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Age as an Aspect of Social Identity in Fourth- to Sixth-Century AD England: The Archaeological Funerary Evidence

Volume One



Rebecca Louise Gowland

Department of Archaeology, University of Durham

Thesis Submitted for the Degree of Ph.D.
August 2002

2 Volumes

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Summary of Thesis Submitted for the Degree of Ph.D. August 2002

This research has examined age identity in fourth to sixth century AD England through the study of archaeological funerary evidence. Age is a fundamental aspect of social identity and organisation and yet has until recently proved to be a blind spot for the social sciences. As time passes our bodies undergo the biological changes of growth, maturation and degeneration. In a sense, this physical progression is a universal human experience. There is, however, a great deal of variation in the way in which cultures divide the life course, in the way that they symbolise these divisions, and the extent and manner in which age identity plays a structuring role in society. Studies of gender and ethnicity have challenged the imposition of modern Western paradigms onto past populations, but age identity has remained largely undeconstructed. This research has shown that by conceptualising age as simply a biological 'variable' the symbolism of the archaeological record is often misinterpreted because past identities do not conform to age parameters of the present. The late Roman to early Anglo-Saxon period was chosen for study in order to examine the extent and nature of social continuity in age and gender organisation.

The funerary context is a unique archaeological resource in that it provides an important link between the physical remains of past peoples, and the material, cultural, context of their burial environment. Accordingly, the funerary data were analysed on two levels. First, skeletal analysis was conducted on approximately 1200 skeletons excavated from ten cemetery sites of late Roman and early Anglo-Saxon date located in Oxfordshire and Hampshire. Current skeletal ageing techniques are notoriously inaccurate, due to population variability and the inherent statistical biases of the methods used. Skeletal information was, therefore, recorded so as to allow new skeletal ageing techniques to be developed and tailored to suit the characteristics of the sample. By applying Bayesian statistics, many problems that undermine the accuracy of conventional ageing techniques were overcome and more reliable ages obtained.

In order to understand how these skeletal ages relate to the social experience of age identity in fourth to sixth century England, this information was then analysed in relation to cultural variables from the burial context (e.g. grave goods, body position). Rather than reproducing modern paradigms this study was able to identify social age groupings and identities specific to the period studied (e.g. the attainment and perceptions of adulthood). It also demonstrated the fluidity and interaction of age and gender identity throughout the life course (e.g. the 'masculine' identity of elderly females). By establishing how the changing, ageing body was understood culturally in fourth to sixth century England an important link was also forged between scientific methodologies and social theory in archaeology.

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For Mum and Dad

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This thesis is the result of my own work and includes nothing which is the outcome of work done in collaboration except where explicitly stated.

Introduction

This research examines age as an aspect of social identity in fourth- to sixth-century AD Britain through the study of archaeological funerary evidence. Age is a fundamental aspect of social identity and organisation and yet has until recently proved to be a blind spot for the social sciences. Archaeologists in particular have regarded the cultural experience of age and ageing to have been uniform across societies and through time. By doing so age has been consistently reduced to the status of a biological 'variable' (Ginn and Arber 1995: 2). Subsequently, while recent studies of gender and ethnicity have examined the socially constructed nature of identity and have challenged the imposition of modern Western social models onto past populations, age identity has remained under-theorised.

As time passes our bodies undergo the inevitable biological processes of growth, maturation and ultimately degeneration. In this sense, the physical progression of the ageing process is a universal human experience. However, because individuals grow up and grow old within social contexts (Campbell and Alwin 1996: 34) age cannot be reduced to the 'simple passage of time' (Fry 1996: 117). There is a great deal of variation in the ways in which cultures divide the life course, in the ways that they symbolise these divisions, and the extent and manner in which age identity plays a structuring role in society.

When one examines the bulk of the archaeological literature it becomes apparent that most discussions of age tend to be confined to cemetery reports. While gender has been studied in depth within the funerary context, most cemetery reports continue to relegate age to the status of a biological variable. In this respect age is used to provide the basis for mortality and fertility profiles, or occasionally in conjunction with spatial analysis to identify possible family groups. Rarely is any attempt made to discuss the implications of such findings in terms of the social perceptions of age. Although a number of large-scale studies of cemetery evidence have recognised the importance of age in the structuring of funerary practice (e.g. Pader 1982, Carr 1995, Halsall 1996, Crawford 1999, McHugh 1999, Stoodley 1999a), the majority of these have tended not to explore the meaning of age-related funerary symbolism in terms of the life course. Many previous analyses of funerary data tend to adopt a very rigid, modern Western view of the

adult/child, male/female distinction. Although this is being critiqued, it still functions as the basis of analysis in most archaeological studies.

One of the first major works to consider age as a social construct within archaeology was Sally Crawford's (1991a, b) examination of Anglo-Saxon cemetery evidence in conjunction with law codes. One of the problems highlighted by this study was the lack of standardisation and definition in the reporting of skeletal ages. For example, the term 'child' was used variably to describe individuals from under thirteen years of age to up to twenty-five years, while an 'infant' varied in age from three years to up to twelve years (Crawford 1991a, b, 1999). More importantly, Crawford illustrated the possible misconceptions that occurred when modern Western age classifications were transferred onto the past. For example, Crawford (1991a, b, 1999) suggested that Anglo-Saxon males may have been considered adults at the much earlier age of seven to ten years. Subsequently, many of the so-called anomalies in grave good associations (e.g. child weapon burials) could be the result of excavators projecting contemporary ideas onto the past.

It is clear that the symbolism of the archaeological record is often misinterpreted because past identities do not conform to age parameters of the present. Clearly we need to move away from contemporary paradigms and consider possible past interpretations of these life stages, and the social attributes and responsibilities ascribed to them. We need to understand how the ages that we obtain from the skeletal material relate to their social reality and how the changing, ageing body was understood culturally in the past. The aim of this study will be to elucidate the perceptions of different age groupings during the fourth to sixth centuries, the ways that these may change over time, and the interaction of age with other aspects of the social persona.

Whilst the focus of this research is age identity, the nature and period of the archaeological evidence examined has meant that several other pertinent issues concerning the current academic divisions within the discipline of archaeology must also be addressed. The first relates to periodisation, in particular exploring the relevance of the dichotomy between 'Roman Britain' and 'Anglo-Saxon England'. The fourth to sixth centuries AD in Britain witnessed a profound alteration in the material culture repertoire relating to both settlement and burial practice. The extent to which this shift reflects an ethnic as well as social discontinuity in the island's inhabitants is a heavily debated area of archaeological research. The majority of this work has

focused upon funerary evidence, in particular grave good associations, typologies and distributions. Current debates, however, are in danger of stagnating amidst flawed artefact chronologies and circular arguments relating to ethnic identity. This study has focused on cemeteries either side of this Roman/Anglo-Saxon* divide in order to further examine the degree of social continuity in terms of gender and age identity during this time. By doing so this study also aims to contribute a fresh perspective on current debates concerning social continuity and change.

The second major issue addressed in this study concerns the fundamental assumptions behind the divide between science and social theory within archaeological discourse and the implications of this for archaeological interpretation. The source of evidence used for examining age identity is the cemetery context and a significant part of this research is concerned with skeletal analysis. Often skeletal analysis and discussions of social identity are considered academically disparate because one is supposedly concerned with biological processes and the other with cultural interpretations. This work challenges this view and argues that the human skeleton contains a hitherto untapped wealth of social information relating to lifestyle, culture, and environment. The physical remains of past peoples provide much more than a series of biological facts, the skeleton has both social and biological significance because it was part of a person that dynamically interacted within a *social* as well as physical environment.

The nature of the archaeological evidence examined in this thesis and the period of study has meant that it has been necessary to address these additional issues during the course of this research. The primary aim of this study, however, is an examination of age identity during the period in question. Age is an important component of social identity that has, for too long, been a neglected area of archaeological research. This analysis intends to go some way towards redressing the balance.

Thesis Outline

Chapter 1 focuses on the theoretical background concerning the examination of age as an aspect of social identity. This chapter explores the way that age has been conceptualised within the

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The terms Roman and Anglo-Saxon have been used for ease of expression during analysis, but this use is not uncritical, nor does it necessarily indicate a belief that these represent distinct cultural or ethnic groups (see Chapter 2).

social sciences and archaeology. I focus, in particular, on current age constructs in Western society and the implications that these have had for interpretations of past social identity. Finally, I discuss the implications of current research concerning age identity for archaeological interpretation and establish a theoretical, social framework from which to proceed.

Chapter 2 is concerned with the archaeological evidence examined and the way that these sites relate to broader academic debates concerning the fourth to sixth centuries. A discussion of the cemetery sites is provided (along with the reasons for their selection) and these cemeteries are related to the archaeological background of the surrounding areas during the late Roman/early Anglo-Saxon period. Finally a review of the current debates concerning this period is presented in order to provide a sound archaeological backdrop against which a study of age identity may proceed.

The source of archaeological evidence used in this analysis is the cemetery context, therefore, Chapter 3 focuses on funerary analysis and reviews the theoretical approaches adopted by researchers analysing funerary archaeology of the fourth to sixth centuries. Funerary remains are an important archaeological resource and the study of these remains has contributed enormously to our understanding of past societies. No other archaeological context provides such a tangible link between past peoples and their material, cultural, world. However, this chapter argues that archaeologists have consistently overlooked the most significant component of the burial context: the skeletal remains. Furthermore, there has been a distinct lack of integration and discussion of skeletal data with other archaeological information from the burial environment (Reece 1982, 2000). It is suggested in Chapter 3 that this problem stems from the fact that information from skeletons is conceptualised as purely biological, while that from the burial context is entirely social. A theoretical approach to the study of the cemetery evidence used in this research is outlined.

Chapter 4 is concerned with osteological methodology. The skeletal remains of over 1200 skeletons of late Roman and early Anglo-Saxon date excavated from the regions of Oxfordshire and Hampshire were analysed for this study. A skeletal report at some level had already been produced at many of these sites, however, a reanalysis of this skeletal material was necessary for a number of reasons. Many of the skeletal reports were based upon brief assessments only and

the majority had been undertaken some time ago, prior to the development of new skeletal assessment techniques. It was, therefore, necessary to ensure that all individuals (where possible) were assigned an age and that these ages were based on methods standardised between the sites. This procedure has the additional benefit of eliminating inter-observer error in the ages obtained. Current skeletal ageing techniques are notoriously inaccurate, due to population variability and the inherent statistical biases of the methods used. Chapter 4 therefore provides a critical review of current skeletal ageing methods in order to establish the techniques through which the skeletal information would be best recorded in this study.

Chapter 5 discusses the way that the biases in current skeletal ageing methods were addressed through the collection and recording of this skeletal information. The data was recorded so as to allow new skeletal ageing techniques to be developed and tailored to suit the characteristics of the cemetery samples (i.e. allowing for differences in long bone growth and dental wear between populations). This chapter discusses the benefits of a Bayesian statistical approach to skeletal ageing. It discusses the way that many of the problems that undermine the accuracy of conventional ageing techniques can be overcome and more reliable ages obtained. The innovative use of Bayesian statistics for human skeletal ageing and the methods produced during this research will also have important ramifications outside the discipline of archaeology.

Chapter 6 discusses the results of the ageing and sexing of the skeletal information for each cemetery. Inter-site comparisons are made between cemeteries, both geographically and across the Roman/Anglo-Saxon divide. The implications of cultural factors determining burial within cemeteries as well as the impact of taphonomic processes are discussed in depth, in particular, relating to infant burials. The demographic information from the cemeteries is then discussed in relation to social practices and perceptions of individuals of different sex and ages.

In Chapters 7 and 8, this skeletal information is then related to cultural variables from the cemetery context in order to observe social age groupings and identities specific to the period studied (e.g. the attainment and perceptions of adulthood) and how these altered through time. Furthermore, the fluidity and interaction of age and gender identity throughout the life course (e.g. the 'masculine' identity of elderly females) could also be examined. Chapter 7 focuses on the evidence from the Romano-British cemeteries, in particular, that of Lankhills, which is by far the largest cemetery in the study sample. Chapter 8 conducts a similar analysis on the early

Anglo-Saxon cemeteries, and the emphasis in this chapter is on inter-site comparisons of age and sex patterning in material culture deposition.

Chapter 9 draws together the findings from the previous three chapters, summarises some of the more pertinent observations and discusses the implications of these findings for the construction of age and gender identity during the fourth to sixth centuries. Chapter 10 concludes this research and focuses on future directions. Proposals for future research are numerous and relate to a number of seemingly disparate aspects of archaeological study. These include: further consideration of age identity and social identity; a break from the current pre-occupation with ethnic modeling in studies of the fourth to sixth centuries; developing a suitable approach to funerary information that elides science-theory divides; and the further development of age estimation techniques from the human skeleton.

Chapter 1

❖

Age and Social Identity

'*Age can be reduced to the simple passage of time, but lots of things are altered in time. Bodies age, societies change and lives are lived*' (Fry 1996: 117).

1.1 Introduction

This research begins by examining recent and current theoretical work concerning age as an aspect of social identity. It also establishes the pressing need for a discourse on age within archaeology. While the study of age in past populations has been largely neglected, it has recently become a central topic amongst other disciplines within the social sciences. The following discussion examines this research and its implications for the study of age in the past. This review also intends to critically examine the preconceptions that researchers have concerning age identity and the effects of these on interpretations of the archaeological record.

A study of age identity in the past must first examine and understand the nature and perceptions of current age constructs; identifying the way that the life course is divided and structured today. This discussion will also explore the way that our society rationalises these divisions and acts to both formulate and maintain these boundaries. Once the nature of age identity in modern Western society has been deconstructed, the implications of these preconceptions concerning age for interpretations of the past can be more readily identified.

This chapter will then proceed to examine the interaction and tensions between age and other aspects of the social persona. Age identity can then be examined using the archaeological data (presented in the following chapter) from a more enlightened perspective. Finally, numerous approaches to the study of age have been developed. These will be critically assessed in order to identify the most appropriate method for examining age identity from archaeological funerary evidence. This chapter will begin by presenting a brief theoretical background concerning the study of age within archaeology.

1.2 The Feminist Critique and Age Identity

Over the last few decades, research within anthropology, social history and sociology has begun to explore the role of age in social identity and as a structuring force in society. Archaeology contributed little to initial debates until feminist inspired critiques of the discipline and the influence of social constructionism laid the groundwork for a burgeoning interest in past age identities.

The feminist critique of archaeology argued that the androcentric representation of the past served to undermine the roles of females, and both reinforced and validated the present situation of sexual asymmetry (Conkey and Spector 1984). Feminist archaeology challenged the constancy of the male/female dichotomy and traditional concepts of the division of labour that involved the naturalisation of gender roles (Eisner 1991). This paved the way for the realisation that not only has the past been interpreted from a purely male perspective, but also in overtly adult terms. The neglect of children, for example, within archaeological discourse could be seen as resulting from the same androcentric biases that had previously served to marginalise women. As Baker states:

> '...children have been both absent/invisible from the archaeological record, and invisible, unknowable at the conceptual level. Contemporary culturally constructed social knowledge, embedded as it is in masculist ideologies, fits 'children' in the interpretative framework as incomplete humans, that is, not male/masculine' (Baker 1997: 187).

Feminist archaeology influenced a number of studies of age in the past, the majority of which were concerned with childhood. For example, Lillehammer's (1989) work was amongst the first to call for an inclusion of children in archaeological discourse. Although pioneering, this work can be criticised for the very modern perspective of childhood that it adopted through the association made between children and 'toys', and also because of the implicit suggestion that children in the past had to be actively 'found'. Lessons from feminist archaeology teach us that such an approach is theoretically flawed, there was no need to 'find' these individuals. Children, like women, were already there in the material record (Sofaer Derevenski 1994, 1997a).

Further work on age identity has continued to focus almost exclusively on childhood. For example, a number of articles in Moore and Scott's (1997) *Invisible People and Processes* and a volume of the *Cambridge Archaeological Review* (1994) were devoted to the study of

childhood. Much of this initial work was in the spirit of social inclusion, a desire to make those people previously excluded or marginalised in traditional archaeological narratives more visible. This work has made an important contribution towards redressing the balance of academic neglect. However, archaeologists now need to move a step further and emphasise the perceptions of age identity throughout the entire life course. A specific focus on 'childhood' or the 'elderly' ultimately characterises these age groups as 'other', while the hegemonic status of adulthood is left intact. It also presupposes that these age categories actually existed in the past, and could serve to universalise a contemporary version of the Western age paradigm. More recent work has begun to examine the interaction of individuals of all ages throughout the life course (Gilchrist 2000). This type of approach is much more productive and facilitates a less biased study of age identity.

1.3 Social Constructionism and Age Identity

Over the past few decades a considerable body of research has focused on the socially constructed nature of identity within society. Aspects of identity such as gender and ethnicity are no longer considered to be natural biological categories, but subject to cultural negotiation and interpretation. This perspective has had a profound influence on our interpretation of past societies and the culturally specific condition of social identity has been the focus of a prolific body of research. It is, therefore, surprising that the characterisation of age as a purely biological concept has proved to be immune to similar deconstruction for so long.

Cultures invariably divide the life course into a series of stages, each accompanied by certain social attributes or expectations of behaviour regarded as appropriate for that age group. A biological emphasis on the ageing process within the social sciences has almost inevitably resulted in the naturalisation of those social and ideological norms that accompany age-related behaviour (see below). As with gender, age norms have been mistakenly perceived as the social elaboration of a biological given. The result of this naturalisation is that it has allowed us to project our contemporary age paradigm onto the past with little appreciation for the diversity with which cultures conceptualise and symbolise age identity. These attributes do not simply represent a social elaboration of biological changes in the same way that gender and gender roles are not the social expression of a biological given (Moore 1994). The impact of this naturalisation process and the identities that we ascribe to different age identities will be deconstructed further below. First, however, we need to explore exactly what we mean by age and age identity.

1.4 Defining Age

Ginn and Arber (1995: 2) argue 'a distinction parallel to that between sex and gender needs to be made in relation to age'. This has led several authors to distinguish between a numbers of different 'types' of age. These are:

1) Physiological age (representing the physical ageing of the body).
2) Chronological age (corresponding to the amount of time that has passed from the moment of birth).
3) Social age (socially constructed norms concerning appropriate behaviour and attitudes for an age group).

It is evident from the majority of cemetery analyses that such distinctions have clearly been unrecognised in archaeology. For example, the age definitions given for the Anglo-Saxon cemetery of Millgate, Nottinghamshire (Harman 1989: 23) are as follows:

Infant (under 2 years)
Child (2-12 years)
Adolescent (12-18 years)
Adult (over 18 years)
Ageing adult (over 35 years)

When we deconstruct this process, it becomes evident that all three definitions of age are actually being used: the biological age (of the skeleton), which is translated into a chronological age and is then described further by a social age. Because we fail to theorise age identity and the way that it operates within society, we use these different definitions inter-changeably as though they mean the same thing. Terms such as child, adolescent, or any of the above are, however, culturally loaded: they do not simply convey to the reader a chronological age, but a whole schema of appropriate social behaviour and attributes derived from a modern western context. Imposing these social norms (whether consciously or not) onto the past is a practice that serves not only to perpetuate and validate our current age paradigm, but has the potential to misrepresent the population under study. It is, therefore, necessary to explore each of these definitions of age more fully so that we may understand better the way that age identity may be formed and negotiated within past societies.

1.4.1 Biological Age

We cannot deny the biological nature of the ageing process: humans are conceived, born, develop and grow, reach maturity, undergo physical and/or mental degeneration and die. There is an inevitability about this process, which is interrupted only by illness or accident. It is well attested, both ethnographically and historically, that age-related social transitions within societies often coincide with physiological parameters (e.g. learning to walk, puberty). This biological framework has undoubtedly resulted in a degree of cross-cultural uniformity with respect to particular social age transitions (Schildkrout 1978). There is no absolute universality, however, and a biological milestone viewed as important for age categorisation in one society may be entirely inconsequential in another (La Fontaine 1986). For example, menarche is an important physical milestone for females, often signifying the transition to adulthood. Literary evidence relating to the Roman Empire, however, indicates that this had little social significance for females of this period, with the transition to adulthood only occurring with marriage (Fraschetti 1997: 69; Laurence 2000). Whether biologically synchronous or not, considerable variation does exist with respect to the *cultural* interpretations of these life stages, and the social attributes and responsibilities believed to be held by different age cohorts within societies (La Fontaine 1986).

While there is often a closely synchronicity between biological and social age transitions (as with the onset of menstruation) (Myerhoff 1984: 307) one should be aware that the identity of a particular age group is *not* the naturalised manifestation of their physical development. Within our society, the physical immaturity of the body indicates a child and all of the subsequent social qualities that our culture bestows (e.g. innocence), but these are not associations acknowledged in all societies. When one examines the ethnographic evidence, bodily maturity is not necessarily a prerequisite for 'adult' status. Indeed, biology and culture in this respect often appear entirely disparate. For example, amongst the Boran in Ethiopia and Kenya, while a boy's physiological age may be recognised, some are initiated into 'elder' age sets, with subsequent implications for their social identity and relations (Legasse 1973). Amongst the Tuareg, some women are considered socially elderly and post-childbearing before they are biologically post-menopausal (Rasmussen 1987: 21). Conversely, a physically mature individual may still be considered a 'child'. For example, according to traditional customs of Australian aboriginals, when a marriage breaks up, the female reverts to the status of a girl, regardless of age or factors such as childbirth (La Fontaine 1978).

These examples demonstrate that the physical condition of the body is not necessarily the most important or relevant factor for the conferment of age identity. Even were this so, recent theoretical developments within the social sciences have brought into question the very immutability of these biological transitions. Cultural practices may, in fact, have a profound effect upon the chronological age of attainment of so-called biological goals. For example, walking and talking is viewed as the beginning of personhood for many cultures, both past and present, and yet cultural practices may either significantly delay or advance such abilities (Levine 1998). For example in the United States, greater importance is placed upon communication skills, whereas amongst many hunter-gatherer groups physical abilities take precedence. Culturally enforced priorities will lead to an earlier age for talking in the United States and advanced physical dexterity in the latter group.

As discussed, menarche is often viewed as an important physical milestone for females, and yet the age of onset has been found to vary significantly, both between and within populations, due to environmental and socio-economic factors (Beall 1984). Information on age at menarche is available for a large number of populations worldwide and has been found to range from twelve to eighteen years (Eveleth and Tanner 1990). Over the last few decades in the UK, the average age at menarche has dropped significantly further. So sensitive is age at menarche to cultural practices and environment, that it is frequently used as a parameter for reflecting health and living conditions of subgroups within a society. In South Africa for example the average age at menarche for those of good socio-economic status is thirteen years, for those living in poor rural conditions it is fourteen years, and for bushwomen fourteen to sixteen years of age (Henneberg and Lauw 1995: 4).

The influence of cultural beliefs and practices on the physical body in terms of the timing of age-related 'biological' changes, or the manifestation of symptoms of illness are potentially profound. The field of medical anthropology is producing some interesting results concerning the inter-relationship between biology and culture in this respect. Amongst the traditional Eskimo males, for example, a hunting lifestyle necessitates a high degree of physical fitness. However, once their sons become adept hunters and they are able to reduce their own hunting activities, they experience disproportionately rapid physical deterioration (Beall 1984: 87-88). The timing of this physical degeneration can only be understood within the cultural context. Another example of the interaction between biology and culture relevant to a study of age identity is the extreme cross-cultural variability in physical menopausal symptoms and the resulting effect on cultural perceptions of this life event (Fry 1996; Davis 1997). Recent work in sociology has focused on the social construction of physical concepts such as frailty and dependency relating to old age, and the physical repercussions of such constructs (Fry 1996).

1996). We cannot, therefore, reduce the idea of age to a binary opposition of biological versus cultural age. As Henrietta Moore has stated: 'A more contemporary view of human biology would stress that biology enables culture, while culture brings about biological change...biology and culture are in a dialectical relationship' (Moore 1994: 19). I am tempted to go further than this and state that the two embrace an irreducible relationship.

1.4.2 Chronological Age

In our society chronological age is of paramount importance, although in non-Western, preliterate, pre-industrial societies, chronological age is seldom formally recognised (Fortes 1984). Criteria and norms of chronological age imposed in Western societies dominate our thinking about age because the laws that define and determine the rights and duties of citizenship demand so (*ibid.* 1984). Chronological age is the fundamental basis of the political and legal bureaucratic system in place in many literate societies. From birth, our development is closely monitored according to pre-established chronological norms and individuals labelled advanced or retarded according to these standards. Infants and children are tightly segregated into year cohorts throughout their growth and development, and are only diverted from this programmed trajectory if physical or mental capacities are exceptional. Functional ability within this framework is always a secondary consideration to the amount of time passed since birth. The timings of age-related transitions within Western society are also tightly regulated through laws that deal entirely with chronological age rather than ability. For example, in the UK men and women may marry at age sixteen, buy alcohol at age eighteen, and at sixty claim state retirement pension.

There are many anthropological examples of societies where chronological age has little or no bearing on the structure of society, and yet age is still an important aspect of social identity. Age instead may be understood in relative terms with informal systems of acknowledgement, or by age grading and the existence of age sets that relate individuals by seniority (Cohen 1984). For example, among the Hausa although the majority of individuals are unaware of their chronological age they will know who amongst their associates are older (Schildkrout 1978). The Bible is another example,

> 'full of lengthy references to generations but contained no exact chronological age references....Nowhere in the bible are we told the exact ages of David or Jesus at crucial times of their careers although their genealogies and hence generational rank are meticulously recorded' (Fortes 1984: 113).

Generational ageing replaces a system of chronological age in many societies, although this relationship is frequently made more complex by the recognition of birth order. Fortes provides an example of this amongst the Tallensi:

> 'I recollect one morning meeting a youth whom I guessed to be about 20 scolding a small boy, who might have been about 6 or 7, for letting the goat he was herding stray. When I asked the young man why he didn't wallop the boy, he answered, looking quite shocked that he couldn't do that. 'Don't you know he is my father?' he said. It transpired that the child was the son of his grandfather's youngest wife, therefore his classificatory father' (Fortes 1984: 102).

Institutionalised measures do, however, exist in most societies to counteract the ambiguities that may arise (Baxter and Almagor 1978; Fortes 1984). Indeed, although Western society is heavily structured by chronological age, within the domestic context of the family, generational ageing may assume a greater importance (Kertzer and Keith 1984).

Anthropologists and archaeologists feel compelled to relate maturational data obtained from field studies to chronological age so that they can be expressed and compared to developmental models within our own society. Faced with an absence of knowledge concerning chronological age, anthropologists use estimations from physiological age parameters (Konigsberg and Frankenberg 1992). Chronological age is essentially an ethnocentricity. Therefore, attempting to interpret social behaviour using a model that has no relevance for the population being studied is problematic (Fortes 1984).

Within archaeology it seems that we go a stage further; not only using chronological age as a standard, but also assuming the chronological boundaries that exist today divided life in the past. As discussed previously, archaeologists tend to assume that the age of transition from child to adult in the past was the same as today and interpret the material record accordingly. We also use terms such as 'adolescence' (a distinctly twentieth-century construct), with all the social connotations that it entails (Rice 1996). It is probable that such transitions occurred at entirely different ages in past populations as they clearly do between different cultures in the present. Anglo-Saxon law codes and evidence from Roman tombstone inscriptions indicate that the transition into adulthood was not dictated by chronological age (Crawford 1999). Written evidence indicates that the social realities of particular age identities in the past bears little resemblance to contemporary age norms. Because archaeologists tend not to

consider this, the material evidence is often mis-interpreted, particularly in the funerary context.

1.4.3 Social Age

Social age refers to the socially constructed norms of appropriate behaviour and perceptions of a particular age group. The questions that we need to explore with respect to the past include:

- How did past populations conceptualise and structure their life course?
- What particular characteristics were each of these stages imbued with and how were they symbolised?
- How did age interact with other aspects of the social persona such as gender and status?

Before examining age identity in the past, we must first identify and articulate the nature and origins of current social age constructs and how they influence our image of both past and present social organisation.

1.4.3.1 Childhood

Children have arguably suffered the most from our disregard of age identity in archaeology. Until recently, archaeological interest in childhood had gone little further than noting the probability of high mortality rates, their under-representation at cemetery sites, or drawing attention to the more sensationalist practices of sacrifice and infanticide (e.g. Smith and Kahila 1992, Mays 1993). An understanding of the neglect of children within archaeological discourse can only take place within the context of current perceptions of childhood.

It is clear from the media that childhood within the contemporary Western world has been sentimentalised and romanticised. A hazy, chocolate box image of childhood has been constructed; it is presented as a period of obligatory happiness arising from innocence and a lack of responsibilities (Ennew 1986: 18). Guileless, uncontrived and artless, are all characteristics ascribed to children; they are likened to empty vessels, unsullied by the corruption and problems of society. This 'unspoilt' status harkens back to Rousseau's 'innocent child' and has been promulgated primarily by scholars such as Jean Piaget working within the field of developmental psychology (Prout and James 1990). Theories of 'socialisation' have fostered the belief that children pass from a natural, acultural and

essentially egocentric state, through a series of pre-programmed, inevitable socialising stages, into the cultured adult world (Hockey and James 1993, Jenks 1996, Prout and James 1990).

Implicit in the socialisation model is the transformation from the playful, irrational world of the child into the serious, responsible realm of adulthood. Within this model children are reduced to passive participants in a socialisation process orchestrated by adults. Only when this process is complete may the full mantle of adulthood be assumed and the privileges of independent personhood attained:

> 'children are not to be viewed as individuals fully equipped to participate in a complex adult world, but as beings who have the potential for being slowly brought into contact with human beings' (Jenks 1996: 24).

Within this model adulthood becomes perceived as the complete state, and yet this idea of 'adult cognitive competence' is a particularly western one (Jenks 1996: 19). This viewpoint structures our nostalgic beliefs about childhood as a period of naivety to be treasured but inevitably lost. This happy ignorance is to be protected and nurtured from the evils of the outside world. The image is one of ultimate dependency and passivity and children are often portrayed as the 'innocent victims', in poignant proclamations of the plight of Third World nations.

The essence of this belief is grounded in nineteenth-century evolutionary models, positing the development from simple to more complex forms (Prout and James 1990: 10). So-called primitive tribes were also viewed as both 'natural' and 'irrational', and therefore likened to children. As Prout and James state:

> 'Following on from Comte's theory of social evolution the 'savage' was seen as a precursor of civilised man, paralleling the way that the child prefigured adult life.... The proximity of the savage to the natural world made Rousseau's child of nature an apt metaphor for social evolution during the nineteenth and early twentieth centuries' (Prout and James 1990: 10-11).

Within such views the natural, untamed child, in opposition to the socially driven adult, was the embodiment of the more general dichotomy of the cultural and natural world. This Western view of childhood has been shown to be absent from other cultures (e.g., Inuit), and innocence and ignorance, qualities seen as particularly childlike, are in fact created and fostered by Western parents (James 1998).

Regarding childhood as an unsocialised state has had several consequences for both ethnographic and archaeological interpretation. Firstly, when viewed as acultural, childhood essentially becomes a universal concept, unchangeable through time and space. This effectively denies any historical contingency relating to the experience and perceptions of childhood and children within various cultural settings. This view has essentially sanctioned the global imposition of a Western concept of childhood. For example, initial attempts to eliminate 'child labour' (another socially contingent term) led to the enforcement of educational requirements for children in nations with no previous formal system of learning. Ironically the outcome of this was that many children (often the primary breadwinners) became disempowered, experienced lower socio-economic status, and in some instances were forced into begging or prostitution (James 1998: 58). More informed campaigners, now tend to emphasise an improvement in children's working conditions as opposed to exclusion from the work place (Jenks 1996: 101).

Secondly, socialisation theory has conceptualised children as wholly passive and dependent, playing no role in the formulation or maintenance of their identity. The social status of the child becomes inconsequential (Schildkrout 1978). This passive identity of children is reflected in the progressive institutionalisation of their 'needs' from the nineteenth century onwards, which has culminated in the increasingly 'protectionist' policies of the present (Jenks 1996: 122). Such an ideology relies upon an increasing emphasis on the differences between children and adults. This in turn has served to legitimate and expand upon the current adult/child dichotomy, thus intensifying the economic dependency and social marginalisation of children (Hockey and James 1995: 138).

The 'specialness' of children in the Western world is reinforced on a daily basis by way of designated social spaces (e.g. playgrounds, seating areas) and distinctive material culture, even to the extent that they have particular forms of food and drink (e.g. small portions in fast food restaurants accompanied by a toy, high sugar breakfast cereals). Children have tightly enforced spatial boundaries and this segregation (together with the very idea that there are 'wrong' places for children) is legitimised under the auspices of 'protection' and 'care'. Such spatial confinement is again very much a western phenomena, and in other cultures children often have a greater freedom of movement than adults. For example, amongst the Hausa restricted adult movement is linked with gender-based avoidance behaviour, something by which children (who have an ambiguous gender identity in this culture) are not bound (Schildkrout 1978). In the Western world essentially the reverse is true and the older a child becomes, the greater freedom of movement they are granted (Jenks 1996: 40). In both cases

we see that social space becomes intimately linked with the life course. Age transitions are frequently accompanied by a shift in spatial boundaries and this is a factor that has not been explored in any detail within archaeology.

This definition of children, in opposition to adults, has had implications for their treatment archaeologically. Firstly, it perpetuates a contemporary version of the child/adult dichotomy; overlooking additional or alternative age identities that may exist either side of this binary division, or those that may transgress it. Secondly, these notions of 'specialness', as well as playfulness and dependency, have been projected onto children of the past. For example, certain artefacts may be interpreted as 'toys' on the basis of their size, particularly when found in association with children's remains (Lillehammer 1989). That the item is functionally more appropriate for a child (e.g. miniature bow and arrow), or that the item has amuletic properties, tends not to be considered because function and ritual have no place within Western notions of childhood. By classifying items of material culture associated with children's remains as items of 'play', their importance also becomes effectively dismissed, because they are defined as objects of frivolity. What these items may represent in terms of creative activities is, therefore, not fully considered because 'play' is seen as merely imitative rather than constitutive of an adult world.

Identifying the nature of childhood within any one period from the archaeological record is problematic. While artefacts relating, for example, to the dress of immature individuals (e.g. van Driel-Murray 1998) provide a tangible link to past children, as do items such as the mammiform pot, interpreted as an infant's feeding vessel, excavated from Castledyke cemetery, Barton-on-Humber (Drinkall and Foreman 1998), they offer limited information concerning the experience and perceptions of childhood within a particular cultural setting. As discussed, the material world of the child within present Western society is entirely different from that of adults, relating to and constructing our perception of childhood as a distinctive stage of human development. It is a mistake, however, to project this material distinction onto the past, and attempts to access children archaeologically through the identification of 'toys' are potentially problematic in that they confine the experience of childhood to that of the Western construct. When addressing children within archaeology, we should perhaps dismiss the notion of 'finding' them, and instead recognise that as individuals interacting as an important, and possibly materially indistinguishable part of the cultural milieu, they are no more or less 'visible', or responsible for creating the archaeological record, than other social actors (Sofaer Deverenski 1994).

The first real challenge to the normacy of Western concepts of childhood was initiated by developments in history, in particular by the work of Phillippe Ariès. In his book, *Centuries of Childhood*, Ariès (1962) argued that because children in medieval iconography were portrayed merely as miniature adults, the concept of childhood as a separate and distinct phase of human development did not exist. The impact of Ariès's work was significant in a number of ways. Firstly, and perhaps most importantly, because it focused on children as a valid group to study in their own right. Secondly, Ariès was one of the first to suggest that perceptions of childhood neither subscribe to a universal reality, nor remain static over time. This work inspired a deluge of further historical studies centring on 'the child', all focusing on the fluidity of attitudes towards children through time. According to numerous historical studies, parents at various times have been indifferent, ambivalent or downright cruel towards their offspring (e.g. Ariès 1962; Demos 1970; Lyman 1974; deMause 1974; Shorter 1976; Stone 1977; Hoyles 1979). deMause (1974) goes as far as to suggest that:

> 'The history of childhood is a nightmare from which we have only recently begun to awaken. The further back in history one goes, the lower the level of child care, and the more likely children are to be killed, abandoned, beaten, terrorised and sexually abused' (deMause 1974: 1).

Despite this somewhat pessimistic outlook concerning parental care in the past, such works were important in forging the idea that age identity is subject to cultural interpretation. It is clear, however, that within much of this literature the notion of what actually constitutes 'a concept of childhood' is both vague and confused (Pollock 1983). In the *Forgotten Children*, Pollock argues:

> 'If there is an appreciation of the *immaturity* of the child in either the physical (e.g. an awareness of such developmental stages as teething and the acquisition of language) or mental sphere (e.g. the need to socialise a child by discipline and education) then whoever has that appreciation possesses a concept of childhood, no matter how basic or limited this is. The point at issue here is not whether there was a concept of childhood in the past, but whether the concept has become more elaborated or changed through the centuries' (Pollock 1983: 97, her emphasis).

In a critique of previous work, Pollock (1983) argues that although past peoples may not have had a modern Western concept of childhood, to interpret this as having no understanding of childhood at all is unacceptable. Later historical work has refined initial ideas and tends to be

more sensitive to specifics concerning the ways in which childhood was experienced in the past (e.g. Pollock 1983, Shahar 1990).

This work in social history has prompted similar studies within the fields of anthropology and sociology. The anthropologist Hardman (1973) was one of the first to acknowledge that children should be studied as individuals within their own right, rather than as empty vessels acted on by the socialising influence of adults. Similarly in sociology, the realisation that children are capable of actively restructuring their society has led to similar assertions.

> 'For some time now it has been possible to think of a theoretical space in which, for example, children can be looked at as active social beings, constructing and creating social relationships, rather than as the cultural dopes of socialization theory' (Prout and James 1990: 28).

Recent interest in social phenomenology and the role of individuals in constantly recreating their social reality has also prompted the understanding that children play an active role in forming perceptions of themselves and others. For example, Bluebond-Langer's (1978) work amongst children diagnosed with leukemia in North America shows how children understood the seriousness of their condition through the symbolic action of others, and yet they concealed their knowledge from parents because they understood the adult wish for them to retain their innocence through ignorance.

Although Western society is obsessed with children and childhood, current trends may again be revealing an increasingly ambiguous or uncertain perception of the actual nature of childhood. For example, one third of the subjects entered for the John Kobel photographic portrait competition at the National Portrait Gallery for the year 2000 were children. It was the depiction of the children as 'other worldly' that was most suggestive; the way that the pictures conspired to:

> '...produce an alienation of childhood, to push it away and make it strange, and see what it becomes.....Clearly our society is worried about its children: whether their innocence can be preserved, or whether it has been invented; whether children themselves can be the authors of violent crimes; and whether an intangible myth of innocence might not find its opposite in the form of experience but rather in its other antithesis– guilt.' (Wood 2000: 47)

It may be no coincidence that this uncertainty has arisen in the wake of a series of reports reflecting the capacity of children to commit cruel and brutal crimes. For example, the James Bulger case in which a two-year-old boy was brutally murdered at the hands of two young children. The culprits were tried in court as though adults amidst the angry backlash of a society whose boundaries of identity had been thrown into confusion.

In Western society this almost obsessive preoccupation with children would appear to make their absence from archaeological discourse seem paradoxical; that is until one understands the passive nature of the identity they have been ascribed. In recent years a few authors have gone some way towards rectifying this situation and current research now emphasises the importance of children both socially and economically in the structuring and functioning of past societies (e.g. Scott 1991, 1999; Pearce 2001; Gowland 2001).

1.4.3.2 Adulthood

Archaeology has treated adulthood as the unspoken hegemony, and the past has been viewed in overtly adult terms. It is the paradoxical nature of such dominant discourses, however, that their assumed normacy leaves them under-theorised. For example, in a reaction against the masculine dogma of archaeological narratives a considerable body of research has over the past two decades focused on women and their roles in past societies. The concept of femininity has consequently been explored in depth, while ironically masculinity has received little theoretical attention (for an exception see Hadley 1999). As discussed previously, a similar reaction, this time against adult-centric views of the past, contributed towards the current focus on childhood, leaving adulthood under-theorised. The social criteria necessary for the attainment of adulthood in the past and the multitude of ways in which societies may perceive adulthood (if at all) is unexplored territory in archaeology.

The concept of adulthood is arguably open to greater cross-cultural variability and subjectivity, in part because of ambiguities regarding any sound biological basis. Although puberty in many cultures is associated with transitions into adulthood, this is far from universal. Within our society law decrees that an individual attains adulthood at the age of eighteen years. In reality, it is usually associated with social rather than chronological factors, such as leaving home, gaining employment, or going to university. Numerous ethnographic examples recognise adult status at much younger or much older chronological ages than Western societies (e.g. Bernadi 1985; Larick 1986) a factor that doubtless has implications for the social attributes of other age identities. Many societies associate adulthood not with the crossing of physiological boundaries, but with the fulfilling of social roles such as marriage or

childbirth. Institutions such as marriage cannot, however, be automatically seen as conferring full adult status onto individuals. For example, it has been argued by Fischler (1998) that a Roman female (who could marry from the age of twelve years) would only take on the truly gendered identity of a women after she had given birth.

The experience of being an adult within a particular society is not homogeneous, but is dependent upon gender, status, ethnicity and age. Men and women for example, often experience different chronologies with respect to social age transitions (see below). Furthermore, in many societies there are different perceptions of what constitutes socially appropriate behaviour for a young adult compared to an elderly adult. As with childhood, the elderly have been almost completely neglected and old age 'remains shockingly untended' (Kertzer 1995: 363). Within archaeology this is particularly so, and is in part due to the misconception that very few individuals in the past lived beyond the age of forty years. This is a predicament unfortunately given credence through the systematic under-ageing of skeletal material by current osteological techniques (Bocquet-Appel and Masset 1982; Molleson and Cox 1993; Aykroyd *et al.* 1999). Western European life expectancy at birth has risen from approximately 40 years in 1800 to 70-80 years today. However, such figures are deceptive in that they are more a reflection of infant and child mortality (Rose and Mueller 1998). People did reach old age in the past, as demonstrated by epigraphic evidence, but they formed a much smaller proportion of the population than they do today.

The neglect of older people within archaeological discourse also relates to current demographics and social perceptions. The elderly are consistently denigrated and problematised within today's ageing society, and negative stereotypes relating to them are prolific. The status of the elderly within society is generally thought to decline with industrialisation and modernisation (Cohen 1984). The decline in oral tradition that tends to follow modernisation often results in a replacement of the authority of the 'elders' with political and jural systems (Halperin 1984). It would be wrong, however, to infer that the elder members of past communities were uniformly treated with greater respect (Halperin 1984; Foner 1984; Shahar 1997).

In the Western world, virtually every history of ageing affirms that old age came to be perceived as a problem by the early twentieth century (Achenbaum 1996: 145). A new consciousness of old age begins that starts to highlight negative aspects. As with childhood, the concept of 'the elderly' began to be institutionalised and the establishment of mandatory retirement provided a legitimate institution whereby old age could be formally recognised as a distinct stage of the life course. Retirement legitimated the loss of roles and precipitated

disempowerment for many elderly people, bringing about a forced dependency on the state, and leaving little access to wealth and status. This negativism of old age continues to be reinforced today through the medicalisation of the elderly (Fry 1996: 129). During the late nineteenth century for example, there was a shift in the emphasis of medical magazines, from tonics and medicines that promote longevity, to a focus on the symptoms and identification of senescence (Haraven 1995; von Kondratowitz 1991).

Through language and imagery, the elderly have become both feminised and infantilised in the Western consciousness; transformations linked in that they serve to reinforce an illusion of weakness, dependency and low status (Hockey and James 1993). Feminisation occurs in part because the majority of the very old are in fact women, but primarily because those same social characteristics previously used to disparage women are being ascribed to the old (i.e. dependent and weak). It has been argued by Arber and Ginn (1991: 18) that parallels can be drawn between the social construction of women as the weaker sex, and the construction of negative aspects of old age. Confinement to the domestic sphere, and the loss of rigidly defined gender roles between many elderly couples, has contributed to the blurring of gendered identities with age (Wilson 1995). Age frequently becomes the over-riding defining characteristic of the elderly, often asserting a primacy over gender (Moen 1996: 181). Indeed many elderly people are viewed as essentially asexual, but cross-cultural evidence suggests that this is not a naturalised expression of the cessation of the reproductive role. For example, amongst the !Kung the reverse is true and older women are granted the power to express their sexuality more overtly (Holmes and Holmes 1995: 84).

The process of infantilisation (Hockey and James 1993: 9) and the idea of a 'second childhood' serves to reinforce those same negative aspects that derive from being feminised. The association between old age and childhood though both verbal and visual imagery is pervasive and powerful in our society. The compatibility of childhood and old age has become naturalised and popularised through the media, even in the absence of any physical or mental incapacity (Hockey and James 1995: 137). While child-like characteristics are transferred by society onto the elderly, these are no longer considered positive, they become problematic and a source of vilification. This is not merely a product of contemporary society and in some senses this perception is connected to the idea of the cyclical nature of life: we live full circle and leave this world as we entered it. For this image to exercise such resounding logic within a society that perceives age and time as uncompromisingly linear, demands further explanation.

The obsession with youthful looks and the increasing importance of the role of the body in social status (e.g. Bourdieu's (1986) 'body capital') has also led to a glorification of youth and corresponding denigration of the elderly within Western society. Elderly people are frequently defined in terms of their physical capabilities and hence socially reduced to their particular disabilities. Western society is particularly effective in defining people on the basis of their physical appearance and abilities (James and Hockey 1995).

Within archaeology, we seem to have adopted a functionalist concept of ageing in terms of role theory, as expounded by Parsons (1952) and Eisenstadt (1956), whereby older people undergo a progressive reduction in social roles with age- what sociologists refer to as disengagement (Bury 1995). As a result, their importance in archaeology is frequently overlooked, or associations made between reduced social status and old age. For example, in Anglo-Saxon cemetery reports, those individuals without grave goods have been interpreted as slaves, paupers, or the elderly. Guy Halsall (1996) discussed the reduced number of grave goods buried with children and old people in cemeteries of early Merovingian Austrasia as 'demonstrating that deaths among neither group created much social stress' (Halsall 1996: 22). The inherent assumption is that the elderly were as much an underclass in the past as they are in the present. As discussed above, such interpretations are rooted in the present; a society that has experienced a huge demographic shift towards an unprecedented number of elderly people. This shift towards an ageing population, while serving to problematise the elderly, has conversely added an increased scarcity value to children, securing them further precious attention (Jenks 1996: 5). When interpreting archaeological evidence we need to recognise that it is the contemporary socio-economic structure, through institutions such as mandatory retirement, that is responsible for depriving many elderly people of status and autonomy, rather than an actual loss of functional ability with age (Arber and Ginn 1991).

The ageing population of today is discussed as a social problem, and we have transferred this problematic status onto older people in the past. The elderly are not a homogenous group and the experience of being elderly differs greatly with gender, ethnicity and social class. Although the elderly have not yet received the same attention accorded children within the social sciences, the trend is shifting slightly and the construction of old age is now being theorised in sociological (e.g. Johnson and Slater 1993; Featherstone and Wernick 1995; Ginn and Arber 1995), anthropological (e.g. Kertzer and Keith 1984) and historical (e.g. Pelling and Smith 1991; Rosenthal 1996; Shahar 1997) research.

1.5 Approaches to the Study of Age Identity

The study of age can be broadly divided into two primary approaches: an age differentiated approach that focuses on age grades and cohorts, and the less divisive life course approach. The former perspective has dominated much anthropological and sociological research on age to date. The imposition of age grades onto the life course creates structured inequalities and differential access to power and resources. Members of a particular age grade are imbued with particular social norms until their departure into a new age grade. It has been argued by Baxter and Almagor that:

> 'Age systems therefore seek to arrest time for a period so that it moves forward in jerks. The period between sets (or generations or grades) which are marked by transition rites are periods of liminility, or moments out of time, which allow time to catch up with events or events with time' (Baxter and Almagor 1978: 164).

What is apparent from the above discussion, however, is that this structure cannot be viewed as rigid and unchanging, nor do age stages have the uniformity of action that is inferred from functionalist concepts of age stratification theory (Parsons 1952; Eisenstadt 1956). Once categorised, the homogeneity of the grouping then becomes assumed, but this fails to take into account inequalities and conflict, both within and between age groups. Because of this, when discussing age many authors now find it useful to refer to the life course; the period of time from conception to death. An important tenet of life course analysis is that one life phase can only be understood in relation to the way that identities are played out over the entire life course. This approach rather than focusing on a series of demarcated age groups, concentrates instead on life pathways and the role entry/exit transitions that occur throughout the trajectory of life in a more holistic manner (Moen 1996: 180).

For the purposes of discourse it is often convenient to talk about age categories (as above), but this is not necessarily appropriate for those numerous societies where age identity is more fluid and lacks formal definition. For example:

> 'For the !Kung, making absolute social classifications is culturally unfamiliar. The spatial fluidity of their foraging life promotes a focus on situational relationships. Age does appear salient. However age is not used to define sharp boundaries of social categories or life transitions' (Keith *et al.* 1996: 247).

A life course approach to age is much more sensitive to the fluidity of identity. Previous age-differentiated frameworks focused on age grades, and in doing so tended to emphasise the *differences* between life stages with the result that:

> 'theories of childhood (socialization), adolescence (identity formation and achievement) and old age (disengagement) shared few core assumptions regarding the behaviours and attainments of individuals' (O'rand 1996: 189).

A similar age-differentiated perspective examines age as a series of cohorts. A cohort is defined as a group of people born at approximately the same time that grow up and grow old during a particular period of time. This perspective is valuable in that it acknowledges more formally the fact that members of a particular birth cohort will have a unique history and their experience of the ageing process will be correspondingly singular (Uhlenberg and Minor 1996: 208). The experience of being 60 years old in 1950, for example, is a very different one from being the same age in the year 2000.

> 'By recognizing that ageing is a dynamic process produced by the collective behaviour of individuals who live within historical and social contexts, this perspective guides attention to the critical factors that change the ageing process over time' (Uhlenberg and Minor 1996: 210).

As each cohort ages, considerable continuity in the behaviour between age cohorts separated by only a few years may exist, however, periods of profound social change and the cumulative impact of past social events can significantly challenge the existing structures and experiences of ageing (Haraven 1995; Uhlenberg and Minor 1996: 208). An older age cohort may respond to changing social circumstances in a significantly different manner to a younger one and this is in part because of their different social experiences (Foner 1984; Haraven 1995). Within an archaeological context, while a cemetery may be divided into a series of broad chronological phases, age cohorts are virtually impossible to identify. While individuals can be grouped according to age categories, it must be recognised that they were not all the same age during the same time and this may have impacted upon their experience of ageing. Given that this study examines a period of rapid social change from the fourth to sixth centuries AD in England, one may expect a certain element of heterogeneity and inconsistency with respect to age-related funerary practice.

Although the study of age cohorts does provide a useful perspective, there is the tendency in such studies to conceptualise age groupings as homogenous without due consideration of the

effects of gender, social status and ethnicity (Uhlenberg and Minor 1996: 216). A life course perspective has, therefore, been adopted in this study, in part because it allows for a greater sensitivity towards the fluidity of age related shifts in identity, particularly with respect to gender and status over time (O'rand 1996: 192-3). A life course perspective has been described as an 'explicit attempt to view the individual biography within the context of society, and to take a historical perspective on both the individual and society' (Marshall 1996: 22). When looking at rites of passage, the crossing of transitions between age boundaries, we need to consider the interaction and tensions between age and other aspects of the social persona. We should examine the way that age identity influences and is itself influenced by other social constructs (e.g. gender and status) and how this relates to social hierarchies (Bury 1995; Bradley 1996: 20).

1.6 Age and Gender

The inter-relationship between gender and age has already been touched upon with respect to the elderly who stereotypically experience a loss of gendered identity and sexuality in Western society as they become older. The fluidity and intertwining of gender with age on some level is a feature of all societies, but a number of ethnographic studies have shown that this relationship can be particularly salient. For example, the Hua of Papua New Guinea, while classifying individuals by anatomical sexual features, also classify according to the amount of 'male' and 'female' substances they have in their bodies. These substances are thought to be transferable through eating, heterosexual sex, and every day casual contact (Meigs 1984: 108-9). The gender of a person will, therefore, change over their lifetime as their body takes on more of the substances and fluids transferred by the other sex. As a result, older females may take on more masculine roles and assume a more masculine identity and vice versa.

The gendered identity of the very old or very young is frequently obscure, with these age groups commonly occupying an almost liminal gender zone. This is also the case in our society, where a degree of gender ambiguity (e.g. tomboy) is tolerated in early childhood before what has been described as a 'gender crackdown' occurs, at an age when this behaviour is no longer considered appropriate (Fischler 1998). Although male and female identities are recognised amongst children in Western societies, these distinctions take on a new significance after puberty and into adulthood, as they become more strongly aligned to sexuality. Amongst the Hausa, the male and female adult activities are strictly segregated, almost to the point of avoidance behaviour, and yet children up until the age of approximately 10 years (whilst being recognised as male and female) may cross freely between these

domains (Schildkrout 1978). Indeed, because of this strict gendered spatial segregation, the role of children is vital to the functioning of Hausa society. The same applies to the elderly, and in Samoa for example, the strongly adhered to avoidance patterns that begin at puberty between brother and sister, no longer apply when women become old (Holmes and Holmes 1995: 84). Many anthropological examples exist that demonstrate the culturally androgynous state of older women and this is often accompanied by an increase in social status and power (e.g. Cole 1990; Coles 1992: 78; Rasmussen 2000). Numerous authors have suggested that this identity shift is related to the cessation of their reproductive role (e.g. Poole 1981). However, it does not always coincide with menopausal changes and tends more often to be connected to social factors that are only indirectly related to age, such as the marriage of a child or widowhood (Rasmussen 1987: 17). The same is also true for males who may assume roles more intimately connected with the domestic sphere in later life. For example, Fijian men in the earlier part of the last century took on a range of domestic chores with old age and lavished greater time and affection on their wives (Quain 1948).

While gender may be seen to be fluid throughout the life course, within many societies the gender of an individual will also affect the timing of age transitions, so that they experience different age pathways. For example, the Nandi in East Africa formally recognise two ages for females (girls and married women) and four for males (small boys, initiates, warriors and elders) (Holmes and Holmes 1995: 52). An historical example of different life pathways is also evident from Roman literary evidence. This indicates that children under the age of seven years, while being recognised as male or female, were not clearly differentiated in terms of their material culture or treatment. The perceived identity of children underwent something of a transition after the age of about seven years, towards an identity that was more explicitly gendered. For example, after this age terminology that differentiated between the sexes (*puer* or *puella*) became appropriate rather than the asexual grouping of *infantia*. Furthermore, virginity is, for the first time, attributed as a characteristic after the age of seven years (Fraschetti 1997). From this age onwards, males and females then experienced divergent chronologies in terms of social age transitions. Roman males underwent a significant rite of passage at approximately fourteen to sixteen years of age, during a ceremony that took place in both public and private; they replaced their *toga praetexta* with the *toga virilis* and removed their *bulla* (Eyben 1993: 6; Fraschetti 1997: 64). This event signified a new social age for males who were then considered 'more responsible' individuals as *adolescens*, until approximately twenty-five to thirty years of age (Weidemann 1989: 116). Females had no similar rite of passage, the onset of menarche does not appear to have been socially significant, and only upon marriage did they experience a change in status (Fraschetti 1997:

63). This is in contrast to males where no clear distinction between an unmarried or married man is made with respect to terminology (Leijwegt 1991: 55).

What becomes clear from both ethnographic and historical examples is that social ageing is gendered and men and women experience different chronologies (Arber and Ginn 1995). While gender affects the timing of age-related transitions, entry into a particular age group may conversely alter the gendered state of an individual. The interrelationship between gender and age is so striking in virtually all societies that it becomes impossible to examine one of these facets of identity in isolation: the two act simultaneously in the construction of identity.

1.7 Age and Status

The archaeological investigation of status identity to date has been conducted almost exclusively within the structural functionalist framework of New Archaeology. Numerous studies of funerary evidence have examined status, but only in terms of the identification of linear, ranked, hierarchies, primarily reflected by wealth associations in graves (e.g. Binford 1971; Brown 1971; Tainter 1978; Arnold 1980). 'Status' and 'rank' have been used inter-changeably within archaeological discourse, in contrast to anthropology where its broader implications in the formation of social identity and its interrelationship with other aspects of the social persona are explored. The very attenuated definition of the term status has been drawn largely upon Linton's (1936) categories of ascribed status (status over which a person has no control) and achieved status (status acquired throughout the life of the individual). Wealthy child and infant burials have traditionally been viewed as examples of ascribed status, because the child has not had the means with which to achieve the wealth itself. This idea does not, however, take into account the attitudes of either the culture or the individuals towards children (Pader 1980).

Even when one is thinking of status only in terms of linear hierarchies, Linton's status definitions are still over-simplistic. For example, in this schema, biological sex can be considered an ascribed status. However, because sex in many societies determines the trajectory of an individual's life, it will have a profound effect on the status which that individual is capable of achieving (Jenkins 1996).

Status is in many respects inextricably linked to age. This is particularly so in our society where age involves differential access to power, economic resources and social privileges

(Bradley 1996). Indeed it has been argued that the very nature of age relations is one of intrinsic hierarchy:

> '...passage through the life course from birth to death involves the wielding and attribution of personhood at different times and...power is asymmetrically wielded as individuals move between marginal and central social positions between different conceptions of personhood. Parents for example, are persons in a way which small children are not; adults are persons in ways that the elderly no longer are. And in each relationship, power is unevenly exercised' (Jenks 1996: 71).

The shifting status of individuals with age is often recognised by initiation ceremonies or rites of passage (Van Gennep 1960). Such rituals are often invoked as a means of bridging discontinuities of identity such as marriage or death (Fortes 1984). These symbolise the passage from one status to another and tend to involve a period of liminality. This serves as an uncertain time of transformation that may contrast with the defined identities on either side of this transition (Cohen 1994).

The shifting status of individuals with age has already been discussed in relation to the increase in power experienced by females in a number of societies during their elder years. This is often associated with their greater involvement in activities typically reserved for men and often in the public sphere. Conversely many ageing men will take on roles such as childcare, more typically associated with women and often confined to the domestic sphere (Rasmussen 1987: 19). In addition, from this and several examples discussed above, a recurrent theme is that social space, as well as being regulated and defined by (and defining) gender and status, is intimately linked to the life course.

1.8 Conclusion

Through recent work into the origins and perceptions of childhood in the past, archaeology has begun to acknowledge that age identity is not only an important aspect of the social milieu, but is contingent upon historical and cultural context. Much of the initial work was, however, in the spirit of social inclusion– what has been described as the 'add and stir' approach (Sofaer Derevenski 1994). Focusing selectively on socially excluded groups, such as children or the elderly, is a practice that tends only to compound the marginalisation of those it tries to integrate. By continuing to treat them as 'other', it disallows the possibility that such identities were not even conceived of in the past. As Keith *et al.* (1996: 246) state:

'To begin by asking 'at what age does a person become old?' imposes a notion that there is a category called old and that it has a chronological basis'.

A focus on adult-child boundaries creates a false dichotomy and one that is not necessarily applicable cross-culturally. As is evident between other social categories, a constant dialectic exists between age groups and is responsible for both their maintenance and reformulation. Identities are frequently formed in opposition, so that the social qualities assigned to childhood can only be understood when examined in relation to those attributes believed to be held by adults (Haraven 1995). As discussed above, the denigration of the elderly within modern Western society can only be understood within the context of the association made between their 'dependent' status and that of children. In order to understand the way that an age group is perceived within a society we must contextualise it within a study of individuals throughout the entire life span.

Age groups are not necessarily discrete and exclusive; they become blurred by the actions of individuals, and shift in accordance to changing socio-economic and historical circumstances. Very little work, however, has examined the relationships and tensions between age groupings, or has attempted to identify age thresholds in past societies. This neglect would appear to stem from the fact that age (more so than gender or ethnicity) is considered to be a purely biological phenomenon. Consequently, age identities and age roles have become naturalised. When an identity is naturalised, it also becomes imbued with universal properties, thereby sanctioning our projection of the contemporary Western age paradigm onto the past irrespective of social context.

This unshakeable perception of age as a uniform human experience has remained unchallenged for so long because age identity in Western society is associated with (and built upon) the inevitable linearity of time itself. Human ageing has been perceived as the physical manifestation of the procession of time, set against a backdrop of monolithic cultural behaviour. However, time itself is not universally recognised as linear, but subject to variable cultural perceptions and experience. The relationship between time and age within Western society, although linguistically linked and characterised as linear, in reality exhibits an ambiguity that manifests itself through such cyclical associations as childhood and senescence.

Theoretical developments within the social sciences have led to an understanding of the complexity and fluidity of age identity. Ethnographic and historical examples reveal that

biological, cultural, and chronological concepts of age are intertwined in the formation of age identity in a way that is impossible to unravel. This complexity is further exacerbated by the inter-relationship between age, gender and status. We have seen that gender is biographically located, while age transitions are gender specific. Gender and age are inextricably linked throughout the life course and intimately connected to fluctuations in social status and power.

The significance of the archaeological record in terms of age identity has been a neglected area of archaeological research. While archaeologists have recognised the significance of past material culture in terms of gender and status, there has been a failure to appreciate that these identities are closely inter-woven with age. Throughout the life course individuals experience subtle or profound shifts in gender and status that may be displayed by concurrent changes in associated material culture. Our study of past identity must be sensitive to this complex inter-dependence. By adopting a life course approach we can elide current age norms so that we avoid reproducing our own paradigms from past material culture, and instead seek to identify and understand those age thresholds that have symbolic and social significance within the past.

Chapter 2

❖

The Cemetery Sites and Archaeological Background

2.1 Introduction

When examining age identity in the past it is the human skeletal remains and their burial context that provide the most direct form of evidence. This study of age identity during the fourth to sixth centuries AD has focused on the wealth of evidence available from cemetery sites. Rather than adopting the broad geographic approach that characterises the majority of cemetery studies for both the Roman (e.g. Philpott 1991, Cooke 1998) and early Anglo-Saxon periods (e.g. Crawford 1991a, Stoodley 1999a), this analysis instead examines localised cemetery clusters. The reason for this is that while generalisations relating to burial practices of both the late Roman and early Anglo-Saxon period can undoubtedly be made, such surveys tend to obscure more subtle, localised, social practices. Generalised studies also impose a 'spurious uniformity' onto the past.

One could argue for a greater degree of homogeneity in burial practice during the late Roman period, due to the centralised nature of Roman power and government (Hatton 1999). However, the mixture of peoples and religions in different places and the varying degrees to which people in the separate regions of Britain subscribed to Roman practices is likely to have led to considerable diversity (Williams 1999). Indeed it is evident that even within a localised area, the difference in burial practice between urban and rural areas is often quite striking (Pearce 1999). For the Anglo-Saxon period, social organisation was believed to be on a more localised scale, thus the pooling of data from different regions is likely to be particularly counterproductive.

As Halsall (1995: 40) has argued, societies change over short distances, and while aggregating evidence may allow for statistically more satisfactory sample sizes, a more localised survey will have a greater sensitivity to specific patterns. It is all too easy for localised idiosyncrasies in burial practices to become subsumed by dominant regional trends. With the above in mind, two clusters of cemetery sites, ranging in date from the late fourth to sixth centuries AD, have been chosen for this analysis. One cluster is around the area of Dorchester-on-Thames, Oxfordshire

and the other is in the environs of Winchester, Hampshire (Figure 2.1). Each cemetery was chosen for inclusion in this study based upon the following criteria:

a) The availability of information concerning the site.
b) The number of burials (the larger sites being preferred).
c) The preservation and availability of the skeletal material.
d) The cemetery location (within reasonable proximity to other sites within the cluster).

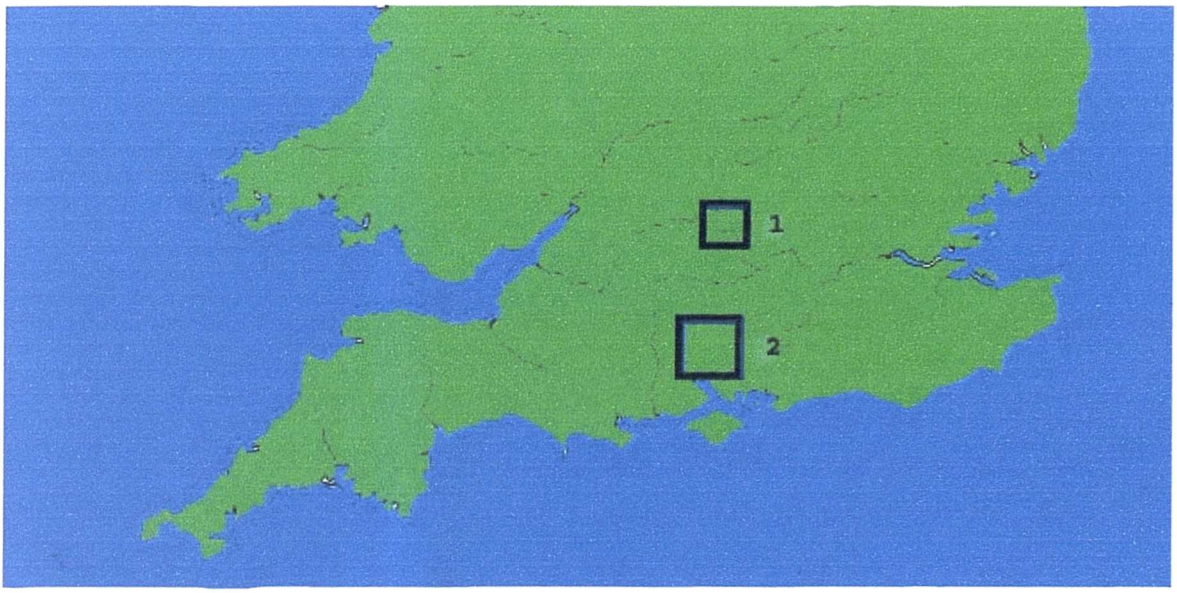


Figure 2.1: Location of site clusters. A detailed view of '1' is presented in Figure 2.2 and '2' in Figure 2.7.

This section will discuss the cemetery sites chosen for analysis and provide a general archaeological background of the study areas. The fourth to sixth centuries is a heavily debated area of academic research and this chapter aims to relate this cemetery evidence to these broader debates. By doing so this chapter aims to provide an appropriate archaeological backdrop from which to proceed with an analysis of age identity.

2.2 Oxfordshire

The Upper Thames valley is an important geographical area and has undergone extensive archaeological survey including: aerial photography; fieldwalking; excavation and environmental sampling. Archaeological investigation has not been uniform over the whole of the Upper Thames (as with all regions), and there has been a bias towards the gravel terraces of the Thames, with the Chilterns, Cotswolds and North Oxfordshire receiving comparatively less attention

(Miles 1986a: 49). The late Roman sites chosen for analysis are the cemeteries of Queensford Farm and Cassington, and the early Anglo-Saxon sites are Abingdon and Berinsfield. All of these are located in the vicinity of Dorchester-on-Thames. Cassington is slightly further away (Figure 2.2), however, this cemetery was included because of the scarcity of late Roman cemeteries of any substantial size within this area. This section provides details of these cemeteries in relation to the archaeology of the late Roman and early Anglo-Saxon periods in the area.

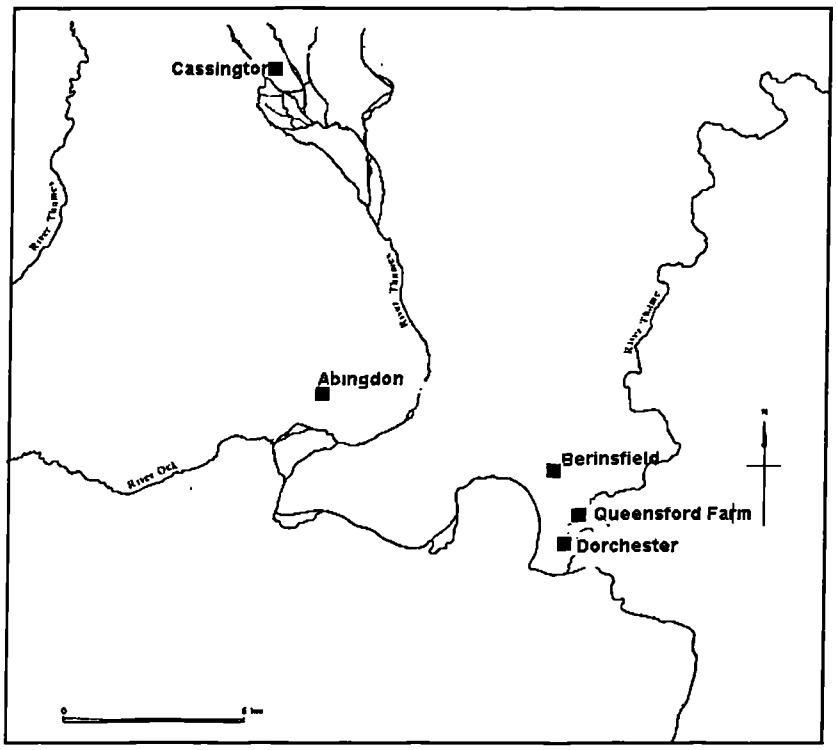


Figure 2.2: Location of cemeteries in relation to Dorchester-on-Thames.

2.2.1 The Roman Period

Roman settlement of the Upper Thames Valley demonstrates some geographical continuity with the Late Pre-Roman Iron Age (LPRIA); the Roman small town of Dorchester-on-Thames, for example, is sited close to the Late Iron Age settlement or *oppidum* at Dyke Hills just to the south (Miles 1986a: 51). Similar continuity occurs with respect to the site of the nearby Roman town of Cirencester, which replaced the *oppidum* at Bagendon. Up until recently surveys of Roman Oxfordshire have portrayed the area as essentially a 'backwater'; only Alchester and Dorchester-on-Thames (recognised as small towns) have any claims to 'Romanisation' on an urban scale. Alchester was the larger of the two towns, containing the more substantial buildings and

demonstrating some signs of formal planning (Young 1986: 59). In common with many Roman small towns Dorchester did not have the same formal grid layout, but it was located at an important bridging point at the confluence of the Thames and the Thame (Giller 1993: 15; Henig and Booth 2000: 35). These 'small towns' were technically *vici*, and while they acted as market places and presumably had magistrates of some description, the term is generally used to distinguish sites with some urban characteristics, but few of the significant public buildings of the larger towns (Henig and Booth 2000: 52). Both Alchester and Dorchester would have served as tax collection points and areas of craft specialisation as well as important communication nodes between the nearest major Roman cities of Silchester, Cirencester and Verulamium.

Although Roman activity in the area was largely rural, the portrayal of the Upper Thames as a backwater has been superseded in more recent years. Extensive surveys in the region and excavations have revealed intensive Roman activity in the area with numerous villas and farmsteads, trackways, roads, and agricultural complexes (Young 1986: 58; Miles 1988). In the fourth century the series of trackways allowed a linked network of communication that indicates a system engaging in frequent production and exchange. Dorchester was an area of intense settlement during the Roman period, and numerous small settlements and several prosperous villas have been identified (Miles 1988). During the Roman period the apparent need also to exploit the wetter first terrace in the Thames valley for agriculture, indicates intensive use of the land (Benson and Miles 1974). The normal pattern of rural settlement in Roman Britain is dispersed rather than consisting of nucleated villages (Esmonde-Cleary 1989: 106). Villas like Barton Court Farm (perhaps more accurately described as modest farmsteads showing some pretensions on the part of the owner for a Romanised manner of life), illustrate the success of productive centres in the late fourth century (Miles 1986b; Giller 1993: 41).

The recovery of Roman material immediately south of Dorchester would appear to indicate that substantial extra-mural settlement of the town also occurred (Harman *et al.* 1979: 1). The emergence of the Oxfordshire pottery industry at numerous kilns located between the small towns of Alchester, Dorchester, and midway between the large towns of Cirencester and Verulamium (Young 1977; Dickinson 1979: 381) would have increased the importance of the towns from the second century AD in terms of an urban marketing strategy (Esmonde Cleary 1989: 91). The pottery industry peaks in the later third century (a factor linked to the decline in the importation of pottery and other wares) and its distribution, although concentrated around the areas of production, reached sites across southern and central England (Millett 1990).

Both small towns reveal evidence pointing to a military presence; a fort has been discovered at Dorchester and army equipment near Alchester (Giller 1993: 41). For a short period Cirencester and Alchester would appear to have supported vexillations of legionaries in addition to auxiliary units (Henig and Booth 2000: 37). The excavation of coins dating to the end of the fourth century at Dorchester and Alchester indicates the continuance of trade at these centres. The importance of Dorchester may have increased in the later fourth century due to its position on a vital river system. Dorchester has produced more evidence of sustained activity at the very end of the fourth century than almost any other Roman town (Henig and Booth 2000: 46, 182).

Most, if not all, of the major settlements in Oxfordshire continued to be occupied throughout the fourth century (Henig and Booth 2000: 180). The early fourth century, in general, was a relatively prosperous time for landowners and structural additions to villas such as North Leigh and Stonesfield during this time testifies to this (Ellis 1999). It has been suggested that the prosperity of villas in the third and fourth century may have arisen from the growth of local market centres, many of which were sited on, or close to river crossings/roads, and a decreasing reliance on major towns (Miles 1984: 207).

Despite intensive survey the Upper Thames Valley has only yielded Roman cemeteries dating to the later Roman period. Many of these are small rural cemeteries and only five cemeteries in the area of Oxfordshire have produced more than fifty burials (Booth 2001). The known late Roman burials associated with Alchester are few in number, comprising about thirty individuals outside of the boundary of the northern extramural settlement. The principal cemetery (assuming one exists) of this small town has not yet been located.

Dorchester-on-Thames on the other hand is unusual in having two substantial and relatively well-defined late Roman cemeteries associated with it: Church Piece and Queensford Farm*. The cemetery of Queensford Farm is 0.7 km north of Dorchester-on-Thames and Church Piece lies 1 km north-east of the town, on the opposite bank of the Thames (Figure 2.3) (Chambers 1987: 36). The cemetery of Church Piece has not undergone any significant excavation and Queensford Farm is the largest excavated late Roman cemetery sample in this region. For this reason it has been chosen for analysis in this study.

* Although this cemetery was excavated at the two sites of Queensford Farm and Queensford Mill, for the sake of ease it will be referred to as Queensford Farm throughout this thesis.

Queensford Farm has a straight track leading to it from the north-east of the town and the cemetery enclosure is laid to the west at right angles to it (Harman *et al.* 1979: 2). The deposition of the dead within bounded enclosures and in association with boundary features is an important recurring feature of burial practice in Roman Britain (Hatton 1999: 138; Esmonde Cleary 2000: 137). Despite this, there are few sites (of which Queensford Farm is one) where the enclosure appears to have been dug during the planning of the cemetery. At the majority of sites it is difficult to ascertain whether the boundaries were intentionally dug to enclose the burials, or use was made of earlier field system boundaries (Hatton 1999: 138).

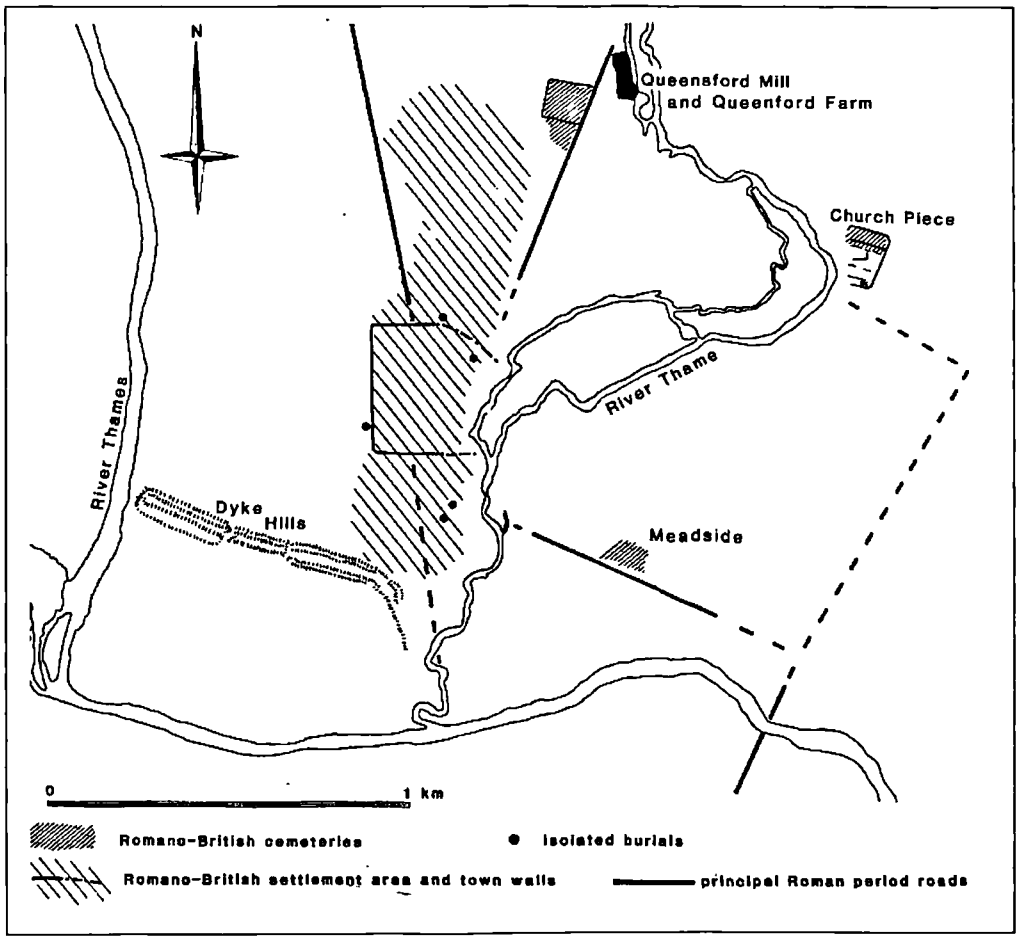


Figure 2.3: Late Roman cemeteries associated with Dorchester-on-Thames (after Chambers 1987: 37).

Queensford Farm seems to belong to the category of late Roman 'managed' cemeteries that tend to be associated with urban centres (Booth 2001). These 'managed' inhumations cemeteries tend to be of fourth century date and are characterised by a standardised mode of burial. It has been

argued that this uniformity of practice may have reflected an extension of bureaucratic control over the disposal of the dead in later Roman Britain (Hatton 1999: 40). Queensford Farm, together with the nearby cemetery of Church Piece, are unusual because they are not sited in the usual position of extra-mural cemeteries which tend to be closer to the town walls and along main approach roads. It has been suggested that these cemeteries may have also served suburban inhabitants and the surrounding rural population (Hatton 1999: 133, 146).

Although field walking has taken place at Church Piece, along with the excavation of several trenches, the site remains largely unexcavated (Harman *et al.* 1979: 15). Queensford Farm on the other hand has been subject to two major excavations (Figure 2.4). The Queensford Mill site was excavated in 1972 when (during gravel quarrying) the south-east corner of what was later found to be an extensive inhumation cemetery was uncovered. Only a small part of the south-eastern quarter of the cemetery enclosure was cleared during these excavations, revealing 188 graves. Further development for the construction of the Dorchester by-pass in 1981 led to excavations of the south-west corner of the cemetery. In these later excavations 102 graves were identified, 82 of which were completely, or partly excavated (Chambers 1987: 36). Unfortunately only a very small proportion of the actual cemetery has been excavated; road building and gravel quarrying have resulted in extensive destruction. It has been estimated that the original burial population would have been in the region of 2400 individuals (Chambers 1987: 40).

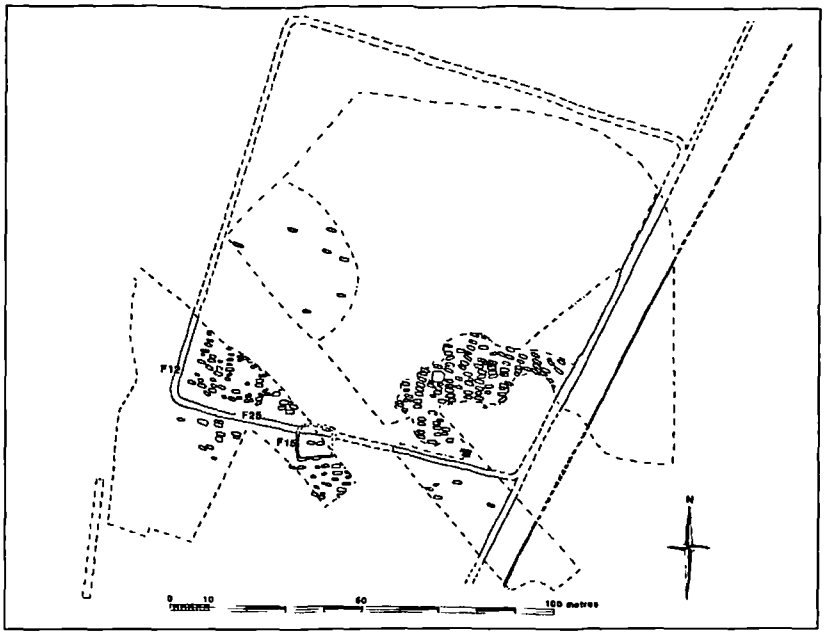


Figure 2.4: Excavations at Queensford Farm and Queensford Mill (modified from Chambers 1987: 38).

Nonetheless, the 164 skeletons form the largest sample of late Roman and sub-Roman graves so far excavated in the Upper Thames Valley. This factor, together with the radiocarbon dates from the cemetery that indicate it was in use from the late fourth to the mid-sixth century were the primary reasons for its inclusion in this study. The vast majority of burials had been buried within the rectangular enclosure ditch formed probably in the fourth century, and placed adjacent to a road leading from the Roman town.

Queensford was in use well past the conventional end date for Roman Britain in the early fifth century and may well have continued into the sixth, as a significant proportion of the population are of post Roman date. Two of the radiocarbon dates from Queensford have ranges of 340-650 cal AD at 95 percent confidence; one is 420-670 cal AD and one at 430-720 cal AD (Chambers 1987). This suggests very strongly a continuation of at least one major Roman-type cemetery into the post Roman period, and therefore implies the survival of a fairly substantial 'Romanised' population in and perhaps immediately around Dorchester itself, at least until the end of the fifth century.

The late Roman cemetery of Cassington is the next largest cemetery in the region (of those where some excavation records and skeletal material survives) and for this reason has also been included in this study sample. This site was discovered in 1931 during the demolition of a barn in advance of the Oxford northern bypass on the Cassington-Eynsham road. Thirteen graves were noted during this demolition, two skeletons were salvaged and a further five graves subsequently excavated by Leeds (1937: 237). In 1935 Captain Musgrove and Miss Blackwood undertook excavations of the main part of the cemetery. Cassington was never published, but details of the site, including sketches of the skeletons, were taken from Captain Musgrove's notes curated at the Ashmolean museum and this information added to from the Oxford Catalogue at the Natural History Museum where much of the skeletal material is housed. Unfortunately no plan of the cemetery appears to exist. The limits of the cemetery were not defined during excavation, but the number of burials (some of which were destroyed during construction) was believed to total approximately 120 (Musgrove n.d.: 45)

Only 72 of the individuals excavated were added to the Oxford collection at the Natural History museum (the rest had been reburied). Subsequent excavations in the region of Cassington have revealed a number of early Saxon burials and at Cassington II (Leeds and Riley 1942) Roman

burials have been reported from around and possibly from within the area of Saxon graves (producing material of fifth-century date). Unfortunately, the lack of adequate records from this site (as with the large late Roman and early Saxon cemeteries at Frilford) makes it impossible to know the relationship between them.

2.2.2. The Early Anglo-Saxon Period

The archaeological evidence from the Upper Thames Valley indicates a general decline in the amount of land under cultivation immediately after the end of the Roman period, with settlement and land-use reverting to the more favourable soils of the second terrace gravels (Miles and Palmer 1983). While the town of Alchester appears to have been largely abandoned after AD 400, Dorchester seems to have remained a main focus of early Anglo-Saxon activity in the region (Rowley 1975; Blair 1994; Henig and Booth 2000: 195). As a result, Dorchester has featured strongly in debates concerning the degree of continuity between the late Roman and early Anglo-Saxon periods. Frere's excavations in 1962-3 revealed a continuity of occupation in the form of a small three roomed building that overlay a worn coin of Honorius (AD 394-5), and the building itself was cut by an Anglo-Saxon foundation trench (Frere 1962, 1984). Also sunken-feature buildings dug into the early levels and substantial quantities of early Anglo-Saxon pottery excavated from the southwest corner of the former town hint at an early Anglo-Saxon occupation (Frere 1984: 163-165). While some have interpreted these findings as 'providing the best evidence outside of Canterbury for intentional reuse of a Roman town by German warriors in the early fifth century' (Higham 1992: 114), the nature of this continued occupation is not entirely clear. Rowley and Brown (1981), for example, have recovered evidence for an overall urban decline in Dorchester during the fourth century and evidence of only moderate refortification after the late third century. There would also appear to be a slight gap in occupation of the town and the evidence for early Anglo-Saxon occupation does not suggest any concentration of settlement (Blair 1994).

A number of sites in the region also demonstrate continuity of some description into the fifth century. For example, at the site of Barton Court Farm a hoard appears to have been hidden as late as AD 430 and there is evidence of Anglo-Saxon structures (e.g. sunken-feature buildings) and other features containing some Anglo-Saxon pottery (Miles 1986b). The majority of Anglo-Saxon features at Barton Court Farm are, however, of sixth century date or later, indicating that the villa underwent a period of abandonment (Miles 1986b). At Shakenoak villa, it would seem that gradual decline rather than sudden abandonment occurred and coins dating to the AD 420s

have been excavated (Brodribb 1978). It would appear that the villas continued in use, but in reduced circumstances, up to at least the end of the fourth century and possibly beyond (Henig and Booth 2000: 182). The relatively late occupation of villas in Roman Oxfordshire is unusual, however, Blair (1994: 3) suggests that while 'the Oxfordshire villa owners were unusually resilient...to view such survivals as links into the Anglo-Saxon future is topsy turvy, they mark the last stage of quick and total collapse'. Esmonde-Cleary (1989: 197) has also argued that on the whole the evidence for continued occupation of Roman sites into the fifth century is small when viewed 'in the face of the hundreds where there is no evidence of institutional continuity' (Esmonde Cleary 1989: 197).

Most identified fifth- and sixth-century settlements were sited on land that was well-drained and already cleared. Traces of early Anglo-Saxon settlements at Frilford and Lechlade for example, are on higher gravel terraces or limestone slopes, rather than on the wetter first terrace that was additionally exploited during the preceding centuries. In the Oxford region itself, Anglo-Saxon settlement had intensified in the sixth century both on the Thames itself and on its tributaries. In contrast to settlements, cemeteries of the fifth century are numerous and most early fifth-century material from the Upper Thames is from burials. The Upper Thames Valley is renowned for the high number of Anglo-Saxon cemeteries that were in use by the early fifth century (see below). This is primarily a result of the less robust building materials that appear to have been used during the fifth century, which render early Anglo-Saxon settlements much less visible archaeologically (see below). Most structural evidence for early Anglo-Saxon settlements come from fifth-century features associated with pre-existing Roman structures.

Similar to settlement evidence, the cemetery evidence in this region also demonstrates some continuity of use from the fourth into the fifth and sixth centuries. Early Anglo-Saxon cemeteries were also located close to burial grounds in use during the Roman period. The environs of Dorchester-on-Thames have an exceptionally high number of graves dating to the fifth century compared to adjacent regions (Henig and Booth 2000: 192). The early presence of material perceived to be 'Saxon' in the Upper Thames was pivotal to ideas of a Germanic invasion, with the Thames corridor itself conceptualised as a major 'invasion route' by Leeds (1933). The most striking feature of the earliest Anglo-Saxon sites in the Upper Thames region and the one most frequently noted, is that they all cluster around the Roman town of Dorchester where the final detectable phase of Roman occupation is contemporary with the earliest phase of Anglo-Saxon burials (Dickinson 1979: 405). Not all authors have agreed about the origins or extent of the early

Anglo-Saxon presence in the Upper Thames Valley. If the Anglo-Saxon chronicle is to be believed, as Myres states: 'they had no business in the year 500 to be settled in the Oxford district at all' (Myres 1937: 321).

Frilford is one of the best examples of certain continuity between Roman and Saxon cemeteries within the Upper Thames region. Unfortunately this site was largely excavated during the nineteenth century, subsequently few records exist and only crania of the skeletons were retained. The large numbers of individuals involved makes this particularly lamentable*. It has also been argued that the Anglo-Saxon cemetery at Long Wittenham I, which is also notable for the very large number of early Saxon graves datable between AD 450-559, was also a continuation of a Roman cemetery (Dickinson 1979: 402, 404). Not all individuals were inhumed in the early fifth century; cremation was practiced almost equally in the fifth and sixth centuries, although several sites such as Abingdon demonstrate an increase in the number of inhumations during the second half of the fifth century (Dickinson 1979: 403). Despite the large number of early fifth century cemeteries in this area, very few had adequate published records or skeletal remains that were available for study. The sites of Abingdon and Berinsfield fulfilled the criteria for study (discussed above) more satisfactorily than the other cemeteries in the area.

The Anglo-Saxon cemetery at Saxton Road, Abingdon (Figure 2.5) was discovered in 1934 during construction work and excavated by Leeds and Harden (1936). A total of 123 inhumations and 82 cremations were excavated, but not all of the cemetery was sampled (see Figure 2.5). While the cremation burials possibly represent an earlier rite, it is clear that both inhumation and cremation was practised contemporaneously for a time. None of the cremated human bone has been retained. Given the date of excavation the cemetery was well recorded and, although no individual grave plans were published, detailed descriptions of body and artefact positions were provided. It would appear that sex determinations are largely based upon grave good associations and age estimates of juveniles and adults are rough approximations. It is not apparent from the published report that any osteological analysis of this site was undertaken.

* Although not fully published, the skeletal material from Frilford and some records from the site are amongst the 'Oxford Collection' curated at the British Museum of Natural History.

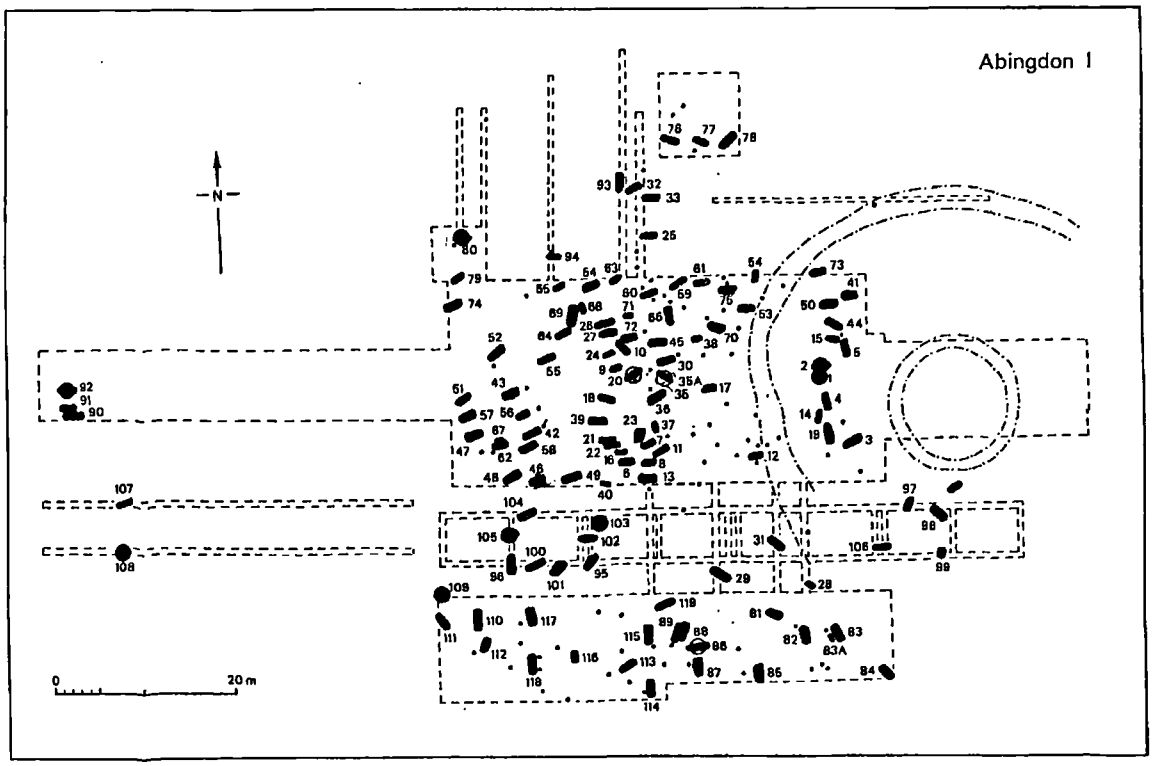


Figure 2.5: Plan of the early Saxon cemetery at Abingdon (modified from Leeds and Harden 1936: Figure 3)

The site of Berinsfield was excavated in 1974/75 in advance of development and an estimated two thirds of the original cemetery area was explored, leading to the recovery of 118 individuals (Figure 2.6). The site was in continuous use for approximately 150 years from the early-mid fifth century (Boyle and Dodd 1995: 142). It has been argued by Boyle and Dodd (1995: 138) that the earliest burials at Berinsfield, Frilford and Abingdon may belong to *foederati* and their families. Berinsfield cemetery is located only 1 km north of Dorchester-on-Thames and was sited over and around the ditches of a Roman field system. The authors of the report have speculated that it was serving a rurally based early Saxon population. A complete osteological report of the skeletal material has been published. Although this publication is recent, much of the report was based upon an analysis made soon after excavation, and was, therefore, conducted prior to the development of some of the more recent ageing techniques.

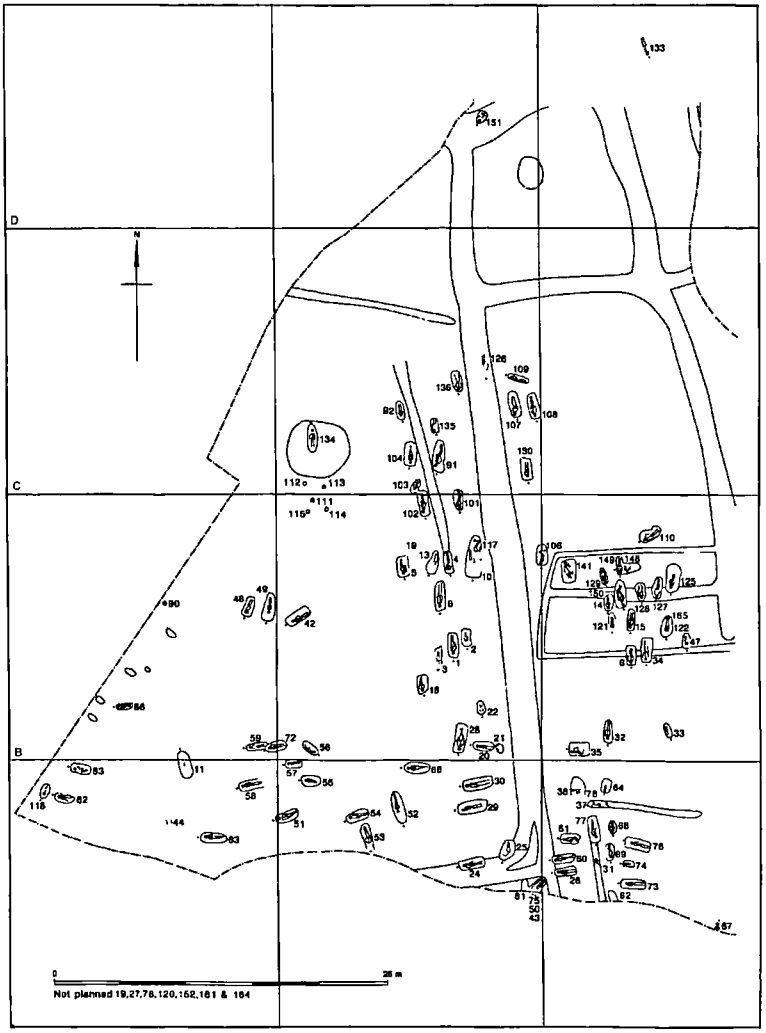


Figure 2.6: Plan of Berinsfield cemetery (after Boyle *et al.* 1995: 150).

