploring such a processual approach to prehistory, amongst them Renfrew's own study of social change in the area (Renfrew 1973a). This was also the approach used by Ellison as a framework within which to structure research activity in Wessex in the later 1970s and 1980s (WAC 1981).

As an essentially scientific school of thought, processualism promoted the scientific study of sites and materials and it is in such an environment that technical studies of ancient materials from around Stonehenge flourished: for example amber (Shennan 1982; Beck and Shennan 1991), shale (Brussell et al. 1981; Pollard et al. 1981), metal (Britton 1961; Ottaway 1974), faience (McKerrell 1972), and stone (Howard in Pitts 1982). Studies of the environment were also a key element of this scientific view of landscape and land-use (Richards 1990; Allen 1997).

Another facet of modernism was the bringing into the present of things from the past. The use of Stonehenge as the setting for a story or as a powerful image has a long history, but from the 1960s its appearance in popular and historical fiction (Grinsell 1986), advertising, and 'pop' culture becomes more common (see Chippindale 2004; Darvill 2004a). By the end of the 1990s the range of Stonehenge-inspired literature was very considerable, and included 'best-sellers' by Edward Rutherford (1987) and Bernard Cornwall (1999) among others. The emergence of parallel narratives, multivocality, and the study of agency are features of post-modernist or post-processualist views of the past, a return towards essentially interpretative approaches which represents the most recent swing in thinking about Stonehenge and its surroundings.

#### Post-modernist approaches

Contributed by Barbara Bender

Although Chris Chippindale might be surprised to hear himself called a post-modernist, his book *Stonehenge Complete*, first published in 1983 (Chippindale 1983a; 2004), and his edited volume *Who owns Stonehenge?* (Chippindale et al. 1990) were among the first attempts to consider the changing and often contested meaning of the stones, though not the landscape. Somewhat later, Bender focused on questions of multivocality and contestation (Bender 1992; 1993); Timothy Darvill pushed towards a symbolic landscape (Darvill 1997a); and Mike Parker Pearson and Ramilisonina (1998) used ethnographic analogies to great advantage. Whilst most English Heritage publications have remained resolutely descriptive, their *Teacher's handbook to Stonehenge* (Anderson et al. 1996) moved towards a contested present-past. *Stonehenge: making space* covers much post-modernist ground (Bender 1998).

Post-modernist approaches begin with the problemization of the well-established demarcations within research agendas. Thus, for example they question the separation of prehistoric Stonehenge from contemporary Stonehenge since 'we', in the present, create, naturalize, and valorize all the categories and divisions employed. The questions we ask, and the answers we give, are always created in the present out of our particular embodied historical and social placement. There is, therefore, only a present-past, and we cannot make definitive propositions – only ones that answer well (enough) to our (multiplex) condition. Second, though there are questions specific to particular historic conjunctures, there are many more that are appropriate to any time or place. Interpretations of the past are enriched by asking the same questions about the present – and *vice versa*.

These two general considerations lead to a number of other perspectives on what we do. We construct a very particular type of past based on the assumed neutrality of linear (clock) time. The past, therefore, appears to lie 'behind us' and to be separate from the present. It might be more realistic to think of the past as in front of us, because we rework it as part of the present/future. Moreover, linear narratives are interjected with other sorts of time – emotive, conditional, seasonal, ceremonial, and memory time.

We construct a very particular type of past – and present – based on assumed divisions between people and things



and people and places. We need to understand that things and places are not just created by people, but creative of people, and that time, space, things, people work off each other, and are always in process.

We construct a very particular type of past – and present – based on other taken-for-granted divisions: nature :: culture, mind :: body, life :: death, male :: female. These need to be questioned.

Space, like time, is polysemic and polyvalent. Depending on who you are, and when and where, your sense of place will vary. Some people's sense of place will be valorized, others' marginalized.

Places, like sites, are never autonomous. They work within larger landscapes. These landscapes – familiar, unfamiliar, landscapes of voyaging, of exile, of hearsay and myth – are interconnected and unstable. A familiar landscape may become unfamiliar.

