
EXCAVATION

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HISTORY OF DEVELOPMENT OF TECHNIQUES

Introduction

The discipline of archaeology has a long history, even if it has only recently been accepted by most people as an important and vibrant research subject. However, the point in time at which it might be defined as a distinct discipline varies, depending on whether one chooses as its central focus simply the *collection* of material culture from past societies, which took place at an early stage; the *classification* of this material, starting in a later period; or the *interpretation* of data, which occurred later still. None the less, by any definition, the subject has existed for at least a century and, naturally, it is not difficult to find authors who have charted the trajectories of its overall development. For the British audience, Daniel's various works (especially 1975) may take pride of place. Klindt-Jensen (1975) has provided a corresponding description of Scandinavian traditions, and Willey and Sabloff (1974) of American developments. Thus, the general history of the discipline is well known and easily accessible.

Publications which focus specifically on the nature of archaeological fieldwork and its history of development are less numerous. Initially such matters either were discussed by oblique reference within excavation reports, for example those of Pitt-Rivers (1887), or occurred in more general works on aims and methods within the discipline, as with Petrie (1904). Even where a book was centrally concerned with digging up the past, it might still contain very little on the actual recording of excavations (Woolley 1930). Later, this situation changed. Specialist authors such as Atkinson (1953) and Crawford (1953) discussed fieldwork *per se*, the latter admittedly being more concerned with surface configurations than digging. For excavation itself, Wheeler has pride of place, not just in his well-known book *Archaeology from the Earth* (1954) but, more importantly, in his 'technical papers' (1945 and 1946) on the use of a grid of excavation boxes.

Publications by Alexander (1970), Coles (1972) and Webster (1974) discussed the direction of excavation projects and endeavoured to set them in a more general institutional and organisational context. Even so, it must be said that each, and especially the last, has very little to say on detailed matters which are a central concern of this manual, for example the descriptive criteria which might be applied to archaeological strata. Furthermore, any recording

methods which are mentioned are mostly unsystematised and vague in their application. Finally, Barker has had the most recent word, both on techniques in particular (1977) and on the philosophy behind excavation in general (1986).

From these and other studies, it is possible to chart the progress of archaeological fieldwork. This might be seen as starting in the middle of the first millennium bc with interventions in the city of Ur, or with work by Greeks in Hippias Major, mentioned by Plato, which involved using material remains to write *archaiologia*. The latter term might be best understood as involving 'stories' about the past, rather than purported historical accounts drawing on evidence, in the way a modern reader might understand. Whether in Sumerian or Greek contexts, such activities arose not simply out of human inquisitiveness, but rather from social need. Recovering archaeological remains was part of the drive to extend a city's origins into the past, thus legitimating its position within the region, and when undertaken by particular families this would reinforce their own importance and authority. In this sense, such investigations were intimately bound up with the needs of maintaining citizenship within the ancient world.

These initial steps were followed by Roman interest in past societies, which included a strong focus on what would be now called anthropology, as is clear from the writings of authors such as Tacitus. Again the main objective was not simply knowledge for its own sake but, with the vast expansion of the Empire, either to contrast the tribal peoples which the legions encountered with their own, Roman 'civilisation', or to see them as 'noble savages' who became soft when they took on an urbanised lifestyle. Roman involvement extended to the collection of material remains, particularly in Italy, even though this often amounted to little more than glorified looting.

After the fall of the Roman Empire, attitudes towards the past developed in different directions within Europe. Islam, with its greater respect for academic learning, retained an interest in Latin authors and protected their works from the excesses of destructive Christian zeal when possible. By the same token the Byzantine Empire, where 'Roman rule', in some sense of the word, might be seen as lasting until the fifteenth century, continued to facilitate the archaeological work of such scholars as Cyriac of Ancona. The contrast between Islamic and Byzantine spheres and Western Christendom is clear, the latter being more often concerned to lay waste or marginalise earlier monuments than to protect or investigate them. Yet, even within Christianity, particular events should not go unremarked. Thus the monks of Glastonbury excavated to uncover their links with Arthur, and in the process legitimate the holiness of their foundation and promote its economic power. Equally intriguing, though problematic, is the suggestion (Clark 1978: 198) that Geoffrey of Monmouth may have made use of a Roman antiquity in the twelfth century to elaborate his story of the life of Cadwallo, king of the Britons.

The birth of Renaissance movements in Europe, concentrated in Italy but

with reverberations far beyond, prompted a renewed contact with Antiquity. Those at its epicentre, where Roman buildings often remained visible above ground, responded most forcefully. The pope, for instance, took the opportunity to excavate large areas of Pompeii in the late sixteenth century. However, even countries which had been on the margins of the Roman Empire, such as Britain, or entirely outside it, as with Scandinavia and much of Germany, became deeply involved. Antiquarian interest generated huge collections of objects derived from ancient cultures, initially from within home countries and then, with colonial expansion, from increasingly accessible sites abroad. Such collecting created a demand which could be best served simply by looting, an activity with a long, and in some ways venerated, history which continues in many parts of the world up to the present.

These huge numbers of artefacts in antiquarian collections were eventually classified into typological sequences, a process augmented by the concept of the three-age system. This, plus other general developments such as the notion of *biological* evolution later expressed in Darwin's *Origins*, was a product of the more general notion of 'progress' abroad in a society responding to the Scientific Revolution. Such forces led, understandably, to the use of archaeological material to elucidate *social* evolution. Arguably the late seventeenth century was a critical turning point in this respect, the time when the term archaeology, with its Latin root, was used by Jacob Spon to describe the activity of antiquarians studying objects and monuments with the explicit objective of shedding light on past societies. The questions raised in the process of this intellectual enquiry required, in turn, further fieldwork to furnish not just more artefacts, but also the structural and topographical information which would give such finds a meaningful context. Thus controlled excavation to provenance finds became, increasingly, the order of the day: it remains a requirement which field-workers in the twenty-first century still endeavour to satisfy (and, in my opinion, are becoming increasingly expert at achieving).

The objective of this chapter is not just to provide the above brief outline of these developments, but to consider the dynamic behind them. Some have portrayed the process as being driven forward by the dynamism of particular individuals (described in **1.1** below). Such terms of reference, though allowing convenient descriptions, ignore social forces. If we wish to understand the sequence of development more fully, we have to consider the three elements of intellectual framework, available technology and organisation of fieldwork, and to understand the way in which they react on, and interact with, each other. Thus the subsequent sections will consider the ideological background within contemporary society which both constrained and promoted new forms of explanation (**1.2**); the technical, usually technological, developments outside archaeology which the discipline then incorporated to mutual benefit (**1.3**); and the social and economic context in which archaeological excavation took place (**1.4**). In particular, recent professionalisation (**1.5**) has turned the excavator

into wage labour and thus transformed the way in which fieldwork is practised. The content of this manual is largely a product of attempts to cope with this new and challenging context.

