UNIVERSITY OF SOUTHAMPTON

The Middle Pleistocene in Transition:

Lithic assemblages and changing social relations between OIS 12 and 6 in Europe and Africa

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ABSTRACT

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The core argument demonstrates that the archaeological notion of transitions is untenable. They structure the past into blocks of time, thereby amalgamating behaviour patterns and establishing universal interpretations that are situated outside of hominid action. Within the current framework a transition is a historical junction point in chronological time, organised according to change and variation in archaeological assemblages. Several models have been proffered to explain change, but the underlying framework through which transitions are established has rarely been questioned, because of their key role in the interpretation of hominid evolution.

This traditional framework is critiqued and two themes are addressed to re-contextualise Middle Pleistocene archaeological interpretation. Firstly, in an exploration of the concepts of temporality and the taskscape, it is argued that time and space are mutually produced through hominid action. This alters the interpretation of change and variation, which is my second theme. I conclude that they exist in unison, as change is a constant although inconsistent process of transformation.

Undermining the notion of fixed points of transition renders research focusing on origin points, and therefore modern humans origins, implausible. Current discourse on hominid identity draws on the structural opposition of 'modern' versus 'archaic' humans for interpretation. In contrast, I locate hominid identities through the exploration of social praxis, offering a way of linking recent social theory with the practice of lithic analysis to interpret changing hominid identities. The transformation from the Acheulean to the Middle Stone Age and Middle Palaeolithic is characterised in five case studies that analyse Middle Pleistocene lithic assemblages from the UK, France and South Africa. I demonstrate that there is no single identity for Acheulean, Middle Stone Age or Middle Palaeolithic hominids, and show how non-linear transformations in the detailed analysis of lithic artefacts and the surrounding taskscape can portray changing relations in hominid social life.

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PART I – INTRODUCTORY SECTION

CHAPTER ONE

DEFINING THE PROBLEM

"Time is a blind guide."
Fugitive Pieces, A. Michaels (1996: 5)

CONTENTS OF CHAPTER ONE

1.1 RESEARCH AIM

The central aim of this research is to explore the concept of 'transitions' in archaeology through a study of Palaeolithic hominid social relations. Investigating the latter portion of the Middle Pleistocene (Oxygen Isotope Stages 12 to 6), this thesis examines the Acheulean and early Middle Palaeolithic/Middle Stone Age (MP/MSA) lithic assemblages from Europe and Africa. These were times of technological continuity as well as change between two very different regions of the world, as demonstrated by their stone tool industries. The main objective highlights two directions that are followed in the course of this thesis. The first is to provide a detailed account of material culture between Oxygen Isotope Stages (OIS) 12 to 6 through the analysis of stone tool assemblages from the UK, France, and South Africa. The second is to pursue this account through a new theoretical framework informed by the theory of structuration (Giddens 1984) and interpretations of personhood (Gell 1998, Strathern

1988), with an emphasis on embodying the materiality of social relations (Gosden 1994, Gosden and Marshall 1999, Ingold 1993). My approach leads to the interpretation of several identities for Middle Pleistocene hominids thereby undermining the concept of a singular transition between Acheulean and MP/MSA as multiple transformations are incorporated in the discourse of stone tool knapping taking place in day to day lives.

It is my view that problematising the concept of transitions in archaeology allows for very different interpretations of Middle Pleistocene behaviours. I have found that while transitions are implicit in the writing of virtually any form of archaeology, their status as an ideological concept has rarely been addressed. Rather they have only been discussed as a methodology. There are some notable exceptions (e.g. Freeman 1993, Revell 2000) but these occur outside of research on early archaeology. The Middle Pleistocene (reviewed in Chapters Two & Three) is a good starting point for this wider debate on transitions as there is a minimal amount of historical baggage and it is therefore easier to see the frame on which interpretations have been hung.

Chronology has been one of the key focus points for framing interpretations, but in the course of this thesis it is argued that, "Time is a blind guide." (Michaels 1996: 5). The focus on dating precision is misplaced, as social interpretations do not arise from measured time (Chapter Four). Questioning the chronological framework also shifts the understanding of transitions. Transitions are a direct result of levels of change and variation in material culture. I would define the current understanding of the word transition as the moment(s) of change between two blocks of time. This is based on the assumption that stasis, or an equilibrium, is the preferred natural state. Therefore the transition is the point at which variation exceeds the norm, change only occurring when provoked by abhorrent circumstances. From this viewpoint variation is a static concept as it implies variation *on a theme*, i.e., within one cultural block of time, while change is the movement between two themes (Chapter Five). This sets up change as an artificial boundary or an origin point at which change occurs and creates a fundamental structural opposition between archaeological stages such as Acheulean/non-modern and MSA/modern. When the archaeological record is understood in this manner, the transition can only be viewed in two ways, as a jump from one static culture/species to another, or as a phase that sits between these two cultures (e.g. the South African Fauresmith or the French Micoquian). These two approaches follow the two opposing evolutionary biology models of punctuated equilibrium and gradual evolution respectively, which are here rejected as inappropriate for the interpretation of material culture.

Interpretation of archaeology within these static blocks of time has unified stone tool practices. Industry names such as Acheulean assume that hominids had a similar experience and that stone tools had a singular meaning. I believe there is a need for a greater focus on Middle Pleistocene archaeology, as critically, present problems lie in concepts of logocentrism brought about by the universal explanations of periods and things. Artefacts such as the Acheulean handaxe have helped develop a meta-narrative of human origins (Chapter Six). In this approach hominid behaviours have been viewed as a unitary experience of being *an* industry (e.g. Acheulean or MP/MSA) and stone tool assemblages that do not fit well in this model are considered to be a 'variation' on the same theme or a 'proto-type' for the next industrial stage. Fixed industry units do not provide the potential for viewing the processes of change.

The focus of Palaeolithic stone tool research has been on typological, technological and biological continuity as well as change through a progressive chronology without any discussion of the way that material culture would have been used by hominids to create, act in and recreate their social worlds and ways of life. This creates a normative image of the numerous hominids situated in diverse contexts over space and time. On the contrary I argue that stone tools have a multiplicity of meanings and should not be typologically or technologically grouped together in this manner. They are products of specific historical circumstances. I would agree with those who argue that, even during the Middle Pleistocene, stone tools are meaningfully constituted (Hodder 1992b: 12) and therefore cannot be separated out into technological and cultural segments (Chapter Six). Alternative approaches to identity and stone tools are played out in the case studies of Chapters Seven and Eight. These then generate a more general discussion on the Middle Pleistocene and lead to a conclusion on the nature and importance of transitions in archaeological research (Chapter Nine).

In this first chapter I show how the historical structure of our present research endeavours has led to a monolithic and homogeneous understanding of the Acheulean and the MP/MSA (**section 1.2**). These universal explanations have made interpretations of Palaeolithic social life difficult. This thesis approaches change and variation in stone tool typology and technology as intrinsically dynamic, not normative, connecting hominid social relations through the repeated *praxis* of stone tool knapping. An introduction to this different approach is given in **section 1.3** while outlining the direction of this thesis.

1.2 CURRENT THOUGHTS ON THE MIDDLE PLEISTOCENE

1.2.1 Introduction: Time & Typology

Before discussing the current evidence a broad overview of the typological industries and their artefacts is provided. This is followed by a preliminary account of the present day stone tool typologies and their interpretation in Africa and Europe, which highlights my concerns with the present approach. The final subsection demonstrates the relationship between these two continents in terms of research strategy and hence the strengths of investigating both regions in this study. Perceived hominid cognitive abilities are used by archaeologists to tie together sites in both places to produce a contemporary understanding of early hominid behaviour. To begin with, some key definitions relating to chronology are supplied to situate the reader within the current Middle Pleistocene framework.

The **Middle Pleistocene** is a geological time period. It begins at the Brunhes-Matuyama boundary, dated to 780kya and finishes at the beginning of OIS 5e (125ka) due to a faunal turnover commencing with the Last Interglacial. For the purposes of this thesis I use the term Middle Pleistocene to refer to the Acheulean after OIS 13 up to the early MP/MSA of OIS 6.

The **Acheulean Industry** is present in Africa from about 1.6ma, while in Europe handaxe industries are widespread by 500ka. On both continents the Acheulean continues until between 300 and 100ka. Although the Acheulean is often defined by the presence of handaxes, here this term also includes the Developed Oldowan and the Clactonian (see Chapter Two for main discussion).

Both **Middle Palaeolithic (MP) and Middle Stone Age (MSA) Industries** are first present by about 300ka, equivalent to OIS 8. Both industries are defined by a change to flake tools and an increase in the use of prepared core technology. In Africa, the MSA is applied to all assemblages situated between the Earlier and Later Stone Age. The MSA is segmented, and following Volman's chronology (1981), the focus here is on the earliest stages, MSA I and II. In Europe the MP is referred to generally as situated between the Lower and Upper Palaeolithic. However, often the term MP is used to refer specifically to archaeological assemblages pre-OIS 5e, c.128ka, while the rest of the period is known as the Mousterian. I will follow this format, retaining the MP for the pre-OIS 5e industries. Prepared core technology (PCT) is an important part of the MP/MSA and there are many viewpoints on its definition. I use this term to encompass all Levallois products (radial and convergent) and laminar technologies. I utilise the definitions provided by Boëda and McNabb for Europe and Africa (Boëda 1995, McNabb 2001) following their view that PCT is a particular technological conception where the flaking surface is knapped and maintained to produce one or more flakes of a predetermined shape.

1.2.2 The current arte-'facts' of the transition

Rightly or wrongly, interpretations of the Acheulean appear to focus on a single artefact, the handaxe. Outside of this, the presence and absence of other artefact types has not been regarded as highly significant (e.g. Gowlett 1996, Wynn 1995). This is different from the MP/MSA where temporal variation is considered to be greater and a number of different stone tool types are described within the toolkit (e.g. Mellars 1996, Singer and Wymer 1982). However, in both Africa and Europe the Levallois technique and blade technology are present in small amounts in the late Acheulean (e.g. Kuman submitted, Tuffreau 1994). Following this, there is a gradual shift of emphasis to a greater reliance on retouched flakes, the reduction or absence of handaxes and cleavers, the predominant use of blades and the Levallois technique (Kuman submitted), and greater mobility evident from the longer raw material transport distances (Féblot-Augustins 1999).

Archaeological evidence suggests that the transition to the MP/MSA occurred at similar times in Eurasia and Africa. Although attempts have been made to pinpoint the start and finish of any industry, to summarise, recent chronological adjustments suggest that prior to 300ka the industries are Acheulean, and after 130ka the Middle Stone Age and Middle Palaeolithic Industries have completely replaced earlier industries and are the only types present in the archaeological record (Dibble and Rolland 1992). This transition has often been avoided as a research topic because of the difficulties associated with the study of these lithic industries, namely, poor site contexts and the lack of dating techniques. However, current research suggests that it is in this 170 thousand-year span between OIS 8 and 5e that the major changes occurred (Porat et al. 2002), but it is hard to pigeonhole these assemblages. Even some of the Acheulean assemblages prior to 300ka show greater affinity to the MSA (McBrearty 1991) and PCT is argued to be present by at least OIS 12 in Europe (Tuffreau et al. 1994), Asia (Goren-Inbar 1992) and Africa (Beaumont 1999, Biberson 1961, Kuman submitted). This suggests that definitions and the understanding of change within and around this time period need to be rethought and hence the rationale for embarking on this thesis.

Given the above description, to make a fair assessment of the Middle Pleistocene transition I decided that it was necessary to begin my study at OIS 12. This is because, at this time, all assemblages across Europe and Africa are considered to be part of the Acheulean Industrial Tradition (here the Clactonian and Developed Oldowan are considered to be a part of this tradition). To revert to even earlier periods in the Acheulean risks confusing these issues with the debate on the colonisation of Europe, which is not the focus of this thesis. By OIS 12, all researchers agree that the Acheulean is present in Europe, and the Middle Palaeolithic and Middle Stone Age are not yet considered to exist in any form. Likewise, the termination of my study at OIS 6 has also been chosen for very specific reasons. Firstly, the 'classic' Mousterian industries are considered to begin in OIS 5e (Mellars 1996) and these are very well studied in comparison to the earlier Middle Palaeolithic. Similarly, in Africa, the early MSA or MSA 1, which is also dated to before OIS 5e (Volman 1981), is rarely discussed in any detail.

There is an important reason for pursuing an inter-continental approach in this study. Some exemplary work bringing together data on this time period has been accomplished in Europe, at the International Symposium to Commemorate the 50th Anniversary of Excavation in the Mount Carmel Caves, in 1980 (Ronen 1982) and in Africa by McBrearty (1991, McBrearty, Bishop, and Kingston 1996, McBrearty and Brooks 2000). However, since the early 20th century little work has been done to tie data from both continents together. An attempt was made recently by Foley and Lahr (1997) to apply a phylogenetic approach to archaeology worldwide in the hope of elucidating biological development through time. They linked the Acheulean to MSA stone tool transition with changes in the fossil record. In Africa the earliest archaic *Homo sapiens* are represented by the Florisbad cranium dated to 259kya (Grün et al. 1996), while in Europe at the same time late *Homo heidelbergensis*/early *Homo neanderthalensis* species are present at several sites. Although they correctly stressed the importance of changes in the Middle Pleistocene from Mode 2 (Acheulean) to Mode 3 (MP/MSA) technology, Foley and Lahr (1997) have oversimplified the archaeological record, giving the impression of a linear evolution which we know is not applicable to either the archaeological or fossil record. This linear view resulted from the overly general approach they applied to the archaeological record focusing on PCT and its relationship to the origin of modern humans. To overcome this I propose to take a more detailed site-based approach. In addition, my aim is not to compare but to contrast these areas. I look at how differences in material culture can be analysed and interpreted even when they are bound by the same technological practices.

Although the very brief account given above outlines the current archaeological view of the transition, research into the Acheulean and MP/MSA transition is part of a very large web that includes the past, the present and the continued weaving of further investigations. Therefore the following section gives a short introductory account of the historical developments in Europe and Africa, incorporating the main ebb and flow of research across the continents that has led to the current positions of research in both regions.

1.2.3 The creation of a transition in Africa

In Africa the Palaeolithic was originally divided into two main periods known as the Earlier and Later Stone Ages. The presence of a Middle Stone Age (MSA) was first proposed by Goodwin and van Riet Lowe when, following intensive fieldwork,

> "...it was forced upon our notice that we were dealing, in South Africa, with a series, not of two, but of three main invasions, either of a migratory or of a purely cultural type." (Goodwin and van Riet Lowe 1929: 95).

This second 'invasion' was determined by the distinctive change in flaking techniques to flake tools, and in particular, the presence of convergent flaking, the use of points, and the faceted butt. The origin of these new stone tool types was thought to come from the north and the similarity between the Mousterian of North Africa and the MSA Industries of South Africa was noted (Goodwin and van Riet Lowe 1929). However, in their work it is strongly stated that European terms can not be applied to the South African record (*ibid.*: 96) although cultural parallels to the Mousterian are drawn throughout this text.

The conviction that the MSA had northern origins stemmed from a colonial belief that Africa was a primitive continent. This belief continued throughout the first half of the twentieth century and was later reconfirmed by what was thought to be a finite radiocarbon date of 60 ka from the Acheulean levels at Kalambo Falls, Zambia (Clark 1969-1974). This date substantially influenced the notion that the MSA, at less than 60 ka, was actually equivalent to the 40 ka Upper Palaeolithic of Europe. While similarities between these two industries were sought and found, new and improved dating techniques and methods of climatic correlation during the 1970's eventually pushed back the MSA beyond 100 ka (most recently to beyond 250ka, Kuman, Inbar, and Clarke 1999). This reoriented the MSA as the chronological equivalent of the Middle Palaeolithic in Europe. Consequently, the early MSA lost its spotlight, as this new dating evidence influenced a whole new series of research questions centring on the MSA to LSA (Later Stone Age) transition in Africa and its relationship to the Upper

Palaeolithic revolution of Europe. The trend became particularly focused on this later transition between the Middle and Upper Palaeolithic (e.g. Mellars 1990) and the MSA to LSA (*c.f.* McBrearty and Brooks 2000: 457) because of the visibility of art and sophisticated culture. In addition, the presence of only a single hominid species (with the exception of relict populations of Neanderthals), allowed for a more eloquent and detailed interpretation of the so-called "rise of modern behaviour". Mousterian lithics are described as the consistent occurrence of a small range of artefacts found across extremely diverse ecological regions of Europe (Kuhn 1995: 174). This is fundamentally different to the 'culturally modern' Upper Palaeolithic human record that demonstrated rapid turnover of stone tool types and styles across Europe.

The emphasis on the transition from archaic to modern humans has been an important research topic for several decades. This led to a focus on Upper Palaeolithic where there was fossil evidence for *Homo sapiens* in Europe for the first time. At this time the earlier transition was only mentioned in broad accounts of Palaeolithic change in stone tool types. It has not been until recently that significance has been attributed to either the Acheulean/MSA/MP transitional period or to the African material (Foley and Lahr 1997, McBrearty 1991, McBrearty, Bishop, and Kingston 1996, McBrearty and Brooks 2000). Since the mid-1980's there has been growing palaeo-anthropological interest in the end of the Middle Pleistocene, which has directed attention towards research on African archaeology. This has been led by biological rather than cultural research questions. The two main thrusts behind this increasing interest began when new genetic evidence suggested an African 'Eve' (Cann, Stoneking, and Wilson 1987) and the heated debate broke out between supporters of the "Out of Africa Hypothesis" (Stringer 1989, Stringer, Hublin, and Vandermeersch 1984) and those of the "Multi-Regional Hypothesis" (Wolpoff 1989). This concern with the origin(s) of modern humans moved attention away from the archaeological evidence for the behaviour of later modern humans towards the anatomical nature of the earliest *Homo sapiens*. Genetic and anatomical research have led all research avenues towards confirmation (or denial) of the presence of modernity. This has resulted in the description of an earlier and more modern, cultural package for these *archaic Homo sapiens* emphasising evidence for ochre, burials and possible art forms (e.g. Deacon 1989). This has led to an uneasy relationship between archaeological views of the origin of modern humans and the beginning of the MP/MSA as there is an unqualified assumption that the changes in technology must be linked to the changes in the patterning of the biological data. The cultural transition is once again defined by the concept of modernity, only this time the European Upper Palaeolithic is not the focal point. If nothing else, this historical review serves as a warning against pursuing transitions in this manner.

1.2.4 Approaches to Research at the Transition in Europe

In Europe, research into the Middle Pleistocene transition has not taken quite the same form, as the presence of *Homo sapiens* on this continent was an Upper Palaeolithic phenomenon. Hence, although the hominids were changing (from *H. heidelbergensis* to *H. neanderthalensis*), research surrounding the Lower to Middle Palaeolithic transition has focused not on the fossil hominids but on the stone tools.

Initially, the "Epoch of le Moustier" was placed between the Acheulean and the Solutrean (de Mortillet 1883). This industry was characterised by the presence of Levallois flakes, points, scrapers and triangular bifaces. Commont (1913) then suggested that there was chronological development within this Mousterian industry;

1. Last interglacial "warm" Mousterian.
2. "Lower Mousterian" with Levallois flakes, triangular handaxes, scrapers, points and notches.
3. Middle Mousterian with numerous scrapers
4. "Evolved" Mousterian scrapers (especially Quina), without handaxes.

These stages were later thought to be synchronic variation in the form of parallel traditions (Peyrony 1921). Breuil (1932) found that the parallel phyla were affirmed by the synchronic existence of two cultural traditions; the Mousterian of the Acheulean Tradition (MTA) and the Typical Mousterian. The MTA tradition consisted of assemblages with bifaces, scrapers, notches and denticulates while the Typical Mousterian had scrapers and points. Breuil argued that the Acheulean gave rise to two traditions; the Middle Palaeolithic Levalloisian with several chronological subdivisions, and the "Cave Mousterian" with or without handaxes.

Bordes (1961a) revolutionised the Middle Palaeolithic with his comprehensive type list incorporating all aspects of lithic assemblages into the analytical framework. This ordered assemblages into six major groups by their relative frequency of types rather than on the presence or absence basis of a '*fossiles directeurs*' methodology. Although he eliminated the *fossiles directeurs* approach he retained a cognitively and culturally meaningful palaeontological analogy. Each lithic type represented intentional end products and was biologically analogous to palaeontological species.

Research on stone tool assemblages between the Acheulean and MP has focused on levels of variation, and more recently specifically on Levallois technology. Since Bordes' system came into operation in the 1960's (Bordes 1961a), a key area of interest has been the explanation of variation, particularly between Mousterian lithic assemblages. Amongst others, three key figures argued for the following contrasting explanations; Mellars (1970: 80) suggested that variation was a consequence of stylistic patterning, the Binfords (1966, Binford 1973) argued that variation was a consequence of function and Bordes (1973) put forward cultural models. However, the assumption by all three figures was that tool morphology was premeditated and that the design was conceptualised prior to production. This took on a new angle in the light of experimental studies during the 1960's and 70's as others proceeded to show that tool morphology could be a continuous process of utilisation and resharpening rather than a stable typological form (Dibble 1987, Jelinek 1988). This was followed by new studies on the definition and variation of Levallois technology and its products (Boëda 1988a, Copeland 1995, Van Peer 1992). The importance of these works in relation to the transition is that they brought into focus the contrast between variation in the Middle Palaeolithic and the long period of stasis in the Acheulean during which the handaxe was the defining feature. The presence of Levallois in the late Acheulean came to be seen as highly significant because it was considered to be the most cognitively complex operation occurring during this time period. As the main technological link between the Mousterian and the Acheulean was Levallois technology, so the focus on the transition came to be a focus on the origin point for Levallois as the beginning of an evolutionary pathway towards the Middle Palaeolithic. The apparent complexity of Levallois technology is argued to have cognitive implications and this, in turn, has implications for changing behaviour patterns recognised in both the cultural and fossil record.

1.2.5 The cognitive link

The histories given above should now start sounding both familiar and similar. On the one hand, in Africa the investigation of change is focused on a fossil speciation event, i.e. a change in biological makeup. On the other hand, in Europe the change is considered to be present in the technology. Hence these continents are linked through a common perception that the hominid cognitive structures were changing at the Acheulean to MP/MSA boundary. Although cognitive archaeological approaches did not become explicit or widely discussed until the middle of the 1980s, the concept of the evolutionary development of intelligence and increasing complexity in humans has been present since the beginning of archaeological research. It has underpinned the very notion of culture. What and how we think hominids were (or were not) thinking has always influenced the types of behaviours that we believe they had. The manner in which Middle Pleistocene behaviours have been interpreted is informed by two linked approaches; culture history and processualism. I argue against the interpretation of the Acheulean to MP/MSA transition through systemic models of the culture process (see Chapters Four & Five).

Interpretations of the Middle Pleistocene transition are stuck within a chronological framework that can thus be divided into two linked approaches; culture history and evolution. The culture history approach creates a situation where change is not interpreted but described through comparative differences between the earlier period (e.g. Acheulean) and the later period (e.g. MP/MSA). The evolutionary approach explains change as the cumulative effects of biological and cognitive development. Although present studies express many different opinions about the degree and form of hominid intelligence, the perception of levels of cognition frames the interpretation of all present studies. These two models are often used simultaneously, one backing up the other, creating a tautology. The chronological framework determines the points of transition while behaviour is constrained by the cognitive ability inferred for each stage in the sequence. It is developmental changes that provide a structure within which behavioural variation is determined.