People's engagement with the world around them is sensory as well as cerebral. People's engagement with the material world is created through action, and creative of action. Using all their senses, people are socialized into and negotiate their place within the landscape, learning and questioning what is possible, where to go, what and how to see. Landscapes of movement, entrance, exit, procession, escape.

Because people's engagement with the world around them is variable and in process, and because knowledge of 'how to go on' is differentially experienced and valued, the use of past or of place is always open to contestation. Past and place are political (Illustration 17).

Illustration 17

De-romancing Stonehenge: confronting the socio-political functions of the site in a post-modernist age. [*Illustration by David Bromley from* The Guardian, 15 June 1992. Reproduced courtesy of Guardian Newspaper Group.]

## THREATS, PRESERVATION, AND SURVIVAL

The decay of standing monuments in the Stonehenge Landscape has been a matter of comment and concern for several centuries. William Stukeley lamented the ploughingup of the downs and the decay of monuments in the 1720s when he was working in the area, and he shows ploughing on the Stonehenge Avenue in one of his illustrations (Stukeley 1720, 1 and 52). But even in Stukeley's day the prehistoric monuments of the Stonehenge Landscape were far from pristine. Each successive generation has contributed to the diminution of what already existed. Indeed, it seems likely that some if not all of the later prehistoric and Romano-British fieldsystems in the area had a major impact on earlier funerary monuments. The most severe damage in more recent times came through the construction of military camps in the first half of the twentieth century and the dismantling of the camps, levelling of earthworks, and conversion of the land to arable in the mid twentieth century.

Surveys of the preservation and survival of monuments mainly date to the later twentieth century. Land-use and ownership are major contributory factors for the long-term conservation and management of archaeological remains and they conspire to create two broad zones of preservation within the Stonehenge Landscape. North of the Packway the land is mainly in military ownership. Here earthwork survival is generally good, with much land in pasture (McOmish et al. 2002). South of the Packway earthwork survival is generally poor except where woodland or some other feature has limited the impact of destructive activities; landuse here has been predominantly arable cultivation (Richards 1990), although this is changing as the National Trust negotiates new leases and agreements. The RCHM survey of the Stonehenge Environs in the mid 1970s documented the decay of archaeological sites within their study area parish by parish and by reference to the main types of upstanding monuments (RCHM 1979, xiv-xix). It all makes dismal reading and emphasizes the dramatic losses over the last 300 years.

During the final fieldwork season of the Stonehenge Environs Project (1983–4) a systematic check was carried out on all recorded monuments within the study area, but the results do not appear to have been analysed beyond their primary use in the development of site management recommendations (Richards 1984; 1986). At the same time, a study of the archaeology of the Salisbury Plain Training Area was undertaken (Canham 1983) which drew also on earlier work (Smith 1981). Here a sample of 27 round barrows in grid square SU15SE, for example, showed that about 15 per cent were undamaged, nearly a quarter could not be located because they had probably been destroyed, about one third showed evidence of old damage, while the rest (about 35%) showed evidence of recent damage (Canham 1983, 42). This is slightly better than the national average for Bronze Age monuments; the Monuments at Risk Survey (MARS) revealed that in 1995 about 15 per cent of Bronze Age monuments were complete or almost complete, but that only about 12 per cent of known monuments of the period had been destroyed (Darvill and Fulton 1998, table 6.1).

A comparative study of the survival of Bronze Age round barrows in the Stonehenge area and in the upper Thames Valley of Oxfordshire showed that in both areas medieval and earlier farming had destroyed more barrows than nineteenth-century and later agriculture (Peters 1999). In October 1999 a study of recorded monuments within the National Trust's Stonehenge Estate revealed that half of recorded earthworks had been levelled, and an estimated 15 per cent of monuments were at that time regarded as highly vulnerable. It was found that 35 per cent of visible damage was caused by badgers and rabbits (Illustration 18), 30 per cent by ploughing, footpaths, and building works (National Trust 2001, 14–16). A more broadly based condition survey of 661 recorded monuments within the World Heritage Site was carried out in 2002, commissioned from Wessex Archaeology by English Heritage (WA 2003b). This desk-based study and fieldsurvey revealed that about 60 per cent of monuments had no surface expression. Of the monuments that were visible (40% overall) some 28 per cent were in 'good' condition, 34 per cent in 'moderate' condition, and 39 per cent in either 'poor' or 'very poor' condition. Overall, about two-thirds of monuments were found to be in a relatively stable condition, 12 per cent were subject to moderate deterioration, and just 1.5 per cent were subject to rapid deterioration. The main ongoing influences on the condition of monuments were, in order of magnitude: cultivation, burrowing animals, and tree and scrub cover. Lesser impacts from stock damage and wearand-tear from visitors were found to be limited in scope and effect. About 6 per cent of monuments were assessed as being highly vulnerable to the loss of their archaeological resource from ongoing impacts, while a further 57 per cent were assessed as having medium vulnerability.