2.3 Winchester, Hampshire

Much less published archaeological information is available for the Hampshire region than for Oxfordshire. Although some areas of the county have been systematically excavated (e.g. those sites along the M3 and the A303 corridors, the city of Winchester and the environs of Basingstoke), there has not been a regional survey of a similar intensity to that conducted in the Upper Thames Valley. There has, for example, been very little excavation of the chalk downlands, or much archaeological investigation of the southern river valleys (Pearce 1999: 92). A subsequent bias is, therefore, apparent against those sites that are less visible archaeologically (e.g. Anglo-Saxon settlements), thus presenting a correspondingly skewed picture of the fourth to sixth centuries in the region.

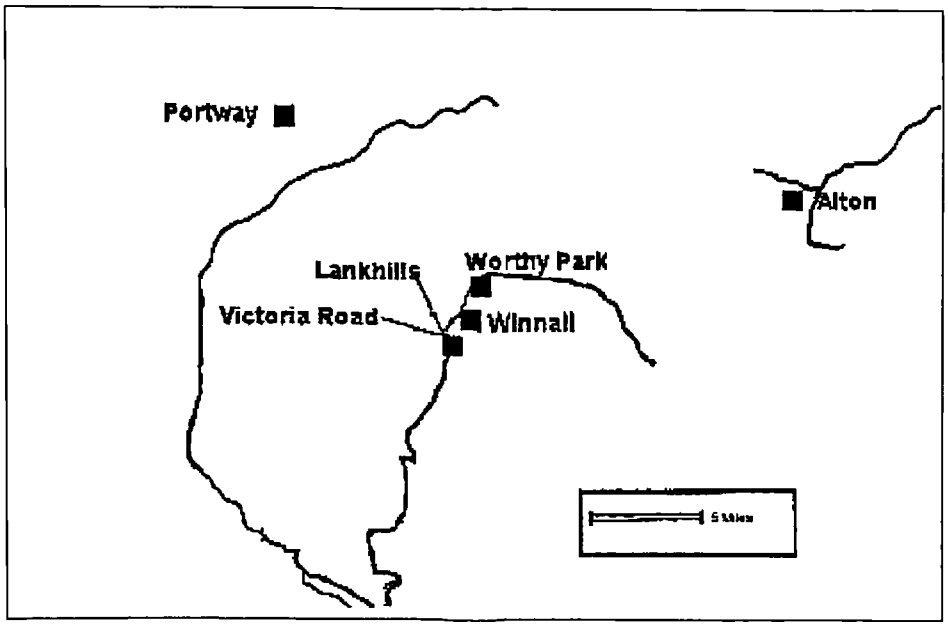


Figure 2.7: Location of the Hampshire cemeteries.

2.3.1 The Roman Period

Winchester is located at a narrow point of the flood plain of the River Itchen with chalk hills rising both to the east and west (James 1997: 23). The town of Winchester (named *Venta Belgarum*) was one of the first Roman settlements, and became the fifth largest in Roman Britain (Johnston 1981: 46). Extensive settlement of the area had occurred during the middle to late Iron Age, concentrated more towards the western side of the present city at the site of Oram's Arbour (James 1997; Qualmann 1993: 71). Although not strictly classifiable as an Iron Age oppidum, the function and extent of the Oram's Arbour settlement is still not entirely understood (James 1997: 29). Iron Age settlement at the site appears to have dwindled until the middle of the first century BC and (unlike settlement at Dorchester-on-Thames) there appears to be a break in occupation until the first Romano-British settlement at AD 50 (Qualmann 1993: 73).

By the end of the first century AD Winchester boasted at least partial defences, a grid of streets, and public buildings such as a forum and basilica. Six Roman roads radiated from Winchester including the main roads towards Silchester in the north and Cirencester in the north-west. By AD 200 the population was growing to the point where Winchester appears to have acquired a considerable suburban attachment (Wacher 1974; Qualmann 1993: 73). For example, several sites have revealed burials from the Eastern suburbs dating from the late Roman period (e.g. St. Martins Close and Chester Road). Evidence for occupation in the Western suburb is less

substantial, although a number of burials have been recovered from the Orams' Arbour Iron Age ditch (Pearce 1999: 88). Up until the fourth century Winchester was more densely occupied, and it is clear that civilian inhabitants were reasonably wealthy (Wacher 1974: 299).

However, from the mid fourth century onwards, the town appears to be in decline and settlement shifts away from stone buildings towards wooden ones (Qualmann 1993). Evidence from the first few decades of the fifth century suggests that with the withdrawal of Roman administrative control, the larger towns such as Winchester had essentially become an irrelevance (Blair 1994: 1). During the later Roman period, *civitates* were no longer the only economic foci and many appear to show evidence of decline during this time (Reece 1980). While they continued to function as administrative centres and contained large private houses, they did not necessarily function as centres of production. This generalised urban decline is linked to a changing economic focus from town to country in the later Roman period with the development of large villa estates and the increasing importance of 'small towns' (e.g. Dorchester-on-Thames discussed above). There is, however, no corresponding demographic decline in the urban populus and evidence from the Winchester cemeteries indicates an increase in burials up until the early fifth century (James 1997: 37). It is of course possible that these urban cemeteries also served communities in the surrounding countryside (Esmonde-Cleary 2000: 127).

There are few known Roman cemeteries of any significant size located outside the environs of the city of Winchester. Those in this study will, therefore, focus on two late Roman cemeteries in close association with the city (Lankhills and Victoria Road). In Winchester during the first and second centuries an extensive mixed cremation and inhumation cemetery was in use outside of the north gate, close to the junction of the Sílchester and Cirencester roads (Pearce 1999: 76). The excavated site (Hyde Street cemetery) shows that the proportion of cremations within this cemetery increased during the later phase, although the vast proportion of all inhumations were infants under the age of two years (Hatton 1999: 59). The same is true of the Victoria Road cemetery during the earlier phases of its use, dating from the first to second centuries (Rees in prep.). During the third and fourth centuries, inhumation becomes the dominant funerary ritual at Victoria Road and this follows general trends elsewhere in the country (as well as the rest of the Empire).

The principal inhumation cemetery at Victoria Road was also located outside the north gate, although in a different location to the earlier cremation cemetery. Late Roman inhumation

cemeteries are frequently sited in areas distinct from earlier cremation cemeteries (Hatton 1999: 85, 129). This may be significant in terms of the rationalization of this significant shift in funerary practice (Pearce 1999). Parts of the large northern inhumation cemetery have been excavated, principally at the sites of Lankhills and Victoria Road (Figure 2.8). The skeletal and burial information from both of these sites have been used in this study.

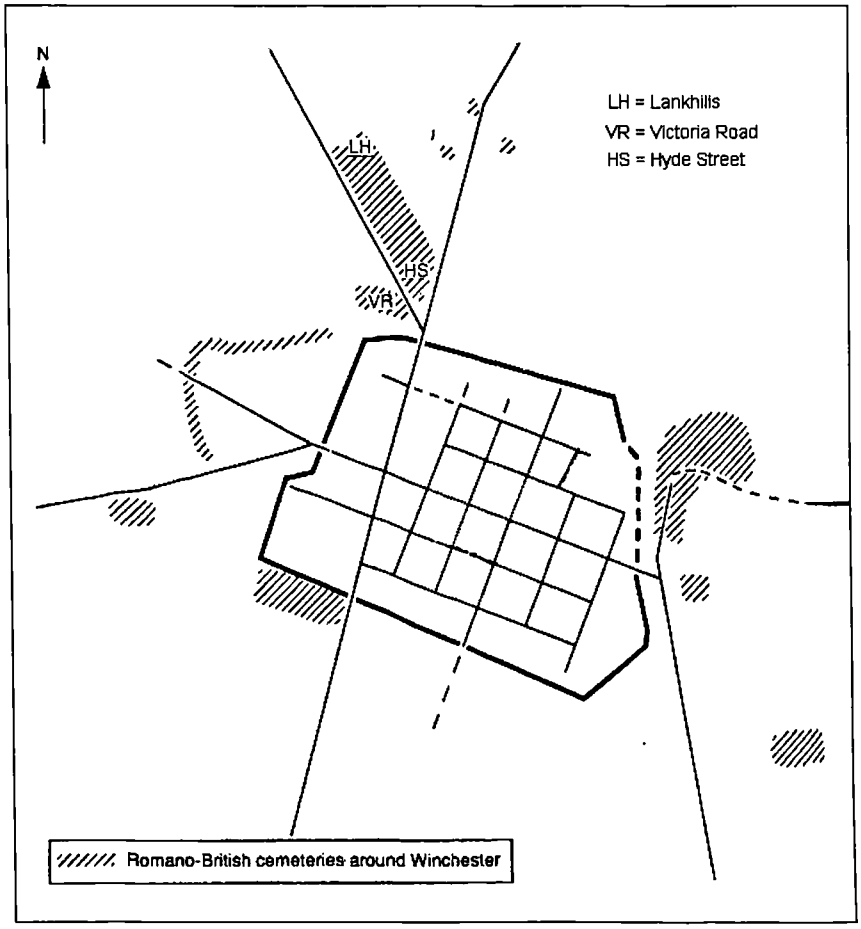


Figure 2.8: Location of the Romano-British cemeteries around Winchester (after Rees in prep).

Lankhills is the best-known site within the northern cemetery of *Venta Belgarum* (Figure 2.9). The entire northern cemetery has been built over during the last two centuries and excavations indicate that it was bounded to the west by the Cirencester road and to the east by a large boundary ditch. Evidence suggests that burial in the northern cemetery spread north-west from the city, starting in the first century at North Gate (Hyde Street cremation cemetery) and reaching Lankhills 500m away in the fourth century (Clarke 1979). Pottery and coin evidence from Lankhills indicates that burial did not begin prior to AD 300 and a starting date of AD 310 is

proposed. As no recognizably fifth-century objects were found (e.g. metalwork decorated in the quoit-brooch style) the cessation of burial has been set at c. AD 410. In light of the discussion in Chapter 1 concerning the problem of dating early fifth century artifacts this assumption can be considered problematic. A total of 451 graves were excavated from Lankhills (33 only partially so), six of which contained more than one burial (Clarke 1979: 13). Overall the site plan indicates a comparatively well ordered burial ground. The lack of graves on the eastern part of the excavation is however conspicuous and in all probability it signifies the edge of the cemetery.

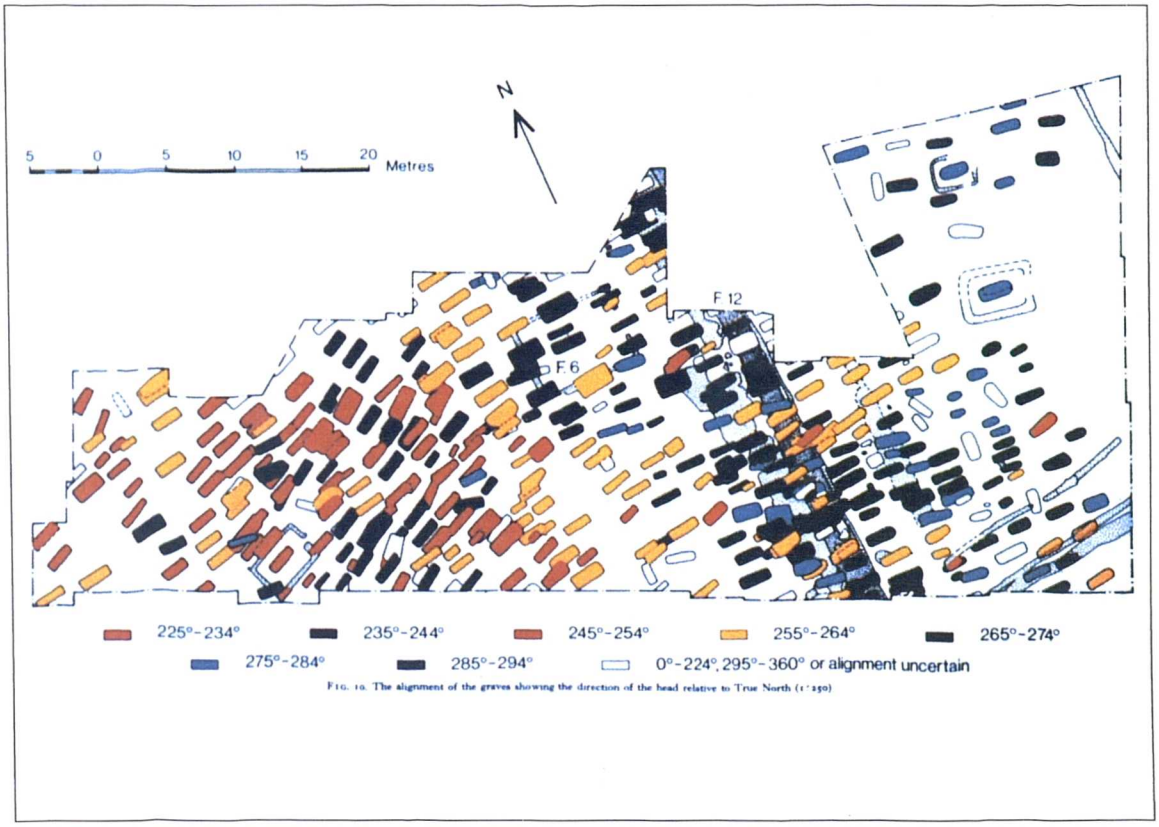


FIG. 10. The alignment of the graves showing the direction of the head relative to True North (1:250)

Figure 2.9: Plan of the late Roman cemetery of Lankhills (after Clarke 1979: Figure 10).

The excavated part of the Victoria road cemetery lies to the west of the Cirencester road and opposite the site of the early cremation cemetery at Hyde Street. The cemetery was not long in use; the earliest inhumations are dated to AD 350 and the later burials date to the late fourth to early fifth century (Figure 2.10). Stratigraphic relationships and alignments have allowed the Victoria Road cemetery to be divided into four main phases. Victoria Road is similar to Lankhills in terms of the chronological phases of development and cemetery lay-out and it has been suggested by Clarke (1979: 11) that it was first put into use when the main northern cemetery started to become overcrowded. This theory is supported by the extension that occurred at

Lankhills at around this date with burials occurring within and extending beyond a former boundary ditch. Cremation burials (usually urned) have been recovered from shallow cuts in all phases, although the overwhelming majority of the burials were inhumed. The earliest phase of the cemetery has a larger frequency of ceramic deposits (Rees in prep.). Inhumations were largely coffined but unfurnished. There were a number of shallow, uncoffined burials that disregard previous alignments (although still approximately east-west) that were probably of a later date and several furnished inhumations that may be later still.

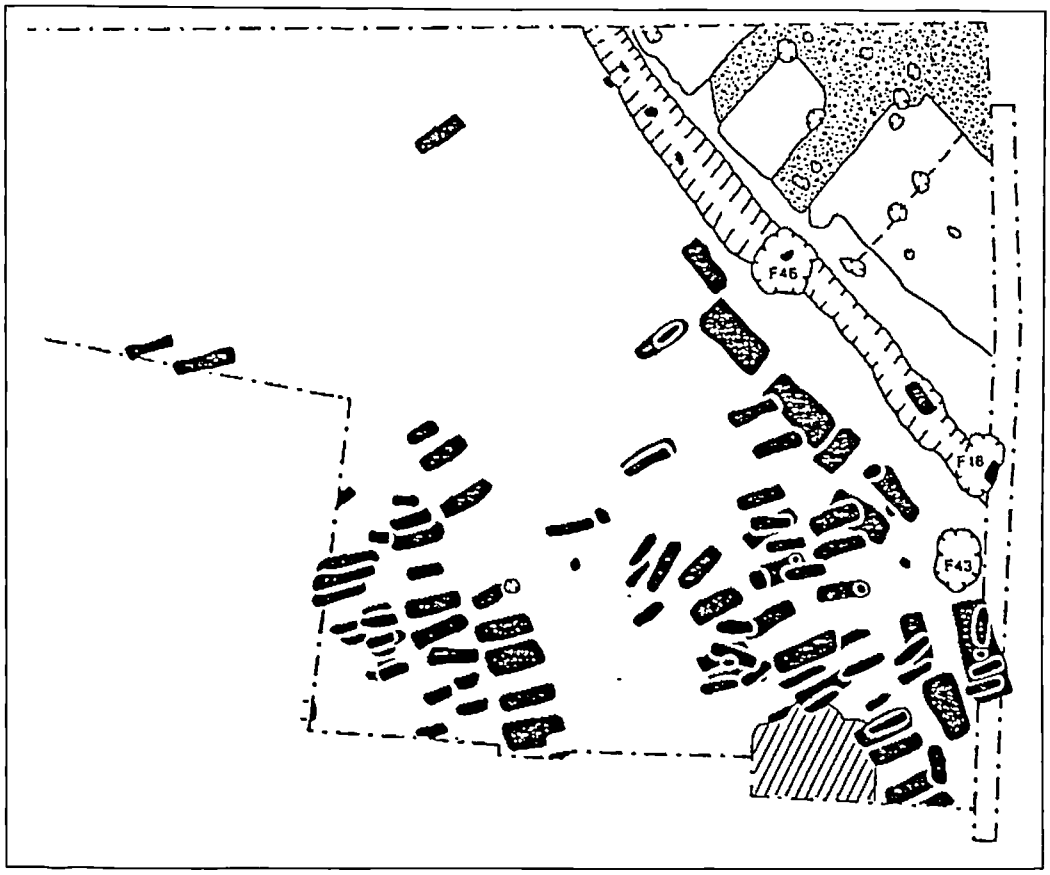


Figure 2.10: Plan of the late Roman cemetery at Victoria Road (after Rees in prep.).

2.3.2 The Early Anglo-Saxon Period

There is no similar evidence for continuity in occupation at Winchester as there was at Dorchester-on-Thames. At Winchester, there seems to be a fifty-year period in the fifth century for which there is remarkably little evidence, although this may be more a problem of dating than a true reflection of chronology. The burial population around Winchester in the fifth and sixth centuries drops significantly when compared to that of the late fourth century. The presence of burials dating to the fifth century, may, however, indicate that the city did at least act as a

continuing focus for settlement, despite there being little archaeological evidence for occupation within the walled city itself during the fifth and sixth centuries (Hinton 1981).

The cluster of Saxon cemeteries of a relatively early date close to the walls of Winchester is quite exceptional for a Roman city. The Worthy Park cemetery is situated on the northern side of the Itchen Valley, on raised ground, approximately 350 metres east of the Roman Silchester to Winchester main road and approximately three miles upstream from Winchester (Figure 2.11). The cemetery is thought to have served a settlement located approximately 550m south-east, rather than any occupants of the Winchester itself (Hawkes and Grainger unpublished). The cemetery was excavated in 1961-1962 and unearthed a total of 150 burials, both inhumations and cremations. Although the northern limits of the cemetery were defined, it could not be fully excavated (due to a large driveway cutting the site). It is thought that the full extent would yield at least double the number of burials (Hawkes and Grainger unpublished: 12).

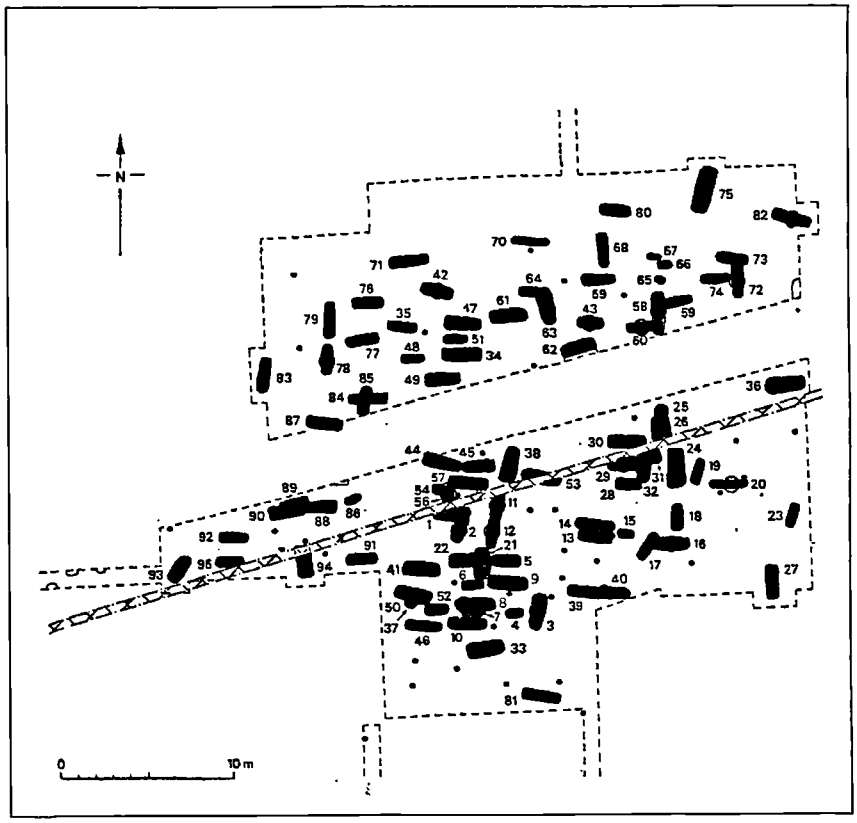


Figure 2.11: Plan of Worthy Park cemetery (modified from Hawkes and Grainger unpublished).

Closer to Winchester, just outside the eastern walls, are the cemeteries of Winnall I, Winnall II and St Giles Hill, while to the West of the city lies the West Hill cemetery (Figure 2.12). All of these cemeteries were in use during the sixth and into the seventh centuries, and therefore, largely postdate the timeframe of this study. The cemeteries of Winnall I and II have, however, been included in this study, to provide a slightly later comparison. Winnall II is the most extensive of these cemeteries with 45 individuals excavated (Meaney and Hawkes 1970).

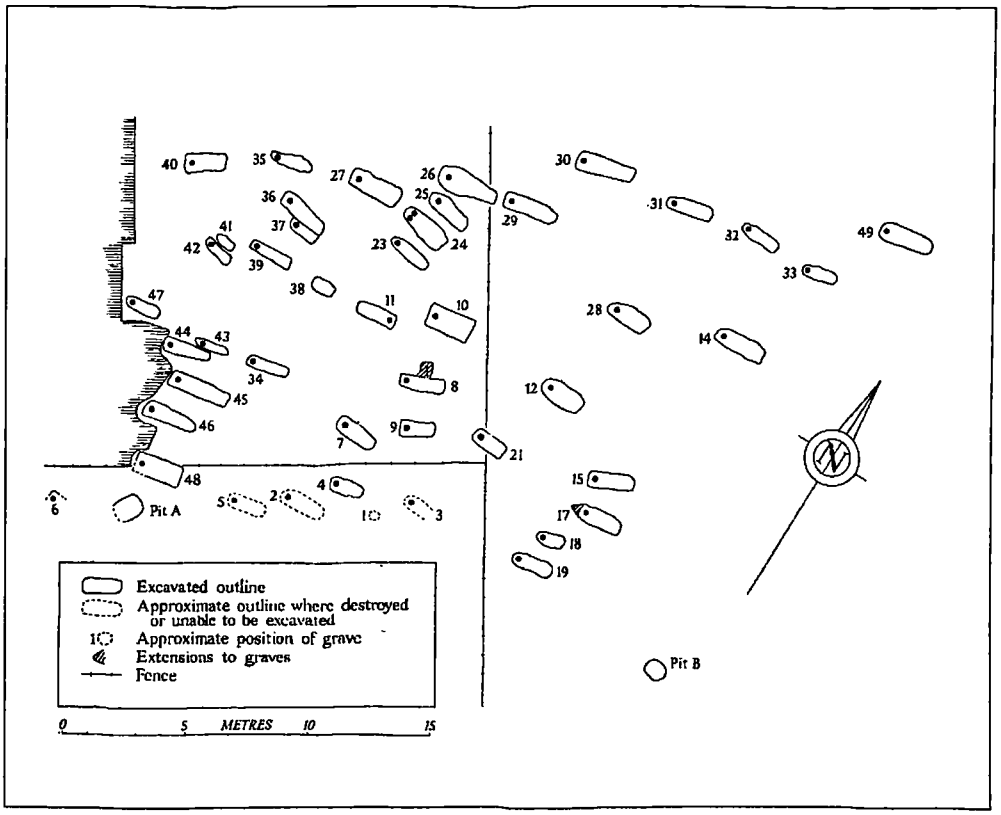


Figure 2.12: The mid-Saxon site of Winnall II (after Meaney and Hawkes 1970: 8).

Within the area surrounding Winchester, few Anglo-Saxon settlements have been excavated on any scale and this is likely to relate to the archaeological biases discussed previously. There has not yet been an intensive archaeological survey of the Hampshire region, in particular the gravel terraces, which have proved such a rich source of early Anglo-Saxon evidence in the Upper Thames Valley (Hinton 1981: 60). There does, however, appear to be a distribution of settlements and cemeteries scattered around the areas of Winchester, Andover and Droxford (Hinton 1981:

59). Excavations of an extensive settlement site at Chalton revealed a large late Roman site associated with early Anglo-Saxon pottery, suggestive of a continuity of settlement throughout the fourth to fifth centuries (Cunliffe 1973, 1976). At Church Down, Chalton, a quite extensive Anglo-Saxon settlement with substantial timber structures, thought to date primarily to the seventh century, has been excavated (Champion 1977). Similar fifth century structures have also been excavated by Millett (1983) at Cowdrey's Down in Hampshire. At the Roman villa site at Sparsholt, Hampshire, the derelict walled courtyard continued to be used as a stock enclosure and a large timber hall built in the vicinity during the early Anglo-Saxon period (Johnston 1981: 49). However, none of Hampshire's other villa sites have so far produced evidence of continued use into the fifth century (Hinton 1981: 59). As was the case in Oxfordshire, the pattern in Hampshire is similarly one of site abandonment and continuity (in site location, if not in purpose of use) throughout the fourth to sixth centuries.

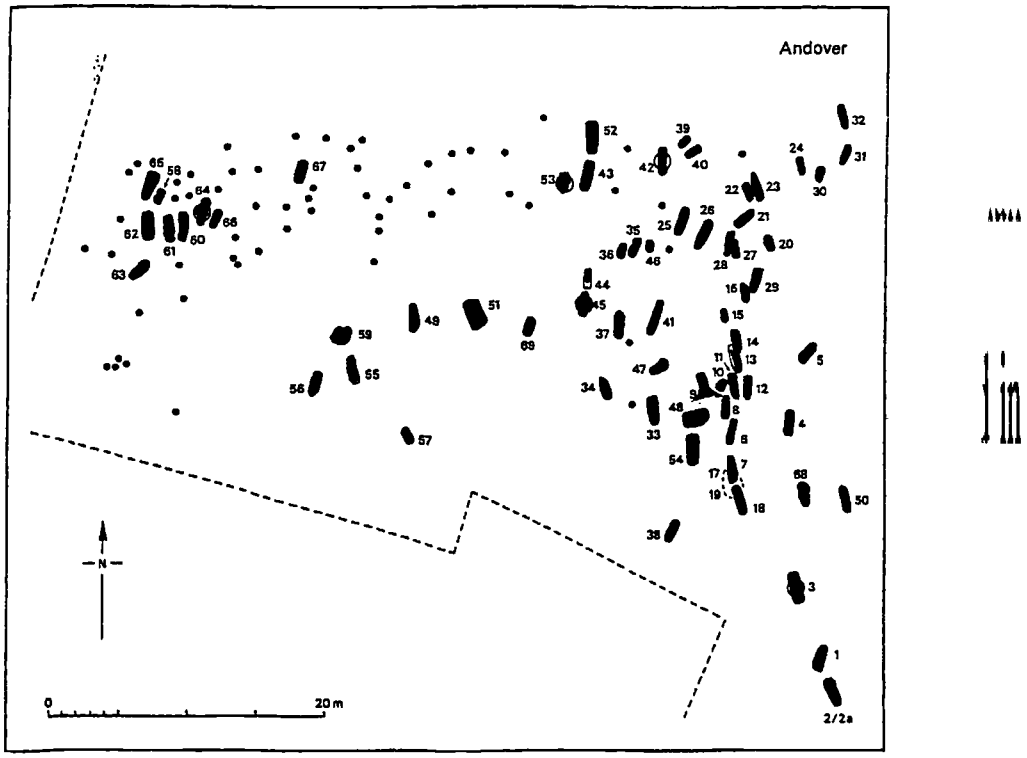


Figure 2.13: The early Anglo-Saxon cemetery of Portway (modified from Cook and Dacre 1985: Figure 13).

At Old Down Farm near Andover, six sunken-feature buildings (SFBs), presumably of Anglo-Saxon date, were found on a settlement occupied throughout the Iron Age and early Roman period (Cunliffe 1993: 289). This settlement site is not far from one the cemeteries examined in

this study: that of the early Saxon mixed cremation/inhumation cemetery at Portway, Andover (Figure 2.13). Located just to the south of a barrow complex, this early Saxon cemetery was excavated almost in its entirety and comprises 69 inhumation graves and a maximum of 87 cremations. Study of pottery and artefacts show that burial commenced about AD 500, possibly during the closing years of the fifth century and continued throughout the sixth century. In the vicinity of Portway, at the junction of the road from Winchester to Cirencester with the road from Silchester to Old Sarum, was an area of intense Romano-British activity (Cook and Dacre 1985: 3). There is a heavy concentration of villas in the area that would suggest that it was an important agricultural focus and that the cross roads were acting as a trading focus (Cook and Dacre 1985). Since the excavations at Portway, a second Saxon cemetery, probably of seventh-century date has been discovered 800m west of the Portway site (Cook and Dacre 1985: 3). Again, early Saxon sites or cemeteries tended to be located close to, if not on, sites of earlier Romano-British activity.



Figure 2.14: The early Anglo-Saxon cemetery at Alton (after Evison 1988: 125).

The final early Saxon site to be examined in this study is the mixed inhumation/cremation cemetery at Alton (Figure 2.14). Excavations in the vicinity of Alton do not suggest any appreciable gap in occupation of the area from the late Roman to early Saxon periods (Evison 1988). Alton is located at the source of the river Wey, a tributary of the Thames and archaeological evidence indicates fourth-century connections between this area and London. Alton also lies only a few miles west of the crossroads between the Chichester-Silchester road and the west-east Roman road which would have connected Alton with Winchester (Evison 1988). Therefore, while settlement of this area appears to have been sparse, the connections to trade routes were strong. It has been suggested that the small number of Romano-British objects 'mingled with Saxon possessions' at Alton indicate some sort of contact between the Romano-British and early Saxon settlers. Placed in the context of previous arguments, it is, however, possible (if not probable) that there was a continuity of people in terms of ethnic identity throughout the fourth to sixth centuries.

2.4 Fourth- to Sixth-Century Britain: Current Debates

This section discusses the above archaeological evidence in relation to broader debates surrounding the fourth to sixth centuries. From a brief review of the evidence from Oxfordshire and Hampshire it is apparent that the archaeological record of Roman Britain is dominated by structural evidence, whilst that of the early medieval period is characterised by cemeteries and grave artefacts. As Esmonde Cleary (1993b: 58) states 'until recently the archaeology of late Roman Britain has been an archaeology of the living; the archaeology of early Anglo-Saxon England has been an archaeology of the dead'. The relative paucity of funerary evidence from the late Roman period relates, in part, to the practice of unaccompanied inhumation. The absence of grave goods renders these burials less archaeologically visible and reduces the probability of the graves being discovered accidentally (e.g. during construction), or by metal detectorists. Furthermore, in the absence of stratigraphic information, the lack of grave goods from late Roman graves leads to dating problems (unless radiocarbon dating is undertaken).

This is in contrast to the abundance of artefacts (in particular metal) recovered from early Anglo-Saxon cemeteries. Conversely, the dearth of settlement evidence from the early Anglo-Saxon period is partially a result of the use of less robust building materials and pottery types that degrade more readily than those used during the Roman period. As a result, the funerary archaeology of the early Anglo-Saxon period is a well-developed area of research compared to Romano-British mortuary studies, which have contributed relatively little to archaeological

debates. Presented with structural remains from one period, and cemetery evidence from another, archaeologists are confronted with contrasting viewpoints of the fourth compared to the fifth and sixth centuries. This factor has served to exacerbate the apparent cultural gulf between these populations. Despite the change in burial tradition from the fourth to fifth centuries, it is still possible to examine age and social identity from both periods using the evidence available.

Traditional historical and archaeological narratives have explained the profound changes in the archaeological record from the fourth to sixth centuries in terms of a collapse and withdrawal of the administrative control of the Roman Empire and the large-scale influx of Germanic settlers/ invaders, who replaced, displaced, or at least came to dominate the 'native' Romano-British population. These conceptual frameworks rely heavily upon historical narratives that were generally written several centuries after the events that they describe. According to traditional frameworks, the acute alteration in material culture from the fourth to fifth centuries represents not only a discontinuity of political control and social organisation, but also a distinct shift in the ethnic identity (in terms of both biology and culture) of the island's inhabitants. The material culture identified by archaeologists as reflecting the 'Saxon' provenance of these migrants/invaders, is found across most of England by AD 475 (Higham 1992). The perceived nature of this movement of peoples has varied over the years: from those scholars who envisage a mass migration or invasion with almost no survival of the native populous (e.g. Collingwood and Myres 1937); to models of elite take-over, where a large proportion of the native population survives (e.g. Arnold 1988; Hodges 1989; Higham 1992); to more recent interpretations that argue for continuity and seek to explain change through mechanisms other than population movement (e.g. Lucy 1998, 2000; Moreland 2000).

Few archaeologists today would argue that all (or even the great majority) of the people buried in early Anglo-Saxon cemeteries were in fact Germanic immigrants or their direct descendants. Despite this, it is clear from most research that the population of fifth- and sixth-century Britain has been conceptualised as one that is culturally distinct from that of the fourth century. The extent of ethnic discontinuity during these centuries is a vigorously debated area that has dictated much of the archaeological research of this period. These debates obviously impact upon the study of social identity during this time. In order to understand the funerary evidence examined in this study within its broader archaeological context, it is important to provide a brief review of some of these issues. While it is beyond the scope of this project to give an exhaustive account of all of these debates, it is pertinent in this introduction to provide a brief overview of current

theories in relation to the archaeology of the Upper Thames Valley and Hampshire dating to the fourth to sixth centuries AD.

2.4.1 Historical Overview

The historical framework relating to the fourth to sixth centuries is based upon only a handful of historical documents and yet these have been extremely influential in directing interpretations of the archaeological evidence. None of these documents are contemporary and all have overt religious and political agendas that have clearly pre-empted a faithful recounting of past events (even were they known). According to historical evidence, imperial authority over the province of Britain did not finally cease until AD 410, when the Emperor Honorius relinquished government of the country and Roman army units were withdrawn. It is presumed that Roman government titles went on in use and that councils continued to be controlled by landowners for some time after this event (Dickinson 1979: 397). Historically it would appear that England succumbed to increasing attacks by raiders during the late fourth century, and the Gallic Chronicle refers to the continuing devastation of Britain by the Saxons into the early fifth century. This source was not recorded until AD 452, however, and may be guilty of projecting a contemporary localised situation from the continent onto a different time and place (Esmonde-Cleary 1989: 138). Despite the historical references to raiding and settlement by the Saxons, it would appear from the accounts of authors such as St Germanus in AD 429, the life of Patrick born in AD 415 and Gildas' *De Excidio Britanniae et conquestu* that a continuation of *Romanitas* in some form did occur (Higham 1992; Millett 1990: 218).

The accounts of Gildas, Bede, and the *Anglo-Saxon Chronicle* tell of invasions from the continent on a scale so massive that according to Bede, at least one region of Northern Germania was almost depopulated (Hamerow 1997). The traditional date given for the Saxon invasion/migration is AD 449/450, although Gildas' account of these invasions states that the first Germanic settlers were in fact mercenaries (known as *foederati*) hired by the Romano-British to protect them against 'barbarian' onslaught. According to Gildas, these *foederati* then turned upon their employers and with the aid of an influx of their fellow countrymen (the Angles, Saxons, and Jutes) succeeded in seizing power, displacing or enslaving the native population (Hamerow 1997: 33). On the basis of such work, scholars have attempted to identify 'invasion routes' (e.g. Leeds 1933) and a number of archaeologists have sought evidence for *foederati* in the form of late fourth- century burials with 'Germanic' elements (e.g. Hawkes and Dunning 1961). Several of the

burials within and close to the cemeteries examined in this study feature strongly in such debates (see below).

More recently such historical accounts have been the focus of critical re-evaluation and their validity as factual sources for the period that they describe severely questioned (e.g. Hanning 1966; Howe 1989; Pohl 1997). For example it has been argued that the writings of Gildas and Bede describing invasions and mass migrations of people drew heavily on biblical accounts to create a parallel origin myth for the English (Harrison 1999: 116). With regard to factual events such accounts are notoriously vague and inaccurate concerning the chronologies of early fifth-century history (Sims-Williams 1983). Bede's *Historia Ecclesiastica* was completed shortly after AD 731, and (relying heavily on the work of Gildas) describes the settlement of England by the Angles, Saxons and Jutes. As Yorke (1993) has argued, the low level of literacy during this period would have meant that it is unlikely that any detailed written information would have been available to Bede and his historical account would have depended much upon the memories of his informants and oral traditions. Indeed, any additional material that Bede was able to add to Gildas' account has been described as 'scrappy' at best (Sims-Williams 1983: 25).

Anthropological studies have shown that attitudes to the past could be very different in literate and pre-literate societies and that a historical sensibility (as we would understand it) tends not to exist without permanent records. Perceptions and recollections of past events are much more fluid in the absence of written records and are constantly shaped by concerns of the present (Yorke 1993: 46). Just as the accounts of Gildas and Bede have specific political and religious agendas, it has been similarly asserted that compilers of the *Anglo-Saxon Chronicle* wished to produce a version of a world in which West Saxon affairs could be related to events of Roman and New Testament history (Yorke 1993: 46).

Historical frameworks concerning the foundation of Anglo-Saxon England are, therefore, based on only a handful of historical sources, none of which are contemporary (some written several centuries after the events that they describe). Furthermore, these sources were not written as faithful factual accounts of past events, rather they were a means of validating distinct political or religious agendas. Despite current concerns regarding their historical accuracy, it is clear that from the late Victorian period onwards the *adventus Saxonum* has been a highly influential account (Lucy 2002: 146). This historical framework has for many years bound archaeologists conceptually and the material culture record has been interpreted accordingly. The apparent

discontinuity between the fourth and fifth centuries, and stylistic similarities of excavated artefacts with those on the continent, led Victorian archaeologists to concur with historical accounts which seemed to suggest the almost total annihilation of the native population. This view was to stay with Anglo-Saxon scholars, almost unchanged for the next century (*ibid*: 147-148). The value of these written sources, however, relates predominantly to the social climate of the time they were produced, rather than their historical merit. For example, Sims-Williams (1983: 41) has argued of Bede and the *Anglo-Saxon Chronicle* that they 'are of value only for the light they shed on early Anglo-Saxon dynastic, heroic and topographical tradition and learned historiography'. However, so resonant are these historical sources that even those scholars who profess to reject their 'monolithic structure' continue to interpret the archaeology of the fifth century as the product of either Germanic groups or Romano-British refugees (e.g. Arnold 1984).

While the concept of invasions as described by Gildas and Bede has been re-evaluated in more recent years by those envisaging a less aggressive influx of peoples from the continent, opinion is still divided over the scale of these migrations, or whether they occurred at all. Relatively recently, however, the traditional historical framework has been challenged and the validity of the Roman/Anglo-Saxon deconstructed. The profound shift in material culture from the fourth to sixth centuries clearly demands an explanation. However, one that does so purely in terms of a replacement, or displacement of peoples (to whatever degree), clearly lacks a critical appreciation of the complexities of social behaviour.

2.4.2 A Question of 'Transition'?

The division of the past into specific time periods has proved to be a useful disciplinary tool, in terms of both the interpretation and the practice of archaeology. By focusing on archaeological evidence either side of the traditional Roman/Anglo-Saxon divide as well as that which elides it, this study becomes entangled in the theoretical baggage that is attached to such periods of 'transition'. The notion of 'transition' in itself has been subject to a degree of criticism and deconstruction in recent years (e.g. Halsall 1995; Harrison 1999). It has become clear that such classificatory systems are not simply passive, descriptive mechanisms. Temporal divisions in archaeology have, to some extent, actively shaped perceptions of the past so that interpretations become self-perpetuating and archaeologists have become constrained by paradigms of their own creation (Jones 1997: 139).

The problem of periodisation is particularly evident with respect to the chronologies of the fourth to sixth centuries. This factor has been discussed by Harrison (1999) in relation to brooch typologies and ethnic identity in eastern England and by Halsall (1995) with respect to social identity in Merovingia. The concept of 'transitions' must exist within a linear, evolutionary framework, because periods of transition can only be recognised after completion– once the next stage has been attained. The term 'transition' is important in imparting a particular perception of the fifth and sixth centuries; it presents an image of something incomplete, struggling between one form and another, possessing no definable characteristics of its own, just vestiges of times past and promises of things to come. The fifth and sixth centuries are consequently conceived of as a mosaic of other times rather than a time in itself: conceptualised as a population traumatised from the collapse of Roman authority, bumbling towards the formation of kingdoms that would define the seventh century.

The situation of fifth-century Britain is exacerbated by problems of dating. At the beginning of the fifth century (AD 411) coin production in Gaul and its export to Britain ceased. As a result the dating of particular ceramic phases during this time becomes difficult (Henig and Booth 2000: 178-9). It has been argued that coin cessation may have resulted in a compressed pottery chronology, because ceramics spanning the fifth century are dated to just the first few decades when assemblages can be securely coin-dated (Whyman 1993). The accurate dating of archaeological features in the fifth century is currently problematic (Dickinson 1979: 27; Esmonde Cleary 1989: 141), although absolute dating techniques may help to resolve some of these issues.

The current chronology of early Anglo-Saxon archaeology has been based on the typology of grave goods and their stylistic similarity to those of continental origin (Giller 1993: 5; Dickinson 1979: 24). Because these chronologies are based upon historical accounts of the migrations, it is not possible for Anglo-Saxon material to be dated prior to the historical date for this event *(Millett 1990: 219). Within such a self-supporting framework, dates provided by artefacts will lend credence to the chronology of particular historical events, when it is in fact these very events that produce the chronologies upon which such artefact typologies are based. What we are left with is something of a chronological paradox.

* Although the use of radiocarbon dates does have the potential to solve this problem.

When we talk about a transitional period, very specific archaeological themes predominate, ones that rarely feature when one is comfortably ensconced within the parameters of single time period. These most notably include:

a) The identification of indicators of continuity or discontinuity between the two periods, and
b) The identification of natives/incomers through material culture.

2.4.2.1 Continuity or Change?

Issues of continuity, discontinuity, or non-continuity (Reece 1989) have been central to discussions of the fifth century. The archaeological evidence for discontinuity would appear to be overwhelming and for many years the fifth century was understood to have undergone a complete and brutal social and material rupture from the previous century. However, more recently authors have emphasized the increasing evidence for continuity in the archaeological record during this time. Several of the sites in Dorchester-on-Thames and Winchester discussed above have played pivotal roles in debates concerning continuity/discontinuity between the late Roman to early Anglo-Saxon periods.

By the late fourth century, the majority of towns such as Winchester no longer supported urban functions, and most villa sites indicate abandonment, or at least a period of discontinuity in occupation. A few sites occupied during the fourth century continued in use into the fifth century (e.g. Dorchester-on-Thames) and many early Anglo-Saxon settlements appear to occupy areas that were in use during the fourth century. Site abandonment during the late fourth century is clearly a fate of the majority. However, a small number of fourth century sites display a clear break in activity, with the site abandoned and re-occupied later.

This pattern of continuity, site abandonment and re-occupation, and settlement shift is not easily understood within traditional concepts of the Roman and Anglo-Saxon periods. It has been argued by Taylor (1982) that this pattern, rather than being a characteristic of the transition towards the early Anglo-Saxon period, is a feature of the landscape at any given moment in time. One cannot deny the almost revolutionary change in material culture that occurred in a relatively short period of time during the late fourth to early fifth century. However, the search for continuity between periods actually denies the extent of change that occurs within them. For example, from the second century AD there was a massive shift in burial practice from cremation

to inhumation and a significant decline in urban functions with a shifting economic emphasis on the countryside. While the complete removal of a Roman administrative role appears to have acted as the catalyst for an almost complete collapse (Millet 1990: 221), this process was clearly already underway. It is possible that internal factors (unconnected to the withdrawal of Roman administrative control or an influx of continental migrants), may have contributed to urban decline (Lucy 2002: 161).

The perception of a static homogeneity either side of the Roman/Anglo-Saxon divide is a perception that is clearly not supported by the archaeological evidence which demonstrates a constant state of mutation. Because periodisation effectively arrests time, the homogeneity of experience within a particular period tends to become assumed and social organisation and norms perceived as static (Olivier 2001). Cultural change within such a framework is emphasised only upon the shift to another time frame. A parallel can be made between the division of the past into time periods and the division of the life course into age groups. Likewise, individuals within age groups are perceived as sharing similar characteristics (see Chapter 1), with a change in identity only occurring with the transition to an older age group (e.g. the transition from 'childhood' to 'adulthood'). Although events during the late fourth to early fifth centuries may have conspired to accelerate social change, these occurred within a society that was by no means static.

In terms of fifth-century settlement in the Upper Thames Valley and Hampshire, the relative invisibility of Anglo-Saxon sites within the archaeological record presents us with a very incomplete and biased picture. Over the past few decades, with the increasing accessibility of more sophisticated archaeological techniques and the increase in professional developer-funded excavations, there has been a dramatic increase in the number of early Anglo-Saxon settlements recorded. This corresponds with a similar increase in the number of non-villa type Roman rural settlements, a type of site that suffers from a similar under-representation. It would seem that despite the collapse of urbanisation, no similar 'rupture' is apparent amongst the rural populous and the archaeological evidence suggests that they were able to continue their agrarian pursuits relatively unscathed (Hines 1995: 76). Environmental evidence would appear to corroborate this, and pollen records generally indicate continuity in both intensity and purpose of land-use (Bell 1989; Dark 2000)

Furthermore, the 'continental' provenance of the architecture of early 'Anglo-Saxon' timber-framed structures is no longer seen as distinctively 'Germanic' (Moreland 2000: 41), and research

indicates that stylistically they owe much more to native building traditions (Dixon 1982: 278). The apparent discontinuity in building type appears to have more to do with a relative lack of evidence concerning the vernacular architecture of the late Roman period. What is clear is that architecture during the fifth and sixth centuries does not manifest any of the previous social differentiation; instead such displays appear to have switched from settlement to burial. The archaeology of late Roman Britain demonstrates specialisation by occupation, and status positions linked to the imperial hierarchy; such positions demand social reinforcement through the material trappings of power. By contrast the evidence for early Anglo-Saxon society, with the collapse of the official positions of the *Romanitas*, suggests a far lesser degree of scale, hierarchy and specialisation. Evidence from their settlements, structures and their cemeteries is that their chief social units were the family and kin (Esmonde-Cleary 1993: 60). As such, social distinction becomes the domain of burial ritual with cemeteries becoming much more differentiated by age, gender, and status from AD 500 onwards.

2.4.2.2 Ethnic Identities

The marked change in material culture from the late fourth to early fifth centuries has been perceived by many to be the result of a strong 'Germanic' influence (although as discussed previously, disagreement exists regarding the extent to which this represents a physical movement of Germanic peoples). The result of this is that archaeologists have created a dichotomy of peoples and there is a preoccupation with identifying 'Romano-British' versus 'Germanic' individuals. During the early part of Roman power in Britain, there is a similar division of the populace into 'native' and 'Roman'. Within archaeology these identities are forged through a perceived opposition between groups and the monolithic character of those on either side. This construction has dictated the investigation of this period and resulted in a preoccupation with ethnic markers (both skeletal and artefactual), often to the detriment of an understanding of social identity and processes (e.g. age and gender organisation). For example, Roman archaeologists frequently attempt to identify 'natives' through burial practice, as opposed to those buried with indicators of a 'Romanised' lifestyle. In the late fourth to fifth centuries there is a similar concern with identifying intrusive 'Germanic' elements (see below). What becomes apparent in studies of the fourth to fifth centuries is a shift in the concept of 'native' from representing *non*-Roman peoples, towards *non*-Germanic peoples. Native is defined in the negative and the same word encompasses two very different definitions of peoples, the only actual difference being time. 'Romanised' items of material culture consequently shift in identity from signifying the incomer, to signifying the indigenous. What has altered here? Not the

material culture, or the people, but only it seems the largely artificial framework within which archaeologists work.

Several attempts have been made to try to identify an Anglo-Saxon presence in fourth-century Roman Britain through the presence of Germanic items of material culture (e.g. belt sets) within late fourth-century and early fifth century graves. For example, in his study, Clarke (1979: 378-403) identified two groups of burials from Lankhills that were interred with cross-bow brooches as 'intrusive'. Clarke (*ibid.*) argued that these individuals were imperial officials from Hungary, and he identifies a second group buried with belt sets as early Anglo-Saxon military or official settlers (*laeti*). On the basis of the Lankhills burials, Biddle (1976: 325-6) has also argued for a strong Germanic element in the population of the Winchester area in the fourth century. Cooke (1998: 225) suggests that these claims are substantiated by a wall painting from within a tomb at Silistra, where a servant or mourner is shown carrying the military belt of the deceased to the grave, whilst the deceased himself is shown wearing a cloak held together at the right shoulder by a cross bow brooch (Cooke 1998: 255).

The classification of metalwork in terms of ethnic identity is a common feature of more traditional studies of the fifth century (e.g. Hawkes and Dunning 1961; Hawkes 1986), although this practice has been criticised by a number of authors (e.g. Lethbridge 1956; Hills 1979; Lucy 1998, 2000). A prime example of this is the burials at Dyke Hills near Dorchester-on-Thames that are of a different burial tradition from the usual unaccompanied late Roman inhumations (Kirk and Leeds 1952/3). The burials in question consist of graves with belt sets (Dickinson 1979: 387) and graves with jewellery dating to the early to mid fifth century (Kirk and Leeds 1952/3). The male burial at Dyke Hills had a range of copper alloy belt fittings of fairly standard late Roman type and also, more questionable evidence for weapons. The date of these burials has been assigned to the first half of the fifth century and similar burials have been excavated from elsewhere in the country, for example at Mucking and Milton Regis (Hawkes 1989).

These are amongst the most discussed burials in early Anglo-Saxon archaeology. Hawkes and Dunning (1961), for example, drawing upon parallels from Gaul, have proposed that they represent evidence of an early Germanic military presence in the form of *foederati*. These were bands of barbarians who entered the empire under a treaty arrangement, and retained their ethnic identity, methods of fighting, and leaders (Esmonde Cleary 1989: 6). It is argued that these *foederati* were then in a favourable position to assume political control during the break down of

Romano-British power in the late fourth to early fifth centuries. It has been suggested that Dorchester became a settlement of Germanic *foederati* who had, by the middle of the fifth century, assumed sole political control and had begun to expand and consolidate Saxon settlement in the area. These Germanic usurpers were envisaged to have asserted their culture (material and otherwise) over the native Romano-British population that, while maintaining some British elements, was largely subsumed by the dominance of the Germanic settlers (Dickinson 1979: 447). Such interpretations owe much to the writings of Gildas discussed previously.

Barbarians were apparently used in all levels of the army throughout the fourth century; however, there is no evidence that Germanic units reinforced Britain. Because these elaborate belts sets were found in Germanic graves on the continent and in fifth century graves in Britain they have been considered to be items of Roman manufacture, but to barbarian taste for issue to Germanic troops. It has more recently been argued, however, that this assertion is totally without foundation (Millett 1990: 216) and the classification of the art style as 'Germanic' has also been brought into question (Leahy 1993: 30; Lucy 2000: 167). It has been pointed out that these belts were the standard insignia of office of later Roman civil as well as military officials, no matter what their ethnic origins (Esmonde Cleary 1989: 191). While a specific identity may be inferred from the appearance of belt sets, they do not necessarily reflect an ethnic identity (Moreland 2000: 30).

Similarly, the presence of fourth-century objects in Anglo-Saxon graves is often used as evidence of an early Anglo-Saxon date, close relations between Anglo-Saxons and Britons, or even the British origin of the person buried (Dickinson 1979: 240). Archaeologists have also suggested that certain burial positions or orientations are also indicative of the ethnic origin of the deceased. For example, east-west orientation, tightly flexed, prone, or decapitated burials as well as dress assemblages containing Roman artefacts, or items worn in a Roman fashion (e.g. single shoulder brooches) might indicate that the deceased was of Romano-British descent (O'Brien 1999). By contrast the burial of males with weapons and females with matched pairs of brooches worn on the shoulders has been interpreted as a distinctive Germanic practice (Brush 1993: 46).

Dickinson (1979) found an association between the location of the burial in which these objects are found and the presence of adjacent Roman sites. For example, a large quantity of Roman material from an Anglo-Saxon cemetery may well relate to the presence of a nearby abandoned villa. Another method whereby ethnic identity has been examined is through the identification of classes of fourth-century objects of Roman manufacture but in a 'Germanic' style. For example,

some pottery types were believed to have been manufactured using Roman techniques but incorporating 'Germanic' decorative motifs (Myres 1956). The ethnic inferences made on the basis of these 'barbarian-style' pots was questioned by Hills (1979: 308) and subsequent reassessment of this pottery suggests that it is in fact standard late Roman provincial ware with no ethnic overtones (Gillam 1979). In fact it would seem that a number of art styles that have been classified as Germanic in origin do not actually have continental parallels, and instead are more closely aligned to late Roman provincial styles of decoration (Lucy 2002: 167).

Artefacts are thus interpreted in terms of the ethnic identity of the wearer, or as a direct measure of ethnic interaction in a rather simplistic manner. Continental influences in art style do not, of course, dictate that those who wore such objects were of Germanic origin. Similarly, the presence of Roman objects in graves dating to the fifth and sixth centuries does not necessarily reflect a Roman identity or aspiration towards *Romanitas* (for a more detailed critique see Lucy 2000: 163-173). As the above shows, the approach towards much of the archaeological evidence relating to the fifth century has been culture-historical in nature, by the almost direct substitution of pots for people (Hills 1979). Such an approach is dubious and it has been argued that 'in culture-history, Archaeology's subservience to History is reproduced' (Moreland 2000: 29). Rather than taking such a direct culture-historical approach to the data, archaeologists are now appreciating the fact that the distribution of particular artefact styles may simply relate to trade, exchange systems, or reflect a penchant for new decorative objects and motifs. Shifts in material culture styles need not necessarily indicate the actual *en masse* movement of peoples (Brush 1993: 50). As Lucy (2000: 181) has stated:

> 'we cannot any more assume that people moved, on the basis of standard interpretations of history and archaeology. Such things must be demonstrated, by showing a series of links between different areas both in terms of material and, more importantly, in the ways in which that material was used'.

Instead the active (and sometimes subversive) role that material culture plays in the formulation and expression of past social identities is now being explored. Archaeologists are also more ready to diverge from the historical evidence in their understanding of fourth- to sixth-century material culture and skeletal information.

> 'The fire and sword scenario painted by many for the adventus saxonum is unlikely to have occurred; there was no confrontation between coherent, homogenous Anglo-Saxons and an equally coherent and homogenous British 'people' in a few cataclysmic years' (Moreland 2000: 38).

2.5 Conclusion

Our pre-occupation with ethnicity during the fourth to sixth centuries has perhaps blinkered us in our interpretations of the archaeological record of this time. As Esmonde-Cleary (1993: 57) states:

> 'If we redefine the debate to centre around issues of identity rather than race, then the important question becomes: why do material culture, associated practices and the identities on which these reflect, change between the fourth and seventh centuries?'

It is identity that is the focus of this research. By studying age and gender identity at cemeteries on either side of the Roman/Anglo-Saxon divide, this research aims in some way to elide the more dominant ethnic discourses that have structured the archaeological agenda of this period. By examining the same type of archaeological context (cemetery evidence) from both periods, the material gulf between the fourth to sixth centuries becomes slightly less stark. This is, in part, because we are not addressing the excavation biases relating to Roman settlements versus Anglo-Saxon cemeteries.

This chapter has aimed to establish the archaeological setting for both the area of study and the debates concerning this period. The aim of this research, however, is the study of identity, more specifically that of age. While acknowledging that the fourth to sixth centuries is a contentious academic area, this study does not intend to become too embroiled in debates concerning ethnicity, or constrained by 'transitional' perspectives. Rather, it is the construction of age identity and the way that this contributes to social identity and organisation, as expressed in the burial context, which is of prime importance. The representation of identity from the burial context is also far from straightforward and before proceeding with the analysis of the cemetery evidence, the following chapter intends to establish the most appropriate theoretical approach to the funerary data.

Chapter 3

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Funerary Archaeology of the Fourth to Sixth Centuries

3.1 Introduction

The funerary context is an important archaeological resource in that it provides a unique and valuable link between the physical remains of past peoples, and the material, cultural, context of their burial environment. Since the antiquarian activities of the eighteenth and nineteenth centuries, funerary remains and the ritual trappings of death have captured the imagination of treasure hunters and archaeologists alike. Funerary evidence has always played an important role in structuring archaeologists' ideas about past cultural identity, and has provided significant contributions to our understanding of past expressions of gender, ethnic and status identities. The interpretation of archaeological funerary remains has undergone numerous major developments over the course of the last century in response to the changing theoretical climate of archaeology. Several authors have summarised this theoretical progression and its impact on funerary analysis in recent work (e.g. McHugh 1999; Parker-Pearson 1999: 21-44). To avoid repetition, this chapter will focus primarily on previous funerary research concerning the fourth to sixth centuries AD. This chapter aims to provide a review of previous approaches to late Roman and early Anglo-Saxon funerary remains and to identify any methodological or interpretative shortcomings. From this basis, a theoretical approach has been developed for the examination of social identity from the cemetery sites discussed in the previous chapter.

3.2 Fourth- to Sixth-Century Funerary Archaeology: An Overview

The approach to Romano-British funerary evidence has tended to differ from that of the Anglo-Saxon period. As discussed in Chapter 2, funerary remains have been one of the least exploited forms of archaeological evidence in Romano-British studies and have been described as something of a 'blind spot' (Esmonde Cleary 1993b: 59). This predicament stems in part from the impoverished material condition of the vast majority of late Roman graves (Pearce 1999: 34). Grave good deposition within most Romano-British cemeteries is both infrequent and ungenerous, and burial practice apparently uniform and undifferentiated. This is in stark contrast

to the lavish displays of wealth, hierarchy, specialisation and power exhibited in settlement evidence (Pearce 2000: 1). In contrast to the Romano-British period, early Anglo-Saxon archaeology has been dominated by the study of cemeteries. Burials from the fifth century onwards were relatively rich in artefacts, a factor that serves to increase their archaeological visibility and interpretative potential. During the early Anglo-Saxon period the burial context becomes one of the most important mediums for social display.

The practice of unfurnished inhumation during the later Roman period also creates dating problems. The lack of any distinguishing features means that many graves of probable late Roman date remain unidentified. This is particularly likely in rural contexts where grave monuments are fewer and burials may be isolated or in small groups. This factor contributes to the disparity in numbers between the Roman and Saxon burials.

The general trend in Britain was for inhumation to replace cremation as the dominant burial practice at some point during the late second to early third century (Jones 1987; Philpott 1991). It has been pointed out by Pearce (1999: 34), however, that inhumation burials still account for a significant proportion of early Roman burials, particularly in rural areas. For example, inhumation was the majority burial practice of early Roman Dorset, and Pearce (*ibid.*) suggests that this is probably true of other counties with few cremation burials and a high proportion of undated inhumations. Nevertheless, during the late Roman period it is clear that there is a general increase in the proportion of the population that was inhumed. Cremation was also practiced in significant numbers during the early Anglo-Saxon period and several of the cemeteries examined in this study consisted of both inhumed and cremated human remains.

The largest cemeteries known from the late Roman period are attached to major towns and these are the most intensively studied type of Roman burial (Esmonde-Cleary 2000: 128-129). Large cemeteries consisting of standardised burials were placed outside, but close to the city walls, usually sited adjacent to the major roads into and out of the city. By doing so, upon entering a town, the dead were the first to be encountered. Only infants were permitted burial within the towns, a factor that is frequently borne out by the archaeological evidence (Kjølbye-Biddle 1992: 212). The dead clearly occupied an important place in the overall urban planning and specific areas were set apart for their burial.

The inhumation cemeteries known from the early Anglo-Saxon period tend to be located close to settlement sites, but are much smaller in size and show considerable variability in terms of grave contents and alignment. As a result of this variability in burial practice there is much more scope within the Anglo-Saxon cemetery context for analysis and interpretation. Consequently, Anglo-Saxon funerary archaeology tends to be much more theoretically advanced than Romano-British cemetery studies. An outline of the various approaches to the analysis and interpretation of cemetery evidence from both is presented below.

3.2.1 The Culture-Historical Approach

Studies of Romano-British burial practice have tended to focus on issues of ethnicity and religion (e.g. Clarke 1979; Thomas 1981; Watts 1989, 1991; Cooke 1998). A number of studies have charted the influence of Romanisation on Iron Age burial practices during the early Roman period, and distinguished 'intrusive' Germanic elements during the latter stages of the Empire (see Chapter 2). Although funerary material has played only a small part in 'Romanisation' debates, it has often been used to determine 'native' or 'Roman' identities (e.g. Clarke 1979: 377-403). It has also been noted that in comparison to most aspects of life, the Romanisation of burial practice was relatively delayed (Pearce 1999: 162). Such studies have made overt use of the culture-historical approach to material evidence in that they tend to invoke a direct relationship between associated grave goods and ethnic identity.

The culture-historical approach is also exemplified in many studies of early Anglo-Saxon cemetery evidence. The majority of early Anglo-Saxon cemetery analyses have (until recently) focused almost exclusively on grave goods and in common with Romano-British studies have sought to identify and chart 'intrusive' ethnic elements, this time those of 'Germanic' origin (Lucy 1998: 25; Stoodley 1998: 11). The direct association between grave goods and social identity embodied by the culture-history approach has, however, long been questioned (e.g. Lethbridge 1956). So resounding does the logic of this approach appear to be though, that archaeologists continue to chart the progress of invaders across Britain in the fifth and sixth centuries through direct associations of artefact styles with ethnicity (Lucy 1998: 19).

Within the culture-historical approach there was also a tendency to explain all cultural change in terms of movement of peoples (Lucy 1998: 13). For the early Anglo-Saxon period, such work has been criticised for (amongst other things) its reliance on historical frameworks shown to be

inappropriate for analysing archaeological material (Lucy 1998: 16). It was argued by Dickinson (1979) that the culture-historical approach within archaeology was limiting the type of questions being asked. Similar to Romano-British funerary studies, these also focused on issues of ethnic identity. Within the culture-historical framework there were few studies that explored the relationship between the living and the dead beyond that of ethnic markers. It was not until the 1970s that a more explicit theoretical framework for examining social identity and organisation from the funerary domain was developed.

3.2.2 New Archaeology and Processualism

During the early 1970s, working within the structural-functionalist framework of New Archaeology, Saxe (1970) and Binford (1971) produced a number of universal, cross-cultural laws for the interpretation of funerary remains. Drawing heavily upon social evolutionary models, these laws stated that burial practice would consistently and predictably reflect and reproduce the social organisation of the burying society. In this model, the degree of mortuary variability within a cemetery was regarded as being directly related to the level of social complexity in the living society. For example, a uniform burial practice was indicative of an egalitarian society, while cemeteries with numerous differentiated burial practices were the product of greater social complexity. Furthermore, the amount of 'energy expended' in the treatment of the deceased was believed to vary in direct relation to their social position (Binford 1971: 15).

This work presented a theoretical framework where for the first time the archaeological record could be analysed and quantified to make direct inferences about past societies. The attractions of such an approach meant that this work was highly influential and dominated the study of social identity from cemetery evidence for many years. Much subsequent mortuary research was heavily pre-occupied with the identification of social hierarchies, and in particular, the interpretation of wealth associations in terms of 'rank' and 'status' (e.g. Binford 1971; Brown 1971; Peebles 1971; Peebles and Kus 1977; Saxe 1970, 1971; Shennan 1975; Tainter 1975, 1978). Status, it was argued, was measureable through mortuary variables such as grave goods, thus allowing burials and cemeteries to be ranked in relative sequences over time in order to chart social development. By assigning scores to grave goods (e.g. Arnold 1980), 'energy expenditure' and hence status could be made quantifiable in a manner that allowed for comparisons between cemeteries and regions.

Although some proponents of this approach objected to particular aspects of evolutionary models being applied in this manner, it is clear from their work (e.g. Tainter's 1978 energy expenditure model) that they fully embraced the fundamental principles (Pader 1982: 60). This approach to funerary ritual by American scholars proved to be highly influential in the UK and the identification of societal hierarchies through wealth scoring was adopted enthusiastically. Early Anglo-Saxon cemeteries in particular, with their numerous grave goods, were particularly vulnerable to such analyses (e.g. Arnold 1980; Hirst 1985). This is exemplified by Arnold's (1980) wealth scoring approach, whereby each grave good in a cemetery was assigned a score, the sum of which allowed each grave to be ranked accordingly. Subsequent interpretations concerning status, social complexity, and change were then derived from these vertically ranked hierarchies.

The majority of large-scale studies of Romano-British funerary evidence have also been conducted within a processual framework. For example, Jones's (1983, 1984) survey of third-century cemeteries in the Western provinces is the most extensive application of a processual approach to Roman period burial evidence. In common with other processual studies of funerary evidence its focus lay primarily with the status dimension of identity (Pearce 2000). The purpose of many Romano-British funerary studies appears to have been the amalgamation and comparison of material from sites across Britain (e.g. Philpott 1991). Often this information is then compared and contrasted with evidence from contemporary continental cemeteries in order to examine the nature of Romanisation throughout Europe (e.g. Jones 1983, 1984; Cooke 1998).

The largest study of burial evidence from Roman Britain was the work of Philpott (1991). This work was invaluable in drawing together a vast body of burial data, and included details of almost all aspects of burial practice from coffins, body positions, and the whole gamut of grave goods. While providing a useful synthesis, the actual analysis and interpretations undertaken by Philpott (1993) have been criticised for being severely limited (Jones 1993). Cooke's (1998) unpublished thesis also deals with a number of large fourth-century cemetery sites in England. It explores the sex and age related patterns in grave good deposition and compares findings with cemeteries on the continent. Although a useful comparison, again this work is limited with respect to its approach and manipulation of the data. In general, studies of Romano-British funerary practice tend to focus primarily on artefacts and their geographical distribution rather

than detailed examination and interpretation of individual cemeteries. This is primarily a result of research driven by an emphasis on the chronology and distribution of *Romanitas* rather than an exploration of provincial social identity.

In summary, both implicit and explicit in the processual approach to funerary archaeology was the notion that funerary ritual presented a passive reflection of the burying society. This approach was intent on the identification of cross-cultural economic paradigms and as a result the possible idiosyncrasies invoked by various belief systems were necessarily de-emphasised (Carr 1995; Shepherd 1999). Such factors were essentially dismissed as 'cultural noise', which interfered with (but did not alter) the universal status of ritual code. In contrast, much ethnographic work was at the same time acknowledging the role that belief systems played in burial ritual, and the extent to which these could and did present a subversive image of prevailing social norms (e.g. Ucko 1969; Huntington and Metcalf 1979; Bloch and Parry 1982). Furthermore, many anthropological studies demonstrated the disparity between the reality of social organisation and the idealised representation of it during funerary practice. Such incongruity, it was argued, was partly a factor of the *conservative* nature of ritual (Pader 1982: 37). In the face of this research, the objective and quantitative approach to funerary evidence that had been promoted by New Archaeology started to appear much less convincing.

3.2.3 The Post-Processual Critique

From the early 1980s onwards, considerable criticism was leveled at much of the processual inspired work in funerary archaeology. The assumed objectivity of New Archaeology was questioned: 'quantification does not necessarily produce objectivity only its aura' (Shepherd 1999: 7). Instead, influenced by the symbolic, structural framework of ethnographic approaches, scholars such as Pader (1980, 1982) and Hodder (1980, 1982) placed a much greater emphasis on the importance of *ideology* in the structuring of mortuary practice. They argued that burial ritual could not be reduced to the sum of energy expended and the economic value of the goods interred, but needed to be understood in terms of the symbolism of individual identity, social organisation, and belief systems. Furthermore, they argued that one could not hope to understand the symbolism expressed in burial ritual without recourse to the ideological dimension of funerary practice within a specific society: 'Whenever a sign is present ideology is present too' (Pader 1982: 13).

Under a barrage of post-processualist criticism, scholars such as O'Shea (1984) and Chapman and Randsborg (1981) (while continuing to hold true to the fundamentals of the Binford- Saxe approach) increasingly acknowledged that cultural ideologies may distort social reality in burial. However, as Shanks and Tilley (1987: 43-44) point out, rather than addressing or theorising about such behavioural aspects, they tended to treat ethnographic 'anomalies' merely as cautionary tales. Ultimately a true understanding of individual cultural identity within a processual approach to burial practice was sacrificed in favour of creating overarching generalisations and the search for an underlying body of theory.

Within early Anglo-Saxon funerary archaeology, the work of Pader (1980, 1982) and Richards (1987) was instrumental in developing the symbolic, structural perspective. This approach moved away from Arnold's (1980) scoring of grave goods, instead seeing grave inclusions and burial practice as a cultural language. Contrary to the processualist stance, it was now argued that material objects were imbued with symbolic meaning that sprang from a *specific* cultural ideology, and as such they could not be 'read off' in any direct way, nor could they have universal significance. As Richards has stated '...the meanings of symbols are not intrinsic to them. They become established through cultural tradition; one reads meaning into, not out of, a text' (Richards 1995: 54). It was argued that material culture did not passively reflect contemporary social or economic circumstances, but could distort social realities, concealing or highlighting inequalities, and becoming an active means through which social interaction took place through conscious choices and agenda (Hodder 1980, 1982b). This concept of an individual as 'active agent' also represented a significant departure from processual approaches. In previous analyses, the social structure had assumed an importance that made individual agency inconsequential; people were essentially made powerless and conceptualised as passive cultural dupes. The past for processualists had been defined not by people, but by their structural positions in society (Cohen 1994).

Within a post-processual framework, the economic transience of material symbolism was also acknowledged. An object is not rigid in either its meaning or socio-economic value (Bradley 1988). Instead this may fluctuate over time and with context. This related not only to the context of the burial environment, but also to the gender, age and status of the interred. For example Pader (1982: 59) argues that where an object is associated primarily with a particular sex, the appearance of it within the grave of the opposite sex may make it more significant. Within the

parameters of the 'wealth approach' described earlier, such significance would be rendered invisible. Furthermore, the post-processual approach to funerary archaeology acknowledged that the rules governing the dress of the dead may be very different from those operating amongst the living. Despite such critiques, the wealth approach in the examination of social status continues to be used, albeit in a more cautious manner, to draw conclusions regarding social status (e.g. Stoodley 1999b).

Pader's (1980, 1982) work in Anglo-Saxon archaeology was instrumental in bringing about a change in the approach to interpreting cemetery evidence. This work has, however, since been criticised on methodological grounds by other Anglo-Saxon funerary scholars. For example, Brush disputed its adoption of broad artefact categories and ignorance of much of the typological variation (Brush 1993: 4) and Huggett (1996) took issue with the statistical analysis. It was, however, theoretically pioneering work and Anglo-Saxon funerary archaeology, in particular, has since tended to emphasise the symbolic nature of material culture, most notably in the work of Härke (1990, 1992), who has explored the symbolic nature of the Anglo-Saxon weapon burial rite (see below).

By contrast, there have been very few large-scale, post-processual inspired analyses of Romano-British burial evidence and indeed funerary studies of this period have been far from innovative. This is a factor that has been lamented by several authors (e.g. Jones 1993). One of the few 'post-processual' approaches to Romano-British mortuary evidence on any significant scale is the work by Pearce (1999). Pearce undertook a contextual analysis of rural and urban burial sites, with a greater emphasis on spatial analysis that had hitherto been attempted. In doing so he was able to question some previously held generalisations concerning shifting burial trends, the appearance of 'managed' cemeteries, and supposed 'Christian' versus 'Pagan' cemeteries. A number of smaller studies have also adopted a more post-processual approach to the study of Romano-British mortuary remains (e.g. Scott 1991; Esmonde-Cleary 2000). These studies have again tended to focus on spatial context and symbolism. For example, Esmonde-Cleary has been examining the close physical association and alignment of burials with ditches and has suggested that these are more purposive and symbolic than had previously been recognised (Esmonde Cleary 2000: 139). Eleanor Scott (1991, 1992) has examined the burial ritual surrounding infants on settlements and suggests that their spatial relationship to agricultural features represents gendered negotiations by women over aspects of economy and production.

In summary, burial treatment within a post-processual perspective was no longer seen as a passive, direct reflection of society. Instead, burial ritual became invested with the potential to present an indirect and possibly subversive representation of society, with meaning filtered out through a series of ideologically conditioned symbolic codes. Because of the emphasis on ideological processes in post-processual archaeology (including the structural Marxist approach), historical and cultural contexts were subsequently granted a hitherto unrecognised importance in all periods of archaeology (e.g. Pader 1980, 1982, Shanks and Tilley 1982, Shennan 1982, Bradley 1984, Whittle 1988, Barrett 1990, Brush 1993, Pearce 1999).

3.2.4 Post-Structuralism

More recent research in funerary archaeology (particularly that of the early Anglo-Saxon period) has been influenced by the work of Giddens (1984) and Bourdieu (1977). Giddens' (1984) structuration theory differs from previous structuralist approaches in that while it recognises structured elements of society, the action of individual agents in the reproduction or recreation of these structures is stressed. One of the leading proponents of this work in archaeology has been Barrett (1990, 1994) who used Giddens' work in his examination of Neolithic funerary monuments. Within this framework, burial practice is, again, not viewed as a quiescent medium of display, but as an important and active component in the reformulation and creation of social organisation and identity (Barrett 1990). Through the use of symbolism in funerary ritual, information is not simply passively communicated, but used to construct and actively change social worlds through social practice (Richards 1995: 55). As Berger states:

> 'legitimations of the reality of the social world *in the face of death* are decisive requirements in any society' (Berger 1969: 43-4, his emphasis).

This approach emphasises and illustrates the way that individuals and society actively recreate and change their own social realities through ritual practices and was adopted by Lucy (1998) in her study of early Anglo-Saxon cemetery evidence in East Yorkshire. Lucy discussed the way that material culture was active in creating and maintaining social groupings and divisions, particularly in relation to gender and ethnicity and stated that:

> 'Material symbols are both negotiated and manipulated as part of strategies (coinscious or otherwise) of individuals and groups' (Lucy 1998: 24).

Material culture was, therefore, seen to be an integral component of social life that expresses, creates and transforms rules of meaning.

Again, for such an approach to funerary evidence to be meaningful and the significance of various aspects of burial practice to be understood, there is a necessary emphasis on local context. Only then can we understand how material culture was used to structure social relations (Lucy 1998). Death is the ultimate marginal situation for humans, which forces a consciousness about society and self (Berger 1990). Burial ritual represents a physical element of this social discourse but does not necessarily reflect social organisation. Instead burial may be understood as representing aspects of organisation being contested and rearranged in different ways (Lucy 1998: 26).

This theoretical viewpoint encourages an approach to the data that is much more localised because of the very specific role of material symbolism in social discourse. Very few studies of late Romano-British or early Anglo-Saxon evidence, however, have adopted such an approach. Although there is a greater sensitivity to the possibility of localised idiosyncrasies (e.g. Brush 1993; Lucy 1998), the majority of studies still collate results from geographically dispersed cemeteries (e.g. Stoodley 1999a). It is clear that although broad conformities did exist in some aspects of late Roman and early Saxon burial ritual, such generalised analyses undoubtedly mask the more subtle differences. For example, Stoodley's (1999a) study stresses inter-site uniformity in burial practice. However, it is clear that quite profound geographic differences do in fact exist with respect to the age and sex related deposition of particular items of material culture (e.g. Huggett 1995, Lucy 1998).

It seems that the temptation to produce generalisations about burial practice still has an alluring appeal that many researchers find hard to resist. Numerous recent studies (e.g. Halsall 1995, 1996, Stoodley 1999a), although embracing the principles of the post-processual critique, clearly harbour residual elements of processualism in terms of both analysis and interpretation. Indeed when one is faced with a considerable amount of data to quantify and manipulate, as is the case in cemetery analysis, localised traits become subsumed all too easily by the often stronger and

statistically more compelling uniformities. This is an unfortunate by-product of many analytical techniques that are necessary for dealing with large-scale data analysis. More intimate studies of cemeteries on an individual level would be more satisfactory in terms of understanding identity, but less so in terms of the perceived impact of results for any one period.

3.3 Human Bones and Funerary Studies

What becomes apparent when one examines many of the above approaches to funerary evidence is the repeated recourse towards the cultural components (in particular grave goods) within the grave as opposed to the physical remains of the deceased. This neglect of the skeletal evidence occurs to such an extent that skeletons may even be assigned biological characteristics (e.g. sex) on the basis of grave good associations. Although this practice has been critiqued in recent years (e.g. Henderson 1989), it is clear that when skeletal and artefactual evidence appear 'contradictory' (e.g. a female weapon burial), the grave goods still seem to hold a greater sway (e.g. Hirst 1985).

In many cemetery reports, human bone data will be confined to the appendix, or (worse still) microfiche, so that they are not only physically disengaged from the cultural information gathered from their burial environment, but their importance is both metaphorically and literally diminished. Skeletal information is often reduced to a series of summary tables listing demographic or palaeopathological statistics, and linking this information to individual burials may be problematic, if not impossible.

A number of years ago Reece (1982) predicted that some of the most important developments within Roman funerary archaeology would come from human bone analysis. Likewise, Hills (1979: 328) stated a similar belief for early Anglo-Saxon cemetery studies. It is clear, however, from many studies of Romano-British and early Anglo-Saxon cemeteries that most researchers are actually unaware of the potentials and limitations of osteological evidence for answering crucial questions concerning aspects of social organisation and identity. Conversely, many osteoarchaeologists (often in the pursuit of separate research agendas) have tended not to incorporate current theoretical perspectives regarding social identity into their interpretations of skeletal evidence. Although archaeologists are beginning to show a greater appreciation for the type of information that can be recovered from skeletal remains, osteological reports continue to take a 'back seat' when it comes to the reconstruction of social identity from burial evidence.

This section attempts to explore the reasons for this, examining on a more general level the way that skeletal analysis has been characterised within archaeology, and the role that human bones have (or have not) played in the examination of past social identities (in particular gender and age).

3.3.1 Whose Grave is it Anyway?

An examination of funerary reports demonstrates a very clear dichotomy in our conceptual approach towards the two main categories of evidence: the skeleton and the burial context. Human skeletal remains are examined by osteologists in a decontextualised environment, and often the bones will become objectified because they are disengaged from their cultural context. Very few excavators provide the osteologist with, for example, contextual or stratigraphic information, although this can prove invaluable for interpretation. Skeletal analysis within archaeology has been categorised as a scientific undertaking, with all the trappings and trimmings associated with scientific endeavour. Subsequently, osteological methods are conceptualized as objective and the results of skeletal analysis immutable. By contrast, social interpretations of the burial context (while using the skeletal data as a series of biological variables) tend to be more ephemeral, in the sense that they emphasise the historically and culturally *specific* condition of human identity. Social interpretations of funerary ritual are, therefore, viewed as subjective and fluid, because they are based upon the symbolic action of a particular social group. What becomes apparent is our contrasting conceptual treatment of the physical remains and their interpretation within the social sphere. This approach ultimately suggests that information retrieved from the skeleton is biologically universal, whilst that from the burial context is culturally specific. The effect of this divide on our interpretation of burial evidence and the validity of this perspective for the study of past social identity is explored below.

An example of this dichotomy and the problems it entails may be demonstrated by Härke's (1990, 1992, 1995) use of non-metric, or epigenetic, skeletal traits in his study of early medieval ethnicity. Non-metric skeletal traits are minor skeletal variants and include an array of cranial, postcranial, and dental features (Figure 3.1).

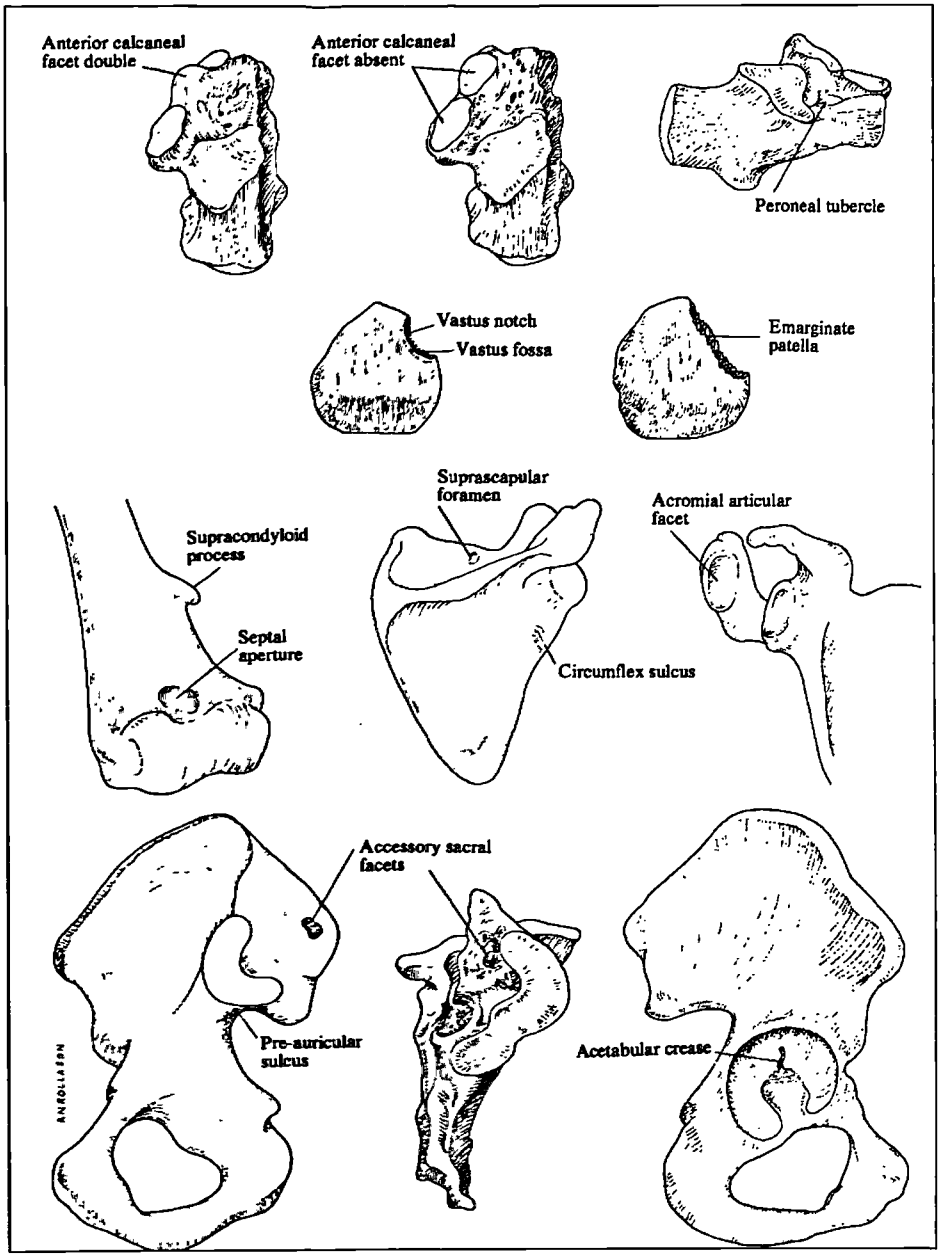


Figure 3.1: Examples of postcranial non-metric traits (after Brothwell 1981: 99)

Skeletal variants identified as non-metric traits are numerous, but because the value of the information provided by many of these traits is debatable, there is little consistency with respect to the quantity and types recorded by osteologists (Tyrrell 2000b). Härke (1990, 1992) makes the valuable point that weapon burials in Anglo-Saxon England are not necessarily indicative of the warrior status of the deceased, but instead may be symbolic of a particular social identity. Härke

proposes that through the use of grave goods, people of the fifth and sixth centuries were attempting to convey a 'Germanic' identity, in order to distinguish themselves from the 'native' population. Having emphasised the *symbolism* of the material culture, Härke then utilises skeletal data in a *biologically deterministic* fashion, by equating particular skeletal non-metric traits with distinct ethnic groups. Härke, therefore, essentially uses the skeletal evidence as a device to make his inferences from the material culture appear incontestable: because they can be seen biologically, they become fact.

There are several major problems involved when using non-metric traits to infer ethnic identity on both a practical and theoretical level. These problems have been addressed more fully by Tyrrell (2000a, b), but a brief summary will be provided here. Non-metric traits are not inherited in a Mendelian way and in addition to a genetic contribution, environmental stimuli will also impact substantially upon trait expression. Developmental modification during the growth period, and factors such as age, sex, and robusticity are also instrumental in their manifestation (Tyrrell 2000b: 292). Certain traits are more valid than others as indicators of heritability (e.g. dental non-metric traits), but postcranial skeletal traits (the main ones used by Härke) are the least reliable; affected as they are to a high degree by factors other than genotype. Particular non-metric traits will appear within certain populations in higher frequencies than others, for example, the greater frequency of shovel-shaped incisors amongst many Mongoloid populations. However, when studying trait frequencies amongst a sample as small as weapon burials within a cemetery, the results can have little meaning, and the analysis will certainly lack any statistical rigour.

On a more theoretical level, this study also assumes a very homogenous, monolithic stance with respect to the genetic origins of both the weapon and non-weapon burying groups. Given that 'migration period groups themselves were believed to have been characterised by fluidity and heterogeneity' (Moreland 2000: 37), this would seem an unrealistic assumption. Even were the past to have been populated by the genetically autonomous groups of people implied by Härke's study, non-metric traits are still inappropriate due to plethora of non-genetic factors affecting trait expression. While such arguments have an intuitive resonance that has ensured their popularity, they have no grounding in population genetics (Konigsberg and Buikstra 1995: 194).

Studies such as Härke's use the biological data from the skeleton in the belief that it incorporates an element of factual immutability to their hypotheses. This is not necessarily the case, and to reduce the social concept of ethnicity to a series of skeletal traits is (at best) misinformed. As Tyrrell states:

> 'Many studies have treated trait frequencies as if they were an archaeological typology, using a mix and match approach to determine if skeletons in a cemetery belonged to related individuals, or to determine the 'ethnic' group to which an individual skeleton belonged. This is unacceptable since not only does it lead to misleading conclusions, but also promises to access information which morphological studies cannot at present ascertain' (Tyrrell 2000b: 302).

Unfortunately the lack of communication across the science/ theory divide in archaeology has meant that Härke's work has gained widespread acceptance, and the improper use of non-metric traits within cemetery studies continues largely unchallenged (e.g. Stoodley 1999a). A similar assertion has been made by Jackson (1998) who stated that foot bone morphology can be used to distinguish between Romano-Britons and Anglo-Saxons. This work suffers from the same shortcomings as that using non-metric traits and foot bones in particular can be profoundly influenced by environmental factors. Variables such as terrain and foot-wear will contribute as much (and probably more) to foot bone morphology as genetic affiliations. By invoking skeletal arguments, however, such work has succeeded in acquiring an illusionary validity.

Other studies that have also attempted to use skeletal evidence such as pathological changes to make social interpretations. For example, in Anglo-Saxon cemetery studies, both Stoodley (1999a) and Crawford (1999) discuss skeletal 'health stress' indicators (e.g. cribra orbitalia and periostitis) in terms of social status. While such studies are commendable in their acknowledgement that skeletal evidence has a part to play in social interpretation, their application of osteological information is uninformed and naïve. No consideration is given to the complexity of palaeopathological interpretation (e.g. multiple aetiologies or the 'osteological paradox' as discussed by Wood *et al.* 1992).

3.3.2 Science/Social Theory Divides

From the above examples it becomes clear that while skeletal data is used occasionally to support interpretations derived from cultural evidence, such information is often abused. There is a clear disciplinary divide operating in cemetery studies and this has resulted in a lack of communication and contrasting conceptual approaches. This division stems from the way in which we construct archaeological knowledge through the academic division of labour; between social theory on the one hand and scientific methodology on the other. This in turn relates to the nature-culture dichotomy that structures the social sciences. The validity of this dichotomy has only recently been brought into question, particularly in anthropology where the divide between biological and social anthropology is becoming much less certain. As Descola and Pálsson (1996: 18) state: 'the person and the environment embrace an irreducible system; the person is part of the environment and, likewise, the environment is part of the person'.

Theoretical developments over the last 20 years have seen a rise in the importance of the 'body' as an integral part of social identity (Shilling 1997: 65). There has also been a general trend away from biological essentialism in the understanding of human relations. Instead researchers have embraced the idea that aspects of identity (e.g. gender, ethnicity, and age) are not biological givens, but subject to culturally specific interpretation. This work has been extremely important in archaeology for our understanding of past societies and has helped us move beyond many of the modern preconceptions concerning social relations (e.g. gender roles). However, much of the work of social constructionism in funerary archaeology, far from bridging disciplinary divisions has, in fact, compounded this science/social theory divide. Because factors such as gender are no longer seen as biological, the inference is that, by default, skeletal information becomes even *less* relevant. Within the perspective of social constructionism, 'the body' is often discussed as an important mediator of social relations; a culturally adorned vessel through which self-identity and social identity may be negotiated (Shilling 1993). While there is a great deal of discussion about embodiment, there is a tendency to deny the actual physicality of the body, and the role that it plays in social relations (Shilling 1993, 1997). Examples of this are evident in both Romano-British and early Saxon cemetery studies in the work of Carr (2001) and Brush (1993) respectively. An inevitable consequence of this work has been that the role of the skeleton in funerary archaeology is essentially reduced to that of a clothes-horse for cultural symbolism. Ultimately human skeletal evidence has become increasingly marginalized because the flesh,

blood and (more importantly) bones of people become an irrelevance– the body itself becomes invisible.

While other social theorists such as Giddens (1984, 1991) acknowledge that the body exerts an enabling or constraining effect on human actions, they still maintain a clear distinction between the biological nature of the body and social behaviour. So while these perspectives continue to provide valuable insights into past social relations, they still exclude the skeleton because they operate within the confines of this biology-culture dichotomy (Shilling 1993).

Skeletal information has played a limited role in funerary analysis because it has been erroneously characterized as a purely biological phenomenon. We need to overcome this dualist approach. Information from the skeleton cannot be viewed simply as a series of biological facts, but as the product of an individual interacting within a social as well as physical environment in a dynamic way. People do not exist within a vacuum. Bodies are affected by social action; the skeleton will be modified by particular activities, but in turn the bodies of individuals will then influence self and social identity, exerting an effect upon behaviour. While the former is an important point and has been examined within osteoarchaeology and biological anthropology, the latter part of this statement remains relatively unexplored.

A number of researchers have been examining how the skeleton, may, for example, be gendered (not sexed) through the actions connected to differing gender roles (e.g. Sofaer Derevenski 2000). The skeleton is likened to material culture in that it is modified and gendered by particular cultural activity. Although one must be cautious when linking particular activities to skeletal changes in any specific way, this approach provides a useful perspective. Gendered social practices will physically impact upon male and female skeletons, and these in turn may reinforce or contribute to particular images of femininity and masculinity within that society (Shilling 1993: 107). Rather than simply adopting a more integrative approach to funerary data (e.g. including the skeletal data within the main body of cemetery reports), archaeologists need to go further and stress that the body *simultaneously* has social and biological meaning. The skeleton is an absolute wealth of social information, which, except on a very fundamental level, has largely been ignored by archaeologists undertaking funerary analysis.

3.4 Conclusion

A review of funerary studies of late Roman and early Anglo-Saxon cemetery evidence reveals something of a gulf in terms of both the intensity of research and theoretical approach. While a number of useful analyses of both periods have been conducted, those relating to early Anglo-Saxon cemeteries tend to be more sophisticated and theoretically informed (with some notable exceptions discussed above). This is a situation that is clearly the product of an early Anglo-Saxon archaeological record dominated by cemetery evidence. The above review has discussed a number of approaches to the study of funerary evidence and has assessed the potential shortcomings of each.

The theoretical approach to the cemetery evidence adopted in this study of age identity, explicitly focuses on the symbolic condition of material culture and the role of funerary ritual in reconstructing social realities. By doing so, this research follows some of the more recent studies in funerary archaeology that has been inspired by the work of social theorists such as Giddens. This research, however, also proposes a more integrative stance with respect to the skeletal and cultural data; taking greater account of the changing physical nature of the body as it ages and the potential impact of this for social identity. The following two chapters are, therefore, concerned with the skeletal aspect of human ageing and address methodological issues concerning the estimation of age at death.

Chapter 4

❖

The Methods and Problems of Ageing Human Skeletal Remains From Archaeological Contexts.

'Age determination is ultimately an art, not a precise science'
Maples (1989: 323)

4.1 Introduction

When exploring age in the past it is, of course, skeletal evidence that provides the best direct evidence and will be utilised in this study. Determination of age at death of skeletal remains is an essential part of human osteoarchaeology, providing the biological basis for demographic analyses and studies of palaeopathology and social identity. A considerable body of research has investigated the potential of numerous skeletal elements to produce accurate and reliable estimates of age at death. An array of macroscopic and microscopic methods have been developed and tested although macroscopic methods are used far more frequently. This is primarily because by comparison these methods are non-destructive, require no specialist equipment, and the ages may be estimated relatively quickly. A review of the recent literature (e.g. Aiello and Molleson 1993) also suggests that microscopic techniques (e.g. osteon counting), despite being laborious and destructive, do not necessarily produce age estimations of greater accuracy. In a study of this magnitude, microscopic methods of age estimation would not be feasible; this chapter will therefore focus on macroscopic ageing methods only.

The skeleton undergoes numerous changes throughout the life course, from an array of developmental changes during the growth period, to the more subtle alterations in bone topography throughout adulthood. Our ability to age skeletal material during the growth period has been accepted as reasonably accurate. Once skeletal maturity has been reached, the ageing process become increasingly difficult to characterise and the estimation of age at death of

skeletons post maturity is a process fraught with problems (Kemkes-Grottenthaler 2002: 48). This chapter will review the advantages and shortcomings of each skeletal ageing technique with the aim of identifying those methods most appropriate for this study. The potential limitations of the data will then be explored, together with the possibilities of improving the reliability of age at death distributions for the skeletal populations analysed here.