1.3 REORIENTATING THE RESEARCH: NEW QUESTIONS AND AN ALTERNATIVE APPROACH

Initially this thesis was intended to be a descriptive account of Middle Pleistocene stone tool assemblages that would inform on the nature of the transition to modern humans. I embarked on this topic believing that a transition could be located and that modernity was an historical process. I also followed a processualist approach to archaeological interpretation. As the project progressed it became clear to me that I could not uphold these beliefs. In the course of investigating the theoretical framework of transitions my views on the interpretation of material culture were also subsequently altered. This thesis is therefore the outcome of my own attempt to use post-processualism in the interpretation of Pleistocene archaeology.

The previous sections have outlined the main historical developments, typologies and dates that underpin our current position of understanding in the Middle Pleistocene. I argue that there is a poor understanding of stone tool assemblages in the later Middle Pleistocene due to the culture history approach. It has led to processual models advocating functional, object orientated explanations of a structured, chronological archaeological record. The diverse knapping practices situated within archaeological assemblages need to be embraced rather than ironed out if we are to look further into hominid behaviours during the Middle Pleistocene. At present, assemblages are placed in particular industry types and these industries are used to characterise hominid behaviours despite being situated in diverse contexts over huge lengths of time. Each industry is understood as a block of time/behaviour and henceforth industries are ordered into a sequence creating finite boundaries, or points of transition, between these blocks of time/behaviour. During the research of this thesis topic I have come to the conclusion that although changes occur, the archaeological transition, as it is discussed above, is a false concept. I hope to demonstrate that this concept needs to be abandoned.

Briefly, this thesis is a critique of transitions and everything else is selected to examine this concept (table 1.1). Current approaches to the Middle Pleistocene are problematised during the course of describing the chronological and systemic modes of thought which frame present explanations of the Middle Pleistocene archaeological records in Europe (**Chapter 2**) and Africa (**Chapter 3**). At present the quest to understand the latter half of the Middle Pleistocene lies in the explanation of the origin of *Homo sapiens* and PCT through defining typological and cognitive points along an archaeological timeline.

Chapter Number	**Key Words for Chapter**	**Topic**
PART I – INTRODUCTORY SECTION		
1	Introduction	Introduction
2	Europe	Current state of research
3	Africa	Current state of research
PART II – THEMES & FRAMEWORKS		
4	Time & Space	Context in action
5	Change & Variation	Transformations through context
PART III – IDENTITIES & INTERPRETATIONS		
6	Hominid Subjects & Material Objects	Constructing and practising identity in the archaeological past and present
7	Case Studies	Interpreting identity through detailed artefact analysis
8	Case Studies	Contextualises interpretations of the archaeology of social relations in the wider taskscape framework
9	Conclusion	Gathers threads together

Table 1.1 – Summary of Thesis Outline

From the critique provided three major questions arise,

1. How can the concept of transitions be reformulated?
2. How might hominid identities be interpreted in Middle Pleistocene archaeology?
3. How can connections be made between lithic assemblages and social interpretations?

In response, this thesis uses four major, inter-linking themes to explore the structure of the Acheulean to MP/MSA transition; time, space, change and variation. To begin with there is an outline of archaeological approaches to space and time as these provide the context and boundaries within which the transition takes place and therefore frame our understanding of sites and the connection of sites and regions (**Chapter 4**). Within these spatial horizons, it is change and variation over time in the archaeology that have been key factors directing our interpretation of Palaeolithic transitions (**Chapter 5**). Instead, I approach time and space as mutually produced through social action, constructing an alternative framework for Middle Pleistocene interpretation based on temporality and taskscapes. This incorporates change and variation as a part of each other, viewing change as a constant although inconsistent process of transformation.

Altering the space-time framework alters the context within which interpretations are made. This in turn lays bare problems with current interpretations of hominid identity, which aim to explain modern human origins through hominid fossils and stone tool analysis procedures (**Chapter 6**, also see lithic analysis procedure in Appendix I). In outline, the approaches put forward here are drawn from social theories that were mainly established in anthropology and in archaeological research on later time periods. The culmination of my argument rests in a notion of *praxis*, which both acknowledges the theory and practice of the past and its context in the present. Some readers may be concerned about the application of modern anthropological social theory to early hominid groups. However, we cannot situate ourselves outside of the present or remove the relationships that we have with others and ourselves (Patrik 1985, Tilley 1989). Therefore all interpretations of early hominid groups are inherently modern and contain anthropological links. There is always a leap of faith in the interpretation of behaviour as actions can be misconstrued even whilst they are taking place. The aim here is to open up new ways of approaching action through patterns established by a social context.

Through this new approach to interpretations I aim to provide a thorough account of material culture situated between OIS 12 and 6. I discuss how Middle Pleistocene archaeology changes differently in different regions of the globe and I describe differences in the lithic assemblages and the relative importance of PCT in the Middle Pleistocene. In my analyses I discuss whole assemblages as well as focussing in on particular artefact types. The way each of these topics is discussed has direct consequences for stone tool interpretations. I aim to demonstrate the potential for a multiplicity of meanings for stone tools through social practice that goes beyond the typological categorisation of technological traits to interpret the materiality of social relations over the Middle Pleistocene. The first case study (**Chapter 7**) interprets hominid identity through detailed stone tool analysis (see also Appendices II & III for study site details). This is then expanded into a wider context and further case studies (**Chapter 8**) are more general, covering wider areas and interpretations at the site and regional levels. By altering our understandings of these different themes the concluding Chapter draws out the main elements of the case studies to weave together a new interpretation of the Middle Pleistocene.

The organisation of this thesis stems from the belief that archaeology is a practice firmly located in the present and does not form an independent fossil record of past events (Patrik 1985). Therefore, as this project progressed, I realised that specific theoretical and methodological chapters were to be avoided as theory is not separate to the practice of archaeology (Shanks and Tilley 1987: 25). Hence my research is orientated around an approach to, not a model for the interpretation of material culture, as I did not want to 'apply' a formulaic set of principles to the material. Instead, I have attempted to undermine specific ways of thinking through archaeological interpretations for Middle Pleistocene contexts (Chapter 4), notions of change and variation (Chapter 5) and hominid identities (Chapter 6). For clarity, these new approaches are also displayed in a series of tables that highlight the main points. Each chapter pursues a specific theme, beginning with a critique of the status quo (tables 4.1 & 5.1) and followed by a new approach (tables 4.2, 5.2 & 6.3). The ideas are woven together and accumulate through the chapters, which culminates in the formula laid out in table 6.3. I would like to stress though, that this is a way of thinking rather than a model of doing, aimed at setting the tone for the reader. Although the themes do overlap, I have separated them to draw out the main lines of argument. The Chapters are designed to fit together so that by re-contextualising the framework for time and space, the artefact analyses lead to new interpretations of social relations thereby gradually threading together a series of connected but diverse interpretations of Middle Pleistocene *praxis* in Europe and Africa through the case studies of Chapters 7 & 8. In conclusion I draw together the evidence to look at the relationship between stone tools, social relations and transformations in archaeology, arguing for possible constructions of multiple identities for the Middle Pleistocene world.

CHAPTER TWO

PRESENT INTERPRETATIONS OF MIDDLE PLEISTOCENE EUROPE

CONTENTS OF CHAPTER TWO

2.1 INTRODUCTION

Change in Middle Pleistocene Europe seems to revolve around stark contrasts. For example, there were environmental leaps between hot and cold, a cultural shift from the drudgery of handaxe forms to the diversity of Levallois technologies and physical alteration of robust hominid bodies evolving from *heidelbergensis* to *neanderthalensis*. In terms of hominid behaviour, perhaps the European transition from Lower to Middle Palaeolithic can presently be summed up as the arrival (and later development) of specific skills (Gamble and Roebroeks 1999: 11). This chapter expands on Chapter One to provide a more detailed description of the present interpretations of Middle Pleistocene archaeology in Europe. It is important to understand the current framework within which research is undertaken before attempting a critique of present research or providing new approaches. This discussion of the European data focuses on the north-west (fig. 2.1), with wider references to other countries such as Italy and Spain. The Acheulean is discussed first in **section 2.2** and this is followed by an overview of the Middle Palaeolithic in **section 2.3**. The intention is to summarise our present understanding of Middle Pleistocene life in terms of the framework we place it in, the environmental conditions and hominid types we ascribe to it, and the interpretations of material culture made through it. These two industries are discussed separately as for the most part research focuses on either one period or the other. The transition between these two stages is summarised when the periods are joined together at the end of this chapter (**section 2.4**).

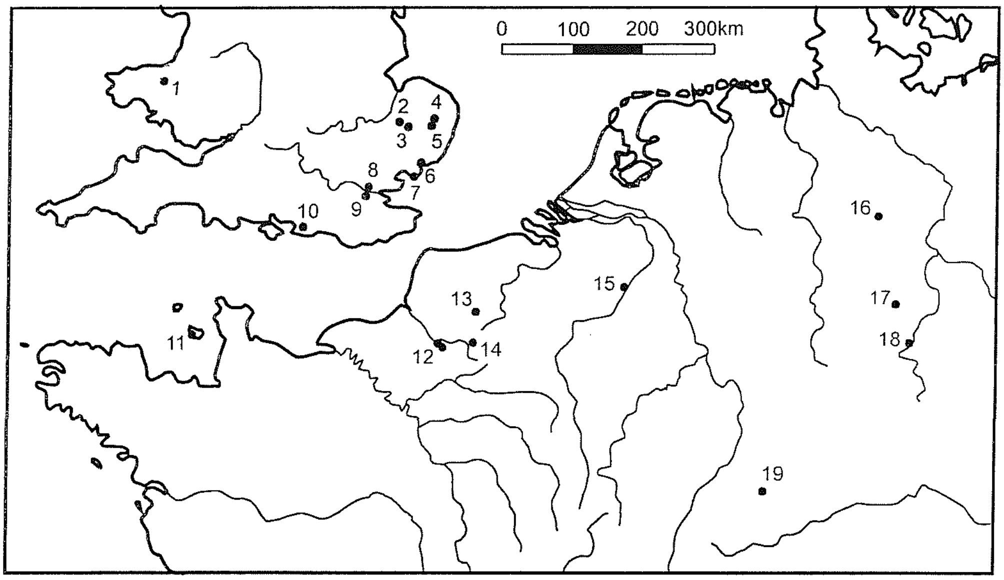


Figure 2.1 - Map of European Middle Pleistocene archaeological sites
Case Study sites are highlighted in bold below.

1 Pontnewydd	Wales	UK	**11 La Cotte de St Brelade**	**Jersey**	UK
2 High Lodge	Suffolk	UK	**12 Cagny L'Epinette**	**Somme**	**France**
3 Barnham	Suffolk	UK	**12 Cagny La Garenne**	**Somme**	**France**
4 Hoxne	Suffolk	UK	13 Biache-Saint-Vaast	Pas de Calais	France
5 Elveden	**Suffolk**	**UK**	**14 Gouzeaucourt**	**Somme**	**France**
6 Dovercourt	**Essex**	**UK**	15 Maastricht-Belvédère	Limbourg	Holland
7 Clacton-on-Sea	Essex	UK	16 Schöningen	Nordharzvorland	Germany
8 Baker's Hole	Kent	UK	17 Bilzingsleben	Thüringen	Germany
9 Swanscombe	Kent	UK	18 Ehringsdorf	Thüringen	Germany
10 Boxgrove	**West Sussex**	**UK**	19 Steinheim	Bad-Wurtemberg	Germany

2.2 ACHEULEAN EUROPE

2.2.1 Dates and a Definition of Acheulean Archaeology

The Acheulean Industry of Europe is defined by the presence of bifaces. In Europe biface assemblages are widely present by 500ka as indicated by sites such as Boxgrove in Britain (Roberts, Gamble, and Bridgland 1995), Atapuerca in Spain (Aguirre et al. 1987) and Notarchirico in Italy (Piperno 1999). The end of the Acheulean is difficult to pinpoint in Europe, as chronology is determined by stone tool typology (for examples see the interactive discussion of these problems in Ronen and Weinstein-Evron 2000a) and bifaces have a continued presence during the Middle Palaeolithic (Bosinski 1967). At La Micoque for example, the late Acheulean is dated to between 300-350ka (Falgueres, J.-J. Bahain, and Seleki 1997). However, it is generally thought that the Acheulean is beginning to alter by about 300ka as assemblages have a greater proportion of Levallois technology and flake tools which typify the Middle Palaeolithic.

The Acheulean consists of handaxes and/or cleavers, cores, flakes and some retouched pieces. However, during this time period pebble tool assemblages without bifaces are present at some sites. These have been classified as the Clactonian Industry in Britain and as Tyacian or Pebble Tool assemblages elsewhere in Europe. There has been a long debate over the relationship between the Acheulean and these non-biface assemblages (summarised in White 2000b). Most recently, it has been suggested that the Clactonian and Acheulean in Britain are separate pulses of colonisation possibly stemming from different European populations (White and Shreve 2000a). The Clactonian is described as reflecting an early post-glacial recolonisation event, while the Acheulean represents the second wave of hominids into Britain during the main interglacial. This is thought to be a recurrent phenomenon during the first two post-Anglian interglacials. Other researchers argue that the differences between the Acheulean and the Clactonian reflect environmental contexts and subsistence practices (Collins 1969); activity facies (McNabb 1992); raw material potential (McNabb 1992, Wenban-Smith 1998); differences in landscape use as directly related to immediate and local circumstances (Ashton 1998); and cultural differences between hominid groups (White 2000b, White and Shreve 2000a). The different interpretations are used in opposite ways to make a case for or against the Clactonian. Some researchers argue that a distinction between these two types of assemblage needs to be maintained (Wenban-Smith 1998, White 2000b), while others conclude that the Clactonian and the Acheulean are part of one continuing tradition (Ashton and McNabb 1994, McNabb 1996a&b, Roberts, Gamble, and Bridgland 1995). In my opinion this time period should only maintain the term Acheulean and in this sense I follow the arguments provided by McNabb (1992) and Ashton (1998). Furthermore, as I argue in Chapters Four and Five, the culture history framework through which these divisions are created needs to be dismissed altogether as we need to focus on situated knapping practices rather than large-scale interpretations of industries. These 'pebble tool' sites have been located across Europe throughout the Palaeolithic (Gamble 1986: 278). Part of the case study in Chapter Eight attempts to demonstrate one way in which these sites can be re-incorporated into investigations of social life.

2.2.2 Environmental background

Given that there is a high degree of climatic variability between Oxygen Isotope Stage (OIS) 12 and 6 and a large range of topographic landscapes within Europe it is important to provide information on environmental change, particularly as variability in the archaeological record is thought to reflect these differences. Our understanding of the environmental record during this time period is fairly sketchy, particularly the further back in time we go. The detail of climate is poorly understood and it is difficult to fit the fine scale record of one site into the global environmental chronology for a particular time period. However, the interpretation of the climatic record from deep-sea cores (Shackleton and Opdyke 1973) has had a major impact on the interpretations of both the dating and the environmental conditions of Europe. In combination with faunal remains, pollen and charcoal, broad environmental conditions can be suggested for successive stages in Middle Pleistocene Europe (Tzedakis et al. 1997).

The Acheulean between 500 and 300ka incorporates OIS 12 to 9. Following the north-west European glacial/interglacial stages this period includes the Elsterian and the Holsteinian complex. The Elsterian glacial episode, equated here with OIS12, had a more significant impact than any other stage during the Pleistocene. It caused significant changes in landscape morphology and affected both the structure of the mammalian community and the balance between carnivores and herbivores (Gamble 1999). It has been suggested that the demise of big cats and hyenas around 500ka may help explain the greater numbers and densities of sites occurring after this time (Turner 1992). The following glacial complex, the Holsteinian, includes OIS11 and possibly OIS9. There is debate over the dating of sites attributed to OIS 11 and 9 (Bowen et al. 1989), which is perhaps linked to the brevity of the intervening cold period of OIS 10 (Gamble 1999). The 30ka interval that comprises OIS 10 is difficult to locate as the faunal and floral communities have little time to establish differences to the warmer periods of OIS 11 and 9.

Environmental conditions have both a biological and a cultural impact on hominid groups (Gamble 1995b, Stringer and Gamble 1993, White 2000b, White and Shreve 2000a). During glacial maxima the extension of ice caps would have forced inhabitants of boreal zones to seek refuge further south. Local increases in biomass in southern zones would have added incentive to move into even more southerly zones. Cooler stages would increase available space due to sea level changes and the depletion of forest cover would have made hunting easier. The gradual expansion and contraction of hominid groups across Europe altered their bodies and their species designation, as I shall discuss below.

2.2.3 Hominids

Turning to the fossil evidence, we have come to realise that the divergence between *H. sapiens* and *H. neanderthalensis* probably occurred much earlier during the Acheulean than previously thought (Cann, Stoneking, and Wilson 1987, Krings et al. 1997, Stringer and Andrews 1988). This has added further intrigue to the terminal Acheulean and the transition from Acheulean to Middle Palaeolithic industries. At present there are four hominid species associated with Middle Pleistocene Europe *H. neanderthalensis, H. heidelbergensis, H. erectus* and *H. antecessor*. This "muddle in the middle" (Isaac 1975), which at present depends on how the hominids are taxonomically grouped, is making it difficult to interpret species behaviour in the period between 500 and 100ka. *Homo erectus, Homo heidelbergensis* and *Homo antecessor* are all potential candidates for the origin of Neanderthals. Local European evolution from *H. heidelbergensis* to *H. neanderthalensis* is supported by the recent cranial finds from Sima de los Huesos at Atapuerca (Arsuaga et al. 1999, Arsuaga et al. 1993). This evidence has also been used to suggest that all European Middle Pleistocene hominids are without exception the only ancestors of Upper Pleistocene Neanderthals (Arsuaga et al. 1993, Arsuaga et al. 1997b). There are two different lines of thought. Either *H. neanderthalensis* is a descendant species of *H. heidelbergensis* or the lineage splits much earlier in time with *H. erectus* (sensu lato) and therefore perhaps both *antecessor* and *heidelbergensis* are ancestors to Neanderthals. Hominids from this time period, such as the Swanscombe skull (c. 400 ka), have thick skull bones similar to *H. erectus* but the cranial capacity (1,325cc) exceeds the *H. erectus* brain size by a significant proportion (Klein 1989 (1999)). In addition the Swanscombe occipital has a suprainiac fossa, which is a derived characteristic of Neanderthal skulls (Luca 1980) and a flattening of the lambda that resembles the later specimen from Biache-Saint-Vaast (Stringer, Hublin, and Vandermeersch 1984).

Middle Pleistocene Hominids of Europe		
Age Estimate	**Site**	**Hominid Species**
120	Saccopastore	
	La Cotte de St Brelade	
	Biache-Saint-Vaast	*Homo neanderthalensis*
	Ehringsdorf	
220	Pontnewydd	
	Atapuerca Sima de los Huesos	
	Steinheim	
300	Reilingen	
	Swanscombe	
	Arago	*Homo heidelbergensis*
400	Bilzingsleben	
	Vértesszöllös	
	Petralona	
	Boxgrove	
500	Mauer	

Table 2.1 – Middle Pleistocene hominid sites in Europe

Although there is still disagreement over species types, there seems to be a clear link in Europe between the Middle Pleistocene hominids and later Neanderthal specimens (Arsuaga 1991, Arsuaga et al. 1993, Arsuaga et al. 1997c, Klein 1989 (1999): 296-305). Debates over the dates and definition of Neanderthals remain but the important point here is that in Europe there is no association of Neanderthals with an Acheulean industry. Therefore, for the purpose of the time period under study here, the Acheulean of 500-300ka, *H. heidelbergensis* will be used to describe the hominids of this period (table 2.1). The paucity of fossil evidence and the wide span of dates attributed to these hominids means that it is difficult to establish a list of morphological traits for behavioural interpretation. More generally, they have a robust form, large in height and size, evident in fossils such as the tibia from Boxgrove (Roberts, Stringer, and Parfitt 1994). Using widely spread fossils in time and space it has been possible to determine that by about 400ka the hominids have evolved significantly large-brains and in compensation developed a reduced gut necessitating high quality food (Aiello and Wheeler 1995).

2.2.4 Lifeways in Acheulean Europe

The interpretation given here is pieced together from site-based studies and regional pictures using data from both fine-grained deposits and palimpsests. At a landscape level, studies of raw material transfer across regions of Europe have shown that during this time hominids were ranging over small distances suggested by the predominantly local raw materials used for artefact production (Féblot-Augustins 1997, 1999). Detailed studies indicate that at most Acheulean sites raw material is collected within a radius of 0-3km and it is not usually transported further than 80km (*ibid.*). The high density of bifaces and flakes along major rivers suggests that when hominids were moving, it was frequently along paths within the valley floor (Hosfield 1999). Using these data, Gamble (1999) suggests that during the Acheulean landscapes of habit were local and activities took place within a few days range.

Where *in situ* sites allow the visibility of short-term subsistence or knapping practices on the ground attempts are made to reconstruct hominid interactions. It is suggested that hominids may have been structuring their space (e.g. Bilzingsleben or Lazaret) although there is no good evidence to indicate 'dwellings' (Kolen 1999) and fires are not marked out. At Bilzingsleben there may be an intentionally paved area (Mania 1991, 1995) but good spatial evidence is rare. It has been suggested that social life may not have been organised by hearths and huts but perhaps it was routinised through opportunities of action in daily life (Gamble 1999).

The *chaîne opératoire* indicates that stone tool technologies were focused on *façonnage* rather than *débitage* (White and Pettitt 1995), resulting in large numbers of pebble tools and handaxes. Handaxes are argued to show evidence for motor and cognitive skills either through technological production or in the form of the mental template (Gowlett 1984, 1986). Although ovate handaxes are argued to be the preferred form (White 1998b), Gamble (1999) stresses the need for a shift towards a focus on the situational character of variation. The intense focus on handaxes has often lead to the impression that the Acheulean is a static period that reproduces the same stone tools with predictable monotony. In the last few years, interesting differences in assemblages have been drawn attention to such as s-twists in bifaces from OIS 11 (White 1998a), the very high incidence of retouched tools from High Lodge OIS 13 (Ashton and McNabb 1992) and non-biface assemblages (White 2000b). In addition to lithic material, sites such as Bilzingsleben have several unstandardised wooden pieces and engraved bones mostly on elephant (Mania 1991, 1995). Cutmarked bones such as some of those at Boxgrove indicate primary access to large carcasses (Roberts and Parfitt 1999) and wooden spears at Schöningen (Thieme 1997) and Clacton (Oakley et al. 1977) suggest evidence of hunting. The wooden spears are 2m long, made from the trunks of sprucewood and the centre of gravity is close to the tip, which suggests a good understanding of projectile technology.

Social life was routinised and networks of relations emphasised co-presence (Gamble 1999: 173). Networks of hominids were both intimate and effective but they were probably not greater than twenty individuals in number (Gamble 1999). This fits well with the pattern suggested by sites such as Boxgrove (Roberts and Parfitt 1999), which produce only small quantities of *in situ* lithics indicating a low-density use of locales.