The order in which these ideological, technical and organisational factors are discussed below reflects my own view of how change takes place in human society in general. Ideas are clearly *one* of the driving forces (see 1.2), but only develop in circumstances composed of a historically specific combination of technological and organisational factors (see 1.3 and 1.4 respectively). Thus fieldwork activity itself, in the techniques which it employs, and in the way people use these techniques and the organisational context in which they find themselves, constitutes the real motor for change in excavation practice. In short, the practice of archaeology underpins its ideological development (or, as Marx famously once put it, the material world precedes consciousness).

1.1 The role of dynamic individualism

The brief historical outline given above demonstrated that humans have long been interested in ‘the past’ and have often become involved in archaeology as a result. Indeed, such curiosity is seen by many commentators as a natural phenomenon evident in every social formation (or at least as far back as those for which we have documentary evidence to demonstrate conscious human intention, for example in the writings of the earliest classical authors). Yet that résumé also shows that, even if such interest is seen as part of human nature, curiosity is expressed in different ways in different societies, and that it changes through time. How are we to comprehend such diversity of response and evolutionary process?

As already noted, some commentators suggest that all intellectual enquiry passes through a similar sequence of development which starts with the collection of material, moves on to classification to impose order on chaos, then proceeds towards the explanation of any patterns derived. This process, they maintain, is visible in various disciplines including, most pertinently, archaeology. Hence, it could be said that early antiquarians gathered artefacts (the ‘collection’ phase); archaeologists in the eighteenth and nineteenth centuries imposed typological systems on them (‘classification’); and twentieth-century scholars specified dynamics to facilitate the move from typological arrangement to interpretation (‘explanation’). By the same token, when we consider specifically work in the field, early practitioners can be seen as collecting monuments, at least to the extent of noting their existence in particular places (Plate 1). Monuments were then classified into different types and their positions plotted on maps to elucidate distributions. However, in order to move towards interpretation, one had to know whether any patterns were ‘real’ or simply a product of intensity of fieldwork and/or visibility of the monument concerned.

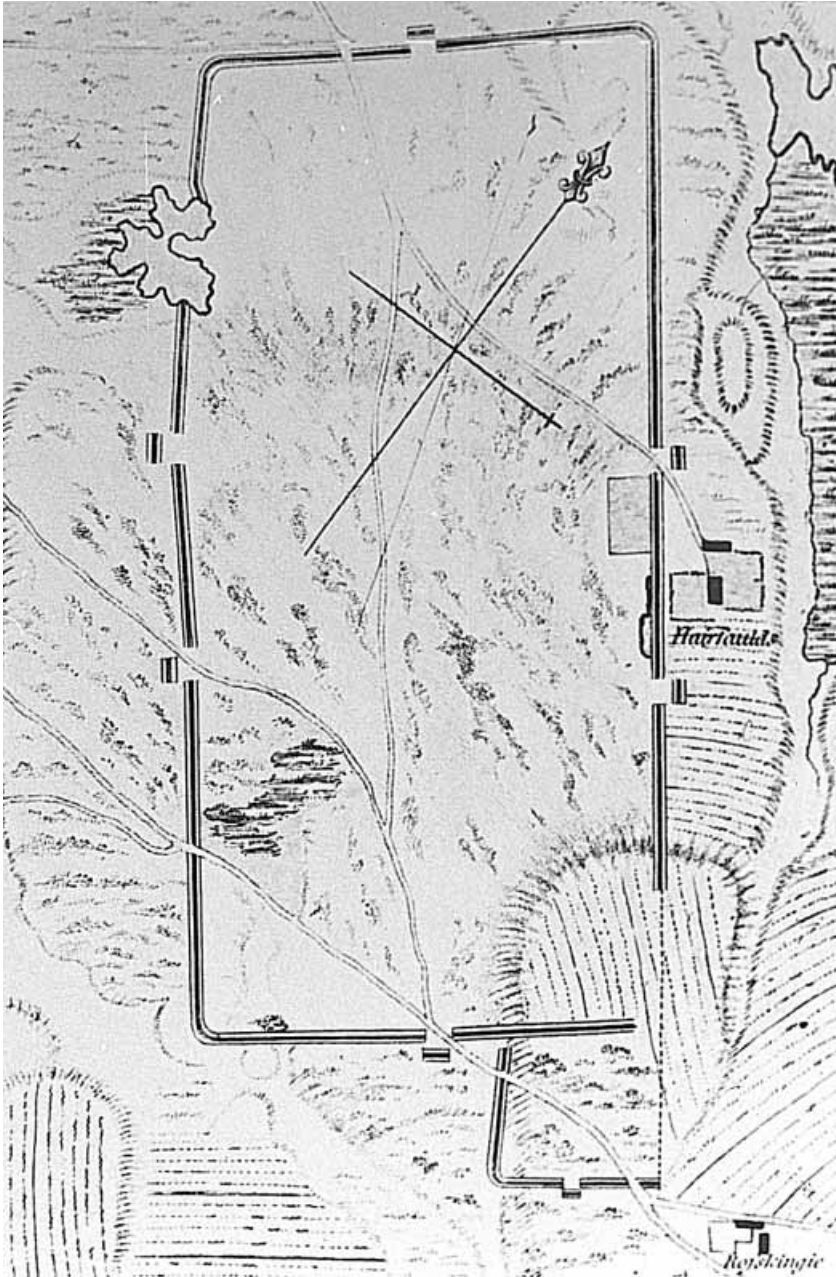


Plate 1 Drawing by William Roy of the plan of the Roman camp at Kirkboddie, published in his 1773 work *The Antiquities of the Romans in North Britain*. In effect, the fieldwork which underpinned such books 'collected' monuments in the landscape and, as here, then began to classify them by cultural period.

Only then could one assess their significance. Hence it became necessary to dig to augment the data-base and to confirm or deny the historical reality of a class of monument and its distribution. Only then could one start the difficult job of moving from recognition of architectural form and spatial distribution to interpretation of the social process which produced it.

Yet there is a problem with the above characterisation. Although archaeology can be seen as developing along broadly similar lines to other disciplines such as botany and geology, in the process of moving from a hobby to an intellectual enquiry in its own right, these developments took place at different times and were stretched over different periods. Even if the change from vague, quirky interest of the few, to scientific endeavour supported by the many is an inevitable one, how are we to explain different rates of progress? One way forward has been to avoid the question by simply associating new developments with particular, named archaeologists. Hence individualism provides, albeit implicitly, the dynamic of change.