4.2 Ageing Immature Skeletons

> *'the only consistent characteristic of growth is its variability'*
> (Scheuer and Black 2000b: 4).

Growth is a process that for medical, forensic, and archaeological purposes has been characterised by numerous measurable parameters (Mendez 1985). The wide variety of developmental stages occurring during the growth period means that children can be aged with much more confidence and precision than adult skeletal remains, despite generally poorer preservation and recovery at excavation. One of the major drawbacks associated with ageing the skeletal remains of juveniles, however, is sexual dimorphism in growth. A number of methods have been devised to sex infant and juvenile material, primarily from the pelvis (e.g. Fazekas and Kosa 1978; Weaver 1980; Schutkowski 1993), but these have generally proved unreliable (Scheuer and Black 2000a, b). The inability to sex juvenile skeletal remains (unless using DNA analysis) adds an element of variability to an already various process. Not all age indicators, however, are highly sexually dimorphic, therefore, the degree to which this factor impacts upon the accuracy of different ageing methods is not always significant (particularly when viewed in terms of the degree of individual variability in growth). The primary methods used to age immature skeletal remains include: dental development and eruption, long bone growth, and epiphyseal fusion. The advantages and disadvantages of each of these, together with current ageing standards are discussed below.

4.2.1 Dental Development and Eruption

Skeletal markers vary in the accuracy with which they reflect chronological age, and dental development is generally considered to be the most accurate method of age estimation in immature skeletons (Ubelaker 1989a, b; Saunders 2000). The accuracy of this method is believed to be so great that teeth are still used as indicators of a child's age in anthropological studies of

societies where no birth records are available (El Nofely and İşcan 1989: 238; Townsend and Hammel 1990). The use of the dentition for estimating the ages of children dates back to nineteenth-century legal cases. The eruption of the first permanent molar was used to enforce Factory Acts legislating against child labour and to determine whether convicted children were old enough (over seven years) to be deemed responsible for their crimes (El-Nofely and İşcan 1989). In 1836, Thompson, a medico-legal expert, laid down the rule that 'if the third molar [referring to the first permanent molar] had not protruded there can be no hesitation in affirming that the culprit had not passed their seventh year' (cited in Miles 1963b: 255).

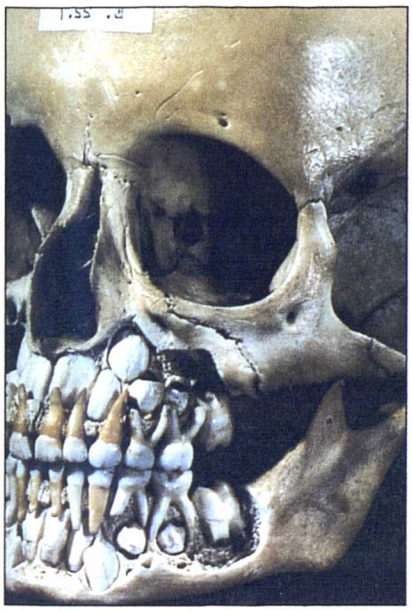


Figure 4.1: Dental development and eruption.

There are essentially two methods to derive age from the dentition during the growth period: tooth formation and eruption. This section examines both of these; looking at the methods used, problems involved, and establishing an appropriate procedure for ageing the immature skeletons from the cemeteries in this study.

4.2.1.1 Tooth Formation

Tooth formation is the most accurate method of age estimation of immature skeletons and is the developmental indicator least susceptible to environmental factors (Ubelaker 1989a, b; Saunders 2000). Tooth formation commences with the calcification of the tooth crypt and ends with the closure of the root apex (Figure 4.2). Development of the dentition begins *in utero*; soft tissue

development of the tooth germs from the dental lamina occurs about 6 weeks after conception. Mineralisation then commences during the second trimester of pregnancy, between approximately 14 and 16 weeks (Kraus 1959; Hillson 1996; Whittaker 2000). Tooth development and mineralisation begins with the deciduous central incisor, and progresses in a posterior sequence (after an interval of approximately two weeks) to the second incisor, followed after a further week by the canine. The exception to this sequence is the first deciduous molar, which calcifies after the central incisor and prior to the lateral incisor (Kraus 1959; Kraus and Jorden 1965).

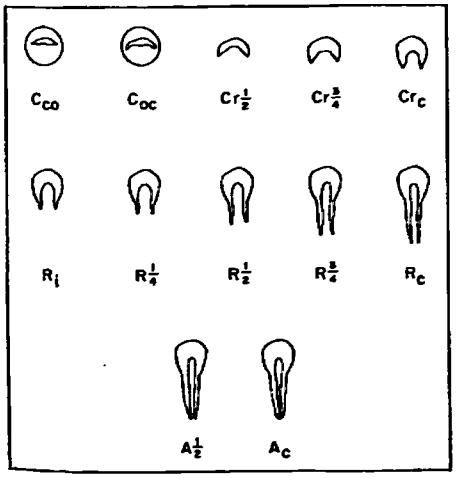


Figure 4.2: Development of tooth crown and root (after Moorrees *et al.* 1963a: 206).

Data relating to *in utero* development of the dentition is relatively rare. Kraus (1959), however, published data on the chronology of deciduous tooth formation from a sample of 95 foetuses, and Stack (1960) was able to record the growth status of foetal and infant dentitions expressed in terms of dry weight of tooth substance. The largest study of the foetal dentition was by Kraus and Jorden (1965) who produced standards for early crown development from a sample of 787 human foetuses examined between 1954 and 1965.

At birth the crowns of the anterior deciduous teeth are approximately 60% formed and the cusps of the deciduous molars are calcified (Figure 4.3) (Kuhns *et al.* 1972). The first permanent molar also begins to mineralise in the mesio-buccal cusp area at (or just before) birth (Whittaker 2000). The stage of the dentition around birth does, of course, ultimately depend on the length of the gestation period (Hillson 1996: 121). Some arrest in growth manifest as the neonatal line occurs at birth for approximately two weeks.

There is a slight degree of sexual dimorphism in tooth development, and the male deciduous dentition is slightly more developed than the female dentition by the end of the first trimester (Burdi *et al.* 1970). After birth, the differences between the sexes are in the order of one month in infancy and four months at nine years of age (Miles 1963b: 257). The extent of the differences between males and females may be 2-3%, although this may be a consequence of the larger size of male teeth rather than sexual dimorphism in growth (Goodman and Song 1999: 220). These differences are, however, considerably less than for osseous development.



Figure 4.3: Developmental stage of teeth at birth.

Inter-population differences in the relative calcification of teeth do exist. Smaller variations are apparent in the timing of deciduous than permanent crown formation (Goodman and Song 1999: 235). Intra- and inter-population variation in tooth crown calcification is relatively under-explored (*ibid.*: 218), although some ethnographic comparisons have been made (e.g. Fanning and Moorrees 1969; Tompkins 1996). One of the few archaeological studies of relative calcification was conducted by Owsley and Jantz (1983) and demonstrated systematic variation between the Arikara Indian developmental pattern and the modern standards of Moorrees *et al.* (1963a, b). There is, however, some doubt as to whether the methodology and sample age distribution, as opposed to biological factors, are responsible for observed differences (Simpson

and Kunos 1998: 480).

Age characterisation of tooth formation dates back to the nineteenth century (e.g. Legros and Magitot 1880, 1881) and since this time numerous cross-sectional and longitudinal studies have produced tooth formation standards (e.g. Logan and Kronfield 1933; Kronfield 1935; Schour and Massler 1941; Gleiser and Hunt 1955; Nolla 1960; Moorrees *et al.* 1963a, b; Demirijian *et al.* 1973; Demirijian and Levesque 1980; Anderson *et al.* 1976; Smith 1991). The majority of this research has been conducted on North American children of European descent (Liversidge *et al.* 1993: 307) and very few standards for other populations are available (Jaswal 1983). The analysis of tooth formation of known age individuals is more problematic than tooth emergence, requiring as it does, either radiographic examination of the jaws of live children, or post mortem dissection (Smith 1991: 144).

Although radiographic material is more common, its use does present some difficulties, particularly for distinguishing between the crown completed stage and the root initiation stage (Liversidge *et al.* 1993: 312). Radiographic assessments of dental development are not directly comparable to examinations of the dry specimens because initially enamel has a low degree of mineralisation. Radiographs will, therefore, produce a general bias towards an older age. The lack of radiographic prenatal dentitions means that a sample bias towards the later age groups is also present (Simpson and Kunos 1998: 484). Radiographic studies are, however, important for providing longitudinal information.

All of the above studies have adopted an ordinal system of measuring formation, meaning that tooth growth is divided into a series of arbitrarily defined morphological stages. Methods tend only to vary with respect to the number of stages observed and the age ranges assigned (Saunders 1992: 8). Because tooth formation is a continuous process it could of course be argued that there are statistical shortcomings in the use of an ordinal system of recording. A continuous method of recording has been devised by Liversidge *et al.* (1993) and Liversidge (1995) using measurements of tooth length. However, because of problems relating to differences in tooth size and root length between individuals, such a system is not readily applied to different populations (Saunders 2000; Simpson and Kunos 1998: 502).

Radiographic studies have shown that tooth development is not a linear phenomenon. Gleiser and Hunt (1955) and Fanning (1961) state that there is a pause, or period of deceleration between the

stages of completion of the crown and commencement of root formation, and again during apical closure (Simpson and Kunos 1998: 482-483). It should therefore be emphasised that in an ordinal system of recording, the passing from one grade of development to the next does not necessarily represent equal periods of time throughout the developmental sequence.

The majority of studies of archaeological populations (both in the UK and abroad) have made use of the dental formation chart produced by Schour and Massler (1941). There does, however, appear to be some problems with the data upon which this chart was based. The original sample was traced by Garn *et al.* (1959) through a number of secondary and tertiary citations back to what is essentially the Kronfield (1935) permanent tooth standards. The Schour and Massler (1941) chart was in fact based upon observations made by Logan and Kronfield (1933) on a small and heavily biased sample (only three individuals were older than four years) of 25 juveniles, supplemented by an additional five individuals by Kronfield (1935). The range of variation or sex differences cannot possibly be obtained from such a small data set (Goodman and Song 1999: 213). Furthermore, many of the subjects in this study had died from prolonged, debilitating illnesses, which could feasibly have affected the chronology of tooth development (Garn *et al.* 1959).

The use of modern standards to age archaeological populations does not appear to lead to excessive inaccuracy; tests of modern standards on historically documented skeletal populations have suggested that dental development produced results comparable with known age at death (Bowman *et al.* 1990; Saunders *et al.* 1993a). Saunders and co-workers (1993a) tested the Anderson *et al.* (1976) and the Moorrees *et al.* (1963a, b) methods and found the latter to produce the most accurate results (usually to within one year of known age). They also found that age estimates based on a single tooth had a standard deviation of 0.94, compared to only 0.38 when all possible teeth were observed. Smith's (1991) study also found age estimates from the dentition to be very accurate, and that accuracy increased when ages obtained from several teeth were averaged. On the basis of several studies (including the review by Smith 1991), it seems that the data of Moorees *et al.* (1963a, b) has been found to produce the most consistently accurate results and is most useful for this study in terms of sample size and age distribution.*

* Recently, a method has been produced by Simpson and Kunos (1998) using the seriation of radiographs to account for the continuous change in dental development. This method could not, however, be used in this study, as it only came to the attention of the author at a late stage in analysis.

When utilising the Moorrees *et al.* method (Chapter 5, Figure 5.3) there is, of course, a degree of subjectivity when assigning scores, particularly when differentiating between certain stages (e.g. between the root being ¼ to ½ formed) (Simpson and Kunos 1998). Inter-observer error tests have found that agreement is highest for crown complete (59%) and initial root formation (100%), although for many stages fell far short of this (Jackes 1992: 210). In order to eliminate the possibility of inter-observer error, the dentitions of all of the immature individuals (where available) have been re-analysed for the purposes of this study.

As dental formation is the most accurate indicator of chronological age, this will be used as the primary method of ageing the immature individuals in this skeletal sample. This method has further importance in that it provides a 'known age' parameter from which to make other ageing methods (e.g. bone growth, dental eruption) more suitable for the population being studied. There are, however, a number of statistical shortcomings in the application of this method that will impinge upon the accuracy of results. In an attempt to eliminate these as far as possible, these problems need to be addressed. The following chapter, therefore, discusses a new way of applying the Moorrees *et al.* data.

4.2.1.2 Tooth Eruption

From the Middle Ages the eruption and replacement of the deciduous teeth by permanent teeth has been used to define stages of growth (El Nofely and İşcan 1989: 237). The deciduous teeth erupt during the period from approximately six months to two years, gradually becoming supplemented and then replaced by the permanent dentition between the ages of 6 and 12 years. There is a distinct clustering in both the formation and eruption of teeth. With respect to the permanent teeth, the first molar and incisors erupt at 6-8 years, followed by the canines, premolars and second molar at 10-12 years, and finally the third molar, which usually erupts between the ages of 18-23 years. Accuracy of the age assessment of individuals based on eruption alone *between* these age categories may, therefore, be compromised (Smith 1991). Indeed, after the age of approximately 12 years, when the second molar has erupted, tooth eruption is no longer able to precisely estimate age. Although the eruption of the third molar is a useful age marker, epiphyseal fusion is considered a more accurate ageing parameter during the teens (Schwartz 1995).

Tooth eruption (as with formation) is not a linear process. The rate of eruption during the period

when the tooth is still within the mandible or maxilla is substantially slower then the rate after the tooth has penetrated the alveolar crest (Konigsberg and Holman 1999: 269). The actual emergence of the tooth is an event of short duration, described by Fanning (1961) as a 'single fleeting event'. The mechanisms behind tooth emergence are still not entirely clear and several theories have been advanced (see El-Nofely and İşcan 1989 for a review). While some authors have maintained that tooth emergence is independent of formation (e.g. Lauterstein 1961) others have suggested it is closely related to stages of root formation (e.g. Moorrees *et al.* suggest a correlation between eruption and the tooth root being three-quarters formed). In general, teeth begin to erupt after root formation has commenced and only emerge into the mouth after a substantial amount of root has been formed (Smith 1991: 145). Very little published information is available concerning the amount of time that it takes for a tooth to reach full occlusion once it has begun to emerge through the gingiva (Miles 1963b: 257). Dental emergence is certainly not always closely correlated with dental development and can be severely advanced or delayed by factors such as premature loss of deciduous predecessors through injury and infection, or inadequate space in the jaws (Fanning 1961; El Nofely and İşcan 1989: 243; Saunders 2000).

Tooth eruption is easily observed in living children and numerous cross-cultural studies have examined the timing and sequence of eruption of both the deciduous and permanent dentition, highlighting a number of inter-population differences (e.g. Holman and Jones 1998). For example, Dahlberg and Menegaz-Bock (1958) have reported that Pima Indian children are relatively advanced with respect to the eruption of their posterior teeth, but exhibit later eruption of the anterior teeth compared to Western populations. Such studies illustrate a potential source of error when using modern tooth eruption standards to age past populations and this is something that needs to be considered here. One other major problem when using modern eruption standards obtained from observations of living children to age archaeological specimens is that eruption is defined as the appearance of the tooth through the soft tissue (gingival emergence), rather than the alveolar bone. These standards do not, therefore, translate easily to dry bone specimens. A number of tooth eruption studies have been based upon radiographs and although these are more useful to osteoarchaeologists, they are less common and tend to involve smaller sample sizes (Hoffman 1979).

As well as variation between populations, a degree of intra-population variability should also be expected, particularly as studies of living populations indicate that tooth eruption exhibits a greater degree of sensitivity to environmental conditions than tooth formation (Hoffman 1979).

Chronically undernourished children of lower socio-economic groups will often show retarded eruption timing within a given population (El-Nofely and İşcan 1989: 244).

Hoffman (1979) found that the range of variability of tooth eruption ages for a known age sample group was as large as the variability of diaphyseal lengths of the radius and femur. One source of intra-population variability is, of course, sexual dimorphism and several studies have shown that the anterior deciduous dentition of males is slightly in advance of females (Demirijian 1986). The eruption of the canine appears to exhibit the greatest degree of sexual dimorphism and as age increases, so too does the range of variability (Hoffman 1979: 463). This will result in an increased probability of error when standards for tooth emergence from one population are imposed upon another (Jaswal 1983; Owsley and Jantz 1983). Deciduous dental eruption is not as severely affected by environmental onslaughts as permanent dental eruption, and while the former may be affected by severe malnutrition, most childhood illnesses have comparatively little impact, particularly when compared to osseous development.

Ubelaker (1989a) produced charts showing the various stages of dental eruption for both the deciduous and permanent teeth. This chart is the one most commonly used to age archaeological populations. Given the problems outlined above and the inter-population variability, the suitability of this chart is questionable. Obviously the application of dental formation standards to a group other than that for which the charts were designed introduces the possibility of a significant source of error and this needs to be taken into consideration when ageing the individuals in this study. As a result of the above factors, eruption data will only be utilized in this study when it is not possible to observe fully the developmental status of the teeth of individuals.

4.2.2 Long Bone Growth

Long bone growth is a process that varies enormously both within and between groups and this is something that has been studied in depth for a large number of living populations (Ubelaker 1989a, b; Eveleth and Tanner 1990). Differences in growth between populations arise from variation in environment, gene pool, and the interaction between the two (Johnston 1962). Unlike dental development, genetic components in long bone growth may have a secondary influence in the presence of severe environmental conditions (e.g. malnutrition, illness). In extreme cases such factors may prevent an individual from attaining their full genetic potential (Hummert and Van Gerven 1983; Jantz and Owsley 1984). The environment exerts a powerful influence on skeletal growth, leading to a high degree of variability in linear growth between both individuals and

populations. Nutrition and infection, or the interaction of both, are the most influential environmental components impacting on growth (King and Ulijaszek 1999: 161; Humphrey 2000: 23). Those individuals suffering from prolonged episodes of health stress will exhibit a slower rate of bone growth, delayed dental eruption, a prolonged period of growth and ultimately a diminished adult stature (Humphrey 2000: 23). Indeed evidence from the late nineteenth century indicates that final adult stature may not have been attained until as late as 29 years of age in adults of the lower social classes (Morant 1950). Similarly several studies of skeletal remains from archaeological sites have indicated a prolonged period of growth, for example, the individuals excavated from the medieval site of Wharram Percy (Mays 1999: 300).

Despite the array of variables impacting on long bone growth, there have been numerous attempts to characterise this process from both modern and archaeological data. Growth curves produced from modern populations use either radiographic or anthropometric techniques. Radiographic measurements incorporate a magnification error of approximately 2-3%, but are still the most accurate, and because they measure diaphyseal length are more suited to studies of archaeological material (Hoffman 1979: 462). Numerous longitudinal (e.g. Maresh and Deming 1939; Maresh 1943, 1955, 1970; Anderson *et al.* 1963; Gindhart 1974; Hoffman 1979) and cross-sectional (e.g. Scheuer *et al.* 1980) growth studies of modern populations from radiographs have been conducted and the data used to age archaeological skeletal remains.

The long bones begin to ossify *in utero*, between the eighth and twelfth gestational weeks. Linear diaphyseal growth is most rapid around the fourth and fifth lunar months and a uniform, linear level of longitudinal growth then occurs at a reduced rate between the eighth to nineth lunar months (Figure 4.4) (Fazekas and Kosa 1978; Mendez 1985). After approximately 36 gestational weeks there is another period of reduced growth rate up until term, although this rate increases to the pre-36 week rate during the immediate postnatal period (Tanner 1974; Mendez 1985).

Long bone growth is a particularly useful index by which to age perinatal skeletons, as the rapidity of growth during this period results in large incremental growth differences between individuals of different ages (Jeanty and Romero 1984a). Numerous techniques have been developed to determine gestational age of a developing foetus from long bone growth (e.g. Olivier and Pineau 1960; Fazekas and Kosa 1978; Scheuer *et al.* 1980; Kosa 1989; Gowland and Chamberlain 2002) with varying degrees of accuracy. Ultrasonic studies of foetal growth have been numerous. Femur length was originally examined in order to diagnose limb dwarfism,

however, a close correlation with gestational age was observed and the femur has since been investigated by a number of authors (e.g. O'Brien *et al.* 1981; O'Brien and Queenan 1981; Jeanty *et al.* 1981, 1982, 1984a; Yeh *et al.* 1982; Hohler and Quetel 1981). Femur length is now measured routinely along with the biparietal diameter in the estimation of gestational age and the analysis of growth disorders and skeletal dysplasias (Hohler 1984; Jeanty *et al.* 1981). Further studies (Jeanty *et al.* 1982, 1984) found that the other major long bones also provided a good indication of gestational age.



Figure 4.4: Growth of the femur *in utero*.

Factors that influence foetal growth are unique in that they have very little to do with the genetic make-up of the foetus itself, with growth being primarily influenced by the maternal environment and genotype (Johnston 1986; Roberts 1986). Although social and environmental stresses are not believed to have a considerable effect on foetal growth, they do have implications regarding perinatal mortality, leading to increased numbers of pre-term births and still births (Antonov 1942; Mutale *et al.* 1991).

From the above it is evident that the birth of a child cannot be viewed as a starting point in the examination of skeletal growth; at birth the newborn has already had an eventful history that results in significant variation between neonates in size and maturity (Tanner 1974). After birth, there is a period of adjustment in growth as the newborn makes the transition towards a regulatory system based upon their own homeostatic and genetic make-up rather than that of the

mother (Johnston 1986). The first year is, therefore, one involving considerable alteration in the infant's growth trajectory (Tanner 1974). With respect to postnatal growth, velocities are highest for the first year after birth, with a velocity of approximately 30 cm/year in the first two months (Mendez 1985), but dropping off dramatically after 12 months (Johnston 1986). Such rapid growth necessitates high dietary requirements during the postnatal period and leaves the infant at greater risk of malnutrition and infection (Saunders and Barrans 1999: 184). There is a decline in growth after three years of age when the pattern of growth for a particular child is established as advanced or retarded. A distinct increase in growth rate may then occur between the ages of about 6-8 years (although the existence of the mid-childhood growth spurt has been debated by Ledford and Cole 1998) and then again around puberty (Scheuer and Black 2000b: 4). Upon reaching puberty there is an increasing divergence between individuals and sexes (boys experiencing a growth spurt at a later age than girls), leading to a reduction in the ability of long bone length to predict chronological age (Humphrey 1998; Scheuer and Black 2000b: 5).

Growth is not, therefore, a linear phenomenon; children will grow in spurts followed by periods of relative stasis (Hewitt and Acheson 1961) and while two children may reach the same height, they may do so at different tempos of growth (Eveleth and Tanner 1990). The characterisation of growth within a population is further complicated by the phenomenon of 'catch up' growth, whereby a period of illness may result in growth stasis, followed upon recovery by acceleration in growth (Tanner 1986). These phenomena cannot be observed archaeologically due to the cross-sectional nature of the data, but introduce a significant element of variation in chronological age for a given long bone length.

Due to variability in growth, it has long been recognised that profiles of modern populations are not necessarily applicable to past populations. As a result of these factors diaphyseal length has often been regarded as a poor indicator of chronological age in the immature skeletal material (Hoffman 1979; Jantz and Owsley 1984). Modern reference standards are produced on children who have a consistently adequate diet, and low disease prevalence. The application of these standards to past populations may well lead to the under-estimation of age (Lampl and Johnston 1996: 351). Numerous attempts have, therefore, been made to model the growth of archaeological populations by using dental age as 'known age' (e.g. Johnston 1962; Walker 1969; y'Edynak 1976; Merchant and Ubelaker 1977; Hummert and Van Gerven 1983; Jantz and Owsley 1984; Mensforth 1985; Owlsey and Jantz 1985; Lovejoy *et al.* 1990; Hoppa 1992; Saunders *et al.* 1993b; Miles and Bulman 1994, Mays 1999). While such studies have provided valuable

information concerning the differential growth of past populations, they are only truly comparable if they have used the same dental standards to derive 'known age'. If not, then differences in growth profiles may relate simply to differences in the dental ageing techniques used (Saunders and Hoppa 1993; Saunders *et al.* 1993b; Humphrey 2000: 27). For example, Merchant and Ubelaker (1977: 68) found that growth curves derived from the Arikara Indian population using the Moorrees *et al.* (1963a, b) dental standards produced greater levels of skeletal development at all ages than those based on the Schour and Massler (1941) chart. That slightly different rates of dental development occur in different populations is also a source of error that needs to be acknowledged (e.g. Jantz and Owsley 1994).

Growth profiles of archaeological skeletal samples are of course cross-sectional in nature, in that bone length represents the end of a continuous process for that individual (Lampl and Johnston 1996: 347). This is one of the major limitations of such growth profiles, because it means that the timing of growth spurts and rate differences in growth for each population cannot be taken into consideration. This may lead to the mis-characterisation of important growth episodes (Konigsberg and Holman 1999: 264; Hoppa and FitzGerald 1999: 7; Humphrey 2000: 25). Furthermore, the inability to sex the skeletal remains of children also means that data from both sexes must be pooled, and as differences in the timing of growth spurts between the sexes may be quite marked, this again increases the likelihood of error.

The majority of growth profiles produced from archaeological populations demonstrate retarded growth when compared to their modern counterparts (e.g. Molleson and Cox 1993, Molleson 1995). It has been argued that because profiles are derived from dead children, it is likely that a period of health stress would have preceded their death and that this would have impeded growth, resulting in retarded growth profiles (y'Edynak 1976). Growth research in past populations often seeks to elucidate the effects of morbidity within different groups (Saunders and Barrans 1999: 184). Growth studies of skeletal samples generally assume that the differences amongst populations reflect health status, children's growth having been taken as a parameter of the population's health (Lampl and Johnston 1996: 101). The basic assumption of growth related studies is that the growth of the child reflects their health or nutritional status. Growth is, however, only a non-specific indicator of health as it is subject to many factors (Hoppa and FitzGerald 1999: 12) It has, nevertheless, been countered that children generally experience illness acutely, due to their immature immune systems, and death would therefore occur before any skeletal manifestations of health stress were incurred (Johnston 1962). Although this is an

area that continues to be debated (Humphrey 2000), Saunders and Hoppa (1993) found that while statistically significant, the effects of morbidity prior to death are almost inconsequential when compared to the magnitude of other methodological problems inherent in the use of skeletal growth profiles. More recently it has been possible to derive skeletal growth profiles from populations where the age of the individuals is historically documented (e.g. Saunders *et al.* 1993b; Humphrey 1998).

In light of the above discussion, it seems that rather than rely on modern data, or data from other archaeological populations, it is necessary to produce growth profiles for each of the skeletal populations in this study by using dental age as the 'known age' data. By doing so a number of the potential biases discussed above can be minimised. Such growth profiles would also allow for future studies concerning the patterns of growth, between and within late Roman and early Anglo-Saxon populations.

If such a study were to be undertaken (and it is beyond the scope of this current research) another consideration that should be observed is that differences in skeletal growth profiles are not the result of differences in final adult stature between populations. One may standardise the end point of growth for each population by expressing the growth profiles as a percentage of mean adult stature for individual populations (Hoppa 1992; Saunders *et al.* 1993b; Humphrey 2000: 29). For population comparisons it is suggested that variation in the percentage of adult size attained is a more appropriate indicator of health than variation in actual skeletal size, which may simply reflect the difference in growth potential between the two groups (Humphrey 2000: 29).

As Saunders and colleagues (1993b) also discuss, the long bone lengths obtained from these studies are not true growth curves (as they are often mistakenly referred to) as these can only be carried out on longitudinal studies. They argue that confidence intervals rather than standard deviations should be employed to report variance as they control sample size as well as variance. This factor has also been taken into consideration in this study and will be discussed in the following chapter together with the methodology.

4.2.3 Skeletal Maturity and Epiphyseal Fusion

The appearance and fusion of specific ossification centres provides a useful means of determining age at death throughout the growth period and into early adulthood (up to approximately twenty-

five years). The appearance of centres of ossification provide a basis for a minimum age, and their subsequent development and union continue to be useful as an index for measuring skeletal maturity. In the early stage of their appearance, ossification centres have an amorphous, indistinct appearance (Figure 4.5), which makes them difficult to identify other than by their anatomical position (Scheuer and Black 2000b: 7). Only later, as new bone replaces cartilage, do they assume their characteristic appearance. It should be noted, however, that many epiphyses and other ossification centres are porous and contain a high proportion of cancellous bone. This factor, together with their small size, means that they are particularly susceptible to post-depositional diagenesis and poor recovery at excavation (they are often mistaken for stones).



Figure 4.5: Development of the distal femoral epiphysis.

With respect to bone fusion, numerous radiographic and dry bone studies have been conducted, although reconciling these two forms of data is problematic (see Scheuer and Black 2000b: 12). There appears to be little variation in the sequence of epiphyseal union between populations and Johnston and Snow (1961) found a high degree of correlation between Inuit, Native Americans, American whites and Australian whites. As with the appearance of ossification centres, the timing of their fusion can be highly variable. The main variability is that exhibited between individuals. As a general rule, complete union tends to occur up to two years earlier in females than males, although sexual dimorphism is not as marked as with long bone growth (Schwartz 1995).



Figure 4.6: Unfused vertebral arches.



Figure 4.7: The unfused pars basilaris (a component of the basi-occipital portion of the skull). The left side is from a newborn and the far right is from a child aged approximately 6 years.

Fusion of the neural arches of the vertebrae (Figure 4.6) and the metopic suture of the cranium and the development of the components of the basi-cranium (Figure 4.7) (Redfield 1970; Scheuer and Maclaughlin-Black 1994) and the petromastoid portion of the temporal bones (Weaver 1979) are all particularly useful indicators of maturity at various ages up to approximately seven years. Prior to puberty the fusion of the neural arches to the vertebral bodies, ischiopubic ramus and acetabulum also provide useful ageing parameters. In the post-pubertal period, after eruption of

the second molar, epiphyseal fusion of the long bones becomes one of the most useful methods of estimating age. With respect to the long bones, the distal epiphysis of the humerus is usually the first to fuse, while the last three sites to fuse are the proximal humerus, the distal radius and the sternal clavicular epiphysis (Schwartz 1995).

Skeletal maturity indicators are also sensitive to illness, malnutrition and general socio-economic factors, although it was found that ill health had a comparatively greater effect on bone growth than on skeletal maturation (Hewitt and Acheson 1961). Another method of gauging the degree of developmental stress within a population is by examining the discrepancy between age derived from dental development and that from skeletal maturity (Humphrey 2000: 29). The use of modern epiphyseal union standards for ageing archaeological populations is of course of questionable accuracy. As with long bone growth, maturation rates in modern populations tend to be in advance of past populations. For example at Spitalfields one female still had unfused long bones at the age of 27 years (Molleson and Cox 1993). In order to obtain maturational data that may be more applicable to this study, the sequence of fusion within this population has been observed in relation to dental age (this has provided a 'known age' as with long bone length).

4.3 Ageing Mature Skeletons

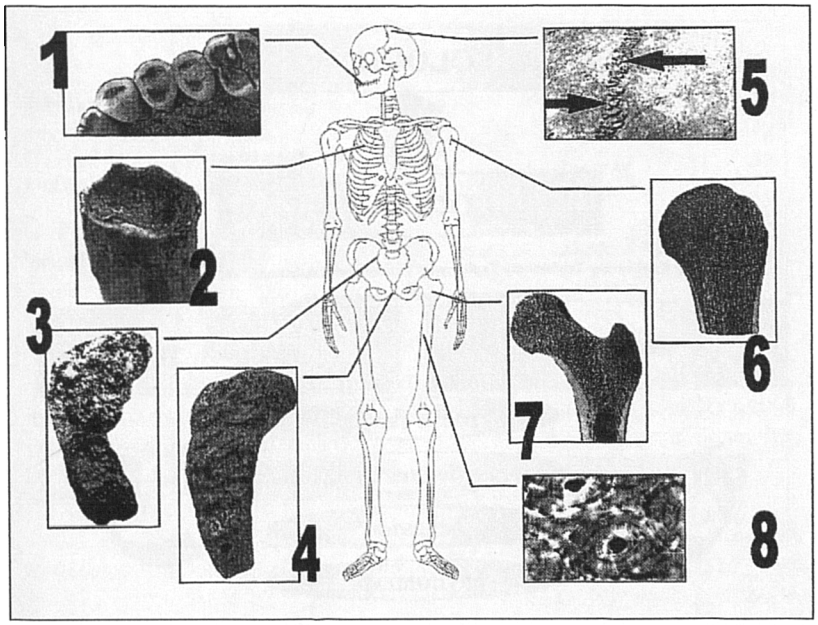


Figure 4.9: Methods used to age adult skeletal remains (1=dental wear, 2= sternal end rib, 3=auricular surface, 4=pubic symphysis, 5=ectocranial suture closure, 6=proximal humerus, 7= proximal femur, 8= bone histology) (modified from Kemkes-Grottenthaler 2002: 49).

A variety of morphological features are useful for estimating the age at death of skeletal remains once skeletal maturity has been reached. The morphological stages exhibited by the majority of these skeletal age markers are related to degeneration and are greatly influenced by factors unrelated to chronological age. A discussion of the advantages and disadvantages of each of these age estimation techniques will be presented below.

4.3.1 Pubic Symphysis

The morphological development of the pubic symphyseal face has undergone more examination than any other skeletal criterion of age estimation (Klepinger *et al.* 1992). The pubic symphyseal face undergoes regular morphological alteration with age (see Figures 4.9-4.11). This correlation had been noticed by researchers for some time before an attempt was made to characterise these changes by Todd (1920). Basing his results on a collection of 306 male skeletons of known age, Todd (1920) identified nine areas of the symphyseal face whose changing state he mapped through ten distinct phases; selecting 'typical' examples to represent each morphological phase. Although Todd (1921) noted that a degree of inter-individual variability existed, particularly with respect to those individuals exhibiting signs of disease, he stated that there were no discernible differences relating to parturition in females. This method was, however, critiqued by Brooks (1955) who found that it produced inaccurate results and demonstrated a tendency to overage in the third decade. Brooks (1955), therefore, introduced modifications to Todd's original method and developed casts in order to display the 'typical' features of each stage.



Figure 4.9: Pubic symphyseal face of a young adult (approximately 18-25 years).



Figure 4.10: Pubic symphyseal face of a middle adult (approximately 30-45 years).

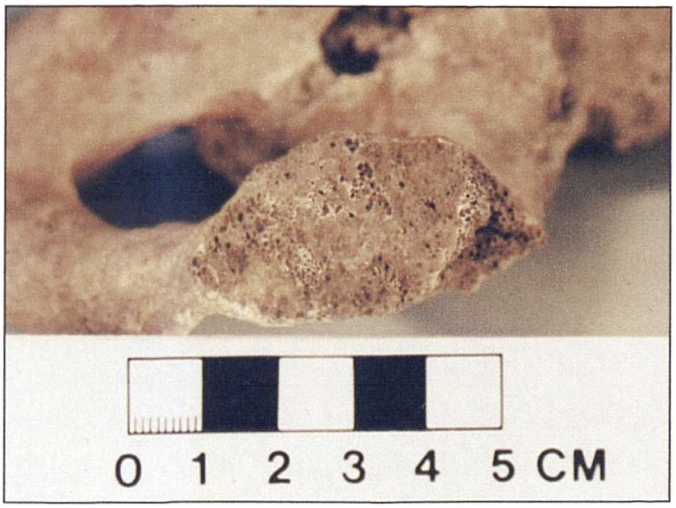


Figure 4.11: Pubic symphyseal face of an old adult individual (approximately 45+ years).

Another more drastic overhaul of the pubic symphyseal method was subsequently undertaken by McKern and Stewart (1957). They argued that Todd's system oversimplified the changes occurring in the pubic symphyseal face and did not allow for individual variability. McKern and Stewart (1957) stated that certain components of the symphyseal face changed independently and must be examined accordingly. Subsequently, they devised a three-component system, whereby

the metamorphosis of three features of the symphyseal face (the dorsal demi-face, the ventral demi-face, and the symphyseal rim) were observed separately. Each component was divided into five developmental stages and scored accordingly; the sum of these were then converted into an age estimate.

A similar component system was devised by Gilbert and McKern (1973) for females. They observed that the female symphyseal face underwent accelerated rates of morphological change in certain areas, most notably the dorsal surface, causing inaccuracies in age estimates (Gilbert 1973). Although these component systems were initially believed to improve age estimates by allowing greater objectivity (e.g. Hanihara and Suzuki 1978), blind tests of these and other pubic symphysis methods have demonstrated that they are in fact prone to greater inaccuracies than more traditional methods. Gilbert and McKern's (1973) female standard was tested by Suchey (1979) who found that only 51% of estimates were within fifteen years of documented age. Suchey (1979) believed that the problem did not lie with the nature of variability of the female symphysis, but rather with faults inherent to the Gilbert and McKern system. Meindl *et al.* (1985a) and Meindl and Lovejoy (1989) also found component systems to be not as 'biologically sensitive', instead recommending Todd's (1920) original method with the modifications suggested by Brooks (1955). They themselves produced a system that recognised five major biological phases for the pubic symphysis (Meindl *et al.* 1985a). A number of authors (Suchey and Katz 1986; Suchey *et al.* 1986; Katz and Suchey 1989) criticised the method of Meindl *et al.* (1985a) on the grounds that some of the ages assigned to their reference sample (the Hamann Todd collection) were questionable, a factor that was later refuted by Meindl *et al.* (1990).

Acsádi and Nemeskéri (1970) pubic symphyseal method (which later formed part of their complex method) also recognised only five separate developmental phases. They were criticised by Brooks and Suchey (1990) for concentrating solely on early and late developmental features and indeed this is evident from the standards that they provide. Brooks and Suchey (1990) subsequently produced a pubic symphyseal ageing method that was based around Todd's (1920) original method. Using pubic bones from 739 males from post-mortem cases they devised a system comprising six phases each for males and females that were groupings of Todd's original ten phases (Figure 4.12). In an independent test, this method was found to outperform other pubic symphyseal ageing techniques (Klepinger *et al.* 1992). After a period of unpopularity the McKern and Stewart component method has, in part, been revived by Boldsen and colleagues (2002) who give a statistical argument for component rather than 'type' methods and a statistical overhaul of

McKern and Stewart's raw data*.

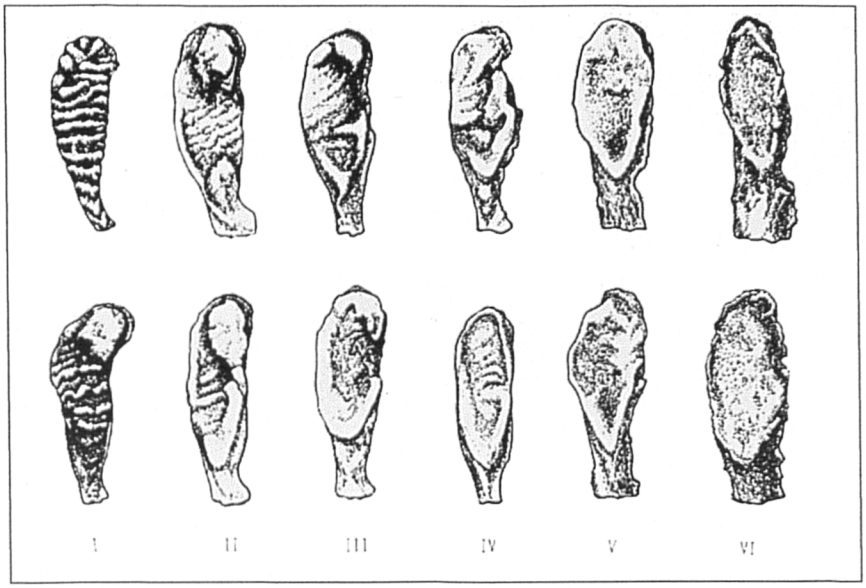


Figure 4.12: The six phases of the Suchey-Brooks 1990 method (based on Katz and Suchey 1986).

As with the majority of ageing methods, in blind tests of the accuracy of pubic symphyseal aging, younger individuals were aged with a much greater degree of accuracy than older adults. For example with the Suchey-Brooks method for males under the age of 35 years the average absolute deviation was three years (see Table 5.8 in the following chapter). Although it is generally stated that morphological changes are not affected by physical stress factors, this was found to be untrue. Klepinger and colleagues (1992), for example, found that in an examination of forensic cases of known age individuals, severe physical trauma or lack of normal physical activity through disability affected the normal sequence of morphological changes (Klepinger *et al.* 1992: 768).

Over the age of approximately 40 years, after the appearance and fusion of the ventral rampart, all changes of the pubic symphyseal face are degenerative and highly variable (Saunders *et al.* 1992; Meindl and Russell 1998). Furthermore, the morphological changes of the female pubic

* This method was published after the analysis in Chapter 5 was undertaken.

symphysis on the whole are much more variable than for males, presumably as a result of obstetric factors (Klepinger *et al.* 1992). Given the arguments outline above, it is the Suchey-Brooks (1990) method, with the use of the pubic symphyseal casts produced for comparison, which has been used in this study.

4.3.2 Auricular Surface

Sashin (1930) first noted that the auricular surface of the ilium (the site of the sacro-iliac joint) undergoes structural change with age, as a result of an increase in the proportion of fibrocartilage in the joint (see Figures 4.13-4.15). Lovejoy *et al.* (1985b), during their study of the Libben population, observed that metamorphic changes at this site were in accordance with ages at death determined by other means. They subsequently identified a number of components (the inferior and superior demiface, the retroauricular area and the apex) that exhibited regular changes and devised an eight phase system for estimating age at death from the auricular surface. They stated that while the age related changes did not occur with the clarity of the pubic symphyseal face, they could be used to reliably age individuals beyond the age range of the pubic symphysis. Furthermore, they argued that sex-related differences were minimal in comparison to pubic symphysis methods (Lovejoy *et al.* 1985b).

Murray and Murray (1991), however, tested the auricular surface method on a mixed race and sex population and found that while the method could be applied with approximately equal levels of accuracy to both males and females, differences in geographical origin and ethnicity had a considerable effect on results. Murray and Murray (1991) found that the auricular surface significantly under-estimated the age of older individuals and that the proportion of individuals estimated as falling between the ages of 30-50 years was much higher than was actually the case. They concluded that the variability of the auricular surface method was so high that it could not be used on its own.



Figure 4.13: Auricular surface of a young adult (approximately 18-24 years).



Figure 4.14: Auricular surface of a middle adult (approximately 30-35 years).



Figure 4.15: Auricular surface of an older adult (approximately 45+ years).

The auricular surface method was also tested on an archaeological sample of known age at death from Belleville, Ontario (Saunders *et al.* 1992). The system was found to under- estimate age at death especially for the older portion of the sample (over 45 years), although it predicted the ages of the younger adults reliably (Saunders *et al.* 1992). The authors found that estimates of age at death for many of the individuals did not fall into the correct modal stages, indicating that the method of Lovejoy *et al.* (1985b) may not adequately allow for individual variation in skeletal aging. Bedford *et al.* (1993) also tested the auricular surface method on a sample of known age skeletons from the Grant collection at the University of Toronto. As with other tests of the method, there was a tendency to over-estimate ages of younger adults and to under-estimate ages of individuals over 60 years old. Despite these criticisms both of these studies found that the auricular surface was better than the pubic symphysis for estimating the age at death of individuals over 40 years of age.

One of the most frequently voiced criticisms of the auricular surface technique is the high level of intra- and inter-observer error (Saunders *et al.* 1992: 103). The morphological changes of the auricular surface are more subtle than for the pubic symphysis and the morphological descriptions provided by Lovejoy *et al.* (1985b) provide room for ambiguity. Recently, two attempts have been made to overcome this problem and to account for the variability in auricular surface

degeneration through the use of Bayesian analysis (Buckberry 1999, Schmitt and Broqua 2000). Both methods adopt a scoring system for several morphological components of the auricular surface and use Bayesian statistical inference to produce age estimates. Results were found to be as accurate as the pubic symphysis (Buckberry 1999). A key advantage of the auricular surface technique, however, is that it is preserved far more frequently than the pubic symphysis in archaeological contexts. Both the Lovejoy *et al.* (1985b) and Buckberry (1999) methods were examined in this study

4.3.3 Dental Attrition



Figure 4.16: Mandible exhibiting dentine exposure as a result of wear.

Observation of dental wear patterns is one of the most commonly utilised methods of ageing adult skeletal remains in archaeology. The popularity of this method arises from the high survival rate of teeth within archaeological contexts and the relative ease with which dental wear patterns can be observed and scored. As teeth wear, the enamel of the occlusal surface is progressively removed until the underlying dentine is exposed (Molleson and Cohen 1990: 363). Wear also occurs at the mesial and distal surface contacts of adjacent teeth (interproximal or approximal attrition) owing to slight movement during mastication (Scott and Turner 1988: 109). The degree of dentine exposure on the occlusal surface of the molars is most frequently used to estimate age at death, as both the rate and degree of wear exhibited on these teeth is more consistent (Santini *et al.* 1990: 176).

Dental wear is caused primarily by two processes; attrition and abrasion (however, in developed populations, Mair *et al.* (1996) state that factors such as bruxism, enamel erosion through chemical exposure during industrial work, alcoholism, and bulimia are responsible for most of the observed wear). Attrition is caused by contact between the maxillary and mandibular teeth, primarily during mastication, whereas abrasion is caused by components within the food itself. Both of these processes lead to the wearing of the enamel and exposure of the underlying dentine. Although the degree in severity of tooth wear in past populations is primarily a function of age and diet, the relationship is far from straightforward.

Studies of tooth wear have focussed on regional differences, temporal trends, sex differences, and relationships to subsistence strategies (Scott and Turner 1988: 110). Patterns of tooth wear are now being understood in terms of complex interactions between the teeth, their supporting structures, and the functioning of the chewing apparatus (Smith 1972). Variables influencing dental wear include: tooth and dental arch morphology, the force and direction of masticatory movements, and enamel and dentine hardness. Cultural factors influencing dietary practices and non-masticatory factors such as bruxism and the use of the teeth for manipulative functions will also cause considerable inter- as well as intra-population variation in tooth wear severity for any particular age cohort at any one period of time (Richards and Miller 1991).

Normal patterns and rates of wear may also be altered considerably by malocclusion and pathology (Jackes 1992). Consideration of the secondary effects of these differences on the rate and pattern of wear is necessary as they may significantly affect the correlation between dental wear and age (Smith 1972). Tooth position and occlusal relationships do alter during the growth period, but unless the dentition is subject to severe attrition or abnormal occlusal forces they are generally static after the attainment of adulthood (Brown *et al.* 1990). Attrition sometimes wears the occlusal surface flat, but when wear becomes more severe, an oblique wear pattern is more commonly produced. In these cases it is usual for wear to be more severe on the buccal surface of the mandibular molars and lingual surface of the maxillary molars (Reinhardt 1983).

4.3.3.1 Dental Wear and Age

Tooth wear in archaeological skeletal remains is considerably greater than that observed today because food in the past was much less processed. The heavy occlusal wear of past populations

used to be thought of as a pathological condition until it was observed that the level of dental attrition in recent 'primitive' societies was of a similar severity (Molnar 1972). The rapid wear exhibited by many past populations produces a relatively strong correlation between chronological age and the severity of attrition. It is generally believed that the rate of tooth wear within an archaeological population should exhibit sufficient uniformity for it to provide an approximate indication of age at death (Tomenchuk and Mayhall 1979).

Attempts to characterise the chronology of tooth wear began in the nineteenth century (e.g. Broca 1879) and has most commonly been done through the use of ordinal scales that describe molar attrition through a series of stages (e.g. Murphy 1959a, b; Brothwell 1981; Scott 1979). The majority of studies have focused on molar attrition as these teeth tend to exhibit less variability when compared to the anterior teeth where wear is affected by childhood occlusal relationships and shift in occlusion during adulthood. Some authors (e.g. Murphy 1959a), however, have also produced non-molar wear sequences.

Most ordinal methods of scoring wear are based upon straightforward observations. More recent attempts, however, have been made to estimate dentine exposure more accurately and objectively through the use of the photographs and planimeters (e.g. Molnar *et al.* 1983; Richards and Brown 1981; Richards 1984), that allow the actual calculation of the area of exposed dentine (Walker 1978). Such methods are not widely used for the examination of archaeological material in the UK, because they are slow and require specialist equipment. Instead, scoring techniques based on visual assessment of dentine exposure are more common.

The ordinal scoring of dental attrition suffers from similar statistical disadvantages to those discussed above for dental formation. In reality, tooth wear is not a linear phenomenon and technically it should be measured on a continuous scale (Richards and Brown 1981: 94). Indeed, some authors have adopted a continuous measure of wear based on crown height that can be standardised by total tooth size (e.g. Tomenchuk and Mayall's (1979) study of age-related attrition amongst the Iglooik Inuit). Such techniques are, however, problematic in their application to archaeological populations, because it is difficult to assess tooth size when the cusps used to delineate the occlusal surface are lost through wear (Walker 1978).

A number of ordinal scales and scoring techniques have been produced and these appear to differ only with respect to the number of stages that they employ. In the UK, the charts produced by

Brothwell (1981) are the most commonly used to estimate the age at death for archaeological samples (Figure 4.17). This chart was based on work conducted initially by Miles (1962, 1963a) using an Anglo-Saxon population, although additional dental samples from several other British sites ranging in date from the Neolithic to Medieval periods were included.

There are, however, a number of problems with Brothwell's method. Firstly, given the profound impact of diet and culture on the relationship between dental wear and age, it seems unlikely that the same wear chart can be used to estimate age reliably over such a diverse time span. In an examination of this method, Molleson and Cohen (1990: 368) also found that the wear stages did not represent equivalent amounts of attrition, nor equal lengths of time, as implied by the age ranges. In reality, certain stages were prolonged (e.g. Brothwell's stage 2) and some shorter than stated. They found that by far the greatest error was manifest by stage '5++', which represents two to five times the amount of wear for any of the other grades. Because Brothwell took no account of crown height, from grade four onwards this system was found to lead to the under-ageing of older individuals (Molleson and Cohen 1990; Mays *et al.* 1995).

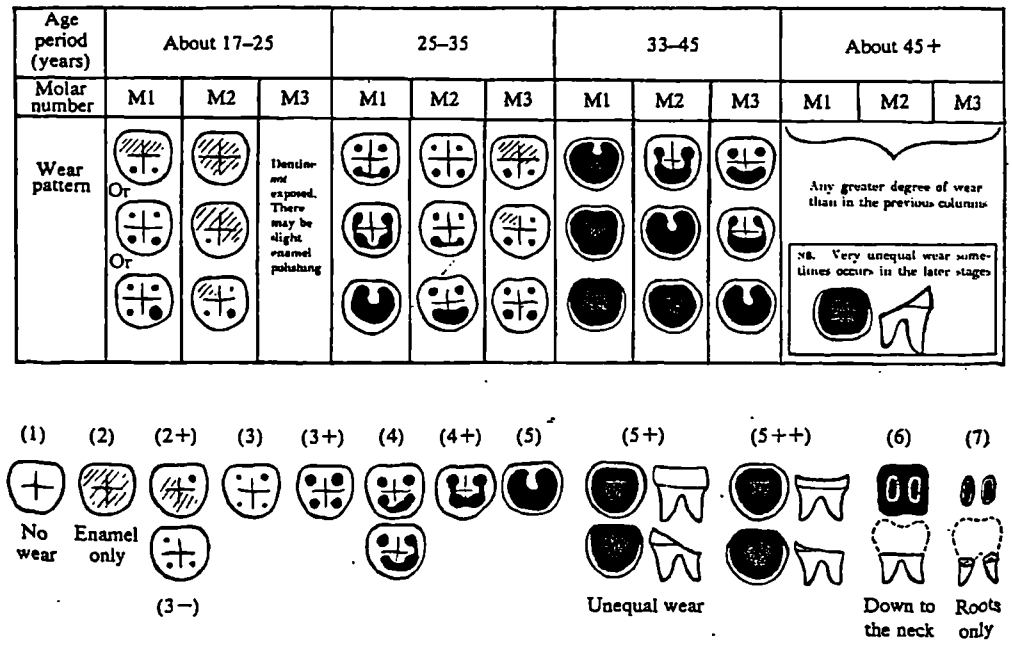


Figure 4.17: Brothwell's system of scoring of dental wear (after Brothwell 1981: 72).

The 'known ages' for Brothwell's archaeological sample were derived from pubic symphyseal age estimates, a technique that has an extensive error range involved, particularly for individuals older than 30 years of age (Brooks and Suchey 1990). The lack of a suitable known age dental-wear reference standard from which to age past populations is one of the main problems in the formulation of a dental-wear ageing technique. Within most modern Western populations, the soft, processed diet results in slow wear rates and subsequently a poor correlation with age. This relationship is further obscured by the increased significance of factors such as occupational exposure to abrasives, or idiosyncratic behaviour such as bruxism (Walker 1978: 169). For example, Santini *et al.* (1990) found there to be a poor relationship between wear and age in a study of a sample of 60 modern known age Chinese skulls. Modern populations also have different dental bites, which appears to be a function of softer diets. Less industrialised populations tended to have more 'perfect' occlusion and edge to edge bites rather than the slight over-bite of modern, westernised groups (Corruccini *et al.* 1990). It is not, therefore, possible to use dental wear standards from modern populations in the production of a method for estimating age at death of archaeological populations.

4.3.3.2 Tooth Wear and Culture

One possible way around this problem is to use standards derived from populations of recent or living known age individuals that exhibit severe levels of attrition. The correlation between tooth wear and chronological age has been studied in a few contemporary populations exhibiting high attrition rates. Information is available for Austalian Aboriginals (e.g. Richards and Brown 1981; Richards 1984; Molnar *et al.* 1983), Inuit (Tomenchuk and Mayhall 1979), and South American Indians (Walker 1978). In each case a clear relationship was found between known age and severity of wear. The possibility of using known age standards from one of these populations was examined in order to produce a methodology that would be applicable to the individuals in this study, or at least in order to produce a model for the variation of dental wear with each age cohort.

One of the few uncontested generalisations concerning tooth wear is that the transition from a hunter-gatherer economy to an agricultural economy is coincident with a marked reduction in both the rate and level of sexual dimorphism in dental wear (Tomenchuk and Mayhall 1979; Molnar 1972; Scott 1979: 214; Smith 1984; Molnar and Molnar 1990: 385). While both hunter-gatherers and agriculturalists can show pronounced degrees and rapid rates of wear, the latter tend

to exhibit comparatively reduced levels and different patterns of attrition. For example, hunter-gather groups commonly wear their anterior teeth more rapidly than agriculturalists, who in turn tend to show more rapid and extensive destruction of the molar crown surfaces. Furthermore, the shapes or angles of the worn occlusal surfaces tend to differ between the populations with opposing subsistence strategies (Molnar and Molnar 1990). Smith (1984) examined the molar wear angle in five hunter-gatherer and five agricultural groups from around the world and found that agriculturalists consistently showed a more oblique wear angle than the hunter-gatherers. These observations suggest that the distinct diets require different chewing modes and varying lengths of time to reduce food to the bolus prior to swallowing (Molnar and Molnar 1990: 385). Sexual dimorphism also appears to be more evident within hunter-gatherer societies and has been demonstrated amongst Inuit, Australian Aboriginal groups (Molnar and Molnar 1990), and the San Bushmen (van Reenen 1982).

Non-dietary chewing also varies considerably between groups (Molnar 1972) and the co-variation of wear patterns with culture has been emphasised by Moorrees (1957) and Brothwell (1963) in noting the limited usefulness for estimating age by comparison of degrees of attrition (see Molnar and Molnar (1990: 387), for a table of dietary and non dietary causes of wear and variability). As well as inter-population variation, some concern should be given to the individual's selection of food and non-dietary substances for ingestion. Diets are not identical for all members of a single socio-economic community even when the same range of exploited food sources are available to everyone. This does of course lead to a considerable amount of variability within any one population for a given age cohort.

On a more physiological level, another complicating factor causing inter-culture variability are the relationships between the patterns of tooth wear and craniofacial morphology, and the morphology and pathology of the temperomandibular joints (Richards 1989). Even among the modern 'primitive' populations there is considerable variation in tooth wear that cannot always be explained in terms of food habits and the practice of crafts using the teeth. For example, the Negritos of Little Andaman Island are extremely 'primitive' in their ways of life and diet, but their teeth are relatively unworn. The pattern and degree of tooth wear depend to a great extent on the thickness and hardness of enamel, which vary from individual to individual as well as population and appears to have a genetic basis.

Given the complexity of factors involved in the levels and patterns of wear within populations, a modern known age standard exhibiting dental wear of comparable severity to archaeological populations may not be suitable for devising an ageing methodology. Tooth wear, although correlated with age, exhibits patterns that are highly culturally specific.

4.3.3.3 Population specific wear rates

The problems arising from the lack of a suitable 'known age' population for ageing archaeological dentitions were in part overcome by the seminal work of Miles (1962, 1963a). Miles recognised that because not all teeth erupt at the same time, the dentition has a built in wear rate indicator. Molar teeth erupt at approximately six-year intervals, therefore, the difference in attrition scores between adjacent molars reflects the amount of attrition taking place during this six year period. Miles (1962, 1963) applied this principle to determine the rate of wear for a collection of Anglo-Saxon skeletons from Breedon-on-the-Hill, Leicestershire. The 'known ages' were derived from thirty-eight immature individuals, which Miles seriated according to ages estimated using the Schour and Massler (1941) chart, modified slightly to take into account the works of Gleiser and Hunt (1955) and Garn *et al.* (1959) (see previous section for age estimation of immature skeletons).

By assuming that M1* erupted at 6 years, M2 at 12 years and M3 at 18 years, it was then possible to observe the wear on M1 at various functional ages (i.e. the number of years the tooth has been in occlusion) up to 12 years and on M2 up to 6 years. These immature individuals, therefore, act as a baseline to deduce the functional age of the molars. In theory, addition of the functional and known ages will yield the chronological age at death of the individual. In order to age individuals with fully developed dentition, those who exhibited only a small amount of wear on M3 (and therefore not much older than the 'known age' group) can be given estimated ages. The dentitions can then be seriated and ages progressively extrapolated from the 'known age' group to the rest of the skeletal population.

Miles (1962, 1963) found that M2 and M3 wore more slowly than M1, but that the rate of wear of M1 was not slowed by the appearance of M2. Consequently, for a given wear stage M2 has a higher functional age than M1. Miles (1963, 2001) determined from subjective analysis that the ratio of functional ages for equivalent wear of M1: M2: M3 was 6: 6.5: 7. This ratio was then

* The first, second and third permanent molars will be referred to as M1, M2 and M3.

assumed to be fixed throughout the individual's lifetime. Some studies have reported similar wear differentials (e.g. Keiser *et al.* 1983), but others have reported equal rates of wear (e.g. Nowell 1978).

Two tests of Miles' method, on a skeletal population (Nowell 1978), and on an ethnographic population (Keiser *et al.* 1983), found that it produced credible results. Miles' application of this method to an archaeological population did, however, indicate a tendency to under-age older individuals (Miles 2001). This method does not take into consideration the complete range of variability in age during the more advanced stages of wear and is biased against older individuals.

When estimating the age at death of archaeological skeletal remains it is vital that a dental wear ageing technique be used because the teeth are frequently the only indicators of age preserved. While the Miles method does overcome the problem of population differences in dental wear, it has some drawbacks. Firstly, the assumption that rates of wear within a population are equal between teeth and constant throughout life may be confounded by alterations in the rate of enamel loss and secondary dentine formation as teeth wear. Secondly, it is evident that an array of circumstances can lead to two individuals of the same population exhibiting different rates of wear due to differences in diet (possibly related to socio-economic circumstances), patterns of malocclusion, unequal susceptibility to caries, abnormal molar eruption ages, loss of occlusal partners, and use of the teeth as tools. In the experience of the author, all of these factors can cause considerable variability within individuals from the same cemetery population. Despite these factors, several authors have found that dental wear, if observed systematically within a population (i.e. through the use of seriation techniques), can yield accurate results (Lovejoy 1985). There is evidence that age determination from the dentition provides the most accurate method yet available but is more likely to result in a ranking order of age in a given population rather than an accurate age determination of any one individual (Whittaker 2000: 84). While Miles' technique provides the best method to date for deriving population specific age estimates, it is clear that there are statistical problems with the method that have resulted in biased age estimates. In a recent test of his own method Miles (2001) conceded that some under-ageing of older individuals at least was occurring. A Miles type method was employed in this study, but with some statistical and methodological developments (discussed in following chapter).

4.3.4 Cranial Suture Closure

The cranial vault consists principally of six major bones (excluding facial and basi-cranial bones): the frontal, right and left parietals and temporals, and the occipital. These bones undergo fusion along cranial sutures throughout life and eventually these sutures may become obliterated. Estimation of age from cranial sutures is one of the oldest methods used for adult age estimation. As early as 1905, Parsons and Box divided adult crania into ten year age categories and described the appearance of sutures both ectocranially (outer table) and endocranially (inner table). The inner and outer table of the cranial vault are separated by a layer of cancellous bone and the fusion of the sutures externally may not be strictly synchronous with internal suture closure (D. Lucy 1997).

Todd and Lyon (1924), using a sample of 307 crania, produced an ageing method which classified each suture into four stages according to the degree of fusion. Serious criticism of the ability of cranial suture closure to reflect chronological age began with Singer (1953) and Brooks (1955). Brooks (1955) found that cranial suture closure consistently under-aged individuals and later Powers (1962) also found significant errors in age estimation using this technique.

The first modification of Todd and Lyon's (1924) method was produced by Acsádi and Nemeskéri (1970). They divided the sutures into segments and awarded each segment a score between zero and four, depending on the degree of closure and obliteration of the suture line. Regression models were then used to produce estimates of age. Tests of this method indicated a great degree of inaccuracy (e.g. Saunders *et al.* 1992). However, the increasing belief that no one skeletal age indicator could produce accurate estimates of age led to further refinements of the cranial suture method (e.g. Perizonius 1984, Meindl and Lovejoy 1985).

Meindl and Lovejoy's (1985) cranial suture method is the one used most widely today. They chose a series of 1cm segments of ten suture sites (Figure 4.18) and scored these on a scale between zero (open) and three (completely obliterated). Their subsequent analysis demonstrated that the best age estimates could be made from only five of the original ten locations, all situated on the lateral-anterior portion of the cranium. This method was, however, found to produce poor results when tested on the Spitalfields collection (Molleson 1995).

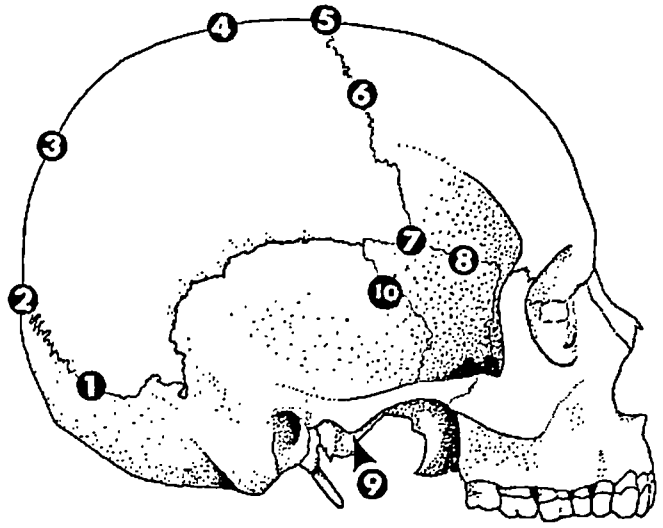


Figure 4.18: Ectocranial suture sites used for estimating age at death (after Meindl and Lovejoy, 1985: 60)

Cranial suture closure clearly exhibits a great deal of variability between individuals and is only poorly correlated with chronological age. Suture closure is not a gradual, uniform, process as is frequently assumed; instead the sutures will fuse in short bursts of activity (D. Lucy 1997). The cranial vault is also influenced by a variety of pathological conditions, which either delay or produce premature fusion of sutures. Furthermore, studies indicate that females show a significant number of open sutures until a later age (Hershkovitz *et al.* 1997). The wide age limits provided by Meindl and Lovejoy (1985), particularly after the age of 50 years, are indicative of the very approximate nature of this method of skeletal ageing. With respect to the above discussion, cranial sutures were only recorded in this study in the absence of other ageing indicators, and even then only used to provide a very approximate indication of age at death.

4.3.5 Sternal End of the Fourth Rib

The sternal end of the rib undergoes a series of morphological changes to the rim that are roughly correlated with chronological age (Figure 4.19). It was argued that this element should show less biological variability and unlike pelvic indicators of age is only minimally influenced by bio-mechanical factors (Dudar *et al.* 1993: 678). İşcan *et al.* (1984a, b, 1985) devised an eight phase system of age estimation based on the study of 230 right fourth ribs of white males and females. This method has, however, been found to exhibit significant variation between sexes, ethnic groups, and environmentally diverse populations. Russell *et al.* (1993) also found the method to

be inaccurate after the third decade, and to perform poorly against the pubic symphysis and auricular surface in all decades.

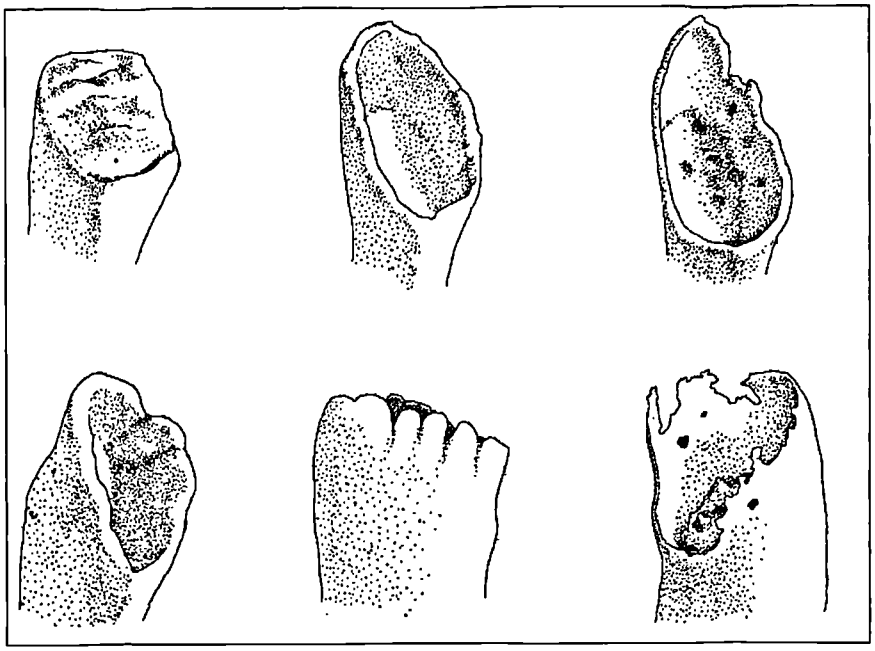


Figure 4.19: Age changes at the sternal end of the fourth rib (after Schwartz 1995: 205).

The principal problem encountered when attempting to use this method within an archaeological context is that the fourth rib rarely survives intact and identification of fragmentary rib ends in the laboratory is problematic. Unless the fourth rib is marked, or bagged separately on site, it will continue to be of limited value. Preservation is clearly a fundamental issue with respect to archaeological skeletal remains and this was found to be an extremely limiting factor in this study with respect to the fourth rib ageing technique.

4.3.6 Late Fusing Epiphyses

The examination of late fusing epiphyses is extremely useful for ageing younger adults. Similar principles apply with respect to the fusion of these epiphyses as with those of the younger individuals. The fusion of the sternal clavicular epiphysis, in particular, has been subject to extensive examination and several, similar, ageing schemes devised (Szilvassy 1980; Webb and

Suchey 1985; Mensforth and Lovejoy 1985; Black and Scheuer 1996). The Workshop of European Anthropologists (1980: 532) provides a fusion age range of 22-24 years for this epiphysis. However, a review of fusion literature indicates that the medial clavicle fuses over a broad age range and that this age range varies considerably between studies (Kreitner *et al.* 1998; Dean 2001).

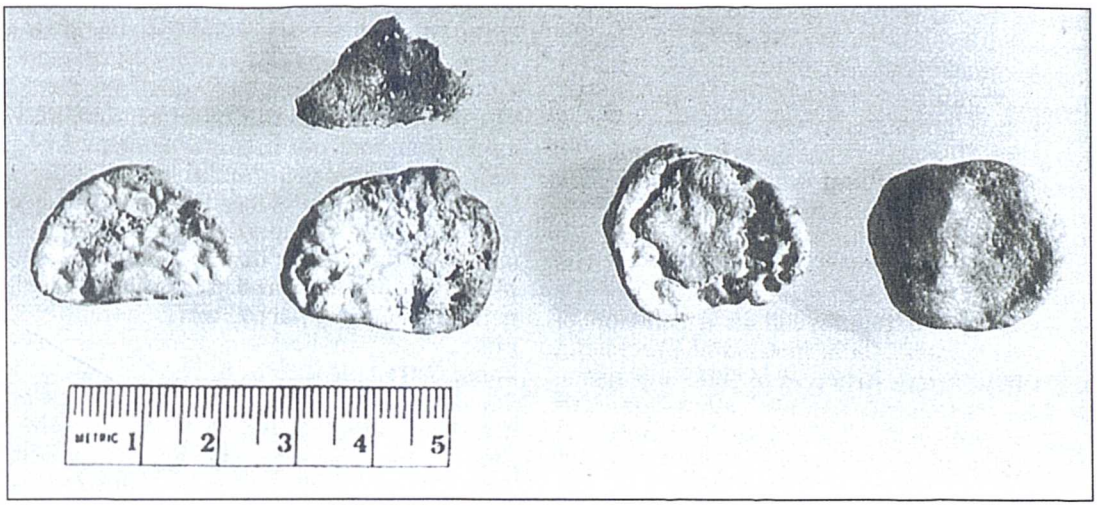


Figure 4.20: Fusion stages of the sternal clavicle (after Webb and Suchey 1985: 460).

The iliac crest, ischial tuberosity, and fusion of the first and second sacral vertebrae are also useful for identifying adults in their early twenties. With respect to the iliac crest (Figure 4.21) a recent study has examined the known age data produced by Owings (1981) using Bayesian statistics (Dean 2001). The examination of the probability distribution of fusion ages indicated that 22-24 years were the most probable range for complete fusion for males and females (Dean 2001: 73). Little sexual dimorphism exists with respect to fusion of either the iliac crest or medial clavicle. The fusion status of these late fusing epiphysis were recorded in this study for all individuals where present.



Figure 4.21: Unfused surface of the ilium with a fragment of the iliac crest beginning to fuse.

4.4 Multifactorial Ageing Methods

When skeletal preservation on an archaeological site is reasonably good, the osteologist is usually presented with more than one indicator of age at death. It has been demonstrated that age estimations derived from a number of skeletal ageing methods consistently produce more accurate ages than when only a single skeletal trait is utilised (Baccino *et al.* 1999). As Kemkes-Grottenthaler (2002: 58-9) states:

'Each bone is merely a single aspect of the whole skeleton....in order to minimize errors introduced by aberrant individual indicators, the combined analytical approach is desirable'.

As a consequence, numerous multifactorial methods have been devised, which produce an age estimation based on observations of a suite of skeletal ageing traits. The first formalised multifactorial method to be developed was by Acsádi and Nemeskéri (1970) and was known as the 'complex method'. They employed four skeletal traits: the pubic symphyseal face; the spongiosa structure of the femoral and humeral head, and the obliteration of the endocranial sutures. The ages from each of these age indicators were assumed to be equally accurate and reliable, and the results then combined to produce an overall age estimate.

Lovejoy *et al.* (1985b) devised a new multifactorial system that was based on five skeletal traits including: the pubic symphysis (Meindl *et al.* 1985b); auricular surface metamorphosis (Lovejoy *et al.* 1985a); trabecular involution of the proximal femur (Walker and Lovejoy 1985), and dental wear. This method advocated the use of seriation before assigning a score; this serves to reduce both inter-observer and intra-observer error. Rather than assuming each age indicator has an equal level of accuracy as with the 'complex method', each indicator in this technique was then subjected to principal components analysis in order to assign 'weights' (related to the trait's accuracy) and to remove the effect of interdependence.

A blind test of this method was conducted by Lovejoy *et al.* (1985a), but only on the reference sample upon which it was devised. As this is not a statistically satisfactory test of the method's merits, several independent tests of both this and the 'complex method' have since been conducted. With respect to the Acsádi and Nemeskéri and (1970) method, Saunders *et al.* (1992) found that age estimates showed a systematic error of under- and over-ageing. Molleson and Cox (1993) also used the 'complex method' to age the Spitalfields sample of known age individuals and found that less than 30% were correctly aged (which they define as being within five years of the actual age), 50% were assessed to within ten years and three-quarters to within fifteen years of the correct age. In general they also found that there was a systematic over-ageing of the younger individuals and under-ageing of the older individuals. Bedford *et al.* (1993) tested the Lovejoy *et al.* (1985a) multifactorial method on the Grant collection of known age individuals and also commented on the systematic under- and over-ageing of the population. The reasons for these repeated biases in the ageing techniques will be discussed in the following chapter.

The majority of osteologists use multiple indicators in order to derive the best possible age at death for skeletal populations. However, it is more usual to base age estimates upon personal experience of the value of particular age indicators, rather than any set methodology (İşcan and Loth 1989, Saunders *et al.* 1992). It is this situation that has led to the much quoted statement by Maples (1989: 323) that: 'Age determination is ultimately an art, not a precise science'. This situation does, however, lead to a lack of standardisation and reduces the comparability of age at death distributions derived by different analysts. It is unfortunate for those researchers attempting to infer social characteristics from cemetery data that such an idiosyncratic approach permeates almost all aspects of human skeletal analysis. More recent multifactorial approaches have attempted to overcome this and other problems relating to skeletal ageing through the use of probabilistic approaches to skeletal ageing data such as Bayes' theorem and Maximum

Likelihood methods (e.g. Boldsen *et al.* 2002). The importance of these techniques in relation to age estimation will be discussed further in the following chapter.

4.5 Summary and Conclusion

Numerous studies, in particular since the 1980s, have questioned our ability to obtain accurate age at death distributions from archaeological populations (e.g. Bocquet-Appel and Masset 1982, 1985). It is evident from a review of cemetery reports that age at death profiles from archaeological populations consistently fall outside of known demographic parameters for either historical or extant populations (Howell 1982; Boddington 1987). Archaeological samples often show a peak of mortality, usually between the ages of 30-45 years and correspondingly few individuals aged over 50 years (Chamberlain 2000). Although cultural elements and taphonomic factors undoubtedly contribute towards this anomaly (Walker *et al.* 1988; Paine and Harpending 1998), it has become increasingly evident that osteological techniques for ageing skeletons may be woefully inadequate. These fears appear to be largely borne out by tests of ageing methods on known age material (e.g. Molleson and Cox 1993), which demonstrate that many methods have a tendency to under-age older individuals and vice versa. Many of these problems stem from the poor correlation that many skeletal indicators have with chronological age resulting from the high degree of variability exhibited between individuals (even those within the same population). This variability progressively increases with age, and leads to particular difficulty when estimating age at death of older individuals. It seems at present there is very little that we can do to elide the problem of variability, other than to account for the problem adequately in a statistical manner.

It is clear that the estimation of age at death from human skeletal remains is a far from straightforward process. These problems are further exacerbated when dealing with archaeological skeletons due to preservation factors. The above review has attempted to highlight the methods available and to provide an assessment of the advantages and disadvantages of each. By doing so the skeletal traits most useful for the estimation of age at death in this study were identified and a clear understanding of their reliability gained.

With respect to assessing age at death of immature skeletal remains, dental development provides the most accurate method and will be the primary method of ageing immature individuals in this study. For those individuals whose dentition is not present, long bone growth and skeletal maturity indicators will be used. However, because these age indicators vary substantially

between peoples, population specific growth and maturity models will be produced by using dental data to provide 'known age' information. Dental development ages will, therefore, be used either directly or indirectly to age all immature individuals. As a result, it is important to produce the most accurate ages possible, which means attempting to overcome some of the statistical biases involved when applying tooth formation standards in the conventional manner. The data produced by Moorrees *et al.* (1963a, b) will, therefore, be used to generate a probability distribution and the principles of Bayesian statistics used to produce age estimates. This method will be outlined in the following chapter using the archaeological data.

Once the dentition has fully developed and most long bone epiphyses fused, age estimations will be based upon observations of late fusing epiphyses, the auricular surface, pubic symphysis, and dental attrition. A Miles type method will be used to age the adults from dental attrition, using the dental ages obtained from the archaeological data to provide the baseline ages and wear rates. A further Bayesian modification of the Miles method will be undertaken and this will be outlined in the following chapter.

Much of the imprecision in human skeletal ageing techniques arises from variation between individuals, with increasing divergence in later years. As much as we are able to modify and improve upon existing age estimation techniques, the reality is that we are unlikely to ever produce a method that will consistently produce reliable, accurate ages at death across populations. Even were there to be such a thing as a 'perfect age indicator' we must be aware that what we are actually deducing is the physiological status of the skeleton. By using chronological age as a referent and comparative tool, we are ultimately attempting to understand 'age' within our contemporary paradigm where the time that has elapsed since birth is of paramount importance. The relevance of this may ultimately be refuted by the findings of this study.

Chapter 5



A Bayesian Approach to Skeletal Ageing and Data Analysis

'...the only relevant thing is uncertainty- the extent of our own knowledge and ignorance' (de Finetti 1974: xi).

5.1 Introduction

In order to begin to identify possible age-related social patterns from the archaeological funerary record, it is vital that reliable estimates of skeletal age at death are achieved. The previous chapter has reviewed and critically assessed current skeletal ageing methods so that an appropriate methodology may be devised for estimating the age at death of this skeletal sample. This review has highlighted a number of problems that will seriously impinge upon the reliability of their application. These may be summarised as follows:

1) Individual and inter-population variability in the chronological manifestation of particular age changes. As a result of both genetic and environmental factors not all populations or even individuals will show skeletal age changes at the same chronological age. As Kemkes-Grottenthaler (2002: 53) states: 'The sequential passage of time of any given estimator is a function not only of age but also of a multitude of confounding factors'. Individual variability also increases with age; as a result, many skeletal age indicators have only a poor correlation with chronological age, particularly in later years.

2) Intra- and inter-observer variability in the interpretation of particular age stages. This occurs because a number of age indicators exhibit only subtle differences between stages; particularly those based upon degenerative morphological changes (e.g. the auricular surface and pubic symphysis). Furthermore, the appearance of these age indicators will often not conform to the 'typical' standards produced by those devising the methods. As a result, inter-observer variability may form a significant source of error.

3) Statistical bias inherent in the ageing methods used. Almost all ageing methods have a common basis in their construction: the age indicator is observed in a modern *reference*

population to establish its variation with age, and this information is then used to estimate the age of an archaeological *target population*. A number of studies over the past few decades have, however, demonstrated that the age distribution of the target population will be affected by the age structure of the reference population upon which an ageing method was based (e.g. Bocquet-Appel and Masset 1982, 1985, 1996; Konigsberg and Frankenberg 1994; Lucy *et al.* 1996; Aykroyd *et al.* 1997, 1999; Konigsberg *et al.* 1997; Hoppa and Vaupel 2002).

The above problems need to be addressed in order to ensure that the ages obtained from the skeletons analysed in this study are as reliable as possible. If not, interpretations of the funerary evidence in terms of age identity may be compromised. This chapter discusses the skeletal data recorded and the use of this information to produce new skeletal ageing methods that overcome some of these statistical biases and are tailored to suit the characteristics of this skeletal population. This study addresses the problems associated with inter-population variability by making use of the skeletal data to generate ageing methodologies, in addition to making use of modern known age reference samples.

Population specific skeletal ageing methods have been produced for: dental development, long bone growth, skeletal maturity, and dental wear. Furthermore, Bayesian mathematical models have been used to eliminate the statistical bias that undermines the reliability of many skeletal ageing techniques. By doing so, this study has produced a detailed analysis of age indicators on a substantial scale and has attempted to ensure that the skeletal ages derived are as reliable as possible. This chapter discusses the skeletal ageing methods produced from the archaeological data. Before proceeding, the principles of Bayesian statistics and the benefits of its application to skeletal ageing will be discussed briefly.

5.2 Statistics and Skeletal Ageing

5.2.1 Regression Problems

Bocquet-Appel and Masset (1982) argued that regression equations introduce a systematic statistical bias in the estimation of age at death from the skeleton. They demonstrated that when chronological age is estimated from the state of a skeletal indicator, the distribution of estimated ages in the 'target' population (the archaeological population of unknown age) is, to an extent, dependent on the age distribution of the reference sample (the skeletal population of known aged

individuals upon which the ageing method was devised). Variation amongst populations, rather than being real, instead may be seen as the product of variations in methodologies, based on specific reference population samples having been applied irrespective of the age class distribution and sexual dimorphism of the target populations (Bocquet-Appel and Masset 1982). This 'mimicry' of the reference sample age structure becomes more marked when the correlation between skeletal indicator and chronological age is low. Bocquet-Appel and Masset (1982) state that this effect can 'lead one to superimpose on the mortality structure of cemetery populations the structure of other populations entirely alien to them' (*ibid*: 321).

Although this paper sparked a heated debate (e.g. Van-Gerven and Armelagos 1983; Buikstra and Konigsberg 1985), it demonstrated convincingly that the use of regression analysis in the production of skeletal ageing techniques was largely responsible for this 'age mimicry'. The under- and over-ageing of the Spitalfields sample using macroscopic techniques has been discussed in the previous chapter and similar results were obtained by Gillard and Colleagues (1991) using aspartic acid racemisation in the dental collagen. Aykroyd *et al.* (1999: 56) state: 'the only element of commonality in both studies [of the Spitalfields sample] is the use of conventional regression analysis as a means of relating the indicator variable(s) with the age'. Smith (1991) also found in her study of tooth formation estimates that results varied considerably according to the statistical means by which a technique was developed and as a result of the age structure of the reference sample (Smith 1991: 157).

Since Bocquet-Appel and Masset's (1982) paper, several studies have addressed the problems of applying regression analysis in the estimation of age from the skeleton (e.g. Bocquet-Appel and Masset 1985, 1996; Konigsberg and Frankenberg 1992, 1994, 2002; Konigsberg *et al.* 1997; Lucy *et al.* 1996; Aykroyd *et al.* 1997, 1999; Boldsen *et al.* 2002; Konigsberg and Herrman 2002). The majority of age estimation methods have been devised by regressing age on a particular skeletal indicator. Konigsberg and Frankenberg (1994) and Aykroyd *et al.* (1997, 1999) show that to do so is to identify age as the dependent variable and the skeletal indicator as the independent variable; essentially the reverse of the actual biological relationship. Such a regression model will assume that all errors are in the y direction (the known age), which, again, is clearly not the case (D. Lucy 1996). This methodology also makes the fundamental assumption that any individual analysed is drawn from a population with the same age at death distribution as the known age reference sample (Konigsberg and Frankenberg 1994: 96).

Aykroyd *et al.* (1997) demonstrate that such use of forward regression analysis leads to all young individuals appearing older and vice versa, and state that this relationship is always inversely dependent on the correlation coefficient between the age indicator and age. The poorer the correlation of the skeletal indicator with age, the more that estimates of unknown quantities will reflect the age distribution of the reference sample. Because age indicators in general have a poor correlation with age, the reference sample age structure exerts a profound effect on the age distribution of the target populations.

Konigsberg *et al.* (1997) and Aykroyd *et al.* (1997, 1999) show that one way of avoiding this is to use the classical calibration method (also referred to by D. Lucy (1996) as inverse regression), whereby indicator is regressed on age rather than vice versa. Adopting this approach eliminates the systematic under- and over-ageing that is a product of forward regression analysis. Unfortunately problems with this technique include: the complexity of calculating inverse regression from multiple age indicators; the difficulty of determining the error range associated with a particular point, and the larger degree of associated variability (D. Lucy 1996: 70; Aykroyd *et al.* 1999: 263).

Konigsberg and Frankenberg (1992: 239) state that in skeletal age estimation there are only three instances whereby the age structure of the reference sample will *not* affect the estimated age distribution of the target population:

1) When there is a perfect correlation between chronological age and the skeletal age indicator.
2) When the reference sample and the target population have the same age distribution.
3) When the reference sample has a uniform age distribution.

Unfortunately, no skeletal indicators show a perfect correlation with age, and because the age distribution of the target population is, of course, unknown, its similarity to the age structure of the reference sample cannot be assessed (Gowland and Chamberlain 2002). Konigsberg and Frankenberg (1992) dismiss the possibility of creating a reference sample with a uniform age distribution (as suggested by Bocquet-Appel and Masset 1982) as they state that: 'this requires discarding data, which certainly cannot be an efficient way to proceed' (Konigsberg and Frankenberg 1992: 239). What is essentially a uniform age distribution, however, may be obtained through the use of uniform probabilities across age categories (Bocquet-Appel and Masset 1996: 573) and this is discussed further below.

5.2.2 Bayesian Solutions

Recent publications on skeletal age estimation have explored the use of Bayesian and Maximum Likelihood methods (e.g. Konigsberg and Frankenberg 1992; Gowland and Chamberlain 2002). The application of Bayesian statistics in archaeology to date has primarily focused on dating techniques (e.g. radiocarbon) (Buck *et al.* 1996). Bayesian data analysis allows us to make inferences from data using probability models for observable quantities and for quantities that are unknown, but we wish to learn about (Gelmen *et al.* 1995: 3). Bayesian methods have also been used in palaeodemography (e.g. Konigsberg and Frankenberg 1992; Chamberlain 2000; Gowland and Chamberlain 2002). However, until very recently very little work has explored its application for providing the ages of *individuals*. One exception is D. Lucy (1996) who adopted a Bayesian approach to re-evaluate Gustafson's (1959) method for ageing individuals from multiple dental traits. This work was, however, flawed in that the prior probability chosen was based on the age distribution of the reference sample. It therefore, incorporated one of those biases inherent in regression analysis. A method for ageing individuals using 'transition analysis' has very recently been published by Boldsen and colleagues (2002), and this employs the principles of Bayesian inference for the estimation of skeletal age based on multiple age indicators.

In order to produce an unbiased methodology for ageing the archaeological sample in this study, Bayesian techniques for age estimation from dental development and wear have been devised. Details of the mathematical models implemented and methods produced are described below. First a brief outline of the basic principles of Bayesian statistics and the application to skeletal age estimation is presented.

Bayes' Theorem is a procedure developed from probability laws whereby current opinion may be sequentially revised in light of further, incoming information concerning the data (Phillips 1973). Bayes' theorem provides a formal inferential framework for updating prior beliefs in light of new evidence. The theorem states that one's *posterior belief* in an eventuality is equal to the *standardised likelihood* of *data* predicted by that eventuality, multiplied by one's *prior belief* in the eventuality:

$$p(A|I) = \frac{p(I|A)}{p(I)} \times p(A)$$

A= age and I= skeletal indicator (e.g. dental development stage)

In the above equation p (A|I), representing the probability of being in an age category given a particular age indicator, is referred to as the *posterior probability* as it represents opinion that is revised in reference to the datum, after observing I (Gowland and Chamberlain 2002). The probability of possessing a particular indicator state given age, shown in the equation as p(I|A), is referred to as the *likelihood*, as it is the conditional probability of possessing that indicator state given a particular age category. The overall probability of possessing a particular indicator state is represented by p(I), while p(A) is referred to as the *prior probability* because it represents an opinion before any data has been observed (Phillips 1973).

Within the framework of Bayesian statistics, we may use more than one skeletal age indicator to estimate age if we assume that while these variables may be conditional on age, they are independent of each other. This makes it an ideal method for estimating age from multiple variables and it will also automatically weight the reliability of each age indicator according to the probability distribution. This eliminates the rather dubious process of imposing weights discussed in the previous chapter, or worse still, assuming that each indicator contributes equally (D. Lucy 1996: 80). For the purposes of this study, each age indicator can be considered an independent variable, because it has a unique probability of age for each developmental stage. A Bayesian method will reduce the statistical error associated with regression techniques, and allow an error range, unique to each individual to be produced. This Bayesian method is much more suited to anthropological estimations of age, it incorporates none of the assumptions of regression analysis, while providing numerous advantages. Before describing the mathematical models generated for the study of this skeletal sample, an outline will be provided of the nature and recording of the archaeological skeletal data.

5.3 The Archaeological Data

The skeletal material analysed in this study were from ten cemeteries located in the regions of Hampshire and Oxfordshire (see Table 5.1). The details and archaeological contexts of these sites were discussed in Chapter 2. The current published age estimations (where available) of the individuals within this archaeological sample incorporate many of the problems and biases discussed above. Furthermore, ages from different cemetery reports are not comparable due to a lack of standardisation in both methodology and age categories. This situation is unsatisfactory because it could potentially lead to a confused picture of age identity in fourth- to sixth- century eastern Britain. It was, therefore, necessary to collect primary skeletal ageing data from all of the

available burials. By doing so, a standardised recording methodology between cemeteries was ensured and inter-observer error eliminated.

Region	Site	Period	No. Individuals
Upper Thames	Cassington,	Late Roman	63
Upper Thames	Queensford	Late Roman/Sub Roman	164
Upper Thames	Berinsfield	Early Anglo Saxon	119
Upper Thames	Abingdon	Early Anglo Saxon	129
Hampshire	Lankhills	Late Roman	486
Hampshire	Victoria Road	Late Roman	134
Hampshire	Worthy Park	Early Anglo Saxon	109
Hampshire	Winnall II	Mid-Anglo Saxon	48
Hampshire	Portway	Early Anglo Saxon	71
Hampshire	Alton	Early Anglo Saxon	50

Table 5.1: Archaeological data.

5.4 Data Collection

5.4.1 Immature Skeletal Recording

The immature skeletal remains from each site were recorded using the form presented below (Figure 5.1). It should be noted that individuals between the ages of approximately 16-23 years may have had data recorded using both the immature and mature skeletal recording forms (e.g. if the dentition was almost fully developed but not all of the long bones had fused). The developmental stage of each observable tooth for each immature individual in the archaeological sample was recorded using the charts of Moorrees *et al.* (1963a, b). The jaws were not radiographed and the developmental stage could only be observed where teeth could easily be removed, were free of the jaw, or where the jaw was damaged. Fortunately for the purposes of this study, these criteria applied to the majority of immature dentitions. Where the developmental stage could not be observed, but the tooth was present, the eruption status was noted as unerupted, just erupting (just emerged through the alveolar crest), partially erupted (fully emerged from the alveolar crest, but not fully occluded), or erupted.

The eruption chart produced by Ubelaker (1978) was also consulted for each individual and they were assigned the eruption stage they most closely corresponded to. If the dentition showed any unusual eruption patterns (e.g. retained deciduous teeth, or teeth not erupting in sequence), this was recorded in the notes section. For those individuals whose permanent molars had erupted, wear was also recorded by shading the diagram at the bottom of the sheet.

All complete long bones (including both the right and left sides) were measured, using either sliding callipers or an osteometric board depending on bone size. The fusion status of each of the long bones and epiphyses were also recorded. The level of skeletal maturity attained by a large number of other skeletal elements (tabulated in the sheet) was also recorded. Fusion status was divided into four stages:

1) Unfused.
2) Fusing (the epiphysis is partially fused).
3) Recently fused (the epiphysis is completely united, but the fusion line is clearly visible).
4) Fused.

Any observed pathological conditions or abnormalities were recorded in the notes section. A total of 373 recording forms containing at least some information regarding age at death were produced for the immature skeletal remains in this sample. In some instances preservation was too poor to ascertain any information other than that the bones were immature. In these cases the condition of the skeleton was recorded in the database, but no form was filled in.

No attempt has been made to sex the immature skeletal material in this collection as the degree of sexual dimorphism exhibited in pre-pubescent skeletal material is not pronounced. Whilst a number of authors (e.g. Schutkowski 1993) maintain that it is possible to ascertain their sex, current methods have not produced consistent or reliable results at present.

Skeleton Recording Sheet
Immature Skeleton

Site: Berinsfield Skeleton No: 122

DECIDUOUS TEETH

Tooth	Upper	Lower	Age
I1	/	/	
I2	/	/	
C	/	/	
M1	Ac	Ac	
M2	Ac	Ac	

PERMANENT TEETH

Tooth	Upper	Lower	Age
I1	R¼	/	
I2	R¼	R½	
C	/	Ri	
P1	Crc	UC	
P2	/	UC	
M1	R½	R½	
M2	Crc	Crc	
M3	/	/	

LONG BONE LENGTH

Bone	Right	Left	Age
Femur	I	25.6 cm.	
Tibia	22 cm.	I	
Fibula	I	22 cm.	
Humerus	19 cm	19 cm	
Radius	I	I	
Ulna	I	I	

EPIPHYSEAL FUSION

Distal	Proximal	Age
U	U	
U	U	
U	U	
U	U	
U	U	
U	U	

UNION OF OSSIFICATION CENTRES

Bone	Fusion				Age
Pars basilaris	Fusion:	Width:	Height:		
Vertebrae: arches	CV: F	TV: F	LV: F	SV: F	
bodies/Arches	CV: F	TV: U/F	LV: F	SV: F	
Plate	CV: U	TV: U	LV: U	SV: U	

Skeletal Element	Fusion	Age	Skeletal element	Fusion	Age
Greater wing of sphenoid	X		Scapula: glenoid cavity	U	
Mandible fuses in midline	F		acromium	X	
Metopic suture	X		coracoid process	U	
Humerus: greater tubercle	U		Femur: lesser troch.	U	
lesser tubercle	U		greater troch.	U	
medial epicondyle	U		Tibia: tuberosity	U	
lateral epicondyle	U		Os coxa: ischium-pubis	U	
trochlea	U		ischium-ilium	U	
Ulna: olecranon	U		acetabulum	U	
Clavicle: acromial end	U				

SUMMARY

Dental age	
Long bone length age	
Skeletal maturity age	

Notes:

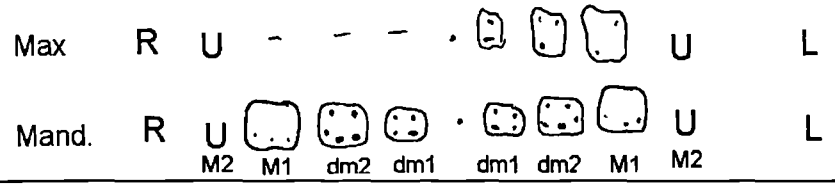


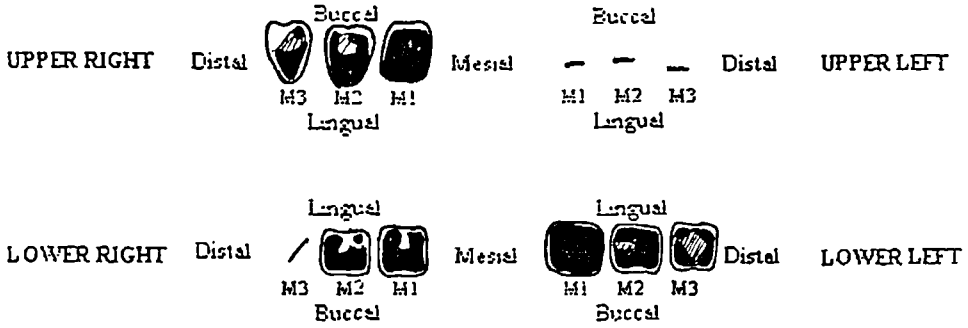
Figure 5.1: Example of a completed immature skeletal age indicator recording form.