2.3 THE MIDDLE PALAEOLITHIC

2.3.1 Dates and a Definition of Middle Palaeolithic Europe

At present, the consensus seems to be that Middle Palaeolithic industries are first present about 300ka (Ronen and Weinstein-Evron 2000b) and conclude with the beginning of the Upper Palaeolithic at some time after 45ka depending on the region and choice of chronologies. The beginning of the Middle Palaeolithic sees a change to an emphasis on flake tools, more frequent use of Levallois technology and only a few handaxes, if there are any at all. Assuming that the UK is the furthest and most isolated part of Western Europe, the presence of Levallois technology here in OIS8 suggests that it was during OIS 8 that this technology becomes a widespread phenomenon across Europe in the societies of the day (White & Pettitt 1995). In the past it has been argued that there is no division between the Lower and Middle Palaeolithic and they should be placed as one group (Bar-Yosef 1982, Gamble 1986). However at present the general opinion is that the Middle Palaeolithic is a distinct unit (Gamble and Roebroeks 1999) and it is quite common to divide up the Middle Palaeolithic into sections. For most researchers the first division sits at OIS 5e or 5d where for the first time there are classic Neanderthal hominids and Mousterian Industries (Mellars 1996). The Mousterian is usually only applied to industries after 5e. This is the definition that I will follow here, only looking at earliest Middle Palaeolithic or pre-OIS5e industries.

2.3.2 Environmental background

Climatic instability has dominated the North Atlantic region (Dansgaard et al. 1993). In Europe the Middle Palaeolithic industries begin in the Saalian glacial complex between OIS 8 and 6. While OIS 8 and 6 are colder periods OIS 7 is somewhat more temperate. Overall there are relatively few sites during the Saalian when contrasted with assemblages post OIS 5e. Before the end of OIS 6 and 5e, there is little stratigraphic information in the caves, as they were scoured out by previous glaciations.

OIS 8 is still not well understood in detail although it is known to be a cold period with low ocean volume. In stage 8 there is the first uncontroversial evidence of a biotope called Mammoth-steppe (Guthrie 1990). This productive habitat had a grazing community stretching from Cantabria to Alaska (Roebroeks and van Kolfschoten 1995, van Kolfschoten 1992). Most of the vegetation and animal communities at this time are a part of the *Mammuthus/Coelodonta* faunal complex (Khalke 1994). During this stage there is an increase in arctic mammal species, especially lemming (*Dicrostonyx*) and reindeer. It is thought that during glacial periods herds, and therefore hominids, were at lower altitudes (Mussi 1999). In Central Europe LP settlements were only found in warm periods and were situated in proximity to water and lithic material. At the LP/MP boundary we see for the first time *in situ* artefacts in cold period deposits, especially in the loess. Evidence of adaptation to cold climate and open landscape seems to be an important phenomenon related to the beginning of the MP (Svoboda 1999).

2.3.3 Hominids

Homo neanderthalensis is the most well understood fossil hominid group due to the numerous remains found and their relative morphological unity. The Neanderthal geographic range is confined to Europe and Western Asia and most of the well-dated, 'classic' Neanderthal forms are present after the beginning of the cooling period at OIS 5d (Mellars 1996). In OIS 5 Neanderthals are represented by specimens such as those at Krapina, Saccopastore, La Chaise-Bourgeois-Delaunay, Gánobce, Taubach, Salzgitter-Lebenstedt. However, it is argued that many of the distinctive Neanderthal traits can be traced back to at least OIS 7 (Stringer and Gamble 1993, Trinkaus and Shipman 1993). Using the ESR dating technique, the Sima de los Huesos early Neanderthals are probably greater than 300ka (J. Bischoff pers. comm. to Plana and Mosquera 1999). Hominid bones and teeth have been classified as Neanderthal from OIS 6 (Lazaret, La Chaise-Suard, Fontéchevade, Biache-Saint-Vaast and Pontnewydd) and OIS 7 (Ehringsdorf), while earlier forms have been regarded as 'pre' or 'proto' Neanderthals such as those hominids from Petralona (Greece), Tautavel (France) and Swanscombe (England). Neanderthals are associated with the Mousterian technocomplex although there is some archaeological evidence to suggest that the Neanderthals also made some variants of what has been traditionally described as Upper Palaeolithic tool types (Mellars 1996). Neanderthals had a high degree of skeletal robusticity, which suggests high levels of habitual physical activity (Trinkaus 1983, 1986). The great contrast between the cross section of femurs from Neanderthal and archaic *H. sapiens* may reflect different habitual patterns of movement about the landscape (Ruff et al. 1993). Despite variation in robusticity both groups were able to exert the same amount of force in a precision grip although Neanderthals would have possessed a much stronger power grip (Trinkaus 1983). The shortness of lower and upper limbs, and the large nasal aperture in Neanderthals are thought to be adaptations to the cold environment (Stringer and Gamble 1993). The degree of dental attrition to the anterior dentition is thought to be use wear caused by non-masticatory activities (Trinkaus 1983).

2.3.4 Lifeways in Middle Palaeolithic Europe

The interpretation of Neanderthal behaviour has been problematic, tending to swing between those who consider that these hominids were very primitive and those that see them as culturally similar to *Homo sapiens* (Trinkaus and Shipman 1993). Mussi (1999) summarises the general trend of current thought on why the Middle Palaeolithic record is such a grey area for interpreting hominid behaviour.

> "We know quite well that the hominids responsible for what we call the 'Lower Palaeolithic' were quite distinctive from ourselves, while we assume that the modern humans of the 'Upper Palaeolithic' differed in no significant way from us. What is left in between, i.e. in Europe, the Mousterian which is associated with Neanderthals and other archaic *Homo sapiens*, is a grey area that we are uneasy with. It is expected to be the result of a behaviour neither totally different, nor really similar to ours." (Mussi 1999: 49)

It is argued that in the MP there is a qualitative difference reflected in behavioural aspects such as lithic technology, symbolic expression and resource provisioning (Mellars 1996), which is visibly different from the organisational levels of the UP. The Mousterian at Arcy-sur-Cure validates this, showing a random distribution of remains (Farizy 1994), which contrasts sharply with the Châtelperronian levels where the cleaning of activity areas suggests a change in the concept of living surfaces. Habits of clearing and disposal of rubbish, including lithic waste, have consistently distinguished French Upper Palaeolithic sites from those of the Middle Palaeolithic, whose occupants have allowed such material to accumulate in place. Although some sites have remains that are discreet with well-defined activity areas, some argue (Conard and Adler 1997, Simek 1987) that this suggests a simple occupation pattern, which is probably the result of several short occupations by small groups. Mellars (*ibid.*) views Neanderthal complexity and the variability of MP settlement as the repetition of a single model and therefore the organisation of activities at MP sites should be interpreted in terms of pragmatic rather than symbolic considerations. Pettitt (1997) describes small groups of hominids occupying sites briefly and repeatedly. He believes this indicates that their behaviour has limited variability and is habitual in nature.

In contrast, Bar-Yosef's team see the presence of secondary disposal at Middle Palaeolithic sites (Bar-Yosef et al. 1992) and at sites such as Cueva Morín, different artefact types are not evenly distributed (Freeman 1992). Vaquero follows along the same line, arguing that the lithic evidence does not imply a qualitative difference between MP and UP spatial patterning (Vaguero 1999). He uses the site of Abric Romaní to support his arguments for variability in the MP occupation stratigraphy. The size and length of the occupation surface, the relationship between different areas, the transport of artefacts, the presence of secondary refuse and recognition of discrete accumulations are all suggested to reflect this. Spatial variability can also be see in functional specialisation, the localisation of knapping activities to one area, the transport of large artefacts equalling higher mobility, and the intentional transport of cores and retouched artefacts over a living surface.

These studies of assemblage variability stem from the techno-typological scheme of Bordes (1961a). Presence, absence and proportion have been key to the interpretation of variability in this period. Stone tool types are interpreted as providing explanations about function, ethnicity, environment and raw material differences. Dibble (1984, 1988a) has attributed variability in stone tool forms as functional rather than stylistic. He proposes that tools were being resharpened probably as a result of scarcity or difficulty of access to raw materials. Hence, Dibble emphasises the last stages of the *chaîne opératoire*. However Pettitt (1992) argues that this model does not apply to the majority of sites in Southwest France. White and Pettitt define Mousterian variability as,

> "...the adaptation of débitage as a response to raw materials, the cyclical fluctuation of such adaptations over time particularly in the context of changing mobility strategies and the incorporation of an element of technology in these, and a continuing (and probably underemphasized) tradition of Façonnage selected for use in certain contexts. ...Much of the variability is due to the adaptation of systems of débitage to a variety of nodule forms

which ultimately produces a recurrent variety of flake types". (White and Pettitt 1995: 36-7)

This is very similar to some of the interpretations of Lower Palaeolithic variability where handaxe types are thought to be largely a consequence of raw material shape (Ashton and McNabb 1994, White 1998b). Returning to comparisons with the earlier period, White and Pettitt (1995) see the LP to MP transition as a gradual increase in the emphasis of débitage (flake-tool-based assemblages) over façonnage (core-tool-based assemblages). Following this there is a cyclical variation on the relative importance of different systems of débitage, which they suggest ultimately relate to changing environments and resulting mobility strategies. By OIS 8 and possibly a great deal earlier the technological transition (i.e., to Levallois) has been achieved and there are no further technological innovations although Neanderthals reflect innovation in different ways such as their use of the landscape.

This fits in well with the observation that hearths change location between the Lower Palaeolithic (LP) and the MP (Svoboda 1999). Hearths are outside by the entry area in the LP, where the activity centres would be expected (e.g. Prezletice and Bilzingsleben). In the MP hearths move into the centre of features. Climatic deterioration throughout the MP period would serve as a simplistic but possible explanation of the change in hearth location. However, unlike the LP, the evidence for the MP is mostly based on cave sites. The frequency of visits to caves probably increases through time, as archaic hominid groups before the Würm (OIS 5d) were probably not using natural shelters more frequently than modern herbivores do. The Acheulean pattern is quite different. For example, the Formazione Aurelia (Mussi 1999) sites indicate a relationship to the seasonal exploitation of dying animals near the water holes and in the poorly drained coastal areas. By the MP hominids were competing with carnivores for the best cave sites in areas with good resources and hominids were returning to distinct places after meat collection (*ibid.*).

There seem to be different settlement patterns and different movement through the landscape in the MP. Hominids were going further for good raw materials and they were collecting and transporting flint as a specific task rather than as part of a wider foraging strategy (Mussi 1999). Lebel's (1992) work on raw materials from levels associated with the Lower Palaeolithic in OIS 12 at the Caune de l'Arago indicates that the majority of the lithic materials were present within 5 km of the cave. Comparisons by Féblot-Augustins (1997) show significant differences in the distances of raw material transfer in Europe between Acheulean and Middle Palaeolithic times. Raw materials that came from more distant sources were also shown to be successively later in the *châine opératoire* sequence of lithic reduction. The most mobile lithics involve Levallois technology (Féblot-Augustins 1999). However, unlike the Upper Palaeolithic, the hominids were moving to the material sources rather than trading flint across large areas of Europe (Svoboda 1999). Kuhn (1995) questions the levels of MP mobility versus possible temporary or seasonal settlement at sites. Arguments for settlement are based on the sheer density of archaeological deposits (Gamble 1986: 299) although there are certainly some brief occupation sites (Otte, Evrard, and Mathis 1988). The presence of ungulates from a variety of seasons has been used to suggest that the site's occupants stayed there year-round (Lieberman 1993). However this suggestion may be countered by the time-averaged nature of deposits, which means that stratigraphy lacks the refinement to clarify this viewpoint. Amongst modern foraging groups, the more regularly a site is reoccupied, the more rigidly they structure the use of space. The absence of structure within the occupied spaces may suggest that groups were actually very mobile.

Kuhn (1995) argues that there is a scarcity of procurement implements in the Mousterian tool kit. The kinds of specialised extractive artefacts characteristic of later time periods are notably scarce. Pointed artefacts may have been hafted and there are cases where points have been found embedded in bone but on the whole hafted weapons are scarce or ambiguous in the Middle Palaeolithic record. Boëda (et al. 1999) found a Levallois point embedded in the neck bone of a wild ass at an open air site in the El Knowm basin in Syria, which has been dated by TL to greater than 50ka. This is not thought to be a projectile point, but it may have been hafted as a spear and thrust into the wild ass. Kuhn is surprised to see so little investment and such limited variation in projectile technology across the entirety of temperate western Eurasia during the 200,000 or so years that Mousterian industries were made. He argues that there is little evidence of a technological response to pressures to be more effective or efficient at procuring game. The Mousterian has a scarcity and monotony of food procurement technology (Kuhn 1995). He suggests that three things could have occurred. One, they could have focused on other resources in hard times, two, hunting strategies did not vary through lithic technology but through patterns of co-operation and collective action (Stiner 1994), or three hominids expanded the search areas to find subsistence.

Issues of symbolic behaviour are also predominant in debates over Neanderthal social life and its possible presence during the Middle Palaeolithic. There is the presence of ochre in greater quantities, the possibility of language and some engraved bone. These pieces of evidence are highly contentious and not common in the archaeological record. Research is particularly fragmented between those that see burials as symbolic (Solecki 1971), those that believe Neanderthals are only performing a functional task (Mussi 1999) and those that do not believe that some of the burials exist at all. In the Lower Palaeolithic it is thought that hominids abandoned bodies and moved on while it is argued that Neanderthals had the ability to cope with the situation and buried corpses instead of leaving a place (Mussi 1999). However perhaps interpretations of both periods are misplaced due to our own preconceived notions of how the dead should be disposed of. Even in more recent times death does not always result in burial in the Western sense of 'six foot under' but can be ritualised and celebrated through cremation, excarnation or even plastination. At Pontnewydd Neanderthal teeth suggest that there were between five and fifteen bodies deliberately placed 225ka ago in the dark recesses of this cave (Green 1984). Similarly at Sima de los Huesos, Atapuerca more than 32 *H. heidelbergensis* individuals have been found at the bottom of a deep shaft (Arsuaga et al. 1997a). It is also possible that at Krapina in Croatia some Neanderthal bones display cutmarks that may represent defleshing and possible excarnation (Radovcic et al. 1988, Russell 1987a&b).

Overall Neanderthal society seems to have been quite different from earlier hominid groups. Although symbolic evidence is minimal, particularly for the earlier portion of the MP, stone tool production methods were changing and movement across the landscape took on a different form. Greater amounts of variation over time and through space are described and this may be suggested to relate to a more intensified social life (Gamble 1999: 267).

2.4 A SUMMARY OF MIDDLE PLEISTOCENE EUROPE

It may seem inappropriate to have discussed the Acheulean and the MP so separately when the focus of my research is on the transition between the two. This is because only four patterns underlying the transition are apparent in the literature (see below), and each pattern is created through the separation of the Acheulean and the MP to explain behaviours. Thus:

1. The 'typical' Acheulean and MP are usually discussed independently and then comparisons are made between the two Industrial groups to determine how behaviour has changed. Therefore two abstracted ideals are compared, not the material itself.
2. When the transition is broached the key theme is the discussion of typology rather than behaviours that may have been present at that time (for example see Ronen and Weinstein-Evron 2000b). The typological discussion is orientated around whether the assemblage is more 'Acheulean' or more 'MP', whether it should be named as a typologically distinct industry and which stone artefacts mark it out as something different.
3. The transition from the Acheulean to the MP in Europe is often seen as an introduced technology from the South and West (Africa and/or Asia).
4. The alternative suggestion is independent invention, which is tracked through the presence of Levallois technology and the European hominid lineage. The Acheulean is studied to look for the beginnings of MP-like tools. There is thought to be a relationship between biface production procedures and Levallois technology (White and Pettitt 1995). This is argued for at sites such as Cagny-la-Garenne dated to OIS 12 (Tuffreau 1982).

Using these points, the Acheulean to Middle Palaeolithic transition ends up as a summary of these two different industrial groups. The Acheulean is generally regarded as less complex than the MP. Earlier signs of complexity, such as small amounts of Levallois technology, are discussed as arising in the Acheulean, but they are only considered to be fully developed during the MP. However, the proportional differences in Acheulean types may suggest that perhaps the industry is just different rather than less complex. The shift is generally described as a change from;

ACHEULEAN		**MIDDLE PALAEOLITHIC**
Façonnage (or core-base)		*Débitage* (or flake-base)
Retouch	**TO**	High levels of retouch at some sites
Many bifaces		Few bifaces at some sites
Levallois		Greater use of Levallois

Although raw materials are usually local for both periods, the distances that raw material has travelled are greater in the Middle Palaeolithic and specific tool types (particularly Levallois pieces) travel the farthest. This suggests an increase in the scale of mobility, more planned seasonal moves and possible long-distance social interaction. It has been noted that the industries begin to change at about 300ka as brain size in archaic hominids begins to escalate to current levels and reaches what is thought to be a critical threshold for maintaining larger social groups (Aiello and Dunbar 1993) and perhaps more complex relationships. Hominids in the MP are now occupying areas of Europe even during cold periods (Svoboda 1999) and there is greater regional variation in stone tool types. From the Lower to Middle Palaeolithic there are also changes in spatial activities demonstrated by the position of hearths, the spatial division of material on a living surface. These shifts suggest changes in the way hominid groups are living and interacting. While Acheulean hominids had social actions, Neanderthals have intensified social life through non-symbolic gestures and material resources (Gamble 1999).

This summary jumps between the Acheulean and the MP. Therefore, while research contrasts these two periods, it does not actually discuss behaviours at the transition. I believe that this is because a transition does not effectively exist within the current framework, as change is located in the comparison of two static blocks of time.

Chapters Four and Five aim to show why current interpretations do not interpret change and why transition points should not be brought into existence (tables 4.1 & 5.1). Similar issues and problems with interpretations of the African record will be visible in the next Chapter (3).

CHAPTER THREE

AFRICA AT THE TRANSITION

CONTENTS OF CHAPTER THREE

3.1 INTRODUCTION

Research in Africa is often linked with Europe by the parallel nature of its cultural changes, particularly concerning the arrival of Levallois technology, at the end of the Middle Pleistocene (e.g. Foley & Lahr 1997). In addition, in Africa at this time, it is thought that there may also be evidence for the origin of modern humans. This has led to intense interest in Middle Pleistocene Africa where key research points to fundamental shifts in hominids' biological, cultural and genetic makeup. This chapter expands on Chapter One to provide a discussion of the present interpretations of these shifts in hominid behaviour patterns at African sites (fig. 3.1). It begins in **section 3.2** with a broad scale approach, looking at material culture across Africa during the Acheulean and Middle Stone Age (MSA). This survey gives the reader an overview of the African chronological and technological evidence for late Acheulean assemblages, prepared core technology and the earliest MSA. A more detailed account of my study area, the South African Middle Pleistocene, follows in **section 3.3** summarising the sites in relation to their stone tool industries, environment and possible behaviour patterns. In the final **section 3.4** a synopsis of African interpretations at the transition is discussed.

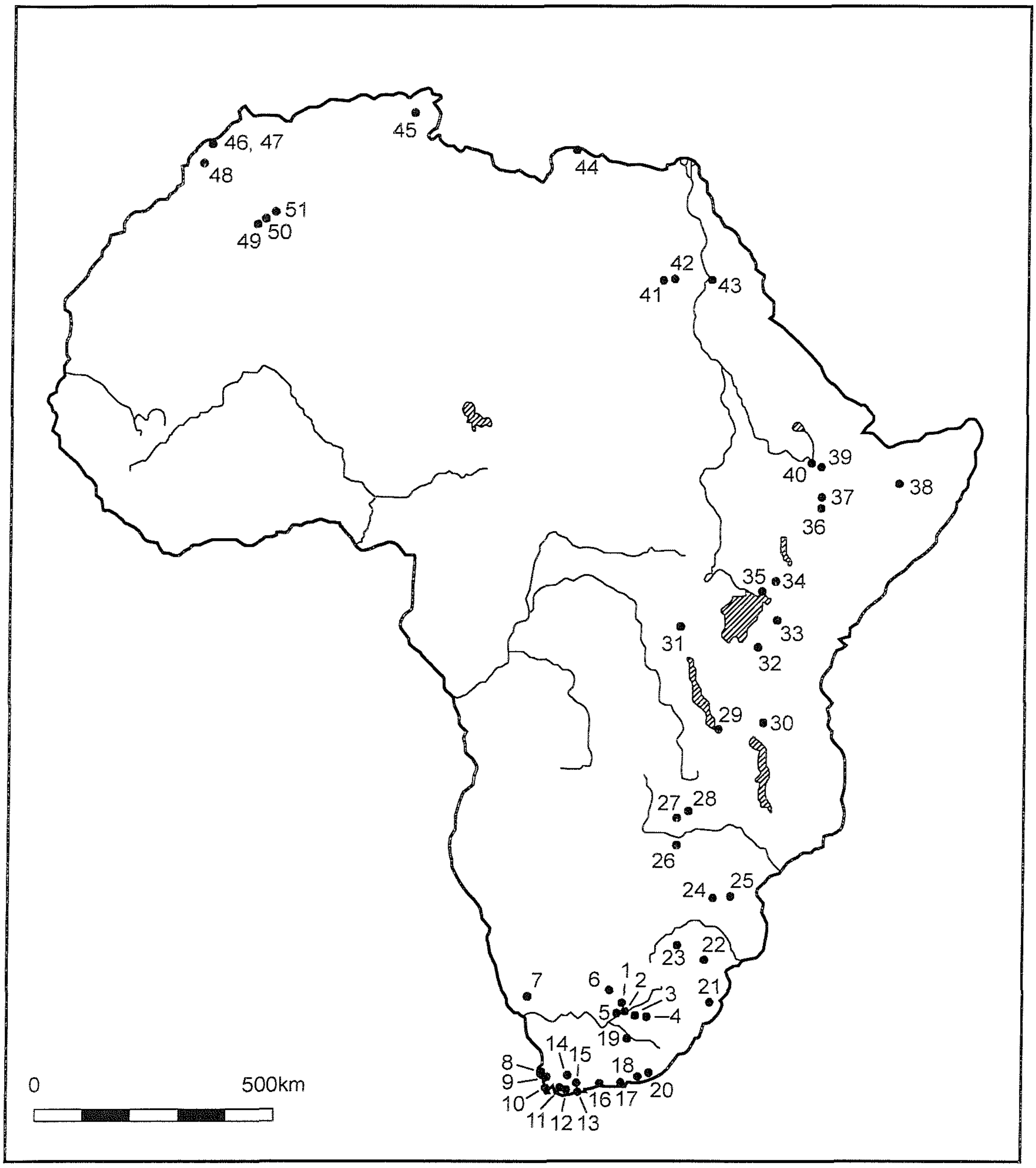


Figure 3.1 - Map of African Middle Pleistocene archaeological sites

Case Study sites are highlighted in bold on the following page.