Thus, in Britain, one might start with Leland (1506–52), Camden (1557–1623), Aubrey (1626–97) and Stukeley (1687–1765), who form a nearly overlapping sequence of antiquarian observers. After this one might note the more intensive intervention in the nineteenth century of excavators such as Colt-Hoare (1758–1838) in Wessex, Petrie (1853–1942) in the Near East and Pitt-Rivers (1827–1900) in southern England. In the twentieth century, Wheeler and Kenyon can be seen as promoting advances in Britain and abroad, to be followed by Barker and others more recently. Corresponding ‘histories’ could, no doubt, be provided for other countries.

Such descriptions, using individuals as exemplars of best practice at particular points in time, are a convenient mechanism for narrative accounts but can hardly be portrayed as coming to grips with the forces at play behind the changes. On the one hand, they pass over the diversity of techniques employed at a specific time. On the other hand, they fail to explain the way in which any one approach spreads to other field-workers (unless one assumes that everyone else simply learnt from that person designated as ‘the master’ – and this is often provably *not* the case). Thus, even if one considers developments within archaeology in isolation, let alone if one seeks a wider social context, such discussions remain intellectually dissatisfying.

Taking these two criticisms in order, let us consider first changes which occur at the same time in different places under the direction of different individuals. Colt-Hoare, who dug many sites, especially barrows, on Salisbury Plain and made one of the first uses of the archaeological section of Wansdyke, was drawing conclusions from stratification in the late eighteenth century. His projects were paralleled in broadly contemporary work in America by Jefferson, who noted stratigraphic relationships in the context of employing a consciously formulated research design on early burial sites. We have no reason to believe that the one learnt from the other, so is the correspondence a simple coinci-

dence? Equally, Petrie's work in Egypt and then the Near East gave more structure to excavation practice and the impetus to 'record everything'. To offer explanation of why this approach developed, beyond the individual and parochial, we must set it beside the work of Schliemann in the same era, who was digging for explicit research reasons and with attention to method.

Secondly, as well as correspondence, we must account for diversity of response, both between different people and within the same individual. For example in the late nineteenth century Petrie was roundly criticising inadequate techniques abroad and General Pitt-Rivers was advancing meticulous excavation and publication at home, emphasising the importance of common items over spectacular treasure, perhaps influenced by the anthropological interests expressed in his large ethnographic collections (Bowden 1991). None the less, during the same decades, Greenwell and Mortimer continued to open barrows on the Yorkshire Wolds at a vast rate, sometimes using methods considered rudimentary, even by contemporary standards (Marsden 1974). In addition, even the meticulous General could use a vertical section to record relationships at Cissbury in 1875, yet forget the technique when recording Mount Caburn two years later (Bowden 1991: 94). By the same token, and coming into the twentieth century, Wheeler advocated box-excavation and attention to sequence, promoting strict control of stratigraphy and, indeed, of all other activities on site. The excavation process thus took on the appearance of a military operation, including separate teams each with its own leader, an NCO, in each box, and Wheeler, of course, as the overall commanding officer. Even so, Wheeler himself utilised, for good or ill, very different techniques on other occasions, for example wall-chasing at Stanwick, or narrow trenches across the defences of Maiden Castle alongside box excavation in the entrance area and the exposure of large, 'open areas' in the centre of the same hillfort (Plate 2).

In recent years, many archaeologists may have moved away from Wheeler's paradigm and towards the techniques advocated by Barker (1977), involving the exposure of sites in large, open areas and adding further precision to site drawing. Barker's own work at the Roman city of Wroxeter and the medieval castle at Hen Domen was preceded by the rural excavations of Steensberg in Denmark, whose influence is explicitly acknowledged. Barker then influenced the work of other excavators who had a formative role in British developments. For example, Brian Hope-Taylor (1977) developed new techniques of recognising colour differences in separate deposit types and in recording inclusions at the early medieval 'royal' centre of Yeavering. He was able to make sense of the evident patterns only by viewing them *in extensio*. Similarly, excavations at Cheddar by Philip Rahtz revealed complete structures over 20m in length, the scale of building suggesting to him that they should be interpreted as Saxon and medieval palaces (Rahtz and Hirst 1979).

Yet this move towards larger excavations is far from universally applied. For example, although many excavators in Britain are now critical of Wheeler's

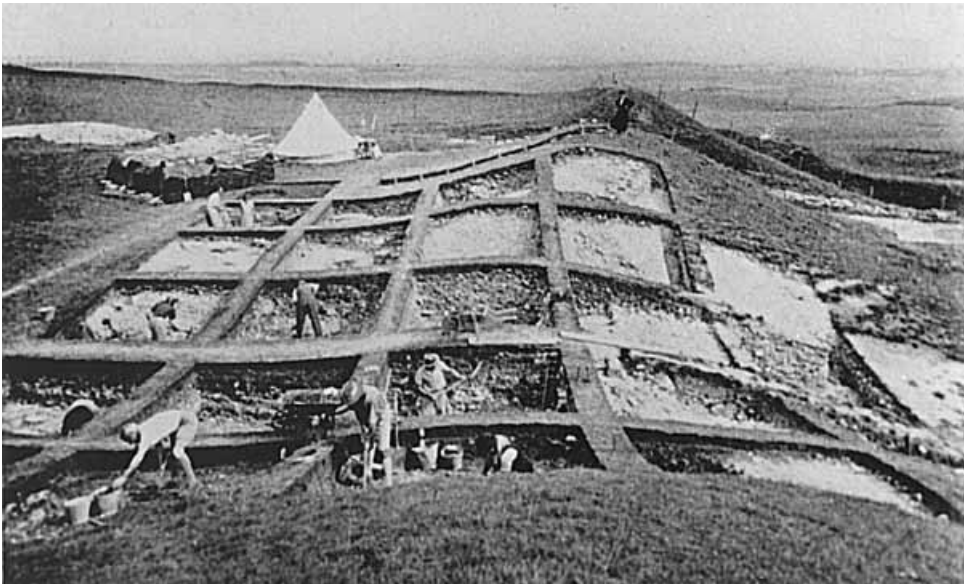
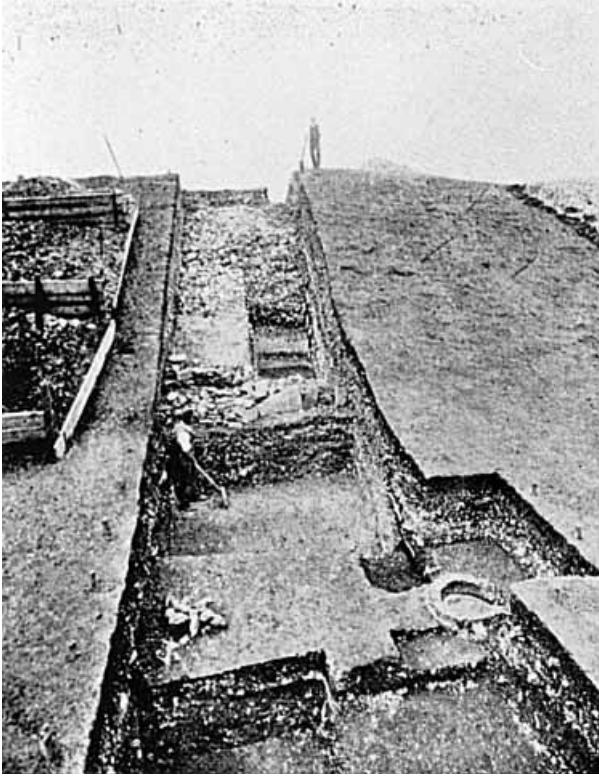