Skeleton Recording Sheet
Adult Skeleton

Site: Berinsfield Skeleton No: 133 Sex: M

Ageing Method	Phase	Age (years)
Pubic symphysis	4 (Both present)	
Auricular surface	5 (Both present)	
Fourth sternal rib	/	

MOLAR ATTRITION:



Age: _____

LATERAL-ANTERIOR ECTOCRANIAL SUTURE CLOSURE

Suture Site	Score
Midcoronal	/
Pterion	/
Sphenofrontal	/
Inferior sphenotemporal	/
Superior sphenotemporal	/
Age (years)	/

LATE FUSING EPIPHYSES

Skeletal element	State of fusion	Age (years)
Medial clavicle	4	
Iliac crest	4	
Ischial tuberosity	4	
Spheno-occipital syncondrosis	/	
S1 and S2	/	

Notes:

Healed fracture of right clavicle.

No complete long bones for stature estimates

Figure 5.2: Example of a completed mature skeletal age indicator recording form.

5.4.2 Mature Skeletal Recording

5.4.2.1 Sex Estimation

The mature skeletal remains were recorded using the form presented below (Figure 5.2). Once skeletal maturity has been reached sex can be estimated using a variety of sexually dimorphic features (Krogman and İşçan 1986; Buikstra and Ubelaker 1994). This involves the morphological examination of a number of characteristics of the pelvis and skull, together with observations regarding general robusticity and metrical data from the long bones. The pelvic girdle is the most sexually dimorphic region of the skeleton and, therefore, the most consistently reliable feature for sexing skeletal remains. The features of the skull are the next most reliable criteria available for skeletal sex estimation. These features are largely related to robusticity, however, and often display considerable overlap between the sexes and variability between populations. Metrical data were also used in sexing, but only as a means of confirming results obtained from the examination of the pelvis or skull. Metrical data are subject to considerable overlap between the sexes and cannot be considered a reliable indicator of sex unless used in conjunction with other methods. All sex estimations were conducted independently of previous osteological reports (where available), or information concerning grave good associations.

When sexing, one must consider the range of variation and overlap within each population. Five categories of sex were used:

F =female
F? = probable female
M = male
M? = probable male
? = sex unknown

Where a question mark has been added after the stated sex, this indicates that some doubt exists concerning sex, either as a result of poor preservation, or ambiguity in those features present.

5.4.2.2 Age Recording

The stages of development of the pubic symphyses were recorded using the Brooks and Suchey (1990) method (see Chapter 4) and the casts that accompany this method as an aid. The auricular surface was recorded according to the stages outlined by Lovejoy *et al.* (1985b), with reference to the photographs provided by the authors. In addition, each auricular surface was also scored using to the unpublished method devised by Buckberry (1999). The phases of the fourth sternal end rib were recorded according to the technique devised by İşcan *et al.* (1984a, b), although this method proved to be of extremely limited use: the fourth rib was only preserved, or identifiable, in two skeletons from the entire sample. Tagging the fourth ribs at excavation would increase the number of individuals that can be aged using this method. For each of the above ageing techniques, the stages were recorded from both the right and left sides. Lateral-anterior ectocranial suture closure was recorded in the initial stages of data collection according to the method outlined by Meindl and Lovejoy (1985). However, this method was disregarded in later analyses because of the fragmentary condition of many of the crania within the sample and the poor correlation of the cranial sutures with ages obtained using other techniques. The fusion status of the epiphyses was also recorded according to the methodology outlined for the immature skeletons.

Molar wear was recorded for both upper and lower molars by shading the diagrams (as illustrated in Figure 5.2). In those dentitions where attrition had proceeded beyond the stage of complete loss of occlusal enamel, the quantity and appearance of the remaining crown was noted and measured using sliding calipers. In addition, the following conventional notations were used to denote the absence of a tooth:

/ post mortem loss
- jaw missing
X ante-mortem loss
* Congenital absence

In the notes section of the recording form any observed pathological conditions or abnormalities were also recorded. In addition, the length of one long bone from each individual was also recorded (where present) for stature estimates in the following order of preference: femur, tibia, fibula, humerus, radius, ulna. Recording forms were filled in for 725 adult individuals. A

substantial number of adults have no age information available due to poor preservation. In these instances, the sex (if possible) and the adult status of the skeletons were entered into the database.

5.4.3 Skeletal Data Analysis

The data from the recording sheets were entered into two Microsoft Excel spreadsheets: one for immature individuals and one for mature individuals. The database for the immature skeletons was designed so that each tooth, long bone, and skeletal maturity indicator were recorded in separate fields. A total of 76 fields of ageing data were recorded for each immature skeleton (see Appendix 1). The database for the adults was designed so that both the right and left pubic symphyses and auricular surfaces were assigned separate fields, as were the molars (upper and lower, right and left) and each of the late fusing epiphyses*. A total of 20 fields of age data were recorded for each adult skeleton, with an additional two fields for sex and stature. The following section describes the analysis of these data and the ageing techniques generated.

5.5 Immature Skeletal Material

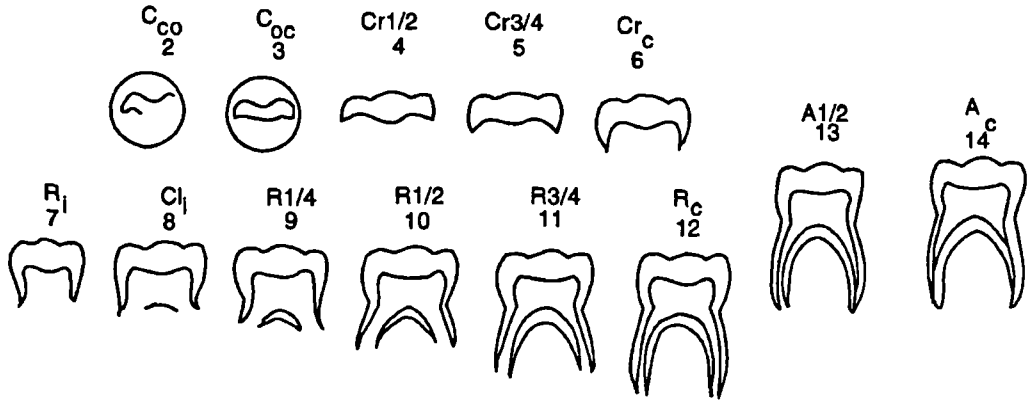
5.5.1 Dental Development

The morphological stages recorded for each tooth (as described above) were converted into a numerical grading system. This was conducted according to Figure 5.3, and the data then entered into a database, with each deciduous and/or permanent tooth assigned a separate field. The Moorrees *et al.* (1963a, b) method was not used in a direct way because of a number of statistical concerns with the conventional application of these and similar standards. One of the major statistical errors made by most researchers using dental standards is the assumption that the mean values of age are universally applicable (Lampl and Johnston 1996: 352-3). As Konigsberg and Holman (1999: 265) state:

> 'nearly all methods of ageing in current use do not make proper use of the statistical nature of age estimates... age estimation from one or more skeletal traits is a process of generating the distribution of possible chronological ages....by throwing out distributional information around the mean or median age, we gain a false sense of statistical power about statements based on that age'.

* The cranial suture stages were found to be frequently at variance with the ages obtained from other skeletal indicators. These results were therefore not included in the final analysis.

Traditional age estimation methods, therefore, tend to treat ages as though they are exact, rather than a *distribution* of possible ages. Despite the relative accuracy of dental development as an indicator of age, no method of skeletal ageing can produce an exact chronological age because of variation amongst individuals concerning the age of attainment of a given developmental stage (Konigsberg and Holman 1999: 268). Even were a skeletal marker to be perfectly correlated with chronological age and all variation eliminated, it would *still* yield a distribution of ages rather than an exact age because children will, upon entering a given developmental state, remain there for some period of time (Konigsberg and Holman 1999: 268). This factor actually introduces a significant source of error, and tends to result in age distributions that are biased by the reference population of the method used (as described previously).



Code	Stage	Code	Stage
1	Initial cusp formation	8	Initial cleft formation
2	Coalescence of cusps	9	Root length 1/4
3	Cusp outline complete	10	Root length 1/2
4	Crown 1/2 complete	11	Root length 3/4
5	Crown 3/4 complete	12	Root length complete
6	Crown complete	13	Apex 1/2 closed
7	Initial root formation	14	Apex closed

Figure 5.3: Dental development thresholds of Moorrees *et al.* (1963b: 1493) modified through the addition of a numerical grading system (Millard and Gowland in press).

Another significant source of error in the application of the Moorrees *et al.* (1963a, b) dental standards is that researchers tend to assign the age that most closely coincides with the developmental stage observed. However, as Smith discusses (1991), at the time of observation a

tooth at a given stage of development has actually already attained that chronological age. It should not, therefore, be assigned an age relating to that developmental stage, but one that is between the current and the following stages. These points have important statistical implications that have been addressed in this study using a Bayesian approach. By doing so a more reliable, less biased method of age estimation from dental development may be produced.

The Moorrees *et al.* (1963a, b) standards were produced in a sex specific format. Because it is not possible to sex immature skeletal material, it was necessary to pool the known age data for both boys and girls. In order to do this, the Moorrees *et al.* (1963a, b) data provided for males and females were degraphed to obtain the mean ages of transition and these were then averaged. This inevitably extends the degree of variation for any one stage of development, however, sexual dimorphism in teeth is comparatively minor and represents an insignificant source of error. Through this process, the thresholds for each of the morphological stages of tooth development (as illustrated in Figure 5.3 for the permanent molars) were derived.

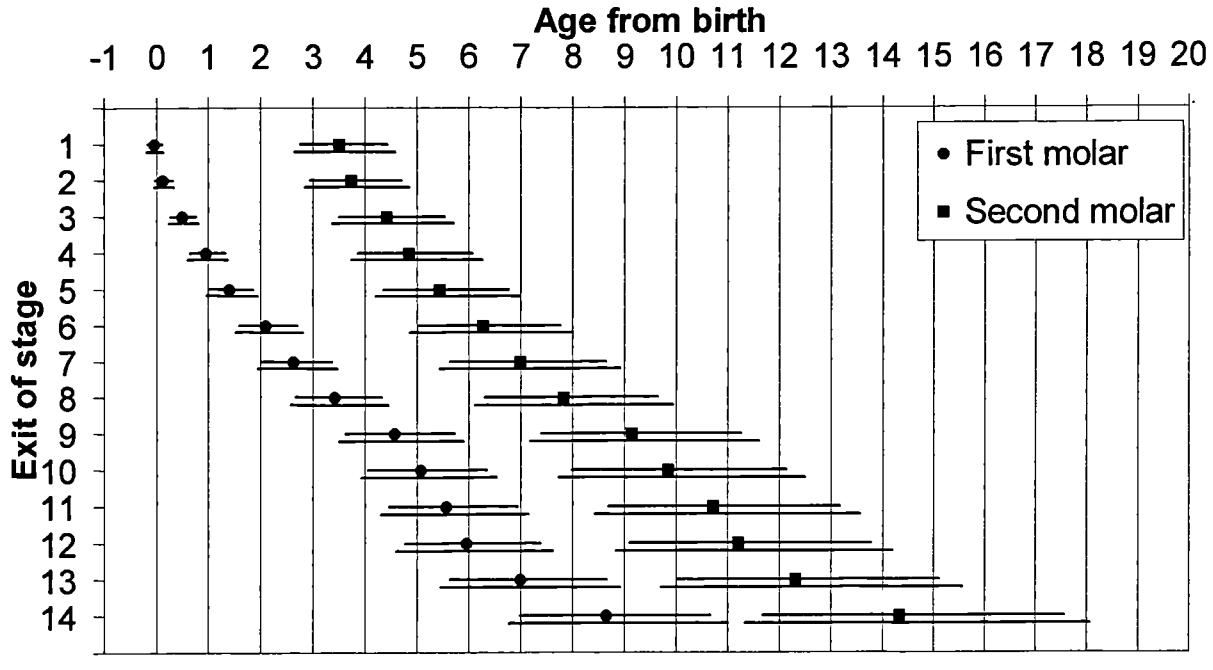


Figure 5.4: Age thresholds for each of the morphological stages of tooth development for the first and second permanent molars.

For the purposes of this study, each tooth is considered an independent variable, because it has a unique probability of age for each developmental, or wear stage. Moorrees *et al.* (1963a, b) give no indication as to whether development stages between teeth are correlated. However, Konigsberg and Holman's (1999) data on covariance of eruption ages show, for the most part, weak correlations between different teeth, suggesting that the assumption of independence leads to a small under-estimation of uncertainty.

Moorrees and colleagues report that their data for cumulative percentages of children having attained or passed a particular developmental threshold fitted a cumulative log-normal distribution with a standard deviation of 0.042 $\log_{10}$ conceptional age units. For each threshold in Figure 5.4, the top line represents 95% confidence interval for the Moorrees *et al.* log-normal distribution of ages of transition. This has been approximated with a logistic distribution (95% CI represented by the bottom line) as this:

a) has heavier tails and helps counter the problem of underestimating uncertainty by assuming all of an individual's teeth development stages are independent conditional on age and
b) is computationally more stable in the software used here (see below).

5.5.1.1 Mathematical/Statistical Model

If Q_{jk} is the probability of tooth j having passed the threshold for the end of stage k (k= 1,2,....N_j-1, where N_j is the number of stages for tooth j), then:

$$\text{logit}\,(Q_{jk}) = \delta \times (\ln(\theta) - \ln(\gamma_{jk}))$$

Where θ is the individual's age, γ_{jk} is the mean threshold age for the population (both expressed as years from conception) and δ is the discriminability. Logit is used becuse If $p(k_j \mid \theta)$ is the probability of tooth j being in stage k at age θ, then:

$$p(1_j \mid \theta) = 1 - Q_{j1}$$
$$p(k_j \mid \theta) = Q_{jk-1} - Q_{jk} \text{ for } 2 \leq k \leq N_j - 1$$
$$p(N_j \mid \theta) = Q_{jN_j-1}$$

By specifying a joint likelihood for the data we are able to provide a full probability model for all observable and unobservable quantities (Lunn *et al.* 2000). If we assume that the development stages of all the teeth are independent then:

$$\mathrm{p}(\mathbf{k} \mid \theta) = \prod_j p(k_j \mid \theta)$$

where **k** is the vector of observed stages. In order to make inferences about age we use Bayes' theorem to construct the posterior distribution from the observed data:

$$p(\theta \mid \mathbf{k}) \propto \mathrm{p}(\mathbf{k} \mid \theta) \times p(\theta)$$

Thus for dental development, according to the equation above $p(\theta \mid \underline{k})$ is the posterior probability of an age θ, given a particular set of teeth, in particular stages and this is proportional to the likelihood the teeth being in the particular stages, given a particular age (taken from the Moorrees *et al.* data), multiplied by the prior probability of that age, $p(\theta)$.

For dental development we take $\delta = 1.6 \times 10.34$, where $10.34 = 1/\ln(10^{0.042})$ equivalent to Moorrees *et al.*'s 0.042 $\log_{10}$ conceptional age units and 1.6 adjusts the 95% spread of the log-logistic to be similar to (but slightly greater than) the log-normal distribution.

A uniform prior (one that assumes an equal probability of ages) has been adopted in this study, however, a model prior obtained from an appropriate model life table, or from ages estimated from the population using other techniques may be more appropriate. Because in this modeling situation the joint posterior distribution $p(\theta \mid \mathbf{k})$ requires complex numerical integration, we use a Markov-Chain Monte Carlo (MCMC) method. This method allows values of age (θ) to be drawn from approximate distributions and then corrects these to approximate better the target posterior distribution $p(\theta \mid \underline{k})$ (Gilks *et al.* 1996). This model has been evaluated using the WinBUGS program, a Windows-based version of BUGS (an acronym for Bayesian inference Using Gibbs Sampling), which allows complex numerical integration analysis by the MCMC technique to be conducted in a user-friendly environment (Spiegelhalter *et al.* 2000; Lunn *et al.* 2000).

Using the method described above (Millard and Gowland in press), dental ages were obtained for a total of 269 individuals with developing dentition. The use of this method has the following advantages over previous applications of dental standards to archaeological populations:

1) It does not assign the age associated with the developmental stage, but one that relates to the current and the next threshold according to Smith's (1991) recommendations.

2) It does not use the mean age from the reference data or use these as an exact age; rather it takes into account the distribution of ages for each developmental threshold.

3) The use of Bayes' theorem ensures that the ages obtained are independent of the age structure of the Moorrees *et al.* (1963a, b) reference sample.

4) This method automatically derives an age from the distribution data of all available teeth, rather than using the statistically dubious process of averaging mean ages. It therefore takes into account: the fact that some teeth may produce more precise ages than others; allows for missing teeth, and adjusts the confidence limits accordingly. For example, the confidence limits for an individual with only one or two teeth present will be greater than those of an individual of similar age with all of their teeth present.

5.5.2 Long Bone Growth

Long bone length is frequently used to estimate the age at death of immature skeletons, and is most useful for ageing young infants and children (prior to puberty), when growth has a greater correlation with age. As discussed in the previous chapter, however, long bone growth is highly susceptible to environmental factors, resulting in a great deal of intra- and inter-population variability with age. Modern reference standards are produced from children who have a consistently adequate diet and low disease prevalence, thus the application of these standards to past populations may well lead to an under-estimation of age (Lampl and Johnston 1996: 351).

While a number of growth profiles of archeological populations have been produced, comparatively few studies have been conducted on Romano-British and early Anglo-Saxon populations. Archaeological studies of growth relevant to this analysis include Hoppa's (1992) examination of several early to late Anglo-Saxon populations and Molleson's (1993) work on the late Roman cemetery of Poundbury. However, the incompatibility of the dental ageing methods used in these studies to derive the 'known ages' means that this work is of limited use. Furthermore, neither of these analyses took into consideration the important statistical fact that

dental age is not an exact age, but represents a *range* of possible ages. The statistical implications of this have been discussed previously in reference to dental development. As a result, new skeletal growth curves for each major long bone have been produced from the archaeological skeletal data collected, using the statistically improved dental age estimates to provide 'known ages'.

5.5.2.1 Long bone data and method

Following the osteological convention growth profiles have been produced using measurements from the left side, except in those instances where the left bone is absent or incomplete, in which case the measurements from the right side were substituted. Figure 5.5 illustrates the preservation of unfused long bone elements within the skeletal sample. The humerus, femur and tibia survived intact most frequently as these tend to be more robust. The fibula was only infrequently preserved and as such has been excluded from further analysis. A total of 200 skeletons produced at least one long bone measurement and of these 126 had a 'known age' derived from dental development. Long bone length has been plotted against dental age to produce a cross-sectional skeletal growth profile.

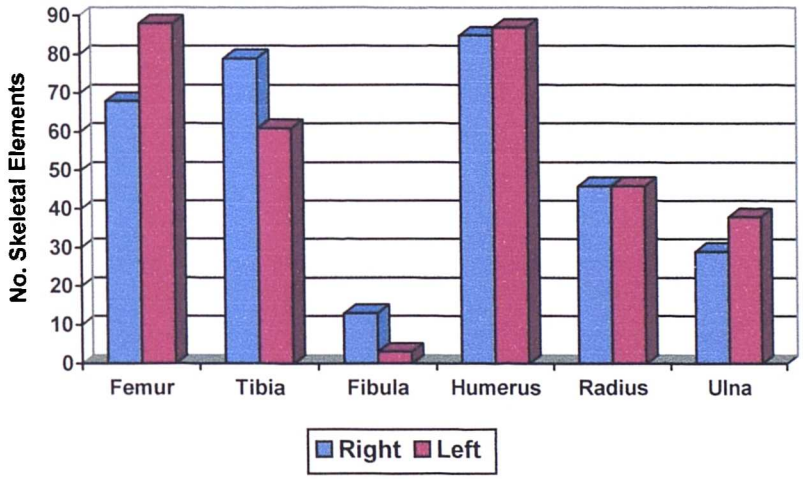


Figure 5.5: Number of complete, unfused long bones of each skeletal element in the archaeological sample.

This study of archaeological long bone length is unique, because it has incorporated the dental age *range*, rather than a mean age for each long bone length. By doing so a more realistic and statistically sound representation of the uncertainty of mean long bone length with age can be

attained. Growth models may also be fitted to this data: the Jenss-Bayley model has been plotted in this study (Figures 5.6-5.10) (Millard and Gowland in press):

$$l = a + b\theta + c\exp(-d\theta)$$

(This includes error estimates on the regression parameters that are the y-errors).

Figures 5.6-5.10 represent the growth curves for each of the major long bones, with the exception of the fibula, which was only poorly preserved. These growth curves have then been used to obtain an age range estimate, given long bone length. An examination of these charts indicates a general trend towards wider dental error bars with age and this is a result of increasing variability in dental development with age. Some of the dental age ranges for younger individuals are also relatively large and this factor relates to only a few teeth being present in these individuals (as discussed previously, the fewer the teeth, the wider the dental age confidence limits).

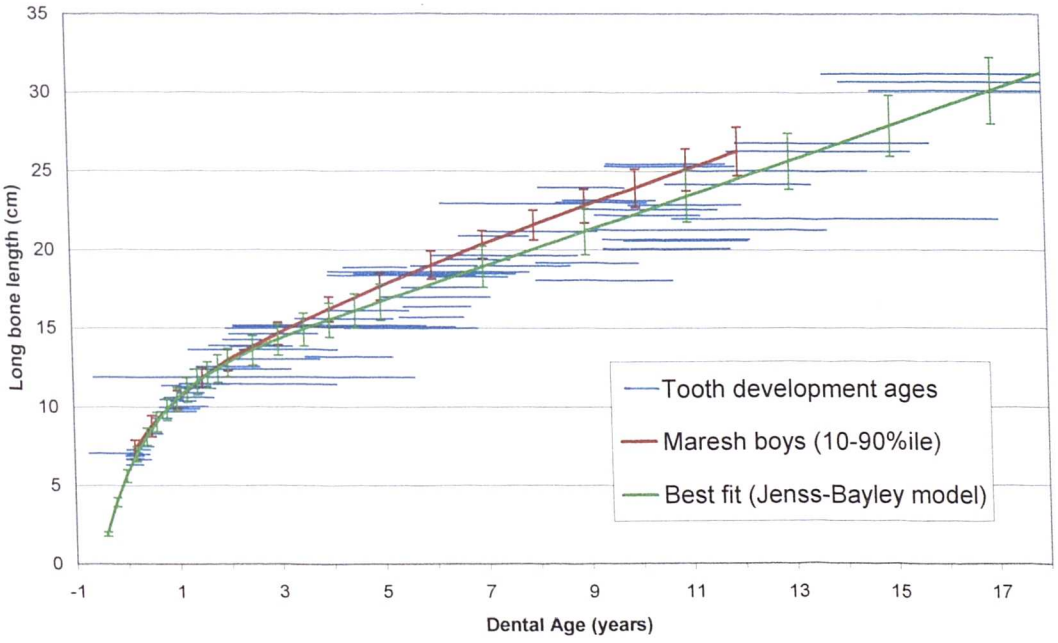


Figure 5.6: Humerus length plotted against dental age range.

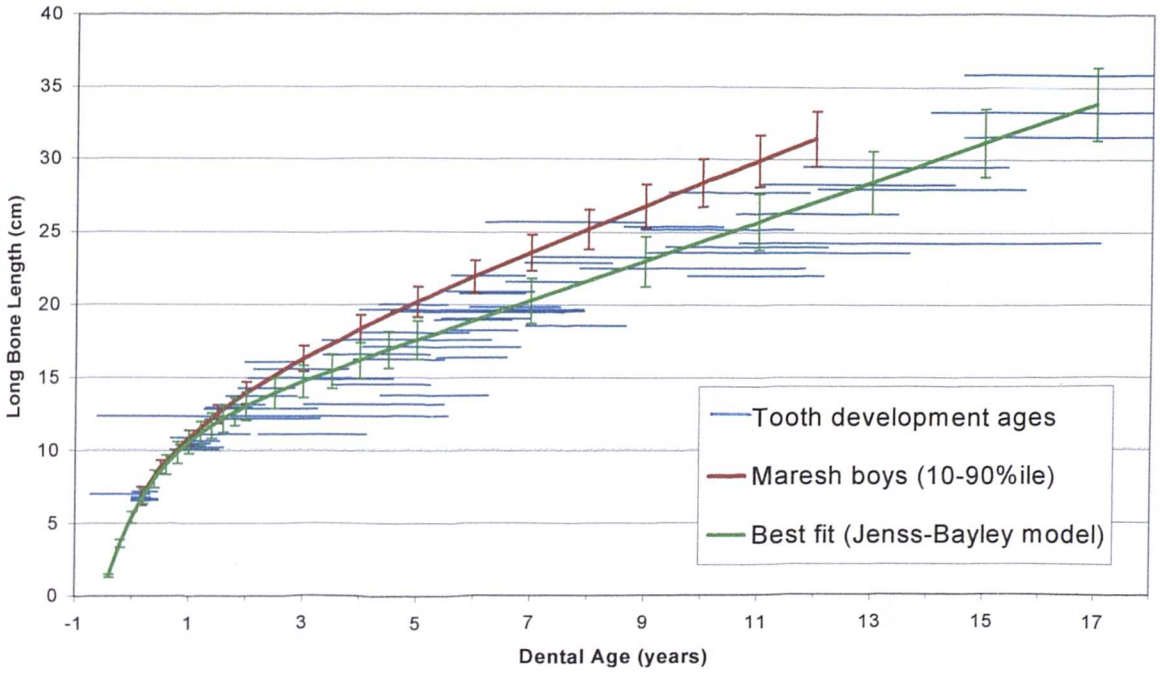


Figure 5.7: Tibia length plotted against dental age range.

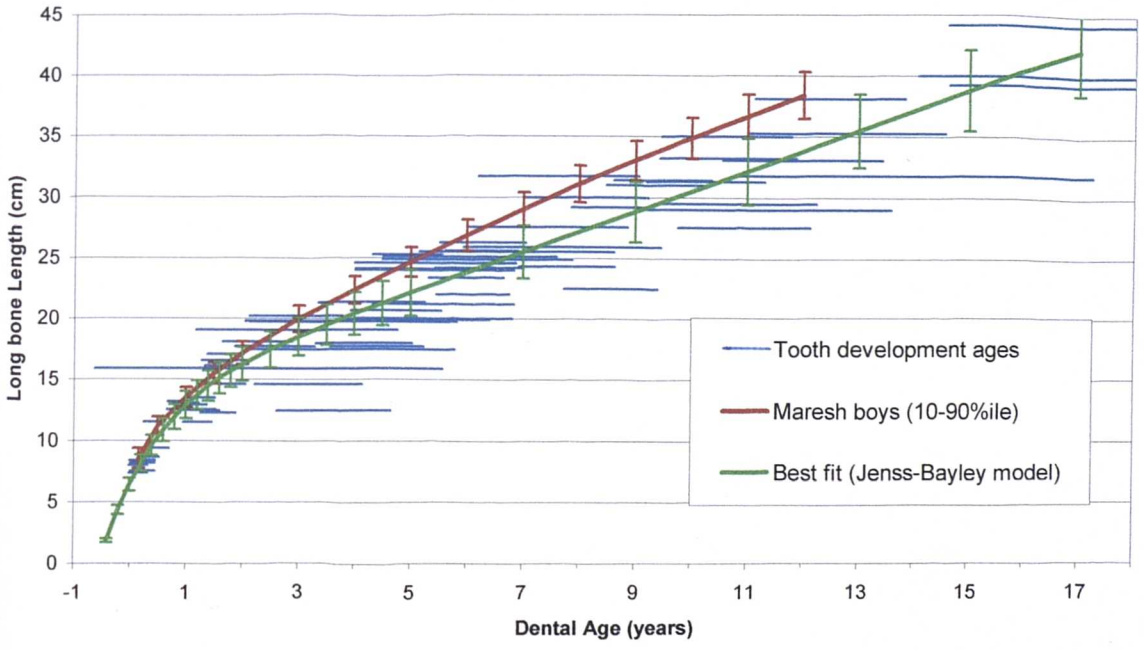


Figure 5.8: Femur length plotted against dental age range.

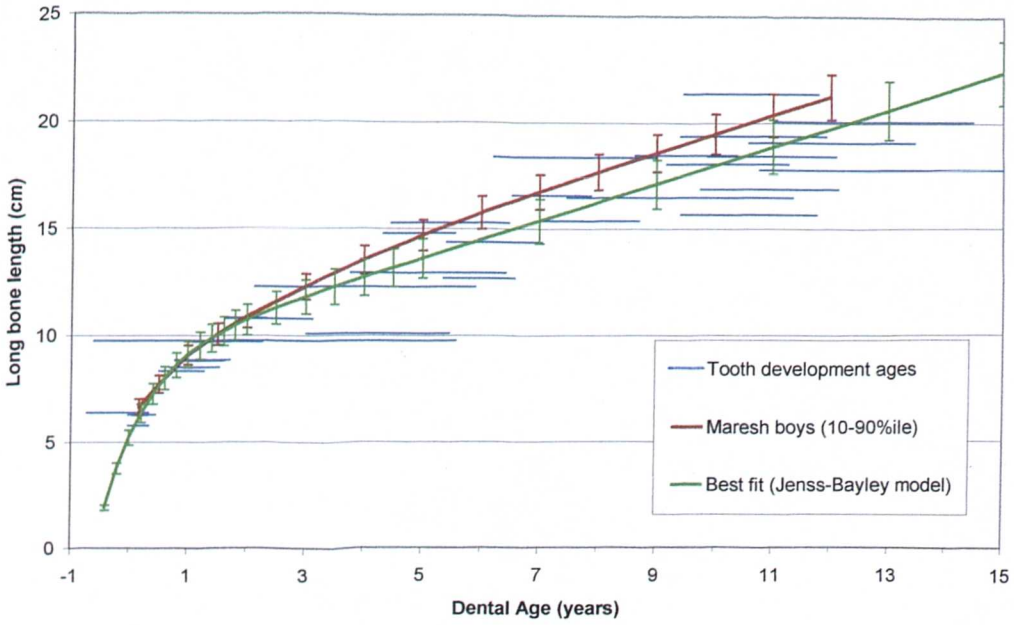


Figure 5.9: Ulna length plotted against dental age range.

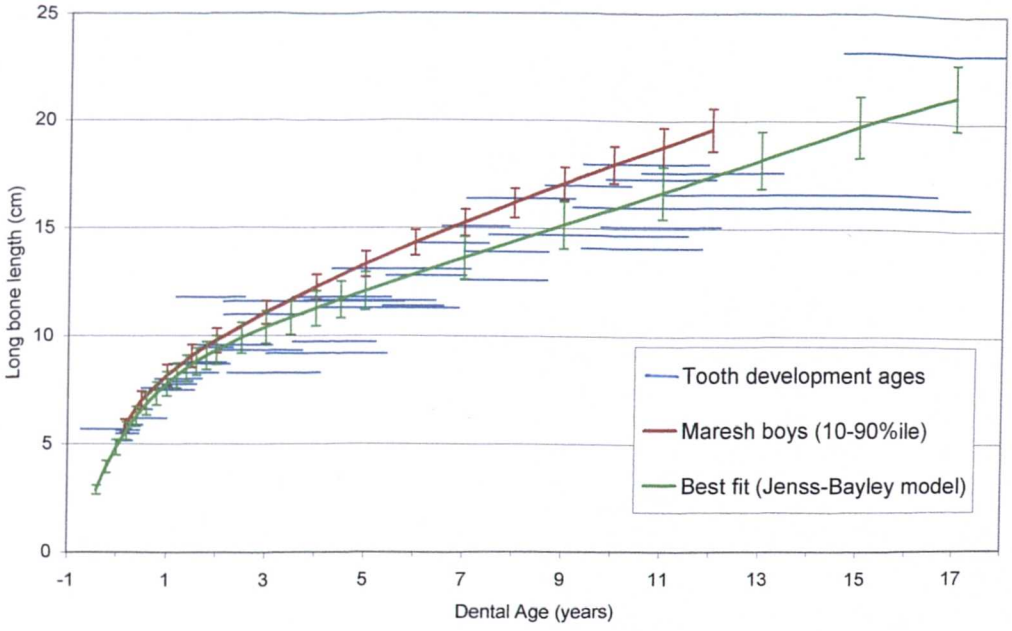


Figure 5.10: Radius length plotted against dental age range.

The data for each long bone were compared to the Maresh (1955) data for long bone growth based on a modern Western population. As we can see, the individuals from this study exhibit retarded growth compared to the modern data and this is true of most archaeological populations. Given the overall increase in both juvenile and adult stature in modern populations, it is unlikely that this slower growth in the archaeological population is a result of morbidity (Saunders *et al.* 1993b).

As we can see from the charts, the variability in long bone growth increases with increasing age and after the age of approximately ten years, the variability increases dramatically. The use of this method has, therefore, been confined to individuals below this age. In the absence of the dentition long bone growth was used in conjunction with skeletal maturity indicators to age individuals prior to the age of ten years.

5.5.3 Skeletal Maturity

The appearance and fusion of specific ossification centres provides a useful means of determining age at death throughout the growth period and into early adulthood (up to approximately twenty-five years). The development and fusion of specific ossification centres is an aspect of skeletal development that is strongly influenced by environmental factors, although less so than long bone growth. Skeletal maturity indicators provide a particularly useful means of estimating the age of individuals after the age of 10 years, when long bone growth becomes less accurate.

All available published skeletal maturity data is based on modern populations. Given the potential impact of environmental factors, these are not necessarily appropriate to the study of Romano-British or Anglo-Saxon populations. Subsequently, dental age was again used to provide a 'known age' against which the skeletal development of individuals could be examined. Table 5.2 shows the results of this analysis of the archaeological data, providing an age range for the fusion of a number of important ossification centres prior to puberty.

In Table 5.2, the age ranges provided for the archaeological data were derived from comparisons of skeletal maturity indicators within the skeletal sample and dental development ages (as for long bone growth). The above table compares the fusion age ranges from the archaeological sample with those obtained from modern populations (Schwartz 1995). It was found in this study that unlike long bone growth, there was a general similarity in bone fusion ages between the

modern and archaeological samples. One notable distinction, however, relates to the fusion of the vertebral arches to the vertebral bodies. It is frequently stated that fusion of these elements begins with the cervical vertebrae and progresses inferiorly to the lumbar vertebrae (Schwartz 1995:). In the archaeological sample, however, it was found that although fusion did begin in the cervical region, the thoracic vertebrae generally fused at a later age than the lumbar vertebrae, and over a greater range of ages. This was a consistent finding in all of the cemetery populations examined.

Skeletal Element	**Modern Data**	**Archaeological Data**
Mandibular Symphysis	6-9 months	6-12 months
Vertebral arches	1-3 years	0.6-2.5 years
Metopic suture	1 year	6-18 months
Pars basilaris/ pars lateralis	4-7 years	4-7 years
Vertebral arches to cervical body	3-4 years	3-6 years
Vertebral arches to thoracic body	3-5 years	4-9 years
Vertabral arches to lumbar body	5-6 years	4-6 years
Inferior pubic ramus to ischial ramus	6-8 years	7-10 years

Table 5.2: Dental age ranges for fusion of ossification centres from the archaeological sample.

The epiphyses of the major long bones also fuse in a specific sequence between the ages of 15-21 years. Figure 5.11 shows the fusion sequence of the epiphyses of the major long bones within this archaeological sample (beginning with the earliest). Although this sequence is broadly compatible with modern standards (e.g. Schwartz 1995) it shows a greater degree of differentiation in terms of the fusion of different long bones. The earliest age for fusion of the distal humerus (the first of these epiphyses to fuse) was approximately 15 years. In this archaeological sample the number of 'known age' individuals present in this age group were relatively few. It was, therefore, necessary to use modern standards to provide the 'known ages' during these years. It was, however, possible to determine the sequence and approximate timing of fusion of these bones for the archaeological sample by seriating individuals according to fusion status. By doing so, and by incorporating the small numbers of 'known age' individuals, a reasonable picture of long bone fusion for the archaeological population could be derived (Figure 5.11). The seriation process allows those individuals without dentition to be aged much more accurately than through the use of modern data alone.

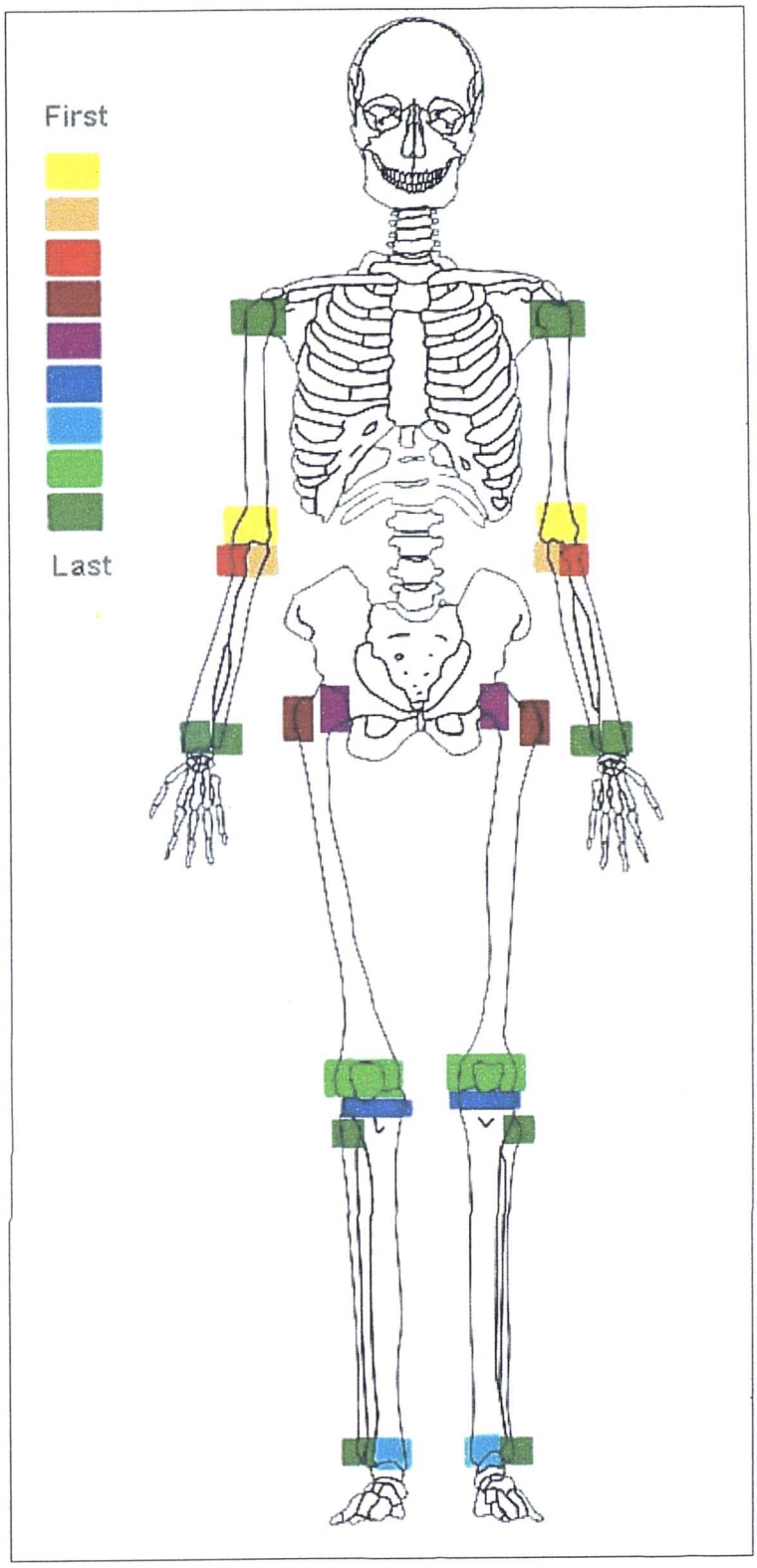


Figure 5.11: Sequence of fusion of the major long bone epiphyses.

5.5.4 Summary

The ages of the immature skeletons in this study have been estimated primarily using dental development. A new dental development aging technique has been developed that essentially removes the statistical bias associated with the application of most dental standards to skeletal populations. In the absence of the dentition and prior to puberty, long bone growth and skeletal maturity indicators were used to estimate age at death. Skeletal bone growth charts were produced for each long bone from the data using dental age as the 'known age'. These long bone charts not only provide a more population specific method for estimating age from the study sample, but have also eliminated some of the statistical biases associated with current archaeological growth profiles. Finally, after puberty, skeletal maturity indicators have been used in conjunction with dental development and wear to estimate age at death. The development and fusion of skeletal elements have been examined in conjunction with dental ages, so that an accurate chronology may be developed for this skeletal population.

5.6 Mature Skeletal Remains

As discussed in the previous chapter, once skeletal maturity has been achieved, the ageing process becomes increasingly difficult to characterise. The following section discusses the development of a new statistical approach to dental wear ageing using the principles of the Miles (1962, 1963 b) method. The results of the application of the auricular surface (Lovejoy *et al.* 1985b) and pubic symphysis (Brooks and Suchey 1990) ageing techniques to this skeletal sample are also addressed.

5.6.1 Dental Wear

From the previous chapter it is clear that dental wear rates are affected by numerous non-age related factors specific to the dental morphology, cultural and dietary practices of each population. When estimating the age at death of archaeological skeletal remains it is vital that a dental wear ageing technique be used because the teeth are frequently the only indicators of age preserved. The lack of suitable known age reference material for characterising dental wear changes with age has meant that a method must be devised from populations of unknown age. As discussed in Chapter 4, Miles (1962, 1963b) outlined a method whereby the rate of wear for a given population is estimated from observations of 'known age' individuals whose age is

determined from dental development. While Miles' technique provides the best method to date for deriving population specific age estimates, there are statistical problems with the method that have resulted in a tendency to under-age older individuals (see Chapter 4).

Very few skeletons in Miles' study were aged over 50 years, in part because his method does not take into consideration the complete range of variability in age during the more advanced stages of wear. This study uses the principles of Miles' method but adopts a Bayesian methodology in order to produce dental wear age estimates that are:

a) tailored towards the rate of wear within this archaeological sample and
b) exhibit no bias against older individuals.

Molar wear was recorded for the upper and lower molars of all skeletons in the archaeological sample as discussed above. In previous studies of dental wear, ante-mortem tooth loss has been considered the final stage of wear (e.g. Molleson 1993). However, a wide variety of non age-related factors may result in ante-mortem tooth loss, consequently this was not a practice followed in this study.

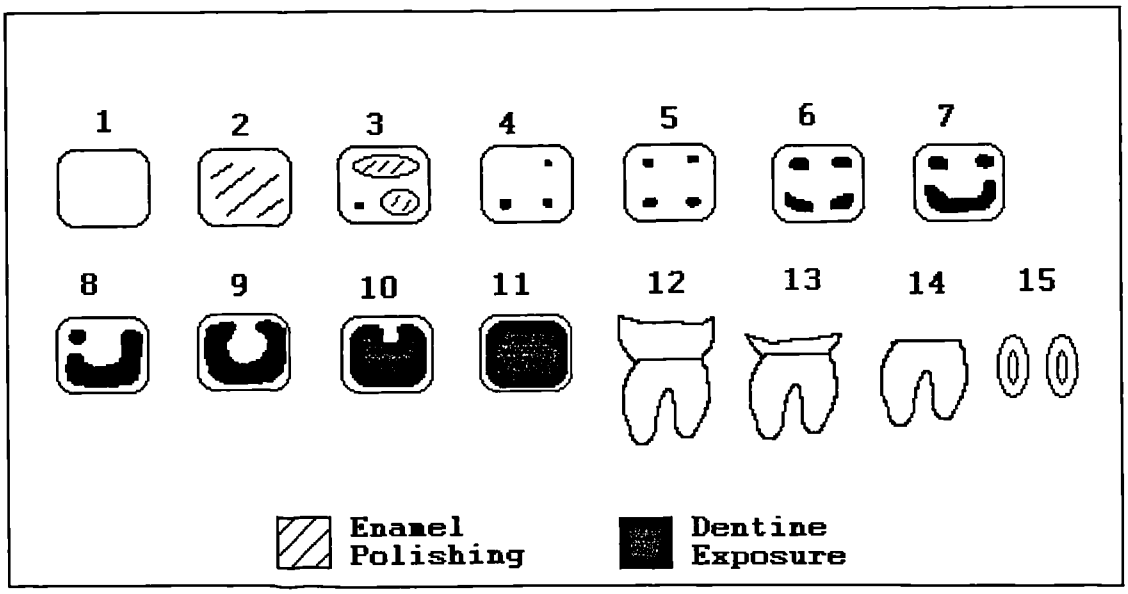


Figure 5.12: Scoring system for dental wear.

Each molar was assigned a wear stage according to the thresholds shown in Figure 5.12 These stages are similar to Brothwell's (1981) system, with only the later attritional stages demonstrating any significant departure. As discussed previously, Brothwell's (1981) method has been criticised because the last stage of wear is of much greater duration than any of the preceding stages (Molleson and Cohen 1990). This system, therefore, scores wear after the loss of occlusal enamel in more detail.

Miles' method utilises the early stages of molar wear in immature skeletons with dental ages to provide a 'known age' group that act as a baseline from which to extrapolate the ages of progressively older individuals. Miles stipulates that at least 32 immature individuals exhibiting varying stages of dental development must be present. In this archaeological sample, the number of 'known age' individuals with a first molar at least in stage 1 of wear totalled 121 out of 269 individuals with dental development ages. Miles used the dental development charts produced by Schour and Massler (1941) to produce the 'known ages' for his sample. The biases of this method have been discussed previously. The dental development method produced during this study has, therefore, been used to provide the 'known ages'. Because eruption ages can vary between populations (see previous section), it was further decided to determine the age range of eruption for each of the permanent molars from the archaeological sample itself rather than rely on modern data.

Tables 5.3-5.5 below shows the mean ages of the 'known age' individuals in each of the early wear stages. Stage 0 indicates a molar that has not yet come into occlusion, but may be just erupting or partially erupted (the other wear stages are as outlined above). The data were analysed in several ways: by dividing cemeteries by time period, geographically, and by pooling the sites. This was conducted in order to examine possible differences in wear rates between populations so that an optimum method for age estimation could be produced.

The upper age limit for dental development is approximately 18 years (when the dentition is fully developed). As a result, the higher wear stages for each molar presented in Tables 5.3-5.5 will be increasingly truncated, because the upper limits of the age range will be beyond the scope of dental development ageing. For example, the mean age for wear stage 4 of the first molar (M1) is 16.35 years, with a standard deviation 1.82 (Table 5.3). From an examination of the standard deviations of the preceding wear stages it is clear that this should in fact be much larger because variation in wear increases considerably with age. These stages have still been included in the

tables in order to present all of the known age information, however, these data were not used to calculate wear rates for the population.

M1	STAGE 0		STAGE 1		STAGE 2		STAGE 3		STAGE 4	
Site	Mean	S.d.	Mean	S.d.	Mean	S.d.	Mean	S.d.	Mean	S.d.
RB	5.34	0.46	7.39	1.93	9.25	3.34	14.48	3.95	16.48	1.20
AS	5.44	0.48	7.57	1.94	9.16	2.13	12.73	4.03	16.30	2.08
Hants	5.79	0.87	7.71	1.85	9.29	2.90	14.13	3.71	15.40	1.54
Oxon	5.40	0.57	7.22	2.01	8.65	2.54	12.00	4.26	16.81	2.01
All sites	5.38	0.45	7.50	1.90	9.20	2.73	13.24	4.00	16.35	1.82

Table 5.3: Mean ages of wear for each stage of M1 with 'known ages'.

M2	STAGE 0		STAGE 1		STAGE 2	
Site	Mean	S.d.	Mean	S.d.	Mean	S.d.
RB	10.16	0.80	13.26	2.76	16.74	1.07
AS	10.15	0.68	12.51	2.90	16.99	1.74
Hants	10.04	0.77	12.39	2.29	17.21	1.02
Oxon	10.29	0.65	14.43	3.21	16.36	2.02
All sites	10.15	0.67	12.75	2.82	16.91	1.54

Table 5.4: Mean ages of wear for each stage of M2 with 'known ages'.

M3	STAGE 0		STAGE 1	
Site	Mean	S.d.	Mean	S.d.
RB	16.94	0.72	18.23	0.99
AS	16.62	0.45	17.62	0.46
Hants	16.69	0.57	17.59	0.43
Oxon	16.82	0.60	18.17	0.82
All sites	16.74	0.54	17.82	0.68

Table 5.5: Mean ages of wear for each stage of M3 with 'known ages'.

The data were split into Romano-British and Anglo-Saxon populations. If (as many archaeologists suggest) these individuals represent culturally and genetically distinct ethnic groups then one might expect some difference in the eruption or wear rates of the molars. From the above tables, it is clear that not only are the eruption ages remarkably similar, but so too are the rates of wear. The data were also divided geographically and dental wear comparisons made between Hampshire and Oxfordshire. Again the similarity in the eruption and rates of wear of the molars is marked. The differences between groups geographically, however, is greater than that observed between time periods. This is what one would expect from relatively stable population with no significant 'intrusive' migrant elements. It is of course possible that a migrant group would have similar levels of wear as the indigenous group, particularly if similar dietary practices existed in their place of origin. Factors such as genetic differences in eruption timing, or enamel thickness, could however, still be expected to produce some differences in wear.

The similarity in the wear data between the different groups analysed does not suggest any large proportion of incoming peoples, but nor does it disprove it. Overall, the range of variation within the data groups, whichever way they were analysed, far exceeded that observed between them. Subsequently, all of the available data were pooled in order to obtain a large amount of 'known age' information concerning molar wear. This 'known age' sample is by far the largest archaeological sample to have ever been analysed in this way.

The earliest age that the first molar began to erupt (emerge through the alveolar crest) was approximately 4 years, and the latest age for the tooth to reach full occlusion was 6 years. By about 5.5 years most of the first molars had come into occlusion. The ages indicate a slightly earlier eruption time for the first molars (by approximately 0.5 years) than modern dental standards. Stage 1 indicates that the tooth was occluded, but that no wearing of the enamel surface had occurred. By a mean age of just over 9 years the first molars had passed from stage 1 and entered wear stage 2, (i.e. exhibited some enamel polishing). This indicates that wear stage 2 occurs at a functional age of 3.7 years. The average age of an individual with the first molar in wear stage 3 was 13.2 years, therefore, after an average functional age of 7.7 years. These immature individuals thus act as a baseline from which the functional age (number of years the teeth have been in occlusion) of the molars of older individuals can be deduced. Addition of the functional and known ages will, therefore, in theory, yield the chronological age at death of the individual.

Once the functional ages for wear stages 1-3 for the first molar were derived, one could assume equal rates for each of the molars, and indeed in some populations this was found to be the case (see previous chapter). As discussed previously, Miles found that the second and third molars (M2 and M3) showed progressively slower rates of wear than the first molar and through a 'subjective assessment' determined that the wear differential between M1: M2: M3 could be expressed by the ratio of 6: 6.5: 7 (Miles 1963: 202). Other authors have noted similar inter-molar wear differentials with more rapid wear of the first molar compared with the second and third molars (e.g. Keiser *et al.* 1983; Richards and Miller 1991; Walker *et al.* 1991), but a few have expressed different wear rates (Murphy 1959a), or found equal rates of wear.

From this dental wear data it was observed that the second molar entered wear stage 2 after a functional age of almost 6 years, compared to the 3.7 years for the first molar. Not enough 'known age' second molars in wear stage 3 were available to estimate the mean functional age for the second molar in the following stage. The wear differential between the first and second molars in the previous stage indicates that the first molar wears at an average rate of 1.6 times more quickly than the second molar. Therefore, if it takes just over 4 years for the first molar to wear from stages 2 to 3, it would take the second molar 6.5 years (at the calculated slower rate of wear) to show the same degree of wear. This information can be used to estimate the mean functional age for the second molar in wear stage 3 (12.36 years).

This differential wear ratio can then be assumed to remain constant throughout life. This assumption is not necessarily valid. For example, Murphy (1959b: 185) found that the wear rate of the first molars decreased during the advanced attritional stages because of the increased masticatory load that becomes placed on the posterior molars. As a result, the inter-molar wear differential has a tendency to equalise, or at least reduce, in later life (Murphy 1959b: 185).

These data were analysed in order to examine the possibility of a reduction in the inter-molar wear differential with age. Tables 5.6 and 5.7 demonstrate the distribution of wear stages for the second and third molars respectively for all the wear stages of the first molar (lower left molars only). After the first molar had entered wear stage 6 an increasing variation in the gradient of wear between the molars can be observed. These tables indicate a decrease in the gradient of wear between the first and third molars in the later attritional stages, suggesting that the wear differential does indeed demonstrate a tendency to equalise.

	M2 STAGE															
M1 Stage	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Total
1	2															2
2	15	5														20
3	21	27	2													50
4	4	30	12	3		2		1								52
5	7	31	25	17	5		1									86
6		2	7	7	13	2	3	1								35
7	1	1	3	6	6	7	2	1			1					28
8			1	1	7	5	14	2	1							31
9				1	2	4	3	9	1	1						21
10						3	3	4	5	1						16
11					2	2		2		4						10
12							1			1	1					3
13								1		2		2	1			6
14											1	1	1	1		4
15							1			1					1	3
Total	50	96	50	35	35	25	28	21	7	10	3	3	2	1	1	367

Table 5.6: Molar wear stages of M2 for all stages of M1.

	M3 STAGE															
M1 Stage	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Total
1	1															1
2	3	1														4
3	23	5														28
4	15	11			1	1										28
5	36	26	5	2												69
6	11	6	2	8												27
7	5	5	8		1	2										21
8	2	1	8	5	2	2										20
9	1	1	2	1	2	1		1								9
10					3	1		3	2							9
11	1		1	2		1		2	1		1					9
12	1															1
13						1		1		1	1					4
14						1					1					2
15						1										1
Total	99	56	26	18	9	11	0	7	3	1	3	0	0	0	0	233

Table 5.7: Molar wear stages of M3 for all stages of M1.

An ageing method that maintains the initial high wear differential calculated from the early attritional stages, therefore, is likely to over-age individuals in the later attritional stages. In order to account for this factor, one could introduce a variable wear differential. However, this would add an increasing element of complexity. Taking into consideration the high degree of individual variability in dental wear, the benefits gained from this would be relatively minimal. In addition, because the area of the occlusal plane increases with attrition, a fall in attrition rate with age could be expected (Molleson and Cohen 1990). Molleson and Cohen (1990: 364) attribute this factor to be responsible for the underestimation of age at death of many archaeological skeletons aged through dental wear, particularly the middle aged and older individuals. However, one would expect attrition to increase once most of the enamel surface has been lost due to the relative softness of the dentine. Keiser and colleagues (1985) found in their study of the Lengua Indians that wear follows a linear progression up to the age of about 39 years, then slows down. Mays *et al.* (1995) examined 293 individuals from the Romano-British site of Poundbury, Dorset and found that the first and second molar wear rates were approximately uniform throughout life, but the third molar was highly variable. For the purposes of this study a number of options regarding the wear differential were available, including:

- Estimating a wear differential at a lower ratio than that obtained in the initial stages of wear.
- Assuming equal rates of wear between the molars.
- Assuming a wear differential similar to Miles' (1962, 1963a, b, 2001) ratio of 6: 6.5: 7 .

After examining the results from all three options, the latter produced the most credible results when tested against several known age samples (see below).

As discussed previously, the method produced by Miles (1963) does under-age older individuals and tends to produce a peak age-at-death between 35-40 years (Miles 2001). The method produced in this study adopts the principles of Bayesian analysis in order to eliminate the statistical bias that causes this under-ageing. Furthermore, this method will produce a more systematic method of ageing from the dentition that also derives confidence limits and statistically allows for missing data.

A Bayesian approach may use the same generic model for tooth wear that was used for development:

$$\text{logit}(Q_{jk}) = \delta \times [\ln(\theta) - \ln(\gamma_{jk})]$$

Where θ_i is the age of individual i in years from conception, γ_{jk} is the mean threshold for tooth j leaving stage k, and δ is the discriminability.

A model analogous to Miles (1963) was adopted that relates the first, second and third molar thresholds via functional ages using the following formula:

$$\gamma_{jk} = \gamma_{j1} + \alpha_j \times (\gamma_{M1,k} - \gamma_{M1,1}),$$

where j = M2, M3, α_j allows for wear differentials, and $\gamma_{j,1}$ is the eruption age of the tooth.

Wear thresholds 1 to 5 were calculated using regression on those individuals with incomplete dental development. The mean values for thresholds so estimated are then treated as 'known' in a second regression based on all individuals with at least one tooth in wear stages 1-5, thus estimating thresholds 6-12. Finally, a third similar regression gave ages of thresholds 13-15, and thus ages for all individuals.

The posterior confidence ranges for each wear stage for each molar have been presented below (Figures 5.13 and 5.14). A broader age range for each stage and slightly older ages were found to result from the use of a wear differential similar to that of Miles.

This method was used to age all individuals with dental wear data in the sample. This method also has the advantage over conventional techniques in that it statistically accounts for missing data through postmortem loss of teeth and it will effectively seriate individuals by age and provide an appropriate and individual error range (Millard and Gowland in press). It could not be tested on a known age skeletal population for reasons discussed previously. The results for each individual, however, were checked to examine the possibility of anomalies and examined in relation to the ages obtained from the pubic symphysis and auricular surface (where present). There was an approximate correlation between the ages obtained from different methods (see Appendix 1).

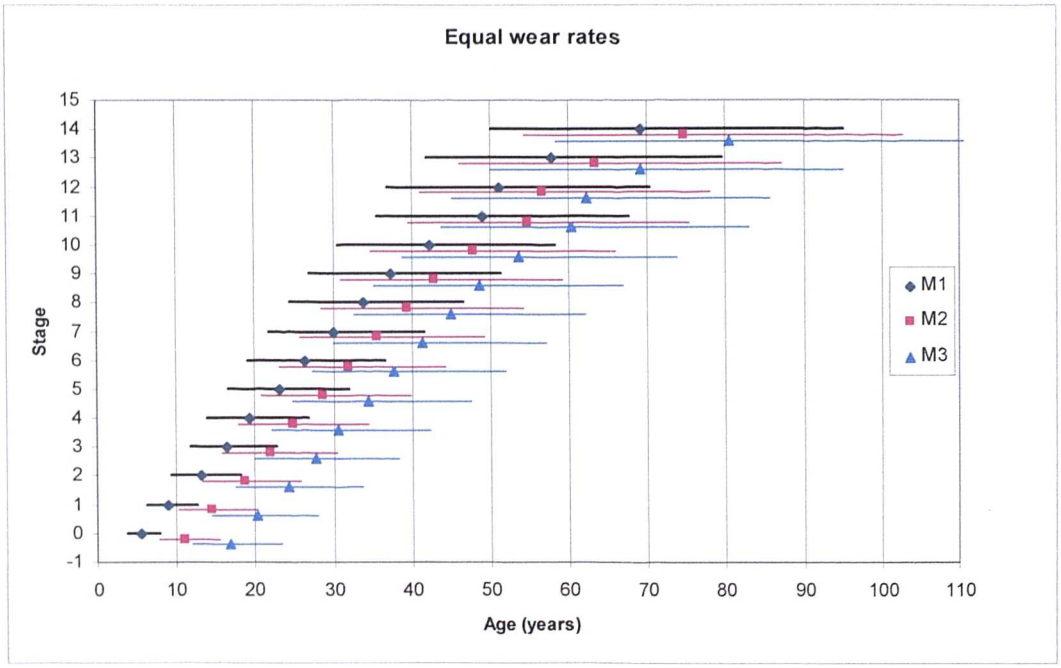


Figure 5.13: Posterior confidence ranges for each molar when equal wear differentials are assumed.

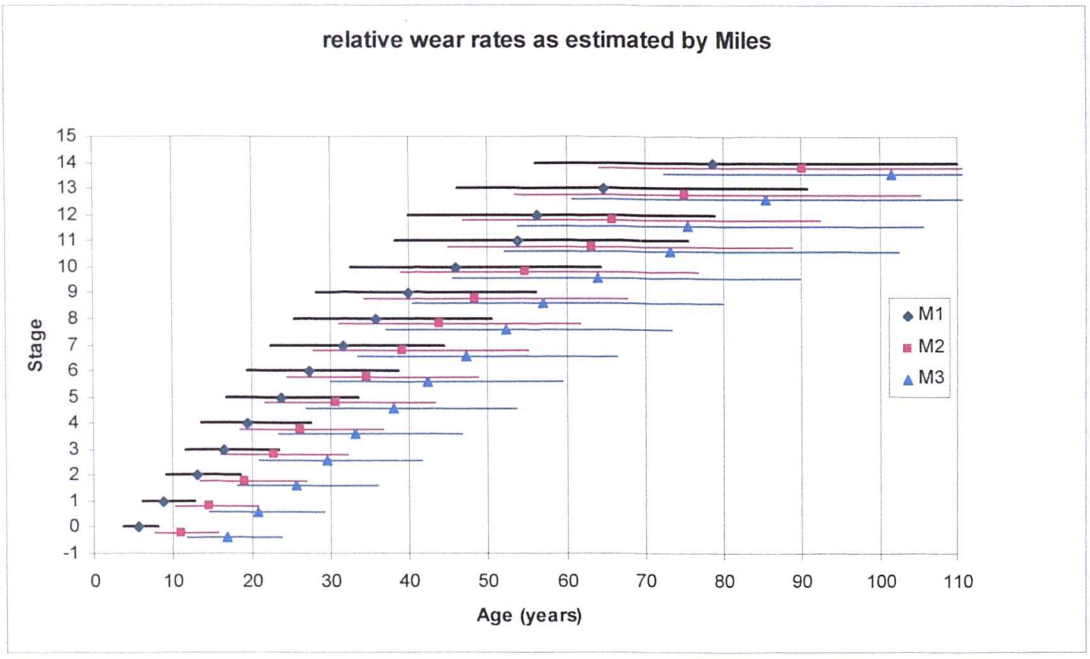


Figure 5.14: Posterior confidence ranges for each molar when Miles' (1963) wear differentials are assumed.

A comparison between the ages estimated using this method and those obtained using the Miles method provided encouraging results. For example, the teeth in Figure 5.15, aged using conventional techniques, are assigned ages of 18 years and 40-50 years (Chamberlain 1994). This new dental wear method provides 95% confidence ranges of 18-22 and 43-54 years respectively (for equal wear rates) or 17-21 and 48-61 years (using Miles' wear differential).

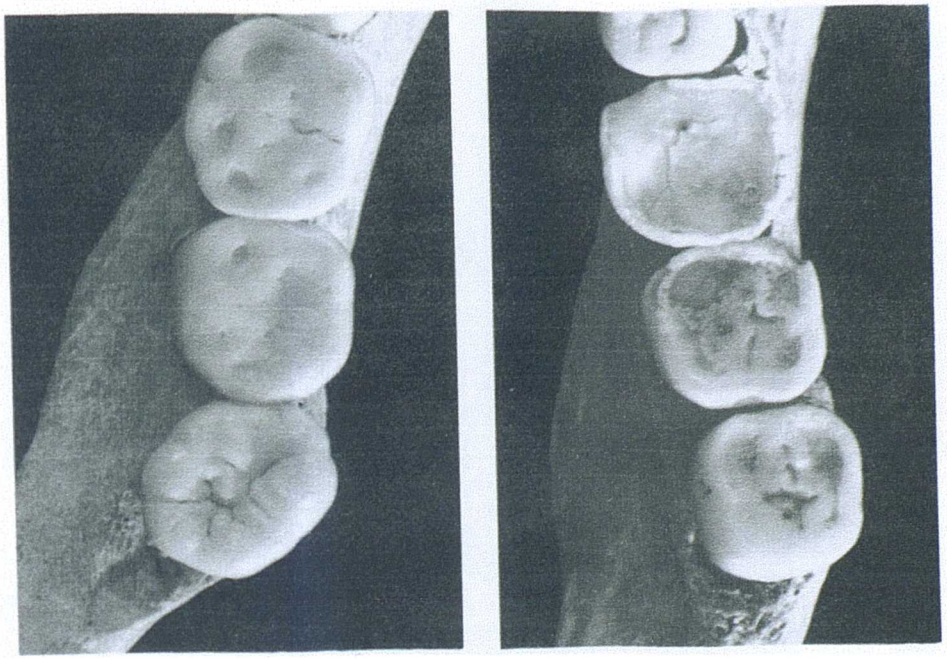


Figure 5.15: Dental wear of the lower jaws of two individuals of different ages (after Chamberlain 1994: 18).

This method produces older ages for those individuals showing heavy degrees of wear and as we know that Miles' method under-ages older individuals this outcome seems more satisfactory. This method also allows consideration to be made of the increasing variability of wear with age, automatically producing broader confidence limits so that while the final age may not necessarily be more precise, it is likely to be a more realistic estimate of age at death.

Although there remain problems with congenital absence of the third molar and ante-mortem tooth loss, there is no difficulty in handling individuals with missing teeth. The ages of these individuals typically have broader confidence limits, involving as they do a greater degree of uncertainty than individuals with a full dentition. Where ante-mortem loss of teeth, or congenital absence of molars had occurred, this method was not used directly to determine the age of the individual. These factors are likely to alter attritional stresses within the jaw and reduce the

correlation with age. It would, however, be unreasonable to simply ignore the dental wear data from these individuals. All of the dental scores for each dentition (including those with age estimates) were, therefore, manually seriated in a data-base. This allowed the wear of those with congenitally absent teeth, or ante-mortem loss of teeth to be examined in relation to the aged individuals. In many cases this allowed a relative age estimate to be produced. Lovejoy (1985) found that the seriation of dental wear in this way was one of the most reliable methods of estimating age from the dentition. Individuals that had undergone complete ante-mortem loss of teeth were not estimated ages as this is not an exclusively age-related phenomenon. In those cases where premature ante-mortem tooth loss through pathological factors had occurred, individuals were also not assigned a dental age.

5.6.2 Pubic Symphysis

Of the adult individuals examined in this study, the ratio of preservation of the pubic symphysis to auricular surface was approximately 1:2. A smaller proportion of the female pubic symphyses were preserved than males, a factor that is likely to be related to the greater robusticity of the latter.

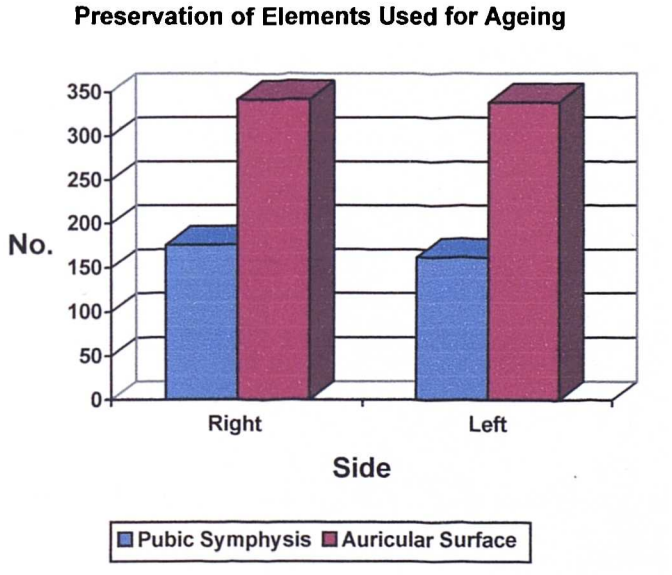


Figure 5.16: Preservation of right and left age indicators.

The age ranges provided for the Suchey-Brooks pubic symphyseal method are extremely broad, particularly in the later phases when individual variability becomes very diverse (Table 5.8). A

number of individuals in this study also exhibited asymmetry in the phases assigned between the right and left sides. These were, therefore, assigned even broader age ranges, as were those who exhibited features intermediate between two phases.

Phase	Female (n=273)				Male (n=739)			
	Mean	*S.D.*	*67% C.I.*	*95% range*	*Mean*	*S.D.*	*67% C.I.*	*95% range*
I	19.4	2.6	17-22	15-24	18.5	2.1	16-21	15-23
II	25.0	4.9	20-30	19-40	23.4	3.6	20-27	19-34
III	30.7	8.1	23-39	21-53	28.7	6.5	22-35	21-46
IV	38.2	10.9	27-49	26-70	35.2	9.4	26-45	23-57
V	48.1	14.6	34-63	25-83	45.6	10.4	35-56	27-66
VI	60.0	12.4	48-72	42-87	61.2	12.2	49-73	34-86

Table 5.8: Age ranges associated with each pubic symphyseal phase for males and females (after Suchey *et al.* 1986: 211).

The distribution of pubic symphyseal phases assigned to this archaeological sample is presented in Figure 5.17 below. For the purposes of ageing, those individuals assigned as probable female, or probable male, were treated as though the sexing was definite. This is unlikely to be a significant source of error given the broad age ranges employed. The disparity between males and females in the stages assigned is quite striking, particularly so with respect to the relatively large proportion of females in stage VI. It was noted that many female pubic symphyses displayed atypical features, and often did not correspond to the descriptions or casts produced by Suchey and Brooks. The female pubic symphyses from several sites (in particular from the Lankhills site) were also extremely gracile and this led to further difficulties in estimating age phase. It is known that the stresses of childbirth do impact upon the manifestation of age-related changes at this site and it is possible that the relatively high number of females expressing advanced stages of symphyseal degeneration may arise from this factor. By contrast, the male pubic symphyses displayed much more regularity in age related changes and exhibited far fewer ambiguous cases. Due to these potential sources of error, in this study the ages obtained from female pubic symphyses did not contribute to the individual's final age in those instances where it differed significantly from other age indicators.

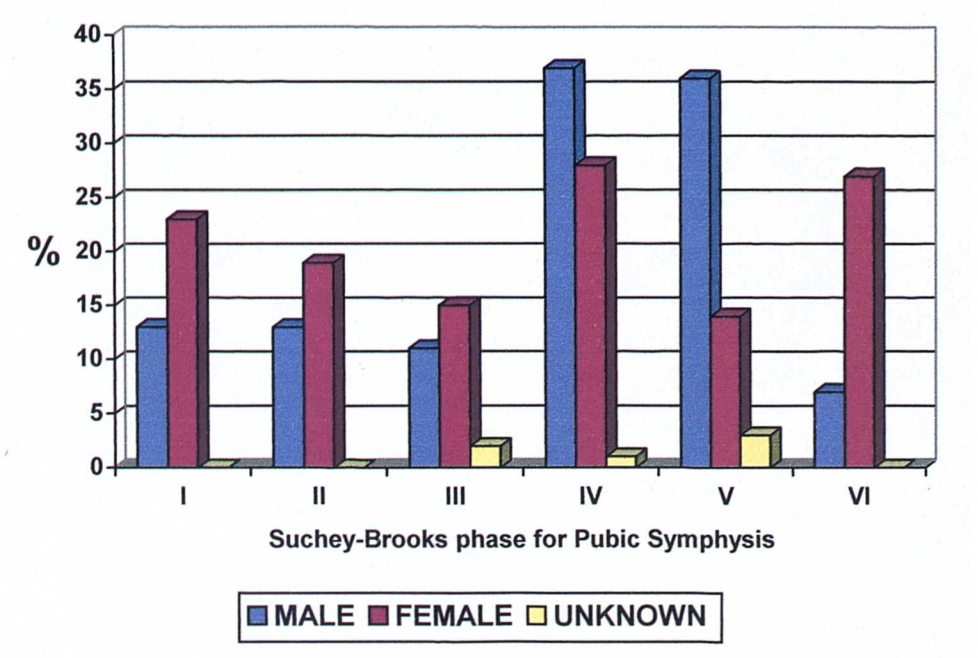


Figure 5.17: The distribution of pubic symphyseal phases in the sample (Males n=189, Females n=101, Unknown, n=6).

The high number of males in stages IV and V is common to many cemetery studies. While this pattern may well reflect the age distribution of the sample, it could be that these stages are simply more prolonged than the earlier stages, and thus encompass a greater number of individuals. Each pubic symphyseal phase was converted to a broad age range based upon the posterior probability distributions produced by Chamberlain (2000: 110) using prior probabilities derived from model life tables on the Brooks and Suchey (1990) data. While it is the age of the individuals rather than the overall demography that is important for this study, Chamberlain's (2000) Bayesian method can also be used to produce an age distribution for the entire sample of pubic symphyseal stages in a way that would present a more realistic reflection of the actual age distribution (e.g. Figure 5.18 shows this for the female pubic symphyses).

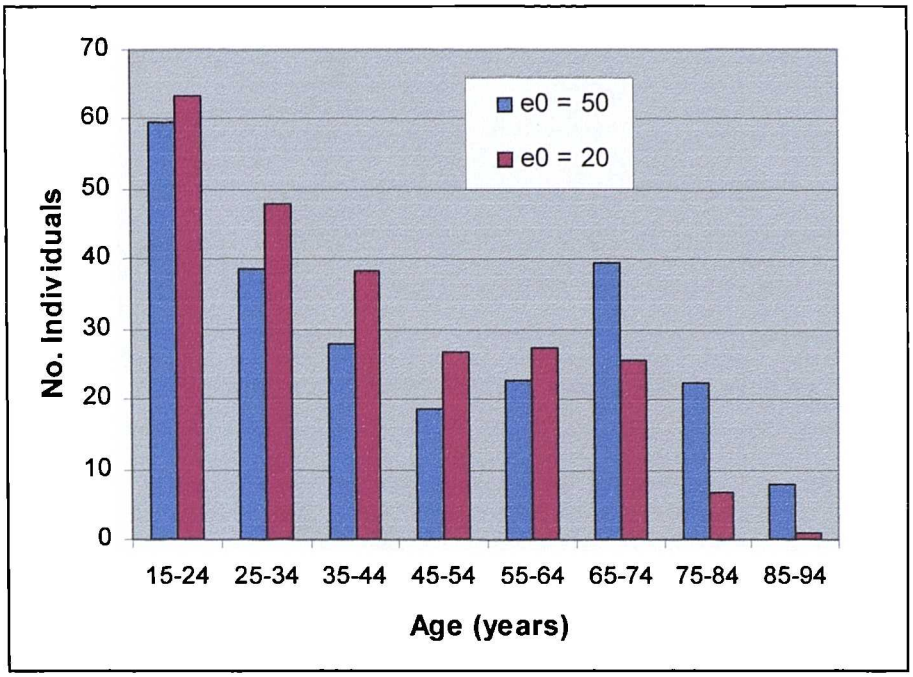


Figure 5.18: Age distribution of females from the entire female pubic symphyseal sample calculated using the posterior probabilities derived from model life tables for females produced by Chamberlain (2000: 110).

5.6.3 Auricular Surface

As discussed previously, the auricular surfaces were preserved for age estimation twice as frequently as the pubic symphyses. Again, the male auricular surfaces were preserved more frequently than the females due to the greater robusticity of the male pelves. However, the disparity was not as great as that observed for the pubic symphysis. The distribution of auricular surface phases between males and females was also more similar than for the pubic symphysis. This factor may illustrate the lesser degree of sexual dimorphism with respect to age related changes of this skeletal element (something that the authors of this method maintain). The auricular surface is unlikely to be affected to the same degree as the pubic symphysis by factors such as childbirth.

It is argued by Lovejoy *et al.* (1985b) that the degeneration of the auricular surface is not related to the degree of physical stress placed on the pelvis. It was noted in this study, however, that asymmetry in the phase assigned to the right and left auricular surfaces did occur, and was often

related to a shift in mechanical forces precipitated by unilateral degeneration or trauma in the lumbar spine or hip. Clearly the auricular surface is impacted by stress factors.

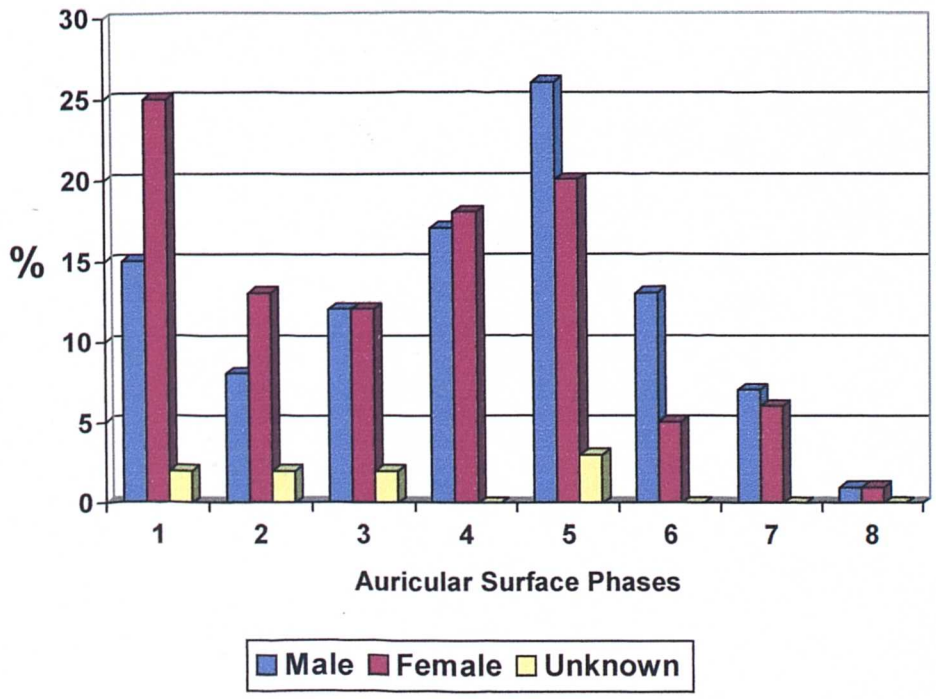


Figure 5.19: The distribution of Auricular surface phases in the sample based on Lovejoy *et al.*'s (1985b) method (males n=339, females n=301).

Despite generally better preservation of the auricular surface than pubic symphysis, this method is not as popular amongst researchers due to the relative subtlety of the age related changes. The published descriptions of the changes are not clearly defined and are often difficult to reconcile to actual observations. A lack of a suitable cast comparison does nothing to improve this matter. A number of recent studies have attempted to produce more rigorously defined techniques for age estimation using the auricular surface (e.g. Buckberry 2000; Schmitt and Broqua 2000). These methods have adopted a component approach to age estimation, but have yet to be satisfactorily tested against known age populations other than those upon which the methods were devised.

This study found that the auricular surface produced more useful and distinctive age changes amongst older individuals and that these corresponded more closely to age estimated from dental wear than did the pubic symphysis. Lovejoy *et al.* (1985b) state that the auricular surface is able

to produce reliable age estimates and undergoes characteristic changes beyond the age range of the pubic symphysis. These findings were borne out in this study. It was also found that the auricular surface was of particular use for those females whose pubic symphyseal face exhibited atypical characteristics.

One of the major problems of the Lovejoy *et al.* (1985b) method is that the authors (while using a large reference sample of known age individuals) did not include the raw data in their publication. Subsequent appeals to the authors to provide this information have proved unfruitful. A list of known ages and the corresponding stage assigned would provide invaluable information concerning the reliability and the extent of variability of this technique. Furthermore, such information would allow probability distributions of age for a given stage to be produced (as conducted by Chamberlain (2000) on the Suchey-Brooks data) that would have allowed for statistical refinement of the technique. Instead the authors assign five-year age bands to each stage, a factor that is likely to be highly unrealistic given the extent of individual variability.

5.7 Summary and Conclusion

The ages of the immature skeletons in this study have been estimated primarily using dental development. A new dental development technique has been developed that essentially removes the statistical bias associated with the application of most dental standards to skeletal populations. In the absence of the dentition and prior to puberty, long bone growth and skeletal maturity indicators were used to estimate age at death. Bone growth charts were produced for each major long bone from the data using dental age as the 'known age'. These long bone charts not only provide a more population- specific method for estimating age from the study sample, but also eliminate some of the statistical biases associated with current archaeological growth profiles. Finally, after puberty, skeletal maturity indicators were used in conjunction with dental development and wear to estimate age at death. The development and fusion of skeletal elements have been examined in conjunction with dental ages, so that an accurate chronology may be developed for this skeletal population.

The adults were aged using a combination of dental wear (according to the new method outlined above), the auricular surface, pubic symphysis, and late fusing epiphyses. The ageing and seriation of the dentition allowed a method whereby individuals could be aged relative to each other. The ages obtained from the female pubic symphyses, where in disagreement with the other

ages, were disregarded as unreliable. Overall the ages obtained from each method were broadly correlated, but with some anomalies (see Appendix 1).

The Bayesian version of the Miles (1963) method of dental wear ageing gives estimates of age that account for much more of the uncertainty in age determination. Notably we can estimate population-specific eruption ages, and wear threshold ages. The use of the above methodology counteracts a number of problems associated with previous applications of dental standards to archaeological populations:

a) It does not assign the threshold or mean age associated with the developmental stage, and treat these as exact ages, rather it takes into account the distribution of ages.

b) The ages obtained are independent of the age structure of the reference sample.

c) Rather than averaging the mean ages from a number of different teeth, this method automatically derives an age from the distribution data of all available teeth. It therefore takes into account the fact that some teeth may produce more precise ages than others, allows for missing teeth, and produces appropriate confidence limits.

As far as future research is concerned, age estimates with full probability distributions will allow the construction of further regressions of other skeletal parameters on age. A more detailed comparison with other ageing methods is planned. Where fully probabilistic age estimates are available, it would be possible to combine age estimates from different methods to produce a statistically improved multifactorial ageing technique. Furthermore, this research will have an application to palaeodemographic studies of population age distributions (rather than individual ages). It should be possible to generalise this method to a hierarchical statistical model that considers a multiplicity of age structures, via a hyper-prior on the age structure of the population (Millard and Gowland in press).

Every possible effort was made to ensure that the age estimations for this archaeological sample were the most reliable possible. This has led to an exhaustive and innovative analysis of a large body of skeletal data on a scale not previously attempted. Despite these efforts, individual variability in skeletal ageing will always frustrate the ability of osteologists to obtain accurate and precise estimations of age at death. This does not mean, however, that the problems associated

with skeletal ageing should be ignored. Bayesian methods can address some of the biases associated with current ageing techniques and (at the very least) will account for these shortcomings statistically. By doing so, the variability in human skeletal ageing can be openly stated through the use of confidence limits so that ages may be expressed reliably, if not as precisely, as we would wish. The following chapters examine the skeletal ages produced using the above methodology, and discusses these in relation to cultural cemetery variables.

Chapter 6



Demographic Results

6.1 Introduction

This chapter presents the age/sex structure of each of the cemetery populations analysed and discusses these results in terms of their implications for age/gender identities. The 'raw' age data collected from each skeleton have been presented in Appendix 1 and these have been converted into ages according to the methodology outlined in the previous chapter. For the purposes of analysis, age categories of differing time lengths have been imposed onto the life course. These categories were not chosen arbitrarily, but relate to particular skeletal periods of development and degeneration. The imposition of categories onto the life course is not ideal; ageing is a continuous, not a discrete process, and although societies often assign age groupings, they may not necessarily coincide with the ones chosen here. However, the presentation of the 'raw' data in the appendix allows the flexibility for future researchers to adapt the age categories to suit alternative analysis.

The age data for each individual have been included in appendix 1 and these have been converted into an age range according to the methodology outlined in the previous chapter. The validity of palaeodemographic studies has been an area of considerable academic debate over the last two decades (e.g. Bocquet-Appel and Masset 1982; Van-Gerven and Armelagos 1983; Buikstra and Konigsberg 1985). Biases relating to taphonomy, ageing methods, and incomplete cemetery excavation have all served to undermine the reliability of demographic reconstructions from cemetery populations. The purpose of this study, however, has not been to make inferences concerning the age/sex structure of the *living* populations from the burial samples. On the contrary, the focus is specifically on the treatment of the individual dead.

The majority of comparisons between cemeteries suffer from inter-observer error and recording inconsistencies in the methods used and in the age categories employed. One of the strengths of this study is that it allows a comparison of the age and sex structures of ten cemetery populations analysed by the same observer using the same methods. Furthermore, these methods have been

developed so that each individual technique has the inherent statistical bias removed through the use of Bayesian statistics. As a result of this a greater degree of confidence may be placed in the results having a cultural rather than methodological basis. As all skeletal remains were also subjected to broadly similar taphonomic biases it is assumed that any subsequent dissimilarities in the age/sex structure between cemetery populations are primarily the by-product of deliberate cultural choices or sampling bias. Few cemeteries are ever excavated in their entirety and in some instances (e.g. Queensford Farm) only a very small proportion of the cemetery has been sampled.

Figures 6.1 and 6.2 show the collated age and sex distribution of individuals buried at the late Roman and the early Anglo-Saxon cemetery sites. Figures 6.3 to 6.13 show the age and sex structure for each individual cemetery. The numbers of individuals in each age/sex category have been expressed in terms of a percentage of the entire cemetery population in order to facilitate a visual comparison between sites.

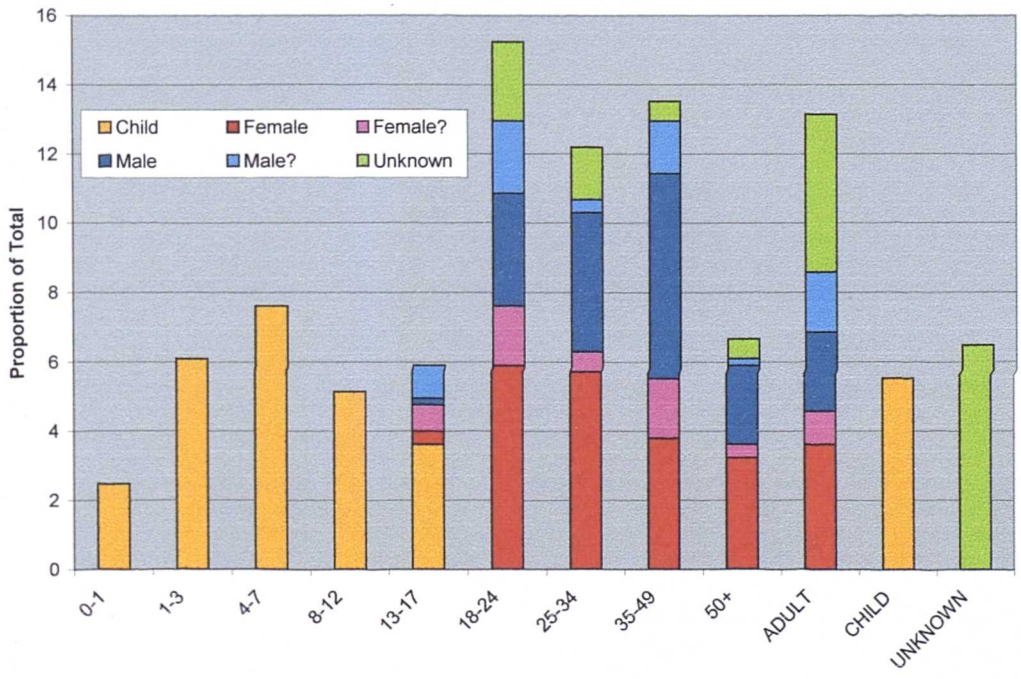


Figure 6.1: Demography of the late Romano-British cemeteries (n=836).

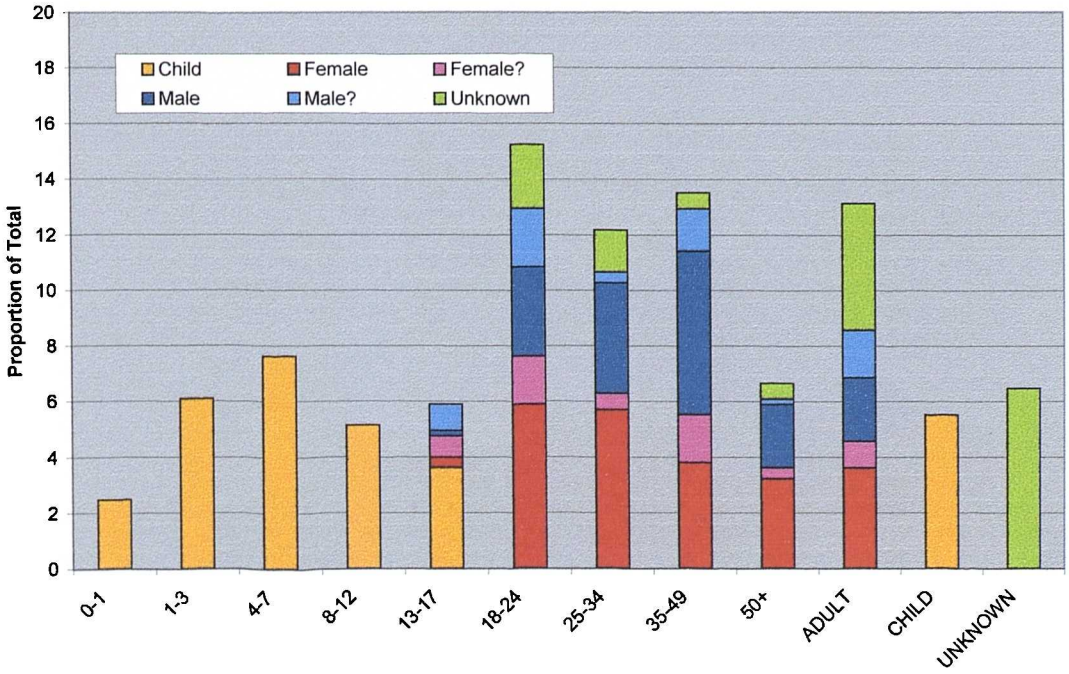


Figure 6.2: Demography of the early Anglo-Saxon cemeteries (n=525).

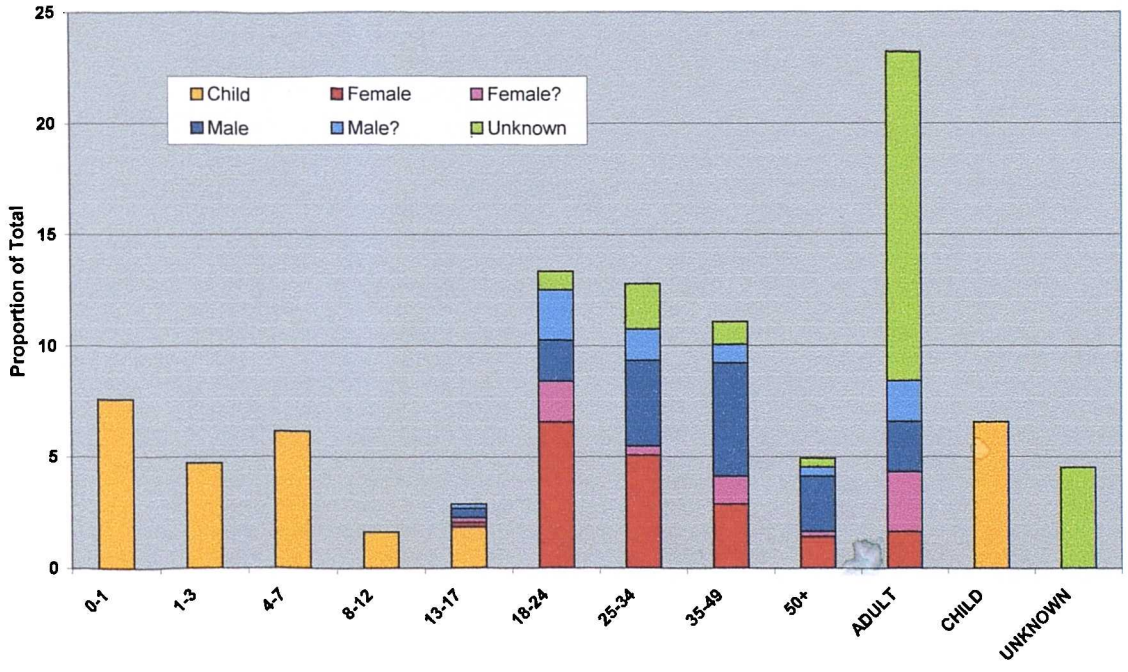


Figure 6.3: Demography of the late Roman cemetery of Lankhills (n=487 including 31 missing).

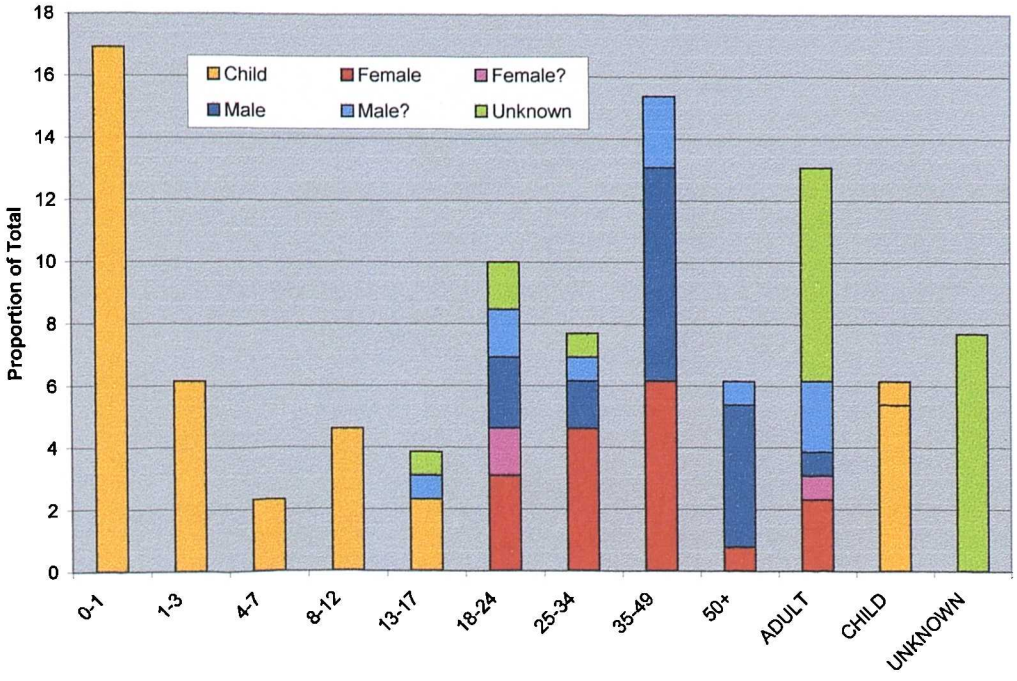


Figure 6.4: Demography of the late Roman cemetery of Victoria Road (n=130).