1	**Taung DB3**	**South Africa**
2	**Canteen Koppie**	**South Africa**
2	**Pniel 6**	**South Africa**
3	**Samaria Road**	**South Africa**
4	Florisbad	South Africa
5	**Muirton**	**South Africa**
6	Equus Cave	South Africa
7	Apollo Cave	Namibia
8	Elands Bay Cave	South Africa
9	Hoodjiespunt	South Africa
10	Hopefield	South Africa
10	Elandsfontein	South Africa
11	Peer's Cave	South Africa
12	Die Kelders	South Africa
13	Blombos Cave	South Africa
14	Montagu Cave	South Africa
15	Still Bay Cave	South Africa
16	Herolds Bay Cave	South Africa
17	Mossel Bay Cave	South Africa
18	Klasies River Mouth	South Africa
19	Orangia 1	South Africa
20	Howiesons Poort	South Africa
21	Border Cave	South Africa
22	**Bushman Rockshelter**	**South Africa**
23	**Cave of Hearths**	**South Africa**
24	Bambata	Zimbabwe
25	Pomongwe	Zimbabwe
26	Twin Rivers	Zambia
27	Mumbwa	Zambia
28	Kabwe (Broken Hill)	Zambia
29	Kalambo Falls	Zambia
30	Isimila	Tanzania
31	Katanda	Democratic Republic of Congo
32	Mumba Shelter	Tanzania
33	Olorgesailie	Kenya
34	Kapthurin	Kenya
35	Muguruk	Kenya
36	Gademotta	Ethiopia
37	Kukuleti	Ethiopia
38	Bodo	Ethiopia
39	Lake Ziway	Ethiopia
40	Melka Konturé	Ethiopia
41	Bir Sahara East	Egypt
42	Bir Tarfawi	Egypt
43	Taramsa	Egypt
44	Haua Fteah	Libya
45	Sidi Zin	Tunisia
46	Sidi Abderrahman	Morocco
47	Thomas I Quarry	Morocco
48	Jebel Irhoud	Morocco
49	Tabelbala	Algeria
50	Ougarta	Algeria
51	Tachengit	Algeria

3.2 THE ARCHAEOLOGY OF AFRICA

3.2.1 Introduction

The Acheulean, characterised by the presence of shaped bifacial stone tools, is first present in assemblages after 1.7ma (Roche and Kibunjia 1994). At a simple level, it is argued that the transition across Africa from Acheulean to MSA is based on a clear change in stone tools following a period that is often characterised by biface studies as over one million years of stasis (Deacon and Deacon 1999: 79; Klein 1989 (1999): 337). Typologically, the transition has been seen as a shift from lithic assemblages with a strong component of flaked pieces (*façonnage*, e.g. handaxes and cleavers) associated with the Acheulean (Isaac 1986), to those with flake tools and points (*débitage*, e.g. scrapers and denticulates) in the MSA (McBrearty 1991). Chronologically the dating across Africa for this time period is very disappointing, as the transition does not demonstrate a straightforward pattern in studies of either assemblage composition or chronology. ESA assemblages begin to disappear from the record after 300ka and by OIS 5e only MSA assemblages are present and broad regional patterns can be identified on the basis of their stone tool kits. However one of the current problems is that,

> "...we are dealing with an enormous time span on a vast continent for which we have a staggering paucity of post-Acheulean data points either through time or across space." (Mehlman 1989: 8)

Arguably the intervening period between the ESA and MSA may have two main variants, the Sangoan/Lupemban and the Fauresmith. The Fauresmith, found south of the Limpopo River, is viewed as either the final stage of the Acheulean (Malan 1947) or the first stage in the MSA (Beaumont 1999) and is recognised by Beaumont on the presence of blades, points and finely retouched artefacts. In contrast, the Sangoan Industry, north of the Limpopo River, is characterised by heavy-duty tools including picks, choppers and core axes. It has been found stratigraphically below the Lupemban at Kalambo Falls in Zambia (Clark 1969-1974). The Lupemban, an MSA industry, also has core-axes and is thought to be associated with tropical and subtropical woodland areas (Clark 1999). Alongside these two industries the Acheulean appears to persist somewhat later in time in some areas and pebble/chopper tools are found throughout the Middle and Upper Pleistocene. The record is further confused by apparent changes earlier in the ESA including the appearance of prepared core technology such as the Victoria West, blade technology, more refined bifaces and sometimes a high proportion of retouched flakes. For simplicity I shall discuss the detailed artefact interpretations of this period in Africa by regions, i.e., North, Central & West, and East Africa, as this is the manner in which the archaeology has been discussed in much of the literature. This will be followed by a summary of the way in which the African transition is perceived. It is worth noting here that in some areas of northern Africa the term Mousterian or Middle Palaeolithic (MP) is applied to the stone tool industries rather than the term MSA, which is consistently used to describe assemblages from this time period south of the Sahara.

3.2.2 North Africa (Morocco, Algeria, Tunisia, Chad, Niger, Libya, Egypt)

Within this region there are a variety of geographical zones ranging from the coastal Mediterranean in the north to dry savannah woodland further inland, which grades into desert in the central Sahara. In spite of the diversity of ecozones and the enormous area covered in this section, most of North Africa has a fairly sparse record of the Acheulean-MSA/MP transition, as open sites do not tend to have long stratigraphies. Poor preservation, limited dates and few faunal remains are partly to blame, and wind erosion and deflation have largely eradicated many of the open sites. In addition, the opportunity to carry out fieldwork in some of these regions has been limited and the paucity of new data is a direct reflection of recent political troubles. In spite of the limited information available there are a few examples of later Acheulean sites in Algeria, Libya and the Nile Valley. They all have bifaces that are said to show typological affinities to the late Acheulean occupations in Morocco (Clark 1992a). Chad and Northern Niger also have evidence for an Acheulean presence, but once again a dearth of intensive studies and the lack of a firm chronology have made it difficult to make any detailed interpretations of these areas. Further west, at Akka in Tunisia there is a typical Mousterian of Levallois facies found associated with Acheulean type cleavers in fine-grained alluvial sediments (Rodrigue 1987). Turning to the Western Desert of Egypt there is a more detailed record of Late Acheulean sites with rare Levallois cores and flakes (Caton-Thompson and Gardener 1952; Schild and Wendorf 1975, 1977, 1981). Although undated, there is Levallois present with typologically

Middle and Late Acheulean assemblages in Nubia (Vermeersch 1995). Two of the most thoroughly researched areas are Bir Tarfawi and Bir Sahara, where there are several Acheulean sites, including a locality with both Levallois flakes and a number of finely made Micoquian bifaces. Some of the Acheulean sites are closely associated with early MP sites (Wendorf et al. 1993). However Wendorf, Schild and Close are cautious of their early dates for the MP on the basis that sites elsewhere in North and East Africa do not have dates greater than about 230ka. Another site in the Nubian region is Taramsa where there is Early Middle Palaeolithic material including handaxes, foliates, sidescrapers and a few denticulates with a striking lack of Levallois technology (Vermeersch et al. 1993).

At present it is in the north-west corner of Africa that the best evidence is found for this time period as the combination of cave and open sites in Morocco allows for a much more detailed record. Here the earliest Levallois is associated with the Middle Acheulean Stages VI-IV of Biberson (1971). The first intentionally prepared cores are described as using the proto-Levallois technique (Clark 1992a) but according to Biberson (1961), prepared core technology was introduced during the Middle Acheulean and developed during the Late Acheulean. One good early example of a Stage IV Acheulean Industry is at Sidi Abderrahman. This site is described as having many flakes and large cores that typologically resemble the South African Hensbeak or Victoria West I core type (Clark 1992a: 23). The following Stage V, best represented by the site of Grotte des Ours, has a full range of Acheulean forms as well as proto-Levallois 2, with Victoria West 2 horsehoof core types. In addition, at this site there are two curved bear bones that are thought to be cultural artefacts. The primary context site of Stage VI, Grotte des Littorines, has an industry similar to Stage V, with characteristic handaxes of a predominantly ovate form and the proto-Levallois technique. It is argued that only later in Stage VII can pieces be typed as Levallois cores because they are smaller, better made and display a number of different core forms (Clark 1992a, Vermeersch 1995). Blades are now present in small numbers and retouched tools (pointed, side and end scrapers) are proportionally more significant and have a greater degree of refinement. In this stage cleavers are not as common although there are some Micoquian handaxes and disc cores. Additionally, in the Late Acheulean there is localised change, as flint was sought for more systematically (Raynal et al. 1995). The final stage of the Acheulean, Stage VIII, is present in the brecciated pink limestone at Cap Chatelier, Sidi Abderrahman. Although the artefacts are fresh they are not thought to be in a primary context which has caused some concern due to the presence of a blade element and a single tanged flake. Other artefacts include discs, and many unifacially and bifacially flaked tools. The age of this deposit is thought to pre-date the marine transgression which ties in with the U/Th dates from the Moroccan coast of c.140 to 120ka bp (Hublin 1985). It is questionable as to whether Stage VIII should be considered as Acheulean or MP (Clark 1992a). Overall, the divisions given for this stage system is not a well-substantiated pattern and as dating techniques are changing, so the interpretations keep shifting. However the importance for the purpose of this thesis is the clear association of Middle Acheulean artefacts with prepared core technology.

On the western edge of the Saharan Desert the talus slopes of the mountain ridges of Ougarta and Tabelbala (Atlas Mountains) are full of quarry waste from the Acheulean and later lithic industries (Balout 1967, Tixier 1957). Of particular importance here is the Tabelbala-Tachengit method for the manufacture of cleavers (Balout *ibid.*). Here cleaver blanks are prepared on the core before the removal of the cleaver flake. This is a clear, albeit very early representation, of a form of PCT technology. The most complete artefact sequence of the Sahara comes from this region at Saoura (Alimen 1978, Chavaillon 1964). Here Lower, Middle, Upper and Final Acheulean assemblages are present with the Tachengit method first appearing during the Middle Acheulean

Across North Africa there is some evidence of the late Acheulean although this would seem to have disappeared by 200ka (Clark 1999). The best representation of this is at the stratified site of Sidi Abderrahman at Casablanca, in Morocco where a late Acheulean assemblage with blades is probably dated to OIS 8 (Clark 1992a). The MSA industries do not seem to be present before stage 6 and the earliest MP of the Maghreb is the Ouljian marine transgression deposits, which correlate with the Last Interglacial. Several U-series dates are associated with this event ranging between 140 and 120kya (Wendorf and Schild 1992). Further south in the Sahara Desert there are several U-series dates associated with Acheulean stone tools in OIS 6, 7 and 8 (Clark 1999). Sequences of Lower and Middle Palaeolithic are extremely rare, Haua Fteah being one of the best examples. Wendorf & Schild (*ibid.*) argue that there is no evidence for the Lower to Middle Palaeolithic transition in North Africa while Clark (1992a) argues that the MP evolved *in situ* directly out of the terminal Acheulean. Much of the interior of this region indicates a period of major aridity between the last Acheulean and the earliest MP. This major aridity is thought to date to well before the Last Interglacial. Both final Acheulean and the earliest MP sites are found along the Mahgrebi coastline. The difference in site location between these two periods is thought to be a consequence of sea level change, which may represent the onset of glaciation further north, suggesting that a significant amount of time passed between the occurrences of the two industry types.

To sum up, the North African evidence provides interesting evidence for the early presence of prepared core technology (including radial Levallois, blade and Tabelbala-Tachengit approaches) and a gradual increase at the end of the Acheulean in the presence and regularity of retouch, the frequency of Levallois technology and the number of flake tools. Unfortunately the great majority of artefacts are surface finds that can not be sequenced and the secondary contexts have put limits on the interpretation of behaviour patterns. Hence the focus has been on description of the artefact typologies and technologies, and the order of the chronological sequence rather than behavioural interpretation. However a combination of geomorphology, fauna and techno-typology has expanded interpretations of the African record. Levels of variation in the Acheulean can be seen at the spring site of Sidi Zin in northern Tunisia (Gobert 1950). Here a sequence of three Acheulean horizons shows interesting stylistic differences. The base assemblage is typical Acheulean with lanceolate handaxes, the middle assemblage has well made cleavers and unifacial ovate handaxes and the upper level is a repetition of the lowest level. This suggests that the Acheulean is not as stereotypical as some have portrayed. In relation to the transition, one interesting observation from the Moroccan sites is the absence of sea foods in the hominid diet during the Acheulean Stages I-VIII (Clark 1992a), as it is known that the MSA hominids were exploiting coastal resources.

3.2.3 Central, West & parts of Southern Africa

South of the Sahara, in West Africa the Acheulean is present but once again lacks intensive investigation, lengthy stratigraphies and dates. However further east, the Sangoan technocomplex is evident in the Congo Basin, Lake Victoria Basin, West African savannah, Angola, Zambia, southern Tanzania and Malawi (Clark 1999). The Sangoan overlies the Acheulean at several stratified sites, such as Kalambo Falls (Clark 1964b, 1969-1974), and underlies the MSA at the cave sites of Pomongwe (Cooke 1963), Bambata (Armstrong 1931), and at Muguruk (McBrearty 1987, 1988). It is argued that these Sangoan artefacts were specifically designed to perform a more limited range of tasks than the multipurpose biface (Clark 1999). The heavy-duty tools of the Sangoan are seen to be a reflection of the more closed habitats and therefore differentiation in subsistence strategies of the tropical African prehistoric populations (Klein 1989 (1999): 259-63). Clark (1964b, 1970, 1999) interprets the Sangoan as representing a new, widespread adaptation to more heavily forested areas, while Fauresmith assemblages remain in similar, open environments to the preceding Acheulean. It is suggested that the widespread distribution of the Sangoan is indicative of a wider occupation area for the Sangoan than for the preceding Acheulean (Deacon 1975). Clark (1999) suggests that this is caused by the increasing desiccation of the continent with the central parts of the Congo Basin occupied for the first time during OIS 7 and 6. Although Levallois does not occur at the Late Acheulean site of Kalambo Falls (Cornelissen 1992) other interesting artefacts include polished rubbing stones (Clark 1999: 289) and pieces of wood modified for use with evidence for charring (Clark 2001: 481-491).

3.2.4 East Africa (Ethiopia, Tanzania, Kenya)

Recent excavations in the Kapthurin Formation show that there is significant variability at this time (McBrearty, Bishop, and Kingston 1996). Here there is good stratigraphic support for the near contemporanity of distinct assemblages made up of either bifaces or blades or heavy-duty tools like those of the Sangoan (*ibid.*). In addition, in the same area early Middle Pleistocene retouched flake assemblages without bifaces are reminiscent of the MSA. This cautionary account emphasises the necessity of good dating and sequences rather than squeezing assemblages into perceived industry categories. Across Tanzania and Kenya the Sangoan is present but further north in the Sudan there is MSA but no Sangoan before it (Shiner et al. 1971). However Clark (Clark 1988) argues that the Sangoan is always found underlying the MSA at sites in the Sudan and in east and south Africa but the MSA assemblages in this area do not contain any heavy-duty core-axes. Sites in Ethiopia and Somalia have a long chronology but the terminal stages are undated. However there is MSA in both countries with blades and levallois on obsidian and chert, which is dated to >180ka in Ethiopia (Wendorf and Schild 1974). In Tanzania Levallois is found in a Late Acheulean context, which although not directly dated is may be as old as 250kya (Mehlman 1991). In Mumba rock shelter Levallois from Bed VI has been tentatively dated from 150 to 70kya (Mehlman 1991). Further north at Lake Ziway, Ethiopia has some of the earliest dates for Levallois (Wendorf and Schild 1974).

Most of the recent work on the late Acheulean and MSA has been done by McBrearty (1987, 1988, 1991, 2000, 2001; McBrearty, Bishop, and Kingston 1996, McBrearty et al. 1998, McBrearty and Brooks 2000). McBrearty (2000) argues that subdividing African prehistory into Earlier, Middle and Later Stone Ages conflates and confuses temporal, technological and typological issues. Using the Kapthurin Formation, which has a well calibrated fossiliferous sequence of between 600-200ka (dated by K/AR, Ar40/Ar39 and palaeomagnetism) and over 30 archaeological and palaeontological sites, she highlights some of the practical and conceptual difficulties in clarifying the Acheulean to MSA transition in four points (*ibid.*).

1. There are sites dating to between 600-280 that have none or just a few bifaces. These lithics would be placed into Oldowan or MSA typological categories if their age were not already known.
2. The Kapthurin Acheulean has blade and Levallois technologies that are usually associated with later periods.
3. The relationship between points and small handaxes in some of the MSA levels at Kapthurin is unclear as the two categories grade into each other.
4. Assemblages that have no handaxes or points cannot be classified as Acheulean or MSA solely on the basis of their technology.

Therefore, evidence from Kapthurin and elsewhere shows that in the absence of an independent chronology, sites should be labelled ESA, MSA or LSA with extreme caution. More importantly McBrearty argues that "use of the African three-age system masks Middle Pleistocene hominid behavioural complexity". Early Levallois technology can be found quite deep into the Middle Pleistocene. The lower reaches of the Kapthurin Formation in the Baringo basin have both flake-based, and non-biface assemblages with radial and opposed platform cores (McBrearty, Bishop, and Kingston 1996).

3.2.5 Interpretations of the African Transition

Bifaces have disappeared by about 250ka on evidence from North Africa (Wendorf and Schild 1980), East Africa (McBrearty, Bishop, and Kingston 1996) and also in South Africa (Volman 1984). Several attempts have been made to tie the hominid record to the archaeological record. This has proved to be particularly difficult, some would say impossible with the present data (Clark 1999). Although fossil hominids are present in the record during the late Middle and early Upper Pleistocene from Jebel Irhoud in Morocco to Klaises River Mouth in South Africa the numbers of fossils are small and their anatomical traits are very variable. Anatomically modern *H. sapiens* (AMH) are present in the fossil record as early as 130ka (Grün and Stringer 1991) and due to the extremely small sample size it is unlikely that this date accurately represents the first appearance of AMH. Unfortunately with the present state of knowledge, links between archaic and fully modern populations are difficult to define clearly (Rightmire 1986). No pattern is yet available to allow us to contribute their information to the archaeological record. Some generally held views on the MSA of South and East Africa (Clark 1988, Thackeray 1992) provide a good insight into the understandings of this time period. On the basis of a combination of biological, genetic and cultural evidence, it is generally thought that the origin of modern humans is in sub-Saharan Africa somewhere near the Acheulean to MSA transition. The MSA 'represents the beginning of regional variation in technology and cultural adaptation' (Willoughby 1993: 3).

It would seem that there is a degree of technological continuity with growing refinements from the Later Acheulean to the MSA (Clark 1999). The transitional period

(>200-70kaBP) may be interpreted as the emergence of two techno-complexes that exist contemporaneously (*ibid.*): (1) the MSA (*sensu stricto*, light duty tools) with regional variants in open, tropical habitats and (2) the Sangoan/Lupemban complex associated with tropical and subtropical woodlands. The specialisation between 200-100ka began earlier in some regions in response to more rapid climatic change. The new, environmentally induced tool kits were made possible by improved socio-economic structuring of hominid groups, which was reflected in the way these tools were made and used. In Equatorial and south-central Africa the emphasis is on light and heavy duty tools with Levallois and blades only appearing later on; at first only rarely with the early Lupemban. The Sangoan, situated in a more heavily forested environment, is associated with heavy-duty tools, while the Fauresmith and pointed artefact forms are associated with the savanna environments across the remainder of Africa. The variability that appears with the earliest post-Acheulean industries is thought to suggest new and more efficient experimental ways of exploiting resources. Core axes were adopted primarily for woodworking while in the MSA assemblages hafting is present for the first time. In the MSA/MP there is only a little direct evidence of hafting although some stone tools have notches that may suggest this. However there are certain other artefacts that suggest hafting may have been practised during this period and earlier in the Acheulean. Other places, such as the site of Blombos (Henshilwood and Sealy 1997), have hafted bone points and there is a stone blade with resin traces at the proximal end from Apollo 11 (Wendt 1976). Although there is technological continuity over this period there is also more extensive experimentation. Clark (1999) interprets this change as possibly resulting from new ways of expanding control of territory and thereby relieving inter-group stress with increasing population densities. He argues that social behaviour becomes more structured and a more regularly organised economy is introduced as a means of establishing group identity and territories. Exotic obsidians at some East African sites suggests that MSA exchange networks exceeded 300km (McBrearty and Brooks 2000). It is suggested that these levels of organisation were necessary to maintain cohesion in rapidly expanding communities that were widely distributed.

Overall the African archaeological record is thought to reflect one of the following three viewpoints on this Middle Pleistocene transition;

1. Change present, indicating cultural and biological modernity (Deacon 1992).
2. Change present, but not thought to indicate modernity (Klein 2001).
3. Change present, as part of a stepwise move towards modernity (McBrearty and Brooks 2000).

Although viewpoints on modernity range widely, it is this key word that determines current interpretations of the Acheulean to MSA transition. The interpretation of modernity is dealt with more thoroughly in the discussion of South African archaeology.

3.3 THE EARLIER AND MIDDLE STONE AGE OF SOUTH AFRICA

3.3.1 Chronology and dating past and present

Thomas Holden Bowker discovered the first stone tools (probably MSA flakes) in southern Africa in 1858 (Goodwin 1935). Not long after, in 1866, Sir George Leith is credited with the first handaxe discoveries (Burkitt 1928). Once stone tools had been found, automatic comparison was made to the European sequence, as this was where most of the collectors were from. For example, Johnson (1907a&b) conducted pioneer work primarily with surface finds using the classification terms developed in south western France during the 19th century. Peringuey (1911) was the first to break away from the tradition of using French terminology and put his material under new South African name headings such as Stellenbosch Type and Orange River Type. In the late 1920's researchers such as Burkitt (1928) and Goodwin & van Riet Lowe (1929) followed Peringuey's refusal to use French terminology and attempted to isolate cultures through the grouping of artefacts using systems of typology specific to the South African record. The Orange River Type was replaced with the Victoria West Industry and a new industry, the Fauresmith, was introduced based on material from the Orange Free State. The Fauresmith was considered to be later in time, with smaller and more refined handaxes. Using the Vaal River terraces, van Riet Lowe (1937) believed there was a five-stage sequence of Stellenbosch development followed by two stages of Fauresmith. He later renamed the Stellenbosch type to Handaxe Culture (van Riet Lowe 1952a) and divided the Fauresmith into three stages (van Riet Lowe 1952b). With all these different names being used in South and East Africa there was some confusion as to what industry was where in the chronology and which stone tools it contained. Hence during the Third Pan-African Congress on Prehistory (Clark 1957) an arrangement was agreed as to the chronology and industries present during the Stone Age (table 3.1). However as research developed it was clear that many of these assemblages were not discrete units. Sampson (1974) suggested a revised nomenclature for the stone industries of southern Africa and the relevant portion of his chronology is shown in table 3.1. Nearly all of these typological variants are still used in some form by various authors.