Plate 2 Wheeler's excavations at Maiden Castle used a variety of techniques: slit trenches to investigate defensive ditches (*top*) and box-excitation in the fort entrance (bottom), alongside open areas to investigate central occupation zones.

boxes and favour open areas, a manual based on US experience (Joukowsky 1980: 139) still recommends the principles developed by Wheeler and Kenyon and thus discusses grid squares as if they are the only legitimate way to excavate. Indeed, what might be called excavation ‘trenches’ in a British context are likely to be termed ‘squares’ in America, even if they are often rectangular in shape. In short, fieldwork practice develops in different ways, and at various speeds, in different places. One can only understand this diversity of response, as well as any general trends, by looking beyond individuals and towards underlying dynamics. To do so requires distinguishing between three forces – intellectual developments, technical changes and organisational contexts. Each will be discussed below.

1.2 Ideological factors

An interest in the past can be driven by intellectual curiosity or emotional necessity. Nevertheless, as argued above, whether, when and how such demands are met is decided within a living society. The past may be used to foster nationalist feelings, give a sense of cultural identity, promote revolutionary fervour or whatever, but always subsists in an intellectual context, a framework produced by the ruling ideas in society. Approaches to archaeological research provide a good illustration of this relationship (see Trigger 1989 for proper detail, giving his usual range of stimulating insights into this complex interaction).

In coming to terms with the Age of Reason, archaeology moved from inductive and pre-scientific approaches, where antiquarian collections were valued for aesthetic reasons and the objects used, at best, to illustrate the margins of documentary history, to a discipline requiring scientific endeavour. Ideas of *biological* evolution, developed and then used within a capitalist system itself undergoing progressive transformation at an ever-increasing rate, brought the issue of *social* evolution firmly to the surface. The world at large thus demanded explanations of the phenomenon from the anthropologist and, especially, the archaeologist. At the same time economic and political development was increasingly tied to regionally located units of capital – nation states – which required the creation of national identities. The ideological justification for such structures was facilitated by ‘the invention of tradition’ (Hobsbawm and Ranger 1983) and archaeologists reflected these changes in their emphasis on culture history. Thus evolutionary and culture-historical paradigms, though apparently contradictory, were really opposite sides of the same coin emerging from a single social and political context.

Of course, change in past societies was conceived and explained in different ways by different people. Some favoured the notion of the survival of the fittest, underpinned by the idea that competition was inherent in human beings and the driving force behind all social development. This no doubt appeared as a

reasonable, 'common-sense' conclusion, given that competition is indeed integral to the functioning of capitalism, the system under which they lived: all dominant systems endeavour to portray their own dynamic as inherent and inevitable, as part of 'human nature'. Alternatively other commentators, at pains to gloss over emerging conflicts within society, played down competition and argued that collaboration was central and that all humans were essentially one. From here it is only a short step to structuralist perspectives, or at least the notion that each individual was linked to those of the same nation or race.

Unfortunately, explanations in terms of either an essentially competitive human nature or the psychic unity of humanity both raised the problem of how to explain diverse social trajectories. This difficulty became increasingly apparent as anthropology provided fuller indications of such diversity, a result both of an inductive reaction which gave a greater role to evidence, and of the vastly increased amount of data gathering which followed the increased professionalisation of anthropology. None the less, despite these weaknesses, the central requirement of archaeology remained the formulation of explanations of social evolution.

A driving intellectual need is one thing: the way in which ideological structures fulfil it is another. At any particular time, ideology is constructed within a society riven with contradictions, and thus itself contains contradictory perspectives. In a changing world, prevailing ideas will act both to constrain answers to newly emerging questions, and to promote them. Thus bourgeois revolutions may have sounded the death knell of a feudal ruling class, first in Britain and Holland in the seventeenth century, and later elsewhere. All the same, their ushering in of a new emphasis on rational explanation did not mean that earlier Christian belief systems then disappeared, to be replaced at a stroke by the Age of Reason. In reality, both paradigms had a continuing influence, and this is particularly clear within archaeological interpretation.

Hence, on the one hand, the discipline of archaeology still had to overcome theological reservations on the antiquity of the earth, and human activity thereon, in order to progress. Previously, it had been acceptable to study the past in the terms presented by classical authors, as long as it did not proceed beyond 4004 bc. Prehistory, at least, remained shackled by the church. In the same way, geological interpretation was bound up with recognising a biblical flood as a fixed point in the sequence of natural development. However, perplexing evidence was accumulating from Europe and from pre-Columban sites in the New World. These data, although irreconcilable with biblical accounts, could not, eventually, continue to be simply ignored. Thus when, in 1800, Frere wrote tentatively to the Society of Antiquaries of London to describe observations of flint artefacts in strata overlain by deposits containing extinct animals at Hoxne in England, his letter provoked little initial reaction. Even so, by 1859 Evans, an archaeologist, and Prestwich, a geologist, were reporting to the Royal Society the validity of similar findings of Boucher de Perthes in France.

The notion of the antiquity of man, confusing and even unacceptable at first, had become undeniable by mid-century (in fact by the very year in which, by an understandable coincidence, Darwin's *Origins* was published).

The tendency of current ideologies to constrain explanation is mirrored, on the other hand, by its role in breaking through barriers. In the case of archaeology, this often involved the incorporation of perspectives from outside the discipline. In relation to the above debate, it was possible to collect objects, and in a sense therefore lifestyles, from periods preceding the available documentary sources and thus implicitly question what was theologically 'given'. Nevertheless, lacking any real notion of time depth and how to quantify it, alternative explanations remained fanciful and, mostly, mythological. The development of the concept of stratification, borrowed from geology, changed all that.

The idea of stratigraphy had appeared at an early stage with the work of George Owen and his *History of Pembrokeshire* of 1570 (interestingly, only formally published in 1796) and Nicolaus Steno in the *Prodromus* in 1669. Yet it was the publication in the 1830s of Lyell's *Principles* which consolidated the learning and allowed the development of a proper discipline of geology. His arguments against catastrophist explanations first set out there have a clear parallel with the effect of Darwin's ideas on the notion of creation (although the latter was no 'naive gradualist': short-term change is not, in itself, incompatible with an evolutionary perspective, as the many, engaging papers by Gould (1978 onwards) clearly demonstrate).