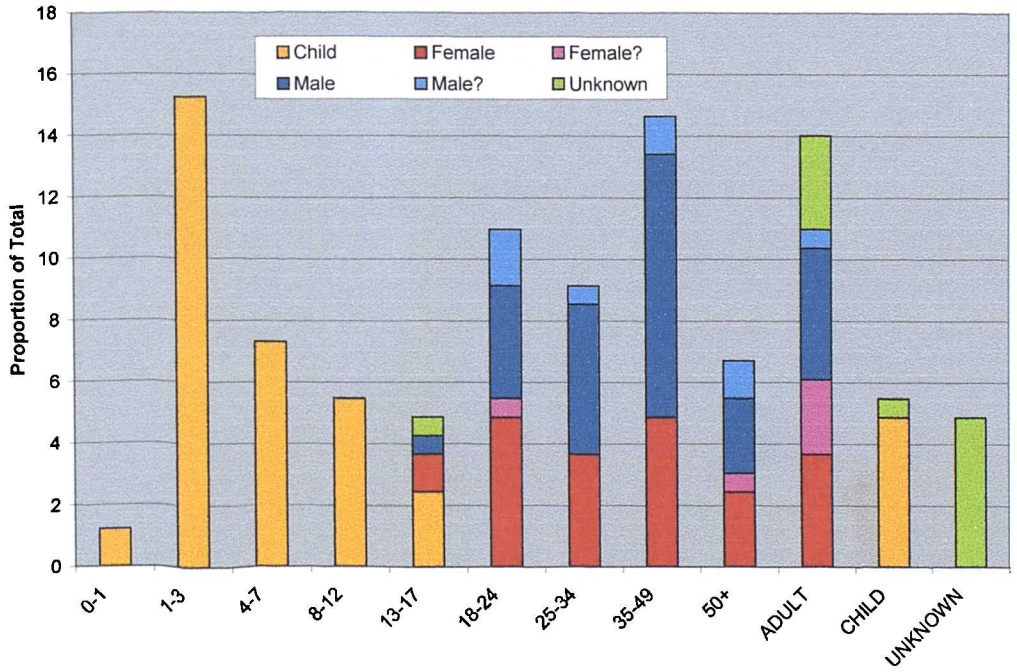


Figure 6.5: Demography of the late Roman cemetery of Queensford Farm (n=164).

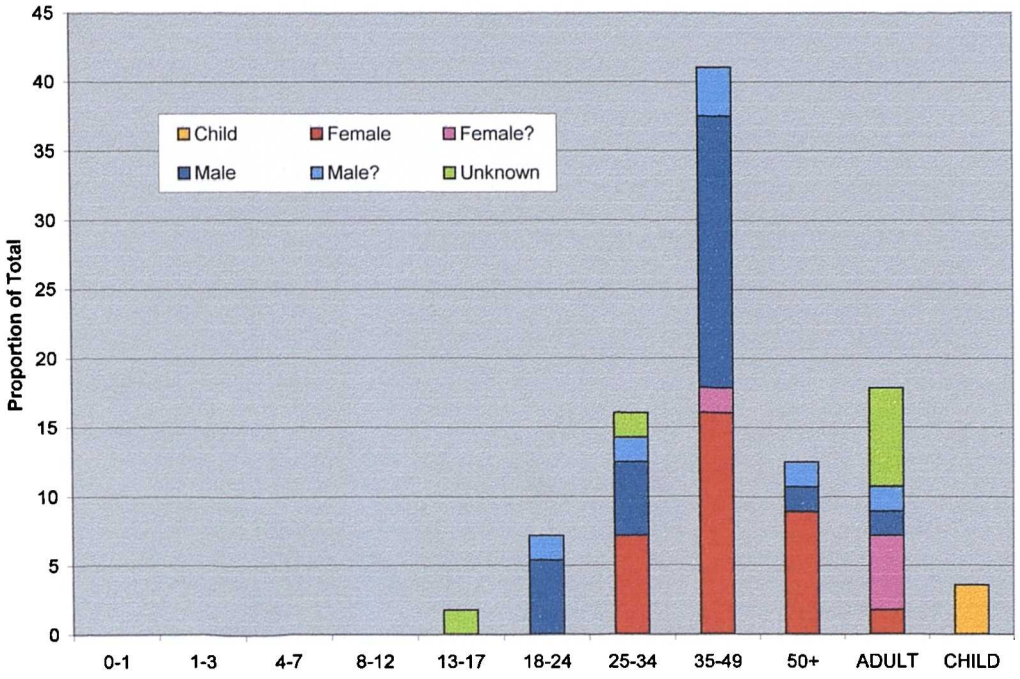


Figure 6.6: Demography of the late Roman cemetery of Cassington (n=56).

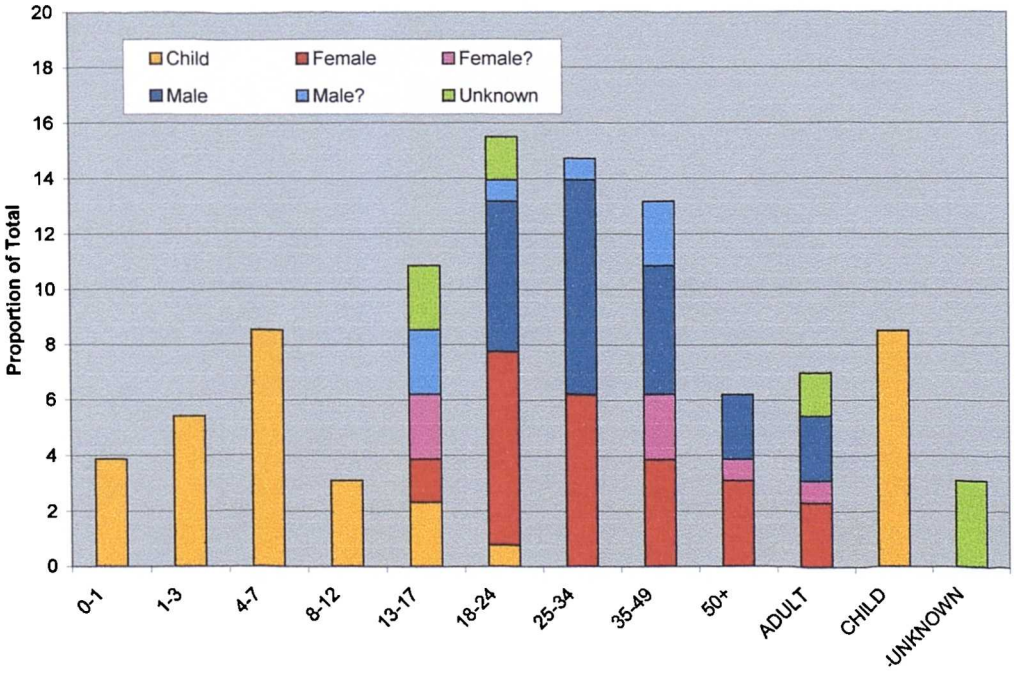


Figure 6.7: Demography of the early Anglo-Saxon cemetery of Abingdon (n=129).

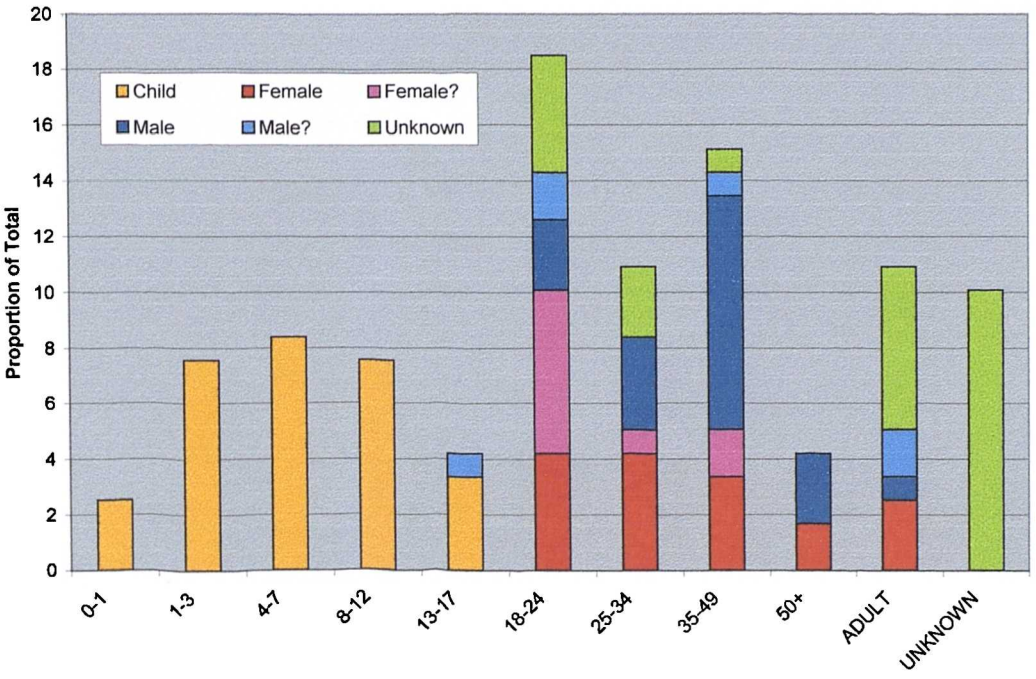


Figure 6.8: Demography of the early Anglo-Saxon cemetery of Berinsfield (n=119).

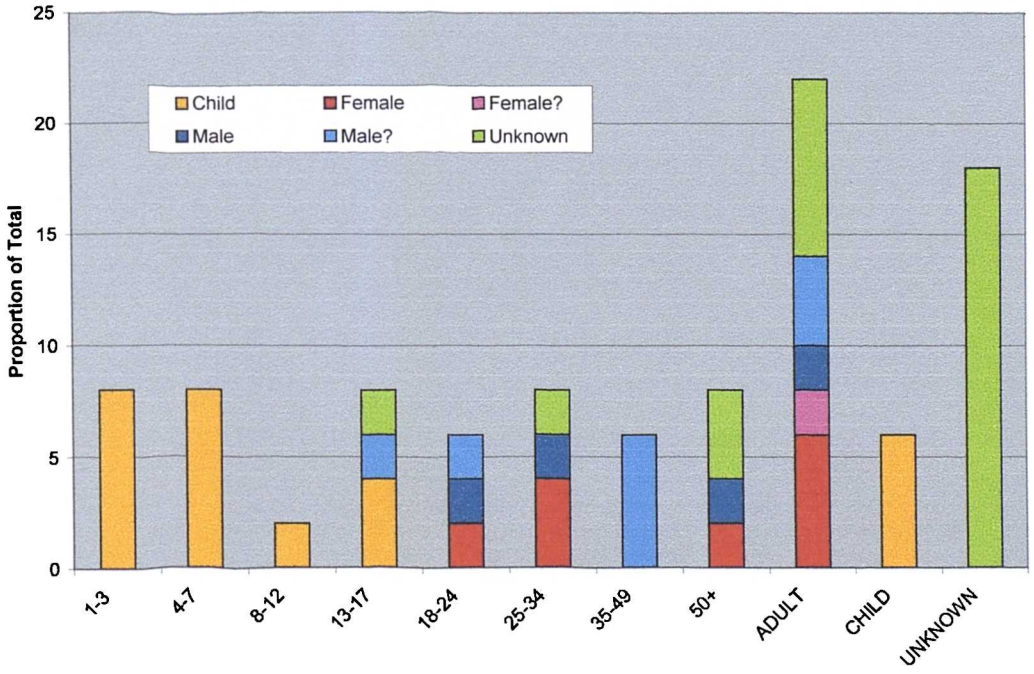


Figure 6.9: Demography of the early Anglo-Saxon cemetery of Alton (n=50).

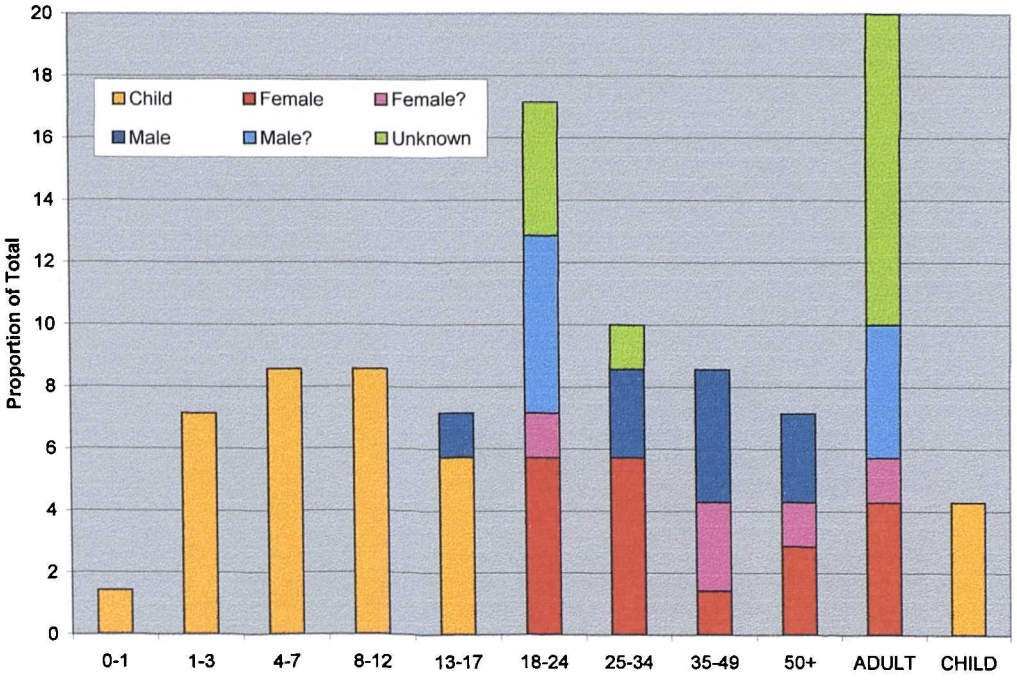


Figure 6.10: Demography of the early Anglo-Saxon cemetery of Portway (n=70).

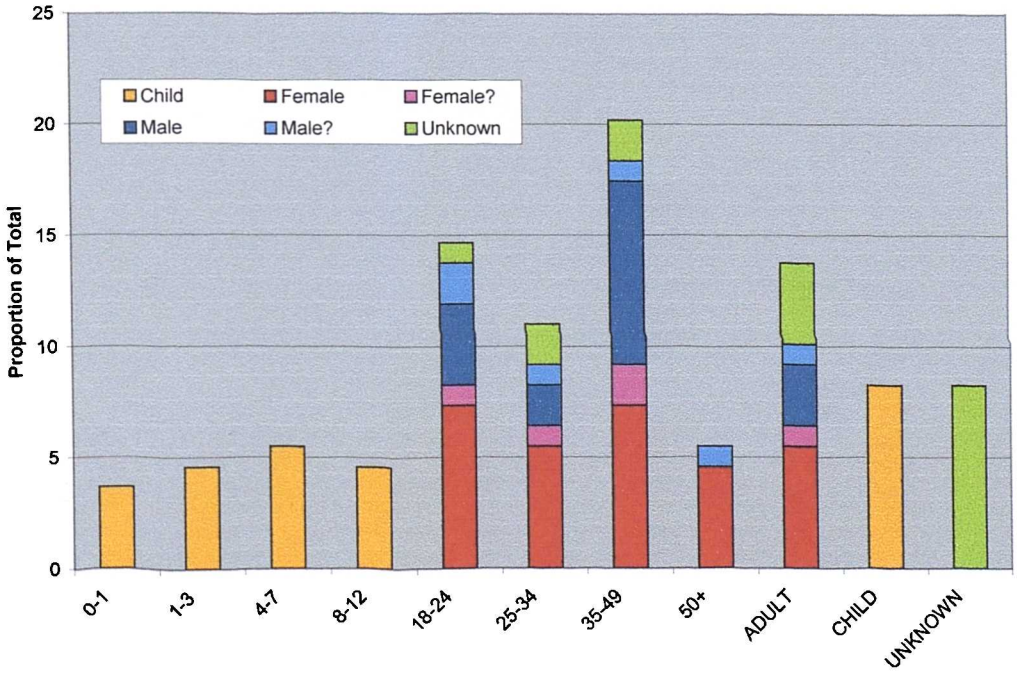


Figure 6.11: Demography of the early Anglo-Saxon cemetery of Worthy Park (n=109).

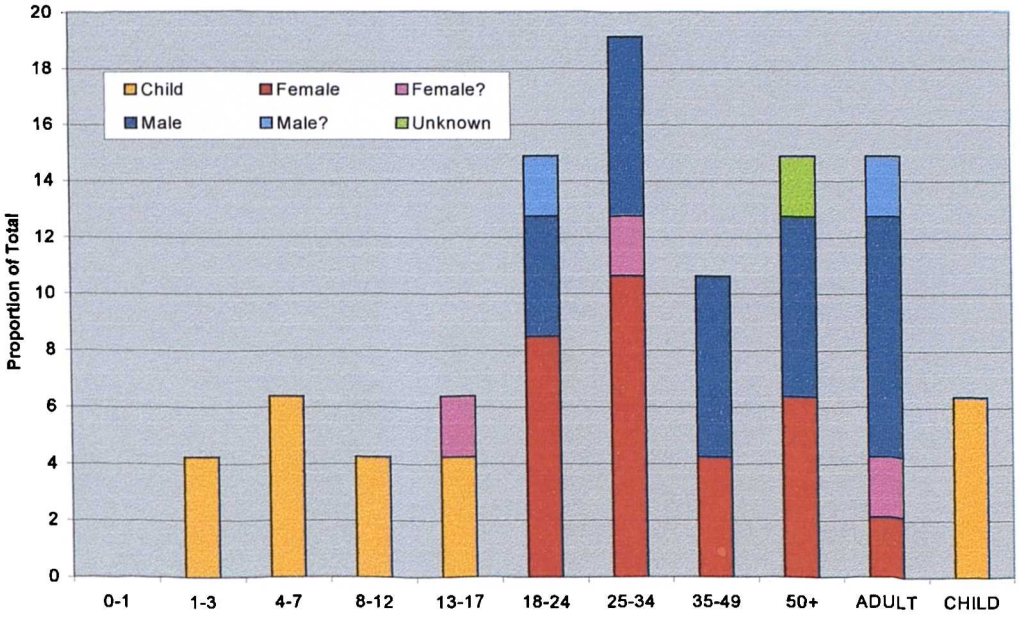


Figure 6.12: Demography of the mid Anglo-Saxon cemetery of Winnall II (n=47).

6.2 Sex Distribution

Sex estimations were made in accordance with the criteria discussed in the previous chapter. Tests of osteological techniques of sexing on well preserved, complete skeletons have been found to be very reliable, in the region of 98%. When sex determinations are based upon the skull alone, this figure drops to approximately 85%. Weiss (1972) has suggested that there is a male bias in skeletal sexing using the skull while Meindl and colleagues (1985) have argued that the most common error is in the reverse direction.

In reality, the accuracy of sexing is likely to vary much more than studies of modern known sex individuals would suggest as a result of variable preservation. At Alton and Lankhills, for example, preservation was poor, leading to a high number of individuals that were not sexed (Figure 6.13). Poor preservation does not affect all age and sex groups equally (Walker *et al.* 1988; Paine and Harpending 1998). Rather there is a bias against those individuals with more gracile and less mineral dense bones (e.g. older females).

One of the most striking features noted during skeletal analysis was the extent to which sexual dimorphism differed between populations of similar date and geographic location. When examining skeletal populations it is therefore necessary to first gauge the extent and characteristics of sexual dimorphism within the burial group before commencing the assignation of biological sex. For example, the sexual dimorphism exhibited amongst the skeletons excavated from Berinsfield was less marked (particularly with respect to features of the skull) than amongst individuals at Lankhills. At the latter, the pelves of females were much more gracile than at Berinsfield, while the sciatic notches (a feature particularly useful for sexing) of the male pelves at Lankhills were generally much wider than one would normally expect for males. One can only assume that differences in degrees of sexual dimorphism between these populations has resulted from a combination of environmental and genetic factors. This is a factor that demands further investigation and, as far as is possible, quantification.

The impact that age has on the changing physical characteristics of the sexually dimorphic features of the skull is a factor rarely alluded to in physical anthropology. It was observed in this study, and has been noted elsewhere (e.g. Meindl *et al.* 1985; Walker 1995), that the morphological characteristics of the skull used to determine sex do not remain static throughout the adult period. For example, young adult males (this would include those up to the 18-24 years age category) tend to have less well-defined supraorbital (brow) ridges and generally less robust facial features than older males. It has been argued by Walker (1995), that this may be a factor leading to the identification of fewer young males within skeletal populations (instead they are categorised as females, or of indeterminate sex). In very advanced years, some facial characteristics of males again become somewhat altered. For example, many older individuals have endentulous jaws, leading to resorption of the alveolar bone of the mandible. This factor together with the inability to masticate tough foods results in a loss of muscle markings and ultimately the jaw becomes more gracile, or feminine in appearance. Other cranial and post-cranial muscle attachment markings may also become less defined with age, leading to a skeleton with a less robust, hence more sexually ambiguous characteristics.

Conversely, the cranio-facial characteristics of females may become more masculine with advancing age (Meindl *et al.* 1985). Post-menopausal alterations in hormones often leads to a thickened cranial vault (Ortner and Putschar 1985) that may also result in incorrect determinations of sex, particularly when preservation is poor. This factor may mean that older females are instead categorised as indeterminate sex or male, and could contribute to the under-representation of older females, a situation often observed in archaeological cemetery

populations. The high numbers of young adult females in this skeletal collection may not necessarily be reflecting maternal mortality, but the incorrect sexing of young adult males, and the concurrent error in sexing older females (Walker 1995). Overall, studies have tended to demonstrate that 'females' are more likely to be misclassified as 'males' rather than vice versa when sex is based upon the cranium alone (Weiss 1972; Milner *et al.* 2000). This relates to a skeletal system of recording that is intrinsically sexist and assumes that a female skull is much less likely to exhibit robust features.

If this is the case, such a phenomenon has quite important implications for the palaeodemography of skeletal populations such as Lankhills, where preservation is quite poor and sex determination becomes more reliant on the skull which is more resilient to decay than the pelvis (Waldron 1987). In addition to this, and of greater importance with respect to this study, I would argue that the changing physical, cranio-facial characteristics with age, has more profound implications concerning social identity; the fluidity of physical features with age both contributes to and reinforces changing perceptions of masculinity and femininity throughout the life course. While the morphological observations discussed above will certainly create a potential bias in skeletal sexing, further research is required to understand the changing physical characteristics of the skull in a specific, measured, investigation.

No major disparity in the proportion of the sexes was observed at any cemetery site of either early Anglo-Saxon or late Roman date. Table 6.1 below shows the collated information for sites of each period.

SEX	ROMAN		ANGLO-SAXON	
	No. Ind.	%	No. Ind.	%
Immature	204	24.4	131	25
Female	162	19.4	119	22.7
Female?	45	5.38	32	6.1
Male	158	18.9	94	17.9
Male?	60	7.18	36	6.86
Unknown	207	24.8	113	21.5
Total	836	100	525	100

Table 6.1: Sex distribution of the cemeteries studied.

The proportions of immature individuals, males (including probable males), females (including probable females) and adults of unknown sex are approximately equal at cemeteries of both

periods. At the early Anglo-Saxon cemeteries there is a slightly higher proportion of females than males and at the late Roman cemeteries the reverse is true. Given the large number of mature skeletons that could not be sexed due to poor preservation, there is no reason to suppose that the male: female ratio at the cemeteries in this sample is anything other than equal.

Comparisons by period may, however, be misleading, and a regional comparison rather than one constrained by date could be more meaningful. Figure 6.13 shows the proportion of individuals of each sex at each of the sites. It would seem that no particular regional differences transcend those of period. The late Roman cemeteries in both the Upper Thames Valley and Hampshire have a tendency towards a slightly higher proportion of males. During the Romano-British period much is made of the male bias in cemeteries, particularly in urban centres (Davison 2000). For example at Trentholme Drive, the male bias is in the order of 4:1 while at Cirencester this is in the order of 5:2 (Jones 1987: 824). There is also some evidence for spatial segregation according to sex at the New Road site, Winchester, where all adult burials of known sex are females (Scott 1999: 115).

At Lankhills, the original report (Clarke 1979) also found a slightly higher number of males than females, although this was not the case in the study conducted here. This disparity between findings at Lankhills has not arisen from a direct disagreement between skeletal analyses, but primarily from the facts that:

a) Overall more individuals were sexed in this study than in the original assessment.

b) Some individuals sexed as males in the published report were found in this study to be insufficiently preserved to be confident of sex.

By contrast at the early Anglo-Saxon cemeteries (with the exception of Alton) there is a consistent, although generally slight, female bias. Worthy Park, however, exhibited a much stronger sexual bias in favour of female burials. The proportions of children, females and males at Berinsfield, Abingdon and Portway are very similar and this may support the idea of a regional pattern within the early Anglo-Saxon period.

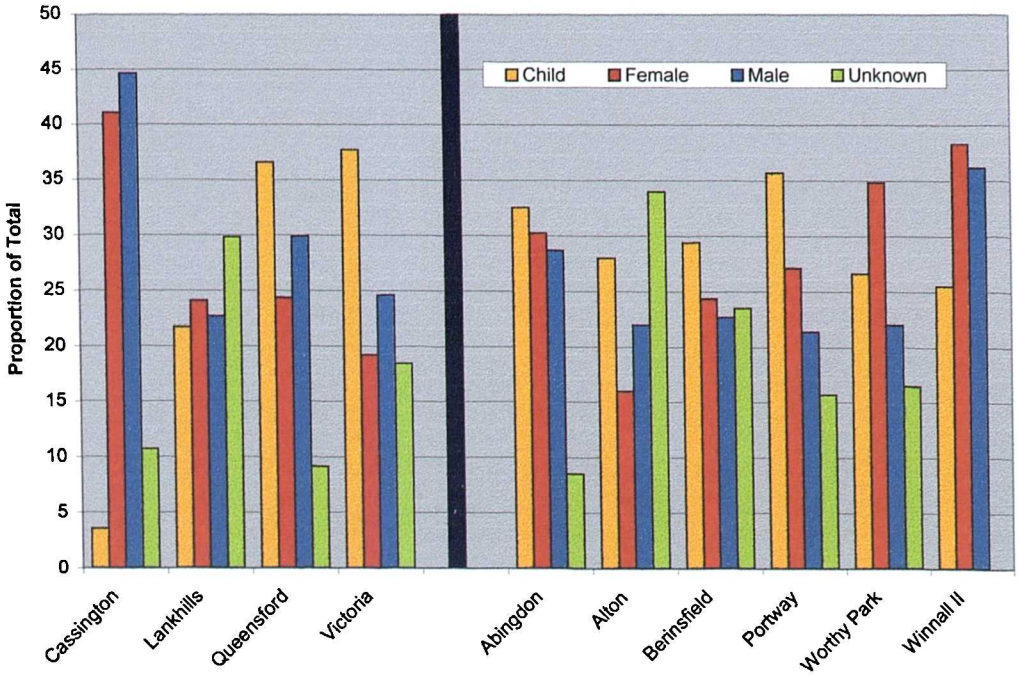


Figure 6.13: The percentage of individuals of each sex at each cemetery site (probable males and females have been classed as definite to prevent the chart becoming over-complicated). The Roman cemetery sites are to the left of the dividing line and the Anglo-Saxon cemeteries are to the right.

6.3 Age Distribution

A comparison of age at death profiles between cemetery data collated for each period indicates no significant difference in age structure between the late Roman and early Anglo-Saxon populations (Table 6.2)

AGE GROUP	% OF MORTUARY POPULATION		% OF POPULATION SURVIVING	
	Anglo-Saxon	Romano-British	Anglo-Saxon	Romano-British
0-1	3.3	11.0	96.7	89.0
1-3	8.2	9.6	88.5	79.4
4-7	10.2	7.8	78.3	71.6
8-12	6.9	4.0	71.4	67.6
13-17	7.9	4.8	63.5	62.8
18-24	20.4	17.2	43.1	45.6
25-34	16.3	16.7	26.8	28.9
35-49	18.1	20.8	8.7	8.1
50+	8.7	8.1	0	0

Table 6.2: Age structure of the late Roman and early Anglo-Saxon cemetery populations.

The most striking difference between the two periods is the higher percentage of infant burials (infant is defined as 0-1 year) at Romano-British sites. By comparison, individuals between the ages of 4-17 years form a much higher proportion of the cemetery population at the early Anglo-Saxon than Roman populations. The age structure of the adult skeletons is almost identical at both the late Roman and early Anglo-Saxon cemeteries. The only difference was the slightly higher proportion of individuals in the 18-24 year age category at the early Anglo-Saxon cemeteries. The survivorship curves below (Figure 6.14) also demonstrate the similarity in age distribution from both cemeteries after the age of 18 years. Overall, there are almost equal proportions of individuals in all of the adult categories at both cemeteries, varying by less than 3 % until the oldest age category of 50+ years when a sharp drop occurs (from approximately 14 to 6 %) at both Romano-British and Anglo-Saxon cemeteries.

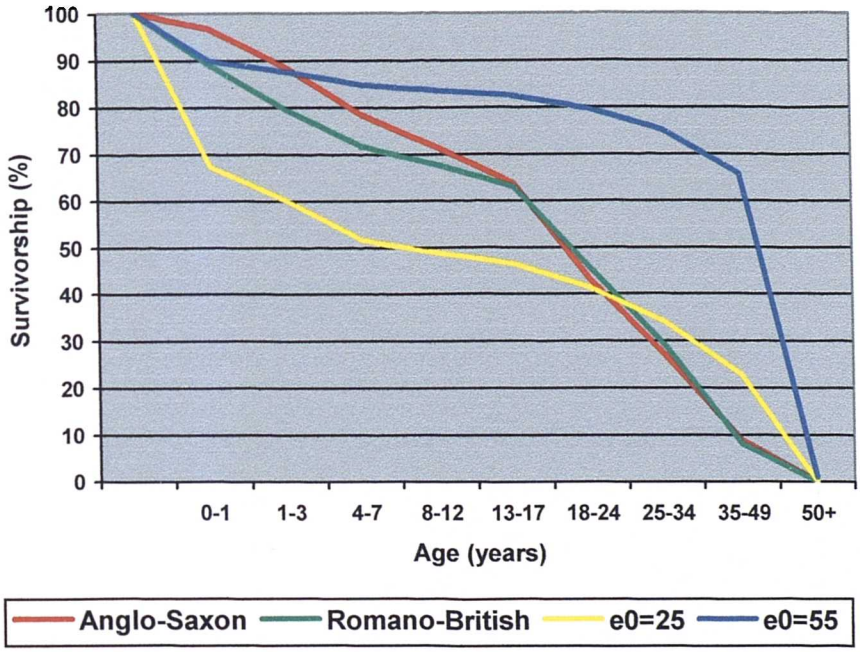


Figure 6.14: Survivorship curves for the late Roman and early Anglo-Saxon populations and comparison with survivorship curves for populations with different average life expectancies at birth obtained from the Coale and Demeny (1983) model 'west' life tables.

With respect to sex differences a higher number of females are represented in the younger adult age groups and a greater number of males in the 35-49 year age category at sites of both periods. Of those individuals over the age of 50 years, there are slightly higher numbers of females in the early Anglo-Saxon cemeteries and more older males at the late Roman cemeteries. A more

detailed inter-site comparison of each age group is conducted below. When interpreting age distributions from cemetery populations it is important to note that for a stable population (that is one with no migration), such information reflects fertility *not* life expectancy (Meindl and Russell 1998: 391).

6.4 Inter-Site Comparison

This section compares the demographic structure between sites of different periods and regions.

			Age (years)											
AREA	Date	SITE	0-1	1-3	4-7	8-12	13-17	18-24	25-34	35-49	50+	ADULT	CHILD	UNKNOWN
Hants	RB	Lankhills	7.5	4.7	6.1	1.6	2.8	13.2	12.8	11.0	4.9	22.9	6.5	4.5
Hants	RB	Victoria Road	16.9	6.2	2.3	4.6	3.8	10.0	7.7	15.4	6.2	13.1	6.2	7.7
UTV	RB	Cassington	0	0	0	0	1.8	7.1	16.1	41.1	12.5	17.9	3.6	0
UTV	RB	Queensford	1.2	15.2	7.3	5.5	4.9	11.0	9.1	14.6	6.7	14.0	5.5	4.9
UTV	AS	Abingdon	3.9	5.4	8.5	3.1	10.9	15.5	14.7	13.2	6.2	7.0	8.5	3.1
UTV	AS	Berinsfield	2.5	7.6	8.4	7.6	4.2	18.5	10.9	15.1	4.2	10.9	0	10.0
Hants	AS	Alton	0	8.0	8.0	2.0	8.0	6.0	8.0	6.0	8.0	22.0	6.0	18.0
Hants	AS	Portway	1.4	7.1	8.6	8.6	7.1	17.1	10.0	8.6	7.1	20.0	4.3	0
Hants	AS	Worthy Park	3.7	4.6	5.5	4.6	0	14.7	11.0	20.2	5.5	13.8	8.3	8.3
Hants	AS	Winnall II	0	4.3	6.4	4.3	6.4	14.9	19.1	10.6	12.8	14.9	6.4	0

Table 6.3: Proportion of the cemetery population in each age category at each of the sites studied.

6.4.1 Infancy and Childhood

As discussed above, the most profound difference in the age structure between early Anglo-Saxon and late Roman cemeteries is the higher number of infant burials at the latter. When one examines the individual sites, however, it is apparent that this is only the case at just two of the late Roman sites: Lankhills and Victoria Road (Table 6.3). The late Roman sites in Oxfordshire do not show the same high proportion of infant deaths as the Hampshire sites. At Victoria Road, the number of infant deaths is (by comparison) particularly high and infants are the most frequently represented age group at this site.

By contrast Cassington is the only cemetery in the study sample to have no infant or juvenile skeletons present, the youngest individual being 16 years of age. This may, however, relate to selective curation of the skeletal material as it has been reported in a previous assessment that 5% of the burial population of Cassington were under one year of age (Harman *et al.* 1981). If this is the case it is unfortunate that the whereabouts of this skeletal material or burial records relating to

them are no longer available. Cassington is unusual for late Roman cemeteries both in terms of its age structure and the burial rites practised (discussed below), and cannot be considered typical.

The Queensford cemetery also has a smaller proportion of infant burials than the Hampshire late Roman sites, despite having the highest proportion of individuals less than 18 years of age. Queensford Farm is unusual in the cemetery sample in that it has an exceptionally high number of individuals aged between 1-3 years, forming 15% of the cemetery population. This figure drops sharply after the age of three years where the age structure is then similar to Lankhills and Victoria Road. A number of cemetery populations throughout the world demonstrate a peak at this age group and this is usually explained in terms of the increased exposure of young children to pathogens upon weaning. Queensford Farm is essentially a sub-Roman site in that it dates from the fourth to fifth (and possibly sixth) centuries. In terms of its age/sex structure it has more in common with early Anglo-Saxon sites than it does with the late Roman cemeteries. This may relate to its rural as opposed to urban setting, or indicate continuity in the age/sex structure of individuals accorded burial within formal cemeteries between these periods.

At Lankhills and Victoria Road there is a sharp drop in the proportion of individuals after the age of one year buried within the cemeteries. This figure dips to only 5% in the 1-3 year age category and the proportion of individuals buried in this age category are comparable to those recovered from early Anglo-Saxon sites. This figure drops further at Lankhills after the age of seven years and remains relatively low until the age of 18 years. At Victoria Road this figure also remains low until the age of 18 years. For a broader comparison of the proportions of immature individuals buried within late Roman cemeteries, several other sites outside of Hampshire and the Upper Thames were also examined (Figure 6.15). The sites in Figure 6.15 were chosen because they contain more than 200 burials each and are of comparable date.

From Figure 6.15 it is apparent that relatively high numbers of infant burials are also present at Ancaster (Cox 1989) and Poundbury (Molleson 1993), although none are as high as Victoria Road. The cemetery at Butt Road, Colchester (Crummy *et al.* 1993) is exceptional in having only a small proportion of infant burials, however, the proportions of individuals in the remaining age categories is similar to that of the other cemeteries. Overall, the proportion of immature individuals tends to drop considerably after the age of one year, where it remains approximately constant (between 2-6% of the burial population) until the age of 18 years. The exceptions are

Queensford Farm (see Figure 6.5) and Butt Road, Colchester, which have only a small proportion of infant burials.

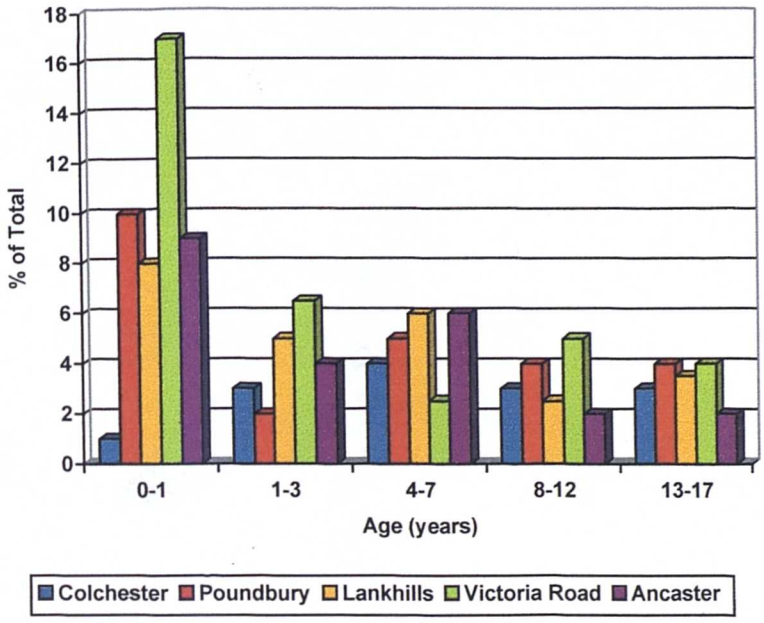


Figure 6.15: The proportion of individuals in each immature age category buried within the cemetery.

The number of infants buried at the early Anglo-Saxon cemeteries is much lower than the Roman cemeteries, and sites such as Alton and the mid Anglo-Saxon cemetery of Winnall II have no infant burials at all. This is a common feature of early Anglo-Saxon cemetery populations where infants are usually conspicuous by their absence. There are, of course, always exceptions and this is the early Anglo-Saxon cemetery of Great Chesterford in Essex, where 33% of the burials were under 5 years; this figure also includes ten foetuses (Evison 1994: 13).

In contrast to Roman cemeteries, after one year of age there tends to be a relatively sharp rise in the proportion of individuals interred, rising to between 5-10 % of the cemetery population in the 1-3 year age category. This figure tends to remain relatively constant throughout the childhood period, often with a slight peak between 4-7 years (although at Alton and Abingdon there is a dip to 2-3% between the ages of 8-12 years). The proportion of immature individuals older than one year are broadly comparable between sites of different regions and periods.

6.4.2 Mature Individuals

After the age of 18 years there is a sharp rise (usually 6-10%) in the number of individuals buried at cemeteries of all periods. The one exception to this is Alton where the proportion remains at approximately 6% into the 18-24 year category and throughout the remainder of the life course. In fact Alton is unusual in that the proportion of individuals in each age category varies only by approximately 2% throughout the entire life course (apart from 8-12 years).

With respect to older individuals, the age distributions of the majority of cemetery populations tend to indicate a peak in the age at death between 35 and 45 years of age. Such age structures consistently fall outside of known demographic parameters for either historical or living populations. It has been demonstrated that a population with such a demographic structure would not be socially viable (Howell 1982). This bias is believed to arise from a combination of taphonomic and statistical factors. Several authors have demonstrated the way that statistical shortcomings in current ageing methods produce a concentration of ages in middle adulthood (see Chapter 5). This bias may be so strong that a comparison of age structures between populations will ultimately be a comparison of ageing methodology rather than the actual age at death (Bocquet-Appel and Masset 1982). This statistical bias has been reduced in this study through the development of new ageing techniques and this is apparent from the more dispersed age at death distributions obtained from many of the cemeteries in this sample (with the exception of Cassington see below).

With respect to the older individuals, each cemetery varies to a degree, but the proportion of individuals buried tends not to vary by much until after 50 years of age. The peak age at death during the adult period varies between sites from the 18-24 year age category onwards. Victoria Road, Queensford, Worthy Park and Cassington all show a peak adult age at death between the ages of 35-49 years. At Cassington this peak is very pronounced while at the other sites it is only higher by approximately 5%. At Portway there is a peak of approximately 7% above the other age groups in the 18-24 year age category and a slight peak of 4% at Berinsfield. Winnall II is the only site to have a slight peak in the ages at death during the 25-34 year age category. The remaining sites of Abingdon, Alton and Lankhills show no particular peak in age at death throughout the period of skeletal maturity. At all sites with the exception of Alton and Winnall II there is a drop in the number of individuals over the age of 50 years. This decrease is usually quite sharp, and was particularly pronounced at those sites that had a peak age at death at 35-49 years. The proportion of individuals over the age of 50 years at the cemeteries varied from

approximately 4-13 %, with Winnall II and Cassington (the cemeteries with almost no juvenile skeletons) showing the highest proportion of over 50s.

With respect to sex, overall the females tend to have a younger age at death than the males and form the greatest proportion of the 18-24 year age categories. There are some exceptions, for example at Alton there is a slightly higher proportion of males in this younger age group. While there tend to be more males than females in the 35-49 year age category, after the age of 50 years there are few consistent differences between the sexes (with the exceptions of Worthy Park and Queensford which have slightly higher proportions of females, and Victoria Road which has a much higher proportion of males).

The primary differences that exist between the cemeteries, therefore, relate to the immature age groups. The exception to this is the Cassington cemetery, which according to the archived notes and skeletal material, had no immature individuals present, and the majority of the cemetery population was between 35-49 years. This cemetery is also unusual with respect to the burial position of the individuals interred. There are an exceptionally high number of prone and decapitated burials, more so than for any other late Roman cemetery of this size. It may be possible that only certain individuals from the living population were being selected for burial at this site. Perhaps it represented an execution cemetery, or some other type of cemetery that catered to specific individuals. The following section examines the possible explanations for these differences in relation to the factors that affect how the living population is represented by a cemetery population.

6.5 Burial Populations Versus Living Populations

The demographic structure of a burial population may bear little resemblance to that of the living population as a result of the following factors:

1) Differential risks of mortality risks at different stages of the life course. This is a concept referred to as 'frailty' (Milner *et al.* 2000).

2) The social identity of the deceased (e.g. age or gender) may influence the burial rite accorded, therefore, affecting factors such as inclusion within a cemetery and susceptibility to archaeological recovery.

3) An array of taphonomic factors relating to post-depositional circumstances and recovery will influence individuals of different ages and sex.

4) Problems and biases in osteological techniques for determining age and sex will form a final distorting factor.

These points will briefly be explored in relation to the findings from the above cemeteries. As discussed previously, no attempt has been made to reconstruct the living populations from which these individuals derived. However, comparison between cemeteries demonstrates some differences and patterns, in particular with respect to infant burials that require further explanation.

6.5.1 'Frailty' and Infant Mortality

Individuals in a living population demonstrate a considerable degree of heterogeneity with respect to mortality risks. As a result, even if a cemetery was completely excavated and preservation good, it would not reflect the living population as certain individuals have a much higher risk of death (Milner *et al.* 2000: 473). These risks are often associated with age and infants and children in particular have a much higher probability of death than older age groups. The 'frailty' of infants will be discussed below in relation to the age structures obtained from the cemeteries in this sample.

The word 'infant' in archaeology has tended to be used as a generic term with little standardisation or definition. This study adopts the demographic definition of infant death: that is all live-born babies who die before reaching their first birthday. Infants may be considered the most 'frail' of all age groups in that the risk of death during this period is much higher than at any other age. Infant mortality has a profound effect upon the crude death rate of a population and because of this is considered a sensitive indicator of overall population 'fitness' (Hoppa and FitzGerald 1999: 16; Saunders and Barrans 1999: 184). Infant mortality is usually measured as the ratio of the number of deaths of infants under one year of age to the total number of live births during a given year (Saunders and Barrans 1999: 185).

Estimated infant mortality figures from modern pre-industrial populations have been found to vary widely, up to approximately 200 per 1000 live births (Hobbs and Kigguridu 1992). Mortality figures tend to remain high for children up until the age of about 5 years, before gradually decreasing (Weiss 1973). Infant mortality figures for many past populations are uncertain and given the inconsistency with which stillbirths and neonatal deaths were reported in the past, historical documents such as the London Bills of Mortality, which recorded deaths in London from the sixteenth century, are likely to reflect a minimum number only (Robertson 1996). Infant mortality figures are generally thought to be high in Western societies up until the late 19th century when the reduction in infant deaths was so profound it is referred to as the 'demographic transition'.

One cannot project infant mortality statistics from historical records, or those derived from living pre-industrial populations onto the past. It has been estimated, however, that infant mortality in pre-industrial Europe was approximately 20-30% (Shahar 1990: 149) and figures for Roman Britain tend to be similarly placed at approximately 25-35% (Frier 1982). Despite the degree of uncertainty surrounding infant and child mortality statistics from Late Roman to Early Anglo-Saxon England, the proportion of infant burials at cemeteries of both periods in this study sample still falls far short of the numbers one would expect if they were a representative sample of the living population.

A factor when considering infant mortality statistics from archaeological evidence is that all of those under one year of age will be classified as infants, and this figure includes possible miscarriages, still-births as well as neonatal death. It is rarely possible to distinguish from skeletal remains between stillbirths and infants who were born alive but die shortly after birth (Saunders *et al.* 1995: 72). One may only establish that an infant has survived the first few weeks of life through the observation of the neonatal line that marks the stage of tooth development at birth. The traumatic event of birth causes a disruption in ameloblast activity (cells forming tooth enamel) and that results in the first prominent, brown stria of Retzius, or neonatal line, that is visible on thin sections of teeth observed under a light microscope (Hillson 1996). Although initiated at birth, the neonatal line may not actually be visible until the infant is about three weeks of age (Chamberlain pers. comm.) as it may only be observed after ameloblast activity has recommenced. Therefore, while this method may establish that the infant survived birth, it cannot confirm that an infant was stillborn. One way of determining pre-natal death is if the foetus is too young to have been viable, or if it were present within the pelvic cavity of a female skeleton upon

excavation. Neonatal mortality is often the result of endogenous causes while postneonatal mortality after the first four weeks is often the result of exogenous causes such as infectious diseases. Postneonatal mortality exceeded neonatal mortality in industrialised countries until the 1930s (Saunders 1992).

In the cemeteries of late Roman Britain, although infants are still generally under-represented, they tend to have higher proportions of infant burials than either the preceeding or succeeding periods. For example, at the late Iron Age and early Roman period sites such as King Harry Lane (Stead and Rigby 1989), Wallington Road, Baldock (Burleigh 1993) and Westhampnett (Fitzpatrick 1997) infant burials do not exceed 1-2% of the cemetery population (Pearce 2001: 134). As always there are exceptions, for example, cemetery three at Owlesbury (dating from the first century BC to the first century AD) was reserved for infant burials only and a large proportion of these were newborns (Collis 1977). In general, however, the proportion of infant burials at Late Roman cemeteries such as Poundbury, Ancaster, Lankhills and Victoria Road is much higher at around 8-10%. Again, in the succeeding period, the proportion of infant burials drops significantly to approximately 2-4% of the burial population. It has been suggested that the rise in visibility of infant burials during the fourth century is related to the introduction of Christianity (e.g. Watts 1989), although this hypothesis has since been criticised (Pearce 2001).

Infant under-representation is particularly acute from cemeteries of the fifth to sixth centuries. In a survey of 'Pagan' Anglo-Saxon cemeteries, it was found that only 1.2% of the mortuary population sampled were individuals of under one year of age (Crawford 1999: 25). In a study conducted by Stoodley (1999a: 106) only 3% of a sample of 1095 aged burials belonged to the neonate group. This is despite the fact that these cemeteries in Crawford's (1999) study had been chosen specifically because they had relatively higher proportions of child burials. Both taphonomic and cultural factors have been posited for this difference and these arguments will be explored below.

6.5.2 Taphonomy

With respect to taphonomy, a number of authors have argued that children, the elderly, and females are under-represented because their bones do not preserve as well as those of young adult males (Walker 1988). This is because the bones of these individuals tend to be smaller, less well mineralised, or both. Immature bones are incompletely mineralised, while the bones of the elderly

may undergo a degree of *in vivo* demineralisation. These are all factors that will increase susceptibility to post-depositional diagenesis and several studies have shown that they produce a very real effect on a cemetery's demographics (Walker *et al.* 1988; Paine and Harpending 1998).

Taphonomic factors will undoubtedly contribute towards the infant under-representation observed here, although the extent to which it does so is much more open to question. While the incompletely mineralised condition of infant bones may lead to a preservation bias (e.g. Gordon and Buikstra 1981; Johnston and Zimmer 1989; Goode *et al.* 1993), it has frequently been observed that when immature bones are recovered their condition is not significantly worse than that of adult remains (e.g. Becker 1995). Molleson and Cox argue that the high proportion of collagen in infant bones counterbalances the diagenetic effects of poor mineralisation (Molleson and Cox 1993: 16). Collagen is the organic component of bone and in a very acidic environment microbial activity responsible for the decay of collagen would be inhibited, whereas the mineral phase would continue to undergo reactions with the groundwater in the burial environment and degrade. However, in a burial environment with a higher pH value, and microbial activity, it is likely that the higher collagen content of bone would have no such benefit to the survival of infant bones. The assertions of Molleson and Cox are, therefore, debateable and likely to depend on the burial environment. Buckberry (2000) also criticises the findings of Molleson and Cox (1993) on the grounds that their evidence related to burials within crypts rather than a soil environment.

What is apparent is that the level of bone mineralisation alters throughout infancy and early childhood. It has been demonstrated that the bones of foetuses are actually more mineralised than those of newborn infants. Mineralisation then increases quite dramatically around the age of two years, a factor that is partly related to additional mechanical demands placed upon the skeleton as a result of walking and movement (Guy *et al.* 1997). These factors need to be considered when interpreting age at death profiles. For example, at a number of sites there is a peak in childhood mortality at around the age of two years that is usually attributed to increased exposure to pathogens through weaning (e.g. Queensford). However, it is possible that this peak represents a taphonomic bias in favour of this age group due to the increased mineralisation of the bones at this age.

Apart from the probable increased effects of chemical degradation that the poorly mineralised infant bones may suffer, it is clear that these skeletons are more sensitive to physical disturbance

and bioturbation (Chamberlain 2000). Furthermore, at both Roman and Anglo-Saxon sites there is a tendency to bury infants in shallower graves and this will further have increased their susceptibility to modern disturbance (e.g. truncation and destruction through ploughing). This has been proposed as one of the reasons for an absence of infants at early Anglo-Saxon cemeteries (e.g. Evison 1987: 146; Lucy 1994) (see Buckberry 2000 for a discussion of this). A further factor relates to a recovery bias during excavation. Infant bones, particularly those of pre-term stillbirths and neonates are much smaller and less recognisable than adult bones and are much more likely to be missed (Sundick 1978). Infant bones are frequently mistaken for animal bones and discarded or sent to animal bone specialists (P. Rowley Conwy pers comm.). Although this problem is less acute in more recent excavations, at earlier ones the discarding of infant bones was not uncommon because these skeletons could not contribute to prevailing academic questions concerning craniometrics and racial origins. An example of this is Hambledon Villa where 97 infant skeletons had been excavated along with the remains of several adults (Cocks 1921). The osteological report only dealt with the adult material and when contacted the museum curating the Hambledon material had no record of ever having received the infant material. It is clear that the infant bones from Cassington were similarly discarded as these were not curated with the other skeletal remains and no records concerning them appear to exist except for a reference by Harman and colleagues (1981). Another factor that will create a bias against infant recovery is the relative lack of grave goods in the graves of infants (see Chapters 7 and 8). As a result they are less likely to be detected in the archaeological record. Recovery at excavation is an important taphonomic factor influencing the age at death profile of a skeletal population (Table 6.4).

SITE	SOIL TYPE	DECADE EXCAVATED	PRESERVATION
Abingdon	Upper Thames	1930	Good
Berinsfield	Upper Thames	1970	Fair to Good
Queensford Farm	Upper Thames	1970 and 1980	Good
Cassington	Upper Thames	1930	Good
Lankhills	Hampshire	1960	Poor to Fair
Victoria Road	Hampshire	1980	Fair
Alton	Hampshire	1960	Poor
Portway	Hampshire	1980	Poor to Fair
Worthy Park	Hampshire	1960	Good
Winnall II	Hampshire	1960	Good

Table 6.4: General level of preservation of skeletal remains. The preservation definitions are based on a broad approximation of the skeletal preservation across the whole site. Preservation definitions are as follows: Poor= ~50% of skeletal elements are generally present, Fair= 60-75% of skeletal elements are generally present, and Good= greater than 75% of skeletal elements are generally present.

The differing levels of preservation between the sites may be a biasing factor in this study. However, it is evident that at those sites where infant bones are recovered in greatest numbers, preservation was not necessarily better, nor were these sites excavated at a significantly different time. Clearly cultural practices have been a primary factor in the under-representation of infants from these cemeteries.

6.5.3 Cultural Practices: Ritual or Rubbish?

While the differential inclusion of individuals of different ages within archaeological cemeteries makes palaeodemographic interpretations problematic, this factor is of paramount interest to this research. While numerous biological components may influence the survival and recovery of bones of different ages and sexes, the burial assemblage is primarily a cultural rather than a biological product (Waldron 1994: 12). The practice of separate burial grounds for young infants and stillbirths is observed cross-culturally in numerous populations. For example, until recently in Northern Ireland, infants that died before baptism were buried in a separate cemetery in unconsecrated ground. These cemeteries were also used for the burial of older infants up to six months of age, suggesting that full membership of community was a more gradual process (Cecil 1996: 181). Why this is and what it means in terms of perceptions of infancy is discussed below. When cemeteries are incompletely excavated, however, one must be aware of the possibility that infants were segregated and rather than absent were buried in an unexcavated part. However, at the majority of sites the infants that were present were interspersed with other individuals. As Esmonde-Cleary states with respect to late Roman burial grounds: no such 'kiddies corner' has so far been discovered (Esmonde-Cleary 2000: 135).

It is clear from the archaeological evidence that the vast majority of infant deaths in Roman Britain were deliberately excluded from the primary burial grounds of the remaining population. Infant remains have been excavated, often in substantial numbers, from within and around settlements and villas (Scott 1991, 1992; Struck 1993). The different treatment of infants in death very much contributes to the perception of them as other (Scott 1999: 122). Overall, the excavations in Roman Winchester, for example, have produced a large number of fourth-century AD infant burials (Scott 1999: 115). Many of these burials, however, lie outside of the formal cemeteries of Lankhills and Victoria Road. An example of this is at the site of Oram's Arbour where 52 neonate burials were found in the ditch which forms part of settlement boundaries. The burial of neonates within boundary markers is known ethnographically where they were often

buried at crossroads or boundary fences in Northern Ireland until the early nineteenth century (Cecil 1996: 182).

A substantial number of fourth-century sites within the regions of Hampshire and Oxfordshire possess cemeteries that are almost exclusively infant burials (e.g. Barton Court Farm and Hambledon Villa). The differential treatment of infants in death has generally been interpreted either in terms of ritual (but one having little to do with the funerary concerns of the infant), or disposal (e.g. Cocks 1921; Watts 1989). Intrinsic to the latter interpretation are preconceptions concerning a lack of emotional attachment to young infants in response to high infant mortality or the practice of infanticide (Pearce 2001).

The evidence for infanticide needs to be addressed, because it has profound implications for the perceptions of infancy in Roman Britain. The presence of large numbers of infants at settlement sites such as Hambledon Villa and Barton Court Farm, or within ditches such as at Oram's Arbour, is not sufficient evidence alone. More recently, Mays (1993) has argued that the age distribution of these infants exhibits a pronounced neonatal peak at 38 gestational weeks, indicating infanticide of newborn infants. Furthermore, Mays (1995) suggests that the greater ratio of male adults at Romano-British cemeteries such as Cirencester, may be indicative of female infanticide.

This research has been widely cited and in a follow up study Mays (2001) sexed a sample of these infants using DNA analysis in order to determine whether females or males were being preferentially killed. Successful DNA results were obtained from only a small proportion of the sample and produced a greater number of males. This study is flawed because it fails to account for the male bias in DNA sexing due to differential preservation of X and Y chromosomes (Millard *et al.* in prep.). Males also have a naturally higher mortality at birth than females, therefore, a slight disparity in favour of male deaths is to be expected. These biases are also illustrated by the outcome of a similar study of infant remains from Roman Ashkelon, Israel, where DNA analysis also indicated a predominantly male bias (Faerman *et al.* 1998).

The evidence for infanticide in Roman Britain has more recently been critiqued by Gowland and Chamberlain (2002). It was argued that the osteological ageing method used by Mays (1993) was statistically biased and this contributed towards the observed peak at 38 gestational weeks. Using a Bayesian ageing technique that removed this bias, and using this method to age a large sample

of infants from Romano-British sites, it was shown that the age distribution of these infants was compatible with that expected when still-births as well as neonates were accorded similar burial rites (i.e. a much broader range of ages at death). No osteological evidence was found to substantiate interpretations of infanticide (Gowland and Chamberlain 2002).

Another argument for the burial of infants within settlements suggests that this mode of burial is simply more convenient. Tied in with this suggestion are preconceptions concerning a lack of emotional attachment to young infants, with burial perceived in terms of a convenient mode of disposal rather than having any ritual symbolism. The age range of infants buried within settlements and villas is extremely specific– between approximately 24 gestational weeks and six months, after which they tend to be accorded different burial rites (Gowland 1998). These burials, therefore, included non-viable foetuses, and pre-term stillbirths as well as live-born infants. One could argue that the grouping of stillbirths and infant deaths is to be expected; they were all considered non-people, and of little subsequent importance. Indeed, such differential treatment of infants has frequently been interpreted in terms of the infant deaths not being the source of much social stress (Stone 1977).

Such interpretations may, however, be related more to the non-human status generally accorded to foetuses in Western society and the age at which a foetus is considered a person is much debated amongst anti- and pro-abortion groups today. The fabric of these arguments are interwoven with particular scientific and philosophical definitions concerning self-consciousness, religion, and ethics. Within the Western world a stillborn infant tends not to receive the same burial ceremony as a baby that dies even after just a few days (Gittings 1984: 83; La Fontaine 1986; Scott 1999: 26). Until recently in the United Kingdom unbaptised infants were denied burial on consecrated ground. Spatial distinctions in the burial rites accorded infants are common. When one examines the demographic population of the majority of cemeteries in Britain, miscarried foetuses, stillbirths and neonatal deaths continue to be conspicuously absent (Scott 1999). Based upon this evidence, the start of personhood in our society would appear to commence with an infant's live birth.

In more recent years, however, there has been a general shift in public attitudes towards stillborn infants that has meant that some hospitals have set aside separate cemeteries for their burial, although these are often within communal graves (Scott 1999: 26). The funeral (or disposal) of a stillborn infant still tends to be the responsibility of the hospital unless a specific request is made by parents. This is a recent trend and previously miscarried infants or still-births were frequently

disposed of without ritual along with deposits of clinical waste. There was a public outcry against a Nottingham hospital in June 2000 because it was disposing of foetuses in this manner. However, the very fact that this was a practice unchallenged for many years, reflects both the changing attitudes of people towards the unborn and also a degree of ambivalence surrounding this issue within today's society. At present there are no fixed social rules governing the disposal of these remains–it is a case of individual choice.

What becomes clear when one examines current treatment of infants deaths within the Western world is that the boundaries that define personhood are not as certain as they once were. This is possibly a result of medical advances that enable increasingly younger pre-term births to survive. The distinction between a foetus and a live-born baby, however, clearly has important, if albeit increasingly ambiguous, implications in our society. The evidence from Roman Britain suggests that there was no clear distinction between pre-term still-births and neonatal deaths. A locational distinction is generally maintained between perinatal infants up to six months of age and those older than six months. In a number of cultures no distinction between still births and neonatal deaths is made (e.g. Ardener's (1962) study of the Bakweri). One could argue that this grouping of stillbirths and neonatal deaths is to be expected, they are all non-people and of little subsequent importance. If this were the case, however, one would perhaps expect to recover them primarily from rubbish deposits rather than houses and settlements. The incorporation of the infant in death firmly within the social sphere of the living, should not be dismissed so readily. Numerous societies bury infants under the floors of dwellings and often this relates to ideological concerns regarding rebirth and the spirit of the dead infant, than the functional aspect of convenient disposal (Williamson 1978: 64; Scott 1999: 117).

Perhaps the burial of infants was confined to the domestic sphere, not because it was convenient for disposal, but because the household represented the social world of that child. As the social relations or influence of infants tend not to extend beyond the immediacy of the household, one could argue that their burial was conducted within the small social arena of which they were a part. This may highlight the social constraints and lack of funerary ritual associated with miscarriage in our society: materially a non-event that belies the considerable emotional upheaval that such an experience provokes. It has frequently been noted ethnographically that while the loss of a newborn did not result in elaborate mourning ritual, the event was clearly the cause of considerable grief and distress (Wembah-Rashid 1996: 77). What is clear is that the exclusion of these infants from formal cemeteries and subsequent burial within settlements was a funerary

ritual associated with a large numbers of infants of a very specific age group. Those infants actually buried within late Roman cemeteries are the exception and the interpretation of their graves must take this factor into account.

In the early Anglo-Saxon period, it is very difficult to discern perceptions towards infants because they are almost completely absent from the archaeological record. Their absence from settlements as well as formal cemeteries does perhaps indicate a shift in the perceptions towards infants from the late Roman to early Anglo-Saxon period. The separation of the infants from the rest of their community becomes more absolute. As discussed previously, an exclusively taphonomic explanation is unsatisfactory, particularly in light of their preservation during both preceding and later periods (Lucy 1994: 26). Although Buckberry (2000) found that the proportion of infant and juvenile burials recovered from Anglo-Saxon cemeteries tended to increase into the later Anglo-Saxon period as a result of site location and geology, there are a number of anomalies in her research sample (e.g. Great Chesterford) that indicate the role of cultural choices.

In contrast to the fourth-century, within the early Anglo-Saxon period, infants have not been recovered in any significant numbers from settlement sites. Given the very small numbers of infant bones recovered from the cemeteries, one would perhaps expect to see them much more frequently buried within settlements. Although infant remains have been recovered from early Anglo-Saxon settlements, they are usually recovered from what have been interpreted as rubbish deposits. For example, the disarticulated remains of at least six individuals from West Stow (West 1985) and around fifteen to twenty were recovered from West Heslerton (Powlesland 1997). Many of these come from the fills of sunken feature buildings (SFBs) and all are fragmentary. It is argued by Powlesland that the deposits within the SFBs represent tertiary deposition of material from the collection of midden material (e.g. for manuring fields) (Powlesland pers. comm.). This sort of evidence cannot be considered in the same light as the material from Roman buildings where the deposition of infants was both deliberate and careful as well as within the lived domestic space.

Although very few early Anglo-Saxon settlements have been excavated in their entirety, one would still expect to find more infants buried within them, given their absence from the cemeteries. One could speculate that infants are being buried in exclusive cemeteries that simply have not been excavated yet, but this does not seem likely. One can only surmise that the burial rites accorded to infants in the early Anglo-Saxon period (if any) were archaeologically invisible (e.g. water burial, or cremation followed by scattering of bone).

Whatever burial rites were accorded, it is again clear that infants were considered a distinct age group, requiring specific treatment in death. In this respect there is some similarity between the late Roman and early Anglo-Saxon evidence. In this sample, only a small percentage of the burial population were under one year of age. In this respect those burials that are present in the cemeteries must again be interpreted as being in some way exceptional and may in itself reflect an unusual or high status of the infant.

6.6 Conclusion

The age distributions produced in this study are more dispersed than those obtained using conventional techniques and the 'attraction of the middle' that affects many age at death distributions has been reduced. The age and sex structure of each of the above cemetery populations tend to exhibit similar trends, although each has specific idiosyncrasies. As discussed above, to interpret these in terms of the living populations from which they were derived would be a problematic exercise. Comparison of the age and sex structure of each of the populations also becomes difficult when very few of the cemeteries have been completely excavated.

Despite this, a number of factors have been drawn out of the above analysis. Firstly, the sex ratio of both the late Roman and early Anglo-Saxon cemeteries are approximately equal. This is contrary to the popular belief that males consistently outnumber females in Romano-British cemeteries. A number of possible sexing biases were also identified in relation to different stages of the life course. These will increase the possibility of incorrect sexing, or an inability to sex, during specific life stages at cemeteries with poor skeletal preservation. The potential outcome of this bias may introduce a significant source of error. Furthermore, a high degree of variability in sexual dimorphism was noted between different cemeteries. This sexual dimorphism tended to be a geographical rather than temporal phenomenon and demands further more rigorous examination and quantification. The findings of this study indicate that the reliability of skeletal sexing criteria when applied to diverse archaeological populations is considerably more uncertain than has hitherto been acknowledged.

Finally the most obvious difference with respect to cultural selection of different age groups within the cemeteries pertains to infant burial. Overall their remains are under-represented, however, while they are excluded from formal late Roman cemeteries they are much more visible

than during the early Anglo-Saxon period when they all but disappear from the archaeological record. It would seem that a shift in the perceptions of infancy occurs during this time, and that these differ from those of the modern Western world. The shifting perceptions of infancy and other life stages will be explored more fully in relation to other cemetery variables in the following chapters.

Chapter 7

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Romano-British Cemeteries

7.1 Introduction

This study aims to adopt a more integrated approach to the archaeological data by relating skeletal information to cultural variables from the cemetery context with the aim of identifying social age groupings and identities specific to the period studied. In order to do this effectively and efficiently, skeletal information and factors relating to the body have been entered into a database table that has been linked to further tables containing information relating to grave variables. The tables are linked relationally in Microsoft 'Access' on a one-to-many basis (see Appendix 2 for tables). The layout of the database is primarily based upon the design produced by Huggett (1992) as this allows a detailed and efficient linking and analysis of both skeletal and cultural variables. Using these data this study aims to establish how the ages obtained from skeletal material relate to their social reality and how the ageing body was understood culturally within the societies of Oxfordshire and Hampshire in the fourth to sixth centuries AD.

This chapter focuses on the analysis of the late Roman cemeteries and the following chapter will examine the evidence from the early Anglo-Saxon cemeteries. The primary focus of analysis undertaken in this chapter will be the grave good associations, but other factors such as the presence of coffins, grave depth and body position will also be considered. Grave good associations are one of the most useful variables in funerary archaeology for inferring particular aspects of individual and social identity. In Anglo-Saxon archaeology they have been used widely in this respect and many studies of grave goods have been conducted. In funerary studies of the Romano-British period very few such analyses have been undertaken, due in part to the dearth of grave inclusions from cemetery sites of this period (see Chapter 3).

The majority of cemetery studies have simply examined material culture on either side of the adult-child, male-female dichotomies. As a result, while authors have inferred that particular items of material culture are gendered, few patterns in the data have been observed and what archaeologists have understood about these populations in social terms is questionable. As discussed previously (Chapter 3), one of the key limitations of this type of analysis stems from

the biology/culture paradigm: archaeologists still consider age and sex as fixed biological variables. As a result of this, a rigid modern western view of the adult/child, male/female distinction has been internalised by archaeologists and imposed onto the past. The following analysis aims to provide a much more detailed examination of the age-related material culture patterns at each of the cemeteries.

For the purposes of this study the numbers of individuals of each age group buried with grave goods, as well as the quantities, types, material and positions of those goods, have all been examined. The results of this analysis will be presented in detail in this and the following chapter for sites of each period and inter-site comparisons made. When examining grave good *quantities*, the charts have been expressed in terms of the percentage of the overall quantity of grave goods that were buried with each age or sex. By doing so it is possible to more clearly compare information between sites than if we were to use actual numbers of goods due to differences in site size. However, there are some demographic disparities between sites that will have some effect on these charts. Consequently, interpretations of the information have also taken into consideration the demographic data shown in Chapter 6.

The term 'child' has been used in the charts below to indicate that an individual could not be sexed because it was skeletally immature. This is differentiated from the 'unknown' sex, which refers to skeletally mature individuals who could not be sexed due to preservation factors or other reasons. In the 13-17 year old age category, some individuals towards the upper end of this age group could be skeletally sexed, however, those that could not be have still been referred to as 'child'. This term is not meant to have any social implications within this context and has been used for convenience only.

At the late Roman cemeteries, Lankhills is the only one where a large proportion of the cemetery population were buried with grave goods. Individuals at Victoria Road also had grave goods, but are usually only buried with a single item and it is difficult to make any social inferences from this information. At the site of Queensford only one individual was buried with a grave good and at Cassington only four individuals are buried with grave goods (Figure 7.1). As a result of this, the main discussion of grave good associations from the late Roman cemeteries focuses on the wealth of data from Lankhills. With respect to the remaining late Roman cemeteries a more detailed analysis of other cemetery variables (e.g. presence of coffins, body position) has been made in order to discern any age- or sex-related patterns in burial treatment.

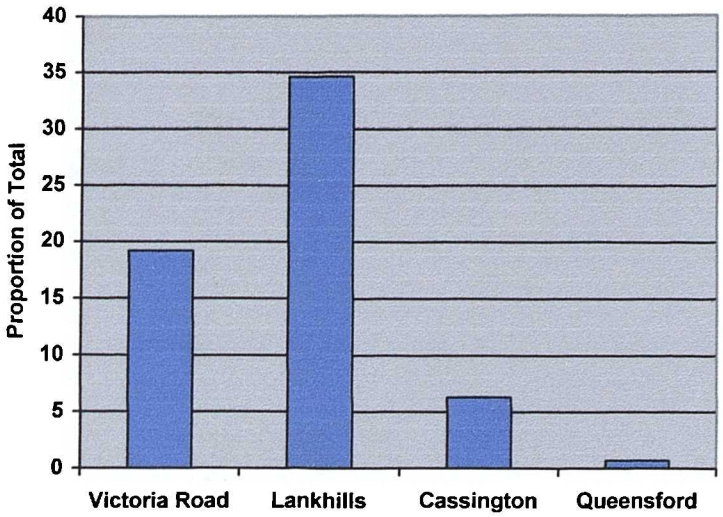


Figure 7.1: Proportion of individuals at each late Roman cemetery buried with grave goods.

7.2 Lankhills Grave Goods

Lankhills is by far the largest cemetery in this study sample, and forms the main focus of this chapter. Lankhills is unusual in that it has an exceptionally high number of grave goods compared with contemporary Romano-British cemeteries, thus lending itself to this type of analysis. Due to the relative lack of grave goods at the other sites in this study sample, it has been necessary to make some broad comparisons with other late Roman cemeteries in the following analysis.

In total, 39% of females, 34% of males, and 34% of individuals less than 18 years of age had grave good provisions.[1] When we compare the actual quantities of artefacts interred, however, 26.8% of the total number excavated from the cemetery were associated with adult females, 15.3% with adult males, while 37.9% were buried with individuals under the age of 18 years (the remaining 20% of goods having been recovered from the graves of individuals of unknown sex or age)[2]. Therefore, despite equal numbers of 'children' and adult males having been buried with grave goods, 'children' actually have a much higher proportion of the overall quantity of artefacts. As far as types of goods are concerned females tend to be buried with items of personal adornment, while male assemblages more frequently included items such as vessels. A more

[1] Hobnails have been excluded from this analysis of Lankhills grave goods and instead have been examined in a separate section.
[2] Each item within the grave (e.g. bracelet, coin, vessel) was counted as a single grave good. Those goods that are comprised of multiple components (e.g. bead necklace) were also counted as a single item.

detailed analysis of the age/ sex relationships with grave good provisioning is necessary in order to distinguish further patterns in material culture deposition.

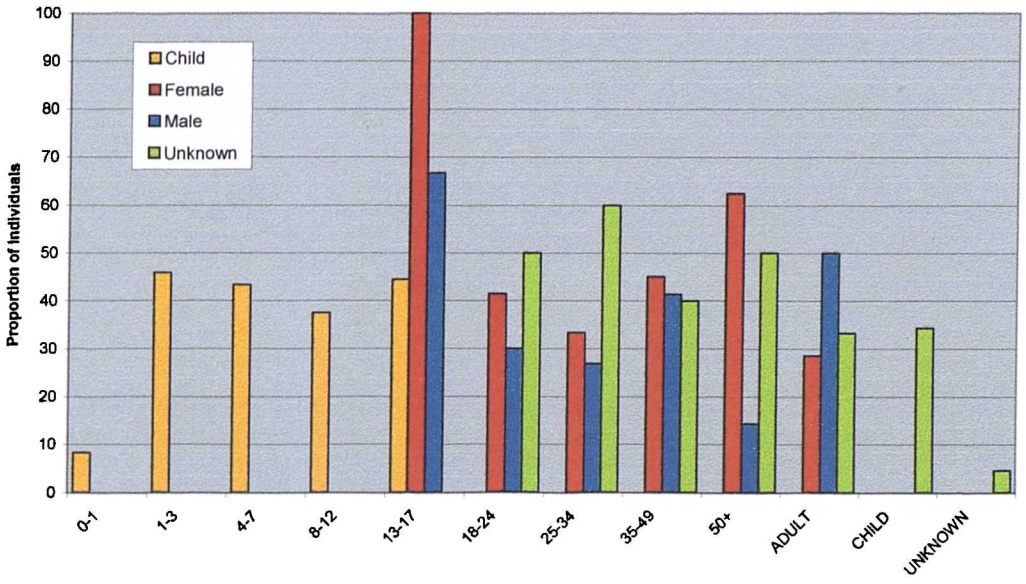


Figure 7.2: Percentage of individuals in each age/sex category at Lankhills to be buried with grave goods.

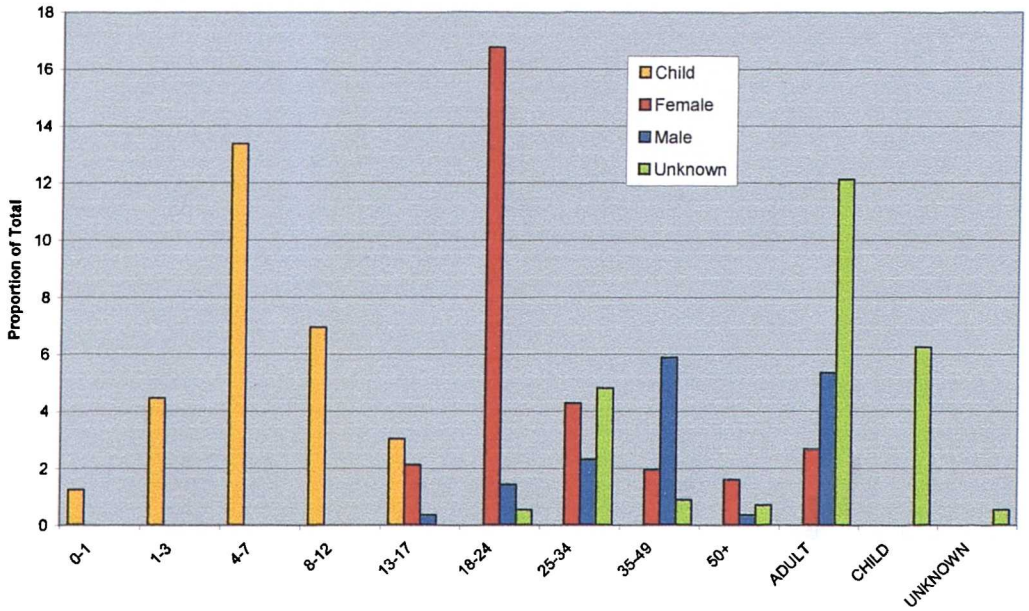


Figure 7.3: Proportion of the overall quantity of grave goods at Lankhills to be buried with each age category (n=561).

7.2.1 Immature Burials

At Lankhills none of the neonates (less than one month of age) were buried with grave goods and only a small percentage of infants under one year of age were buried with any goods at all (see Figures 7.2 and 7.3). Of those that were, the quantity and variety of types are limited. Grave goods tend to be restricted to coins, although one infant (Skeleton 463) was buried with a pendant. No grave goods were buried with the neonatal skeletons, if grave goods were deposited this was only after six months of age. A comparison of these findings with other cemeteries demonstrates that at Colchester none of the infants under one year of age were buried with goods, however, there are actually very few individuals of this age present at all (see previous chapter). At Poundbury, no infants are buried with grave goods, although grave goods are not as common at this site (Farwell and Molleson 1993). Despite the lack of grave goods, infants were often buried with care. For example, at Colchester and Cirencester they were buried within tile or decorated lead coffins (Crummy *et al.* 1993; McWhirr 1986). It should also be remembered that in many respects those infants buried within the cemetery would already appear to be in some way exceptional. It is therefore difficult to interpret the burial rites of those included within Lankhills cemetery in any meaningful way.

After the age of one year there is a sharp rise in the number of grave goods interred and almost half of all individuals are buried with grave goods. This proportion remains approximately constant throughout the remaining developmental years. There is also a greater variety in the types of goods from this age onwards. For example, vessels such as beakers and jugs, coins, combs and occasional items of jewellery were also included. A few unusual grave goods were present, for example, one individual aged 1-3 years was buried with four bank voles placed within the coffin, between the feet.

After the age of four years the proportion of individuals interred with grave goods remains approximately the same, however, there is a sharp peak in the 4-7 year age group in both the quantity and variety of types of goods deposited. From 4-7 years onwards individuals start to be buried with large deposits of grave goods such as numerous bracelets, finger rings, or necklaces. Most of the burials with grave goods also contain at least one vessel, some having as many as four. The relative quantity of goods remains high into the 8-12 years age category and the apparent dip in Figure 7.3 during this age actually relates to the smaller number of individuals in this age category (representing only 2% of the burial population compared to 6% in the preceding age category– see Chapter 6 for demography of Lankhills). The burials of this age group are

amongst the richest for the entire cemetery. One individual was buried with 37 items, including 12 bracelets, three finger rings, two necklaces, a headband and five coins (skeleton 336). Many of these jewellery items were worn. The only other individual to be buried with a headband was another child of slightly younger age, and this burial had a very similar assemblage that also included numerous bracelets, two necklaces and six coins (skeleton 323).

After the age of 12 years although the proportion of individuals buried with goods remains constant, there is a marked drop in the quantity of goods interred. Two individuals in the 13-17 year age category were sexed as females (one as female?) and both of these had grave goods. One of these individuals was buried with a large number of vessels and the other with a single flagon. One 13-17 year old sexed as male was buried with an unidentified object. There is a tendency for a reduced number of items of personal adornment to be present amongst this age group, with the exception of one individual (Skeleton 139) with a mean age of 15 years, who was buried with eight bracelets and two finger rings (none of which were worn). This individual has more in common with the succeeding age group in terms of burial assemblage and indeed is close in age.

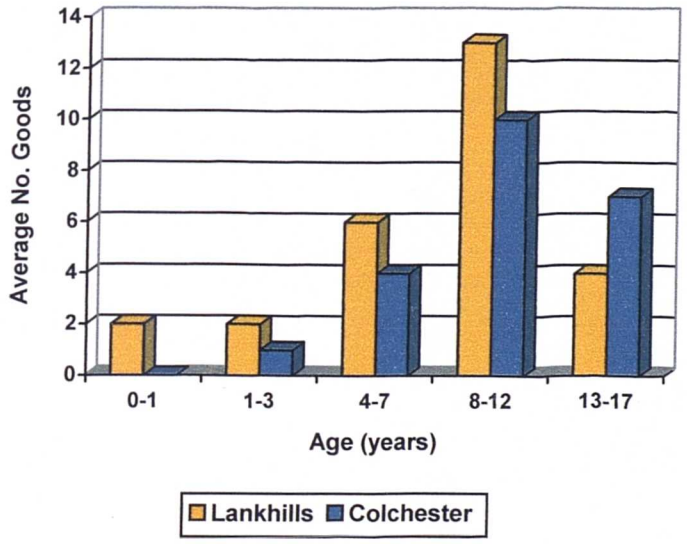


Figure 7.4: The average number of goods buried with each age category (out of those individuals buried with grave goods).

Observing the actual quantity of goods for each age group (taking into account only those individuals buried with grave goods), it becomes evident that while approximately equal proportions of individuals over the age of four years were buried with grave goods, the average quantity of goods increases after the age of four years (Figure 7.4). Overall, therefore, individuals

between the ages of 4-12 years experience a dramatic rise in terms of the quantity of goods deposited. These assemblages are amongst the richest in the entire cemetery and are characterised by large amounts of jewellery. The quantity then decreases during 13-17 years of age. Again, when the results from Lankhills are compared with Colchester the pattern is approximately similar, although at Colchester the number of goods interred with individuals between the ages of 12-17 years remains high. (N.B. in Figure 7.4 the average number of goods in the 8-12 year category has been skewed higher as a result of the single burial with 37 goods discussed above).

7.2.2 Mature Burials

An examination of those individuals traditionally classed as adults also suggests that for any one sex adulthood is not a static social phenomenon. Amongst females over the age of 18 years, there are no significant fluctuations concerning the proportion of individuals in all age groupings to be buried with grave goods (Figure 7.2). Individuals over the age of 50 years were more likely to be buried with grave goods than the other 'adult' females. When one examines the actual quantity of grave goods interred, however, a very pronounced peak is evident between the ages of 18-24 years. Part of this peak can be accounted for by the fact that there are actually greater numbers of individuals in this age group compared to the older age groups (see previous chapter). However, even taking this into consideration, the quantity of goods with the younger females is still striking and it is clear that a substantial proportion of the total female goods were confined to a highly restricted age grouping. In order to examine the mature burials in greater detail, the following sections are divided by grave good type.

7.2.3 Personal Adornment

Personal ornaments form a much more significant part of the burial assemblage at the Lankhills cemetery than at any other site late Roman site either in Winchester or elsewhere in England. As Figure 7.5 shows items of personal adornment are predominantly buried with individuals between the ages of 4-12 years and 18-24 years. A more detailed study of these items and their placement in the grave has been made in order to determine any further age-related deposition pattern. The objects of adornment examined were as follows: bracelets, necklaces, finger rings, headbands, pins, belt fittings, buckles, cross-bow brooches, and combs.

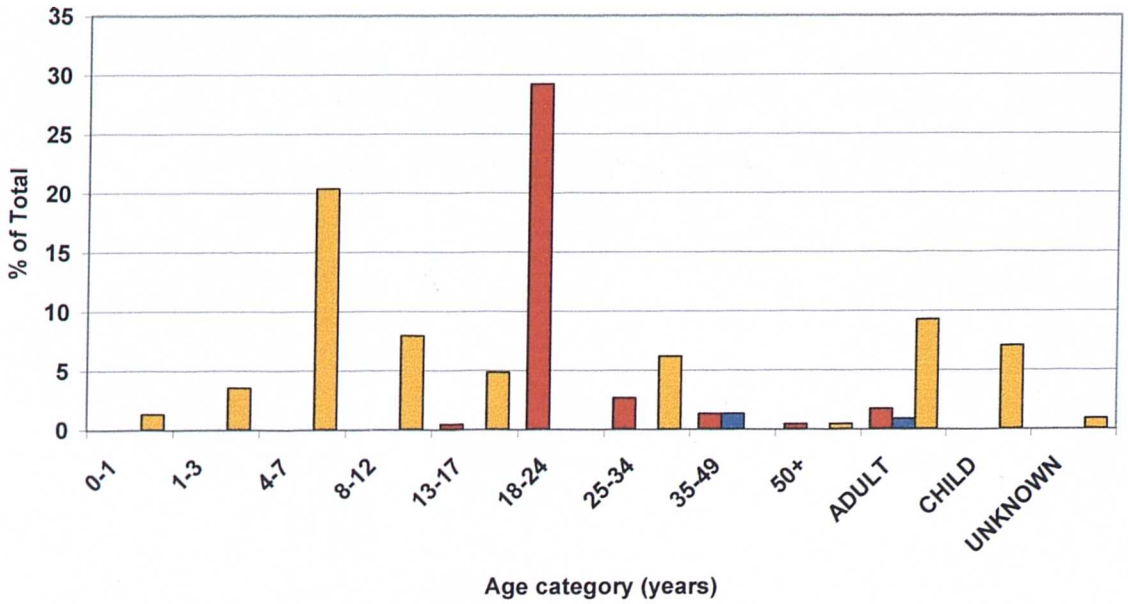


Figure 7.5: Proportion of the total quantity of items of personal adornment buried with each age/sex category at Lankhills (n=226).

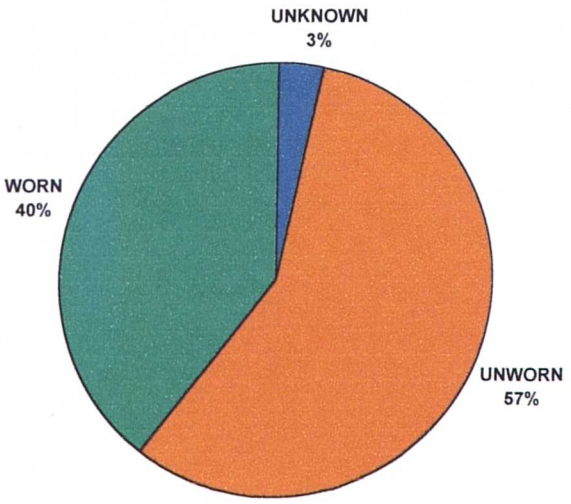


Figure 7.6: The proportion of items of personal adornment at Lankhills that are worn.

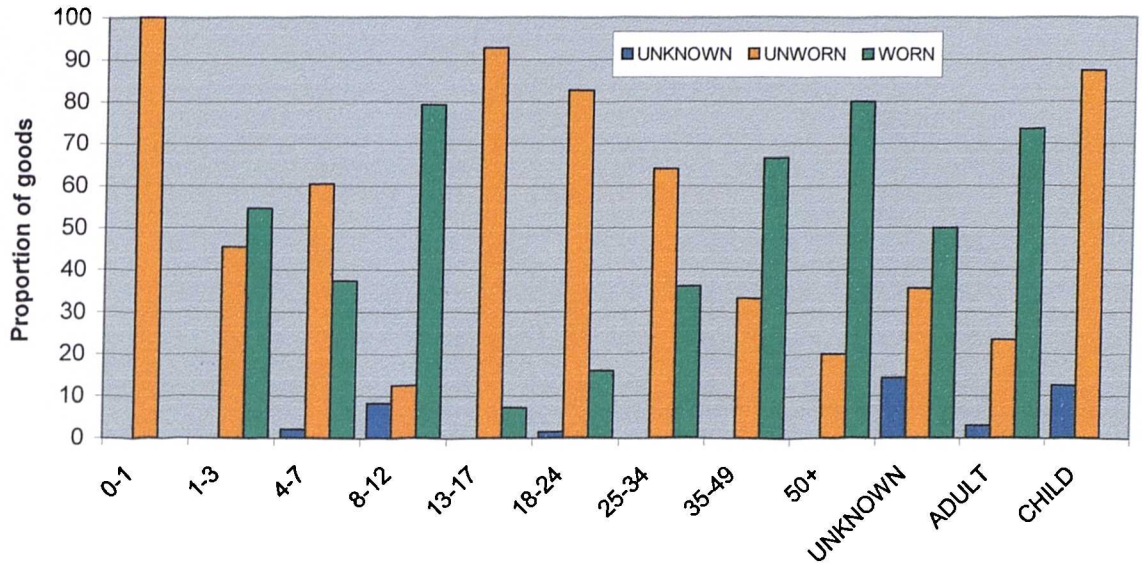


Figure 7.7: The percentage of the items of personal adornment buried in each age category to be worn at Lankhills.

Unlike Anglo-Saxon cemeteries, the objects placed within the graves in Romano-British cemeteries are frequently not worn, but instead placed in piles next to the feet or head. At Lankhills, 57 % of the items of jewellery were unworn (Figure 7.6). Individuals between the ages of 4-12 years and 18-24 years have by far the greatest proportion of items of personal adornment, however, the placement of the jewellery in relation to the body is strikingly different (Figure 7.7). Almost equal proportions of jewellery buried with those aged 4-13 years were worn as unworn (Figure 7.8). By contrast, very few items of jewellery buried with females aged 18-24 years were worn, instead they tend to be deposited next to the body. In fact only one of these females (Skeleton 326) actually had worn items of personal adornment- the rest were unworn. Amongst older females, aged 35 years and over, few items of jewellery were present, but those buried with items of jewellery tended to be wearing them (Figure 7.7).

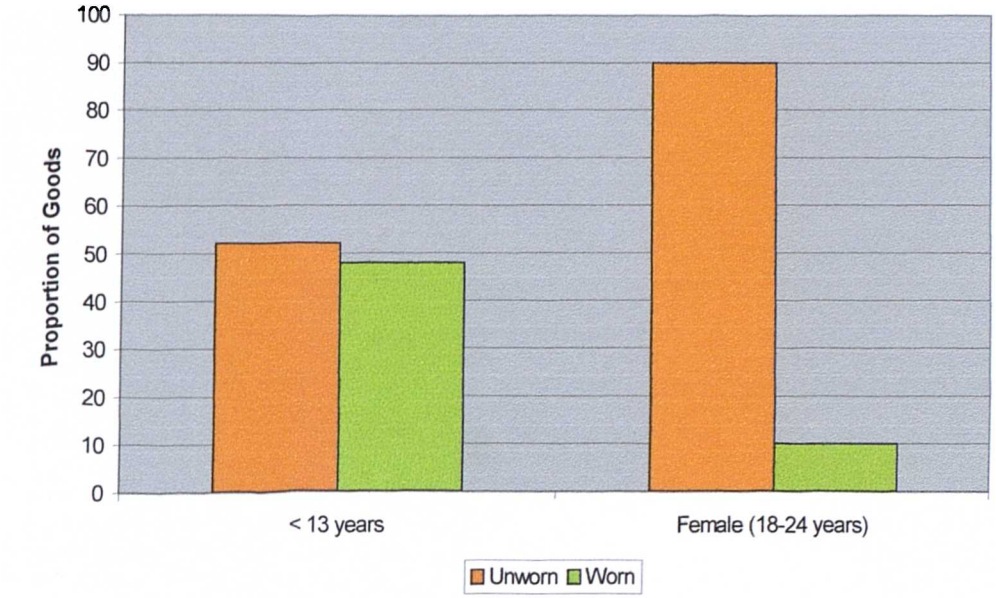


Figure 7.8: The proportion of items of personal adornment worn.

When one compares this pattern of wearing jewellery at Lankhills to other late Roman urban cemeteries such as Colchester, the reverse is true: only 13% of jewellery items buried with individuals under 18 years were worn (the majority having been placed in piles next to the skull) compared to 43% buried with the adults. While there is a similarity in the composition of grave assemblages of children between the ages of 4-12 years and young adult females, there are subtle differences between these groups in terms of placement of goods and whether they were worn or not. These differences may be important in terms of identity and demonstrate how different meanings can be conferred on, and imbued by, the same items of material culture depending not only on the gender of an individual, but also on their stage in the life course. The following section examines the types of items of personal adornment buried with each age group, in order to provide a more detailed analysis and comparison of the grave good assemblages.

7.2.3.1 Bracelets

Bracelets were by far the most common item of personal adornment and were included with both children and adult females. From the analysis below it is clear that the deposition of bracelets was clearly governed by the age and gender of the deceased (Figure 7.9). No sexed males were buried

with bracelets and Figure 7.9 below shows sharp peaks in quantity between the ages of 4-7 years and 18-24 years.

The most common materials from which the bracelets were manufactured were copper alloy and bone (Figure 7.10). There did not appear to be a strong delineation between the age of the individual and the type of material the bracelets consisted of, although as one would expect, those age groups with a high frequency of bracelets subsequently exhibited a much greater variety of bracelet types. For example, those aged 4-7 years and 18-24 years had iron and shale bracelets in addition to those made of bronze and bone. The only jet bracelet excavated and one of only two ivory bracelets excavated from the cemetery were buried with females aged 18-24 (the other ivory bracelet was buried with a 1-3 year old). The only glass bracelet recovered had been deposited with an 8-12 year old.

As discussed previously, the bracelets buried with the immature individuals were much more likely to be worn than those buried with the 18-34 year olds. Furthermore, of the unworn bracelets, those with the immature individuals were most frequently placed towards the foot of the grave, whilst those with 18-34 year old females were placed towards the head.

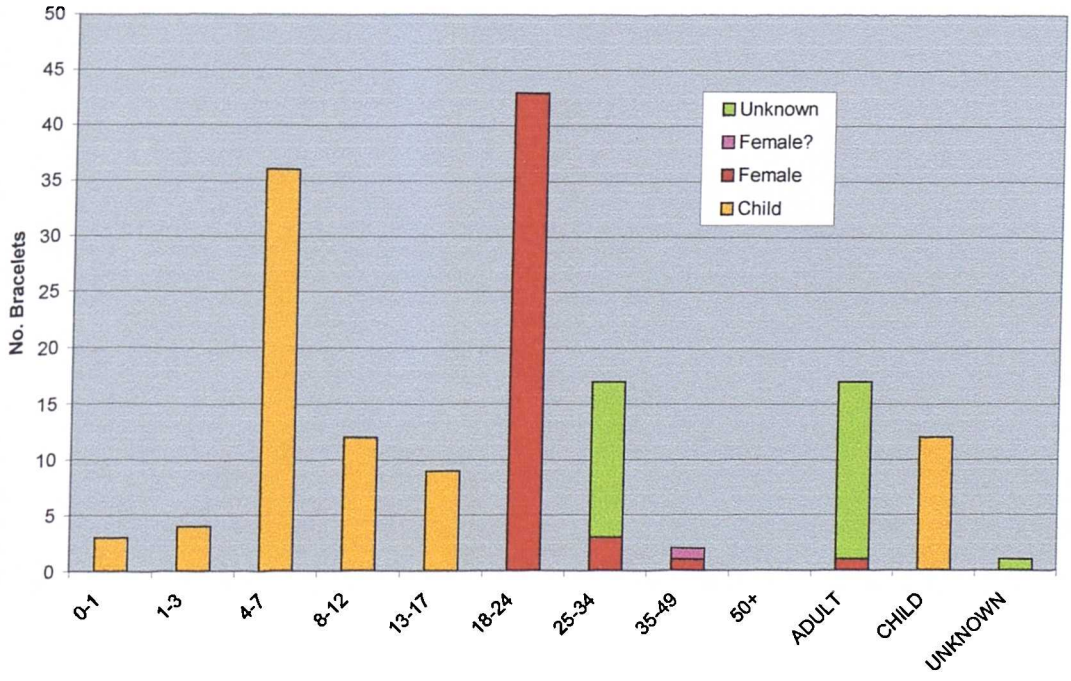


Figure 7.9: The number of bracelets buried with each age group at Lankhills.

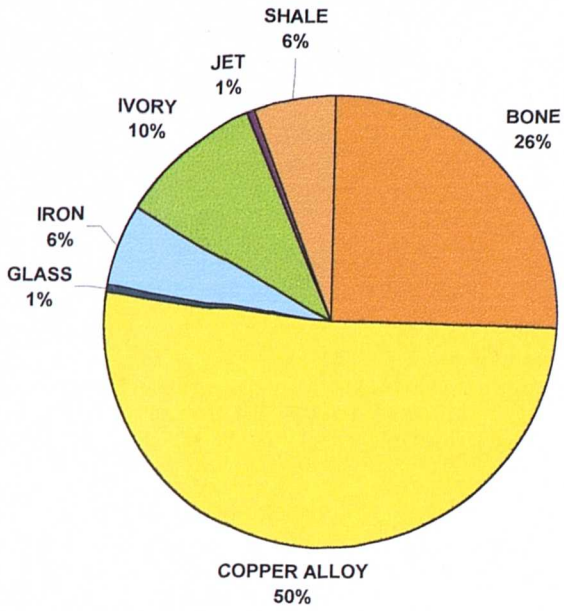


Figure 7.10: Material of Bracelets at Lankhills.