Chronology following the Third Pan African Congress on Prehistory		
Time	**Chronological stage**	**Industries and variants**
↑	Middle Stone Age (MSA)	Stillbay, Pietersburg, Mossel Bay, *Mazelpoort, Alexandersfontein*
	1st Intermediate	Sangoan and *Fauresmith*
	Earlier Stone Age (ESA)	*Pre-Chelles-Acheuls, Chelles-Acheuls*

Chronology suggested by Sampson			
Time	**Complex**	**Industry**	**Phase**
↑	Bambata	Bambata, Mwulu, Florisbad, Stillbay?	-
	Pietersburg	Pietersburg, *Orangian*, Mossel Bay	-
	Sangoan	Sangoan	Early and Late (Charaman)
	Acheulean	-	Typical, Late and *Final*
	Oldowan	-	Typical and Developed

The italics represent numerically distorted or mixed collections mainly from surface scatters or suspect contexts

Table 3.1 – Chronology and Industries of the Southern African Stone Age (after Sampson 1974)

The focus in the 1950's and 60's was on cave and rock shelters with lengthy stratigraphic sequences. Mason worked on the Cave of Hearths, Mwulu, and Olieboompoort (all with Pietersburg Industries). In Zimbabwe, Cook's excavations in the 1960's at the cave sites of Pomongwe, Tshangula, Zombepata and Redcliff established a good record of Charama and Bambata MSA Industries (Cooke 1963, 1969, 1971). To try and simplify matters, Bishop and Clark (1967) subsumed different categories into the Acheulean industrial complex and the Sangoan industrial complex. Most of the sites during the ESA in southern Africa consist of large concentrations of artefacts, often without bone, at open locations in alluvial and colluvial contexts. There are very few Late Acheulean assemblages in a primary context and none of these have faunal remains. In addition, problems concerning mixing and spatial issues have arisen due to the numerous sites comprising of surface scatters and the likely occurrence of deflated sediments. During the 1970's Beaumont (Beaumont and Vogel 1972a,b&c) and Sampson (1972, 1974) slotted the MSA into a single southern African developmental scheme. Then, in the 1980's, Volman (1981) devised a scheme specifically for the MSA sites in the southern Cape. He later applied this scheme elsewhere in South Africa (Volman 1984). Conforming to this single scheme may mask variability at individual sites (Harper 1994). This problem is added to by the conflation of dates due to poor time refinement but at present the following chronology would be acceptable to most people (table 3.2). The Acheulean begins prior to 1 ma at Sterkfontein (Kuman and Clarke 2000) and is still present in some areas, such as at Rooidam, at 200ka (Szabo and Butzer 1979). The earliest MSA in South Africa is dated to 279±49ka at Florisbad (Kuman, Inbar, and Clarke 1999) and the period does not end until about 30ka. This thesis only studies MSA 1, considered to be dated earlier than OIS 5e and some early MSA 2 assemblages prior to the Howieson's Poort (Volman 1981). The early MSA or MSA 1 of southern Africa has been given an age estimate of greater than 130kaBP (Volman 1981, 1984). Assemblages currently placed within this category do not have any defining characteristics and definitions seem to be mostly based on what is missing; bifaces, retouched points and heavily retouched pieces. The early MSA is described as informal with a higher incidence of multiple-platform cores present (*ibid.*) with small broad flakes with intersecting dorsal scars. Volman (1984: 207) says denticulates are uniformly rare and there is less prepared core technology present than in the later MSA. The end struck flake is a characteristic feature of the late Acheulean/MSA (Isaac and Keller 1968).

Site	Date*	Industry Type	References
Florisbad	279±49ka (OSL)	MSA 1	Grün et al. 1996, Kuman et al. 1999
Rooidam	200ka (U-series)	Acheulean	Szabo & Butzer 1979
Pniel 6	>120ka (TL), c.200ka	Fauresmith	Beaumont 1992, Beaumont et al. 1999
Border Cave	195ka (ESR)	MSA 1	Grün & Beaumont 2001
Bushman Rockshelter	OIS6?	MSA 1	Volman 1981
Cave of Hearths	OIS 6?	MSA 1	Volman 1981
Duinefontein 2	OIS 6?	MSA 1	Volman 1981
Elands Bay Cave	OIS 6?	MSA 1	Volman 1981
Peers Cave	OIS 6?	MSA 1	Volman 1981
Herolds Bay Cave	125ka (U-series)	MSA 2a	Brink & Deacon 1982
Klaises River Mouth	110-90ka (AAR) / OIS5e	MSA 2a	Deacon et al. 1986, Deacon & Geleinsje 1988, Hendey & Volman 1986
Equus Cave Units 1B-2B	103-32.7ka (U-series)	MSA 2	Grine & Klein 1985, Klein et al. 1991

* AAR = Amino Acid Racimisation, ESR = Electron Spin Resonance, OSL = Optically Stimulated Luminesence, TL = Thermoluminesence, U = Uranium

Table 3.2 – Dates for the Final Acheulean and Earliest Middle Stone Age Sites in South Africa

Within this chronology where do we find the transition? South of the Limpopo Valley it can still be argued, as was stated twenty years ago (Volman 1981), that no transitional assemblages have been located, although not all researchers would agree that this still holds true. Beaumont (1999) argues that by the Middle Acheulean there is Levallois present and that with the Late Acheulean we see the appearance of blades. The Fauresmith is the first MSA Industry and although there are still Acheulean handaxes and blades, the defining feature is the convergent point (*ibid.*: 3). It is only in the second phase of the MSA that there are no handaxes and limited Levallois.

3.3.2 The South African Palaeoclimate

Although southern Africa was not glaciated during the Pleistocene, there were considerable fluctuations in the climatic pattern (Tyson 1987) with alternations between moist and dry periods. During major glaciations it is thought that cold desertic conditions prevailed and therefore present day temperate areas would have become more arid (Tyson 1999: 340). There are stratigraphic and regional climatic models, although given the nature of the record wide generalisations still have to be made, as several assumptions are used to reach a conclusion. The basis of the interpretation is put together from several sources. At the site level, faunal remains, sedimentology and at the end of the Middle Pleistocene some flora contribute to our understanding of the record. On a larger scale the refinement of the oxygen isotope record is giving us an increasingly useful climatic framework. However the problem remains that the pre-stage 5e glacial-interglacial cycles are not nearly as well understood. Present evidence suggests that during the Middle Pleistocene southern Africa may have been warmer and wetter than today (Klein 1984). The micromammalian fauna indicates increasing desiccation over this time period. It suggests a decrease in tree and bush cover with a concomitant rise in open and dry vegetation in southern Africa (Avery 1995a). Lake sediments at Rooidam, near Kimberley, attest to a humid phase followed by a period of aridity *c.* 200-180ka (Szabo and Butzer 1979). Within the widely known OIS 5e, the climate is again thought to be warmer and somewhat moister as indicated by studies from Border Cave and Klasies River Mouth (Avery 1995b). A similar pattern can be found further north in the Congo River Basin where humid tropical forest gave way to more open country, savanna woodland and grasslands towards the end of the Middle Pleistocene (Clark 1999).

3.3.3 Hominid Fossils

There is a real sparsity of Middle Pleistocene fossil hominid remains across Africa with only about forty sites (depending on choice of dates but c.f. (McBrearty and Brooks 2000) across this time and space. Current evidence during the period between 500ka and 100ka suggests there were four hominid species; *H. heidelbergensis*, *H. helmei*, *H. rudolfensis* and *H. sapiens*. There has been a resurgence of interest in the MSA due to the presence of anatomically modern humans (Thackeray 1992). At present there are five sites with *Homo sapiens* remains in South Africa; Border Cave, Die Kelders, Equus Cave, Florisbad (or *Homo helmei*, *c.f.* Dreyer 1935, Kuman, Inbar, and Clarke 1999) and Klasies River Mouth. Unfortunately at all these sites there are problems either with the typing of the specimen or with the dating and context.

3.3.4 Acheulean and Middle Stone Age hominid behaviour

There are many problems with the Earlier to Middle Stone Age transition. It is spatially and temporally variable and poorly known due to the lack of chronological controls, the scarcity of large and reliably excavated samples and a lack of published reports. This is compounded by the changing way in which archaeologists have interpreted the record and classified artefacts. In addition, as it is easier to date assemblages post-OIS5e, the regional variability in subsistence practices and stone artefact assemblages from the earlier dates are poorly understood. The Earlier and Middle Stone Age archaeological terminology has become a hierarchy of complexes, industries and site variants. Trying to chronologically order these categories has left an indelible mark of uniformity across space, which has led to broad statements limiting our understanding of how hominid groups lived within their world.

Most Acheulean sites in southern Africa are open sites, the few exceptions being Montagu Cave, Wonderwerk and the Cave of Hearths. Open sites predominate and variability in assemblages is argued to be minimal. Typically variation is interpreted as reflecting differing activities, raw material types and shapes. Although some hunting behaviours are assumed, interpretations of hominid lifeways, particularly in the later Acheulean, have been inhibited by a lack of spatial patterning, time averaging and the tendency to include all behaviours in a single Acheulean framework. The focus of research has been on stratigraphy, typology and biface technology.

Overall, the change from Acheulean to MSA is marked by the disappearance of bifaces and a change to small flakes removed from prepared cores. MSA flakes often have facetted striking platforms and dorsal ridge preparation. Distinct MSA flake types include convergent flakes and flake-blades, points, blades and retouched flakes. In South Africa there do seem to be regional differences in artefact types during the MSA. In addition there is a more consistent use of ochre and hearths have a more deliberate structure. There are alterations in settlement patterns during the MSA as caves become frequented on a regular and repeated basis. The distribution of settlement is different as it incorporates both upland and lowland areas. There is also argued to be a shift in the MSA to a focus on coastal rather than inland sites. The MSA has clear patterns of interregional variability in subsistence practice and stone artefact assemblages. The MSA hominids made systematic use of shells and seafood, which is not seen at Acheulean coastal sites (Deacon and Deacon 1999). There was also active hunting of bovids of all sizes (Klein and Cruz-Uribe 1991). Hunting is indicated by the presence of points and the greater use of small flakes suggests hafting.

MSA material culture has been used to support evidence for modern human behaviour and it has been argued that modern behaviour may be seen as early as 100ka, appearing with the first anatomically modern humans (Deacon and Deacon 1999). Research has been orientated around this topic and can be summed up in the following quote.

> "Key questions are whether anatomical and behavioral modernity developed in tandem, and what criteria archaeologists should use to identify modern behavior. For the latter there is agreement on one criterion – archaeological evidence of abstract or depictional images indicates modern human behavior." (Henshilwood et al. 2002: 5)

While some archaeologists have picked a key area for the interpretation of the modern, Deacon has combined data from current hunter-gatherer groups and MSA archaeological remains, to create a set of criteria that he feels suggest that MSA hominids were behaviourally modern (Deacon and Deacon 1999).

1. Small circular hearths are domestic and indicate family foraging groups.
2. The dispersal of sites in the landscape is used to argue for strong kinship ties between MSA peoples.
3. While in the landscape these hominids actively hunted and managed their plant food resources.
4. Symbolism displayed through the presence of ochre at many sites.
5. Reciprocal exchange of artefacts, in other words the use of symbols in communication outside of the body.

This "shopping list" of modernity has come under some criticism lately. Wadley (2001) argues that the attributes we use to establish behavioural modernity are only confused by using items of material culture as markers. It is not the presence of a new technique or artefact type that defines modernity but the manner in which they are used. She argues that modernity should be defined on evidence of symbolically organised behaviour represented archaeologically through the manipulation of artefacts to establish or mediate social relationships.

3.4 A SUMMARY OF MIDDLE PLEISTOCENE AFRICA

The Acheulean across Africa is often expressed as a single behavioural phenomenon (e.g. Foley and Lahr 1997). Although variation is acknowledged, differences are interpreted as factors of environments or raw materials (e.g. Clark 1996). Prepared core technology is present in Africa from the southern tip (e.g. Taung DB3 and Canteen Koppie) to the northern point (Sidi Abderrahman) by about 500ka and perhaps even earlier. The change to the MSA seems to happen at a similar time of 300ka across Africa. Greater regional variations are recognised during the MSA (Clark 1988) and hominids at this time seem to expand into a wider range of environments. Symbolic behaviour is also suggested to occur for the first time during the MSA. These new patterns of behaviour are strongly linked to the initial appearance of anatomically modern humans in the record.

There are two main criticisms of the interpretations given here; one is the amalgamation of archaeology across time and space and the second is the focus on the concept of the modern to construct Middle Pleistocene hominid identity. Firstly, there has been a tendency to make behavioural interpretations at the industry level (e.g. the Acheulean) for the Middle Pleistocene. This has decontextualised the archaeology and separated it from time and space. Chapters Four and Five critique this approach and construct an alternative framework for material interpretations. Secondly, the transition between the Acheulean and the MSA has been orientated around concepts of modernity. Chapter Six shows that concepts of the 'modern' are a particular form of Western discourse and another, more preferable approach is discussed to interpret material culture through concepts of personhood (Gell 1998, Strathern 1988). This culminates in a series of case studies with a detailed discussion of the stone tool assemblages from Africa to interpret social relations. This is followed by a broader investigation of South African sites to show how the landscape can be approached in a wider context as a taskscape (Ingold 1993) to interpret behaviour patterns.

PART II – THEMES & FRAMEWORKS

CHAPTER FOUR

SPACE & TIME IN CONTEXT

"Writing these words, I think of something Claudel wrote: 'Time is the sense of life,' as one would speak of the sense of a word, the sense of smell, or the direction in which a river flows..."
The Adversary, Emmanuel Carrère, Trs. L. Coverdale, 2000: 171

CONTENTS OF CHAPTER FOUR

4.1 INTRODUCTION

To enter into the topic of transitions in archaeology, it is necessary to study the underlying framework where they are described, situated, and in which they are believed to take place. Transitions are located in space and time. Space and time in archaeology are joined together by context. In turn, notions of context organise our view of space and time and therefore how we structure the interpretation of transitions. Two approaches to constructing time and space are discussed here; physical context and social context. They form two separate analytical frameworks (see **summary tables 4.1 & 4.2**) within which there are several different means of constructing interpretations. Here, physical context (**section 4.2**) can be interpreted as a geographical framework used in forming relationships within and between one site, several sites and different regions. This is a calculable analytical tool used to construct levels of interpretation in archaeological practise through pattern recognition over measured time. This approach generally frames Middle Pleistocene research questions. In this chapter, I demonstrate how this view of context has been distorted by the chronological and systemic modes of thought which frame current explanations of the Middle Pleistocene archaeological record. This has decontextualised time and hence the mutual production of space and time. The physical nature of this context has hindered social readings of material culture, which are key to potential interpretations of hominid behaviour and have created fixed, unnatural boundaries as points of transition.

In contrast, social context (**section 4.3**) is a conceptual approach created through human activity and aimed at interpreting social actions by making connections between relationships in the past among hominids and among hominids and things (stone tools, hearths, sites, animals, environment and landscape). Hominids created space and time through living, which can be re-presented in the interpretation of their material culture. This approach is built using a range of work from recent writers in social and archaeological theory (including Barrett 1988, Bourdieu 1977, Gell 1992, Giddens 1984, Gosden 1994, Ingold 1993, Thomas 1996, Tilley 1994) to construct the idea of inhabited space through the mutual production of time and space. It moves towards a more phenomenological approach, which sees archaeological sites as "contexts for human experience, constructed in movement, memory, encounter and association" (Tilley 1994: 15). Through this reading space and time unfold with social action and therefore the context in which the interpretations of a transition are made is altered. A summary of this chapter is made in **section 4.4** and then the new approach described is followed through in the case studies in Chapter Eight interpreting Middle Pleistocene taskscapes using sites in Europe and Africa.

SPATIAL CONTEXT	PHYSICAL SPACE AS...	RELATION-SHIP TO TIME	COMMENT CONTEXT DEFINED PHYSICALLY	SPACE & TIME CHAPTER 4, 4.2 CURRENT APPROACH
1. Location of the site in relation to world	Ecological	Time is abstract	• Hominids (agents) and their inhabited places (structures) are separated as hominids are seen to colonise new ECOLOGICAL niches. • Spaces are united (localities, regions, continents) through dated events.	e.g. The 'Out of Africa' model
2. Location of the site itself	Economic	Time is separated from space	• Space is explained primarily in terms of what is functional and adaptive, i.e. ECONOMIC parameters. • No relationship between economic structure (space) and hominid action (time). • Space is naturalised as environment is already present not culturally constructed.	e.g. hominids 'retreat' into spaces during cold periods
3. Internal structure of the site	Social Organisation	Time is linear (& only moves in a forward direction)	• Stratigraphic levels at sites are seen as units of analysis from which behavioural models of SOCIAL ORGANISATION are constructed. • Space is objectified as an absolute calculation. • Context is a static snapshot of hominid behaviour.	e.g. periods of archaeology divided sequentially into Acheulean and MP/MSA.
4. Individual stratigraphic levels of the site	Technology	Time is averaged	• Spatial uniformity does not allow for cultural space. • Conflation of time and space produces behavioural averages, which does not allow for change or variation of TECHNOLOGY within levels.	e.g. Acheulean is only discussed as one fixed set of behaviours or as a single model.
5. Materials within each level of the site.	Symbolic Behaviour	Time is calculated (in relation to subsistence and activities)	• Space influences the way we see hominid bodies. The current problem is the dual structure of the relationship, dividing the object (SYMBOLIC) and the subject (BEHAVIOUR). • Models are overlain at all sites and therefore space is seen as an active function rather than about the relationships between things. • Hominids either individuals or social totalities - rather than as beings living within the world.	e.g. activity patterns referred to as 'drop' and 'toss' zones rather than as a part of social interaction.

Table 4.1 – Space & Time in a Physical Context. Showing the problematic relationships between space and time when the spatial context is defined physically.

SPATIAL CONTEXT	SOCIAL SPACE AS... (Tilley 1994)	RELATION-SHIP TO TIME	COMMENT CONTEXT DEFINED SOCIALLY (after Tilley 1994: 14-17)	CASE STUDIES CHAPTER 8, 8.2 NEW INTERPRETATIONS
1. Location of the site in relation to world	Existential	Time as past, present & future	Contextualising action in EXISTENTIAL space & time • Is the constant flow of production and reproduction. • It is experienced and created through life activity. • Places are culturally bound. • Cultural boundaries structure space both in and between places.	Locality of sites/place in the environment (8.2.2)
2. Location of the site itself	Perceptual	Time as past, present & future	Contextualising action in PERCEPTUAL space & time • Is the space, or taskscape, through which hominids live out their daily lives. • Space is grounded in the perception of distances and directions. • How world is culturally constructed by hominids as part of being in the world.	Sense of place through knapping actions (8.2.3)
3. Internal structure of the site	Architectural	Time as a (multi-directional) channel for movement	Contextualising action in ARCHITECTURAL space & time • Deliberate attempt to create and bound space, results in a double interpretation. • One reflects the way that we, as present-day archaeologists, produce space at archaeological sites and thereby effect their interpretation. • Two reflects the way hominids culturally construct their space – the *habitus*.	Place type as an understanding of space in the past and present (8.2.2)
4. Individual stratigraphic levels of the site	Cognitive	Time as chains of action.	Contextualising action in COGNITIVE space & time • Is the space of thought and reflection. The reflexive nature between things (material culture, people, etc.). • Is the space of discussion and analysis of archaeology in the present.	Artefact accumulations as understandings of place (8.2.3)
5. Materials within each level of the site	Somatic	Time as movement	Contextualising action in SOMATIC space & time • Is the space of habitual action – the *hexis*. It relates the physicality of the human body form to position in the world. • It considers the position of objects as part of the distributed person.	Different knapping techniques in different regions (8.2.4)

Table 4.2 – Space & Time in a Social Context. Showing the relationships between space and time when the spatial context is defined socially.

4.2 CRITIQUE: SETTING THE SCENE, CURRENT UNDERSTANDINGS OF SPACE AND TIME IN THE HOMINID RECORD

4.2.1 Introduction

Context is the key issue at the heart of interpretation in the Middle Pleistocene as this both describes and validates behavioural interpretations. But how is space spaced, and time timed? It is through labelling the context with a date or chronology and a place or position that the co-ordinates for the time-space dimension is established. Table 4.1 describes the five inter-linking levels of research that can be used as the basis for interpretation. The following two sections discuss these levels of physical context. My argument suggests that space and time are treated separately, as they have been decontextualised by present approaches to Middle Pleistocene research.

4.2.2 Geographical space

One of the earliest forms of contextual interpretations advocated hominid culture areas based on stone tool variability across space and time (e.g. Bordes and Sonneville-Bordes 1970, Mason 1962a; and see table 4.1, point 1). As culture-history approaches were challenged, differences in site type were discussed in some detail by Leakey (1971) who divided occupation sites into living floors, butchery/kill sites, sites with diffused material and river/stream channel sites (table 4.1, point 2). This led to wider considerations of hominid behaviours at sites (Isaac 1972), a critical appraisal of spatial analysis centring on site taphonomy (Brain 1981) and the relationship between depositional practices and settlement (Schick 1987). The ideology behind this approach has been to obtain a scientific explanation of the context of site formation to enhance chronological and stratigraphic interpretations for behavioural models (table 4.1, point 3). Excellent research was conducted which indicated that most of the hearth features, house structures and living floors were secondary depositions or were impressions caused by other natural phenomena (Kolen 1999, Villa 1983). Unfortunately this has led to overcautious and almost non-existent attempts to reconstruct cultural space and movement in the Palaeolithic (table 4.1, points 4 & 5). Because of the post-1970's research on site formation processes, there has been a backlash against 'lived-in spaces' in the Palaeolithic. This sentiment is well expressed through the following quote (Sept 1992: 188),

> "Potts, however (1984, 1988), has focused attention on a weakness of the original home-base model—the assumption that artifact concentrations represented sites of social activity. His asocial alternative, the "stone-cache" hypothesis, suggests that concentrations could have formed if hominids were stockpiling transported stones in their foraging territories to serve as centralized tool sources for anticipated food-processing needs such as butchery. While his hypothesis is not dependent on social interaction and usefully focuses on the costs and benefits of transport, it is based on the idea that hominids made deliberate decisions to concentrate artifacts."

Here, it is clear that no social component is considered necessary for interpretation of hominid behaviour. Contexts are seen as time-averaged palimpsests (Stern 1994) associated with geo-physical processes that can only be interpreted through broad and generalised behaviour models. Using this understanding of context time and space are lumped together awkwardly as models are applicable to all spaces in the same time range rather than seen as repetitive actions in a specific place.

Modelling spatial behaviours became a major focus in Palaeolithic research during the early 1970's. Isaac's Home Base Model (1972), later altered to the Central Place Foraging model (Beaumont 1990, Isaac 1978) used the archaeology from Olorgesailie, Kenya to suggest that hominids scavenged for meat and then returned to a home base where food sharing would take place. This 'fossil camp' model is now outmoded as the analyses of site formation processes had a huge impact on the approach to modelling spatial behaviours (Binford 1989, Schick 1984, Schiffer 1987). Many early archaeological sites became recognised as long-term accumulations through repeated, sporadic use of an area, rather than home bases. Instead, modelling activity patterns through lithic and bone assemblages became the popular approach to interpreting hominid behaviour, for example; the Routed Foraging Model (Binford 1984), the Stone Cache Model (Potts 1984, 1991), the Stone Transport Model (Schick 1987) and the Riparian-Woodland Foraging Model (Blumenschine 1989). These models all attempt to reconstruct behaviour based on habitat specific resources at particular sites. Unfortunately they became competing hypotheses where each author considered their model to be the most apt approach for reconstructing general hominid behaviours. Since then, research has shown that chimpanzee behaviour varies between regions (for example, (McGrew 1992) and so the present objective is to view hominid behaviour as a multivariate response to the environment, habitat and resources rather than using a single inflexible model orientated on particular habitats (Oliver, Sikes, and Stewart 1994, Potts 1994). The key issues of hominid behavioural ecology include: early hominid land preference determined through site distribution (Rogers, Harris, and Feibel 1994), the analysis of potential food resources (Peters and Maguire 1981, Stewart 1994), hominid behaviours in response to predator avoidance and competition for resources (Blumenschine 1994, Bunn and Ezzo 1993, Potts 1991) and the distribution and qualities of lithic materials (Jones 1994). In other words, most of the present approaches study behavioural change and variations through the pattern of site distribution and assemblage size in relation to palaeo-environmental reconstructions (Blumenschine and Peters 1998, Rogers, Harris, and Feibel 1994).