These statistics are comparable with the national picture in 1995 revealed by the Monuments at Risk Survey. Amongst earthwork monuments, for example, about 60 per cent were flat (Darvill and Fulton 1998, figure 5.23), while approximately 2 per cent of monuments were classified as being at high risk (Darvill and Fulton 1998, 221).

Taking a long-term view, the main causes of damage noted for the Stonehenge Landscape have been:

- Construction of military camps
- Pasture or arable conversion
- Road schemes
- Property development
- Ploughing
- Rabbit infestation
- Storms and natural hazards

Many of these are ongoing as either continuous actions, sporadic but controllable events, or unpredictable natural happenings. It is the aim of the Management Plan to reduce, control, and where necessary mitigate these various hazards and threats as much as possible (English Heritage 2000). It may be noted, however, that while some offer opportunities for research work when they are approved (e.g. road schemes and property development), others only serve to diminish the potential of deposits both now and on into the future (e.g. ploughing and rabbit infestation).

## DESIGNATIONS, MANAGEMENT CONTEXT, AND LAND-USE

The Stonehenge Landscape and the sites and monuments within it are subject to a wide range of gradually changing designations and include a large number of protected areas and land over which specific policies or controls apply. These range in physical scale from a few square metres over individual barrows to the 2000ha of the World Heritage Site (Map D). The implications for carrying out research are considerable, although also highly variable. A detailed consideration of these issues is set out in the Stonehenge Management Plan (English Heritage 2000), the relevant designations for archaeology and the historic environment being summarized as follows:

#### International designations

**World Heritage Site.** 2000ha of land forming part of the *Stonehenge, Avebury and Associated Sites World Heritage Site* (Maps A and D) inscribed on the World Heritage List in 1986 (C373). The outstanding universal value of the World Heritage Site is described in the Nomination Documentation as follows:

Stonehenge and Avebury are the two most important and characteristic prehistoric monuments in Britain. They represent the Henge monument par excellence, as the largest, most evolved and best preserved prehistoric temples of a type unique to Britain. Together with the associated sites and monuments they provide a landscape without parallel in Britain or elsewhere and provide unrivalled demonstration of human achievement in prehistoric times.

#### Illustration 18

Rabbit damage to a round barrow in the Winterbourne Stoke barrow cemetery. [Photograph: Timothy Darvill. Copyright reserved.]

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#### National designations

**Scheduled Monuments:** Some 299 separate blocks of land within the Stonehenge Landscape, 179 within the World Heritage Site (Map D), are included on the Schedule of Monuments as defined by the *Ancient Monuments and Archaeological Areas Act 1979*. Controls on works affecting such monuments are in place through the Scheduled Monument Consent procedures.

**Guardianship Monuments:** Two monuments, Stonehenge and Woodhenge, together with adjacent land are in State Guardianship under the terms of the *Ancient Monuments and Archaeological Areas Act 1979*. All responsibilities for the management of Guardianship sites rest with the State.

**Listed Buildings:** These are buildings and structures of special architectural or historic interest that are 'listed' by the Secretary of State and therefore afforded various forms of protection according to their grade (I, II\*, II). There are currently 293 Listed Buildings within the Stonehenge Landscape, 52 of them within the World Heritage Site (Map D).