7.2.3.2 Necklaces

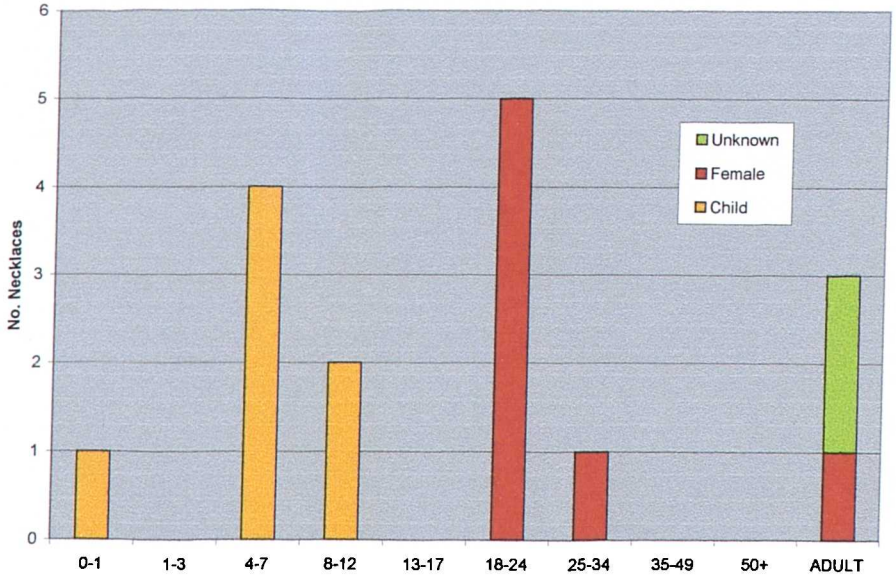


Figure 7.11: Number of necklaces buried with each age group at Lankhills.

The deposition of necklaces follows a similar age and sex related pattern in terms of quantity and variety of type as the bracelets. Again none were buried with sexed males and none were buried with adults over 35 years of age (Figure 7.11). Necklaces were most frequently deposited with those aged 4-7 years and 18-24 years. Necklaces were more likely to be worn than bracelets amongst the 4-7 year age group. By contrast, amongst the 18-24 year old females all but one of the necklaces were unworn. Almost all necklaces were made of glass beads, although a coral necklace was buried with an adult female of 18-24 years, and a cornelian necklace with a female of unknown age.

7.2.3.3 Finger Rings

Finger rings differ from other items of personal adornment in that they were not exclusively buried with females; a male aged 35-49 years was also buried wearing a ring (Figure 7.12). A number of other factors also served to differentiate the deposition of finger rings from that of other items of personal adornment. For example, a considerable proportion of the jewellery buried with individuals below the age of 13 years was worn and yet almost all finger rings were unworn (twelve out of the thirteen finger rings were unworn). It is possible that while the burial of children wearing necklaces and bracelets was acceptable, the wearing of rings for this age group was inappropriate. Numerous finger rings were also buried with the 18-24 year old females and these (with the exception of one) were also unworn. This, however, is in keeping with the mode of deposition of other items of personal adornment with this age group. A further factor that differentiates the deposition of finger rings from other items of personal adornment is that several older females were also buried with rings and (in contrast to younger females) these were *always* worn.

The majority of worn rings were on the left hand, although several were also worn on the right. Most finger rings were copper alloy, although eight silver, two iron, and two shale rings were also excavated. The silver rings were restricted to individuals of 4-7 and 18-24 years of age and shale rings were found only with the latter age group.

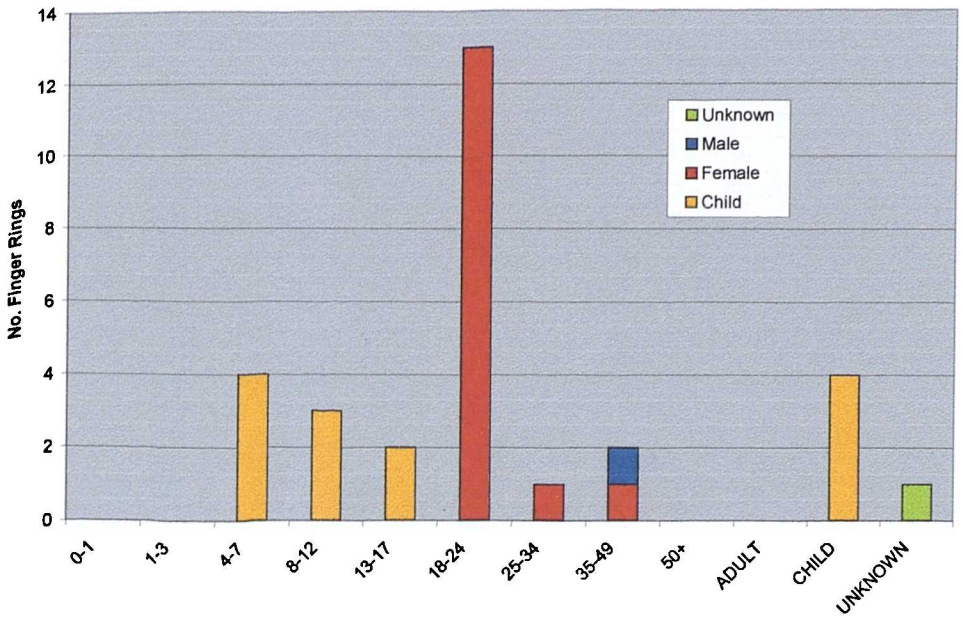


Figure 7.12: Number of finger rings buried with each sex/ age group.

7.2.3.4 Miscellaneous Jewellery

The other items of personal adornment included pins and pendants and these followed much the same mode of deposition as the previous objects. The pins are found only with children and skeletally sexed females. Those buried with the 18-24 years olds were, again, made of the more exclusive material such as jet, glass and silver, while those with the older age groups are bronze or iron. The pins buried with children are bone, bronze, and silver.

Other miscellaneous items of personal adornment include a pewter and glass pendant and two animal canine pendants all of which had been placed beside the feet of an infant aged six months old. It is unusual for an infant to be buried with such grave goods, and these were the only pendants buried within the cemetery.

Finally, two headbands were present at Lankhills: one manufactured from glass beads and the other of coral. Both of these were buried with individuals aged between 4-12 years and both were worn. It is interesting to note that a parallel can be drawn with Butt Road, Colchester, where the only headband recovered was worn by a child of similar age. The headbands and the pendants are the only items of material culture that are restricted to immature individuals.

7.2.4 Combs

As discussed above, older females have very few items of personal adornment present; no ostentatious deposits of jewellery accompanied these individuals. The items that are buried with them are usually worn and were, therefore, more likely to be a part of daily costume rather than an intentional, symbolic, deposit. Older females are, however, buried with bone combs and many of these were placed next to the head. Bone combs are present with the younger adult females as well as older individuals. However, they tend to be placed next to the head only in the graves of older females or young children of 1-3 years. Despite individuals aged between 4-12 years having the greatest number of grave goods, bone combs do not feature amongst their assemblages.

7.2.5 Belt Sets/Cross-Bow Brooches/Knives

By contrast to the other items of personal adornment that are almost exclusively excavated from the graves of children or skeletally sexed females, belt sets and cross-bow brooches are confined to male graves. Eight cross-bow brooches were present in a total of eight graves. All except one of these individuals also had belt fittings included in their assemblage and two also had a knife. Those burials containing knives always had belts present. Unfortunately many of those buried with these assemblages were poorly preserved, and only four out of the eight could be sexed. Three of these were males and one individual aged approximately 60 years was sexed as a 'probable female'. The latter had been sexed on the basis of the features of the skull alone. Given this factor and the overlap between sexual characteristics of the skull (particularly in individuals of an advanced age) it seems possible that this individual was in fact a male. The sexual characteristics of male skulls have a tendency to become 'feminised' in advanced age; the muscle markings and attachments are not as pronounced, and resorption around the teeth of the mandible also give a more feminine appearance (see Chapter 6).

It is unfortunate that due to poor preservation of those buried with cross-bow brooches only a few could aged. When age could be estimated it was found that these brooches are almost exclusively confined to older males of 35-49 years and over. All were worn, usually (although not exclusively) on the right shoulder. Two of these brooches (buried with skeletons 322 and 373) are particularly ornate. Burial 322 was also buried with a silver strap end and it is presumed that a silver belt buckle had been removed prior to burial, presumably because of its value, or perhaps official significance (Clarke 1979: 279).

Nine individuals were buried wearing belt sets and a further five burials had belt sets that were not worn; four placed next to the feet and one next to the head. Belt sets were always placed with older adult males with the exception of one belt fitting placed next to the feet of a child aged 4-7 years.

Seven knives were also excavated at Lankhills and, with the exception of one, all were accompanied by some sort of belt fitting. Three of these knives were unworn and had been placed next to the feet and the remainder were worn at the waist. The items associated with males, belt sets and/ or cross bow brooches, have a relatively restricted distribution across late Roman cemeteries and are found nowhere else in a similar concentration to that at Lankhills (Pearce 1999: 163).

7.2.6 Coins

Coins were found with all age groups and sexes and as such may be considered 'gender neutral' items (see Chapter 9 for a discussion of this term) (Figure 7.13). The majority of burials in the older age groups with grave goods had coins included in their assemblage. Females over the age of 50 years tended to be buried with bone combs and/or coins. By comparison, less than 50% of the younger females buried with grave goods had coins included in the assemblage, and then it was usual for just a single coin to be present. This is significant when one considers the comparative abundance of grave goods buried with these younger females. Males in the 18-24 years age group were also less frequently buried with coins. This is in contrast to the older male age groups where multiple coins were often buried. One adult male was buried with six silver coins beside his right arm within the coffin, and a copper-alloy coin thought to have been outside the coffin (again at the right side). The only silver coins buried within the cemetery were confined to males. Multiple coins were most frequently recovered from the assemblages of children.

The vast majority of coins at Lankhills were placed on the head, usually in the region of the mouth or eye, though one individual had a coin placed on the centre of their forehead. There does seem to be an age-related pattern in terms of the placement of coins. Those buried with the 18-24 year old females, for example, were always placed in the mouth, while those buried with older females could also be placed in the hand. The hand was a relatively common part of the body for the coin(s) to be placed, and no particular hand was favoured for any age group. For example, one child had two coins placed in each hand and two placed beside the feet. The male burials showed slightly greater variability with respect to the placement of the coins, being placed near the chest,

pelvis or beside arms. It is possible that these coins were more frequently contained within a purse.

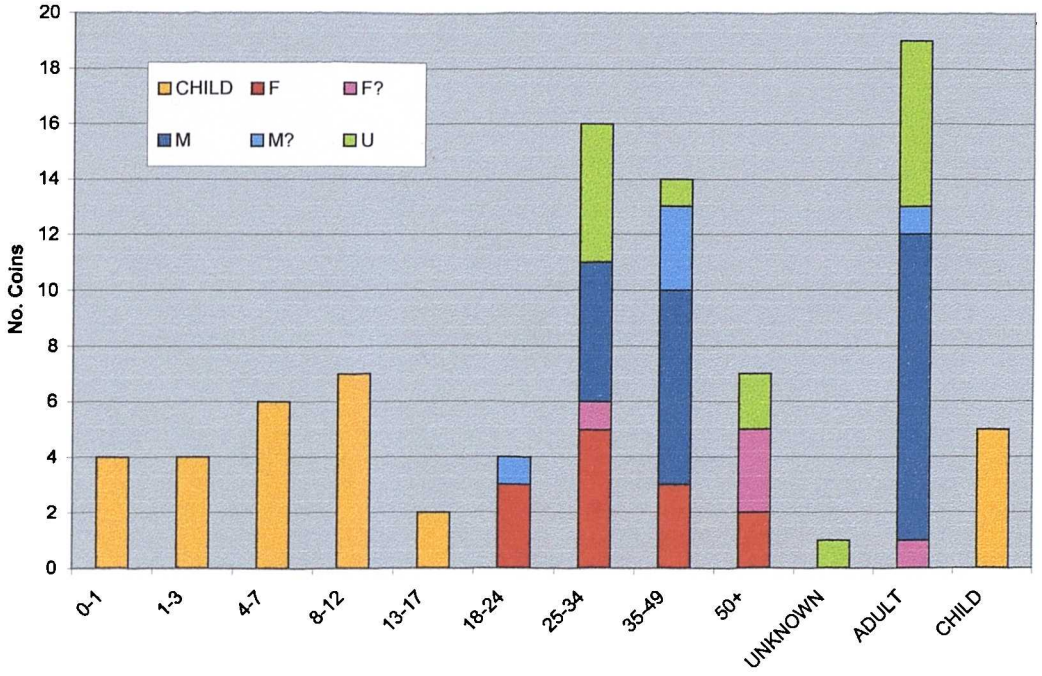


Figure 7.13: The distribution of coins at Lankhills by age and sex.

7.2.7 Vessels

Figure 7.14 and 7.15 below shows the types of vessels present at Lankhills and the quantities with which they were recovered from each age and sex group. Although vessels are buried with most age and sex categories, a few patterns in their deposition are evident. Vessels only begin to be placed with burials after the age of one year. Flagons and beakers are by far the most common type of vessel buried (Figure 7.16). Only two cups were excavated and both of these were from the graves of children (one 4-7 years, the other not aged). The quantity and variety of type of vessel is highest amongst the 4-7 year and 18-24 year age categories and this reflects the high number of grave goods included with individuals of these ages (Figure 7.16). Very few vessels were buried with individuals over the age of 50 years; but those that were included a single pottery bowl and a single pottery jar (one buried with a female, and one with an individual of unknown sex). When the number of vessels are broken down by sex (Figure 7.15) it is apparent

that female burials were not restricted in their vessel type, while bowls and jugs were excluded from the male assemblage.

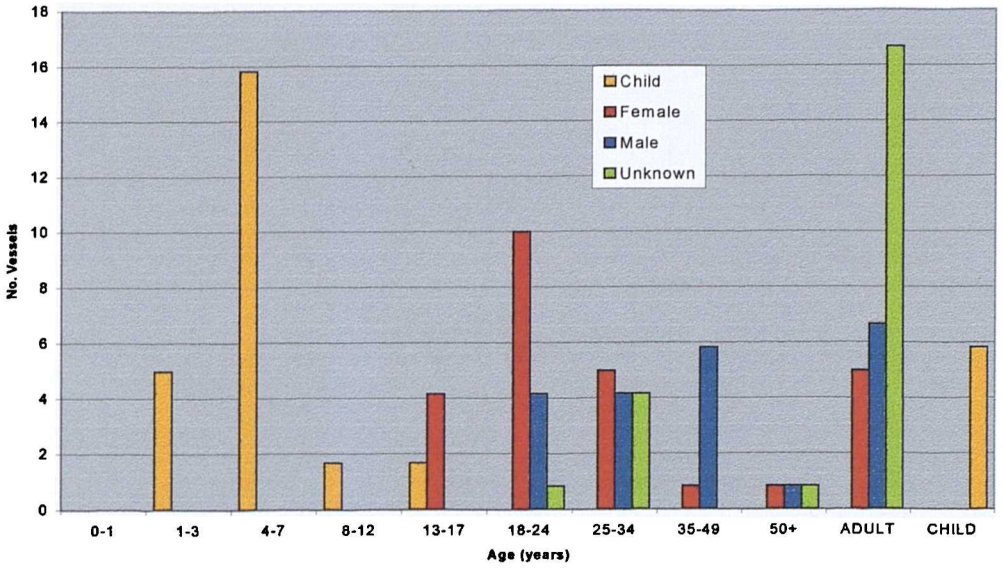


Figure 7.14: Number of vessels buried with each age/sex group at Lankhills.

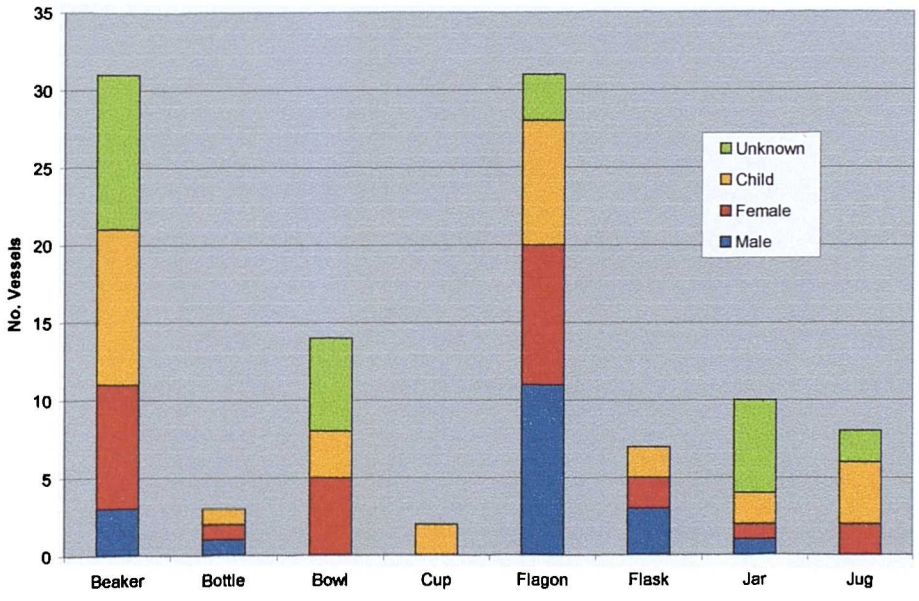


Figure 7.15: Number and type of vessels buried with each sex at Lankhills.

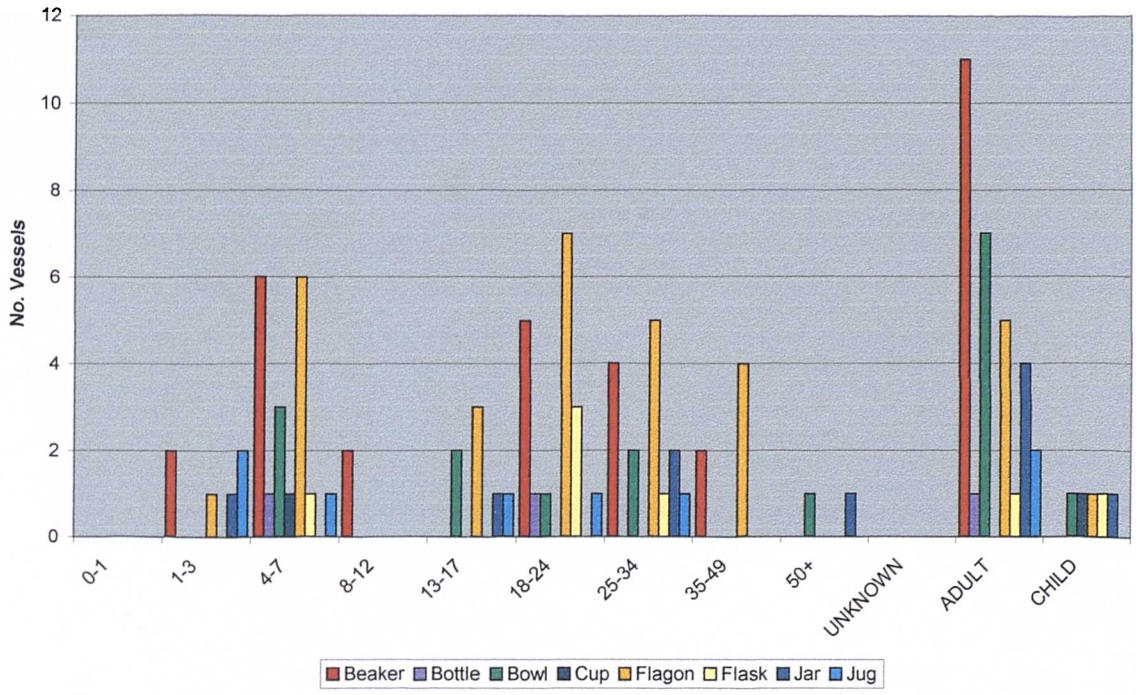


Figure 7.16: Number and type of vessel buried with each age group at Lankhills.

The vast majority of the vessels were made of pottery, however, some glass and pewter vessels were also present. All bottles and cups excavated from the site were made of glass, as were 14 % of bowls, 23 % of beakers, 3 % of flagons, 29 % of flasks and 13 % of jugs (no glass jars were present). The only glass jug buried was with a child aged 1-3 years and the two glass flasks were also buried with children, one aged 4-7 years and one not aged. One child was buried with a glass beaker and glass bottle. No glass vessels were recovered from the graves of older females, almost all buried with females were with those aged 18-24 years. Glass vessels were recovered from both young and old male burials.

Two of the bowls were pewter, both found with adults of unknown sex. One of the individuals with a pewter bowl was also buried with a glass beaker and pottery jug. The other was buried with a single bowl. When more than one vessel is included within the burial, there does not seem to be any particular pattern with respect to the combination, or in relation to age or sex. Two individuals were buried with three vessels, nineteen individuals were buried with two vessels and the remaining sixty-one individuals were buried with just a single vessel.

7.2.8 Miscellaneous Grave goods

Other grave goods that have a distinctive age and sex related pattern include spindle whorls and weaving tablets. These items are only buried with individuals between the ages of 8-24 years. The majority are found with females aged 18-24 years. None were buried with individuals older than this. The spindle whorls were buried either in isolation or as part of an assemblage with necklaces and bracelets. One female of 18-24 years was also buried with two miniature axes. A gaming set was buried with a male aged 13-17 years and a counter was buried with an 8-12 year old.

7.2.9 Position and Placement of Goods

Up until the age of four years goods are almost exclusively placed towards the left side of the body or in the centre. After the age of four years goods start to occasionally be placed on the right side but the majority are still placed on the left. Males and females over the age of 18 years demonstrate a much more even distribution of goods with a slight bias towards the right side.

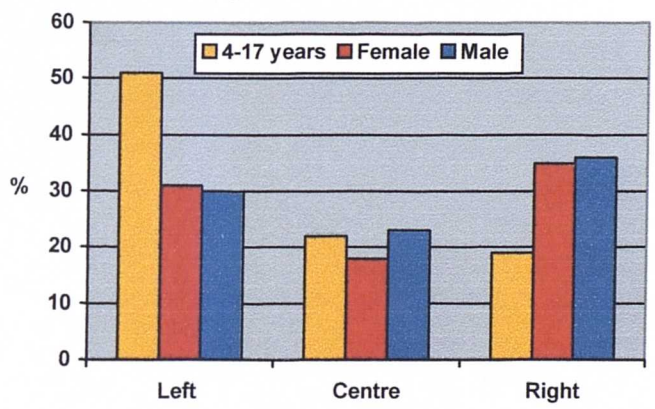


Figure 7.17: Placement of artefacts within the grave according to age and sex at Lankhills.

The placement of particular goods within the grave was examined for any sex or age related pattern (this analysis excludes those goods that were worn). Overall there is an approximately even distribution between the placement of the goods at the head or foot of the graves, with relatively few goods placed in the centre. Individuals may have goods placed at both the head and foot of the graves. There is no distinct differentiation in the placement of goods by sex, although male burials have a slightly higher proportion of goods placed at the top of the grave (Figure 7.18). There is, however, a clear distinction by age as grave goods buried with individuals below

the age of 13 years of age are more frequently placed at the foot (in particular unworn items of personal adornment).

When one examines individual age groups in more detail a slightly more pronounced pattern emerges. As discussed previously, individuals between the ages of 4-12 years and females aged 18-24 years had the greatest number of items buried in the graves. From Figure 7.18 it is clear that the majority of unworn items buried with children are placed near the base of the grave whilst those buried with the adult females are much more frequently placed towards the top. This distinction is not based on particular types of good, for example, vessels and bracelets are placed at either the top or bottom of the graves. This placement appears to be entirely related to age.

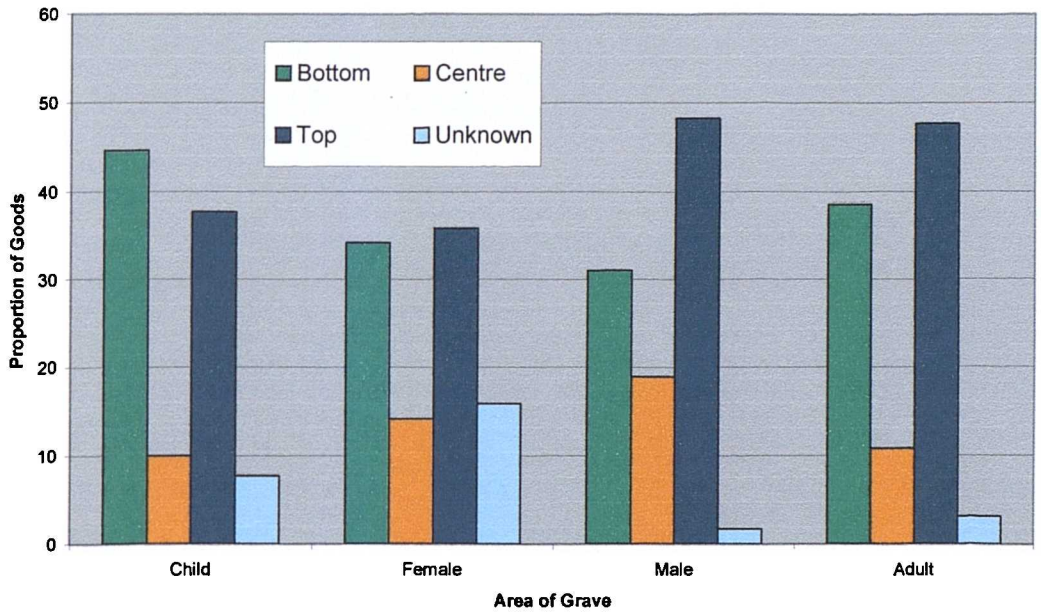


Figure 7.18: Showing the proportion of goods for each category placed in a particular area of the grave (child, n= 130, female, n-128, male, n=58, adult, n=65).

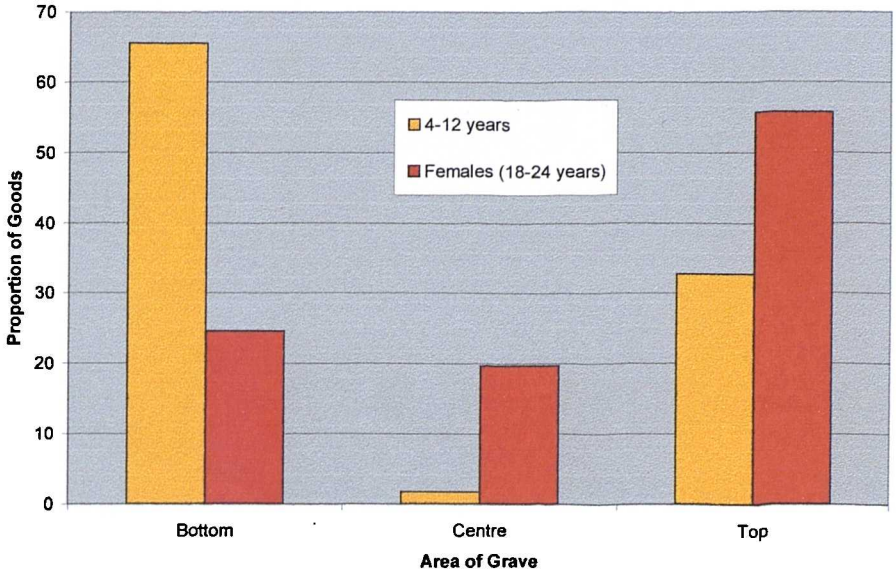


Figure 7.19: The proportion of goods placed in a particular area of the grave (4-12 years, n=58, 18-24 years, n=61).

The vast proportion of grave goods (approximately 80% buried with each sex) had been placed within the coffins (Figure 7.20). Examining those goods buried outside the coffin by age and sex, no particular pattern emerges and this factor does not appear to be based on age (Figure 7.21). It may be significant that all goods buried with 13-17 year old females were buried outside of the coffin, however, the number of sexed 13-17 year olds with grave goods in the sample is only small and this result may be misleading.

Overall, 56% of all goods buried outside of the coffins were vessels of some description. One female aged 18-24 years (Skeleton 100), however, had nine bracelets and a necklace buried outside of the coffin. A slightly higher proportion of the grave goods with the younger adult females were placed outside, while no particularly strong pattern can be observed with the male burials.

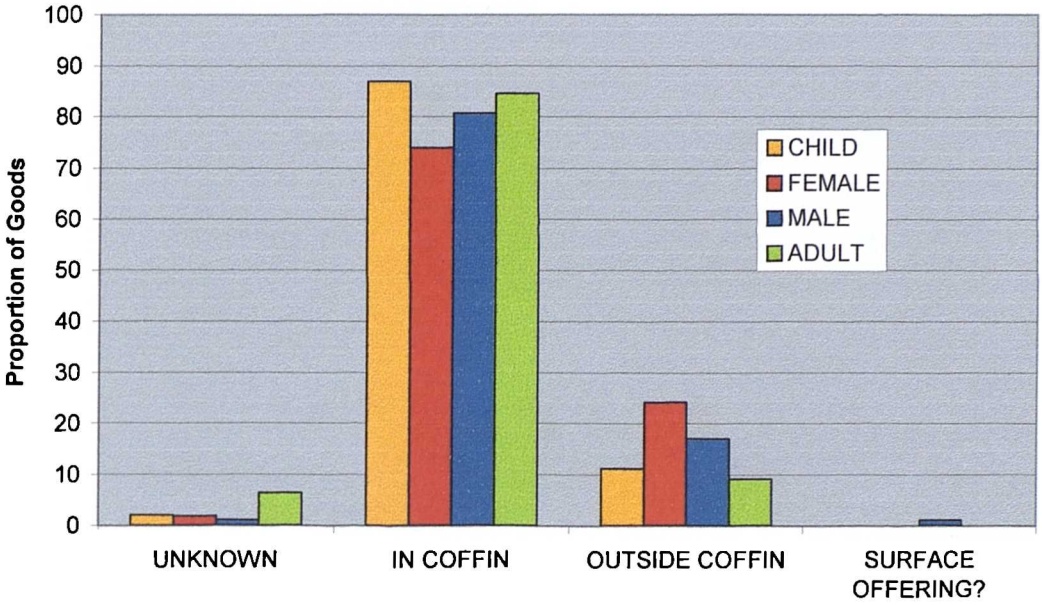


Figure 7.20: Proportion of goods buried in the coffin with each sex.

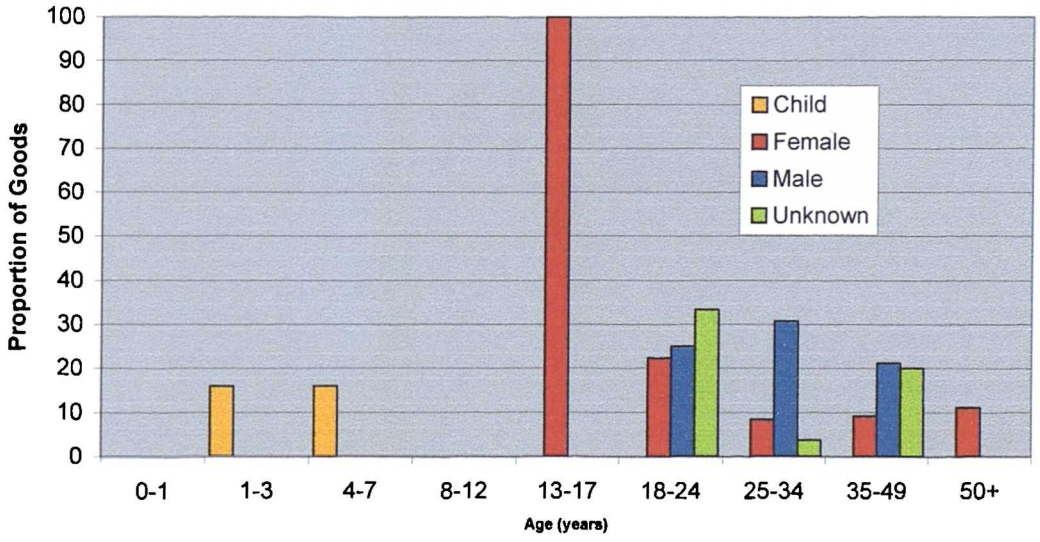


Figure 7.21: Proportion of goods with each age and sex buried outside of the coffin.

7.2.10 Lankhills Coffins

The vast majority of individuals at Lankhills were buried in coffins– a significantly higher proportion than at the other late Roman cemeteries (Figure 2.22-2.24). While the majority of individuals in all age/sex groups were buried in coffins, some patterns have emerged. For example, a smaller proportion of those aged 0-1 years were buried in coffins than amongst the older immature age groups in which almost 100% of burials were coffined (Figure 7.22). Amongst the females there is a clear pattern of a decreasing likelihood of burial within a coffin with age, from 100% of females aged 13-17 years to just over 60% of females aged over 50 years (Figure 2.23). There is no such age related pattern amongst the male burials and almost equal proportions in all age groups were buried within coffins.

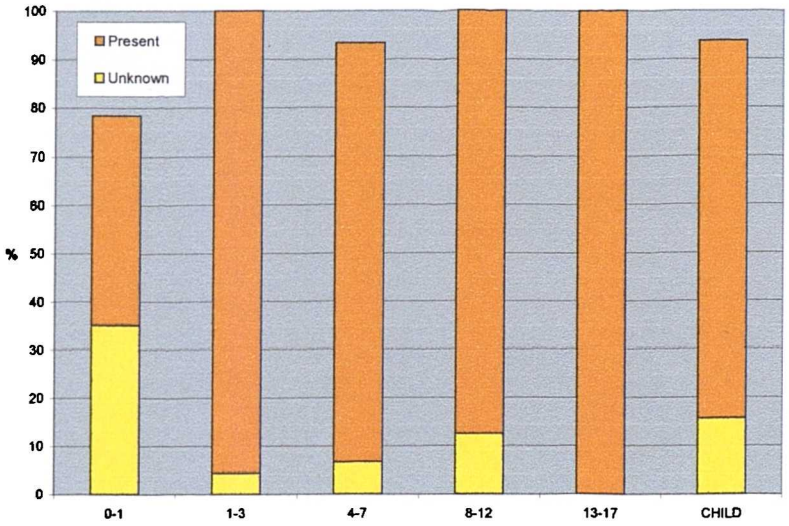


Figure 7.22: Proportion of immature individuals in each age category to be buried in a coffin at Lankhills.

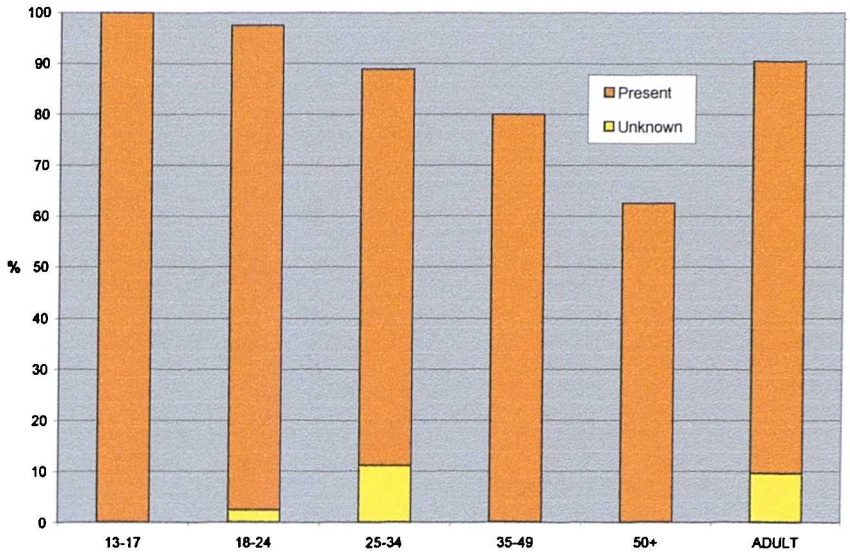


Figure 7.23: Proportion of females in each age category to be buried in a coffin at Lankhills.

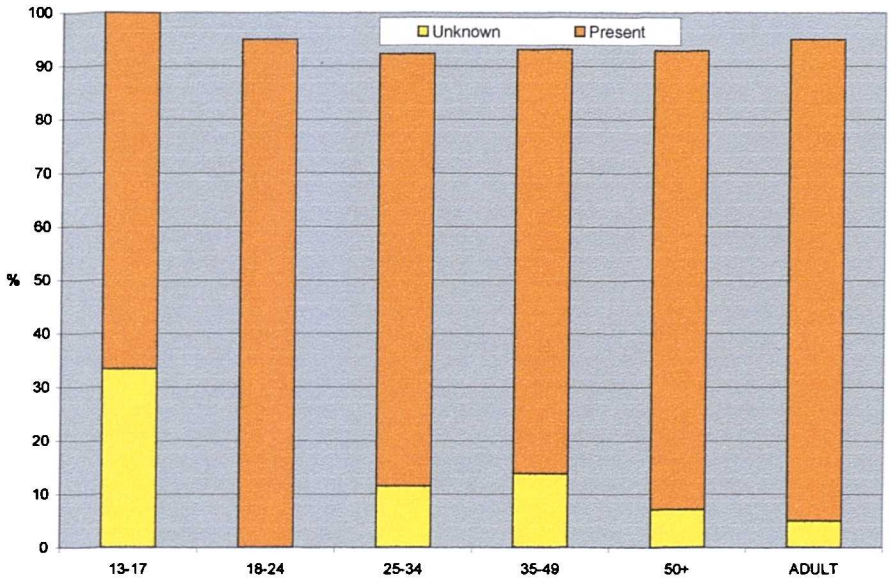


Figure 7.24: Proportion of males in each age category to be buried in a coffin at Lankhills.

7.2.11 Summary

At Lankhills it is evident that while approximately equal proportions of males and females were buried with grave goods, females were buried with greater quantities of goods. Despite fewer 'children' than adult males having been buried with grave goods, they have a higher proportion of

the overall quantity of artefacts. As far as types of goods are concerned, there are several that are clearly delineated by the sex of an individual and subsequently may be considered to have gendered significance. For example, bracelets, necklaces and pins are only found with females. One finger ring was recovered from the grave of a male, but all others were buried with children and females. By contrast, cross-bow brooches, belt sets and knives were only buried with males. A number of grave good types are buried with both sexes and may be considered 'neutral' in terms of gender significance and these include vessels and coins.

While certain items of material culture were clearly gendered, they also have strong associations with particular ages. At Lankhills none of the neonates were buried with grave goods and only a small percentage of infants under one year of age were buried with any goods at all. Of those that were, the quantity and variety of types are limited. Overall, between the ages of 4-12 years there is a rise in both the proportion of individuals buried with goods and in the quantity of those goods. Between the ages of 4-12 years, individuals were buried with large numbers of bracelets, finger rings and necklaces, and these are amongst the richest burials in the entire cemetery.

The vast majority of grave goods buried with females older than 18 years were restricted to those aged 18-24 years. In particular, items of jewellery such as necklaces, bracelets and finger rings predominated amongst this age group and these assemblages are similar to those buried with individuals aged 4-12 years. A relatively small amount of jewellery accompanied older females, and in contrast to the jewellery buried with those aged 18-24 years, this was always worn. Very few grave goods were restricted to male burials only. Those that were include belt sets, cross-bow brooches and knives and these tended to be buried with older males. In addition to differences in the types and quantity of grave goods buried with each age and sex, different patterns of deposition were also observed. The significance of the above findings will be discussed in greater detail in Chapter 9.

7.3 Victoria Road

During the earlier phases that the Victoria Road cemetery was in use in the first and second centuries, cremation was the predominant funerary rite. During this period there were clear age-related differences in funerary practices in terms of the burial rite practised. The vast majority of inhumations were of infants under two years, most of these aged between birth and three months. During the later third and early fourth century inhumation became the dominant burial practice.

The following analysis is based upon those individuals excavated from the later phase of the site and, therefore, primarily focuses on the inhumations.

7.3.1 Victoria Road Grave Goods

At Victoria Road a smaller percentage of the individuals were buried with grave goods than at Lankhills and the quantity of grave goods included was also much less, tending to be single items rather than clusters. No clear conclusions can be drawn on the basis of the grave inclusions at Victoria Road due to the small proportion of individuals buried with grave goods and the small quantity of goods (Figures 7.25. and 7.26). There are, however, some similarities in age and sex related patterns to Lankhills. No infants are buried with grave goods (although one infant had a coffin plate) and the proportion of individuals buried with grave goods increases in the 4-7 year age category (Figure 4.25). Another similarity to Lankhills is that those females buried with goods are the younger adult females. At Victoria Road the highest proportion and quantity of goods buried with males is in the 35-49 year age category, which is again similar to Lankhills.

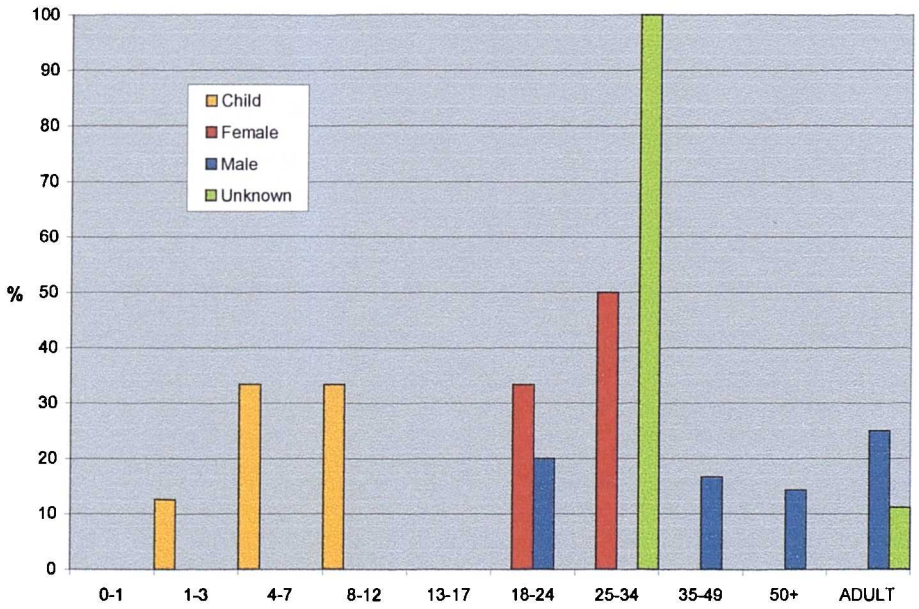


Figure 7.25: Proportion of individuals in each age/sex category to be buried with grave goods at Victoria Road.

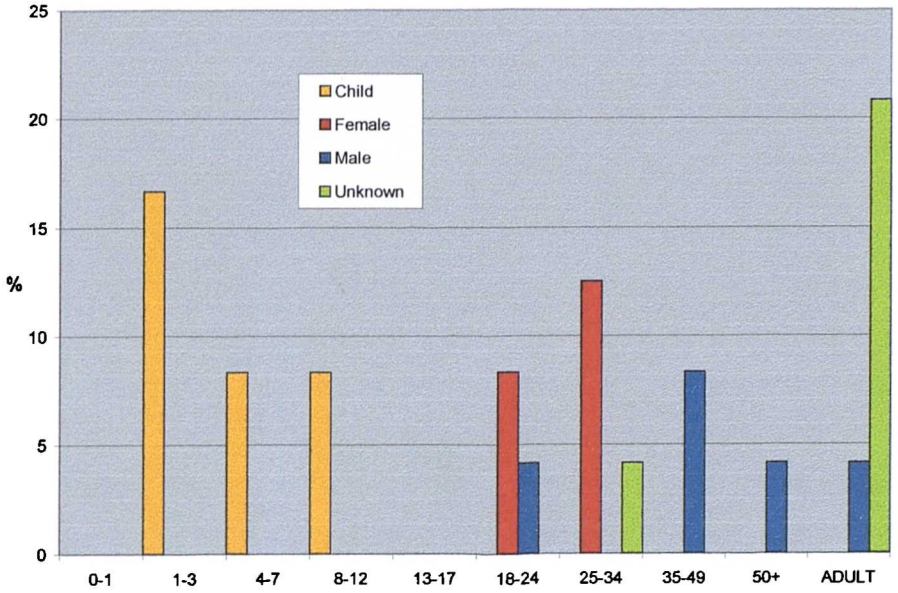


Figure 7.26: Proportion of the total quantity of goods to be buried with each age/ sex category at Victoria Road.

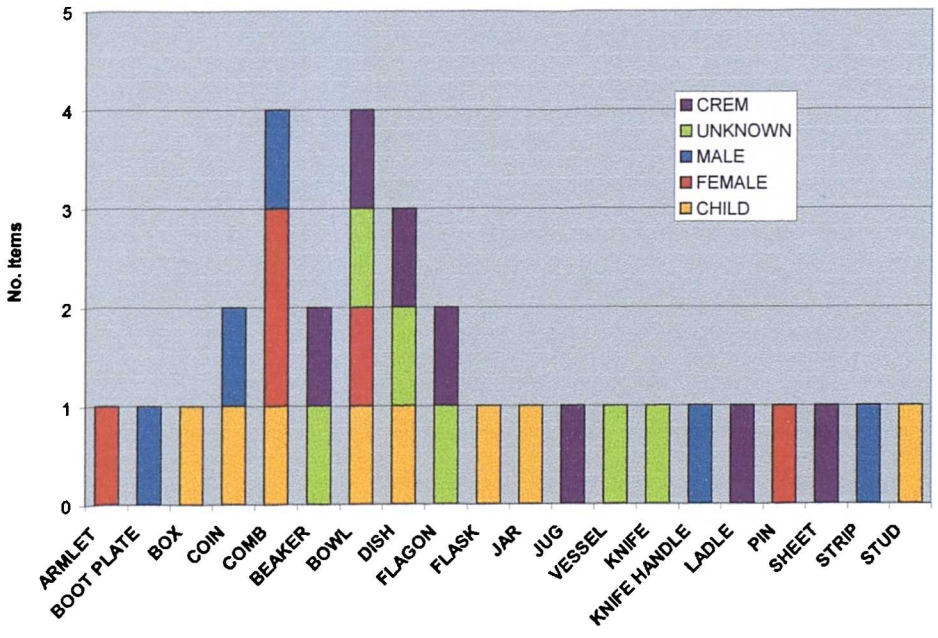


Figure 7.27: The age and sex distribution of the type and quantity of grave goods excavated from Victoria Road.

With respect to the types of goods deposited, Victoria Road is relatively limited. Only one item of personal adornment is present, a bronze armlet buried with a female of 25-34 years. In contrast to Lankhills, no deposits of bracelets or finger rings were recovered. Vessels were the most common grave good and while these accompanied individuals of all ages, none of the sexed males had been buried with vessels. The vessels were all made of pottery and usually only a single vessel was present, although one individual aged 1-3 years was buried with four vessels (a bowl, jar, flask and jug). This individual was buried with the greatest quantity of grave goods accompanying any inhumation at Victoria Road. One cremation burial was buried with five vessels, a ladle and a metal sheet (see Figure 7.27).

7.3.2 Victoria Road Coffins

The relative dearth of grave goods at Victoria Road means that one must examine in more detail the other cemetery variables for an indication of age/sex related burial practice. Not all individuals at Victoria Road were buried in coffins (Figure 7.28). Of those that were, there was some distinction by age and sex. Approximately equal proportions of males and females were buried in coffins, although more females had 'definite' evidence of coffins. Fewer children under the age of 18 years were buried in coffins than adults.

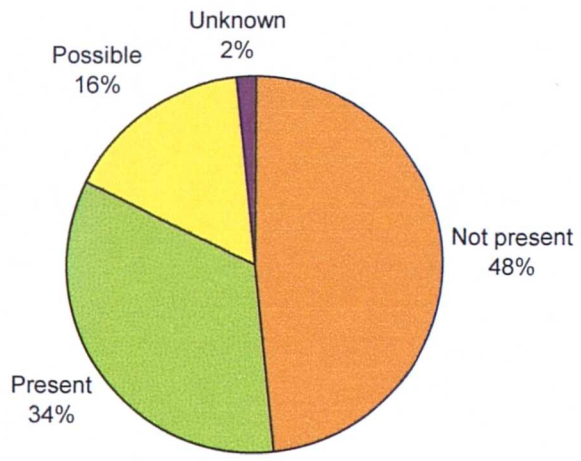


Figure 7.28: Proportion of inhumations buried in coffins at Victoria Road.

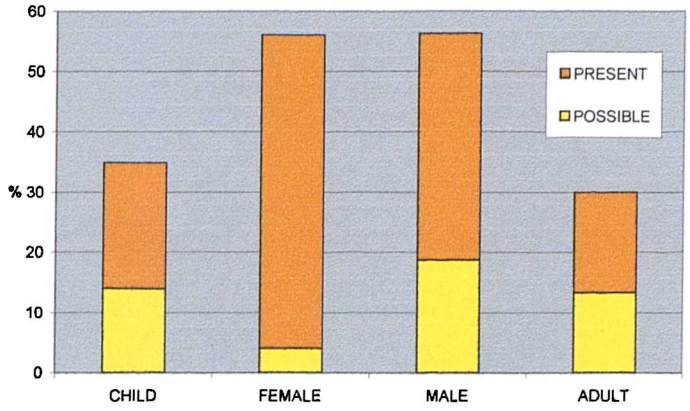


Figure 7.29: Proportion of inhumations of each sex to be buried in coffins at Victoria Road.

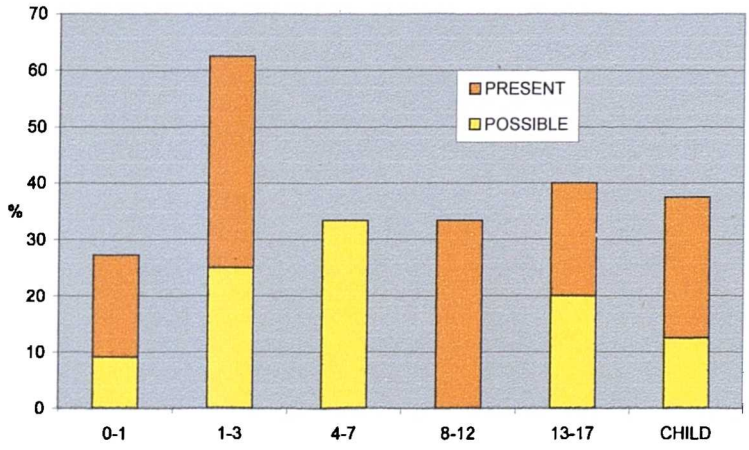


Figure 7.30: Proportion of individuals under 18 years to be buried in coffins at Victoria Road.

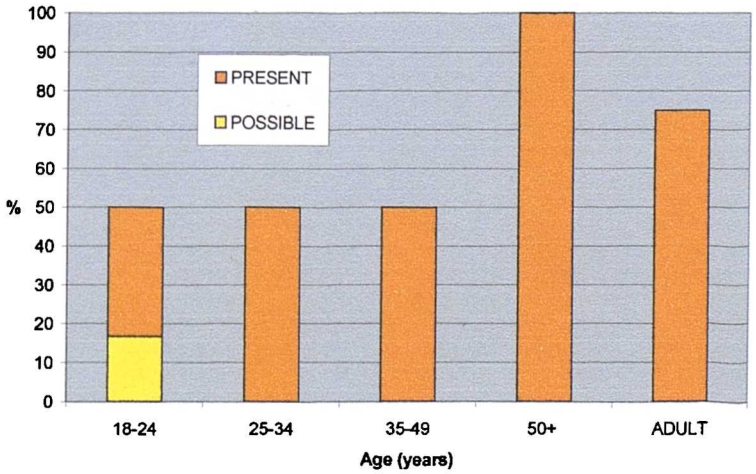


Figure 7.31: Proportion of females in each age category buried in coffins at Victoria Road.

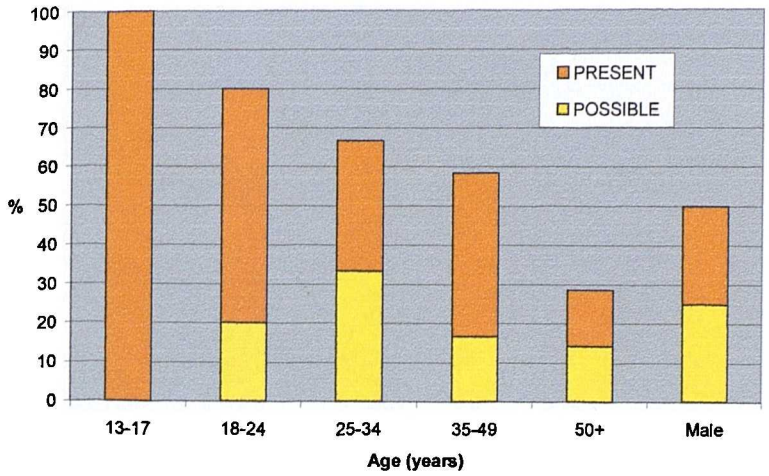


Figure 7.32: Proportion of males in each age category buried in coffins at Victoria Road.

Individuals between the ages of 1-3 years were much more likely to be buried in coffins at Victoria Road than any other immature age group. Immature individuals overall are much less likely to be buried in coffins than those over 18 years (with the exception of the one male present in the 13-17 years age group). Overall a higher proportion of males were buried in coffins. A higher proportion of older than younger females were buried in coffins at Victoria Road. This is in contrast to the Lankhills cemetery where they were less likely to be buried in coffins than younger females. Younger males were more likely to have been buried in coffins than older males. Again this differs from Lankhills, where no age related pattern is noted amongst the males.

Several burials that were not coffined were still buried in deep grave cuts. The vast majority of burials described as shallow belonged to infants and children, many of whom also did not have a coffin present. Flint packing was around present in five graves, all of which had coffins present. The sex and age group of those with packing was mixed, including two children (4-7 years).

7.4 Cassington and Queensford Farm

Very few grave goods were recovered from Cassington and Queensford Farm. Therefore, these sites have been discussed together with respect to grave goods and the presence of coffins.

7.4.1 Cassington and Queensford Farm Grave Goods

Only one grave good was present at Queensford Farm: a bone comb, buried with a female over the age of 50 years. At Cassington, one male burial aged 35-49 years was buried with a coin over

each eye, one male and one female adult were buried with pottery vessels (type unspecified) and one female aged over 50 years was buried with a bone pin. It is not uncommon for late Roman rural cemeteries or those associated with small towns to have limited grave goods. As a result other variables, such as demography, body position and the presence of coffins should be examined to elucidate any age or sex related patterns (see section).

7.4.2 Cassington and Queensford Farm Coffins

The age/sex related pattern in the proportion of individuals buried in coffins at Queensford Farm (Figure 7.33) differs in many respects from Victoria Road. Overall, a smaller proportion of individuals at Queensford Farm were buried in coffins than at Victoria Road and Lankhills. A particularly small proportion of immature individuals were coffined. In contrast to Lankhills and Victoria Road, females were more likely to be buried within coffins than males. Older females were less likely to have been coffined than young females (as at Lankhills). The proportion of coffined burials did not vary greatly between male age groups after the age of 18 years. This is, again, similar to the male coffin burials at Lankhills, although a much smaller proportion of males overall at Queensford Farm were coffined. Cassington has no information available concerning coffins, and it seems from the lack of comments concerning this aspect of burial practice in the archive notes, that no evidence for coffins was present.

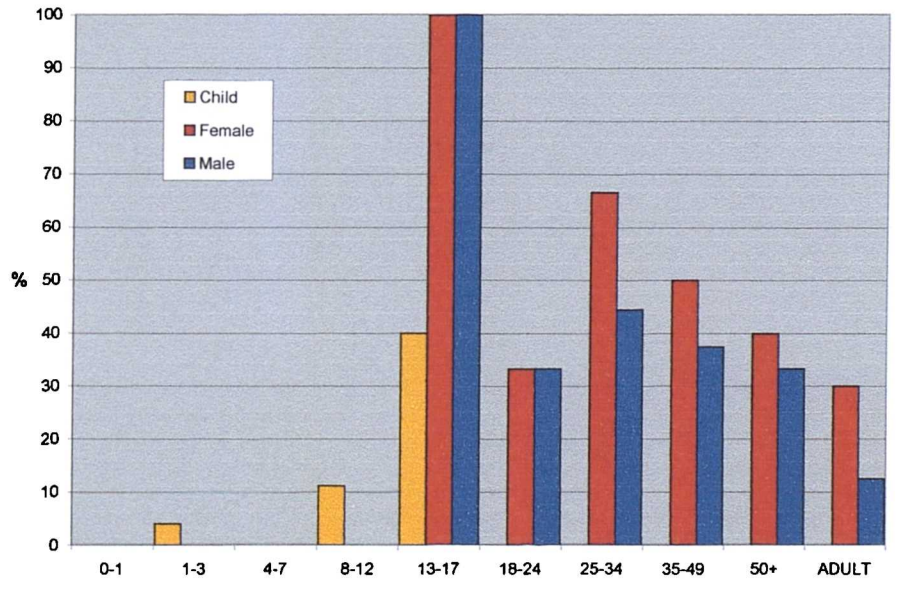


Figure 7.33: The proportion of individuals in each age/sex category to have definite evidence of burial within a coffin at Queensford Farm.

7.5 Body Position

This section examines the various body type positions at each of the cemeteries, and compares the differences between them (Figure 7.34). Out of 616 burials with known body positions, the vast majority (82.3%) were buried supine, with legs extended. Some cemeteries demonstrated a much greater uniformity of body position than others. For example, the cemetery at Queensford demonstrated a very regulated burial pattern. The body was often positioned with hands crossed over the abdomen or along the sides and often the legs were crossed at the ankles. It is possible that this indicates a shrouding of the body before placement in a coffin (in those instances that were in coffins) as one would expect a much greater movement of limbs if the body were placed freely within the coffin, during both burial and the process of decay.

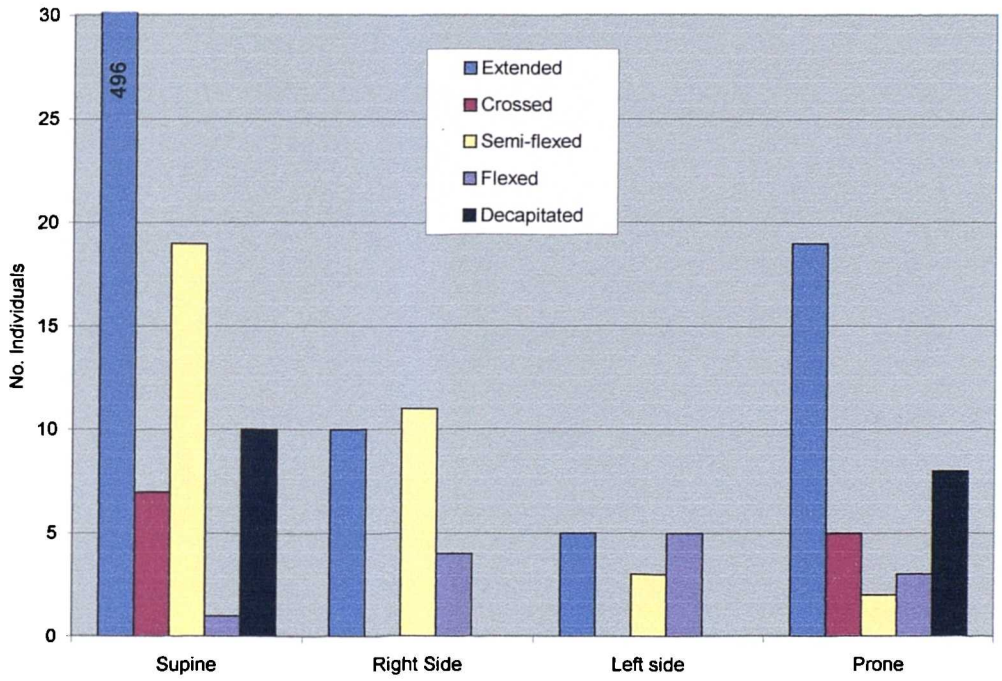


Figure 7.34: Body position of burials at late Roman cemeteries.

7.5.1 Decapitated Burials

Decapitation is a burial rite not uncommon during the Romano-British period and was a rite extended to most age groups and both sexes. The reasons for decapitation are not known,

although those suggested have included attempts to stop the dead from walking, or as a punishment (Philpott 1991; Harman *et al.* 1981). The rite becomes more common during the later Roman period, and is seen with greater frequency at rural cemeteries. Booth (2001) states that the incidence of decapitation in late Roman Oxfordshire sites is generally low, ranging most commonly from 6-10%. Only two late Roman sites within this sample had decapitated burials: six individuals from Lankhills and eleven from Cassington. The decapitated burials are, therefore, from both rural and urban contexts. It has been noted that decapitated burials within urban cemeteries tend to be buried more on the periphery; again, fuelling ideas that these burials represent liminal people, that they were either criminals or perhaps individuals feared during life.

Cassington is a rural cemetery and this site has an exceptionally high number of prone and decapitated burials considering the size of the burial population. Six of the decapitated burials at Cassington were also buried prone. Both males and females and all age groups were buried in such a manner (N.B. no immature individuals were buried at Cassington). The heads had been placed between or on the ankles, knees or thighs. At Lankhills, two of the decapitated burials had also been buried prone. The youngest decapitated burial was at Lankhills: an individual of 1-3 years of age. This burial is also unusual because the body had been placed within a coffin and the head placed outside of the coffin above the feet. This is the only immature individual to be decapitated amongst this sample, although immature decapitation burials are known from other sites (e.g. Harman *et al.* 1981). Within this sample decapitated individuals are represented in all age groups after 13-17 years. Overall, the majority of decapitated individuals (53%) were aged over 35 years. Of those 'adult' burials, they included eight females, seven males and two adults of unknown sex. There was no age or sex related distinction in the positioning of the decapitated heads.

Decapitated individuals were occasionally coffined (e.g. the immature individual discussed above from Lankhills). Grave goods were few amongst them, however, and only one decapitated male aged 35-49 years at Lankhills had a grave good (a coin placed in the mouth). While a large number of decapitated burials were present at Cassington, none had grave goods present.

7.5.2 Prone Burials

Thirty-six individuals were buried prone (eight of these were decapitated- discussed previously) and these burials were present at all sites (Figure 7.35). The majority of prone burials were

extended (Figure 7.34). Immature individuals were also buried prone and these included one infant from Lankhills and three individuals of 8-12 years, two of which were from Victoria Road and one from Queensford. As with decapitated burials the highest proportion of prone burials are in the older age groups, in particular those aged 35-49 years. Males are more likely to be buried prone than females, and this is in contrast to decapitated burials which have a much more even distribution between the sexes. A number of prone burials also had legs in a semi-flexed or flexed position. Whether this indicates a lack of care in burial, or a deliberate positioning of the body is not known.

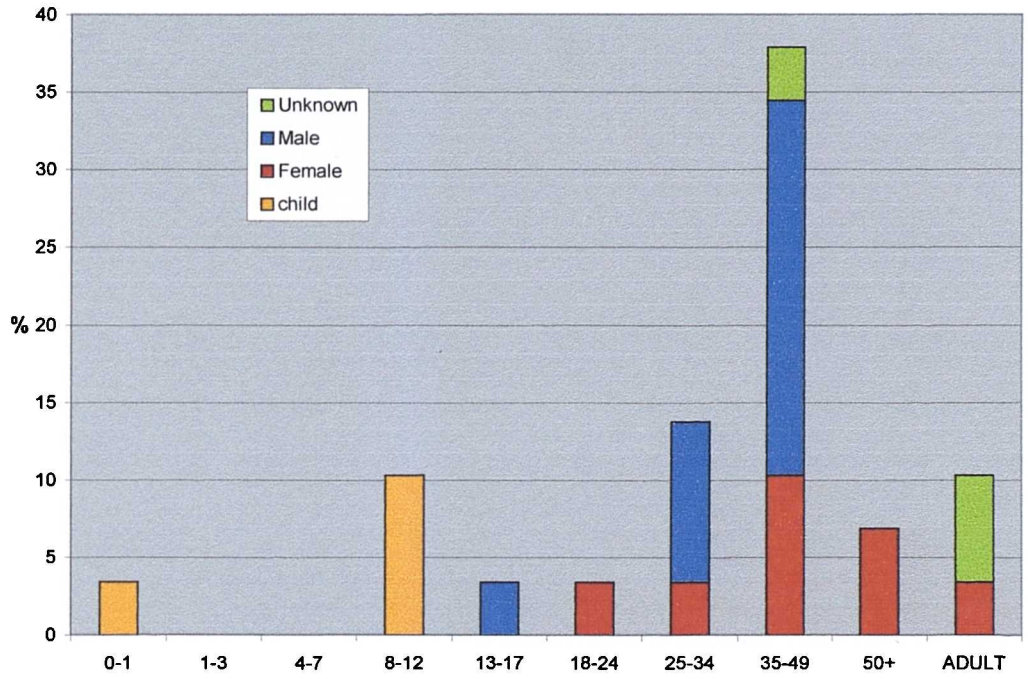


Figure 7.35: The proportion of individuals of each age and sex to be buried prone at the late Roman cemeteries.

One prone female adult was buried wearing a bone comb and with a coin placed in the mouth and another prone individual over 50 years was buried with a coin. One prone male, aged 13-17 years was buried with an iron object underneath the waist. A further adult aged 35-49 years had an iron 'strike-a-light' placed on the top of their head.

7.5.3 Burial on Sides

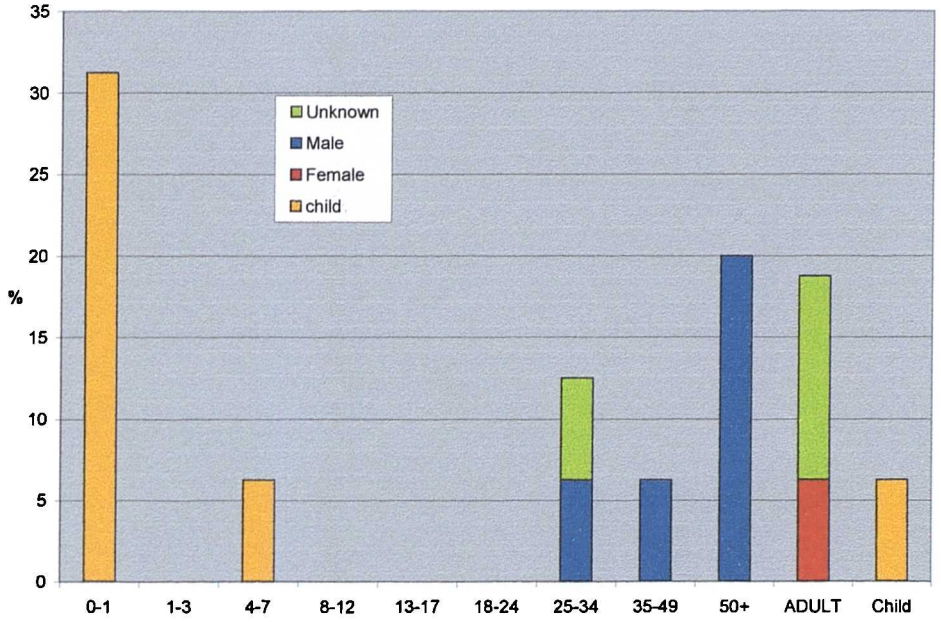


Figure 7.36: Proportion of individuals buried on left side in each age/ sex group (n=16) at the late Roman cemeteries.

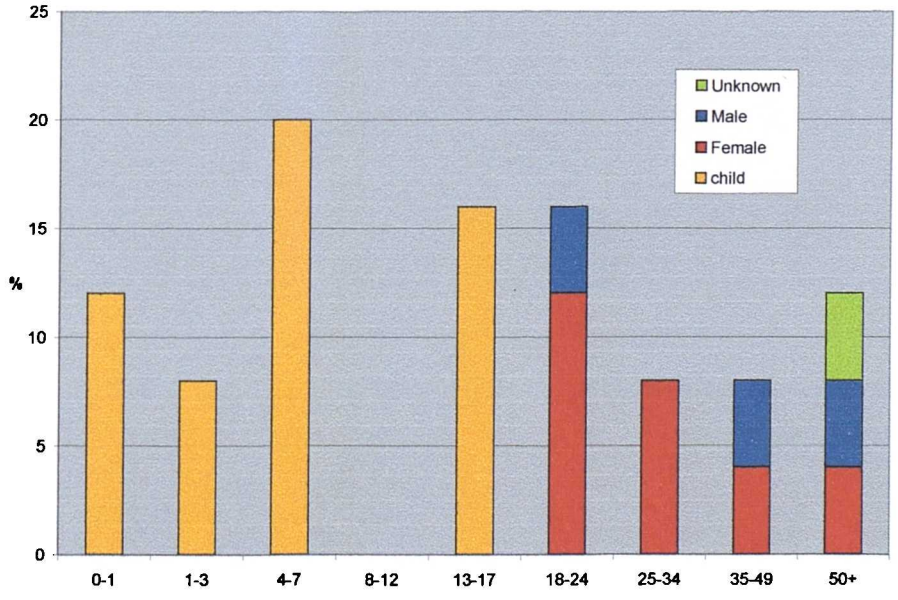


Figure 7.37: Proportion of individuals buried on their right side in each age/ sex group (n=25) at the late Roman cemeteries.

A number of individuals were positioned on their side, rather than buried supine (Figure 7.36 and 7.37). Amongst the late Roman cemeteries this practice only occurred at Victoria Road and Lankhills. Individuals were more frequently buried on their right rather than left sides and this practice was not restricted to any particular sex or age group. It is apparent that a greater proportion of females than males were buried on their side.

7.7.4 Leg Position

With respect to leg position, the vast majority of each age group were buried with their legs extended, although the leg position of the majority of infant burials was unknown. Of the infant burials where leg position was known, a much higher proportion were buried with their legs flexed than in any other age group. Also a significantly higher proportion of individuals older than 50 years were buried with their legs semi-flexed than in any other 'adult' age group. There was no differentiation according to sex.

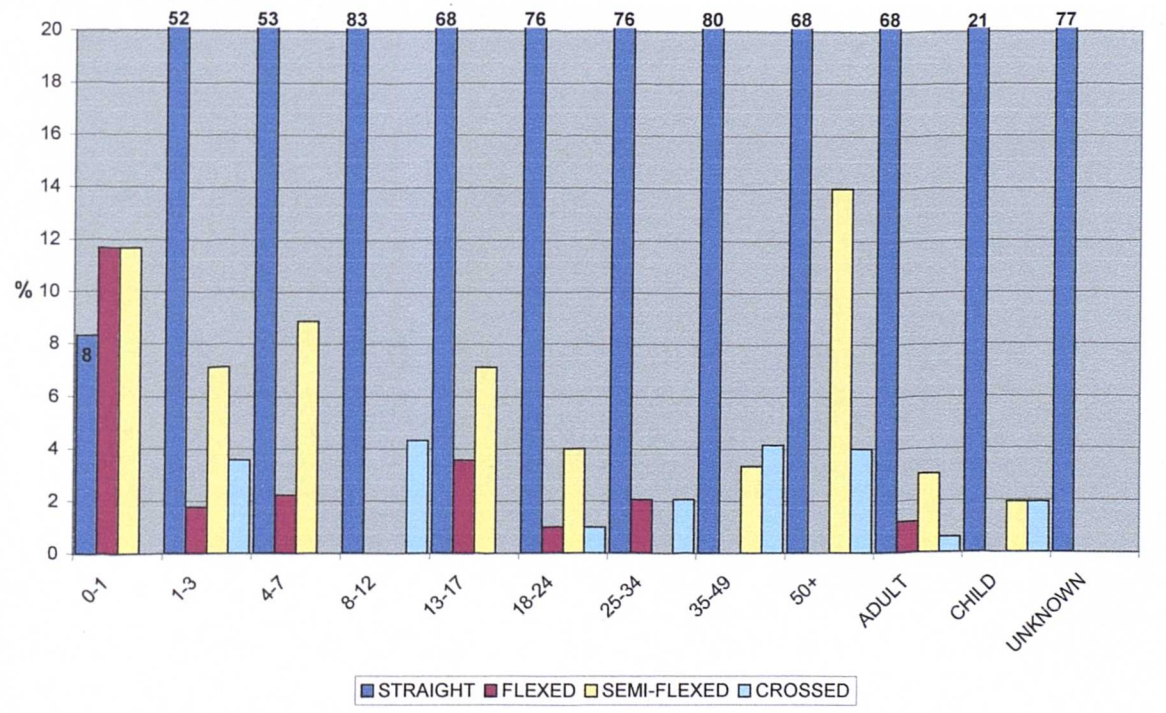


Figure 7.38: Leg position for each age group expressed as a proportion of the total numbers of individuals in each age category at the late Roman cemeteries.

When comparing sites, only at Cassington were individuals not buried with legs flexed. This is perhaps surprising given the irregularity in other forms of body position at this site. Only two individuals at Queensford Farm were buried with their legs flexed, while five individuals had either one or both legs semi-flexed. As discussed previously, the body position of individuals at this site are the most uniform of all Romano-British cemeteries. Higher proportions are buried with their legs flexed at Lankhills and Victoria Road, although the vast majority are buried with legs straight. Again there was no particular sex related distribution with respect to leg position.

7.8 Conclusion

From the above analysis it is clear that the age is an important determinant governing burial ritual. The age of an individual at death impacts upon the type, quantity and placement of grave goods, and the position of the deceased. Further age and sex related distinctions are also apparent at those cemeteries lacking grave goods, for example, with respect to coffins and body position. This analysis of late Roman cemeteries also casts doubt on the apparent standardisation of burial practice within the category of 'managed' cemetery that these sites fall into (with the exception of Cassington). What has been apparent from this analysis is the differences between them. This relates not only to the more obvious factors such as the proportion of individuals interred with grave goods, but the more subtle differences in the sex and age-related burial practices between cemeteries. For example, even between cemeteries of such close proximity as Victoria Road and Lankhills there are different patterns in the age and sex of those accorded burial within coffins. While at Lankhills older females were much less likely to be buried in a coffin than younger females at Victoria Road the reverse was true. It could be argued that a more detailed examination of cemetery variables casts some doubt on previous assertions concerning the extent to which civic authorities exercised control over burial practice.

The majority of the age and sex-related patterns elucidated above have not previously been identified. The reason for this has been the emphasis within Romano-British studies on ethnicity and identifying the processes of Romanisation. As a result, the most salient aspects of social identity in Roman Britain have become subsumed by these dominant academic agendas. The following chapter conducts a similar analysis of the early Anglo-Saxon burial evidence. The findings from cemeteries of both periods will be summarized, discussed and compared in detail in Chapter 9.

Chapter 8

❖

Early Anglo-Saxon Cemeteries

8.1 Introduction

This chapter analyses the burial rites accorded to different age and sex groups amongst individuals buried within the early Anglo-Saxon cemeteries sampled in this study*. In keeping with the previous analysis of the late Roman cemeteries, this chapter will focus primarily on grave good associations. The previous chapter demonstrated a striking relationship between age and grave good associations within a late Roman cemetery context and the following analysis explores this relationship in greater detail amongst the early Anglo-Saxon sites. In contrast to the fourth-century cemeteries, far more grave goods were excavated from the burials of this later period. This chapter is, therefore, able to explore in more detail the grave good associations at individual sites and make more meaningful inter-site and inter-region comparisons than was possible amongst the late Roman cemeteries.

A thorough summary and discussion of this evidence and comparison with fourth-century findings will be conducted in the succeeding chapter. The grave good assemblages in this chapter have occasionally been referred to as 'feminine', 'masculine' and 'gender neutral'. These terms are used to refer to those grave goods that are typically restricted to either biologically sexed females or males, while 'gender neutral' goods refer to those found with both sexes. A more thorough examination of the basis and validity of these terms has been conducted in the following chapter.

8.2 Grave Good Associations

The proportion of individuals buried with grave goods within each of the cemeteries is quite similar, ranging from approximately 55-78% (Figure 8.1). This is, of course, a much greater proportion than one finds at the late Roman cemeteries. Even at Lankhills (a cemetery distinguished by its high number of grave goods) only 35% of individuals were buried with grave goods.

* The mid-Anglo-Saxon cemetery of Winnall II, Winchester has also been included in this analysis and may serve to act as a comparison to earlier Anglo-Saxon cemeteries.

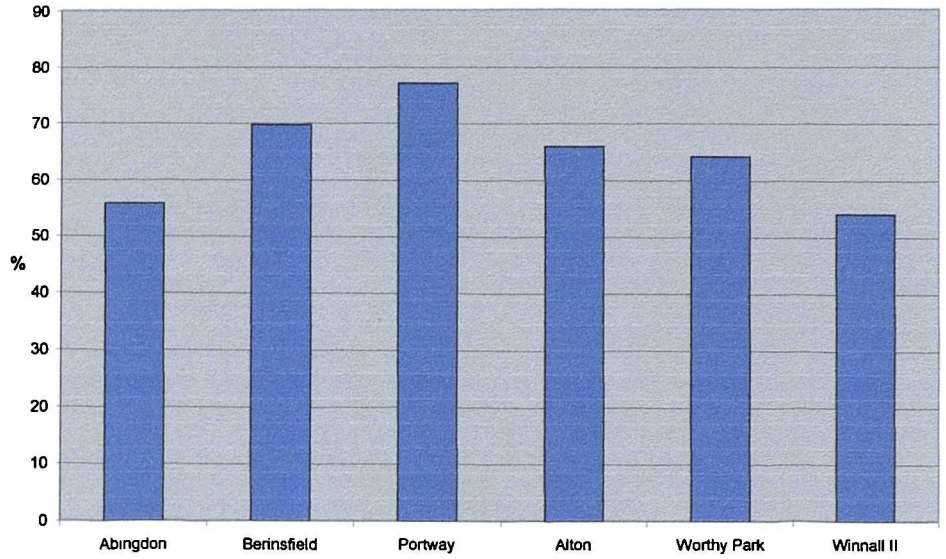


Figure 8.1: The proportion of individuals at each cemetery buried with grave goods (Abingdon, n=129, Berinsfield, n=119, Portway, n=70, Alton, n=50, Worthy Park, n=109, Winnall II, n=48).

When we examine in more detail the proportion of individuals in each sex and age category to be buried with goods, we note that at most cemeteries approximately equal proportions of males and females were buried with grave goods (Figure 8.2). The exceptions are Abingdon and Alton where the females were considerably less likely than males to be buried with goods. In general, individuals below the age of 17 years were less frequently buried with grave goods, although this is not as marked at Berinsfield as it is at the other sites.

The number of individuals buried at each site does vary, therefore Figure 8.3 is used only to examine the proportions of goods buried with each sex between the sites. When interpreting Figure 8.3 it is also necessary to remember that the male:female ratio at all sites is approximately equal (with the exception of Worthy Park which has a greater number of females), as is the proportion of individuals buried with grave goods (see Figure 8.2).

With respect to the quantities of goods interred with each sex and age group, it is apparent that females in general have a much greater quantity than males. The exceptions to this are Berinsfield and Portway where the quantities are approximately equal. For the purposes of this inter-site comparison each bead has been counted as a single good. Obviously this has the effect of exaggerating the number of grave goods buried with females. Attempts to remove this bias have been addressed in later analyses and will be discussed below. Fewer individuals under the age of 18 years were buried with grave goods, however, the actual quantity of

goods buried with the immature individuals is similar to the 'adult' males at several sites. To interpret the evidence from these sites in a more meaningful way, a detailed analysis and comparison of the age and sex related deposition of grave goods beyond the male-female, child-adult divides needs to be made.

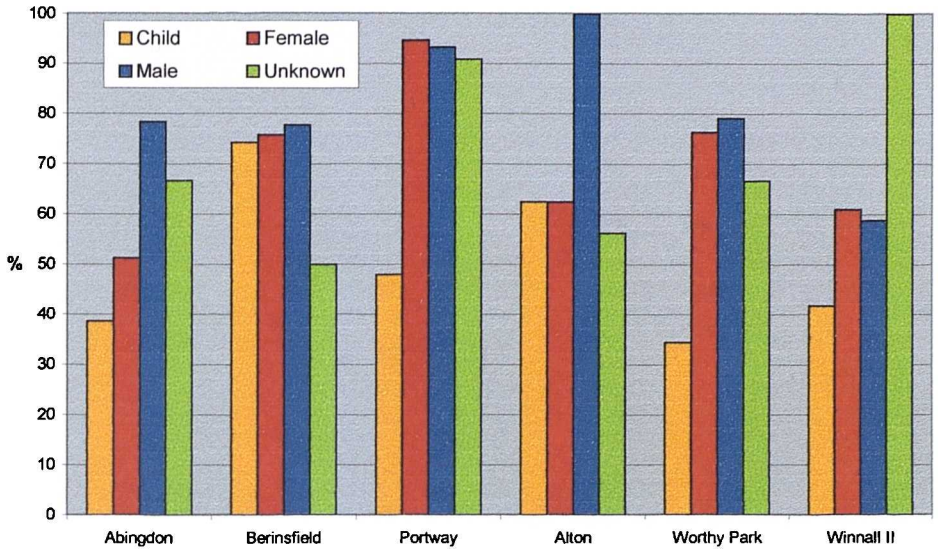


Figure 8.2: Proportion of each age and sex category buried with grave goods.

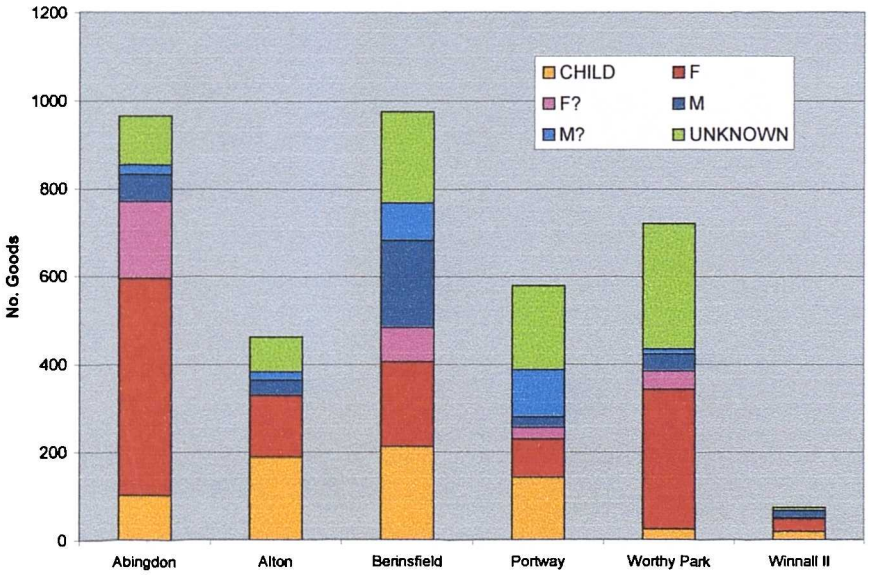


Figure 8.3: The number of goods buried with each sex at each site.

8.3 Proportion of Individuals Buried with Grave Goods

This section examines the proportion of individuals at each cemetery to be buried with grave goods. So that this information may be more readily compared between cemeteries, the following results have been expressed in terms of percentages. The actual numbers of individuals within each age and sex category can be obtained from Chapter 6 (Figures 6.7-6.12).

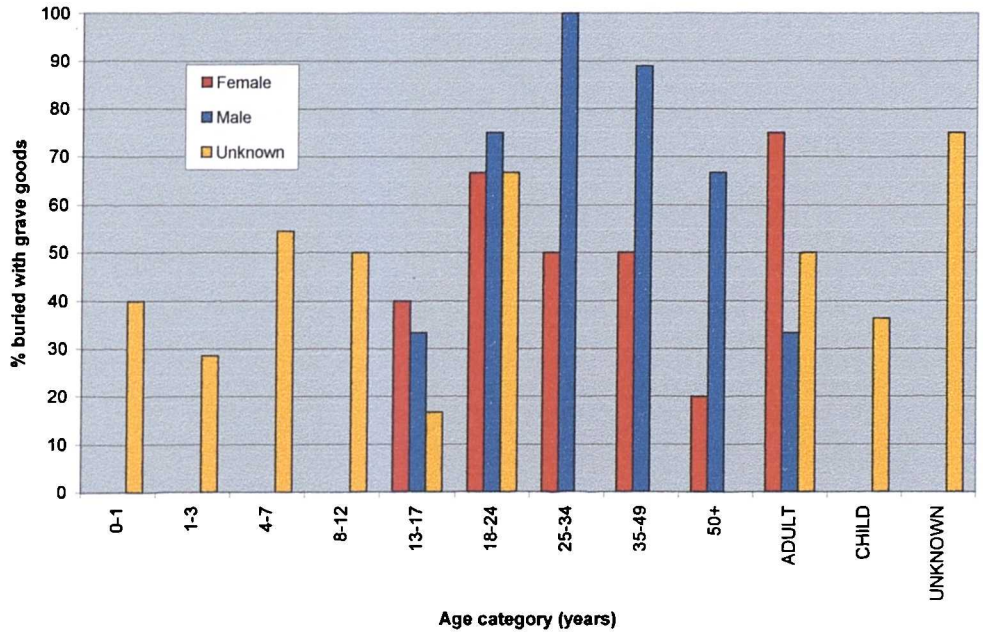


Figure 8.4: Proportion of individuals in each age and sex category that were buried with grave goods at Abingdon.

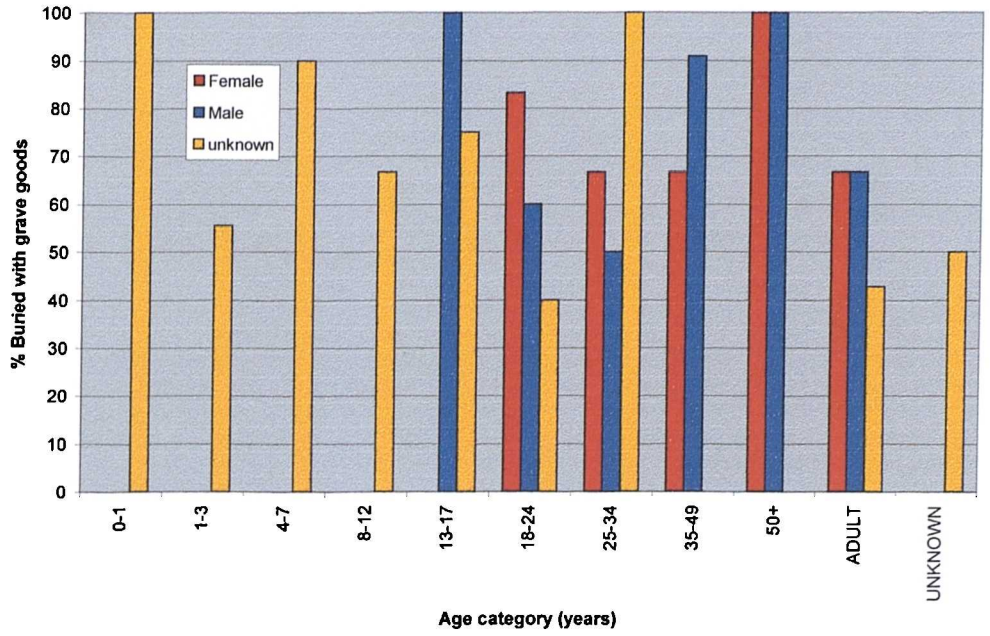


Figure 8.5: Proportion of individuals in each age and sex category that were buried with grave goods at Berinsfield.

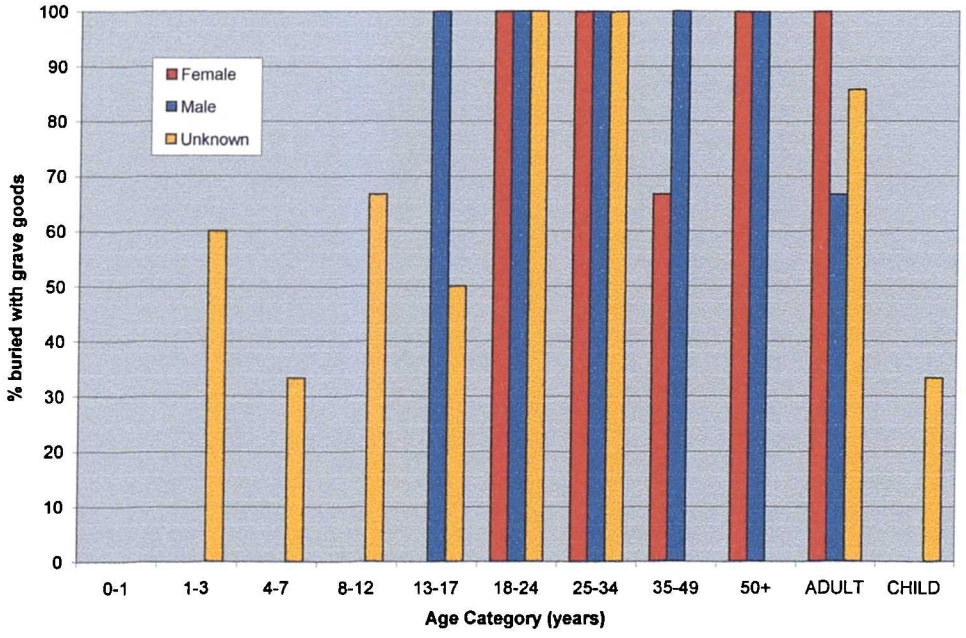


Figure 8.6: Proportion of individuals in each age and sex category that were buried with grave goods at Portway.

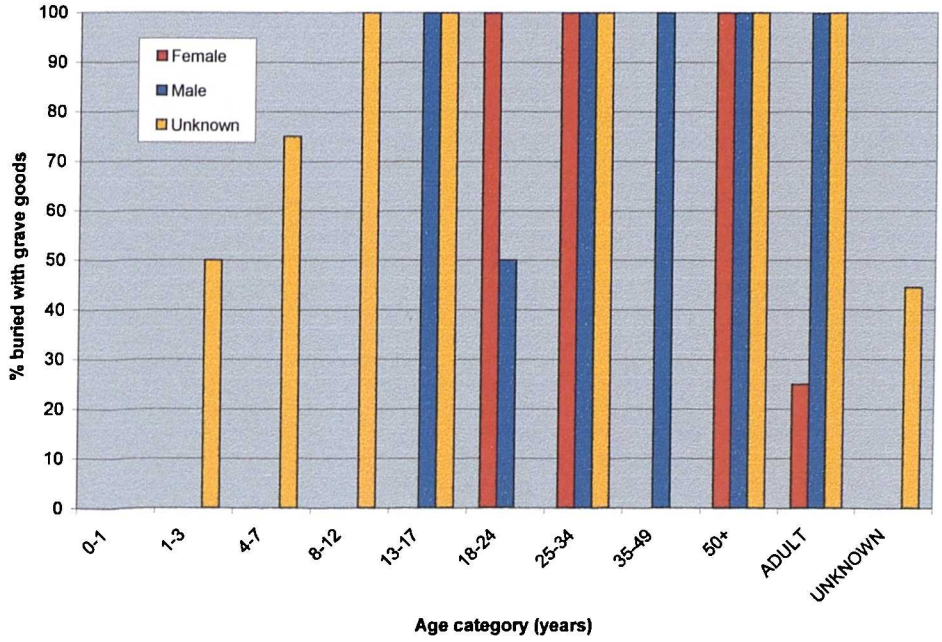


Figure 8.7: Proportion of individuals in each age and sex category that were buried with grave goods at Alton.

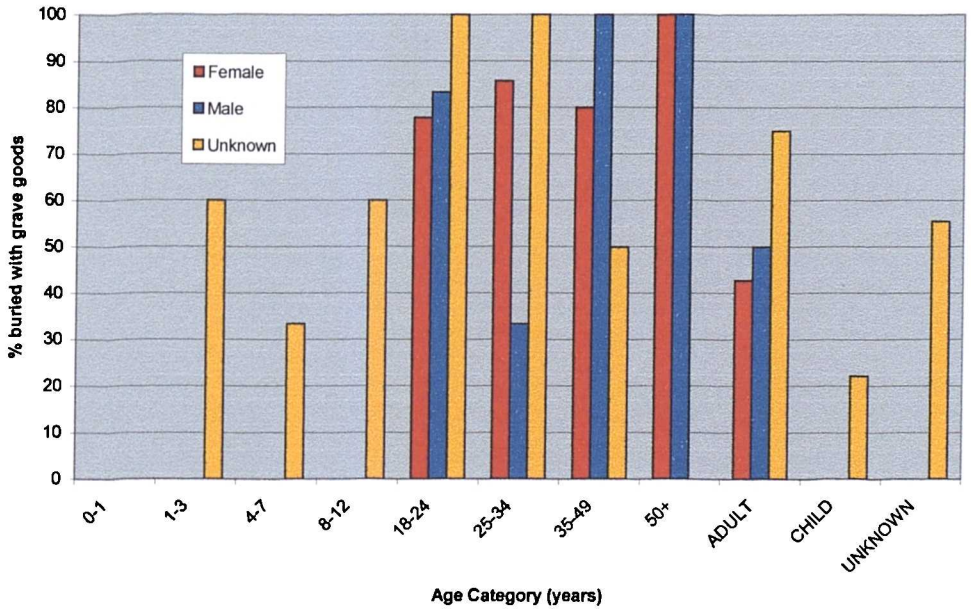


Figure 8.8: Proportion of individuals in each age and sex category that were buried with grave goods at Worthy Park.

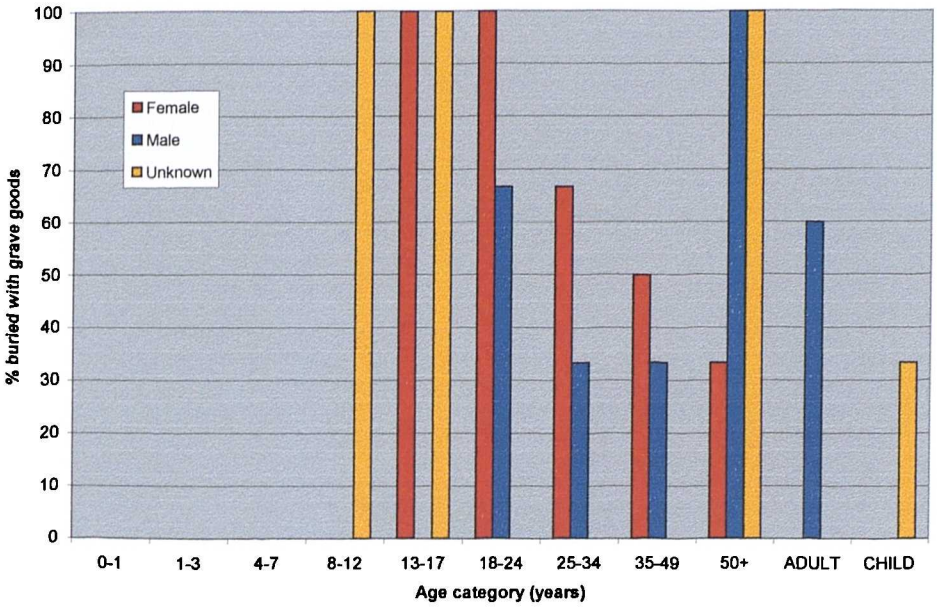


Figure 8.9: Proportion of individuals in each age and sex category that were buried with grave goods at Winnall II.

8.3.1 Discussion

Only at the sites of Abingdon and Berinsfield (both in the Upper Thames valley), were individuals below the age of one year buried with grave goods. The proportions of individuals buried with goods throughout the younger age groups at Berinsfield and Abingdon are very similar. For example, both sites demonstrate a drop in the proportion of individuals buried with grave goods in the 1-3 year age category and a peak in the 4-7 year age category.

The Hampshire sites also show a similarity with each other in terms of the proportions of children buried with grave goods in each of the immature age categories. At Portway, Worthy Park and Alton children were not buried with goods until 1-3 years of age. Approximately equal proportions of individuals in the 1-3 year and 8-12 year categories were buried with goods (this figure dips in the 4-7 year category) at these sites.