Several problems arise out of these models of hominid behaviour. These problems can be separated into three main topics;

1. resources in space (table 4.1, points 1 & 2),
2. relations in space (between hominids, animals and things; table 4.1, points 3, 4 & 5)
3. and movement in space (table 4.1).

In the first two topics, space is viewed as an arena for social action where social systems are passively projected onto the landscape with a lack of reflexivity. This implies that space has no social value and the landscape is free of cultural meanings, separate from hominid experience. Nowhere in the literature is the Middle Pleistocene discussed in terms of a notion of mutuality in the production of time and space; that people shape the world as the world shapes them (Gosden 1994: 80). The separation of the spatial environment, including land, animals and nature from situated Palaeolithic hominid lives is still widespread in Middle Pleistocene research. Climate and sea level changes are seen as dictating habitat options and preferences, and there is no reflexive relationship on how changes would affect and be affected by social dynamics. In addition the spatial relationship between animals and people in the Palaeolithic has only been considered in terms of predator avoidance and competition for resources

(Blumenschine 1994, Bunn and Ezzo 1993, Potts 1991). Hominid use of space is based on the assumption that they are 'tied' to particular resources such as water or food rather than living and acting within a cultural order. Currently, sites are identified in terms of their perceived function such as a 'butchery', 'kill' or 'manufacturing' site. Lived experience is not considered and purposeful deposition of artefacts is rarely suggested.

The third topic on space relates to movement. Hominid movements are modelled to look at three issues; colonisation, demography and resource distribution. For the Middle Pleistocene models have been used to build up pictures of colonisation and migrations of peoples in and out of Africa (see Science issue of March 2 2001 on Migrations), and the UK (White and Shreve 2000a). These models are constructed through chronological dating programmes and the presence or absence of particular artefact industries. Hominid dispersal, particularly the spread of *Homo sapiens*, is currently a key topic of debate (see Chapter Three; Foley and Lahr 1997, Lahr and Foley 1998, McBrearty and Brooks 2000). Often computer-based Geographic Information Systems are used as a way of mapping resources, geology, and locational and spatial analysis of settlement and artefact distributions to look at hominid demography and behaviour patterns (Hosfield 1999). Sites have been linked together across time and space, on the premise of similar artefact types and our knowledge of movement among modern hunter-gatherer groups across the landscape. However, although movement is perceived as moving from site to site, region to region or continent to continent, using this approach, the sites themselves are treated as static 'fossil camps'. Hominid movement between 'camps' is usually related to time-energetics (Aiello and Wheeler 1995, Torrence 1989), economy (Kuhn 1991) and time budgeting (Torrence 1983). In this way space became objectified as an absolute calculation and hominids are assessed for behaviour on the basis of their bodily functions. One such approach has been the study of raw material sources as a way of looking at distances travelled by hominid groups (see Chapter Two; (Féblot-Augustins 1997, Geneste 1988a&b, Lebel 1992).

This approach to looking at spaces views the manufacture and deposition of artefacts as a process allowing functional interpretations of perceived activity patterns where environmental factors act upon hominids and are acted upon by hominids as a resource. When space and time are measured there can be objective comparisons of material culture from different areas of the world both synchronically and diachronically (Tilley 1994: 7-8). Specific contexts are divorced from hominid behaviour through the standard models applied to produce behavioural interpretations. To use space in this manner is to reduce the complexity of social relations to a singular device for the "homogenisation and reification of a rich diversity of spatial itineraries and spatial stories" (Harvey 1989). This view of space has parallel effects on notions of time.

4.2.3 Linear Time

Time in archaeology is date-orientated, focussing on relative and absolute chronologies derived from scientific techniques, site stratigraphies and stone tools. Time has become a framework for uniting events, as chronometric time provides a framework or context within which we can order the past (Shanks and Tilley 1987). However, I argue that a linear notion of time is not useful for understanding the human past. This abstract notion of time, which is measured and calculated, creates fixed models for behaviour. The notion of a single, chronological time is an unusual situation in which to find archaeology, as even within the science of physics Einstein has shown we can have as many clocks as we like (Gosden 1994: 5).

Acquiring a precise chronology has been one of the major preoccupations of the Palaeolithic for the last 200 years. In Europe (by the end of the 19th century) and in South Africa (by the end of the 1920's) a basic geological succession was quickly established. The typology and rigid bracketing of artefacts into chronological categories and the privileging of a sequential order has left us with a problematic legacy today. Culture history was used during a period when no independent chronology existed with which to organise the data. In consequence time became the major determinant of archaeological variability and hence, variability became time driven. As artefact collections have been enlarged over the last one hundred years, less and less of the artefactual material has fitted into these typological schemes. This problem has been addressed through the formulation of new names and periods for the organisation of different artefacts and assemblages. In most cases, due to the lack of precise dating in the Palaeolithic, industry names are instituted both as a way of establishing chronology and as universal categories for defining broad-scale behavioural patterns. This has led to studies of the Palaeolithic as phases of behavioural development, which are then divided into phases of hominid complexity. Sites lacking dates are fitted into these periods through artefact typologies but often a behavioural interpretation is missing or considered less significant at sites where dating is absent. Chronologically we are constantly trying to fill in the 'gaps' or find the 'missing link' in the archaeological record as it is believed by some that obtaining a uniform and perfect chronology will allow for better interpretations. As Dowson has argued for South African rock art, waiting for precise chronologies will not provide new answers, as interpretations do not arise from measured time (Dowson in press), only frameworks. The way that stratigraphies are constructed at archaeological sites makes it seem that time and space can be divided into seemingly logical units. Each stratigraphic level is treated as one 'time slice'. Although we cannot get away from the mixing of events through time in the archaeological record, here time becomes static rather than being considered as the representation of several actions (re)produced through time. Hence interpretation in relation to time suffers on two levels; one, in the present through our own conceptual difficulties; and two, as a past history in which hominids may have had totally different conceptions of time to ourselves.

4.3 ALTERNATIVE APPROACH: ACTION AS THE SPACE/TIME DIMENSION

4.3.1 Introduction

In summary, the previous section demonstrated how space and time are only employed at a descriptive level, splitting the analytical procedure into calculations of geographic distribution (space) and stratigraphic sequences (time). The consequences of this approach are fixed boundaries of transition, which I believe are false constructions. Countering this point of view are several recent archaeological interpretations of space that aim to recontextualise the landscape and hence shift the way transitions are incorporated into interpretations. This section builds an alternate approach to space and time following a central belief that space and time exist through the everyday rhythms of peoples' involvement in the world. This is studied through an investigation of both the reflexive relationship between material remains and hominids and that between the archaeology and the relationship that we have with it in the present. Table 4.2 summarises this alternative construction of time and space approaching it through a social context. Although it is argued here that space and time are mutually produced through action, I still discuss the two topics separately as most authors emphasise one or the other in their discussions.

4.3.2 Social space

All social relations have a spatial extent and character. The tendency to regard the landscape as a resource through ecological and economic approaches (table 4.1, points 1 & 2) has been heavily criticised (Gosden 1994, Ingold 1993, Shanks and Tilley 1987, Tilley 1994). As a consequence there has been a reconceptualisation of space in archaeology as it is argued that space has been dehumanised and therefore placed outside of context and time (Gosden 1994). This need to move away from the binary nature/culture distinction has led to my adoption of Ingold's (1993) 'dwelling perspective' where space is created through living, and people and the world shape each other in a constant dialectic. In this context space is a medium for rather than a container of action (Tilley 1994). Therefore hominids and their environments are not acting on each other but landscapes are reflexively experienced in practice through life activities. In this sense space is existential (table 4.2, point 1), i.e., both causal and contingent in that it constitutes and is constituted by action. Emphasis here is placed on the interpretation of landscape occupation as an experience of being-in-the-world (Heidegger 1962: 78-90), drawing on ideas from phenomenology and the reuse of places (*c.f.* Gosden 1994, Ingold 1993, Tilley 1994).

Ingold's application of phenomenology to archaeology is the 'taskscape' through which he connects and subsumes land, people, and environments (Ingold 1993). In this way he de-centres people thereby avoiding the duality of man versus nature. Rather than focusing on sites as particular activity places with discrete functions they are seen as the result of continuous ongoing rhythms of daily life. These ideas stem from Gibson's ecological theory of visual perception (Gibson 1979), which argues against a separation of organisms from their environment (table 4.2, point 2). This work emphasises that animal and hominid groups were and are immersed in their environment and not divisible from it. Locales are not just specific spaces, but settings of interaction (Giddens 1984) that are constructed from the act of living. In these social landscapes action is sensual, a combination of sight, sound, etc. (Watson 2001). In hominid research, Gamble (1999) is one of the few to utilise the concept of the taskscape, in combination with network analysis, as a framework within which the interactions of hominids can be expressed in time and space. This web-like network of individuals provides the flexibility to move through space and time by allowing movement between the closer scale of analysis at the personal or site level, to the wider interaction of social groups within large regions.

Through human action landscapes are ordered but material culture is not a passive medium but plays an active role in social action. Places are understood in relation to others. Stone tool densities can be seen as centres of social gravity. Material culture is involved in action and it is through action or doing that social relations are made (Gell 1998). Tradition forms the background frame of reference through which hominids would draw on stocks of knowledge about the landscape (table 4.2, point 4). All social relations have a spatial aspect to them. Tilley goes so far as to argue that place is fundamental to the formation of biographies (table 4.2, point 5). It is through the processes of daily life that the structures and strategies both inform and are formed by the identity of that society.

Garfinkle (in Giddens 1984) has demonstrated how settings are used chronologically (and largely in a tacit way) by social actors to sustain meaning in communicative acts. Social 'fixity' is established through day to day existence in time-space (table 4.2, point 3). With this approach interesting arguments can be made to support markers of deposition and the realisation of space amongst hominid groups. I would suggest that handaxe deposition is a social practice and cannot be solely attributed to functional factors. If we turn to later material culture, interpretations of the shell middens of South

Africa or Mesolithic Europe are thought to be the result of intentional processes (Thomas and Tilley 1993: 228). Although the routine deposition at Ertebølle indicates a much more robust pattern for interpretation (Blankholm 1987), Palaeolithic occupations can also be seen as socially important places that may well mark points in the landscape as well as social group identities. Chapman (1997) discusses how sites accumulate "place-value" through the formation of large settlement mounds which creates a collective cultural memory and may generate associations with ancestors during later stages in life.

At a local level, the lengthy history of the use of certain sites may suggest that they were 'persistent places' (Barton et al. 1995). Pollard (2000) criticises the present interpretations of these places as they have focused on mechanistic reconstructions with strongly functional or ecological frameworks of explanation. This approach has led to an impression that hunter-gatherer communities are less behaviourally complex with the downplaying of their social and symbolic dimensions of routine existence (Whitelaw 1994). Pollard (*ibid.*) also considers how particular occupation sites could have been significant places within the landscape, which during repeated occupation would build up a history of memories, meaning and ancestry. For Star Carr he suggests that this was a locale of meaning (or in my terms a locale of doing), which was intimately tied to narratives and social identities that embodied a sense of time and belonging. He uses ethnographic examples to show how the deposition of artefacts such as antler points may have had significant social meanings.

So too, Palaeolithic hominids did not live in abstract space but lived in the world and created meaning along their paths and tracks (Gamble 1996) and as favoured places were repeatedly visited they too would have become ascribed with greater intensities of social significance and value. Perhaps these re-visitations evoked memories and thereby contributed to the structure and restructuring of their societies. Thereby geography and material culture become a part of each other, providing both markers in the landscape and memories of place and times.

4.3.3 Social Time

What has come to prominence through the work of several authors (e.g. Gell 1992, Gosden 1994, Thomas 1996) is that rather than solely using time for chronological purposes, we need to conceptualise how human practice creates and makes use of time. History is contingent not universal, but by collapsing great periods of time across space we homogenise the circumstances within which action and meaning took place (Conkey 1984). Time is not linear and omnipresent, it is created through social practice, and different practices have different structures of time (Shanks and Tilley 1987). Hence research on the Middle Pleistocene needs to move away from its heavy dependence on chronology as a means of contextualising behaviour. At present, Middle Pleistocene archaeology is viewed as a fossilised record of the past and so it becomes open to comparisons cross-culturally (Barrett 1988, Patrik 1985). This record should not be one of past events and processes but evidence for particular social practices. As Gosden has argued (Gosden 1994: 7), we do not need a more refined measurement of time but better concepts that encapsulate temporality and change (see Chapter 5). Using temporality as a framework gives absolute and relative time different meanings (table 4.3). Through

	FRAMEWORKS FOR INTERPRETATION	
	MEASURED TIME **(= linear time, section 4.2.3)**	**TEMPORALITY** **(= social time, section 4.3.3)**
Absolute time	Calendar dates	1. physical limits to action 2. agreed societal referents
Relative time	By association with calendar dates	Part of temporal structure open to change

Table 4.3 – Time and Temporality as Frameworks for Interpretation

the concept of temporality, time is relational to the actions taking place in space. Actions demand contexts, but their construction in the present must not be seen as having a boundary or an essential meaning, as the borders are unstable and only further points in the chain of meaning. Even in the smallest portions of context there are several social situations going on. Time and space can be represented as imagined, enacted, performed, narrated and reversed. They can be located in the body, social structures, ritual, landscape, liminal zones and texts. They can not be tied to a singular linear meaning (Gell 1992).

4.3.4 Timing Space and Spacing Time

So how do we redefine the complex relationship between time and space in archaeology? The title of this section, borrowed from a set of thematic volumes (Carlstein, Parkes, and Thrift 1978), summarises the mutuality of space/time production discussed here, as well as the possibility to stress one topic over the other during the interpretation of actions. It is clear from recent literature that space and time are bound together in a relationship that can only be understood through studying social practices. People create space and time through action (Gosden 1994). However, they are components of, not containers for action (Tilley 1994: 19). Action creates space and chains of action create time, while at the same time habitual actions are shaped by time and space (Gosden 1994: 19). It is habitual acts that structure daily lives and these

> "...structures of reference bring about patterns of action which create pattern in the archaeological evidence. Action has a regional structure to it: there are points in the landscape where people are intimately involved with the world and points where little activity is carried out." (Gosden 1994: 35)

With this understanding of space and time, context is created in multiple forms both simultaneously and at different times and places, and reflexively places thereby acquire a history. In Pleistocene archaeology long term change operates in abstract time rather than as a human product due to the evolutionary discourse. Gosden (1994: 9) argues that this approach is impossible as,

> "Human beings have a particular temporal relation to the world, and this temporality must be the starting point for all exploration."

The short term and the long term are both parts of each other. Movement through space constructs 'spatial stories' thereby also constructing present and past times and the anticipation of future times (Tilley 1994: 28). Therefore context should not be viewed in levels or stages but rather as an onion with multiple skins of intermingled histories so that peoples, places and times are

> "...made of layers of biographical (relational) experience accreted together..." (Gell 1998: 140).

So, to use a cognitive example, although the thought process appears to be a linear stream of consciousness comparable to the writing here, thought is actually a multiplicity of forms of bodily experience that happen at any one moment, constructing human behaviour (Greenfield 2000). We cannot explore every experience the hominids may have had but we can explore the discourse that constructed it. What follows in Chapter Eight is my attempt to achieve this.

4.4 SUMMARY

This chapter has aimed to draw out some of the key problems with the framework of interpretation in the Middle Pleistocene. The alternative approach puts forward action as the medium for the production of time and space. This necessitates emphasis on context rather than chronology and on fluidity rather than frameworks, where space and time are seen as mutually produced, unfolding in social relations. This alternative is expanded upon in the following chapters by attempting to pursue archaeology through the less structured outline of temporality, moving away from broad generalisations towards a re-presentation of situated social practices. As the opening quotation of this chapter says, "time is a sense of life", and it is this sense that I am trying to capture through reconceptualising the notion of context through the concept of the taskscape. In the process of interpreting hominid lives it is necessary to remember that although social production occurs in time and space, it is measured in archaeology through change and variation. How these terms effect and feed into the overall interpretation of Middle Pleistocene hominid behaviour is the focus of the next chapter.

CHAPTER FIVE

THE CONCEPTS OF CHANGE & VARIATION

"I wonder if I've changed in the night? Let me think: was I the same when I got up this morning? I almost think I can remember feeling a little different. But if I'm not the same, the question is, Who in the world am I? Ah, that's the great puzzle!"
Alice's Adventures in Wonderland, Lewis Carroll (1865), C.L. Dodgson (1832-1898)

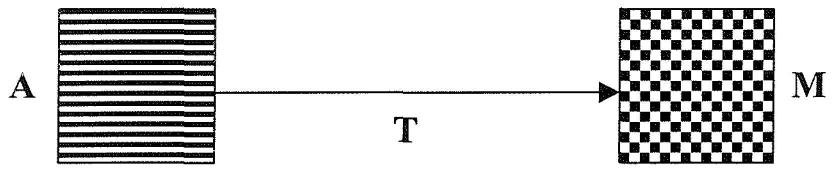
CONTENTS OF CHAPTER FIVE

5.1 INTRODUCTION

In archaeology, the transition is the process by which change occurs. It is the passage, or change, from one state or set of circumstances to another (figure 5.1). This transitory process begins when variation is considered to have exceeded the norm and hence, variation is the origin point for change. Change and variation are widely employed in explanations of the Middle Pleistocene and the generally accepted 'facts' of my study could be spelt out as follows,

> *the static Acheulean tradition changed about 300kya into the Middle Palaeolithic/Middle Stone Age where stone tool types became more variable.*

DEFINITIONS
VARIATION, CHANGE AND TRANSITION



Variation = is found within square units (A & M), represented as black and white (stripes or squares)
Change = is the alteration in the square units from stripes to squares
Transition = is the arrow or sequence of events by which the change occurs (T)

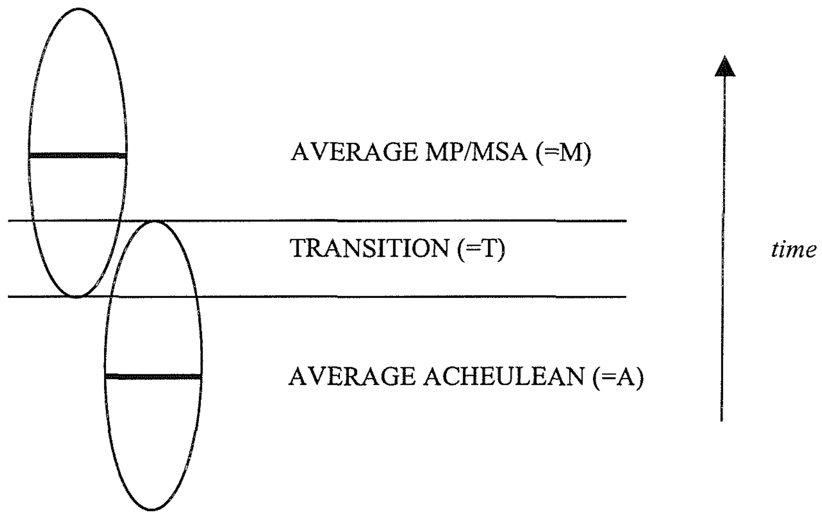


Figure 5.1 - Differentiating the terms variation, change and transition as currently understood for a Middle Pleistocene context

Stasis, change, time and variation are all present in this standard view, but critical assessments of these concepts are rare, particularly in hominid research.

These concepts are discussed and critiqued in **section 5.2**. The study of variation and change draws attention to origin points as the important link between change and time and by implication space and variation. This link requires reflection on the approach to context set out in Chapter Four. It is argued that this viewpoint sits within the physically defined context (table 5.1) that has been previously disputed in Chapter Four. Consideration of these terms in this Chapter leads to the conclusion that the notion of transition is a misleading concept. In its place, a socially defined context leads to the formulation of a new approach to change and variation (**section 5.3**, table 5.2). Here the archaeology is interpreted through the concept of action, which is both more flexible and in line with the concept of doing as a process of interpreting social relations. This alternative approach is played out in Chapter Eight through the case studies interpreting Middle Pleistocene archaeology.

5.2 CRITIQUE: CURRENT APPROACHES TO CHANGE AND VARIATION

5.2.1 Introduction

Space and time are interpreted in archaeology through change and variation. This makes these leading concepts in the investigation of material culture. In current approaches evolution plays a major role in our conception of change and variation and this particularly effects our understanding of time and by implication space. Table 5.1 shows the current relationship between evolution, time and hominids and summarises the three topics for investigation here.

1. Variation and its relationship to time as a short term, synchronic event leading to the description of hominid individuals or small hominid groups comprised of individuals (section 5.2.2 and table 5.1 points 4 & 5).

SPATIAL CONTEXT	PHYSICAL SPACE AS...	RELATION-SHIP TO TIME	PROCESS OF TIME*	TIME THROUGH CHANGE	COMMENT TIMING CHANGE IN A PHYSICALLY DEFINED SPATIAL CONTEXT	CHANGE & VARIATION CHAPTER 5, 5.2 CURRENT APPROACH
1. Location of the site in relation to world	Ecology	Time is abstract	Evolutionary	Long term change Diachronic time Hominid groups	• Evolution is a factor of time, therefore not contingent. • Hence, change is only conditional on time passing, no relationship to human action in the creation of time.	e.g. Evolutionary changes in hominid groups result in increased complexity so have the capacity to colonise new ecological niches.
2. Location of the site itself	Economy	Time is separated from space	Evolutionary		• Change measured by adaptation to things happening outside of human action. • Changes in economy driven by changes in environment.	e.g. The arrival in MSA/MP of seasonality in resource exploitation, increased diet breadth, large game hunting.
3. Internal structure of the site	Social organisation	Time is linear	Historical	JUNCTION OF TRANSITION	• Change is the point(s) between two static units. • Origin point for change is when variation exceeds 'normal' expectations. • Structure of time depends on present-day archaeologists' view change and variation	e.g Structured hearths used to suggest that MP/MSA populations construct more formalised relationships among individuals and groups.
4. Individual stratigraphic levels of the site	Technology	Time is averaged	Ontogenetic	Short term variation Synchronic time Hominid Individuals	• Short term change is often referred to as variation. • Variation united across space due to time averaging (culture history approach).	e.g. Greater innovation and planning depth through change to Levallois technology. Greater variation in techno-types suggest complexity.
5. Materials within each level of the site	Symbolic behaviour	Time is calculated	Physiological & Molecular		• Short term change is often referred to as variation. • Variation is an outcome of function not related to the internal body politic.	e.g. Hominid individuals adapt technology to suit specific circumstances leading to variation in retouched stone tool types.