Geological notions of stratification were soon adopted by archaeologists concerned with human society, influencing the observation and illustration of sections by Rudbeck at Uppsala in 1680s (Klindt-Jensen 1975: 30), and of Stukeley in 1723 in Britain. Geologists described the creation of basins in land surfaces which became filled as deposits took the line of least resistance. Humans could be portrayed as just another agency of erosion and deposition, moulding nature and creating their own basins in which, or upstanding features against which, material then accumulated. The parallel between human and natural processes can be, and has been, taken too far, but the description of natural agencies creating stratigraphic accumulations does have a resonance with the sequences seen on archaeological sites, and the concept of a stratigraphic sequence has been, perhaps, the single most important influence on fieldwork practice during the past century.

Hence Thomsen's idea of a 'closed finds group' (e.g. the finds from a grave), which allowed the construction of the three-age system, is an accepted concept today but rests on the notions of context and stratification, to which Worsaae could only give validity by seriation following his investigation of the layers in Danish peat bogs. Later, the move in archaeology from an evolutionary perspective to culture-historical interests required a tightening of chronology – hence Pitt-Rivers' greater attention to stratigraphic relationships (although

this did not lead him to differentiate deposits and actually excavate them stratigraphically – Bowden 1991: 78). Then the work of Wheeler at Segontium, Verulamium and Maiden Castle on the features and their boundaries seen in baulk sections added further detail to the stratigraphic record in the field. This was accompanied by corresponding developments under Kenyon which transformed work abroad (although Kidder (1924: fig. 8) seemingly developed similar ideas in the US with less lasting impact on excavation technique there). Finally, recent developments such as Harris matrices to represent and manipulate stratigraphic sequences (Harris 1989), and Schiffer's work on the formation and transformation of archaeological deposits (Schiffer 1987), both central discussion points in the present book, are clearly predicated on a concept of stratification.

As discussed, ideological frameworks can constrain or liberate the operation of any discipline. Yet, in the case of archaeology, the ultimate result was never in doubt, given an increasing emphasis on scientific explanation in society at large. Thus theological notions of time were overcome and the geological idea of stratification was incorporated as a key concept to help understand social evolution. At every stage since, our fieldwork has owed a debt of gratitude to geology. The academic perspectives which were engendered have allowed the change from a focus on monuments exposed in a frozen moment, to landscape features created in successive stages, to sites with periods of construction, use and demise visible in section, to complex structural evolution in large, open areas. Today we are still working with, and working through, the implications of the concept of stratification.

Fieldwork developments were described above in terms of the influence of changing ideologies, yet this can only be part of the story. Ideas, however brilliant and innovative, can be put forward but then fail to transform practice because material conditions are inappropriate. Conversely, when new perspectives do have an effect, it is because they find an audience, some people ready to listen. For instance, the breakdown of medieval belief systems and their replacement with 'scientific' rationalism happened, not because people lacked the intelligence to think in such ways before, but because society was then in a state of flux. The changing balance of class forces, notably with the emergence throughout Europe of an increasingly powerful bourgeoisie who first challenged, then overthrew, the pre-existing feudal social order, created the circumstances in which these new perspectives developed.

Clearly the material context in which ideas operate at any particular time is critically important in understanding why they take hold. Dynamics operating within the real world can be divided between technical factors – those who do the work and the tools they use – and the changing social context in which people live and are exploited. This division, between the forces and relations of production, was initially put forward and elaborated by Marx. The first set of factors is discussed next.

1.3 Technical factors

The technological developments which have promoted change within archaeology in general, and excavation practice in particular, have nearly always occurred first outside the subject, to be then incorporated into our processes of data gathering, data manipulation or dissemination of results. The discipline has been transformed as a result of such intrusions, both immediately in the way we do things, and in the longer term because the possibilities opened up have created wider horizons and a more sophisticated set of research directions. To see the effect of technological change, one can look as far back as Camden in the seventeenth century whose book, *Britannia*, had a formative influence on the subject. It is not the brilliance of its content but the fact that it could be printed, in contrast to the previous histories of authors in the ancient and medieval worlds, which ensured such wide dissemination of his information. Indeed, it might be argued that the printing press is the single most important mechanism which led, albeit only eventually, to the creation of a whole new set of intellectual disciplines which have transformed society.

On other occasions, the effect of changes in technical conditions was more a matter of a coincidence. The way in which geology had to overcome ecclesiastical constraints in order to progress has been described above. Part of this process was related to the sheer amount of new raw data which had accumulated and now demanded explanation. Yet this data mountain was not the product of gradual accretion through the centuries but the result of an explosion. Geological observations of Lyell and others were greatly facilitated by the progress of the Industrial Revolution which disturbed the ground for factory building and made visible a large number of strata in a multitude of railway cuttings. The mid-nineteenth century was also the period when major drainage schemes in historic cities allowed pioneer field archaeologists such as Wellbeloved in York and Roach-Smith and Hodge in London to take part in some of the earliest 'salvage' work (Plate 3). In carrying out their work, they produced records which are still useful to those writing-up recent excavations (Marsden 1987; Milne 1992). Thus specific material conditions were of central importance in the creation of pools of geological and archaeological data.

With the greater speed of development in the twentieth century, itself a product of the increasingly frantic needs of capitalism, the relationship between technological advance and fieldwork method has become even clearer. Carbon-14 and dendrochronological techniques, each again coming from outside archaeology, have totally changed our dating of stages within prehistory. Further, in the case of the latter technique, it may allow us to identify 'marker dates' in a sequence (Baillie 1991) which result from traumatic events such as volcanic eruptions and can then be used to interpret site development. Such precision may even require a reassessment of the relationship between documentary history and archaeology: if it really becomes possible to date the