When one examines the proportion of individuals over 18 years to be buried with grave goods, no such discernible pattern in grave good deposition is apparent between the cemeteries. Unlike the younger age groups it is now possible to ascertain the skeletal sex of individuals aged approximately 18 years and over. At Abingdon, females aged between 18-24 years have the highest proportion of grave goods and this proportion dwindles with age. A

similar pattern is observed at Berinsfield, but this figure then rises in the 50 plus year age group, where all older females are buried with goods. At Portway all females in all age categories except 25-39 years were buried with grave goods. At Worthy Park the proportion of females buried with goods remains approximately equal until the 50 plus year age category when again it increases.

With respect to the males, the pattern between cemeteries for different age groups is again, not particularly clear. Abingdon is the only site where a smaller proportion of males over the age of 50 years were buried with grave goods compared to younger age groups. At all other sites all males over the age of 50 years were just as likely (and often more so) to be buried with grave goods as the younger adult male age groups.

From the above it would appear that both males and females were more likely to be buried with grave goods in the older age categories. This pattern is not clearly defined, however, and it is only when one examines the actual quantities and types of goods buried with each age and sex group that one can more clearly discern patterns in age-related material culture deposition.

8.4 Grave Good Quantities

This section examines the quantities of goods present with each age and sex group at each of the sites. Each item within the grave has been counted as a single grave good (e.g. brooch, spearhead, knife etc.). Not all grave goods are identified in the report and a number of 'miscellaneous' iron objects are frequently present. These objects have also been counted as individual goods except in those instances where it has been indicated in the report that they may have been a component of another grave good. Those items comprised of a number of components, such as a shield where the shield boss and studs may be preserved, have been counted as a single item. The exception to this is beads: we need to be able to differentiate between festoons or necklaces comprised of many beads and deposits of only one or several beads. In order to do this, each bead needs to be counted as a single item. However, by doing so an exaggerated impression of the number of goods buried with those females interred with necklaces would occur and this may obscure other patterns. In order to prevent such a bias, beads have been excluded from the charts showing the *overall quantity* of grave goods buried with each sex and age group (with the exception of Figure 8.3 as discussed previously). Instead this data has been presented in a separate, adjacent chart so that the data from both may be viewed together. The exception to this is the mid Anglo-Saxon site of Winnall II, where beads were not present in large quantities. As discussed in the previous chapter, when

examining grave good quantities, the charts have been expressed in terms of the percentage of the overall quantity of grave goods that were buried with each age or sex (with the exception of beads which have been charted separately). This facilitates inter-site comparison, although any demographic differences between sites must be taken into consideration.

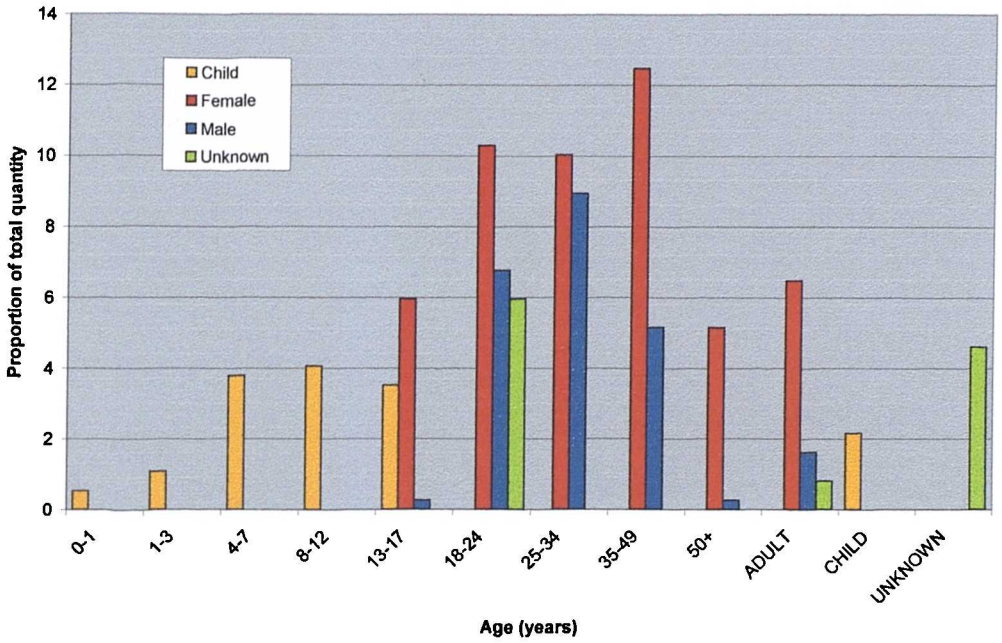


Figure 8.10: Proportion of the total quantity of grave goods that were buried with each age and sex group at Abingdon.

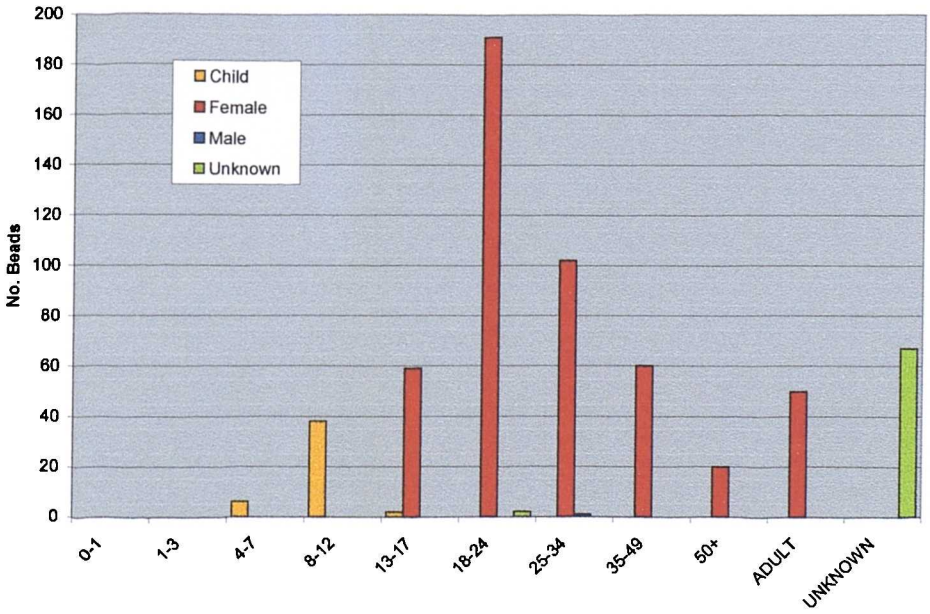


Figure 8.11: Quantity of Beads with each age and sex group at Abingdon.

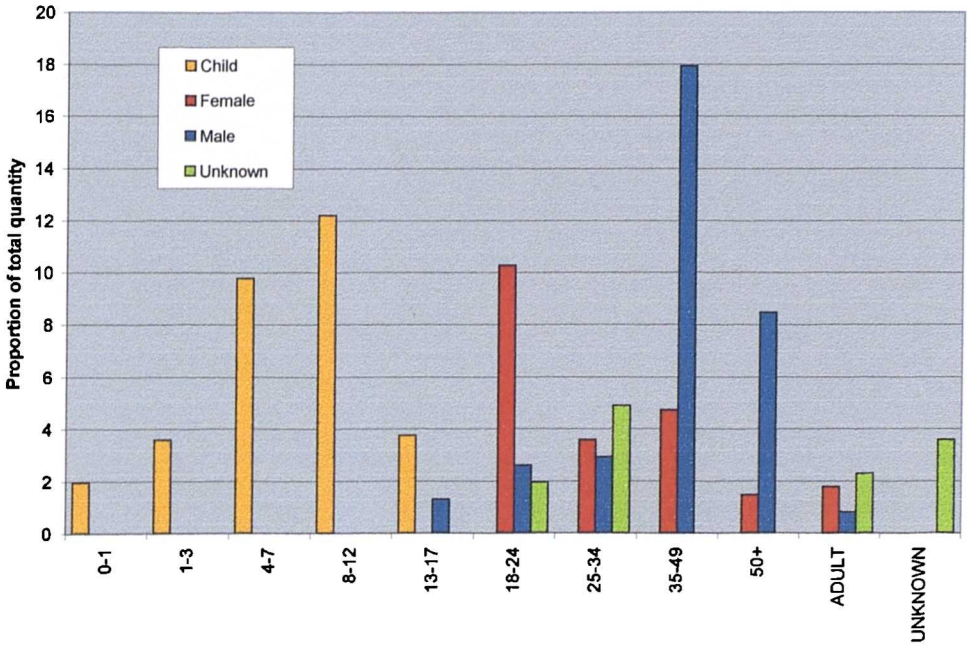


Figure 8.12: The proportion of the total quantity of grave goods that were buried with each age and sex group at Berinsfield.

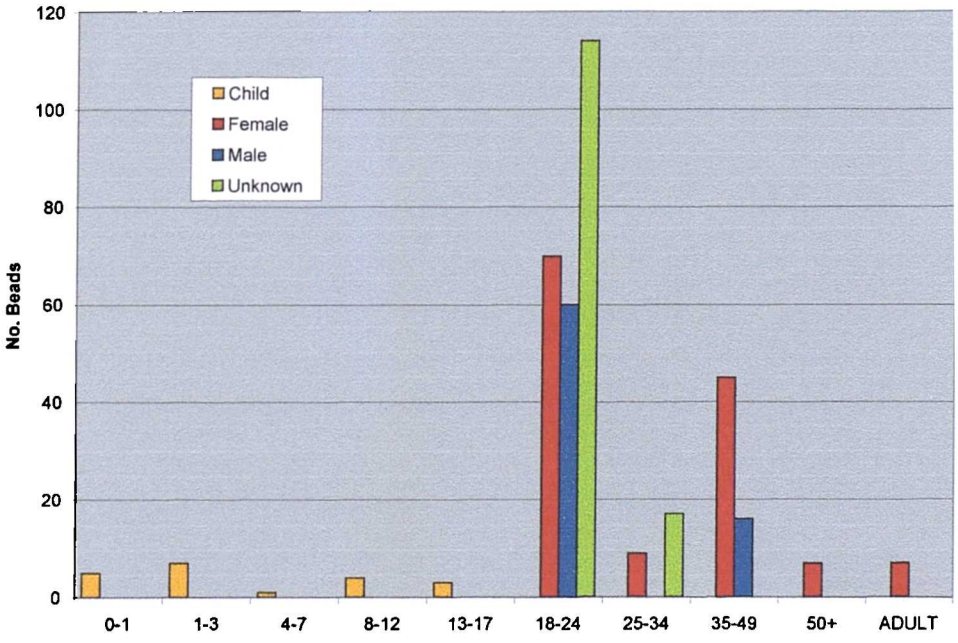


Figure 8.13: Quantity of beads buried with each age and sex group at Berinsfield.

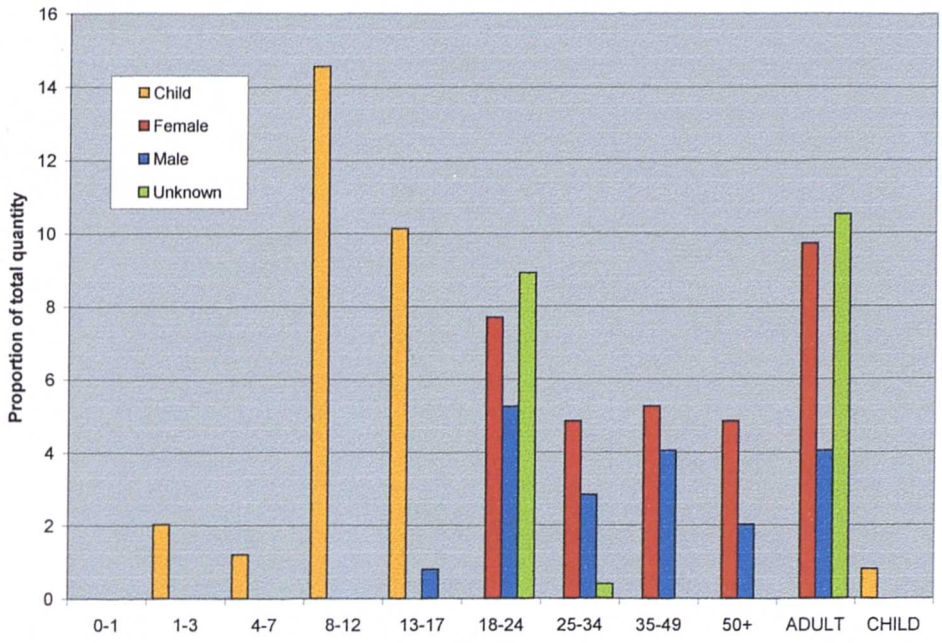


Figure 8.14: Proportion of the total quantity of grave goods buried with each age and sex group at Portway.

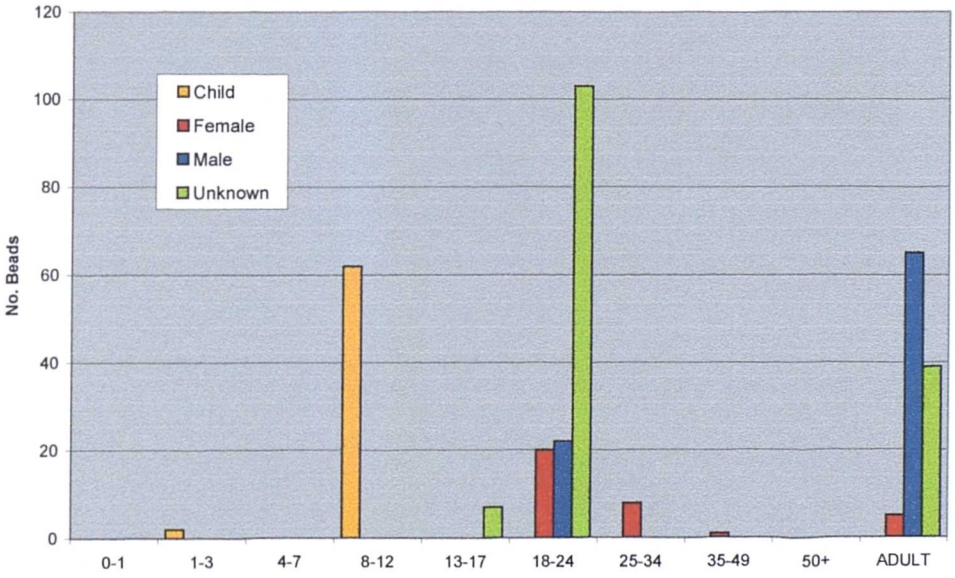


Figure 8.15: Quantity of beads with each age and sex group at Portway.

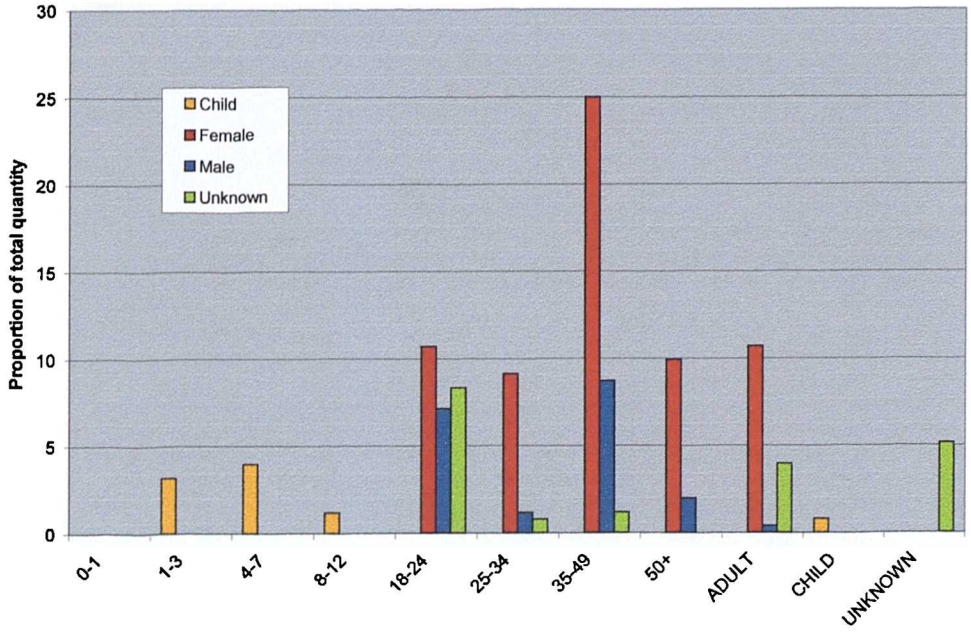


Figure 8.16: The proportion of the total quantity of grave goods buried with each age and sex group at Worthy Park.

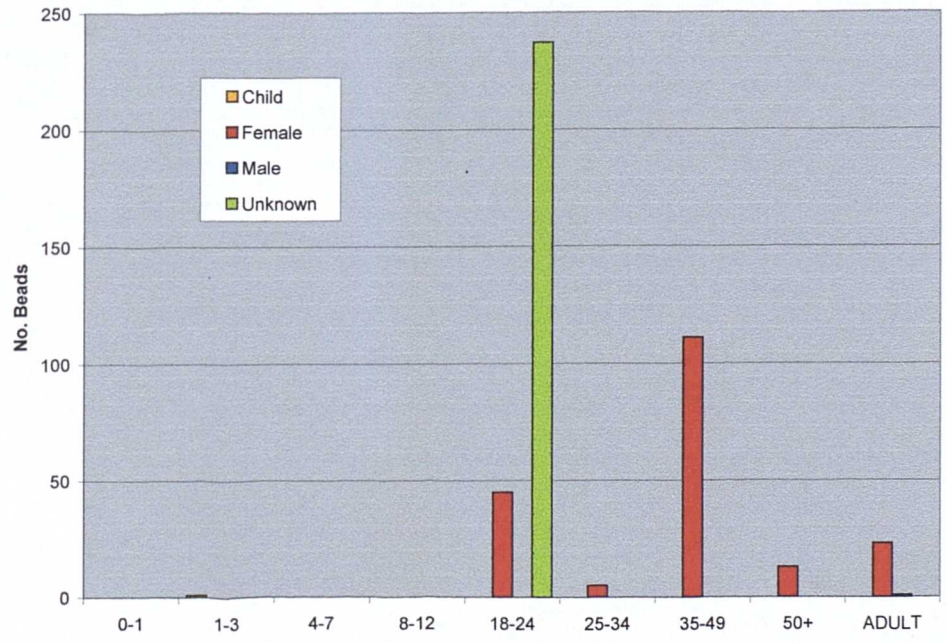


Figure 8.17: The quantity of beads with each age and sex group at Worthy Park.

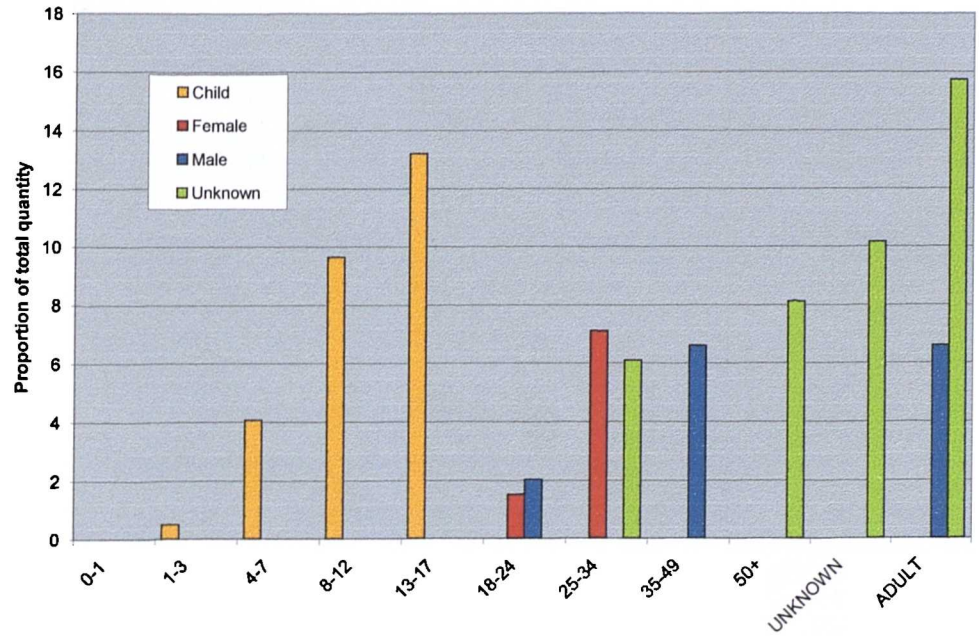


Figure 8.18: The proportion of the total quantity of grave goods buried with each age and sex group at Alton.

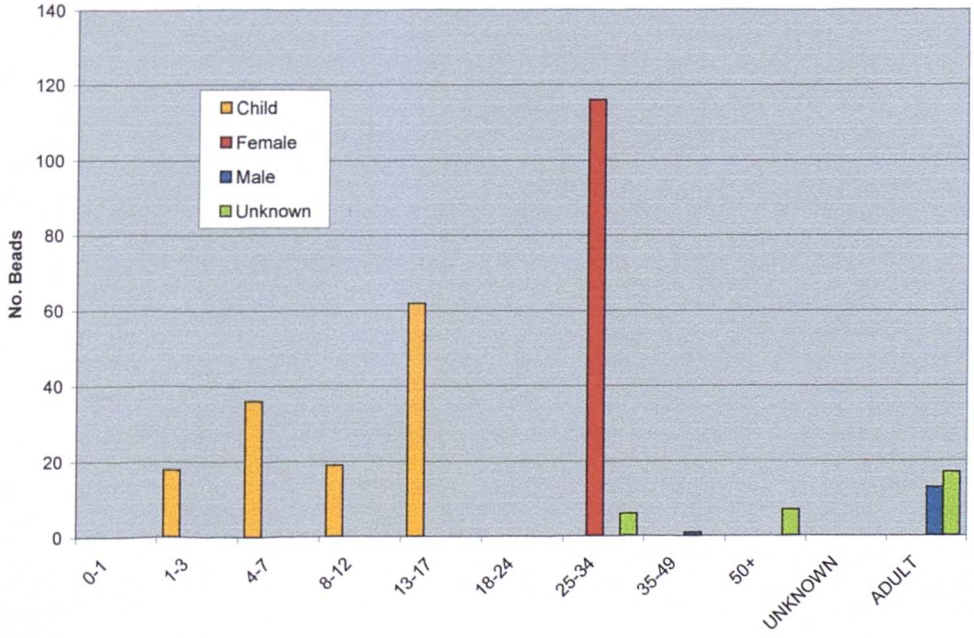


Figure 8.19: The quantity of beads with each age and sex group at Alton.

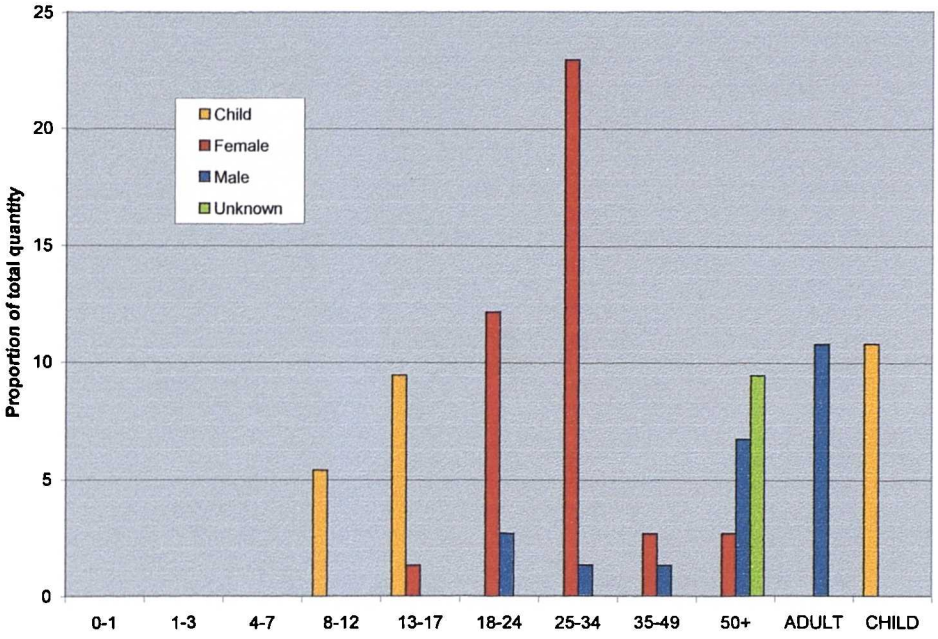


Figure 8.20: Proportion of the total quantity of grave goods buried with each age and sex group at Winnall II.

8.5 Discussion of Immature Individuals

Only at Abingdon and Berinsfield were infants buried with grave goods and only at the latter site were neonates buried with grave goods. One neonate (skeleton 38) at Berinsfield was buried with a vessel and the grave had been cut into the upper fill of a Romano-British pit containing a sheep skeleton. Both neonate burials at Berinsfield are adjacent and the other was adorned with number of items of personal adornment. These included a single supporting arm brooch, beads (probably worn as a necklace), buckles, vessels, spangles, and a perforated coin. This burial is exceptional for this age group both in terms of the number and types of items buried. It is the only individual under the age of 4 years from the entire early Anglo-Saxon cemetery sample to have been buried with a brooch; most infant burials possess only a single item such as a knife, toilet implement, or vessel.

After the age of one year individuals tend to be buried with slightly greater quantities of goods, but this is in part a reflection of the fact that there are also slightly more individuals present in the 1-3 year age category at almost all of the cemeteries. Individuals are more

frequently buried with beads than the infants and in slightly greater quantities, although still considerably less than those buried with adult females. One other notable feature of the 1-3 years age category is that two individuals, one at Berinsfield and one at Portway, were buried with spearheads laid beside their arm. The Berinsfield child was also buried with a buckle and knife. This is the youngest age group containing weapons.

After the age of four years at both Berinsfield and Abingdon there is a sharp rise in the overall quantity of goods compared to the younger age groups. No similar rise is evident at the Hampshire cemeteries. The knife is the most common grave good buried with these individuals (72% of individuals with grave goods had a knife included in their assemblage). Overall, a smaller proportion of the 4-7 year olds are buried with beads compared to the 1-3 year age category, however the 4-7 year olds tend to be buried with significantly greater quantities. It is also notable that at Abingdon during the ages of 4-7 years, two individuals (Skeletons 36 and 70) both had a pair of brooches worn at the shoulders, again in the style of the adult female. The types of brooches worn at this age were exclusively disc brooches. One burial in the 4-7 year age group also wore a Romano-British bracelet. Bracelets are not common grave goods at early Anglo-Saxon cemeteries: only three bracelets were present in the entire sample, one with an adult female (age unknown) and the other two buried with children. All of these bracelets were worn. There is also a slight increase in the frequency of weapons at 4-7 years, with three individuals (one each from Abingdon, Berinsfield and Portway) buried with spearheads, all of which had been placed to the left side of their heads.

In the 8-12 year age category there tends to be a further slight rise in the quantity of grave goods buried and there tends to be an increase in the proportion of individuals buried with grave goods. At Berinsfield and Abingdon, while the proportion of individuals buried with goods decreases slightly, the actual quantity of goods still increases. The rise in quantity of grave goods in the 8-12 year age category is particularly striking at Alton and Abingdon. Despite only a small number of individuals of this age being present at the cemetery, they still have a higher proportion of the overall quantity of goods than the younger age categories.

The most significant aspect about the 8-12 year age group is the much higher frequency of those grave good assemblages that one would consider 'gendered', in that they are typical of those buried with skeletally sexed males and females. For example, a much greater proportion (a third of all individuals with grave goods) were buried wearing two brooches, one on each shoulder, in the adult female style. Given that a proportion of the 8-12 year olds will be male, it is possible that a similar proportion of 8-12 year old females were buried wearing two brooches as amongst the older 'adult' females. With respect to brooch type, most of these

younger age groups were buried with two disc brooches, with the exception of one individual buried with two applied brooches. A single button brooch was also buried with one 8-12 year old from Abingdon, but this was worn at the waist. At the early Anglo-Saxon cemetery of Lechlade, Gloucestershire it was also noted that the majority of brooches buried with immature individuals were disc brooches (Jennings 1998).

Spearheads were also amongst the burial assemblages of two 8-12 year olds (one from Abingdon and one from Berinsfield); both were placed next to the head as described earlier. No individuals below the age of 12 years were buried with gendered grave good provisions at Worthy Park or Alton. The majority of gendered burials (see Chapter 9 for a discussion of 'gendered' grave goods) are from Abingdon and Berinsfield. Again, geographic distinctions are apparent in the age and sex deposition of grave goods at the early Anglo-Saxon cemeteries. Brush (1993: 159-60) also noted that 'children' buried with weapons tended to be restricted to sites 'south of the Thames'.

Individuals in the 13-17 year age category at all cemeteries were buried with brooches and jewellery in the same manner as the adult females. Those assemblages that one most commonly associates with the female sex are more in evidence in this age group than previously. A much greater proportion of individuals have brooches and chatelaines. Again, the brooches present are predominantly disc brooches, although one individual has a pair of button brooches and one a pair of small-long brooches. A further burial is unusual in that it was wearing a 'Roman' brooch and a quoit brooch on the shoulders and a Roman penannular brooch at the waist. In addition, a perforated Roman coin was also part of the burial assemblage. Another individual from Alton is unusual in that it was buried wearing two penannular brooches, a large number of beads and two finger rings (one silver and one bronze). 'Romano-British' styles of goods are relatively unusual in the graves of early Anglo-Saxon cemeteries and it is interesting that they tend more often to be confined to younger females. Owen-Crocker (1986) also noted that Romano-British brooches worn on one shoulder tended to be restricted to 'sub-adults' in cemeteries of Wiltshire.

In contrast to the expression of a feminine gender amongst those aged 13-17 years, it is unusual that weapons (usually considered 'masculine' items) are completely absent from this age group. It seems that males of 13-17 years of age were not buried with grave goods, or were buried with organic goods that have not survived. As many of the 13-17 year old individuals cannot be sexed (due to the immature nature of the bones), it is a possibility that the males of this age were buried with 'feminine' goods. It is also possible that there are just very few male deaths at this age, although this would seem unlikely. One would expect that if

weapons were buried with younger age groups that they would also be buried with males aged 13-17 years and the fact that they are not does demand explanation.

8.6 Discussion of Mature Individuals

When one examines the grave goods buried with individuals over the age of 18 years, there is a much greater variety in type and larger quantity. In order to analyse the pattern in grave good deposition with these age groups it is, therefore, necessary to examine each type of good and its distribution between each age and sex group in turn.

8.6.1 Items of Personal Adornment

Amongst the most common grave goods recovered from early Anglo-Saxon cemeteries are items of personal adornment. The analysis presented below shows that these items had a clear distribution by age and sex (Figure 8.21).

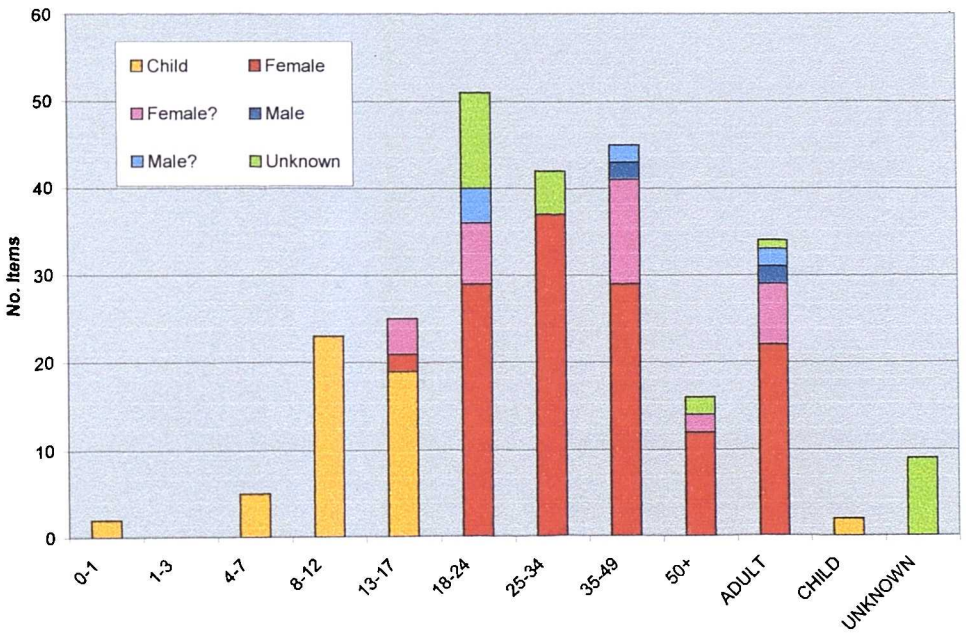


Figure 8.21: The overall number of items of personal adornment buried with each age and sex group from the Anglo-Saxon cemetery sample (excluding beads). Because many items of personal adornment are strongly 'gendered', this overview has differentiated between those of probable sex in order to allow for the possibility of incorrect sexing.

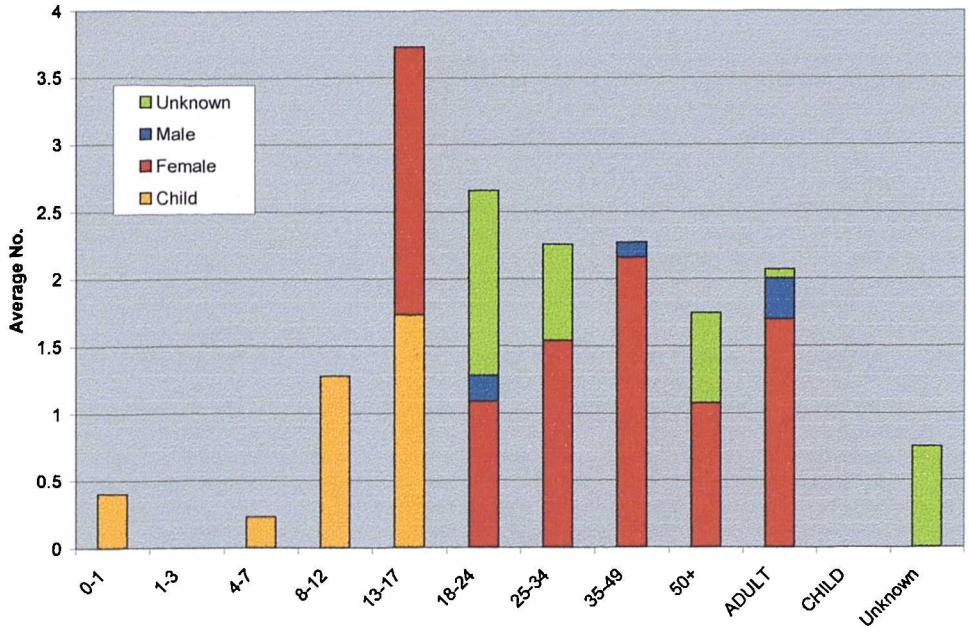


Figure 8.22: The average number of items of personal adornment buried with individuals in each age and sex group from the entire Anglo-Saxon cemetery sample (calculated from those buried with grave goods only).

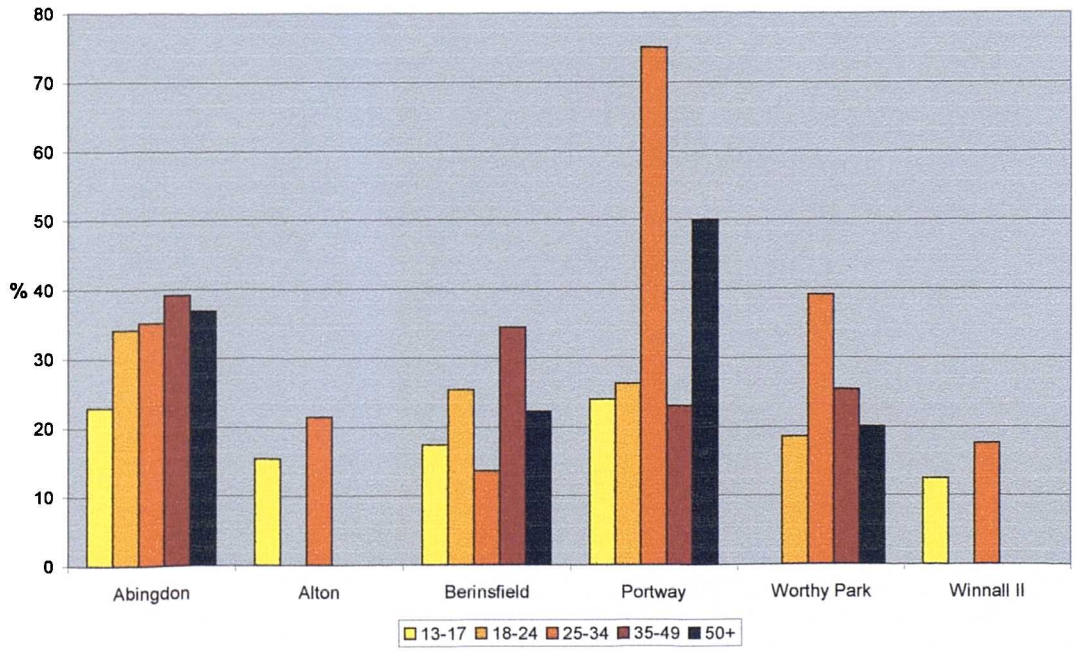


Figure 8.23: An inter-site comparison showing the proportion of the grave goods in each female 'adult' age category that are items of personal adornment.

From Figure 8.22 it is apparent that items of personal adornment are buried with all age groups except for the 1-3 year age category. The sharp rise amongst the 8-12 year age group

has been discussed previously and is particularly significant in terms of the similarity in the burial assemblages of these individuals and adult females. Of those individuals able to be skeletally sexed, personal adornment items are almost exclusively buried with females. The data was examined in order to discern whether quantities of jewellery altered from youth to old age. The results have been expressed in terms of the average number of items included with each individual buried with grave goods of each age group (Figure 8.23). It was necessary to present the data in this way because there were not an equal number of individuals in each age/sex category and otherwise the data may have been misleading.

The average number in the 0-1 year age category has been skewed by a single burial (an infant at Berinsfield, buried with a large number of items of jewellery). Individuals aged between 13-24 years have a slightly higher average number of items of personal adornment than younger or older age groups. When one examines this in relation to the quantity of beads present, this difference becomes much more marked because the numbers of beads buried with those aged between 18-24 years were considerably greater. The difference in the average number of items of personal adornment between the adult females is not particularly marked, although there does appear to be a slight decrease in quantities buried with the older adult females overall.

The proportion of the female burial assemblages that contain items of jewellery does not show any fixed pattern with age (as it does at some late Roman cemeteries). Abingdon and Berinsfield show no particular age-related pattern in the burial of jewellery. Portway and Worthy Park both show that females aged 25-34 years are more likely to have jewellery included in their assemblages. Portway also shows females over 50 having a relatively high proportion of jewellery amongst their grave goods. Despite Winnall II being of a later date, results show a similar distribution to Alton with respect to the fact only younger females tend to be buried with items of jewellery. Clearly no fixed pattern is in evidence although inter-site comparisons have yielded some regional differences between the Upper Thames and Hampshire cemeteries.

The types of jewellery buried at early Anglo-Saxon cemeteries include beads, brooches, finger rings, pins and bracelets. A more detailed analysis of these goods is presented below in order to identify any age-related pattern.

8.6.1.1 Beads

At all cemeteries there is a distinct peak in the female 18-24 year age category in the quantities of beads buried. This pattern is consistent across each of the cemeteries (see

Figures 8.11, 8.13, 8.15, 8.17, 8.19). While beads were a relatively common grave good amongst the immature individuals, they were not buried in the same quantities as those with females aged 18-24 years (Figure 8.24). As discussed previously, it tends to be from the age of 8-12 years onwards that individuals are consistently buried with greater quantities of beads. Females over the age of 34 years are also frequently buried with beads, but again not in the same sort of quantities as younger adult females. Very few males were buried with beads, when they were present it was only in small quantities and they tended to be confined to the younger 'adult' male age groups.

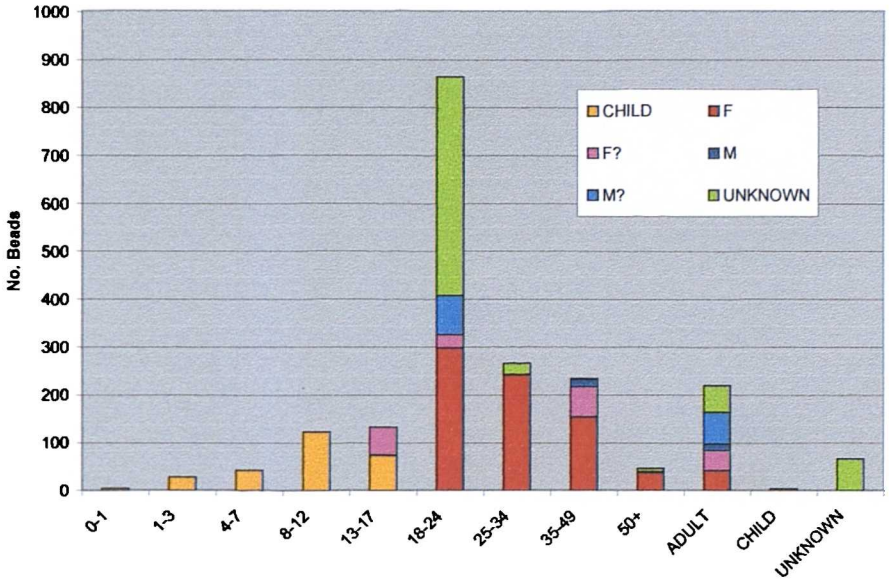


Figure 8.24: The overall number of beads buried with each age group at the Anglo-Saxon cemeteries.

8.6.1.2 Brooches

Overall there is no distinct age-related pattern amongst the skeletally sexed female burials in terms of the proportion buried with brooches. While older females appear to be buried with a smaller number of brooches (Figure 8.25), there was no actual drop in the proportion of brooches buried with them (Figure 8.26). Examining the average quantities of brooches buried with each individual, younger females in the 13-17 year age category and those aged between 35-49 years were found to be more likely to be buried with two brooches (Figure 8.27). In the remaining female age categories the average number of brooches buried (of those buried with brooches) is just one. Amongst the males, when brooches are present, they are buried with those aged 18-24 years and 35-49 years. A slightly higher proportion of the

males aged 18-24 years are buried with brooches (Figure 8.26) and this is true of other items of personal adornment (in particular beads).

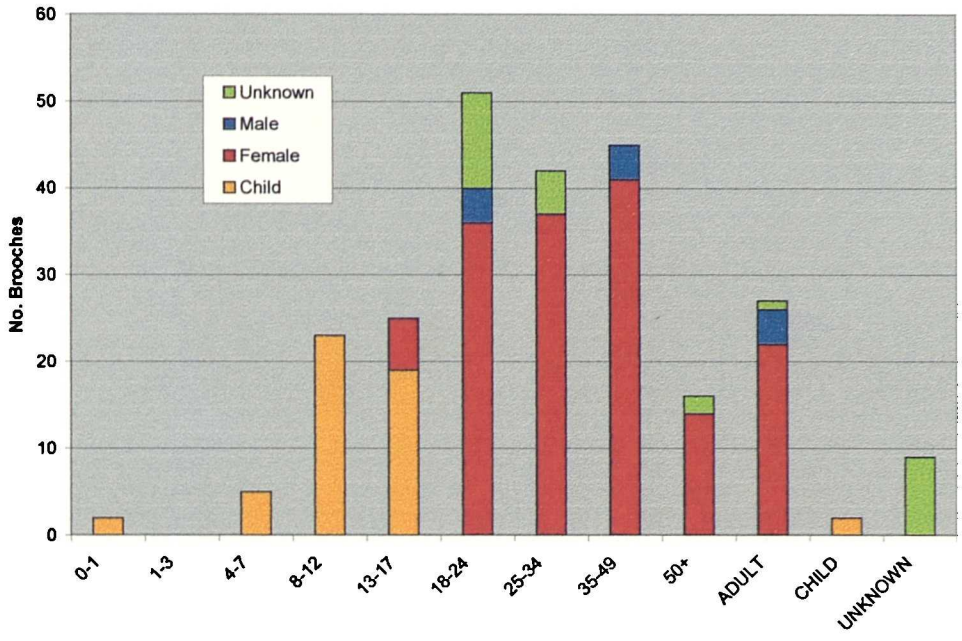


Figure 8.25: The overall number of brooches buried with each age/ sex category at the early Anglo-Saxon cemeteries.

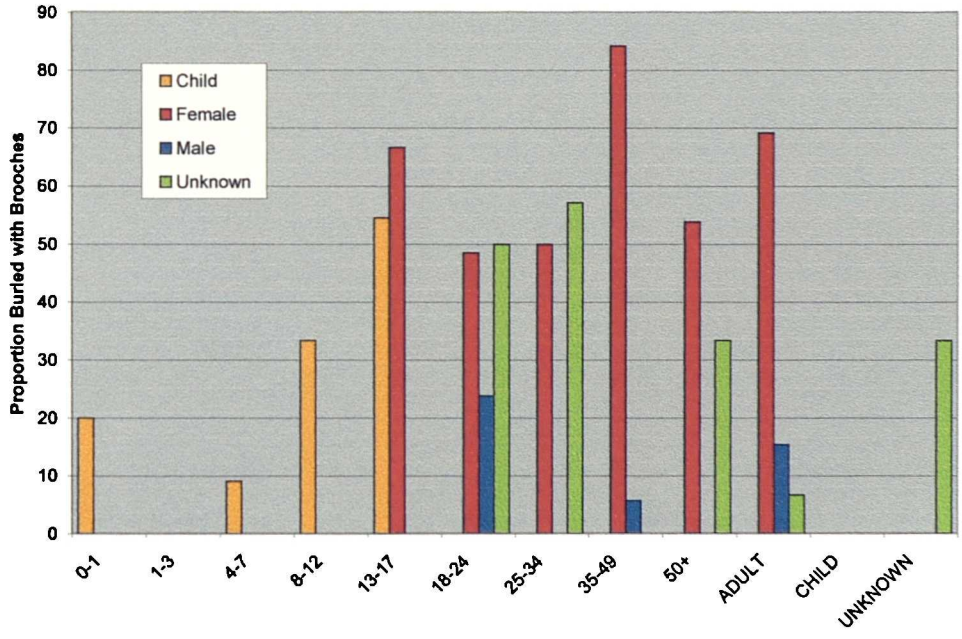


Figure 8.26: Proportion of those individuals buried with grave goods in each age and sex group to have a brooch in their assemblage.

Figure 8.28 shows the type and quantity of brooches buried with each age group over 13 years. For simplicity, the brooches with those below 13 years have been excluded from this graph as these have been discussed in detail previously. For visual aid, the colours of the graph go from lighter to darker with increasing age. No age group is found with just one type of brooch, but several patterns do emerge and particular age groups predominantly have certain brooch types. For example, disc brooches and saucer brooches are by far the most common brooch type and yet no saucer brooches are buried with individuals below the age of 18 years and relatively few are present over 50 years of age. Stoodley (1999a: 115-116) has also noted for other sites that saucer brooches were not found buried with younger individuals. The brooches buried with individuals between 4-7 years are exclusively disc brooches, as are the majority of brooches in the 8-12 year age group. Variety in brooch types increases with increasing age; individuals in the 35-49 year age category show a much greater variety of type than those in the 18-24 year age group. Brooch types such as penannular and quoit, that are occasionally characterised as 'Romano-British', are buried with all age groups, but represent a higher proportion of the brooches buried with those between the ages of 8-17 years.

8.6.1.2.2 Inter-site comparison

Abingdon: There is a slight age-related pattern in brooch type at Abingdon. Females aged 18-24 years are much more likely to be buried with saucer brooches than any other brooch type. After this age, other types of brooch become more common. All of the less common brooch types (e.g. trefoil-headed brooches and square-headed brooches) are buried with older females, who tend to have a much greater variety of brooch types. Disc brooches are the only brooch type found consistently and in approximately equal proportions in all ages (after the age of 7 years).

Berinsfield: Again saucer brooches are more common with females of 18-24 years, but this is not as marked as at Abingdon, nor is there an increase in types with older females. Young adult females tend not to be buried with square-headed brooches as at Abingdon. Disc brooches, again, have an even distribution amongst all age ranges and is the only brooch type to be buried with individuals older than 50 years and is the most common type for those under 13 years.

Portway: At Portway all 'Roman' brooches are buried with individuals between the ages of 13-24 years. No other age-related pattern is evident, although at Portway, as with the other

sites, females over the age of 50 years tend to be limited to applied, disc, annular and saucer brooches.

Worthy Park: At this site, again, the 18-24 year old females are buried only with saucer brooches while older females tend to be buried with annular brooches. However, no other age-related patterns in brooch type are apparent at this site.

Not enough brooches are present at Alton or Winnall II to comment upon age distribution. It is of note that there is a regional distribution in square-headed brooches (both small and great), which were only present at the Upper Thames cemeteries of Abingdon and Berinsfield.

Three definite males in this sample were buried with brooches. Two of these were aged 35-49 years, one with a pennanular brooch worn on the right shoulder and one with two square headed brooches worn at each shoulder. Another male that was unable to be aged was buried with a saucer brooch at each shoulder. A further four 'probable males' were also buried with brooches. Two of these were aged 18-24 years and both were buried with a small-long brooch on each shoulder. They also had some beads amongst their assemblages (one as many as 60 beads) and one had what was described as an 'ornament'. One probable male of 35-49 years from Abingdon was buried with a square-headed brooch at each shoulder, and no other items within the grave. Finally one probable male adult from Portway was buried with an annular brooch at each shoulder and some beads. A more detailed discussion of males buried with items of personal adornment has been presented in Chapter 9.

There is an age-related pattern in the deposition of particular brooch types. Amongst the immature individuals brooches tend not to be worn in the 'adult' female style until 8-12 years of age. All individuals in the 13-17 year age group were buried with brooches in the style of skeletally sexed female burials. Disc brooches predominate amongst these younger individuals. The brooch types are certainly smaller and less obtrusive than those buried with older females (e.g. disc, annular, small-long brooches). Although saucer brooches are one of the most common brooch types, these are never buried with individuals below 18 years of age. Indeed these brooches predominate amongst the 18-24 year age group. Older female age groups show much more variety in brooch types. As with other items of jewellery, it seems that the 'Roman' items are most commonly buried with younger females– those below 18 years of age. For example, all of the Roman style brooches at Portway were buried with those aged between 13-24 years.

8.6.1.3 Miscellaneous Jewellery

Four bracelets were recovered from the entire Anglo-Saxon cemetery sample. Three of these bracelets were excavated from the Upper Thames sites of Abingdon and Berinsfield; all were buried with children aged 4-12 years. The only other bracelet in the sample was buried with an adult female from Portway; all were worn on the right forearm. The lack of bracelets amongst the burials at the early Anglo-Saxon cemeteries is in stark contrast to the late Roman cemeteries where it is one of the most common items of jewellery recovered. Bracelets were clearly worn in the Anglo-Saxon period and have been recovered from settlements. Richards (1995: 57) suggests the lack of bracelets as opposed to brooches indicates that 'some items were appropriate grave-goods, and others were not'.

Finger rings were not common, although they were found at most sites, the exceptions being Alton and Winnall II. They were only buried with individuals older than 8 years of age. No finger rings were recovered from female burials over the age of 50 years and 75% of rings were buried with individuals between the ages of 8-24 years. In fact Abingdon is the only site where rings were buried with females over the age of 24 years. Almost all finger rings at each of the sites were worn on the left hand. No males were buried with finger rings.

Perforated Roman coins were also recovered from each cemetery and were buried with almost all age groups from infancy onwards, although there are biases towards certain ages. They are recovered most frequently from Portway, where they are only buried with individuals between the ages of 8-24 years. As with finger rings, very few are buried with individuals over the age of 25 years, and none are included with females over 50 years. No males were buried with perforated coins and almost all were worn about the body (they are almost exclusively found in the region of the upper body) rather than simply placed within the grave.

Fourteen pendants were also present from the sites of Abingdon, Worthy Park and Portway. At Abingdon and Worthy Park they were only recovered from the graves of adults, although at Portway, four out of five pendants had been buried with individuals aged 8-12 years.

Unusually for early Anglo-Saxon cemeteries an earring was buried with a female aged 18-24 years at Worthy Park. The earring was located next to the left side of the skull and would appear to have been worn. This was the only item contained within the grave. At Portway, pins are also present relatively frequently in the female assemblages, usually combined with brooches. For example, skeleton 25 was buried with four pins, three brooches and beads.

8.6.2 Vessels

Vessels are found with both sexes and almost all age groups (Figure 8.29). As at Romano-British cemeteries, vessels are considered to be 'gender neutral' in that they are buried with both skeletally sexed males and females. The types of vessels excavated from early Anglo-Saxon cemeteries generally include: wooden buckets (with copper-alloy bands), pottery vessels (type unspecified), bowls and jars. When one examines the actual numbers of individuals that have vessels included amongst their grave good assemblage, it is evident that they are a relatively common grave good for infants of less than one year. They are also a frequent find amongst burial assemblages of both males and females aged 13-17 years, but no females aged 18-24 years were buried with vessels. Amongst those individuals over the age of 18 years the numbers buried with vessels remains relatively constant throughout the life course, although disappears almost completely after the age of 50 years for both males and females. The proportion of male and female individuals buried with vessels is exactly the same, however, females have a slightly higher quantity of vessels (15 compared to 13 with males) and they form a slightly greater proportion of the overall female burial assemblage.

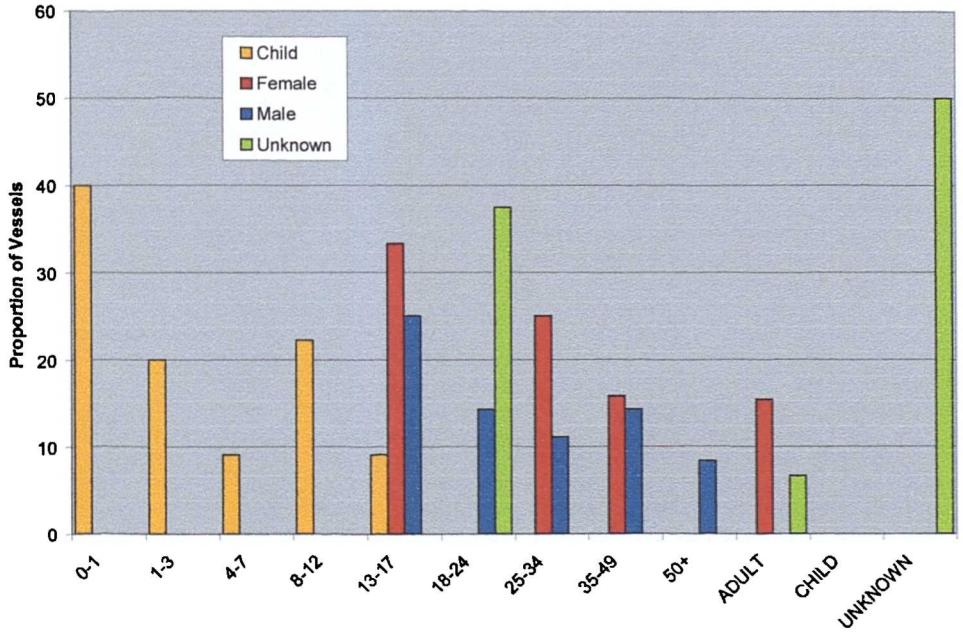


Figure 8.29: Proportion of individuals in each age and sex group to have vessels included in the grave assemblage.

The variety in types of vessels buried is not as great as that found amongst the late Roman cemeteries. Examining more closely the types of vessels buried with each age group, it is apparent that buckets are only included with individuals older than 4-7 years of age. There were few other age or sex differences with respect to the different types of vessels buried, although as discussed earlier, older females and males tend to be buried with fewer or no vessels. It is more usual for just a single vessel to be buried, although several burials have multiple vessels. These include: one 8-12 year old (Abingdon 51) (with a female gendered grave assemblage); one 35-49 year old female (Abingdon 14) buried with a clay pot, bowl and jar, and one female (Alton 14) buried with pottery bowl and glass bottle fragment.

The vast majority of vessels were of pottery, although buckets were usually wooden with copper alloy or iron binding. Only two glass vessels were present; one was recovered from an infant's grave and one accompanied a female aged 25-34 years. None were found with males. If we make an inter-site comparison we see that Berinsfield and Abingdon have by far the greatest number of individuals buried with vessels (Figure 8.30). The material and types of vessels buried did not vary between the cemeteries with the exception of iron bound buckets, which at Berinsfield were only buried with males.

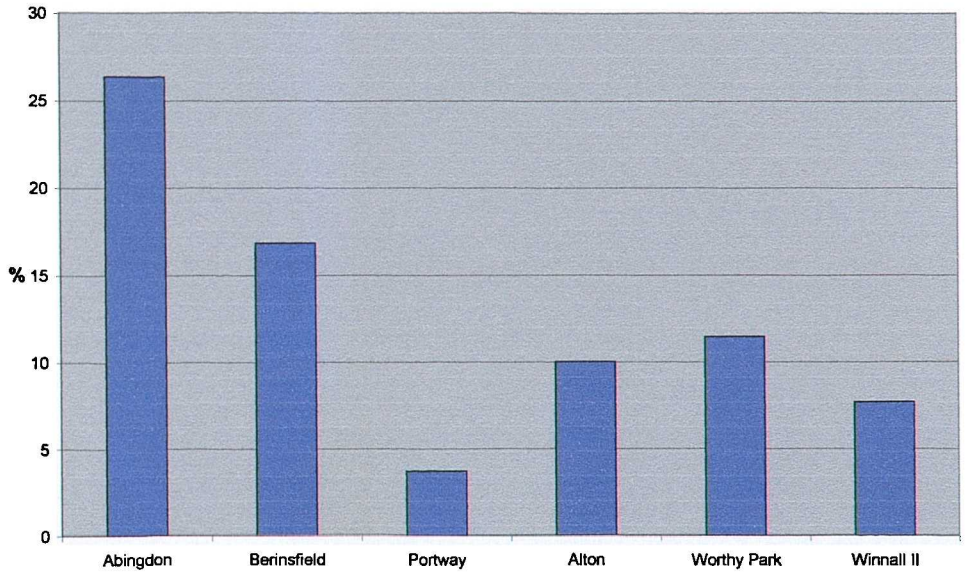


Figure 8.30: The proportion of burials with grave goods at each cemetery to be buried with vessels.

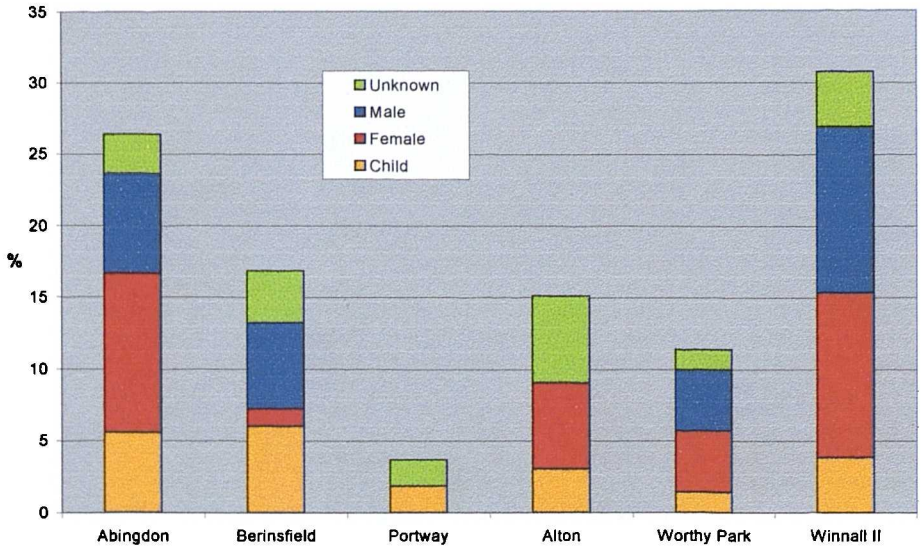


Figure 8.31: The proportion of each sex buried with grave goods at each cemetery to have been buried with a vessel.

Figure 8.31 demonstrates that approximately consistent proportions of males, females and immature individuals buried with grave goods had a vessel amongst their assemblages. At Portway a smaller proportion of 'adult' burials was interred with vessels and it was not possible to determine whether these were males or females. At Alton no sexed males were buried with vessels, however, there are a substantial number of individuals who could not be sexed at this site, making interpretations difficult. At Berinsfield vessels formed a noticeably smaller proportion of the grave assemblage for females than for males. No further patterns in the types of vessels are noted.

8.6.3 Knives

Knives are amongst the most common grave good buried at early Anglo-Saxon cemeteries. Figure 8.32 shows the age and sex distribution of the individuals buried with knives. All age and sex groups are buried with knives and in this respect these items are also considered to be 'gender neutral' goods. Of those burials with knives, only 3 individuals were buried with more than one knife. These include: one 18-24 year old female (skeleton 31) from Winnall, one male (skeleton 28) aged 35-49 years from Berinsfield, and one female adult (skeleton 47) from Worthy Park.

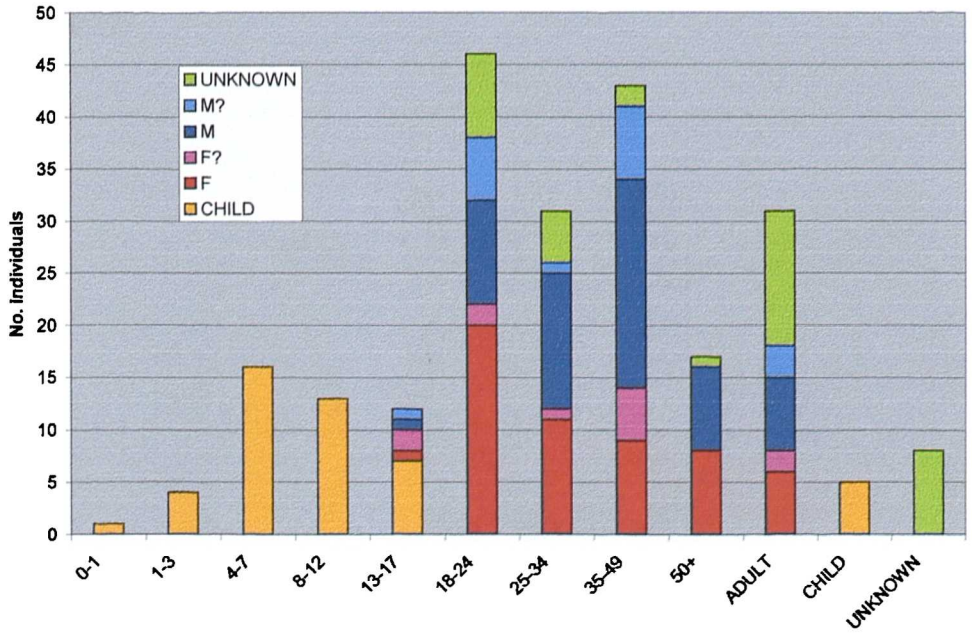


Figure 8.32: The overall number of individuals buried with knives in each age/sex group at the early Anglo-Saxon cemeteries.

Figure 8.33 represents the proportion of individuals in each age and sex group (of those buried with grave goods) to have a knife amongst their assemblage. This allows us to take into account demographic differences and obtain a more realistic picture of the age and sex related pattern in knife deposition than in the previous chart.

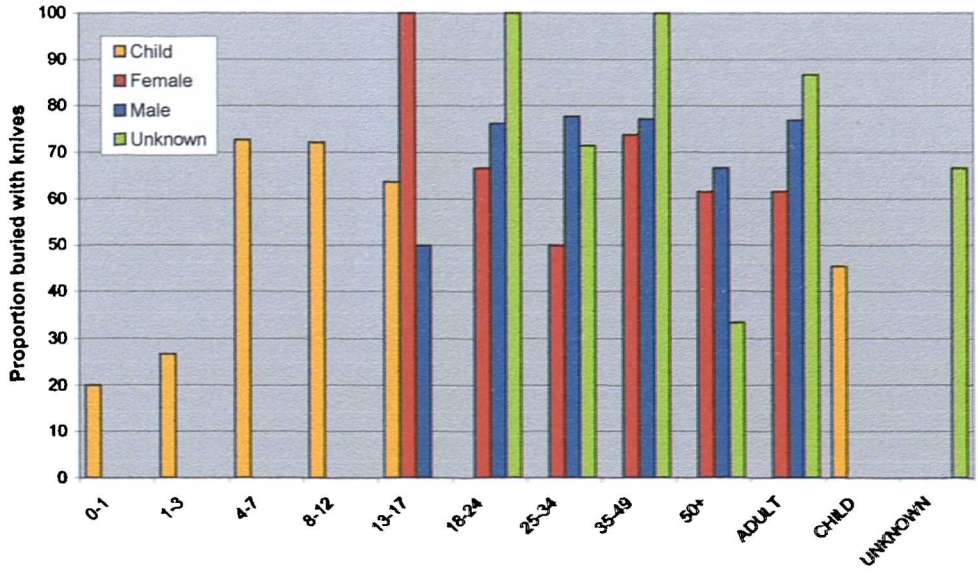


Figure 8.33: The proportion of individuals in each age and sex group that was buried with grave goods to have a knife amongst their assemblage.

The proportion of burials with knives remains approximately equal from the age of four years onwards for both males and females when it forms part of the standard kit. Only a small proportion of individuals below the age of 4 years are buried with knives as grave goods.

An inter-site comparison reveals that similar proportions of individuals were buried with knives at all sites, although an exceptionally high number were at Alton (Figure 8.34). A more detailed comparison by age and sex reveals a slightly different pattern: at some cemeteries knives form a higher proportion of burial assemblages for males (e.g. Portway and Berinsfield) while at others the reverse is true (e.g. Abingdon). At Alton all males and all females buried with grave goods had a knife included in the assemblage (Figure 8.35). When one makes a more detailed examination of the quantities of knives buried with different age categories between cemetery sites, the results are very similar. The only notable differences were at Abingdon and Winnall II. The former is the only site to have a knife included in the burial of an infant of less than one year. At Winnall II, which is of a later date than the other cemeteries in the study sample, no individuals are buried with knives until 8-12 years of age.

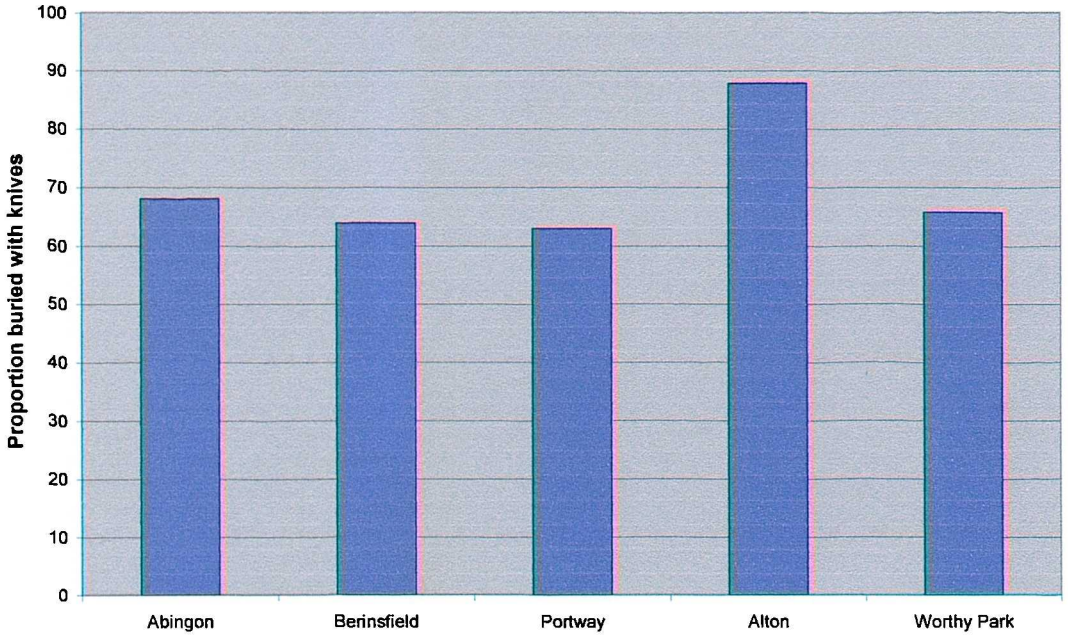


Figure 8.34: The proportion of individuals at each cemetery (of those buried with grave goods) to have a knife in their assemblage.

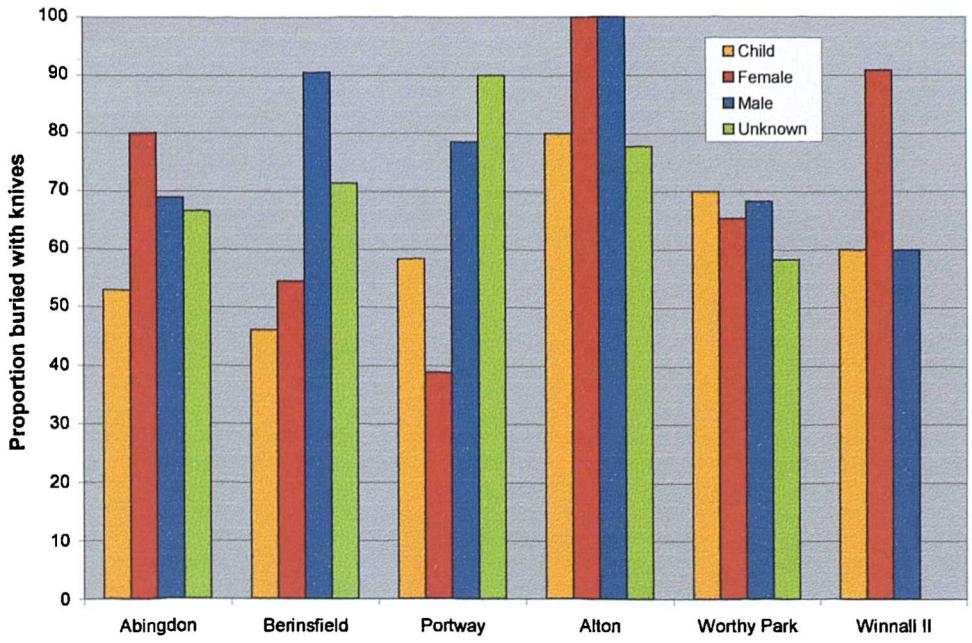


Figure 8.35: Proportion of each age and sex group buried with grave goods at each site to have a knife in their burial assemblage.

8.6.4 Weapon Sets

Weapons are another common grave good buried at early Anglo-Saxon cemeteries and include shields (not technically weapons, but they often form part of the weapon set), spearheads and swords (knives are not classed as weapons). The overall quantity of weapons found with each age and sex group at the cemeteries in this sample is presented in Figure 8.36 below. The vast majority of weapons were buried with adult males, with females only very rarely being buried with weapons (the female weapon burials are discussed in greater detail in Chapter 9).

Amongst the males, individuals over the age of 50 years have fewer weapons than younger adult males (Figure 8.36). When taking into account the disparity in the number of individuals present and buried with grave goods between each age group (Figure 8.37) this decline is not as pronounced as it would first appear. Approximately 50-60% of all those males over the age of 13 years that were buried with grave goods, had weapons amongst their assemblages (with the exception of those over 50 years). Individuals below the age of one year were not buried with weapons at any of the sites. Weapons do, however, form an almost equal proportion (approximately 11-14%) of the grave assemblages of each age group up to 13 years. After 13 years of age weapons form a comparable part of the burial assemblage as with skeletally sexed male burials over the age of 18 years.

Individuals were often buried with more than one weapon; burial with a shield and spearhead is a particularly common combination. These data was examined to see if there was a greater likelihood of different age groups being buried with multiple weapons (Figure 8.38). Younger individuals and younger adult males are more likely than older age groups to be buried with only a single weapon, 23% of those aged 18-24 years were buried with two weapons, and no males under 25 years of age were interred with three weapons. By contrast 60% of males aged 25-39 years were buried with two or more weapons (Alton 39 had 3 weapons). This figure then decreases in the following age group where only 35% of male weapon burials had two or more weapons, although two of these individuals had three weapons (Alton 42 and Berinsfield 28). Older adult males, despite being less frequently buried with weapons, are more likely than a number of the younger age groups to have more than one weapon in their burial assemblage (50% of individuals have more than one weapon).

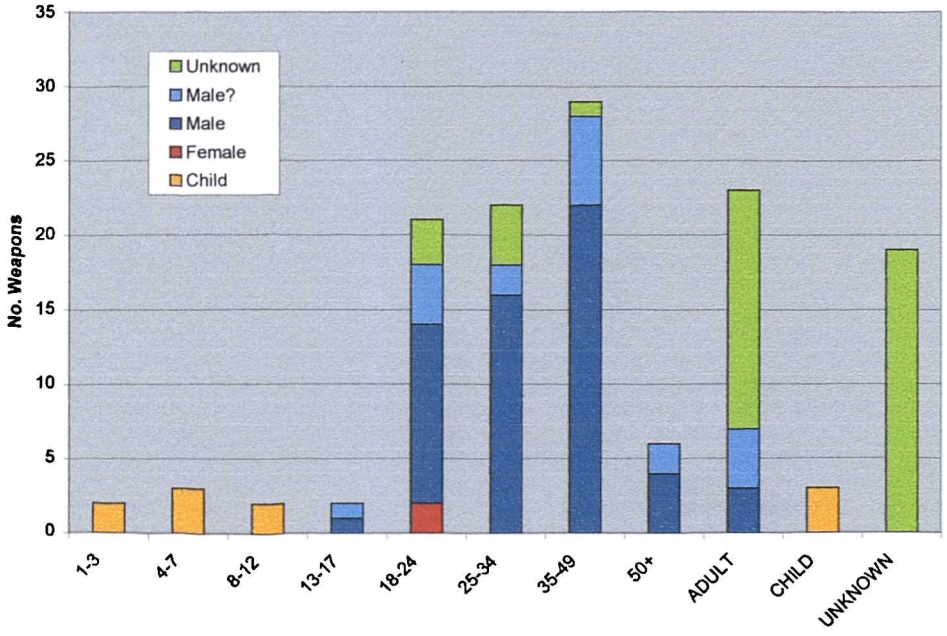


Figure 8.36: The quantity of weapons buried with each age and sex group.

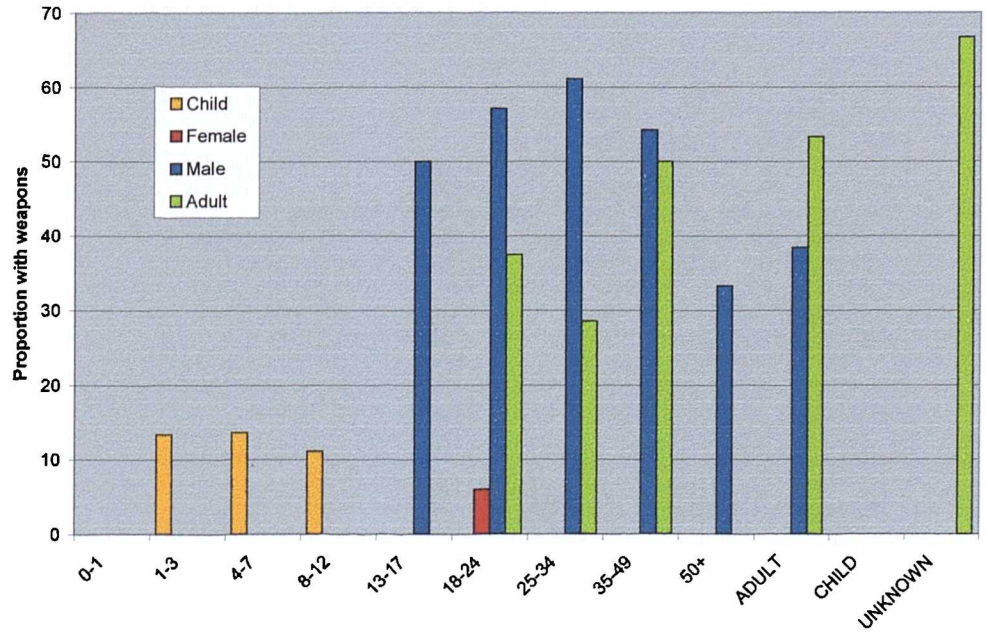


Figure 8.37: The proportion of the individuals of each age/sex buried with grave goods to have weapons included in their assemblage.

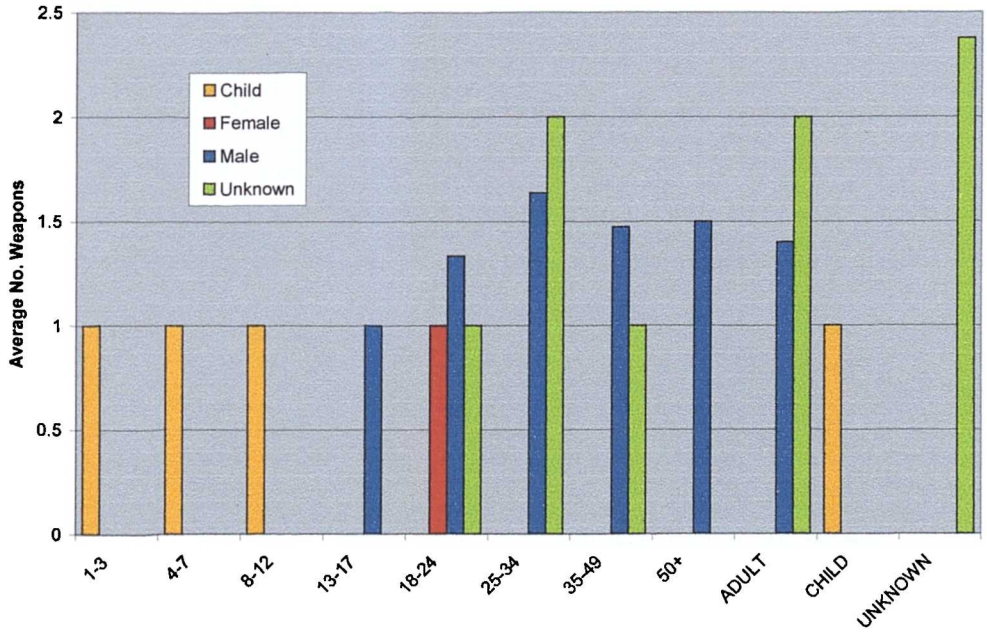


Figure 8.38: The average number of weapons buried with each age/ sex group when weapons are included within the burial assemblage.

An inter-site comparison of weapon burials indicates that differences in the quantity of weapons per grave do occur. At Alton, for example, the likelihood of being buried with a weapon is exceptionally high and much greater than at the other early Anglo-Saxon cemeteries (Figure 8.39). At Worthy Park, Berinsfield and Abingdon the quantities are comparable, while Portway is slightly lower. As Figure 8.42 shows, almost all of the males at Alton that are buried with grave goods have a weapon included in their burial assemblages. At the site of Portway, the quantity of weapons is much smaller. The proportions at Berinsfield, Abingdon and Worthy Park are, however, almost identical. Figures 8.40-8.44 examine the age and sex distribution of weapon burials at each site. In order that these may be comparable, the charts have been expressed in terms of the percentage of individuals in each age and sex group buried with grave goods who have a weapon amongst their burial assemblage.

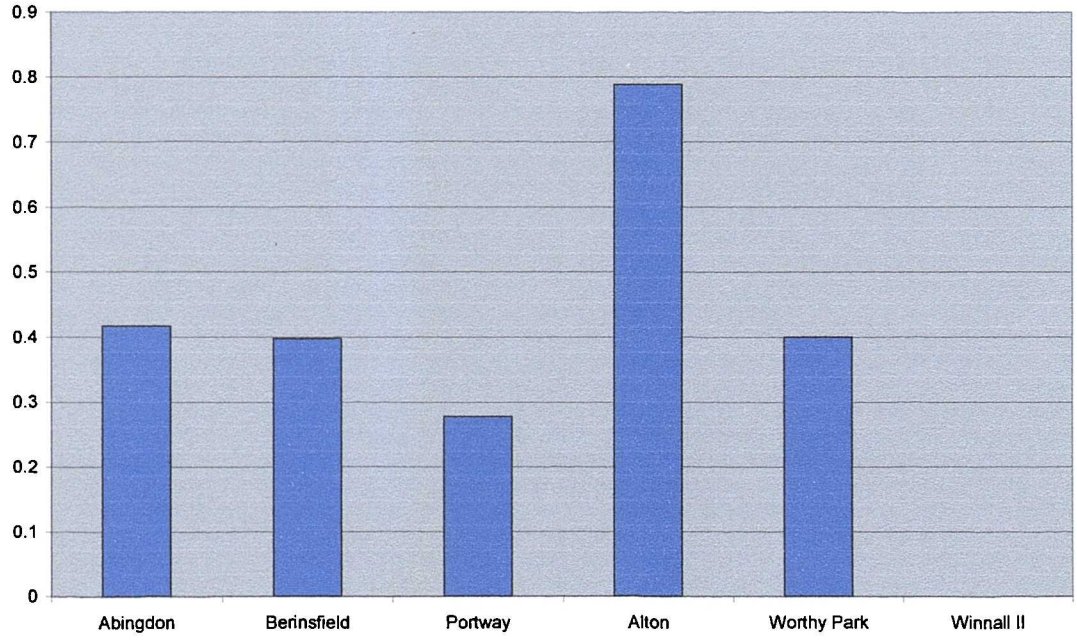


Figure 8.39: An inter-site comparison showing the quantity of weapons at each site divided by the total number of individuals (including females) buried with grave goods.

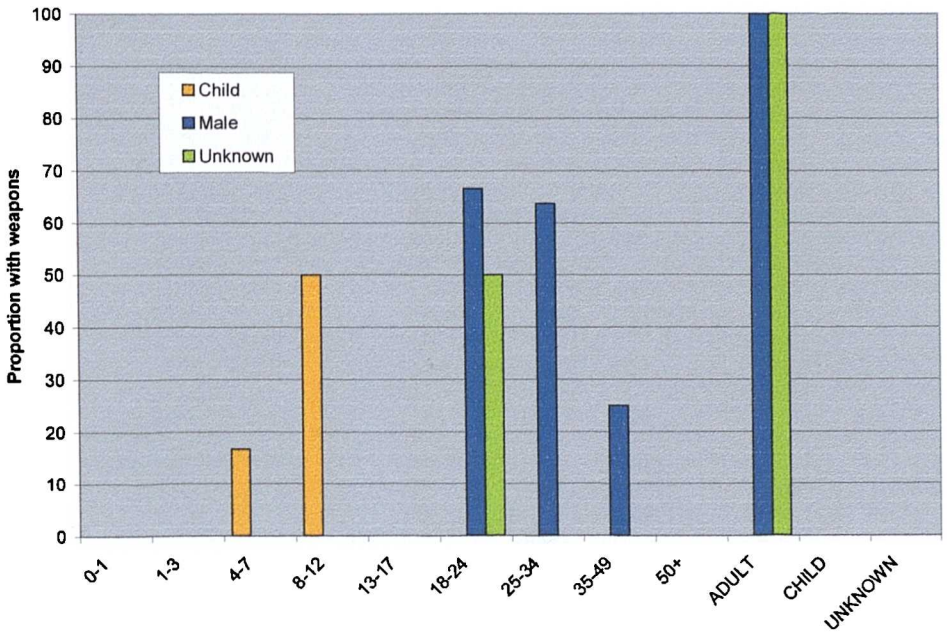


Figure 8.40: The percentage of each age and sex group buried with grave goods to have a weapon in their assemblage at Abingdon.

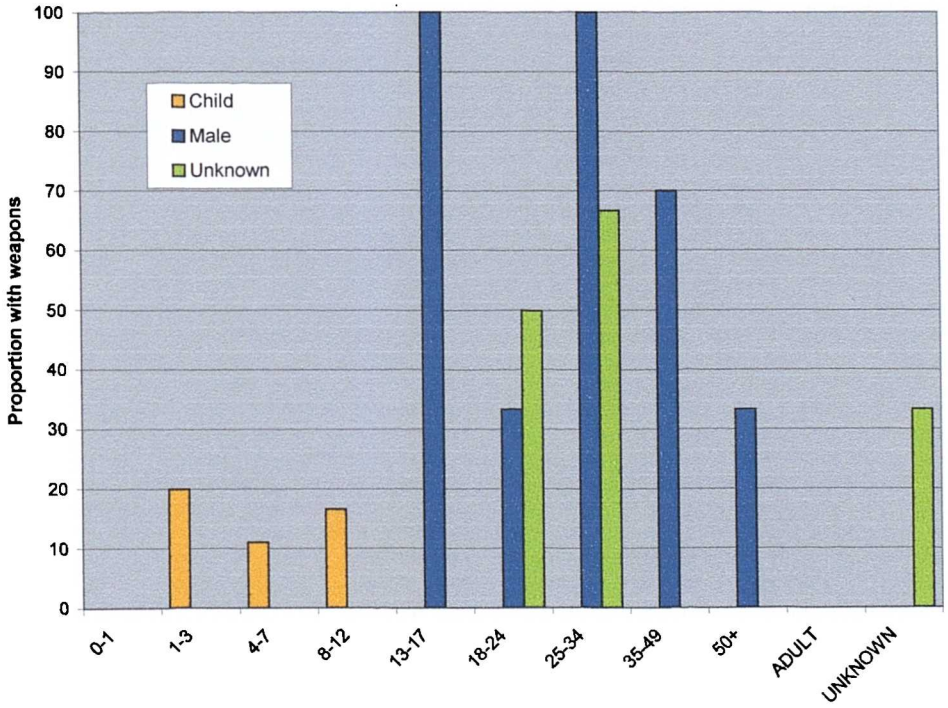


Figure 8.41: The percentage of each age/sex group buried with grave goods to have a weapon in their assemblage at Berinsfield.

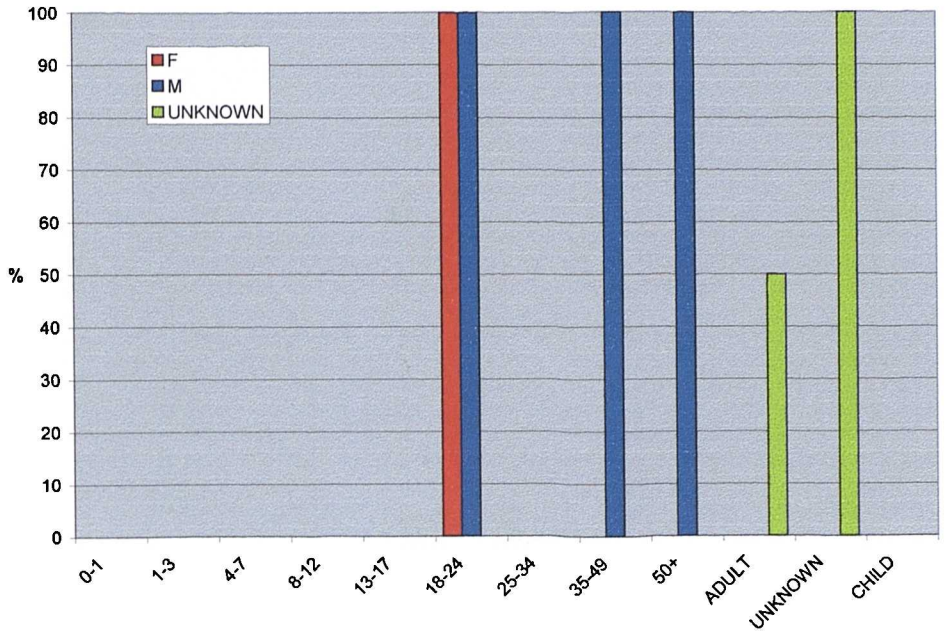


Figure 8.42: The percentage of each age/sex group buried with grave goods to have a weapon in their assemblage at Alton (NB only one female aged 18-24 years was buried with grave goods, which is why this shows as 100%).

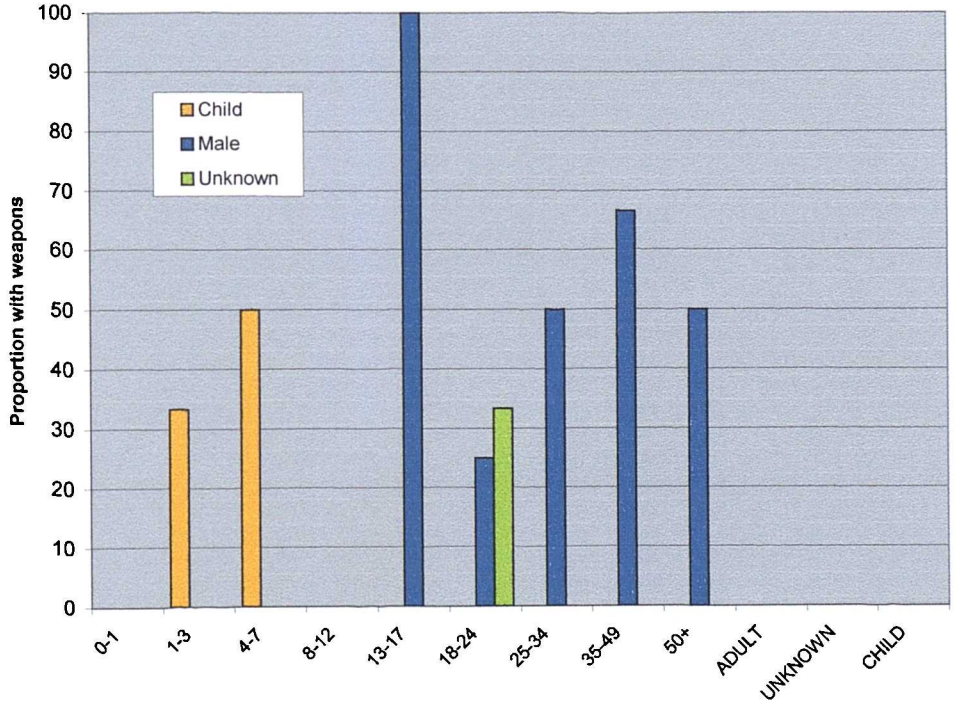


Figure 8.43: The percentage of each age/sex group buried with grave goods to have a weapon in their assemblage at Portway.

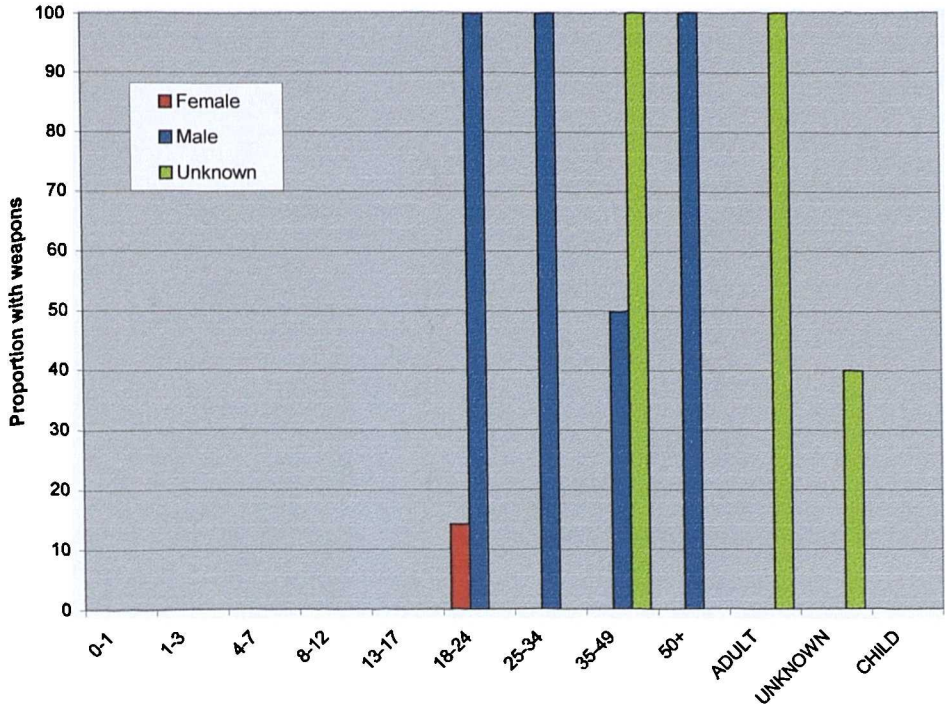


Figure 8.44: The percentage of each age/sex group buried with grave goods to have a weapon in their assemblage at Worthy Park.

A number of patterns have emerged from the above analysis. Only at Abingdon, Berinsfield and Portway are individuals under the age of 18 buried with weapons. The youngest weapon burials were at the sites of Berinsfield and Portway amongst individuals in the 1-3 year age category. Regional differences do appear to exist in terms of the proportions of individuals buried with weapons. For example, at the Oxfordshire sites of Berinsfield and Abingdon, individuals over 50 years are less frequently buried with weapons. At Abingdon and Berinsfield, the proportion of males buried with weapons drops significantly after 34 years. At Portway the proportion remains approximately equal throughout the adult period. By contrast, at Alton and Worthy Park, almost all of those males over the age of 18 years that were buried with goods have a weapon included in their assemblage regardless of age. The Hampshire cemeteries of Alton and Worthy Park have the only female weapon burials. At both Worthy Park and Alton females of 18-24 years were buried with assemblages consisting of an iron spearhead, knife and buckle.

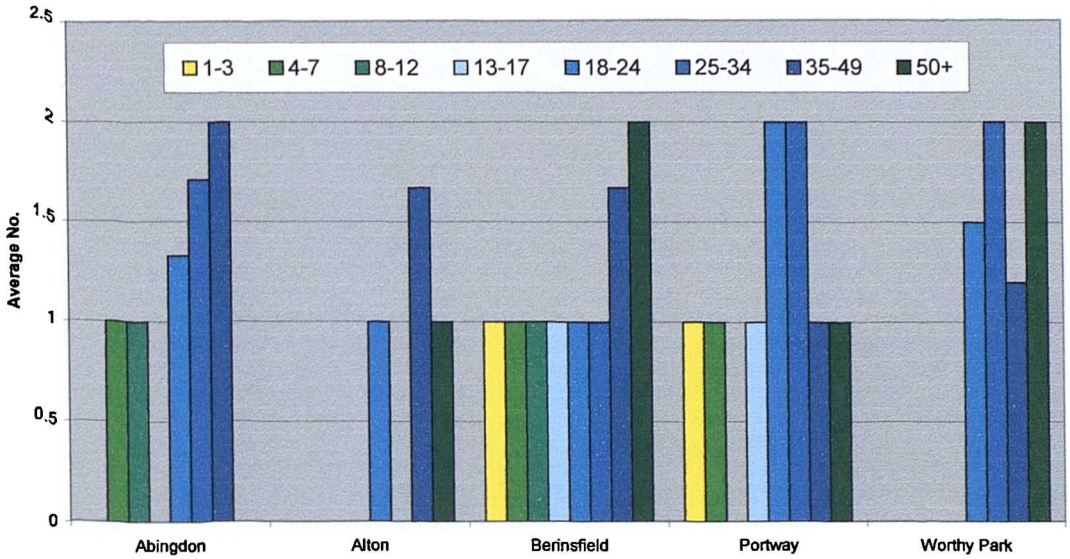


Figure 8.45: The average number of weapons buried with each age group at each site.