* This column lists the five classes of biological processes defined by the different time depths over which they occur, and is borrowed from Haldane's work (1956; Bailey 1983).

Table 5.1 – Change & Variation in a Physical Context. Showing that when the spatial context is defined physically, the problematic relationships between space and time effect the interpretations of change and variation (see also Chapter Four and table 4.1).

SPATIAL CONTEXT	SOCIAL SPACE AS...	RELATION-SHIP TO TIME	PRO-CESS OF TIME	TIME THROUGH CHANGE	COMMENT TIMING CHANGE IN A SOCIALLY DEFINED SPATIAL CONTEXT	CASE STUDIES CHAPTER 8, 8.3 NEW INTERPRETATIONS
1. Location of the site in relation to world	Existential	Time as past, present & future		Directional	Directional time is • The result of intentional action and intended consequences leading to change through difference. • Experience connects structure and process, accentuating the significance of human agency in making history.	Prepared core technology (8.3.2)
2. Location of the site itself	Perceptual	Time as past, present & future	A C	Reversible	Reversible time is • The result of unintentional actions and unintended consequences leading to change. • Tradition is generally the medium of reversible time supplementing daily life with institutional structures through routine and social memory.	Clactonian/Pebble Tools (8.3.3)
3. Internal structure of the site	Architectural	Time as a (multi-directional) channel for movement	T I	Linear	Linear time is • Physical as can only be in one place at one time. • Cultural construction of positioning in time & space by agreed social referents, i.e., the *habitus*. • Establishes ontological security in the social institution.	Raw material movements (8.3.4)
4. Individual stratigraphic levels of the site	Cognitive	Time as chains of action	O N	Cumulative	Cumulative time is • The result of social learning of ways of action, i.e. acculturation, but at the same time, a reflexive relationship with structure evident in variation. • Routinization of day-to-day life	Handaxe accumulations (8.3.4)
5. Materials within each level of the site	Somatic	Time as movement		Circular	Circular time is • Orientated around changes in the body over the life cycle • Change in positioning of relationships • Biographies of peoples, objects and their relationships are constantly transformed as they gather time and movement.	Levallois flake variability (8.3.2)

Table 5.2 – Change & Variation in a Social Context. Showing that when the spatial context is defined socially, the altered relationships between space and time effect the interpretations of change and variation (see also Chapter Four and table 4.2).

2. Change and its relationship to time as long term, diachronic events leading to the description of hominid taxonomic groups (section 5.2.3 and table 5.1 points 1 & 2).
3. Transition as the junction point at which these two types of evidence are linked. It is this missing link that is the highly sought after origin point for change (section 5.2.4 and table 5.1 point 3).

With each of these concepts linked the final portion of this section (5.2.5) puts together these three topics in relation to a physical context to emphasise the importance of problematising their uses in the archaeological record.

5.2.2 Variation

Variation is a key word, utilised extremely frequently in the discussion of archaeological research. I begin here with a description of the concept, as variation reveals our preconceived notions of how change is constructed. The following quotes on this theme (figure 5.2) provide a definition, the culture-historical problems and an evolutionary context for variation, as a useful way of focussing on the application of this term to material culture. The definition given by the Oxford English Reference Dictionary in figure 5.2 summarises what variation is generally taken to mean and in so doing I can highlight the essential problem with the application of this term to archaeology. Material items are perceived as varying around some sort of cultural norm. This implies that there was a cultural norm or a template on which the morphological differences are present. The concept of variation applies when discussing what we perceive as a standard or type, i.e., part of a single cultural whole. In this way differences are viewed as variations on a theme. But what theme is being advocated? I would argue that this theme stems from the cultural-historical framework, which attempted to order variation into cultural traditions thereby linking people across time and space. Applying the term variation to material culture is chronocentric and a way of unifying the archaeological record. This results in the creation of a record that demonstrates stasis. Artefacts, or 'type fossils' such as the handaxe, can be very different in form but are united into a chrono-typological box thereby synchronising disparate events. The resulting interpretation is that different peoples do not do different things but individually vary on the same cultural theme (similar to the Oxford English Dictionary's definition of variation for music, figure 5.2). Differences in archaeological "**variation** *n.* 1 the act or an instance of varying. 2 departure from a former or normal condition, action, or amount, or from a standard or type *(prices are subject to variation)*. 3 the extent of this. 4 a thing that varies from a type. 5 *Mus.* a repetition (usu. On of several) of a theme in a changed or elaborated form. 6 *Astron.* a deviation of a celestial body from its mean orbit or motion. 7 *Math.* A change in a function etc. due to small changes in the values of constants etc."

Oxford English Reference Dictionary (1996)

"**Culture** is viewed as a vast flowing stream with minor variations in ideational norms concerning appropriate ways of making pots... These ideational variations are periodically 'crystallized' at different points in time and space, resulting in distinctive and sometimes striking cultural climaxes which allow us to break up the continuum of culture into cultural phases."

(Binford's (1972: 197-8) criticism of culture history)

"**The nature of evolution**... Darwin's argument of 'descent with modification' is simple. It has four main parts:

- Organisms differ from each other in ways that are inherited – there is *variation*
- More are born than can survive – *a struggle for existence*
- Certain inherited variants increase the chances of their carriers surviving and reproducing – *natural selection*
- Selection leads to the accumulation of favoured variants, which over a long period produce new forms of life – the *origin of species*"

(Jones 1992)

"**natural selection** According to Neo-Darwinism, natural selection is the primary mechanism in terms of which the adaptation of organisms to their environment is to be explained. It depends on three subsidiary mechanisms: variation, inheritance and competition. Individual organisms vary in many of their traits, some variants being better adapted to the environment than others. Given competition for scarce resources, better adapted individuals will prevail over those less well adapted and, if the superior variant is heritable, it will come to be more common in successor generations, and the species to be better adapted to its environment."

(Outhwaite 1993: 411)

Figure 5.2 – Quotes on the Theme of Variation

assemblages are repressed by the standardisation of tool forms. Artefact types are used as historical indicators of temporal and spatial relationships between groups. A particularly good example of the archaeological use of the term variation is through the interpretation of the Acheulean. Because the Acheulean is treated as a unitary phenomenon there can only be variation on the preconceived, but yet unstated, norm. This stems from the notion that similar tool forms are produced for one million years and therefore the assumption is made that the Acheulean is a period of stasis. Instead, we need to question the identity of the handaxe as a sign and the concept of the Acheulean as a unitary industrial complex with normative values, given that this encompasses a one-million-year time period. This is largely a problem driven by our attempts to unite variation over time rather than interpret artefacts as specific sets of events that occurred at short moments in the *longue durée* of time. This is because firstly, in the search for 'meaningful' patterns, quantification of large numbers of pieces is considered necessary to justify any interpretation. Secondly, the temporal resolution of the Middle Pleistocene is not considered to be precise enough for detailed interpretations. For example, Wynn (1995) argues that the basic characteristics of handaxes change little during the Acheulean. Standardisation is a product of our own industrial environment and the manufacture process is perceived as having one particular goal and those artefacts that do not fit the mould are rejected or become cheaper seconds. We can not escape standardisation as the majority of stone tool studies involve vast quantities of artefacts and therefore standardisation in artefact naming is a necessary method for ordering large quantities of data. However, patterns in the data need not be interpreted solely on the basis of artefact type.

Using a culture history approach, stasis or a lack of variation has generally been attributed to either small brain capacity, or group stability or conservatism. Binford criticised this approach (Binford 1972, see figure 5.2) as it unified artefacts into chrono-typological segments, thereby crystallising time. Variation is not given meaning but instead social practices are united into a static structure. The underlying difference between change and variation is one of scale and difference. However static, metrical time does not allow for interpretations of difference. During the 1960's the solution for this was processual archaeology's use of evolutionary models to explain cultural variation. Differences in artefacts were viewed as a product of functional or ecological adaptation (see quote above Jones 1992). These explanations for variation suggest that hominids were driven by their environment, which has been previously rejected (see Chapter Four).

Science provided explanations of variation and within this natural selection was expressly an account of this variation. However, in archaeology evolutionary models have systematised artefacts into families creating a biological model of archaeological taxonomy (e.g. Robson Brown 1996). By implication, applying an evolutionary model to variation unifies disparate elements of material culture as a single biological species (thus beginning to have striking similarities to the culture history approach). The particularities and details of stone tools are absorbed into a general model that allows the reductive blending of variations to be perceived as a continuum of one or several types through the concept of natural selection (figure 5.2, Outhwaite and Bottomore 1993). This has led to the assumption that we can discuss archaeological periods over a large time scale because they are members of the same techno-complex. However, cultural diversity cannot be put into a phylogenetic order, as artefacts mediate social relations and therefore are context specific. They can not be grouped together and modelled using biological concepts. For example, using a model of natural selection to explain variation does not allow for hominid intentionality. Variation is not the re-production of artefacts but the re-presentation of different forms as a form of cultural discourse. In addition, evolutionary concepts are often incorrectly used when interpreting variation. This can lead to notions of hominid cultural progress or complexity, as illustrated here.

> "A picture of fairly substantial inter- and intra-site variation within the MSA is beginning to emerge (Clark 1988: 297, 1992; Deacon 1989, 1992). The existence of this variation in time and space is hotly contested, and casts doubt on the standard view that only in the Upper Palaeolithic did modern humans develop fully symbolic language and the capacity for cultural (or ethnic) variation." (Willoughby 1993)

Instead of subsuming variation under broad generalisations, I argue that it is necessary to exploit differences if we are to get at anything other than universal meanings. In the present structure of Palaeolithic archaeological discourse smaller differences in material culture are attributed to variation at the individual level (i.e. one hominid, one site or one region) rather than any form of continued social practice. At present variation does not account for behaviour but describes the abnormal. This means that the chance to explore differences in social behaviours and aspects of intentionality are lost.

5.2.3 Change

Like variation, the concept of change has drawn heavily from that of evolutionary development, particularly as change tends to extend over long term events. Evolution, particularly notions of descent through natural selection and the survival of the fittest, have had profound effects on all Palaeolithic interpretations and our understanding of time. At present evolutionary change is considered either to be rapid, often consisting of a series of steps (frequently referred to biologically as mutations, punctuated equilibrium, or saltation and stasis), or a gradual progressive accumulation. These two models are used to explain the increasing presence of particular artefact types and the presence of new hominid species. Therefore once again time in a Middle Pleistocene context becomes static, as the diversity of expression within each unit of analysis, the Acheulean and the MP/MSA is combined. Change consists of a single process in which the hominids go from the Acheulean to the MP/MSA.

Recently, an attempt has been made to combine some of the ideas on population dynamics from culture history with those of Darwinian evolutionary theory to explain change (Shennan 2000). Shennan maintains that while post processual approaches investigate the role of material culture in political processes, it is unlikely that internal political processes hold the key to explaining major changes in material culture patterns over time. Using ethnographic comparisons to support this, he reasons that,

> "...until the advent of the first states no political units had either the scale or the power to have a major cultural impact over large areas or long spans of time." (*Ibid.*: 812)

In summary, he alleges that population dynamics are crucial to many if not most processes of culture change and that population dimensions directly affect processes of 'descent with modification', which characterise cultural evolution. However, where the tempo of change is dependent on population dynamics and the mode of change comes from descent with modification, we end up promoting a homogeneous record, which is fixed and ordered according to an ideal model (Shanks and Tilley 1987). In this case there is a necessity to resort to exogenous causalities, which have been argued against on the grounds that history is contingent.

Evolutionary theories do not deal adequately with the social texture of change. Specific events are compacted as change is linked to environmental adaptation and population changes. Archaeology thereby loses the potential to explore social practices, as time is not seen as a constant practice of reworking the past (historicity), present and future (see figure 5.2). This leads to the interpretation of change as driven by external forces rather than internal factors. Here, change is usually explained as adaptation, which provides a logical, functional explanation for behaviour. Adaptation is applied as the interpretation in a very diverse number of situations to explain both biological speciation and human action (Giddens 1984: 233-6). This means that adaptation can be a tautology if it is presented as an explanation of both the cause and the consequence of change. Within the discipline of archaeology there was a growing awareness among some processual archaeologists of ontological weaknesses in this functional approach by the late 1970's. In particular, systems theory saw stability as the norm and change as coming from outside influences. Change was attributed to migration, diffusion, indigenous development (usually evolutionary progression) or completely ignored. As research increased, a greater awareness of diversity in the archaeological record developed. There were severe flaws in ecological determinism and a denial of agency to human beings. Marxist approaches considered social conflict over material resources as bringing about change. However, social approaches to Pleistocene archaeology have been few and far between (e.g. Gamble 1999). For the most part, change and variation are still analysed using evolutionary and culture history approaches. These have had a significant effect on and been affected by notions of time and space.

5.2.4 Contextualising Change and Variation

Variation and change are the standard means by which archaeology accounts for spatial and chronological differences in material culture. As was noted in Chapter Four (section 4.2.2), most approaches study behavioural change and variation through a pattern of site distribution and assemblage size in relation to palaeo-environmental reconstructions (Blumenschine and Peters 1998, Rogers, Harris, and Feibel 1994).

Using an evolutionary approach, variation in material culture is interpreted as an adaptive response to a specific situation, explained predominantly through functional and ecological models (e.g. Clark 1975, Kuhn 1995). Consequently, change occurs outside of human action and thereby separated from context, which creates a division between space and time. This relationship between time and space, as a physically defined spatial context, has been critiqued in Chapter Four. The aim here is to discuss their association with the concepts of change and variation. In processual archaeology this association is well expressed in the following quote,

> "Man's dealings with space can be examined from two complimentary viewpoints, as diachronic change and as synchronic variability. The latter refers to an ecological timescale in so far as it investigates the way adaptive systems vary as a response to ecological factors (Gamble 1986)... On the other hand, the study of diachronic change refers primarily to geological timescales (Gamble 1993), since it is concerned with long-term evolutionary processes." (Féblot-Augustins 1999: 193)

This quote can be re-formulated into a table of binary opposites as follows;

Variation	Change
Space	Time
Synchronic	Diachronic
Short term adaptation in response to ecology	Long term evolutionary process

This table of binary opposites draws out the relationships between space, time, change and variation in a physically defined context. A study of table 5.1 shows how notions of the process of time have directly affected the way that Middle Pleistocene research has understood changes in the archaeological record. Evolution has a very particular understanding of time, and it is time that is outside of human action. Chronology, not action, gives us evolution (Shanks and Tilley 1987). Evolution does not allow for human agency as it is a constant "survival of the fittest", i.e. economic and not social/cultural understandings of mate choice are emphasised and therefore human agency is not a part of this process. Change is scalar because time is measured as chronology and therefore,

> "...while the currently accepted synthetic theory of biological evolution explains in a perfectly satisfactory manner how change occurs, it cannot predict the specific lines that change will follow or what its consequences may be..." (Trigger 1998: 32).

Thereby the long and short term can be interpreted as change through time and variation across space respectively. These have had a significant effect on research goals, as the majority of pursuits are orientated around locating some form of transition.

5.2.5 Tracking Transitions: Locating Origin Points

Using these approaches how are transitions affected by our understanding of variation and change? In summary, the concept of variation in archaeology is used to unify time into a chronological block making time static and separating it from social practice. By dividing time into blocks of variation, change only operates on a large scale and in a long time frame, thereby separated from the processes of human action. Defining change and variation as scalar implies that at some level there must be a boundary between the two. It is this boundary point that archaeologists focus on in their research questions. Archaeology has tended to systematise itself into a trinitarian scheme of early, middle and late (Gamble and Roebroeks 1999). This set of phases is repeatable over and over at both the small scale (e.g. stone tool industry such as the Acheulean) and the large scale (e.g. geological time period such as the Pleistocene) because the cycle is restarted by change. Therefore, transitions have always been key areas of research as they allow focus on the beginning of something new and the end of a previous pattern. It has always seemed easier to explain behaviour at points of change rather than during a continuum of similarities. Using techniques, such as constructing battleship curves or graphs, lithic artefacts have been serialised to show chronological shifts in the frequency of types. These shifts help establish origin points, creating a false beginning for change as they do not allow hominids to make their own world but impose a way of being upon them (see also Chapter Six).

Historically, researchers mapped out time using differences between lithic industries to set up the chronology of culture history. These transitions were particularly good focal points, as different behaviour patterns were clearly evident and interpretations could reflect on both the end and beginning phases. Therefore transitions tend to be seen as the interface between two blocks of culture with people moving from one culture to another. This has created a tendency for attempts to make transitional links from one period to another by searching for increasing complexity at the end of the first period to explain the appearance of the succeeding culture. This focuses interpretations on the upper limits of new technologies to explain the transition as leading from the success of advancing developments. In this way the interpretation implies that history is directional, inevitable and universal rather than contingent. However, as activities always reference previous activity it is not possible to locate an origin point as the event is always deferred to the past (Fowler 2002).

It is this directional approach to history, in combination with the conflation of time and space in a physical context, which has led to the establishment of perceived origin points. Origins research is the focus of intense debate, but all it has done is re-centre the origin points, rather than question the approach (e.g. Porat et al. 2002). Origin points are false beginnings, implying unidirectional causality (Dobres 2000: 11), which reflect our understanding of measurements of time, as origins research is really a form of time measurement. Pinpointing a date or place for origin points is viewed as a primary goal, as if finding this ideal would enable us to understand their meaning. These points focus research on a false line of change but very few people have actually asked whether locating origin points is a research agenda worth pursuing (an exception is Alexandri 1995). She concludes that origins research will always be present because every account has a beginning and an ending (*ibid.*: 60). More importantly though, is the necessity for a realisation by current researchers that the boundaries of our stories become stabilised into formal points of origin. These then often become overemphasised and discussed as realities rather than research frameworks. For example, the underlying problem with the current archaeological perception of the end of the Middle Pleistocene is that the whole understanding of change seems to be driven by biological replacement, searching for interpretations of the origin of anatomically modern humans and Neanderthal populations. Changing biologies can not be used to model human cultural adaptations (Clark 2001). This tendency to 'look for' transitions is ridiculed in anthropological studies as the following example shows.

> "To the classic "our ancestors did not use it" – the polite response to any stupid question from the ethnographer on the origin of things, when such questions deserve no comment..." (Lemonnier 1986:165)

Overall the goal of this section has been to problematise change, variation and transitions in relation to space and time. In the next section I address the problems I have highlighted, producing an alternative framework for rethinking through the archaeology of the Middle Pleistocene.

5.3 ALTERNATIVE APPROACH: CHANGE AND VARIATION AS DIFFERENCE

5.3.1 Introduction

In place of the viewpoint discussed in the previous section, I argue that as people create time and space through action (section 4.3, table 5.2), change is involved in this process. Hence, just as there is a mutuality of production of space and time, so change and variation are a part of each other. Therefore, rather than thinking about change in terms of transitions and origin points, I suggest that change should be understood as transformation. A transition implies a link between two suspended states. In the Oxford English Dictionary the word is defined as the passage or change from either one state, or action, or subject or set of circumstance to another. Each state would thus have a different cycle of time, as the transition is the bridge between two entities thereby implying that time is split between phases of before and after (B-series time, Gell 1992: 157). Instead a transformation implies something actively under change rather than a transition which is between two things. A transformation is part of the ongoing process of change resulting from constantly becoming (A-series time; *ibid.*). This would imply that time is never broken as the process and the event are linked and origin points are no longer a possibility. By linking these concepts the long and short term are dissolved thereby creating a social context in which human action is both the medium and outcome of production, change and variation (table 5.2).

Table 5.3 summarises the arguments of section 5.2 and uses them as the basis for an alternative approach. Rigid structural and biological projects have shown their limitations, hence I am using a combination of post-structuralist ideas and social theories to construct an approach that reopens the possibility of much greater fluidity

SUMMARY OF ARGUMENTS FROM SECTION 5.2					
QUESTION			APPROACH	INTERPRETATIVE FRAMEWORK	
1	WHAT	...do change and variation occurring mean?	Change and variation are not interpreted but are an explanation themselves.	Variation	Change
2	WHERE	...do change and variation occur?	Using scales of analysis variation occurs in the short term, i.e. one unit of time while change occurs in the long term, i.e. two units of time.	Synchronic Short term	Diachronic Long term
3	HOW	...do change and variation occur?	Variation is a consequence of spatial distance and change is a consequence of time.	Space	Time
4	WHEN & WHY	...do change and variation occur?	In time the evolutionary process results in hominids 'acting on'/adapting material culture because of causal factors determined by evolution.	Adaptation in response to ecology	Evolutionary process

SUMMARY OF INTENDED PROCEDURES FOR SECTION 5.3				
QUESTION			APPROACH	INTERPRETATIVE FRAMEWORK
1	WHAT	...do change and variation occurring mean?	Section 5.3.2 Alternative definition	Variation/Change to... Supplement & Difference
2	WHERE	...do change and variation occur?	Section 5.3.3 Social scale	Synchronic/Diachronic to... Short term/Long term to... Temporality
3	HOW	...do change and variation occur?	Section 5.3.4 Active context	Space/Time to... Action = Social Context
4	WHEN & WHY	...do change and variation occur?	Section 5.4 & Chapter 6 Establish identities	Adaptation/Evolution to... Result of social interactions through time between structure and agency

Table 5.3 - Summaries of the critique and the procedure for a new approach

and continuing expansion of interpretations. To orientate my research goals towards a more fluid approach to change and variation an alternative theoretical framework is assembled by answering the following three questions; what are change and variation, where are they located and how are they constructed? The key word here, which answers all three questions, is action. To expand from this starting point I begin with a new definition of change and variation (section 5.3.2). I then discuss temporality as the scale of analysis and the five forms of time through change that are displayed in table 5.2 (section 5.3.3). This is followed by an examination how this fits into the social context of action (section 5.3.4). Finally I discuss how we can draw all these concepts together to investigate Middle Pleistocene archaeology in the final summary (section 5.4).

5.3.2 Redefining Change and Variation

Returning to the 'facts' provided in the opening of this Chapter (5.1), a static Acheulean no longer seems possible, change can not be understood through establishing blocks of time and variation is not interpretable as part of a range of cultural equivalents. In archaeological research, particularly the LP/ESA, change is still often viewed in a static manner with explanations orientated outside the body politic (Barrett 1988: 7), thereby unifying actions as blocks of time. The problems of the unification of time through repeated actions are well summarised by Gell's (1992: 34-5) criticisms of Leach's (1961) depiction of alternating time. Gell argues that in the topology of time Leach's religious time is cyclical and hence problematic. In cyclical time events are repeated events and therefore there would be nothing to distinguish one set of events from the recurring events the next time around in the cycle. This is a key point in understanding the problem of the term variation in the Palaeolithic. When a group of stone tools, such as handaxes, become a united concept there is nothing to distinguish one handaxe knapping event or set of behaviours from the next. Thereby time stands still and change can only be explained outside of human action.