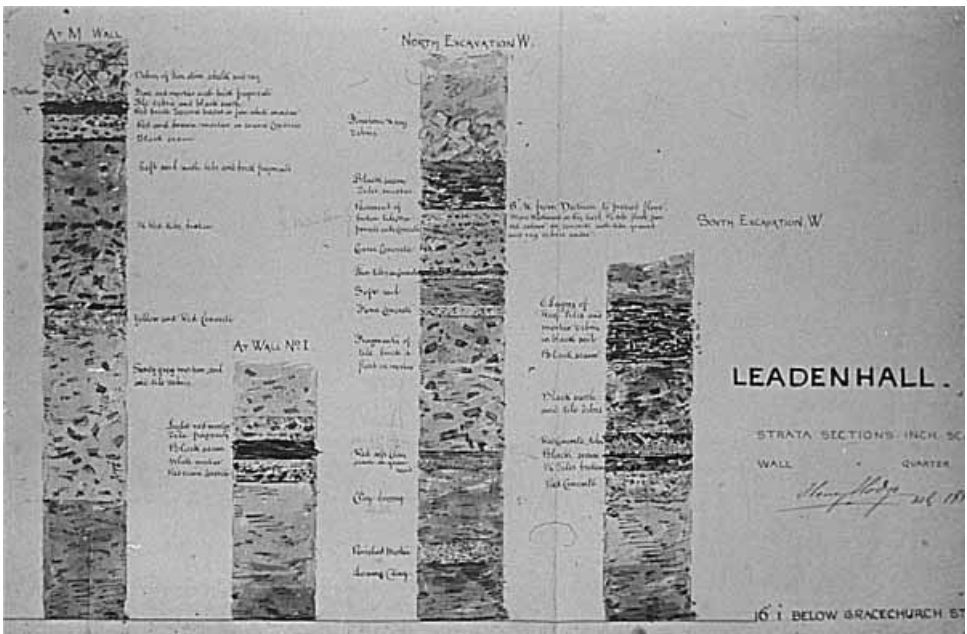
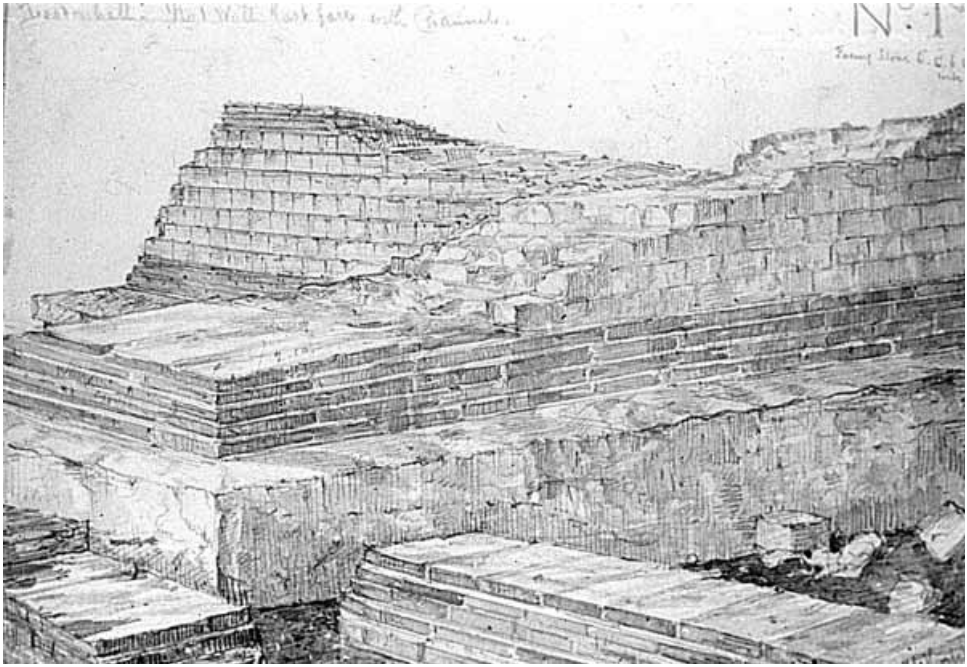


Plate 3 Scale-drawings, in water colour, by architectural artist Henry Hodge. In the last decades of the nineteenth century he recorded building elevations (*top*) on the site of what was later shown to be London’s forum and basilica. He also drew some of the first annotated sections through Roman strata (*bottom*).

construction of a timber waterfront to the nearest year, and even the season within the year, the question of correlations between archaeological evidence and, for example, political events arrives on the agenda in a more forceful way than was possible previously.

Looking at fieldwork practice more specifically, air photographs have transformed the process of finding sites in the landscape, for example increasing estimates of the population of Roman Britain by a factor of five. If we were still flying only kites and balloons rather than aircraft, the impact would have been significantly less. By the same token, ground-based remote-sensing equipment has greatly augmented the ability of archaeologists to understand below-surface site configurations before formal excavation takes place. Indeed, in geophysics, we may even begin to see the start of a reverse process, flowing from our discipline outwards. The diversity of the features which archaeologists investigate, the subtlety of their physical characteristics and the difficulties of their differential survival mean that hardware can be tested in these demanding conditions and then employed more effectively elsewhere – ‘if it can work on an archaeological site, it can work anywhere’. Remote sensing and careful excavation to help with police investigations, or Radar to help construction engineers find cracks in buildings or geologists water in deserts, are some of the hoped-for outcomes.

Lastly, and most obviously, the revolution in information technology allows us to manipulate data in ways which would have been previously impossible and to communicate it to increasingly diverse audiences (see Scollar 1982, Gaines 1984, Richards and Ryan 1985 for commentaries at a formative period, Richards 1998 and refs. for more recent work). Further, the use of computers does not just provide answers to old queries more quickly, and perhaps with proven statistical significance, but also leads to our asking new types of questions: technological development generates intellectual change. Computers have the added advantage of forcing us to order our data in such a way that its hierarchical relationships are explicitly acknowledged and, if necessary, reorganised. The development of formalised languages for describing stratigraphic units and the designation of set systems for effective work on site, central to the discussion in this manual, are partly a product of IT developments.

1.4 Organisational factors

Taking the above discussion to its (il)logical conclusion, one could be forgiven for adopting an entirely ‘technologically determinist’ view of the evolution of fieldwork techniques, in which the gradual accumulation of technical expertise leads to inevitable progress. All the same, this would fail to do justice to the diverse rates and ways in which changes are promoted and implemented in society. To take a simple example, aircraft were invented and technically

refined, not out of the blue or gradually over decades, but in particular circumstances on the ground, notably in the course of two world wars. In addition, the production of a profusion of air photographs for archaeologists later on was related, in part, to the type and amount of flying taking place during the Second World War. After 1945, when the post-war boom allowed greater input from the white heat of technology and thus the construction of cheaper aircraft plus wider access to their use, the employment of air photography in archaeological research was further promoted. Again, this was not automatic. Social circumstances had to be right for resources to be allocated to the pilots who created the widespread and intensive coverage of the landscape which archaeologists now have in so many areas.

Similar examples abound, not least because conflict, now open, now hidden, drives so much of capitalist development. Thus the Second World War promoted advances in radar, now employed increasingly within archaeology, while the later, more subtle 'cold war' involved a space race which generated major spin-offs in computer technology. Archaeological survey by air (Gould 1987) has employed military procedures derived from search-and-rescue (SAR – and presumably could use lessons from search-and-destroy actions, SAD). Even the statistical software packages archaeologists employ with their computers were borrowed from social sciences not even defined as distinct disciplines, let alone invested in, until the decades after 1945. Technological development is necessary, but not sufficient, to guarantee widespread change and social context is vital for its comprehension. Unfortunately few authors have seen fit to discuss the history of archaeology explicitly in social terms, let alone to understand fieldwork developments (Hudson 1981 is one exception, together with specialist studies of Marsden (1974) and Levine (1986)). To see the relationship more clearly, we can return to the history of antiquarian involvement outlined previously around the figures of Leland, Camden, Aubrey and Stukeley.