**Registered Parks and Gardens:** A list of parks and gardens of special historic interest is compiled and maintained by English Heritage, although inclusion on the list does not carry any statutory protection. Two registered parks lie within the Stonehenge Landscape (Map D): Amesbury Abbey (Grade II) and Lake House at Wilsford cum Lake (Grade II).

**Stonehenge Regulations:** The *Stonehenge Regulations 1997* (Statutory Instrument 1997 No.2038) came into force on 8 September 1997, revoking earlier regulation dating back to 1983. The effect of the 1997 Regulation is to control public access to the ancient monument of Stonehenge. A series of prohibited acts are defined, including: injuring, disfiguring, removing or otherwise interfering with in any manner the monument or any notice or any other property situated on the site of the monument; climbing on the monument; digging up any soil or grass or plants; unauthorized parking or leaving vehicles at the site; bringing animals onto the site without permission; lighting fires or fireworks at the site; and throwing a stone or discharging a weapon.

#### Regional and local designations

**Stonehenge Article 4 Direction:** A Direction made by the local planning authority in 1962 under Article 3 of the *Town* and *Country Planning (General Permitted Development) Order* (Article 4 in more recent amendments) which withdraws permitted development rights relating to agriculture and forestry operations within an area of about 20 square kilometres around Stonehenge.

Closely related to the Article 4 Direction is a concordat between the Ministry of Defence, the local planning authorities, and advisory bodies which concerns procedures for approving planned development within the garrison at Larkhill.

**Conservation Areas:** Areas of special local or regional architectural or historic interest and character designated by the local planning authority under national legislation. There are four conservations wholly or partly within the

World Heritage Site (Amesbury, West Amesbury, Wilsford, and Lake), and a further eight (Bulford, Berwick St James, Durrington, Figheldean, Boscombe, Great Durnford, Orcheston, and Winterbourne Stoke) wholly or partly within the Stonehenge Landscape (Map D).

Areas of Special Archaeological Significance: Areas defined and recognized in the Local Plan to help preserve the local archaeological interest of the landscape using existing legislation and the voluntary co-operation of landowners and farmers. A single large ASAS currently covers the Stonehenge Landscape and adjacent areas.

Over and above these designations that apply to the historic environment, there are also a number of protected areas relating to nature conservation, ecology, and landscape character. Details of these are set out elsewhere (English Heritage 2000, 2.5.29–34); Map D shows the extent of land designed as Sites of Special Scientific Interest (SSSIs) within the Stonehenge Landscape.

The Stonehenge Landscape is owned by a large number of private individuals and corporate bodies, the agricultural elements of which generally comprise large and fairly compact holdings. The single largest landowner, holding most of the northern part of the Stonehenge Landscape, is the Ministry of Defence who have developed and implemented an integrated land management plan for the area, including archaeological provisions (Defence Estates 2003). The National Trust is also a major landowner with substantial holdings in the Stonehenge World Heritage Site (see English Heritage 2000, figure 5 for details).

Land-use is also mixed and, in the present climate of uncertainty within the agriculture industry, is inherently unstable and subject to change according to government and European agricultural policy. The most stable land is that held by the Ministry of Defence and that put down to permanent pasture by the National Trust. The National Trust has developed a detailed land-use plan for the Stonehenge Estate which includes a wide-ranging consideration of proposed changes to land-use and access (National Trust 2001, 9).

At the time of writing, no work had been done on Historic Landscape Characterization within the Stonehenge Landscape, although clearly there is considerable potential for this within the developing nation-wide coverage (Clark et al. 2004).

#### REFLEXIVITY AND REVISION

Like research itself, a Research Framework should be a dynamic and ever-changing structure that reflects the implications of the results of ongoing projects and new discoveries. This is the process of reflexivity – referring back to a position in order to move the arguments and ideas forward through what might be seen graphically as a never-ending spiral of change. The means and the mechanism for reviewing, developing, and revising the Stonehenge Research Framework are encapsulated in the objectives set out below: the creation of SARSEN – the Stonehenge Archaeological Research, Study, and Education Network (Section 4). The timetable for revision will depend on the speed of progress with the objectives set out below and the rate of change in archaeological method and theory over the next few years.