From Figure 8.45, it is clear that individuals below the age of 18 years are consistently buried with a single weapon only. At Berinsfield and Abingdon where there is a drop in the number of individuals buried with weapons in the older age groups, it is interesting that the older individuals are actually buried with greater numbers of weapons. The only exception to this is Portway, where individuals between the ages of 25-39 years tend to be buried with more than one weapon.

When we examine the types of weapons buried with each age group an age-related pattern does emerge. While individuals below the age of 13 years were occasionally buried with a spearhead (see above), the youngest burial with a shield was 16 years of age (Skeleton 29, Berinsfield). Spearheads were by far the most common grave good, although at Berinsfield there is also a relatively high proportion of shields. Shields tended not to be buried on their own as a grave good, and were usually accompanied by a spearhead (although at Berinsfield shields were occasionally unaccompanied)

Swords are not a common grave good in the early Anglo-Saxon cemeteries of Oxfordshire and Hampshire (Figure 8.46). A total of seven swords were recovered in all: four from Alton, two from Abingdon, and one from Worthy Park. All of these were buried with males over the age of 18 years, although due to preservation, only three were buried with individuals that could be aged with any precision. No age-related pattern was apparent and the swords from this small sample accompanied individuals spanning the entire 'adult' age range, with the exception of the 50 plus year age group. It has been stated by several authors (e.g. Brush

1993: 166) that a sword was buried with a juvenile at Abingdon. This is based upon the report by Leeds and Harden (1936) which indicates that Skeleton 42 is an 'adolescent'. An examination of the skeletal remains indicated that this individual was aged at between 18-24 years of age and, therefore, the original interpretation is misleading.

Swords were almost always accompanied by other weapons, with the one exception of a burial at Abingdon. At Alton the full set of weapons including a sword, shield, and spearhead more frequently accompanied the deceased. It has been suggested by Hawkes (1973: 186-7) that in weapon burials, when the full sword, spear, shield set was buried it represented the highest 'rank' of weapon burial. While the placement of swords and shields appears to have been dependent upon age and sex (i.e. only with males over the age of 16 years), spearheads were buried with almost all age groups and both sexes, albeit only with two females.

Arrowheads have not formed part of the above discussion; only one was recovered from the sample and this accompanied an individual with a mean age of 13 years and a female gendered burial (e.g. pair of brooches). Härke (1992: 156) also found that these tend to be confined to individuals below the age of 14 years, as did Stoodley (1999a: 108).

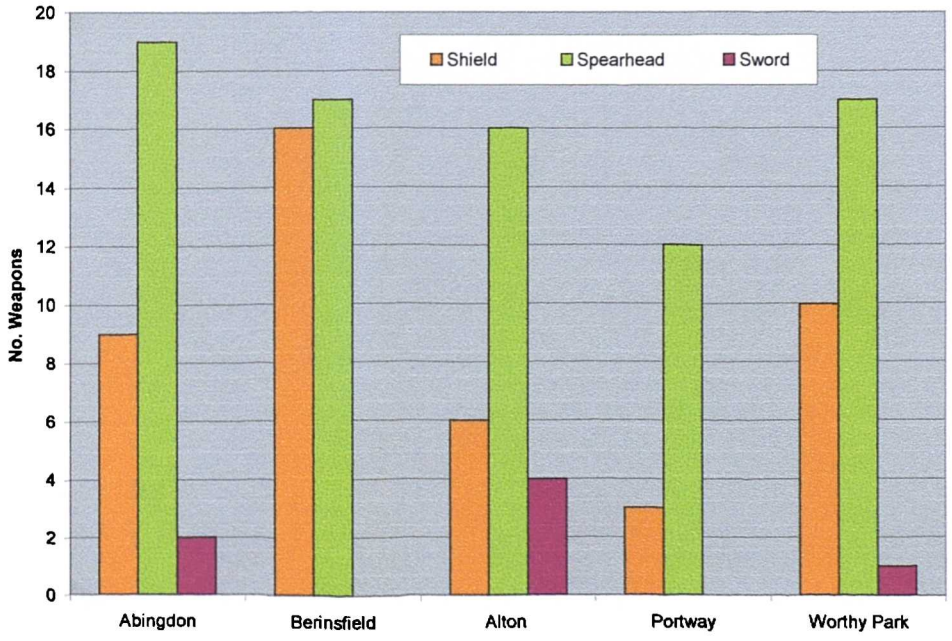


Figure 8.46. Types of weapons at each site.

In terms of the placement of the weapons within the grave, the vast majority were placed at the top of the grave near the head (73%). At Abingdon and Worthy Park there was a distinct bias towards the top left of the grave while at the other sites there was a fairly even distribution between left and right sides. No age related distinction in the placement of weapons was apparent.

In terms of the location of weapons in relation to the body, virtually all spearheads had been placed next to the skull or shoulder. One spearhead had been placed on the chest of an individual at Berinsfield (Skeleton 141/1), and one beside the legs at Portway. At Abingdon and Berinsfield the spearheads were more often placed at the right of the grave, whereas at Portway, Alton and Worthy Park there is a slight bias towards the left side. No age related patterning in the position of the spearheads is apparent.

The vast majority of shields were placed over the centre of the body, on the torso. A few were placed over the lower legs, arms, or head. Slight differences in placement were apparent between sites. For example, at Worthy Park, a third of shields had been placed over the head (more than for all of the other cemeteries put together) and at Portway shields were placed only over the arms (both right and left). The majority of the swords were placed towards the left-hand side or centre of the body, only one was placed at the right. Again no age-related pattern in the position of the swords was noted, although the sample size was too small for any meaningful correlations to be made.

8.7 Body Position

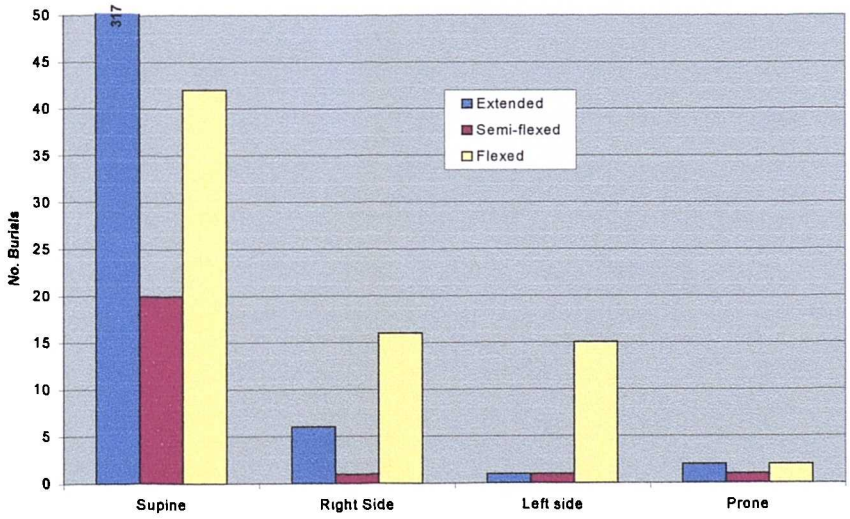


Figure 8.47: Position of burials from early Anglo-Saxon cemeteries.

The vast majority of burials from early Anglo-Saxon cemeteries are extended and supine and in this respect, body position is similar to that observed at late Roman cemeteries (Figure 8.47). Unlike the Romano-British cemeteries, however, there are no decapitated individuals from the early Anglo-Saxon sites in this sample. Decapitated burials are known from Anglo-Saxon England, but they tend to be of mid-late Anglo-Saxon date (Reynolds 1999; Harman *et al.* 1981).

8.7.1 Prone

Only five prone burials were excavated: two extended, two flexed, and one semi-flexed. The two extended prone burials were both females aged 18-24 years (Abingdon 29, Worthy Park 78), the two flexed prone burials included a probable female aged 13-17 years (Abingdon 1), and an immature individual aged 8-12 years was buried with a female gendered assemblage (Abingdon 51). One individual was buried semi-flexed and prone (Worthy Park 43). No individuals over the age of 35 years were buried prone. Two of these burials were from Worthy Park and three from Abingdon; none of the other sites had prone burials. Only two of these individuals (Abingdon 29 and 51) were buried with grave goods.

8.7.2 Flexed Burials

A greater number of individuals at Anglo-Saxon cemeteries are buried in a flexed or semi-flexed position, when compared to late Roman cemeteries. Females are more often buried flexed than males, and a higher proportion of individuals under 18 years are buried flexed than the older age categories. The proportion of flexed burials amongst the infants is probably much higher still, however, the limbs of these individuals tend not to preserve well and the position of many of the infants is unknown. The flexed burials may be supine, or placed on their left or right sides. In her analysis of Bronze Age burials in Hungary, Sofaer Derevenski (2000) found a sharp age/sex delineation in the side that the individuals were buried on. Also at the early Anglo-Saxon cemetery of Edix Hill, Barrington it was found that those burials flexed to the left were predominantly female and all those to the right were male. Furthermore, immature burials also corresponded to these adult patterns; those buried with a spear, for example, were flexed to the right side, consistent with the male positioning (Malim and Hines 1998: 40). No such age or sex related pattern in the side of the flexed burials is evident in this sample.

When comparisons are made between sites, Portway has a significantly higher proportion of flexed burials than the other sites, while Winnall II and Worthy Park have very few (Figure 8.48). With respect to age and sex, both sexes in all age categories were buried flexed (Figure

8.49). Few discernible patterns can be seen. Very few males over the age of 50 years were buried flexed, but other than this, no age or sex related patterns can be seen. Equal numbers of individuals were flexed left and right (15 left and 16 right). Males were much less likely to be flexed right, but males and females of all sex and ages were flexed left.

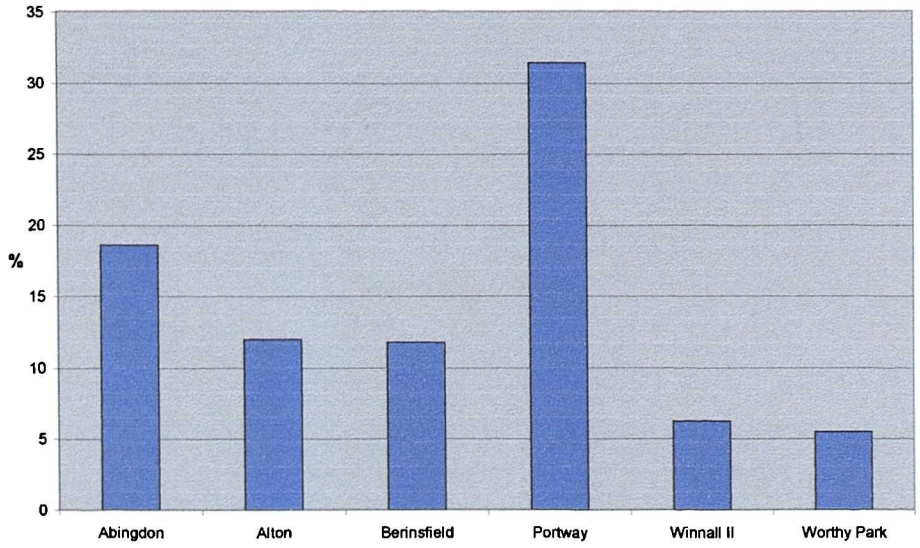


Figure 8.48: Proportion of flexed burials at each of the sites.

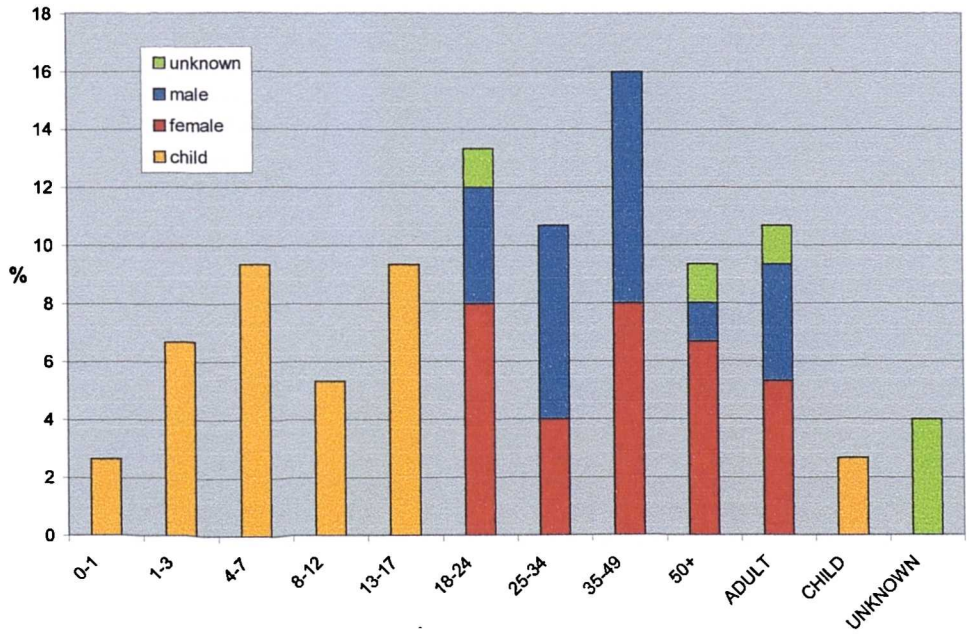


Figure 8.49: The proportion of flexed burials in age and sex category.

8.8 Conclusion

The symbolic link between grave goods and the social identity of the deceased in life has long been noted in studies of early Anglo-Saxon cemeteries (Brush 1993: 24-5). In previous studies, however, the rigid adult-child, male-female distinction has obscured the readings of the data. For example, Huggett (1992) in his study of Abingdon states that there did not appear to be a strong relationship between age and artefacts deposition or body position (Huggett 1992: 15). The evidence from this study indicates a number of age-related distinctions at this site. Pader's (1980, 1982) research has also tended to interpret artefact associations either side of the adult-child divide. Although Stoodley's (1999a) study of age related deposition of artefact elided the traditional adult-child divide, his approach was broad ranging and included cemeteries where the appropriate age divisions could not possibly be recognised due to variability in age range and a lack of standardisation in osteological methodology.

The above analysis has focused on the placement of different types of goods with different age and sex groups. Inter- and intra-site comparisons have been made and a number of patterns elucidated in terms of both grave good deposition and body position. Variation in the types, quantity and material of grave goods occurs throughout the life course and according to the gender of the individual. Many of these patterns had not been noted in previous studies due to the nature of these analyses. Although there are clearly differences in the actual types of goods between early Anglo-Saxon and late Roman cemeteries, there are some similarities with respect to the age and gender related inclusions of grave goods. Comparison of early Anglo-Saxon sites between regions also indicates a degree of localised differences in burial practice. The findings above will be summarised in detail and the implications for age and gender identity discussed and compared to late Roman evidence in the following chapter.

Chapter 9

❖

Age and Social Identity in Fourth to Sixth Century England: Summary and Discussion

9.1 Introduction

Only since the 1980s has age received any kind of analysis for its significance relating to burial treatment (Pader 1980, 1982; Richards 1987; Brush 1993; Crawford 1991a, b, 1999; Halsall 1995, 1996; Lucy 1994, 1998; Stoodley 1998, 1999a, 2000; Scott 1991, 1992, 1999). The majority of these studies, however, continued to adopt a very rigid modern Western view of the adult/child, male/female distinction. Age and sex data retrieved from the skeleton was still marginalised within such perspectives because they were treated as fixed biological variables. As Sofaer Derevenski has argued, such an approach leads to 'predetermined outcomes of investigation' (Sofaer Derevenski 1997c: 489) because interpretations of cemetery evidence are being bound by modern Western norms. As a result, more subtle patterns in burial practice become obscured, and much of the symbolism overlooked or mis-interpreted because the social organisation and identity of past populations is liable to fall outside of modern age and gender parameters.

Rather than projecting contemporary chronologies onto the past, this research has attempted to consider the past interpretations of these life stages, and the social attributes and responsibilities ascribed to them. By doing so, this study has explored how the changing ageing body was understood culturally within late Romano-British and early Anglo-Saxon society. Cemeteries of this period were chosen for examination in order to further explore the extent and nature of social continuity in age and gender organisation across the Roman/Anglo-Saxon divide. This chapter summarises and discusses the results of the previous analysis and compares findings to other studies of social identity during this period.

9.2 Gendered Grave Goods

Items of material culture are traditionally perceived by archaeologists as gendered through their repeated and exclusive association with individuals of a particular biological sex. Grave goods, therefore, become 'masculine', feminine' or, if found with both sexes, 'gender neutral'. Few studies have examined the gendering of grave provisions from the Romano-British period in any depth, although the sex specific deposition of particular artefacts has been noted (Allason-Jones 1995). Items that are exclusively buried with females in Romano-British cemeteries include bracelets, necklaces or spindle-whorls. Items such as combs and finger rings tend to be confined to the burial assemblages of females, however, occasionally they are also recovered from the graves of skeletally sexed males. In contrast to 'feminine' grave goods, very few objects in Romano-British graves can be identified as being specifically 'masculine' (in that they are restricted to male graves only). Items buried with males at Romano-British cemeteries tend to be those recovered from the graves of both sexes, for example, vessels and coins. The exception to this are belt sets, knives and cross-bow brooches. Although these items have been recovered from several late Roman cemeteries they are found nowhere else in Britain in the same concentration as at Lankhills (see below). The majority of graves dating to the late Roman period may be considered 'gender neutral', either because they contain no grave goods, or they consist of those items associated with both biologically sexed males and females. 'Gender neutral' grave goods for the late Roman period include items such as vessels and coins.

In contrast to the late Roman period, numerous studies of early Anglo-Saxon period cemeteries have focused on the gender symbolism of associated artefacts (e.g. Brush 1993; Lucy 1998; Stoodley 1999a). Distinctive sex specific burial assemblages have been identified and the graves of the 'typical' female and male burial assemblages are illustrated in Figure 9.1. The female burial 'kit' generally comprises of brooches (usually two worn at each shoulder), festoons of beads, dress fasteners, chatelaines and weaving tools. The male burial 'kit' has a comparatively restricted repertoire and consists predominantly of weapons such as spears and shields (Brush 1993; Stoodley 1999a: 78). Numerous items are also recovered from the graves of both sexes and these 'gender neutral' goods include objects such as vessels, knives, and buckles.

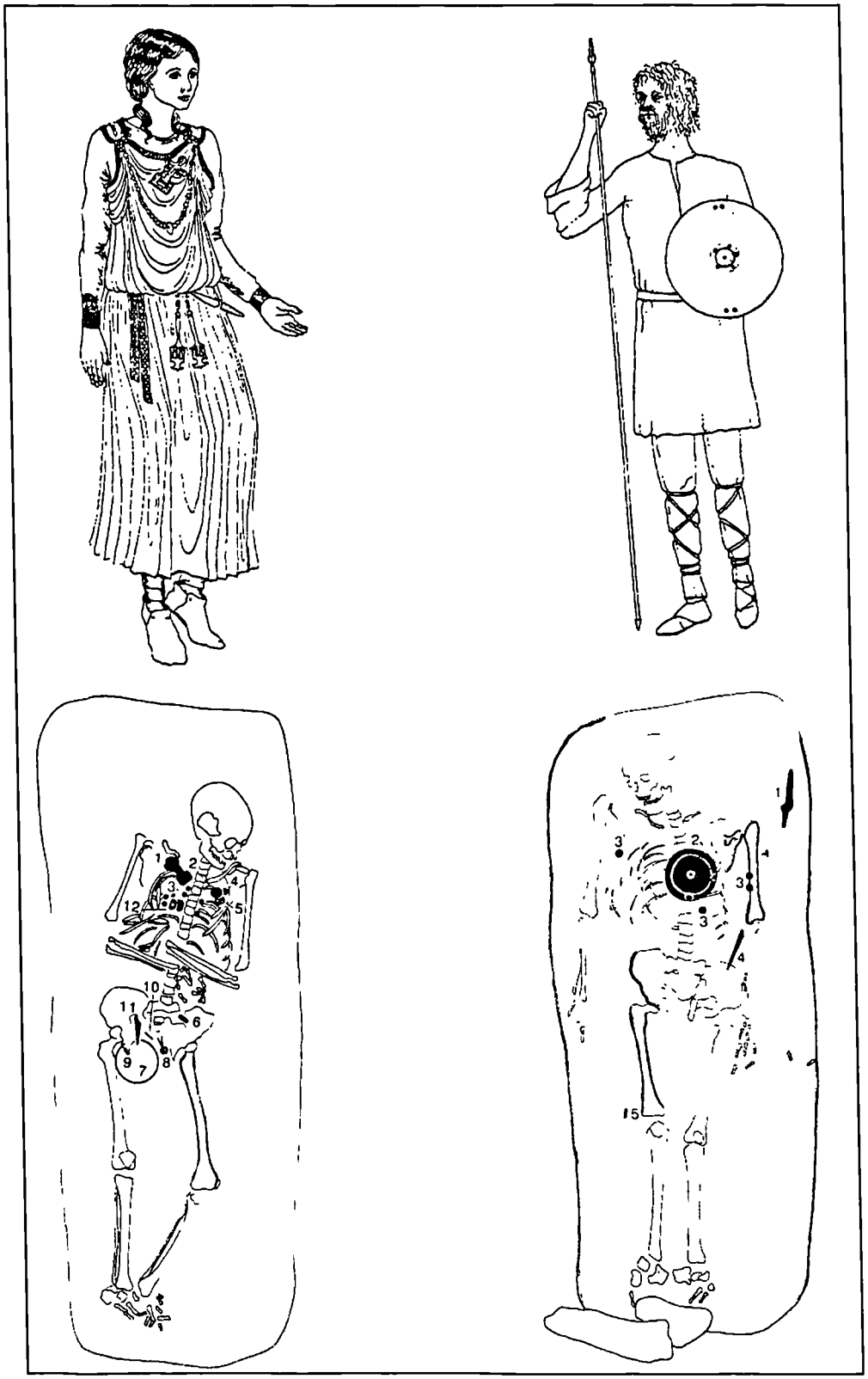


Figure 9.1: 'Typical' male and female burial assemblages recovered from early Anglo-Saxon cemeteries and reconstructions of their dress in life (the female reconstruction is after Owen-Crocker 1986, Figure 30, the male reconstruction is from Brown 1978: 24).

Early Anglo-Saxon assemblages are frequently clearly delineated by biological sex and this factor has certainly contributed to preconceptions concerning gender roles; often perceived as 'warriors' and 'housewives' (Lucy 1998; Stoodley 1999a). Recent arguments have deconstructed these crudely applied gender roles by questioning the functionality of the grave goods. For example, Brush (1993) discusses the fact that the brooches worn in burial were not necessary to fasten female clothing any more than the male attire. Furthermore, some of the brooches excavated would have been non-functional in that they were too heavy for the cloth they were attached to. Härke (1990) also argues that the lack of correlation between weapon burials and skeletal evidence of battle trauma (although this does not preclude the individual having engaged in battle) indicates a less functional role. These and other authors have suggested that grave good assemblages serve more as a symbolic than literal representation of a binary gendered social system. Furthermore, these objects served to reinforce and construct particular cultural interpretations of the biological differences between males and females (Stoodley 1999a: 74).

It is clear from this study that burials exhibiting a 'feminine' gender are more common than 'masculine' burials at both late Roman and early Anglo-Saxon cemeteries. Within cemeteries of both periods, more artefact types participate in the construction of a feminine than a masculine identity. Amongst the Romano-British cemeteries, comparatively few individuals have gender expressed through grave goods, or are distinguished through other cemetery variables. At the cemeteries of Queensford Farm and Cassington, for example, burial practice in terms of the archaeological remains had not been polarised according to the gender of the deceased. At the cemetery of Lankhills gender clearly did form part of the burial symbolism of a proportion of individuals, but a masculine identity was rarely symbolised.

At cemeteries of both periods, the 'feminine' gender was expressed through items of personal adornment; however, there is a difference in terms of the placement of these items. Within the late Roman cemeteries, items of jewellery were frequently unworn and were instead heaped beside the body. In contrast, at early Anglo-Saxon cemeteries, almost all items of personal adornment were worn. The visual construction of 'femininity' within the early Anglo-Saxon burial context was concerned much more with the emphasis of particular aspects of the body (Brush 1993: 152; Stoodley 1999a: 78-79).

By contrast, the construction of 'masculinity' within cemeteries of both periods is symbolised by martial aspects, although there is a much less overt and frequent display during the late Roman period. At Lankhills the 'masculine' burials with belt sets and cross-bow brooches are also often accompanied by a knife, and these assemblages are believed to have military connotations (see below). In contrast to the grave goods buried with Romano-British females and early Anglo-Saxon males, these items are often worn about the body. In early Anglo-Saxon burials weapons are much more frequent, but unlike the late Roman burials, these tend to be placed around, rather than on, the body. Brush (1993: 152) argues that because these played no part in the visual presentation of the body they should not be interpreted as primary symbols of the masculinity of the deceased. Instead they may have signified affiliation with a social group whose membership was normally limited to, but did not completely encompass, individuals of masculine gender. At cemeteries of both periods not only are there distinctions in terms of the types of grave goods included, but also in terms of the placement of these items in relation to the deceased. Although broadly similar goods contribute to the construction of 'femininity' and 'masculinity' in cemeteries, there is a contrast between periods in terms of the placement of masculine and feminine goods in relation to the body.

Previous studies of the early Anglo-Saxon period have also demonstrated that burials exhibiting a feminine gender are far more common than masculine burials and that more artefact types participate in the construction of the feminine identity (e.g. Pader 1982; Brush 1993; Stoodley 1999a: 78). One exception in this study is the cemetery of Worthy Park where masculine burials slightly outnumber feminine burials. It has also been argued that there is a shift over time in the signification of masculinity in burial. These were more common in the early fifth century than later, while by contrast feminine combinations peak in popularity during the first half of the sixth century (Stoodley 1999a: 81). Stoodley (1999a) also associates the greater number of weapon burials in the early fifth century to Härke's (1992) assertions that these represented Germanic male migrants/invaders expressing their ethnic identity through the weapon burial rite.

As mentioned previously a substantial proportion of graves, particularly from the late Roman period, are 'gender neutral', in that they have no features that are specifically associated with one sex. These burials often lack any detailed examination, and emphasis is usually given to the distinctive gender expressions relayed by the other grave good assemblages (e.g. Stoodley 1999b: 100). Recent studies of the early Anglo-Saxon period have begun to stress the significance of

these 'gender neutral' burials both in terms of their frequency and implications for the binary gender system that has been envisaged for this period (e.g. Lucy 1998; Knüsel and Ripley 2000: 178). While these burials tend to be neglected because of their lack of grave goods, their high frequency clearly demands further examination and this will be explored below.

9.3 Skeletal Sexing and 'Anomalous' Burials

"*...we have no obvious anomalies such as Amazonian "ladies" with spears or effeminate "gentlemen" with strings of beads to mar the picture of this Anglo-Saxon community.*" (Hawkes and Wells 1983: 31).

The most controversial burials, particularly during the early Anglo-Saxon period, are those of skeletally sexed males and females buried with goods normally associated with the opposite sex. These burials are not common and indeed none were found to be present from late Roman burial contexts. It has been common practice to dismiss the presence of such burials as errors in osteological sexing (e.g. Hirst 1985). In those instances where the skeletal sex estimated is only 'probable' this may indeed be the case. However, given that the accuracy of skeletal sexing is high with good preservation (see Chapter 6), one must allow for the possibility that such burials are a reality of early Anglo-Saxon burial practice.

In this study, all skeletons were sexed independently of previous unpublished, or published osteological reports and without prior knowledge of any grave good associations. This material was, however, consulted after analysis and any 'discrepancies' between previous osteological reports or grave goods resulted in a re-examination of the skeletal material by the author. An assessment of the possibility of error in the sex estimation was then made. If upon re-examination some of the skeletal characteristics were in fact ambiguous, the sex may have been modified to 'probable' or 'unknown' sex accordingly. Although this situation did not arise often, in the majority of instances where re-examination was necessary, the sex estimation determined during the original examination was upheld. Although skeletal sexing is by no means infallible, there was a desire in this analysis not to dismiss those burials that did 'contradict' grave good analyses. This practice has happened all too frequently in the past. Instead, archaeologists should be more ready to allow for the possibility of such burials and to interpret the evidence accordingly. The analysis conducted in this study revealed several instances of individuals being

buried with grave goods associated with the opposite sex and these will be discussed individually below.

9.3.1 Males with 'Female' Goods

Portway, Skeleton 9: Sex and age were estimated as male? (unknown age) in this study. This individual was also sexed as a male in the original report by two independent examinations (Cook and Dacre 1985: 56). The skeleton was buried with two annular brooches and a necklace of 65 beads. Features that distinguish it from a typical female assemblage include a large flint nodule placed on the chest, and carbonised grain recovered from the pelvic region. This burial was also in close proximity to a possible funerary structure (Cook and Dacre 1985).

Portway, Skeleton 19: Sex and age were estimated as 'male?' (18-24 years) in this study. This skeleton was sexed as a 'probable male' by one osteologist and a probable female by another, although it was not made clear whether the latter was based upon skeletal evidence alone. The sex of this individual was changed to 'female' based on grave good associations in the final report (Cook and Dacre 1985: 68, 71). The individual was buried with two small-long brooches worn at the shoulder, 22 beads and an 'ornament' beside the left abdominal area (this was possibly part of a bracelet or necklace).

Alton, Skeleton 12: Sex and age were estimated as 'male' (adult, probably 50+) in this study. The original bone report also sexed this individual as male, although it was changed to female in the published report due to grave good associations. Saucer brooches were worn at each shoulder, and a few small beads were suspended from the left brooch. A row of five amber beads believed to have been attached to a belt and a crystal bead hanging off it as a toggle were present (Evison 1988: 18). Three chatelaine items, a knife and a pin were also present. As discussed previously, the sexing of older individuals is often ambiguous, however, the skeletal preservation of this individual was relatively good and the burial should be treated as a male with female items of personal adornment.

Abingdon, Skeleton 18: Sex and age estimated as 'male?' (35-49 years) in this study. No osteological report had previously been conducted on the Abingdon skeletal material. This

individual was buried with two square-headed brooches and a knife. Square-headed brooches are not a common brooch type.

Berinsfield, Skeleton 104: Sex and age estimated as 'male?' (18-24 years) in this study. This individual had also been sexed as 'male?' in the original osteological report, although this was contested as a probable error in the discussion (Boyle and Dodd 1995: 112). This burial had two small-long brooches worn at each shoulder, a necklace of thirty glass and thirty amber beads, a knife and belt fittings and a pottery vessel beside the left leg.

Berinsfield, Skeleton 102ii: Sex and age were estimated as 'unknown' (18-24 years) in this study (Figure 9.2). This burial has been included within this section, however, because some skeletal characteristics are sexually ambiguous. Both the pelvis and skull are preserved but are incomplete and fragmented, making sexing quite difficult. The Berinsfield skeletal material is part of a teaching collection at the Department of Archaeology, University of Sheffield and has been subject to considerable handling. Despite every precaution, the damaging effect of repeated handling of human bone has been well established (e.g. Caffell 2001). It is likely that much of the fragmentation of the bone has occurred during the past ten to fifteen years. The original unpublished skeletal report that would have been based on examination prior to much of the current damage sexed this individual as 'male?', while in the published report it is classed as female. In the skeleton's present condition it is clear that a number of features do appear masculine, while others are much more ambiguous, making sex difficult to assign. This is a situation made more difficult by the young adult age of the individual (see chapter 6).

Skeleton 102ii is an unusual burial in that it contains three brooches, including a great square-headed brooch, and the largest necklace in the cemetery, consisting of as many as 114 beads (Figure 9.2). The only other individuals buried with three brooches had very few beads present. It is suggested here that this burial may be that of a young male. The grave goods are unusual and make the assignation of a female sex on the basis of grave goods no less exceptional.



Figure 9.2: Skeleton 102 from Berinsfield (after Boyle *et al.* 1995: 86).

9.3.2 Females with 'male' goods

Alton, skeleton 34: Sex and age estimated as 'female' (18-24 years) in this study. This individual was sexed as a male in the published skeletal report. The burial contained a spearhead, knife and buckle.

Worthy Park, skeleton 71: Sex and age estimated as 'female' (18-24 years) in this study. This individual was sexed as male in the unpublished report (Hawkes and Grainger unpublished). The burial contained a spearhead, knife and buckle.

9.3.3. Cross-Gender Burials: Discussion

From the above it is clear that the burial of male skeletons with 'feminine' goods is a more common occurrence than vice versa, a factor borne out by previous studies (e.g. Huggett 1992; Stoodley 1999a). Only two individuals with weapons were sexed as females in this analysis, both were of the same age and had identical burial assemblages. It is of course possible that these

individuals were incorrectly sexed, however, one must allow the possibility of their existence. Studies of early Anglo-Saxon cemeteries elsewhere in the country have also revealed female weapon burials. For example, at Dover B, Kent, four women were interred with weapons (Evison 1987) and at West Heslerton a number of weapon burials, originally thought to be 'gracile men', were (on the basis of DNA evidence) found to be female (Stoodley 1999a). Stoodley (1999a) also found, however, that DNA analysis proved that some of the burials originally thought to be female weapon burials were in fact males. Brush (1993: 156) has suggested that female weapon burials need not necessarily imply a male sexuality, but instead indicate that the female held a role of power, or a status in society more typically ascribed to males. Brush (*ibid.*) contrasts this to males buried with jewellery by making the important distinction that the items of jewellery are worn about the body, thus effecting a stronger visual transformation of the body.

Those male burials with 'female' grave goods are also particularly interesting because their burial assemblages, while described as 'feminine', often have subtle differences that distinguish them from typical assemblages of females. This becomes particularly apparent when one examines the assemblages in relation to that of age as well as gender. For example, square-headed brooches are not a common find amongst 18-24 year old females, nor are items such as the large flint nodule placed upon the chest of one 'cross-gender' grave. The majority of these 'cross-gender' burials were of individuals aged between 18-24 years. This is not an age with a high proportion of 'gender neutral' burials, instead this tends to be an age when masculinity or femininity in grave goods is strongly expressed. The significance of these burials must not only be examined in terms of gender ambiguity but must also be related to age and status and this will be explored further below.

9.4 Gender and Age

Previous studies of late Roman and early Anglo-Saxon funerary archaeology have focused on the gender symbolism of grave good associations. Comparatively few studies have examined the way that grave goods also symbolise different age groupings and the interaction of age and gender throughout the life course. When one brings age into the equation, looking beyond the child/adult dichotomy that characterises the majority of studies, a much clearer pattern emerges regarding the construction of identity during the late Roman to early Anglo-Saxon period. Some of the findings from the previous two chapters will be summarised here and their implications for social identity compared and discussed.

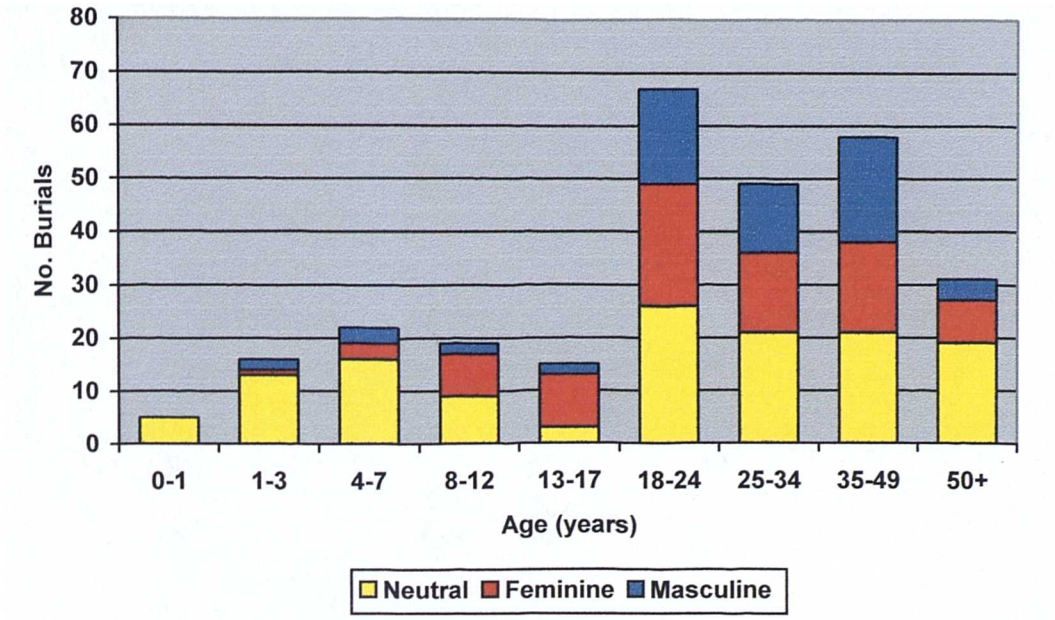


Figure 9.3: Gendered burials throughout the life course at early Anglo-Saxon cemeteries. 'Masculine' assemblages must include weapons, 'feminine' assemblages must have a minimum of either two brooches, or ten or more beads. Burials containing assemblages other than these are 'gender neutral'.

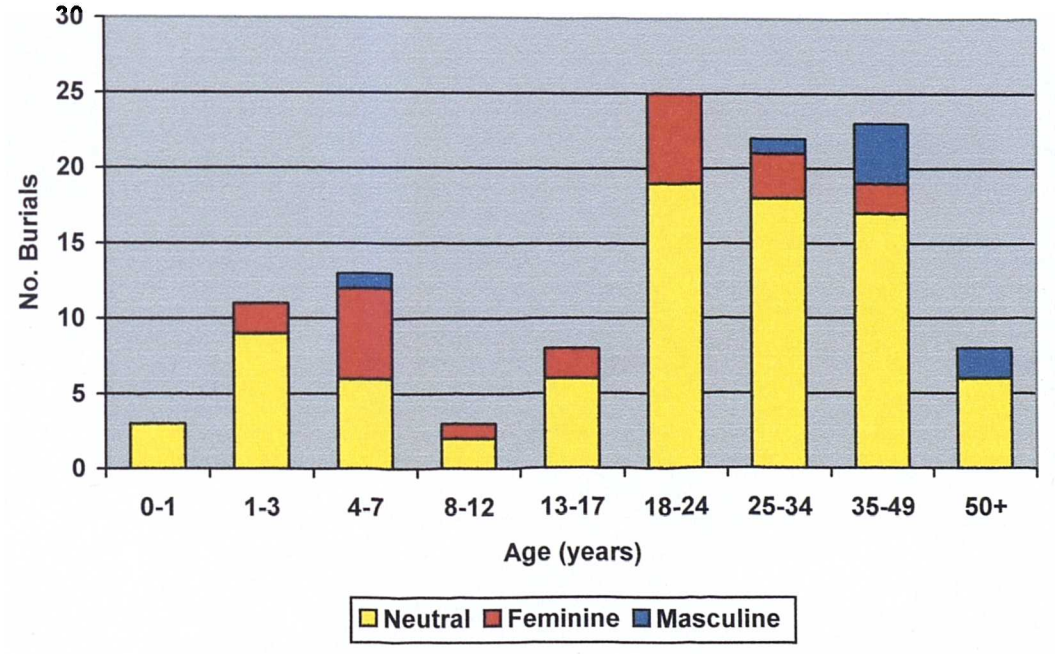


Figure 9.4: Gendered burials throughout the life course at late Roman cemeteries. 'Masculine' assemblages must include items such as belt sets, knives, cross-bow brooches, 'feminine' assemblages must have bracelets or necklaces.

9.4.1 Infancy and Childhood

When examining the treatment of infants and children in death we are of course investigating adult behaviour; not only attitudes and perceptions of the adults towards the infant, but how they and society in turn viewed their role as parent or guardian (Pollock 1983). This relationship was likely to have been subject to the influences of social, economic, cultural and religious variation. The analysis and identification of age/sex related patterns in grave good deposition does, however, provide an insight into funerary conventions that are likely to relate in some way to broader social constructions within the burying society. When examining the grave goods buried with the immature skeletons it has become apparent in the previous chapters that the homogeneity implied by the child/adult grouping does not actually exist. While at both the late Roman and early Anglo-Saxon cemeteries approximately equal proportions of individuals in all of the immature age categories were buried with grave goods, certain types of goods are more specific to particular age groupings and quantities fluctuate in accordance with age.

A number of studies over the last decade have examined the burial treatment of infants in Roman Britain (e.g. Scott 1991, 1992, 1999; Mays 1993; Struck 1993), although few have focused on infancy in the early Anglo-Saxon period (exceptions include Crawford 1991a, b, 1999). As discussed previously, this is a product of the relative absence of infant burials from early Anglo-Saxon cemeteries and settlements. Infants in general tended to be buried with very few grave goods. At the early Anglo-Saxon cemeteries these usually consisted of only a single vessel or knife, and at the late Roman cemeteries goods were usually restricted to coins. With respect to the early Anglo-Saxon cemeteries, only at those located near Dorchester-on-Thames were infants buried with any grave goods at all, possibly indicating geographical differences in burial practice.

Infants were not buried with gender specific assemblages at either late Roman or early Anglo-Saxon cemeteries (Figures 9.3 and 9.4). There is, therefore, a similarity between late Roman and early Anglo-Saxon cemeteries in terms of the restricted quantity and 'gender neutral' type of the grave goods interred with infants. When one examines the ages of these infants in more detail it is evident, however, that infants below the age of six months were not buried with grave goods at late Roman cemeteries, while even neonatal infants (although rarely present) were at the Anglo-Saxon cemeteries. It was observed demographically that infants below the age of six months

tended to be accorded different burial treatment in the fourth century, and this would appear to extend to those accorded burial within the cemeteries. It is difficult to interpret the grave goods buried with infants in terms of their social identity in any meaningful way when their very presence within the cemeteries already makes them in some way exceptional.

As discussed previously, the perceptions of infancy during the Romano-British period differed from modern Western views. In Roman Britain there appears to have been a lack of distinction between miscarried foetuses, stillbirths, and infant deaths up to approximately six months of age. The majority of these infants were buried within settlements and villas rather than formal cemeteries. During the early Anglo-Saxon period the exclusion of infants from cemeteries, and indeed any form of archaeologically visible burial, becomes much more apparent (see Chapter 6). The lack of distinction between these individuals at Romano-British sites and their rare appearance at most early Anglo-Saxon cemeteries could be interpreted in terms of their death not creating much 'social stress'.

The association between infant death and low status is frequently alluded to in archaeology, and is usually associated with ideas concerning a lack of emotional attachment to infants in response to high infant mortality. Numerous cross-cultural studies indicate that infants are often disposed of in a manner that infers a lack of social importance. For example, in Northern Ireland Prior (1989) has observed how stillborn infants were buried in public plots at the edges of cemeteries that had previously been allocated to the poor. It is argued that this low status is because the infant's death does not affect the larger society, and does not, therefore, require its ritual involvement. However, such practices are far from universal and as Golden argues:

"It is almost a cliché to argue that rites for children are less elaborate, the pollution caused by their death less powerful simply because they played a less important social role; they have not fully entered into the community, and so can make the transition out of it more easily" (Golden 1990: 85).

The age at which an individual is considered to have attained personhood varies enormously across populations (La Fontaine 1986; Cecil 1996; Sobo 1996: 40). It has been observed ethnographically that the bestowing of personhood is frequently delayed, particularly in those societies with high infant mortality. In other countries infants may be considered ghost children

or 'born to die' until they survive a particular age. For example, amongst the Nuer, personhood is not attained until six years of age. Death prior to this results in burial by older females within the community and with little associated sacrifice (Evans Pritchard 1956: 146). The bestowing of personhood may also be associated with social and physical milestones, such as whether the child was weaned or unweaned (e.g. as amongst the Lodagaa) (Goody 1962).

There is some literary evidence from Rome alluding to perceptions of infancy that indicates that an infant only attained an individual social identity on the day that it was named (the *lustratio*). This ceremony took place on the eighth day after birth for females and ninth for males (Rawson 1991; Weidemann 1989). Social events such as naming and baptism that are also associated with the conferment of personhood are frequently deciding factors on the placement of the infant burials. Further evidence relating to the Roman period, however, indicates that infants were not perceived to have attained true personhood prior to teething, and possibly walking and talking (Watts 1989; Philpott 1991) at approximately 18 months of age. The relevance of historical evidence relating to Rome for attitudes in Roman Britain is, of course, open to considerable debate.

From the early Anglo-Saxon period there are no contemporary literary references concerning perceptions of infancy. The archaeological evidence would, however, indicate a shift in the treatment of infants between the two periods. This may relate to a change in the age at which an infant attains personhood and is accorded burial rites similar to the rest of the population. The main discernible difference in the treatment of infants between the late Roman and early Anglo-Saxon cemeteries is in terms of their representation. In the later period it would seem that the majority of infants below one year of age received a burial practice that was not archaeologically visible. For example, Molleson (1991) has conjectured that they were disposed of within water. Their absence does not necessarily mean that they were 'low status', but that they were differentiated in terms of their social identity from the rest of the population.

To summarise, the conferment of personhood appears to be much more defined in the late Roman period; after six months of age infants generally received a burial similar to that of adults. During the early Anglo-Saxon period the definition is much less clear. Neonates were rarely buried in the cemeteries, but when they were they were given grave goods as with older children. This would imply some kind of acknowledgment of their personhood. However, those buried within

the cemeteries may have had some exceptional status relating to their circumstances of birth (e.g. high status kin, or events surrounding birth) from which it would be impossible to generalise about the rest of infants.

After the age of one year there is an increase in the number of individuals accorded burial within the early Anglo-Saxon cemeteries and some of the late Roman cemeteries (most notably Queensford Farm). There is a notable increase in both the quantity and variety of grave goods buried at cemeteries of both periods. At the early Anglo-Saxon cemeteries in Hampshire grave goods were not included until after one year of age. At Lankhills there is also quite a sharp rise in the number and types of grave goods interred during the 1-3 year age category. In addition to coins, these graves also included vessels such as beakers and jugs, and goods such as combs and occasional items of jewellery. The first 'gendered' burials are also present during this age in the form of individuals buried with items of jewellery. At early Anglo-Saxon cemeteries there is a similar increase in the quantity and variety of goods and between 1-3 years 'masculine' and 'feminine' assemblages (in the form of a single spearhead or greater quantities of beads) are also present for the first time. It should be noted that these 'gendered' assemblages tend to differ from those buried with older children and adults, with respect to the smaller quantity of gendered items contained.

At the late Roman cemeteries, individuals aged between 4-12 years (but in particular after the age of 8 years) demonstrate a further, more dramatic rise in both the proportion of individuals buried with goods and in the quantity of those goods. There is also an apparent shift towards the inclusion of those grave goods typically differentiated by sex (for example bracelets and necklaces found with females). A 'masculine' identity is, however, expressed only very infrequently during the immature period. At the early Anglo-Saxon cemeteries a similar pattern is observed in that at 4-7 years 'masculine' and 'feminine' assemblages occur slightly more frequently. It is from the age of four years that two brooches are worn and 'feminine' assemblages similar to those of adult females begin to appear. These 'feminine' assemblages increase markedly from 8-12 years and the proportion buried with these assemblages is similar to that observed amongst the older individuals. A similar pattern has been observed in previous studies (e.g. Stoodley 1999a: 110) and Lucy (1998: 45). It is of note, however, that the brooch types buried with individuals below 18 years of age tend to be smaller in size, and the festoons of beads are also not quite as large as with older females.

At cemeteries of both periods there is, therefore, an apparent shift towards the inclusion of gendered grave good assemblages. Prior to the age of 4-12 years 'gender neutral' grave goods predominate. Cemeteries of both periods exhibit similar patterns, and the grave assemblages of those over the age of 4-7 years (but more frequently after the age of 8 years) then become similar to those observed amongst 'adult' males and females. This evidence may suggest that a shift in social status is occurring at around this age threshold, and that this transition coincides with the expression of a more strongly signified gender identity. Literary evidence from Rome indicates that children under the age of seven years were not markedly differentiated in terms of expected behaviour or dress (Franschetti 1997). After seven years, their perceived identity underwent a transition towards one that was more explicitly gendered (Eyben 1993; Fraschetti 1997). Males and females then experienced divergent chronologies in terms of social age transitions. The archaeological evidence would also suggest that a shift in social status is occurring at around this age threshold, and that this transition coincides with the expression of a more strongly signified gender identity.

For the early Anglo-Saxon period Stoodley (1999a: 117) also observes that feminine assemblages start to be used by approximately five years of age and that masculine burials are less commonly expressed amongst younger individuals and only then by the presence of a single spearhead. Pader also noted that the 'male' burial assemblage is present much less frequently than the 'female' assemblages amongst younger burials (Pader 1982). Pader (1982: 130) has interpreted this as symbolising a closer relationship between females and children than with adult males. Furthermore, Pader argues that females are only minimally differentiated by age, whereas the adult males are differentiated from all male children in that none of the latter's graves are furnished (*ibid.*). The findings of this study would disagree with Pader's (1982) in that female burial assemblages are strongly age differentiated in terms of the types and quantities of the artefacts interred.

Although differences in terms of types, quantities and placement of goods occurred throughout the life course, it is evident that there was not that marked a distinction in material culture that serves to differentiate and define children so effectively within our society. The only items of material culture specific to the younger age groups were headbands: excavated from the graves of

two individuals aged 4-7 years. A parallel is observed at Butt Road, Colchester, where a single headband was excavated from the grave of an individual of similar age (Crummy *et al.* 1993).

With respect to the early Anglo-Saxon cemeteries some goods were also deemed inappropriate for immature individuals and these include saucer brooches which were only buried with individuals older than 18 years and weapons such as swords and shields which are also only buried with individuals over 16 years of age. One further pattern of interest was that those goods considered to be Romano-British were most often recovered from the graves of immature individuals. Bracelets were almost exclusively buried with younger individuals as were Roman coins worn as pendants. Penannular and quoit brooches were also found in significantly higher proportions amongst these younger age groups. Such goods are frequently used to identify a 'native' presence in early Anglo-Saxon cemeteries, but the evidence from this study would indicate these items may be visually reinforcing an 'otherness' that is related to age, not ethnic identity.

Crawford (1999: 47) has argued in her study of children within early Anglo-Saxon cemeteries, that: "the majority of grave goods buried with children are adult artefacts belonging within the context of an adult burial ritual". Crawford (*ibid.*) goes on to discuss the occasional identification of 'childishness' within burial ritual through the presence of 'miniature' objects. I would argue from the above evidence that this is an entirely ethnocentric view of the archaeological record. In the contemporary Western world we have constructed a separate and distinctive material and social world of the child, one that both reflects and reinforces our perceptions of their specialness and vulnerability. Despite the few differences in material culture discussed above, such a material gulf is largely absent from the cemetery evidence of late Roman and early Saxon eastern Britain. This does not mean that such material items have an 'adult' identity, but instead indicates that the emphasis and perception of the lived reality of childhood was not based on difference as it is today. Perhaps instead, children played a much more integrated role in the structuring and functioning of late Roman and early Anglo-Saxon society.

9.4.2 'Adulthood'

An examination of those individuals traditionally classed as adults also suggests that for any one sex adulthood was not a static social phenomenon. When one examines the evidence for females over the age of 18 years from the late Roman cemeteries a number of very clear age related

patterns have emerged. For example, at Lankhills, while equal proportions (approximately half) of females in all age groupings were buried with grave goods, 55% of the total quantity of these grave goods accompanied those aged in their late teens or early twenties. A substantial proportion of the total female goods were, therefore, confined to a highly restricted age grouping.

As discussed in Chapter 7 the most striking feature of the grave good distribution was the vast majority of items of jewellery such as necklaces, bracelets and finger rings that were buried only with the younger females. Amongst the older females, a relatively small amount of jewellery was present and this was always worn (e.g. a single bracelet or finger ring). This is in sharp contrast to the jewellery buried with the younger females, which (as well as being more numerous) was almost always deposited next to the body rather than worn (see below). Another difference noted between the grave goods buried with the younger and older females is that those with the former had also been manufactured from the more exclusive materials, such as glass, jet and ivory, compared to the pottery and bone objects found with older females. The majority of older females were buried with those goods that are typically referred to as 'gender neutral', such as vessels and coins.

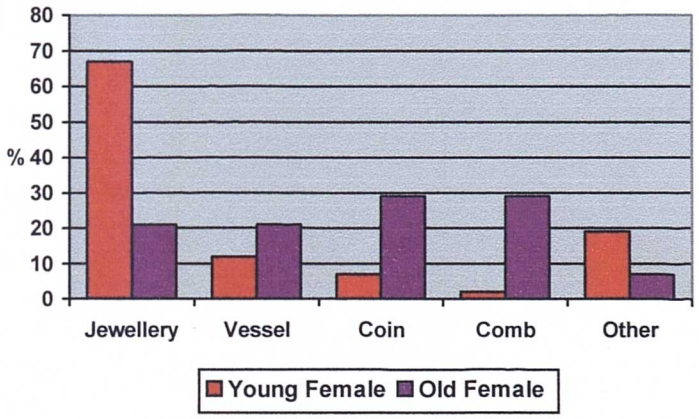


Figure 9.5: Age related deposition amongst female burials at Lankhills.

The burial of younger females with wealthy burial assemblages has also been noted at other late Roman cemeteries. At the Chester Road site, Winchester, the only burial with extensive personal adornment (and placed within a coffin in a deep grave cut packed with flint) was that of a 17-25 year old female (Pearce 1999: 86). At West Tainter Street, London and Butt Road, Colchester

young adult females also had extensive items of personal adornment (Grew 1999; Crummy *et al.* 1993). At the late Roman cemetery of Poundbury, few burials had grave goods, but those with items of personal adornment were again young females and children (Farwell and Molleson 1993). The practice of providing young females with relatively wealthy burials has a wide geographical and chronological distribution throughout the Roman Empire. Martin-Kilcher (2000: 71-72) interprets the burial of young Roman females with above average jewellery (and amulet type objects) as representing the non-attainment of marriage and, therefore, burial with bridal jewellery. One would assume from this that the bride-wealth of older females has been passed down to daughters or other relations. Literary sources from Rome indicate that marriage and child-bearing were important social milestones for females and were accompanied by a shift in their gender and status identity. Perhaps death occurring at around this age had an extra poignancy that was marked by society through the burial of precious possessions.

The age at which females were married within the Roman Empire has been a matter of some debate. The legal minimum age for marriage was 12 years for girls and 14 years for boys (Shaw 1987; Allason-Jones 1989). Hopkins (1965) has argued that a significant proportion of young girls were in fact married at these very young ages (approximately 12-15 years). He did, however, note that the modal age of marriage was much older for Christian girls (approximately 17-18 years). Shaw (1987: 32) has argued that much of Hopkins (1965) evidence is based upon data compiled by nineteenth-century researchers who themselves relied upon secondary and tertiary sources. The apparently young age at marriage is also biased by literary and epigraphic evidence that pertains to higher status female marriages in Rome. Females from wealthy families may have been betrothed at much younger ages than was common for the general populace, or the provinces. Shaw (1987) found that in a sample of 400 tombstones, commemorations were increasingly made by husbands from only the late teens onwards and tend to take over from parents almost entirely after the early twenties. Allason-Jones (1989) also concurs with these findings on the basis of epigraphic evidence. It would seem that this ties in with the archaeological evidence from Lankhills and Victoria Road, which indicates that a shift in social status occurs at approximately 18-24 years of age.

At the early Anglo-Saxon cemeteries, the difference in grave goods between younger and older female burials was apparent, but considerably less striking. Approximately equal proportions of females in all age groups were provided with grave goods, but unlike the Lankhills cemetery, the

average quantity of grave goods also remained approximately the same. The only perceivable difference was with respect to the type of goods (and this difference was subtle) and the slightly smaller proportion of older females buried with 'feminine' assemblages when compared to the younger females. The grave assemblages of the older females more often contained 'gender neutral' items, such as buckles and buckets.

One of the most notable age-related features of burial amongst the females buried in early Anglo-Saxon cemeteries is the large deposits of beads found with the 18-24 year group. While beads were also buried with the older female age groups, these tend not to be in the same quantities. Other differences between younger and older females include brooch types. Younger females show much more uniformity in brooch types, which are predominantly saucer and disc brooches. By contrast, older females were buried with a wide variety of brooch types and very few were buried with saucer brooches. Chatelaine items also tended not to be buried with older females. Despite these differences, there is little change either in the proportions of females buried with grave goods or the quantity of goods over the life course. While the age-related differences in grave good deposition amongst females at the early Anglo-Saxon cemeteries are not as striking as those observed at Lankhills, subtle differences do exist. Brush (1993: 168) found that there was no artefact type that was symbolic of a particular age group. This has been shown in this study to be certainly untrue of the immature individuals and amongst the 'adults' there are also some differences, at least in brooch type and beads. The disparity between this work and that of Brush (1993) may be due to the more detailed focus on age identity (the primary focus of Brush's (1993) research was gender).

Stoodley (1999a: 108) also found a decline in 'feminine' items of grave goods with age, but his interpretations exaggerate the extent of this because he failed to take into account the decrease in the number of females in the older age categories when quantifying this decline. In his research on Merovingian Gaul, Halsall (1996) also found a similar pattern of age-related differences in female grave goods, whereby burial assemblages of older females contained fewer and more 'gender neutral' grave goods. Halsall (*ibid.*) has argued that this decrease reflects a reduction in the household roles of older women as their children marry. Halsall's interpretation of the Merovingian evidence owes much to theories of 'social disengagement' (see Chapter 2), whereby the elderly are believed to undergo a progressive loss of roles and subsequent social devaluation with age. Disengagement is essentially perceived to be a cultural adaptation to minimise the

degree of social disruption that occurs with impending death. Parallels can be drawn between disengagement theory and theories concerned with cultural mechanisms for dealing with high infant mortality. By delaying the conferment of personhood onto an infant, a similar element of social liminality is invoked so that social stress caused if or when death occurs is, again, minimal.

Subsequently, Halsall interprets the reduced number of grave goods buried with children and old women in the cemeteries of early Merovingia as 'demonstrating that deaths among neither group created much social stress' (Halsall 1996: 22). Suppositions such as these are problematic on two levels. Firstly, they are very much rooted in contemporary perceptions of childhood and the elderly; life stages linked within the Western consciousness. The readiness with which archaeologists accord a 'low status' to the elderly in the past also has its origins in the denigration of the elderly within present society (see Chapter 2). Secondly, it is problematic to assume that burial ritual is solely a product of the degree of 'social disruption' caused by the death of an individual. As Humphreys states (1981: 9-10):

> '... it is an obvious ethnocentric mistake to assume that the behaviour evoked by death is to be seen solely as a reaction to the disruptions of social and emotional equilibrium caused by a particular decease. Death provides occasions and materials for a symbolic discourse on life– through the different treatments accorded to those whose lives have ended in different ways and at different stages of development, through theories about what happens in the after-life, through the symbols used in funerary rites or eschatology to express the contrast between life and death'.

It is clear that at the late Roman cemetery of Lankhills and (to a lesser extent with regard to the elderly) at the early Anglo-Saxon cemeteries, individuals below the age of four years and elderly females tend to be buried with fewer and non-gendered grave provisions. Where such differences have been observed, there has been a tendency to interpret the evidence in terms of these age groups experiencing lower social status, and that both age groups occupied a similar position in terms of the status hierarchy. As observed previously, grave goods used to express 'femininity' are often those that are assumed to be high status (e.g. items of personal adornment). It could, therefore, be argued that because it was not appropriate for these younger and older age groups in

late Roman and early Anglo-Saxon society to reflect gender identity in burial, by default, their graves appear to be low status. While one must be cautious when making inferences concerning the social identity of the living from burial evidence, the findings of the late Roman and early Anglo-Saxon cemeteries from this study indicate that gender does not appear to be an overt, or the most important, part of the overall social persona during these ages.

Gender ambiguity in the material culture of the very young or very old has numerous ethnographic and historical correlates, and it is tempting to interpret the evidence in this way (La Fontaine 1978). The ethnographic literature has many examples of older women undergoing a change in social status that allows them to assume increasingly masculine roles (Moore 1994). In much of this literature authors tend to assume that this is associated with the physiological milestone of the menopause. It has been argued that with the cessation of the female reproductive role women are regarded as less 'feminine'. For example, in his study of early Anglo-Saxon burial practices, Stoodley (1999a: 80, 106) refers to 'grades of femininity' and discusses the less gendered grave assemblages of older females as demarcating a change in identity associated with the menopause. Stoodley (1999a) frequently interprets age-related material culture differences in terms of biological milestones such as puberty or the menopause.

By contrast, more recent ethnographic literature has demonstrated that the shift in female identity often observed in old age only occasionally coincides with the menopause. More often it is only indirectly associated with physiological age. For example, the marriage of a child, or widowhood may precipitate a transition to a new gender/age identity with the accompanying material and social norms (Rasmussen 1987, 1991). Often this age transition involves greater empowerment and freedom from the social constraints that govern the behaviour of younger females. The 'gender neutrality' and relatively impoverished material condition of the graves of older females cannot, therefore, be interpreted as reflecting their low social status. Furthemore, while the gender expressed by the older females (particularly at Lankhills) is in sharp contrast to the overt femininity that appears to have been expressed by young adult females, it is by no means a 'masculine' gender. The only females to express a 'masculine' gender (and these may be contestable) are from the early Anglo-Saxon cemeteries and these are aged 18-24 years, which paradoxically is the age when the most 'feminine' burials occur.

When interpreting burial assemblages in terms of social identity, a further point that should be emphasised is that as people get older, not only does their identity alter, but so too does the identity of the primary mourners. This is most clearly seen from epigraphic evidence throughout the Roman Empire. For example, a female was commemorated by her parents in youth, after marriage by her spouse, and in old age by her children (Parkin 1992). Age and gender identity are lived relationally; therefore, the variation in funerary practice accorded to females throughout various life course stages at Lankhills and the early Anglo-Saxon cemeteries could be reflecting and reproducing the changing relationships of the deceased with age. The increase in burial wealth associated with females buried in their early twenties may not necessarily reflect an increase in social status, or gendered identity, but a shift in the identity of the primary mourner and their relationship to the deceased.

The funerary evidence also reveals some clear age-related patterns in the expression of 'masculinity' at both late Roman and early Anglo-Saxon cemeteries. As discussed previously, 'masculine' burials are less common than 'feminine' burials throughout the immature period. Individuals expressed femininity at a younger age than masculinity at late Roman and early Anglo-Saxon cemeteries. Children most commonly exhibit the full 'feminine' assemblage at approximately 8 years of age at early Anglo-Saxon cemeteries, and late Roman cemeteries. By contrast 'masculine' burials are primarily restricted to males older than 35 years at Lankhills and those over the age of 18 years at the early Anglo-Saxon cemeteries. This has led some researchers of early Anglo-Saxon cemeteries to imply a closer link between children and women in terms of their perceived social identity (e.g. Pader 1982). This interpretation tends to imply that 'children' are a homogenous category and does not consider the more subtle differences in grave good type, the presence of 'gender neutral' burials, or the fluctuating expressions of femininity with age. Instead, it seems more likely that that males and females simply experienced different chronologies in terms of social age transitions.

When we examine the 'masculine' burials in more detail, clear (though slightly differing) age-related patterns are observed at both late Roman and early Anglo-Saxon cemeteries. As mentioned above, at Lankhills 'masculine' burials tend to be confined to older males. Furthermore, there are fewer grave goods amongst the younger male age groups and little variation in grave good type. This is in striking contrast to the female burials, as is the fact that older males at Lankhills are buried with the more exclusive grave goods, manufactured from

silver, pewter, and glass materials. For example, all cross-bow brooches, belt sets, and knives, were buried with males over 35 years of age (and usually older). Therefore, while younger females at Lankhills have the more 'feminine' assemblages, older males have the more 'masculine' assemblages.

It is the male burials with cross-bow brooches and belt sets and their potential significance for identifying 'intrusive' ethnic elements that have received the most attention at Lankhills (Clarke 1979; Baldwin 1985). These belt sets have been associated with *laeti* or *feoderati*, although a number of authors have suggested that they were not confined to those in military service after the third and fourth centuries (see Chapter 2). Given their association with older males, however, one could surmise that they are associated with positions of power or a status that was achieved with age, rather than bestowed by birth (e.g. ethnicity). Halsall (1995) has also suggested that burial with belt sets reflects a more overt display of power in burials by local leaders by the late fourth century as a result of the retreating central Roman authority. Pearce (1999: 164) concurs that items of jewellery, insignia, and clothing were frequently used to express social status within the late Roman world to a much greater degree during the fourth century. These belt sets may symbolise not only a masculine identity, but also one that is inextricably and simultaneously linked to age and status. This would also explain the absence of such 'masculine' grave assemblages amongst the younger age groups.

The early Anglo-Saxon cemeteries show a slightly different age-related pattern with respect to the 'masculine' burial assemblages. Firstly, 'masculine' burial assemblages generally occur with much more frequency amongst the early Anglo-Saxon cemeteries than at Lankhills. However, 'masculine' assemblages occur less often than 'feminine' assemblages, particularly amongst the immature age groups. The only weapons included amongst the immature assemblages are spearheads. If one were to conceptualise male burials in terms of 'grades of masculinity' then spearheads alone would almost certainly be of a lower grade than the weapon assemblages buried with older males. At the early Anglo-Saxon cemeteries, after the age of 18 years the proportion of males with a 'masculine' assemblage increases markedly. This remains approximately constant (up until 50 years) and equal to the proportion of 'feminine' assemblages. This pattern is in contrast to the Lankhills data discussed above.

Several authors (e.g. Härke 1995; Stoodley 1998) have argued that the majority of weapon burials are young adult males; implying that only males in their 'prime' physical condition were accorded this rite. In this analysis, a smaller proportion of males over the age of 50 years are buried with weapons overall, however, this decrease is not as marked as has previously been suggested. Stoodley (1998) did not take into consideration the smaller proportion of individuals over 50+ years when quantifying this decrease in weapons during his analysis. At the early Anglo-Saxon cemeteries of Alton, Worthy Park and Portway (all in Hampshire) there is no such drop in the proportion of individuals buried with weapons in the older age categories. At the Oxfordshire sites of Berinsfield and Abingdon, while males over the age of 50 years were more frequently buried with 'gender neutral' burial assemblages, those with weapons tended to have a higher average number of weapons than younger males. Brush (1993: 203) also found that those burials containing the most elaborate weapon sets were of older males. The weapon burials are not, therefore, simply associated with 'masculinity'. They have a clear connection with age that may also relate to power and status in a similar manner to that at Lankhills.

There is a similarity between periods with respect to the lower number of 'masculine' burials prior to the age of 18 years. However, while Lankhills demonstrates a clear association of 'masculine' burials with older age groups, the early Anglo-Saxon sites generally show an even proportion throughout the life course (after 18 years), or a slight decrease after 50 years of age. One may interpret this evidence as representing differential expressions of gender and age organisation between these two periods. Alternatively, expressions of masculinity may be caught up with other aspects of the social persona in different ways. For example, at Lankhills, it seems probable that the 'masculine' burials were also associated with age-related power and status. At the early Anglo-Saxon cemeteries, the expression of 'masculinity' may not have been connected so overtly to age-related status hierarchies over the age of 16 years, but may instead represent a uniformity of gender expression throughout maturity. The general increase in 'gender neutral' male burials after the age of 50 years could indicate an element of gender ambiguity associated with changing age roles, as discussed previously for women. This relationship is not, however, straightforward, and the fact that many older males are buried with more weapons than younger males may also relate to age related status or power.

When discussing age related masculinity, a further striking factor is that many of the 'cross-gender' burials are in fact males aged 18-24 years. These burials assemblages are described as

'feminine', however, they often tend to be slightly atypical of the types of burial assemblages accompanying females of this age. Some may include feminine items of material culture, but in much greater quantities. For example, exceptionally large quantities of beads or more than two brooches. Others include items considered feminine, but that are unusual, for example, crystal beads attached to a belt. One individual at Berinsfield was buried with a great square-headed brooch in addition to two saucer brooches. Burials with three brooches are relatively unusual and no females aged 18-24 years in this sample were buried with this brooch type. While these grave assemblages can be construed as 'feminine' in terms of the items buried, they are not necessarily typical of those buried with females, and particularly not when one considers age. The fact that the female weapon burials were also aged 18-24 years, implies that although clear rules governed the expression of gender in burial at this age, certain individuals could engage in activities or roles that were 'contrary' to their biological sex. While this does not necessarily confer upon them the gender of the opposite sex, in terms of burial, it has placed them in a position where their social identity was exceptional.

9.5 Placement of Goods

The placement of grave goods in relation to the grave or the body has received comparatively little attention within cemetery studies of both periods, which have tended to focus primarily on the type and quantity of grave goods. Influenced by the research of anthropologists such as Battaglia-Jones' work on funerary practices in Papua New Guinea, Pader briefly examined the importance of grave good placement in early Anglo-Saxon cemeteries (Pader 1982: 44). Battaglia-Jones found that particular grave goods were placed in specific positions within the grave and in relation to the deceased. This placement was linked to symbolic and conceptual systems concerning the dead body. Artefacts and their placement may also symbolise different stages of adulthood, either formally as markers of achievement, or simply representing different style of dress. For example, in Iron Age burials in the Asberg area there was a tendency for older females to be buried with three brooches on their shoulders, while young women and children typically had only one or two (McHugh 2000: 22). The previous chapters have revealed some important age-related distinctions in the placement of grave goods at cemeteries of both periods.

The most striking differences observed were in the age-related placement of artefacts at the late Roman cemetery of Lankhills. It was found that individuals between the ages of 4-12 years and females aged 18-24 years had by far the greatest proportion of grave goods (see above). The

grave assemblages of these individuals are also similar in terms of their composition; both age groups were buried with large quantities of jewellery. When one examines these burials in greater detail, however, it becomes apparent that striking age-related differences exist in terms of the placement of the jewellery and whether these items were worn or not. Items of personal adornment buried with individuals of less than 13 years were much more likely to be worn than those buried with 18-24 year old females (90% of the jewellery buried with the latter were unworn). The wearing of jewellery amongst the 4–12 year olds appeared to be partly governed by the type of item. For example, necklaces were more likely to be worn, while finger rings were almost never worn. It was either considered inappropriate for children of this age to be wearing finger rings, or functionally impossible if they were adult rings. If the latter was the case, then the symbolic role of finger rings within the graves of immature individuals is emphasised.

In addition, the unworn items of jewellery buried with individuals of less than 13 years tended to be placed in deposits next to the feet, while those with females aged 18-24 years were more often placed next to the head. Provision of worn personal ornaments and other grave goods is not unique to Lankhills. Examination of other late Roman cemeteries in Britain with burial assemblages of personal ornaments suggest some diversity of burial practice. Ornaments were not worn in general in burials at Butt Road or Poundbury, but the majority are worn in the Eastern cemetery of London (as at Lankhills), mostly on the left wrist or arm (Crummy *et al.* 1993; Farwell and Molleson 1993; Barber and Bowsher 2000).

Despite the similarity between these grave assemblages subtle differences were maintained between these age groups in terms of placement of the goods and whether they were worn or not. Earlier literary sources from Rome refer to the display of the body of the deceased, especially of the elite, prior to the funeral. At what stage the body was placed in the coffin, or whether the coffin was opened or closed for view is not known, however, the evidence from Lankhills and elsewhere in Roman Winchester suggests that the body was displayed (Pearce 1999: 166). The inclusion and placement of appropriate grave goods would, therefore, have played an important role in the image projected to the mourners during the burial ritual.

Another example from Lankhills concerns the burial of a belt set by the feet of a child aged 4-7 years. As discussed previously, these belt sets were usually worn during burial, but were almost exclusively buried with older males. At the late Roman cemetery of Butt Road, Colchester

another child (aged nine to eleven years) was buried with two belt sets with chip carved buckles that had been placed beside the head. It is clear that while the burial of these relatively rare grave goods with these children was permitted, it was either not appropriate for them to be worn, or not practical due to the object's size. Either way, the symbolism of these grave goods has altered because of the age of the deceased and this symbolism has been reinforced through their placement in a different position. It seems likely, therefore, that these belt sets were associated with a particular status or position of power that could not have been held in life by one so young, but perhaps they would have been achieved or inherited had they lived longer.

An archaeological parallel with the burial of late Roman belt sets can be drawn from O'Shea's (1995: 130) work on the Mokrin Bronze Age cemetery in Hungary. O'Shea also found that badges of office when buried with sub-adults were not placed in the correct functional position in the grave. Instead, they could be placed, for example, by the feet, to symbolise the fact that the role was not actually held before death (O'Shea 1995: 130). This recurrent distinction in the focus of deposition will reinforce a visual difference in burial display that was linked to an emphasis on different parts of the body that must be symbolic of a social identity related in some way to age. This also demonstrates how different meanings can be conferred onto, and imbued by, the same items of material culture depending not only on the gender of an individual, but also their stage in the life course.

At the early Anglo-Saxon cemeteries there is no similar distinction between age groups in terms of the placement of grave goods. The weapons buried with the immature individuals, for example, were placed in the same positions as those buried with older individuals. Härke found that there were, however, age-related differences relating to the size of artefacts such as knives and spears and that the oldest males tended to be buried with the largest spearheads (Härke 1991: 158). This relationship has not been consistently borne out at other cemeteries (e.g. Millgate, Nottingham (Kingsley ref)), but indicates a further link between material culture symbolism and age identity at particular sites. No other age related distinction occurs with respect to the placement of items of personal adornment at the early Anglo-Saxon cemeteries. In contrast to the late Roman cemeteries, the vast majority of these items are worn. The differences that exist between age groups relate to types and quantity of artefacts rather than their placement within the grave. The patterning of artefacts and body position often shows a more strict set of rules for adults than subadults.

9.6 How Neutral are Gender Neutral Goods?

As discussed previously, a number of grave good types are considered to be 'gender neutral' in that they were buried with both sexes (e.g. vessels and coins). A more detailed analysis of the placement of these goods and other distinctions such as the material of manufacture, indicates that these goods were by no means 'neutral' in their conferment of social identity. At Lankhills, for example, coins were buried with both sexes and all ages, however, they were much more likely to be buried with older than younger females and their placement differed according to age and sex. Coins buried with younger females were always placed in the mouth, while those with older females were also placed in the hand. Individuals below the age of 13 years were more likely to have multiple coins placed within their burial assemblages (this is one of the few factors that distinguishes their grave assemblages from the 18-24 year old females). The material of the coins also differed according to age and sex, for example, older male burials were the only individuals buried with silver coins.

Vessels at Lankhills are also considered to be gender 'neutral', but when one examines their deposition in more detail, it becomes apparent that certain vessels were not buried with particular age or sex groups. For example, cups were only buried with children, while bowls and jugs were not buried with males. Older females had relatively few vessels, and these were made of pottery rather than the more exclusive materials of glass and pewter buried with other age groups.

Within early Anglo-Saxon cemeteries, the size of 'gender neutral' goods such as knives was previously found to vary with age (Härke 1989). This is not a relationship, however, that is consistently borne out at all early Anglo-Saxon cemeteries. At Alton, for example, there was very little correlation between knife length and age at death (Evison and Hill 1996). Hadley and Moore (1999: 31) have argued that with the decline of the weapon burial rite in the late sixth and seventh centuries the blade length of knives may have become a symbol of masculinity, as males were consistently buried with longer blades than females. Such objects can no longer be considered 'neutral' when one considers them in relation to age as well as sex. When examining age and sex related distinctions in artefacts we should clearly not just focus on the types of goods, but also on their positioning, size, and the material from which they were manufactured.

9.7 Body Position

The arrangement of the body and limbs does show variation at cemeteries of both periods that can, in some instances, be related to the age and sex of the deceased. It is likely that some of the minor variability in body positioning (e.g. one leg semi-flexed) may be related to post-depositional factors, or the shifting of limbs during decay (particularly when contained within well sealed coffins whereby bones may 'float' around in the putrefaction liquids). Furthermore, it is possible that prone burials may occasionally be the result of a coffin having been placed upside down within the grave (e.g. Grave 190 at Bath Gate Cemetery, Cirencester) (McWhirr 1982: 78). However, much of this variation clearly relates to careful positioning that reflects more than simply a lack of care or formality in the burial of the deceased.

At the late Roman cemeteries, the most extreme form of body variation is decapitation. This occurred at two of the cemetery sites, one urban (Lankhills) and one rural (Cassington). No sex-related distinctions were apparent in the decapitation rite and males and females were equally represented. While individuals as young as 1-3 years were decapitated, the vast majority, particularly at Cassington, were over 35 years of age. The unusual position of many of the burials at Cassington, together with the unusual demographic structure of this cemetery indicates that it may have catered for a very specific sector of the community. The high numbers of prone and decapitated burials may indicate that it was an execution cemetery (a term now being used to describe some mid-late Anglo-Saxon cemetery sites), or one where these specific burial rituals were deemed necessary. This can only be speculative, however, but the Cassington cemetery is certainly exceptional for late Roman Britain.

None of the burials at the early Anglo-Saxon cemeteries were decapitated, however, in common with late Roman cemeteries there were a number of prone burials (although considerably less than the earlier cemeteries). All prone burials dating to the early Anglo-Saxon period were females and all were 'young adults', none were over 35 years. A larger number of individuals from late Roman cemeteries were buried prone and these were of all ages and sexes. In contrast to the early Anglo-Saxon cemeteries, the majority of prone burials at the late Roman sites (as with decapitated burials) were aged over 35 years. Distinct differences, therefore, exist between cemeteries in terms of the age and gender of these 'extreme' burial positions.

While few early Anglo-Saxon individuals were buried prone or decapitated, a much higher proportion were buried flexed than at late Roman cemeteries. With respect to body position in early Anglo-Saxon cemeteries, there is an age and sex related pattern. Younger females and immature individuals are much more likely to be buried in positions other than extended supine. Males were much more likely to be buried extended or supine and this is a pattern also noted at other early Anglo-Saxon cemeteries. For example, Pader (1982) has also commented on the fact that many flexed burials are those of females or children. Pader (1982: 168) has further argued that body position serves to reinforce an opposition between children and adults. This was not necessarily found to be the case at the early Anglo-Saxon cemeteries in this sample, where body position was differentiated amongst younger and older 'adults' and between the sexes, rather than between adults and children. Body position appeared to play a varying role between cemeteries, and did not always serve to differentiate between individuals. This is something also noted elsewhere. At Westgarth gardens, for example, Pader (1982) noted the positioning of the bodies was more closely related to age than at Holywell Row, despite the two cemeteries being only 19km apart.

9.8 Grave Structure

Grave dimensions at both late Roman and early Anglo-Saxon cemeteries have been found to relate primarily to the age of the individual. The concept of 'six foot under' was not one that was recognised during this period and the graves were generally dug deep enough to adequately cover the deceased. This was not always the case and very deep graves have been excavated, particularly from the late Roman cemeteries where grave depth appears in some respect to be correlated with other 'status' factors.

At the early Anglo-Saxon cemeteries in this study, no detailed study of grave depth was undertaken, primarily because previous studies have tended only to reveal that the graves of infants and children are smaller and shallower than those of adults. Grave depth in the case of the early Anglo-Saxon cemeteries would appear to be partly a functional affair. The graves of children will be smaller in area and digging a small deep grave is a difficult objective. The graves of infants and children are certainly shallower, but grave depth does not seem to relate to artefact deposition, or the 'status' of the deceased at early Anglo-Saxon cemeteries in any way.

At the late Roman cemeteries a large proportion of individuals were buried within coffins. Furthermore, while fewer individuals were buried with grave goods than at early Anglo-Saxon cemeteries, the graves themselves tended more often to have been cut deeper and with greater regularity. Again, the depths of graves were age related to a degree, with children likewise tending to be buried in more shallow graves. It has been argued that at Lankhills and Victoria Road graves became increasingly irregular and shallow during the second half of the fourth century (Clark 1979; Pearce 1999). At Lankhills it has also been found that temporal trends accounted for much of the variation in grave construction. For example, most of the burials distinguished by stepped construction or located within enclosures related to the first half of the fourth century (Clark 1979). Age and sex related structural distinctions have been noted at all phases at the late Roman cemetery of Poundbury. For example, twice as many of the cist burials are females, and older females form a much higher proportion of these, while over half of the stone lined burials were immature individuals (Farwell and Molleson 1993: 162).

Individuals of all ages and both sexes at late Roman cemeteries were buried in coffins. A smaller proportion of immature individuals were buried in coffins, however, and amongst adults there were definite age related trends for males and females. At Victoria Road older males were much less likely to be buried in a coffin than younger 'adult' males, while conversely, older females were much more likely to be buried in coffins than younger females. The latter is perhaps unexpected considering it is the younger females at late Roman cemeteries that tend to show the greatest amount of attention in burial rites. At Queensford Farm a smaller proportion of individuals overall were buried in coffins. Very few immature burials were coffined at this site and amongst the 'adults' there is no discernible age or sex related pattern.

9.9 Future Analysis

This study has examined age identity from the funerary context, looking at the age distribution of the cemetery population, and exploring associations between the age and sex of the deceased and their mode of burial. There was a specific focus on grave goods in this analysis, examining the number of individuals of different age and sexes interred with grave goods and the quantity, type, material and position of those goods. In those cemeteries where grave goods were not a common feature, factors such as the presence of coffins, position of the body, and depth of grave were also examined.

There are a number of other factors that would, however, also be worth exploring in future research. As well as a more detailed examination of grave construction, the examination of spatial organisation of the cemeteries was beyond the scope of this research. This factor was not examined in any detail, except to point out any obvious age/sex bias regarding location of burial (e.g. infant burials). Cemetery space, as with settlement space, can be an active medium through which relationships are moulded. Spatial differentiation is an important means of symbolising distinctions between males and females in burial and in some circumstances may be related to spatial segregation of males and females in the living context, or in conceptual terms (McHugh 2000: 30). At some early Anglo-Saxon cemeteries age seems to be one of the most important factors in deciding location of burial. For example, Lucy (1998) found at Sewerby that there was a concentration of individuals aged 0-12 years in the lower centre of the cemetery, and those aged 12-25 years on its eastern side. At the early Anglo-Saxon cemetery of Broughton Lodge there was also a concentration of children on the western edge of the cemetery (Kinsley 1993: 71). Studies by Binford (1971: 21-22) and Carr (1995: 184) have also found that age was the second most common determinant of grave location.

Future research into age and sex related material culture associations needs to undertake a more detailed examination of the grave goods. For example, not simply focusing on the types of brooches or belt fittings, but also the size (although this has been mentioned briefly), style, gilding (where appropriate) and colour of such artefacts. The chronological changes amongst the funerary assemblages of early Anglo-Saxon cemeteries should also be considered in more detail (Stoodley 1999a), otherwise mortuary variability could present a confused pattern (Brush 1993). This is, however, problematic in that the dating of such artefacts with any degree of precision is not possible. Even if it were, one then has to contend with the temporal anomalies created by the practice of interring inherited goods. The findings of Brush's (1993: 35) study of early Anglo-Saxon burial practice concurs and she states that it is only feasible to draw distinctions between the cemeteries of the early fifth to sixth centuries and the final phase cemeteries. Future research should investigate these cemetery variables further in relation to the age and sex of the deceased.

9.10 Conclusion

The analyses of the previous two chapters and the discussion above has focused primarily on grave good associations and has been able to demonstrate a number of age-related patterns in the deposition of particular types and quantities of goods. Many of these observations had not

previously been identified, particularly with respect to the Romano-British cemeteries. This is primarily because researchers were dealing with unreliable age and sex data from cemetery reports (e.g. Abingdon), but also because of the rigidity of the adult/ child, male/ female distinctions that many of these studies adopted.

In this study funerary ritual has been interpreted as a public ceremony that reinforces and reproduces prevailing social norms, representing or symbolising the status of an individual in death. The way that this reflects their status in life is, of course, open to debate and, though the relationship is structured, we must be cautious when making inferences of social identity based upon this type of evidence. The relationship between prevailing societal attitudes and actual human behaviour is often complex and inferences from the funerary record are, of course, even more problematic in that we are investigating the product of symbolic action (Morris 1992).

While it is easy to be over-simplistic in our interpretations of material culture associations, particularly within burial contexts, we must be aware that the social meaning imbued by material culture may be far from straightforward. Material culture is just as likely to subvert and transform, as to reflect and conform to social norms, and this may be particularly so when associated with the dead, whose relationship to the living may be one that necessitates a subversive use of material culture items. The funerary treatment accorded to individuals reflects conscious decisions by the burying society to display the deceased in a particular manner. These choices will not necessarily reflect the social identity of the deceased in an objective way, but are likely to draw upon an idealised representation of social identity (Pader 1982; Brush 1993: 28). The extent to which individuals conform to broader conventions will also serve to confuse interpretation in terms of social organisation.

Despite these issues, the analysis and identification of age/sex related patterns in grave good deposition at the sites in question have provided an insight into funerary conventions that are likely to relate in some way to broader social constructions within the burying society. Indications from the late Roman evidence for example, demonstrates that certain age/gender transformations indicated by burial practice do in fact conform to the lived reality as indicated by literary and epigraphic sources. The discussion above has summarised a number of important age transitions and has demonstrated the role of material culture in signifying these life course changes. The following chapter concludes the findings of this research and suggests directions

for future research.

Chapter 10

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Conclusion and Future Directions

The primary focus of this thesis has been the study of age as an aspect of social identity in fourth- to sixth-century England. Current theoretical developments concerning age within the social sciences have demonstrated the pivotal role that age plays in the formulation and structuring of individual and group identity. The failure of archaeologists to adequately consider age identity has meant that current age norms have been transposed onto past populations. When age identity is left out of the social equation, the archaeological evidence is in danger of misinterpretation. Archaeology is, however, uniquely positioned to contribute much to the understanding of age identity in the present as well as the past. For example, archaeologists have the potential to identify social age/gender identities specific to particular periods (e.g. the attainment and perceptions of personhood and adulthood) and observe how these alter through time.

This study has also demonstrated that it is not possible to focus on one particular aspect of identity entirely; individual identity cannot be fractured into its constituent parts. While it is a convenient discursive tool to use categories such as gender, age, status and ethnicity, it is becoming increasingly apparent that the lived reality of social identity is irreducible. All facets of the social persona act simultaneously in the construction of individual and group identity. For example, this study has shown that the gender of an individual affects the timing of age transitions, so that social ageing is gendered and men and women experience different chronologies. Conversely, entry into a particular age group may alter the gendered state of that individual. In short, gender is biographically located, while age transitions are gender specific; the two are inextricably linked and both interact in a similar fashion with social status.

This work has focused upon funerary evidence and it has been argued that the theoretical and methodological distinction consistently maintained between the skeletal and cultural variables in previous cemetery analyses is unhelpful. In the examination of age identity this study has attempted to reconcile two previously disparate areas of academic research: skeletal and social analysis. It has been argued that the human skeleton contains a hitherto

untapped wealth of social information relating to lifestyle, culture, and environment. The physical remains of past peoples provide much more than a series of biological facts, the skeleton has both social and biological significance because it was part of a person that dynamically interacted within a *social* as well as physical environment. From this perspective, the value of adopting an integrative comparison of both skeletal and cultural factors has been demonstrated and it is argued that this has contributed important new evidence to current debates concerning social identity, continuity and change.

By continuing to treat age and sex as fixed biological variables archaeologists are failing to examine the relationship between the changing physical nature of the body as it ages and the way in which this may influence and in turn be affected by social factors. By adopting a life course approach, we may in some way elide the adult/child dichotomy so that we do not merely reproduce our own paradigms from past material culture, and instead identify those age/gender thresholds that have symbolic and social significance within past populations. By understanding that age is not simply the social elaboration of a biological given, we see that expressions of masculinity and femininity are fluid throughout the life course.

A further aim of this study was to compare social organisation in terms of gender and age identity either side of the Roman/Anglo-Saxon divide. The difference in the material culture between these periods is indeed profound. However, to interpret these as a direct reflection of socio-cultural and biological distance is problematic (Jones 1997: 38). Equally difficult to accept is the assumption that early Anglo-Saxon burial practices reflect the conscious opposition of a bounded monolithic cultural entity towards an equally homogenous native population. While material symbolism may well play an active role in the symbolic maintenance of ethnic boundaries (of whatever construction), it could equally be invoking other aspects of identity and group identification. It has been argued elsewhere (e.g. Hodder 1982; Larick 1986, 1991), and has been demonstrated in this study, that items of material culture believed to be significant in terms of group identity, are in fact frequently appropriated for age differentiation. For example, belt sets amongst the 'intrusive' burials at Lankhills were found in fact to have strong association with older age groups, while the majority of 'Roman' objects in early Saxon cemeteries were confined to immature individuals.

Age transitions between periods were found to have some similarities. The demarcation of immature age groupings were similar, as were the timing of more strongly signified gender identities. There was also the tendency for 'femininity' to be expressed more frequently than

'masculinity' at cemeteries of both periods, particularly amongst the immature skeletons. Age transitions amongst the immature and adult individuals occurred at approximately similar ages and there are also similarities with respect to the gendering of these transitions. Some differences are, however, apparent. For example, the perceptions of infancy and the beginnings of personhood at the early Anglo-Saxon cemeteries were less easily demarcated. The overwhelming impression though, is that social organisation in terms of age and gender identity has important similarities. While the material culture repertoire that signifies these identities is almost entirely different, the identities symbolised by them do have parallels. I would argue that this apparent continuity in social organisation is a stronger argument for cultural continuity than any material distinction.

One of the most difficult subjects tackled in this study relates to the estimation of the age at death of skeletal remains. This is one of the most fundamental requirements of human skeletal analysis and yet it remains one of the most problematic. This thesis has discussed in detail the current techniques available and the myriad of problems involved. As Kemkes-Grottenthaler (2002: 51) summarises:

> 'generations of physical anthropologists... erroneously believed that skeletal age could be adequately calculated from a small pool of available traits, when in truth the human skeleton...its composition, physical appearance, and aging pattern, is influenced by a myriad of intrinsic and extrinsic factors'.

While the variable condition of the ageing skeleton renders many of these problems insurmountable in terms of producing precise and accurate estimates of age at death, it has been argued that this variability can be quantified to at least make them more *reliable*. The skeletal research conducted in this thesis has adopted a pioneering approach to the statistical problems associated with human skeletal ageing. Through the application of Bayesian statistics, many of the problems that undermine the accuracy of conventional ageing techniques have been minimised. This study has produced innovative methods for estimating age at death from a number of skeletal traits for both immature and mature skeletal remains. The use of Bayesian statistics in human skeletal ageing and the methods produced during this research will also have important ramifications outside the discipline of archaeology.

Since the analysis outlined in Chapter 5 was undertaken, an edited volume by Hoppa and Vaupel (2002) has been published that calls for a new direction in the estimation of skeletal age-at-death. The authors experiment with a number of statistical methods whereby the

variability of skeletal age indicators is accounted for in a probabilistic manner. In order to achieve this, the authors variously draw upon the principles of Bayes' theorem and Maximum Likelihood Estimate (MLE) methods. This book refers to the 'Rostock Manifesto' which states that the future of human skeletal ageing will rest upon the collection and publication of 'raw' known age data in a way that allows for their probabilistic manipulation using Bayesian statistical techniques (Hoppa 2002). While much of the statistical methodology of this book is experimental, it (along with the work conducted here) does indicate the future of skeletal ageing. However, as Jackes (2000: 421) has stated: 'the proposed statistical techniques do not provide the magic answer', although they do allow osteologists to account for individual variability in a way not previously accessible. The mathematics involved in many of the Bayesian and MLE techniques, including those adopted in this study, are intimidating for the majority of researchers and have yet to be presented in a user-friendly format. Once a consensus has been reached upon the best statistical approach to adopt, it is vital that this be rectified and methods presented in ways that are accessible to all.

On a more fundamental level, the primary focus of future skeletal age indicator recording should place an emphasis on the condition or 'phase' of the skeletal indicators themselves. These should be stated, rather than simply lost during the production of a final estimate of age at death. For example, I would strongly suggest that osteoarchaeologists record the stage of dental wear for each molar according to a chart, or by shading an appropriate diagram (preferably according to a standardised methodology). This information should then be archived for future researchers. By recording data in this format the information can then be adapted and manipulated as methods develop over future years, *without* the necessity of re-examination. At present, the incomparability of reported skeletal ages leads to the need for repeated re-analysis (as in this study) of skeletal material, leading not only to a waste of researchers' time, but damage to the collections from excessive handling (Caffell 2001). Furthermore, in light of the current ethical climate concerning the repatriation and reburial of skeletal collections, a more flexible style of recording may become particularly pertinent in future years.

As discussed previously, a number of factors, both environmental and genetic, also impinge upon the timing of specific age related skeletal traits, leading to population variability. While this is the source of considerable error when attempting to accurately estimate age-at-death of individual skeletons, by recording skeletal age indicator data in the manner discussed above, this factor may actually be harnessed by osteologists to provide an additional source of information concerning populations (Jackes 2000). This would also allow inter-population

comparisons of the skeletal age indicators themselves to be made in a manner that bypasses the imposition of chronological age estimates. Such research would make for interesting comparative studies that would have social as well as physiological implications. For example, one could further investigate the skeletal evidence for migrations during the late fourth to sixth centuries by comparing such genetically controlled traits as dental development between populations of different dates. An examination of differences in growth and dental wear could also be made across time and space and further comparisons made with continental populations.

The comparison of skeletal indicators of age during this research has established the pressing need for a more detailed comparison of other skeletal information between Roman and Anglo-Saxon cemeteries. While such a study was beyond the scope of this research, it would provide important indicators of lifestyle, culture and environment, as well as revealing the impact of particular disease processes in terms of social identity (e.g. disability) within different cultural settings. A more detailed skeletal analysis of the cemeteries already examined needs to be undertaken and the geographic area of study broadened through the inclusion of more cemeteries. This would enable a greater understanding of social identity and change across a more diverse area and help identify regional trends.

For a more integrative use of osteological data, skeletal indicators of health (e.g. trauma, osteoarthritis, infectious disease) also need to be examined and the distribution of these between individuals and populations compared. This skeletal analysis needs to be integrated more fully with cultural data from the cemeteries (e.g. grave goods, spatial patterning, etc.) to examine social patterns in health status. An analysis of carbon and nitrogen isotopes would also yield additional dietary information that, when examined in conjunction with cultural variables, may indicate social differences (e.g. gender and status). Strontium and oxygen isotopes will provide further information concerning the movement of peoples and could help to answer crucial questions concerning the ethnic identity of so-called 'intrusive' burials.

Implicit in this analysis is the understanding that not only is the human body affected by social identity, but that it in turn reacts and influences the construction of identity. A breaking down of the biology/culture dichotomy has more fundamental methodological implications for the traditional academic boundaries between biology or science on the one hand and culture or theory on the other, which are now becoming less clear-cut. We need to question the validity of this disciplinary division and its usefulness for furthering

archaeological knowledge. The manner in which we have constructed archaeology as a discipline has had important repercussions regarding our interpretations of the past.

A comparison of skeletal and cultural factors between Romano-British and Anglo-Saxon populations has not previously been conducted. This integrative and innovative approach to funerary evidence has the potential to revolutionise many central issues of archaeological debate. The development of these ideas may also force a re-evaluation of the academic division between science and social theory within archaeological discourse. Work within the field of osteoarchaeology, focusing on the social condition of the skeleton has important implications concerning interpretations of past identities. By confining osteological reports to the appendix, or reducing skeletal information to a series of summary tables, an important component of cemetery information is being ignored. Communication across the science/social theory divide needs to be encouraged and by taking more active theoretical stances, osteologists can start ensuring that the *people* are being put back into the past.

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Abbreviations

B.A.R. British Archaeological Reports

C.B.A Council for British Archaeology

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