The first worked as the official King's Antiquary, touring England and Wales. Although Leland concentrated on documents and genealogies, he also described sites of interest, including prehistoric monuments. His very appointment was no doubt closely related to the attempts of the Tudor dynasty to create a national consciousness by listing 'their own' monuments (how far down society this ideology of nationalism did, or was intended to, spread has been much debated). Next Camden, the Elizabethan antiquary seen by many as laying the foundations of modern fieldwork, focussed most of his efforts on Roman epigraphy. This would have been a quite natural emphasis in a society with a perceived need to integrate Britain with the rest of Europe. A common inheritance, that of the classical world, came readily to hand. Third, Aubrey was an acute observer and illustrator of monuments such as Stonehenge and Avebury. But he also felt the need to classify artefacts and sites, and such an impetus must have owed much to his relationship with scientists in the Royal Society in the era when polymaths were still allowed. Finally, Stukeley, who not

only added detail to the same monuments but discussed them with a vivid imagination, signalled the move from classification as an end in itself to the process of interpretation. This is exactly what one might expect of a person living on the cusp between a society bound up with classical architecture and one about to indulge in the excesses of a Gothic tradition: fanciful links between Druids and Christianity come as no surprise.

Of course, amongst the people concerned, social context influenced, but did not dictate, development, and anyway there were diverse individual backgrounds to accommodate. For instance, in the nineteenth century, Pitt-Rivers, part of the landed gentry with an inheritance and time on his hands, and Schliemann, an industrialist increasingly liberated from factory management, had very different class origins, an example of the contrast between trajectories of capitalist development in Britain, the first nation to experience a bourgeois revolution, and other countries on the continent such as Germany and France. However, they did have in common the fact that their position not only allowed them to transcend feudal beliefs on the origins of humans without fear of ostracism but, equally important, gave them the freedom and time to travel, and the material circumstances to organise fieldwork projects.

In addition, it must be remembered that the Renaissance, although centrally an intellectual process generating a renewed interest in things Roman and, later, a new spirit of rational enquiry, must be set beside the imperial expansion of Western Europe, requiring increasingly direct contact with other civilisations in newly colonised areas. The later ‘Grand Tour’, with resulting artefact collections then donated to public museums, was a product of this empire-building. Shared colonial aspirations and real imperial conquests dictated the similar intellectual frameworks adopted by German and Austrian archaeologists in Greece, and by British, French and Italian archaeologists in the Far East, the Middle East or North Africa. Common material circumstances also explain how these archaeologists managed to get the resources and permissions to organise fieldwork in the countries on which they impinged. In the process, as we know, they often denuded the conquered regions of their cultural heritage, just as other colonialists decimated their natural resources and their political and social organisation.

1.5 The professionalisation of fieldwork and its implications

Finally, rather than consider only general political contexts in the rather distant past, it is necessary to end this chapter by focussing on the way in which working conditions have influenced recent fieldwork development, a topic of particular relevance to the content of this manual. A second World War was needed to bring the world economy out of the recession of the 1930s, to be followed by the boom years of the 1950s, 1960s and into the 1970s. The threat

which this economic growth posed to our material heritage called forth a response from the archaeological community. Studies from various countries (Barley 1977) show that, even though the timing of destructive construction programmes varied between different parts of the Western Bloc, and solutions to these threats took different forms in separate countries, the problem was a very widespread phenomenon. In Britain, for example, it ushered in the rescue movement and the setting up of RESCUE! (Rahtz 1974), an independent organisation formed in 1971 in order to pressurise the government into putting in place financial resources, organisational structures and legal provisions to allow archaeological material to be either protected or investigated before being destroyed by modern development.

In general terms, the organisational reaction to reconciling archaeological work with new growth was in line with much that was going on in the rest of society, in particular in relation to a new role for the state. Late-capitalism has seen a considerable growth in state planning, particularly after, and to some extent as a result of, World War II. In certain spheres this even took the form of concrete intervention in social developments, for example in health and education services, and by nationalising industries in certain segments of the economy. Such development generated a series of material changes (for example in the design of the buildings in which we live) linked to intellectual changes (for example the development of social sciences in general, and sociology in particular). Thus architectural developments such as the high-rise blocks of council housing were associated with the sociologist predicting how much washing line and leisure space each 'family unit' within would require. Hard on their heels came philosophical changes, in particular the notion that the methods of hard science should be applied to society in general – that we could, indeed should, model human activity, test the models, refine them, etc., the better to predict the future.

How these changes affected archaeological theory, most obviously in the development of 'New Archaeology' and an emphasis on hypothetico-deductive approaches, is well known. Yet, equally striking, though not usually linked in so directly, is the way in which state planning on a much wider scale created a new institutional structure for archaeological practice. As part of this process, the legal rights and duties of the discipline had to be more fully defined or, where appropriate, redefined. Some even thought it possible, and desirable, to define a code of ethics for the profession (Smith 1974). In addition, if archaeological impact was to be accepted as a material consideration in decision-making, archaeologists had to be drawn into the workings of both local and central government to a greater degree than before, not just left in universities and museums. Furthermore, field-workers had to relate to commercial organisations and pressures in ways which would have seemed quite alien in previous decades.

Thus archaeologists were employed in central government to help phrase

legislation and to issue guidance which, though it sometimes lacked the force of law, was often listened to, both by other archaeologists (the issuing authority often held the purse strings) and by private developers (ignoring government advice would simply invite formal legislation in its place soon thereafter). At the local level, councils began to employ archaeologists so that the planning process could include an archaeological perspective. Their advice might then be used either to protect sites or to twist the arms of commercial developers into paying for investigation ahead of destruction. In Britain, the emerging relationship between archaeologists and the property business was signalled by the issuing of a code of practice between both parties (British Archaeologists and Developers Liaison Group 1986 – though the detail has not been taken up universally). Similar links are evident around the globe (Cleere 1984, 1989).

The development of professional fieldwork from the mid-twentieth century was not, of course, a straightforward, automatic or immediate process. For example, teams in Britain and Germany rescuing cities threatened by rebuilding after the Blitz were usually hopelessly underfunded and muddled through, frequently to very good effect, in much the same way as they had done before the war. However, as the pace of redevelopment increased, the rescue demand came from all sides, both town and country. Urban renewal was related not so much to war damage as to economic boom in Western Europe and America. The white heat of technology employed in towns demanded their extensive redevelopment, whilst motorway schemes to link these expanding centres scarred many rural landscapes. The organisational and financial requirements to accommodate such rescue projects demanded professional teams of archaeologists working together all year round.

In Britain such demands generated the ‘circuit digger’, moving from project to project. Then, from about 1970, and at an increasing rate during the next five years, archaeological units were set up with regional or specific urban responsibilities to organise the field teams. In line with the wider changes described above, these organisations were expected to be, and succeeded in being, supported by the state. The fieldwork professional had truly arrived (Plate 4).

Similar developments were evident in the rest of Europe. The professional units which were put in place in many major towns and regions have allowed a fruitful interchange of personnel over the past two decades. Equally, on the other side of the Atlantic, salvage and contract archaeology became commonplace (Wilson 1987). Thus the terminology used and the sites concerned may differ but the processes of Cultural Resource/Heritage Management and the economic position, rights and duties of crews/teams of archaeological fieldworkers have been subjects for heated debate everywhere in the last decade. The threats are international, and common problems have often led to similar organisational solutions. In 1953 Crawford could write that field archaeology was ‘an essentially English form of sport’ (1953: 208). Today it is neither exclusively English (if it ever was), nor seen by those involved as a sport. In most



Plate 4 Professional site staff celebrating the end of another excavation. This group, at the GPO site in the City of London, were described by Hudson (1981) as 'paid graduate professionals. All are under 30 and most under 25 . . . older people with family responsibilities could not exist on the wage offered.' To him, they represented 'a small army under the control of the site supervisor'. As the supervisor in question, I can now reveal that many pictured were graduates only of 'the university of life', that some would have been pleased to be thought of as in their twenties, and that most would have resented anything resembling 'military' control. None the less, Hudson is essentially correct in stressing their professionalism and defining their institutional position as waged labour. He was also right about the low level of those wages!

developed countries, salvage and rescue work is the main driving force behind excavation, and it is contract archaeology which now generates the vast majority of data used by our discipline.

The change to units staffed by full-time, paid professionals, had considerable and sometimes traumatic effects on field-workers, in particular divorcing them from an academic community which none the less continued to spawn a good proportion of the profession as archaeology graduates. Equally, because archaeology remains, in essence, a research discipline with an abiding appeal to interested sections of the general public, further trauma is evident in the lively, and sometimes acrimonious, debate on the competing rights, privileges and status within archaeology of, on the one hand, 'professionals' and, on the other, 'independents' or 'volunteers'. This has been promoted in Britain by Selkirk (1986), though whether the ensuing discussion has generated real understanding or just unnecessary division is another matter. The tension bubbling below the surface is produced by the organisation of the discipline, not out of thin air by the protagonists. The changes in archaeology may be regretted by some and decried by others, but much field archaeology today must be seen as a proper profession (or even, as I would prefer, a job).

On balance, I believe that this increased professionalisation is all to the good, and in any case fairly inevitable, as are the implications of such changes. The workforce in the field is portrayed by most archaeologists, quite correctly, as our biggest asset, more important than any single site or project will ever be. When these people are employed full-time, they constitute wage labour whose interests are radically altered as a result. As paid workers, they can only protect their individual wages and conditions of work by acting collectively. By the same token, only collective action on their part can protect the standards of fieldwork which are now, rightly, demanded by those using the data. The proliferation of unionisation amongst archaeologists in Britain in the 1990s was the logical outcome, as is a closer alliance with other paid workers whose material problems and political solutions they share. Of course, joining unions is not a guarantee of protection in itself, as redundancies within some of the largest, most organised units show. However, if not sufficient, it is generally a necessary condition of successful defence and has at least meant that archaeology has become linked to wider strata within society.

So much for the plus side. At the same time, these employment conditions tend to result in the severing of some links with elements of the rest of the archaeological community. Such a distancing can mean that universities provide training which falls behind technically, and thus produce less useful graduates. Within the profession itself, an excavator whose whole career is in fieldwork will have some different interests from a weekend volunteer on site, no matter how well the two get on, either individually or on a group-to-group basis. More important, divisions with the upper end of the spectrum will also appear. Thus organisations such as the Institute of Field Archaeologists in

Britain, developed on the premise that all archaeologists have something in common, will see this common purpose increasingly obscured when one IFA member, who happens to head an archaeological unit, attempts to throw other IFA members out of work because of a financial crisis. Even initial designs for a code of ethics (Smith 1974) had to acknowledge that the specific content of any such charter might be different depending on whether it applied to the general archaeologist, commercial sponsor, site supervisor or all the other excavation staff. Similar tensions are evident in different institutional contexts around the globe as the field-worker looks more readily to workers employed in similar circumstances, but less readily to those who, though still within archaeology, are situated above or outside that context.

As a final twist in the tale, we have seen, most recently, another development on both sides of the Atlantic. The mid-1980s up to the present has been the era of increased 'privatisation' and withdrawal of state support for certain services. Whether presided over by so-called Socialist or Democratic parties of the left, or those from Conservative or Republican backgrounds on the right, the net result has been the creation of a large, sometimes fragmented, private labour market, frequently working with short-term contracts on projects funded by commercial developers. It is these workers who now do the vast majority of archaeological data gathering in the field. Paradoxically, the attacks on wages and working conditions since the 1980s have been so widespread that they also encompass the university sphere. The increased number of academics working on fixed-term contracts, without tenure or other security, means that they now find themselves in very similar positions to the rescue field-worker. Perhaps this will help to heal the rift between the two spheres which opened up in the course of the 1970s.

The final result of these changes in conditions of employment, and the most pertinent for present purposes, comes from the fact that the jobs of waged, full-time field-workers have to be defined much more exactly than hitherto, in order to justify a specific economic reward. Hence positions and responsibilities must be carefully delineated. In addition, if fellow professionals were to integrate their activities effectively, they required a common language and designated systems of work. This was true of the large, state-supported organisations of the 1970s, but no less needed with the more mobile working conditions forced on the professional excavator since then.

A spate of publications on excavation recording spawned during that period have attempted to service the needs of these teams or crews. Although general books (Barker 1977, Dever and Lance 1978, Fladmark 1978, Joukowsky 1980, Hester *et al.* 1981, Hester *et al.* 1997) have their own important perspectives and insights, in Britain it is the *booklets* (Hirst 1976, Jefferies 1977, Boddington 1978) which show how fieldwork recording has developed (indeed, the same is apparent in pottery research – see Orton *et al.* 1993 and Kunow *et al.* 1986, the latter putting the case for systematisation in three languages to show that it's

serious). Further manuals were issued subsequently for use within units such as Essex County Council, Exeter Museums Archaeological Field Unit, Humberside Archaeological Unit, the Scottish Urban Archaeological Trust, the Trust for Wessex Archaeology and York Archaeological Trust. Their authorship, by organisations rather than individuals, may be the clearest indication of a changed emphasis, away from the site-director and polymath, and towards professional team members.

The present manual has been written by an individual who is now, perhaps inappropriately, an ex-unit worker. Although it covers wider ground than most of the unit publications (or at least the same ground over more pages!), it comes out of a very similar tradition, part of the same response to increased professionalisation. This hopefully gives it a current relevance.