So how are we then to deal with change and variation (see table 5.1)? The Derridean terms *supplement* and *différance* can be employed with great effect to interpret archaeology (Yates 1990). The term *supplement* means both addition and replacement, which is an excellent way of approaching the concept of change as it gets away from the possibility of an origin point. Using the concept of *supplement*, meanings of material culture and material culture change are always deferred through a chain of action. *Différance*, from the French, is the subtle combination of the words to differ and to defer, in this manner becoming both passive and active (*ibid.*). By replacing the passive concept of variation with *différance* the meanings of material culture are never static versions of the norm but are constantly becoming. The concept of *différance* allows us to approach questions of social being whereas similarities universalise. By using the term *différance*, variation is lost, as meaning is constantly shifting and therefore decentred. Horizons of *différance* defer the meaning by making it both passive and active. In this way time as a structure is also dissolved. *Différance* can therefore be constant but not consistent, as *supplement* is a continuous re-presentation of the social structure.

In summary, variation is currently used as *the* essentialist explanation for material culture forms. With the knowledge that all things vary, the application of variation in this manner makes no interpretation and brings about stasis in the archaeological record. Rather, variation should be the rupture point or starting point at which interpretation begins and the interpretation should stem out of ideas of 'difference' as a part of the constant reworking of social relations through practice.

Likewise, change should be understood as a constant but not a consistent process (discussed below). Otherwise, stone tools only provide us with the large-scale changes because they are studied as blocks of time. Change therefore becomes a scalar problem leading to stasis, origin points and steps of change. Change is the outcome of human agency and therefore it is constructed in social reality. Locating moments of change (i.e. origin points) does not explain their cause or consequence. Social identity is constantly re-forming through age and is ever shifting and under constant reinterpretation. The life cycle never shows a particular day where there is evidence of change but rather societies create definitive points of realisation/acceptance of these designated changes, which always occur after the change has happened.

Post-structural approaches such as this have been criticised, because the continual flickering of meaning has made it difficult to develop ideas on time (Gosden 1994: 5). This is only the case when interpretation is dependent on exploring meaning rather than action. When the central focus is on action an approach stemming from deconstruction can help to find points of inflection as discussed below.

5.3.3 Scales of Analysis: Locating Change and Variation

Archaeologists have usually been concerned, at least in part, with the tempo and mode of change. The outcome of this is that different systems of time have been used depending on the type of change one is thought to be modelling and the speed of change that is thought to have occurred. Long term change tends to produce interpretations that are developmental, progressive and directed, while in the short term variation is used to create stasis. As soon as one starts to define time ranges one can not help but become caught up in metrical time. Braudel's *longue durée* allows changes to take place at different rates, hence there is no interplay between structure and agency, and so time becomes a container (Thomas 1996). Consequently events are considered retrospectively and their significance is assessed teleologically. Hence my approach is rather to look at time through change thereby contextualising events as experiential circumstances situated in space. This follows the understanding of A-series time where change results from 'becoming' (Gell 1992: 157), only existing as it is played out through material forms and social relations. Transitions only exist because artefacts are united into discrete contexts. When a context becomes reflexive and active we lose the ability to see change, only points of difference and the effects of change. When a reflexive relationship between space and time is established, the distinction between the long and the short term lose validity and a new form of hominid action can be described that is situated around neither the individual nor the group. This is the temporality of being (see section 4.3.3 on social time and temporality). It is the mutuality of production of people shaping the world as the world shapes them (Gosden 1994: 80). Changes in patterns of practice thus have a reflexive relationship with the structure of social formations.

Table 5.2 describes the five inter-linking levels of research that can be used as the basis for the interpretation of change. Using this approach change and variation are not two separate processes in time, but construct each other. Change in parts affects the whole. This can be intentional change through **directional** time that may have resulted from either intended or unintended actions and consequences. What we see in the archaeological record is the **cumulative** after-effect of these times. Although change is staggered we only see the accumulation of these events. Change itself and the direction of change are caused by a multitude of convergent factors. We do not actually 'see' change but its after-effects. Most importantly is the effect of change, as it alters ontological security, i.e., "the confidence or trust that the natural and social worlds are as they appear to be" (Giddens 1984: 375). Therefore a particular change is not possible unless ontological security is either incorporated within change or produced by it, providing some form of continuity and thus psychological stability through the change. Ontological security sustains and is maintained by trust and tact (in *praxis*), through the routine nature of social reproduction (*ibid.*: 64 & 86). This underpins repeated practice and therefore also ensures that change is sanctioned. It is the routine of **reversible** time, which brings the past memories into the present, that is the key to ontological security. For it is often material culture that provides a thread of continuity through the many changes in life (Gosden 1994: 31). The use of material culture in this sense may bind together disparate elements and help people cope with a unique set of spatial and temporal problems (*ibid.*). The cultural construction of place is important in the maintenance of trust and the position of the body within places is guided by the *habitus* through **linear** time to maintain ontological security. Within places, it is at the moment of bodily performance that there is a conjuncture of structure and agency (Gosden 1994) and therefore one could argue that the body is the nexus for change. Being and change are located in the performance of actions in time and space. As the body is in a constant process of becoming, so it would make sense to suggest that Being is not about transitions but about transformations. These acts of transformation take place during the lifecycle and hence positions are established and accumulate within **circular** time.

This section has discussed forms of time through change. When temporality is the scale of analysis, social relations become fluid, transforming through action. In the following section the aim is to demonstrate how changing social relations are materialised in the context of action.

5.3.4 A Social Context for Change and Variation: Time in Action by Transforming Transitions

Time and space derive from human involvement in the world. Like space and time, change and variation are not mutually exclusive but bound together through action (see table 5.2). Just as time is created through action so change occurs in time. It is action that links all forms of change through time and table 5.2 demonstrates that these different forms of time can operate simultaneously. Change occurs through the redistribution of people and objects in time and space. Their distinction comes through cultural assignment, not automatically or separate to the social process. Variation and change are cultural choices both in the past and the present. Whether we choose to view something as different or still holding the same meaning is a choice of emphasis of either continuity and similarities, or difference and change. As stated previously this thesis focuses on 'doing' rather than 'meaning' in the interpretation of material culture. The study of a transition demands an interpretation of 'meaning' while the study of transformations requires the interpretation of 'doing'.

5.4 SUMMARY

There has been an overemphasis by Middle Pleistocene researchers on the occurrence of change at particular points in time. A stress on continual change through interaction with the world creates a new perspective both on views of the world and views of the body. In response, this thesis aims to interpret hominid identities through the social texture of change in material culture. Approaches to the body and interpretations of material culture are described in Chapter Six, and can be established following the framework provided in this chapter. This requires a movement away from the physical context towards an interest in how people change the world and how the effects of changes set up new conditions for social action. This framework is used to form an approach to identity, which can then be used in the interpretation of lithics in the case studies (Chapters Seven and Eight).

PART III – IDENTITIES & INTERPRETATIONS

CHAPTER SIX

MATERIALISING IDENTITY: FORMULATING PRAXIS

"It is even harder for the average ape to believe that he has descended from man."
H.E. Mencken (1880-1956), American Critic

CONTENTS OF CHAPTER SIX

6.1 INTRODUCTION

Currently transitions are key focus points for archaeologists in creating identities, as they are situated at the junction of changing personas. The previous two chapters have discussed at some length the structure of Pleistocene archaeology and have argued against the concept of transitions, leading to the development of an alternative framework for archaeological interpretation (table 5.2). This chapter looks at how

Middle Pleistocene identities are currently constructed in archaeology. Following this, an alternative theoretical and practical approach is established.

Present research questions are framed by the aim either to locate an origin point for, or demonstrate degrees of modernity in the archaeological record. A focus on the transition to the 'modern' constructs a particular form of identity for hominids both in the past and the present. This identity is clearly expressed in an excellent summary by Mellars of the most important issues in the emergence of modern humans (Mellars 1989). Although this summary focused on the European Middle to Upper Palaeolithic transition and was written over a decade ago, identical questions are currently being asked of the Middle Pleistocene transition. The introduction to this paper (*ibid.*: 349) highlights the research goals of archaeological thought on this transition through a series of specific questions. The first two questions query the relationship between the transition and changes in culture and biology. The second two questions ask how we can model the transition in terms of culture and then biology. The fifth question considers whether the transition is biologically or culturally 'driven' and the relative contribution of these two categories to the transition. The 'transition' for both of these time periods is underlain by the unquestioned assumption that there are definable changes from non-modern to modern humans and a distinct separation of biology and culture. This chapter questions the construction of this relationship between biology and culture, as it is the concepts of modernity, the body and material culture that are establishing identities for peoples of the past.

At present there is an archaeological checklist against which hominid material culture is measured for modernity (table 6.1). This list is based on current views on modern human fossils and the genetic evidence (figure 6.1). One can see that the categories for behaviour in table 6.1 are the same as the categories for physical space critiqued in tables 4.1 and 5.1. Since the end of the 1980's there has been a growing palaeo-anthropological interest in the beginning of the MP/MSA. This has stemmed from the *apparent* chronological convergence between 'anatomically modern' or 'near'/'proto'-modern fossil humans, 'Mitochrondrial Eve' and the beginning of MP/MSA flake-based industries. Therefore the quest to understand the end of the Middle Pleistocene lies in

Table 6.1 – The archaeology of modern behaviour (my summary of the work from a paper by McBrearty & Brooks 2000)

CATEGORY	BEHAVIOUR	ARCHAEOLOGICAL EVIDENCE
Ecology - Colonising new environments requires both innovation and planning depth	Range extension to previously unoccupied regions, broader regional networks	Tropical lowland forest, islands, far north Europe/Asia
	Altered subsistence strategy results in increased diet breath	Fauna
Technology – Reveals human inventiveness and the capacity for logical thinking	New lithic technologies	Blades, microblades backing
	Standardisation within formal tool categories	Stone tools
	Hafting and composite tools	Stone tools
	Tools in novel materials	Bone, antler
	Special purpose tools	Projectiles, geometrics
	Increased numbers of tool categories	Stone tools
	Geographic variation in formal categories	Stone tools
	Temporal variation in formal categories	Stone tools
	Greater control of fire	Hearths
Economy and social organisation – Human abilities to draw models from individual and group experience, to develop and apply systematic plans, to conceptualise and predict the future, and to construct formalised relationships among individuals and groups	Long-distance procurement and exchange of raw materials	Stone tools
	Curation of exotic raw materials	Stone tools
	Specialised hunting of large, dangerous animals	Fauna
	Scheduling and seasonality in resource exploitation	Fauna & shells
	Site reoccupation	Sites have large numbers of occupation layers
	Intensification of resource extraction, esp. aquatic and vegetable resources	Fauna & shells
	Long-distance exchange networks	Stone tools
	Group and individual self-identification through artefact style	Stone tools
	Structured use of domestic space	Hearths
Symbolic behaviour - Demonstrate a capacity to imbue aspects of experience with meaning, to communicate abstract concepts, and to manipulate symbols as a part of everyday life.	Regional artefact styles	Stone tools
	Self adornment	Beads and ornaments
	Use of Pigment	Ochre
	Notched and incised objects	Bone, egg shell, ochre, stone
	Image and representation, language suggested	Carved bone, ochre
	Burials with grave goods, ochre, ritual objects	Ochre, ritual objects

Figure 6.1 - The historical changes over the last twenty years in the placement of the origin point for modern *Homo sapiens*.

1980's

1. Debate begins between the two origins models, "Out of Africa" (Stringer et al. 1984, Stringer 1989) and "Multi-regional" (Wolpoff et al. 1984, Wolpoff 1989).
2. Search for modernity in Upper Palaeolithic (UP; Mellars 1989) and Later Stone Age (LSA; Klein 1989a) material culture.
3. Genetic material (MtDNA) increasingly indicates that the origin point for anatomically modern humans is in Africa (Cann et al. 1987).

1990's

4. Weak Garden of Eden model (Harpending et al. 1993) retains replacement aspect of Out of Africa model but establishes population bottlenecks as key to modern human origins. Bottleneck argued to be present due to volcanic winter (Ambrose 1998) and modern races originated at the beginning of the UP and LSA.
5. Multiple Dispersals model (Lahr & Foley 1994) proposes a population bottleneck during OIS 6. Assumption made that presence of *Homo sapiens* at 130kya must be linked to changes in tool technology (Foley & Lahr 1997).
6. 'Modern' characteristics are now also sought out in the earlier archaeological record of the Acheulean, Middle Palaeolithic (Ronen 1982) and Middle Stone Age (Deacon & Deacon 1999) fossils and material culture.

2000

7. Long and detailed argument put forward by McBrearty and Brooks (2000) for a modern origin point in Africa linked with the appearance of the MSA.
8. Importance of the question of modern human origins reflected in the focus of research output and number of conferences dealing with this issue (e.g., Ronen & Weinstein-Evron 2000).

the explanation of the origin of *Homo sapiens* and evidence for the presence of cultural modernity. So 'origin' and 'modernity' are linked here as research has been looking for the origin point of modernity. In the following **section 6.2** I argue that pursing research into the Middle Pleistocene using this approach constructs a particular outlook on hominid behaviour that constrains interpretations allowing one of only two possible outcomes; modern or non-modern. In addition there are still a great many who believe that hominid research explains the history of humanity and the origins of humanness rather than it being a discourse of our own human identity situated in the present. It is by displacing the concept of the 'modern' that it is possible to expose the tenacity of a whole set of assumptions underlying archaeological thinking on Palaeolithic identity. These assumptions tie in with the framework as a physical context, which was critiqued in Chapters Four and Five. Here their effect on identity is reviewed and an alternate approach is put forward to access routes for establishing identities in a social context (see table 6.2).

IDENTITY IN A PHYSICAL CONTEXT		**IDENTITY IN A SOCIAL CONTEXT**	
INDIVIDUALS	Fixed boundaries between people and things.	**DIVIDUALS**	No fixed boundary between people and things.
OBJECTS	Culture is external to people, possessed by individuals or overlaid upon them.	**MATERIALITY**	All material linked as culture, relationships presented through bodies/artefacts.
EXPLANATION	Depersonalised and general knowledge presented as facts.	**INTERPRETATION**	Contextually situated practice presented as possibilities.

Table 6.2 – Demonstrating the differences between approaching identity within a physical context and identity in a social context.

The alternate approach to transitions established in Chapter Five, necessitates a different approach to identity (**section 6.3**) before the location of transformations can be discussed in Middle Pleistocene material culture. With the 'modern' deconstructed, an alternate proposal for interpreting identity (table 6.2) draws on recent approaches to corporeality (Hamilakis, Pluciennik, and Tarlow 2002b), concepts of agency (Dobres and Robb 2000a, Giddens 1984) and the idea of the partible person (Strathern 1988). This alternate view builds on the new framework established in Chapters Four and Five (tables 4.2 & 5.2) to outline a different approach to the interpretation of hominid identities (table 6.3). It is concluded that identities can be constructed through the materiality of social relations. In this social context three forms of materiality are expanded on (**section 6.4**). The first is an investigation of artefact identity using the concept of *praxis*. This alternative views material culture as *praxis*, not constructed through an underlying pattern, but as part of a constant reworking, casting off and reviving of elements in ever changing complexes. This avoids unifying culture and instead makes it subject to human agency, because it does not exist outside of history. Therefore stone tools no longer only mediate between the hominid and the task to be completed but are disparate elements of culture creating a fabric of meaning and that is consistent and mutually reinforcing. The second form of materiality examines collective identity and artefact accumulations through the concepts of citation and the *oeuvre*. The third looks at active identity by approaching the *chaîne opératoire* as a culturally mediated practice that is integrated within the 'taskscape' (Ingold 1993) rather than as comprising of stages along an evolutionary chain. This sets up an interpretative link between the theoretical arguments and **section 6.5**, which discusses the procedures for artefact analyses. Case studies follow in Chapter Seven and Eight, using Middle Pleistocene archaeological examples to embody change and explore identities without reference to either the concept of modernity or origin points.

6.2 IDENTITY CARDS: THE CURRENT STATE OF HUMANNESS

6.2.1 Introduction

"Archaeology, both historically and in the present, is intimately involved in definitions of humanness" (Gosden 1994: 37), but what does it really mean to be human? This is a question that has been pursued for over 150 years in archaeological research. Two hundred years ago its definition was absolute and unquestionable, but Darwin's *Origin of Species* (Darwin 1859) set a new conceptual agenda, which eventually led to an explanation of *The Descent of Man* (Darwin 1871), providing a natural rather than a supernatural origin for humankind. Since this time Palaeolithic research has been orientated around the transformation from our ancient 'natural' state to cultural modernity. From the late 1950's, with the introduction of dating and therefore a deep ancestry for *Homo sapiens* (Leakey 1959), the debate about what makes us human became ever more prevalent in the study of early archaeology. In combination with the establishment of an absolute chronology, the naming of *Homo habilis* (Leakey, Tobias, and Napier 1964) again reinforced the distinction between us and other genera. This led to a focus on finding answers to questions on when, and on what basis, we could consider hominids as a part of the *Homo* lineage. As we have become aware of the longevity and diversity of hominid species in the archaeological record, the focus has moved away from the question "what makes us <u>human</u>/*Homo*" to the question "what makes us <u>modern</u> humans". In recent years the crux of this transition was placed at the beginning of the Upper Palaeolithic. However, lately interpretations of African archaeology suggest that the origin of modern human behaviour may lie at the boundary of the Earlier and Middle Stone Age in Africa (Chapter Three). Following the same theme, in Europe origins questions have focused on Levallois technology and modernity issues have been raised in connection with Neanderthals (Chapter Two).

The search for modern human origins affects the way that both the European and the African archaeological data are interpreted. The focus here concerns research on 'modern human origins' which is the present-day agenda for discussing the transition in Middle Pleistocene material culture from Acheulean to MP/MSA. Those qualities that make a 'modern' human are currently viewed as a 'package' or an identity card, which can be used to label some hominids. This classification is defined using three forms of measurement; genetic sequencing and fossil anatomy (section 6.2.2), material culture (section 6.2.3) and ethnographic comparisons (section 6.2.4). All three definitions are considered to be problematic, both because of empirical flaws within their current frameworks of analyses (*c.f.*, Klein 2001, Wise, Sraml, and Easteal 1998) and because it is argued here that the very basis of the conceptual framework of modernity is inappropriate (section 6.2.5).

6.2.2 The Biological Body

The body has been a major source of contention in the modern human origins debate, as it is the site of species identification. Contributing evidence from the study of genetic markers and anatomical analyses of fossils has aimed to establish a chronology for and the birthplace of modern humans through locating *Homo sapiens* in the archaeological record. While the 'origin' point is searched for along the archaeological timeline, the features of modernity are debated in terms of fossil descriptions. There are few in-depth analyses of the concepts of modernity or reflective discussions on the relative importance of creating identity through species names. In this way the system exists independently of the social agents. The term 'anatomically modern human' is an analytic fiction (Ingold 1995), which by definition implies a natural (non-cultural) origin for modernity. This term implies that there needs to be an anatomical framework in place prior to the advent of cultural change. Here I argue that it is not objects or species that provide behaviour patterns but rather the study of the interaction of social groups with their material culture.

Over the last 15 years molecular data has had an increasing contribution to make to the modern human origins debate. Originally mtDNA findings were interpreted as strongly supporting the Out of Africa Model (Cann, Stoneking, and Wilson 1987, 1994). Genetic evidence from mtDNA suggested that all humans living today have an African origin as Africans have the greatest genetic diversity and therefore, they have been present for the longest amount of time. In Europe, genetic evidence has also been used as a way of understanding the relationship of Neanderthals to other hominid lineages, particularly their contribution to or separation from *Homo sapiens* (Krings et al. 1997). However, more recently other studies have shown that mtDNA may not mutate at regular rates. It has been argued that we must look at the variation in different regions of the genome (Wolpoff and Caspari 1997) as different regions of the genome are increasingly indicating several different evolutionary histories. It is interesting to see that unlike traditional interpretations, even in genetic studies there is now a suggestion that evolution does not operate on a linear time scale but has several different histories operating within one body. A number of questions have also arisen as to the potential of mtDNA as a neutral marker in evolutionary and population genetics (Adcock et al. 2001, Wise, Sraml, and Easteal 1998). Although genetic researchers are increasingly aware of the complexities of the human genome, genetic sequences are still often used to support archaeological interpretations with little reference to its difficulties (Clark 2001).

A second line of inquiry investigates the anatomical features of hominids. Anatomically, modern human skulls may be present in East Africa from 150kya but even these are disputed as retaining archaic traits. There are very few hominid fossil remains from the end of the Middle Pleistocene and it has been recently argued that the number of hominid species has been underestimated (Foley and Lahr 1997, McBrearty and Brooks 2000). As there is no consensus as to the credibility of the biological taxonomic units themselves (Clark 2001, Willermet and Clark 1995), material culture should not be interpreted on the basis of biological change. Links between fossil remains and stone tools create a universal picture of hominid behaviour that is divorced from context specific information based on the particular practices taking place at the archaeological site itself. This has tied material culture to particular hominid species. Hence, archaeological site patterns become generalised as interpretations of material changes are related to levels of biological difference. When the biological evidence (fossil & genetic) is compared with 'modern' material culture the description takes on one of two forms; the 'instant parcel' and the 'extended package', discussed below.

The 'instant parcel' assembles a set of cultural elements accompanying modern human anatomy, which assumes that biology and material culture are linked (Deacon and Deacon 1999) and associates material complexity with cognitive development. The misreading of Tasmanian archaeology during the 1970's is a good example of the effects this kind of interpretation can have both on the archaeology of the past and views in the present. In Tasmania the reported lack of technological variety in aboriginal tool types was thought to represent a squeezing of intellectuality (Jones 1971, 1977). When types are collected together as a checklist of 'modern' technologies (see table 6.1) technology is objectified. This makes the assumption that one or any combination of cultural attributes is explained by applying a 'modern' label.

In contrast, other researchers have separated the anatomically and culturally modern elements, describing an 'extended package' for modernity. Klein has described a time lag between human cultural and biological modernity suggesting that modernity originates in Africa culturally with the MSA and biologically with anatomically modern humans (Klein 1998, 2001). Alternately, McBrearty and Brooks (2000) link these two types of evidence, arguing that modern human adaptations appeared gradually rather than at once (*ibid.*: 458), with each part having its own origin and demanding its own explanation (*ibid.*: 534). In opposition to these views I purport that levels of humanness can not be located either outside the body (in the phenotype) or inside the body (in the genotype). The terms anatomically and culturally modern can not be divided or partitioned, as this would imply that there are two or more stages of modernity. Modern is a way of being, it can not be separated into parts without the meaning breaking down and it can not be located outside of the present. It is through the engagement in social relations that identity can be ascertained.

The concepts of modern, modernisation and modernity as applied to the fossil and archaeological records all imply that there was a contrasting, archaic, stable past (Latour 1993: 10). This relates to the way that we contrast hominids between the concepts of primitive and modern (see figure 6.2), which stems from a pre-Darwinian understanding of evolution as a progressive trend from simple to complex. The terms 'pre' and 'proto' are used to describe both material culture and hominid fossils as forerunners to the origin point or as a way of explaining early examples of a particular type or technology. In this context the archaeological record is presented as directional. For example,

> "The human fossils associated with southern African MSA artefacts are considered modern or at least 'near modern'" (Thackeray 2000: 165).

This creates a circular argument in that when a 'modern' pattern shows up in a 'pre-modern' context it is used as justification for the succession of evidence. There is no discussion of the logic of inference underlying the explanation (*cf.* Clark 2001), as the assumption is that the term modern is wholly understood. This is further compounded by the recognition and subsequent use of our ape ancestry (backed by fossil and genetic

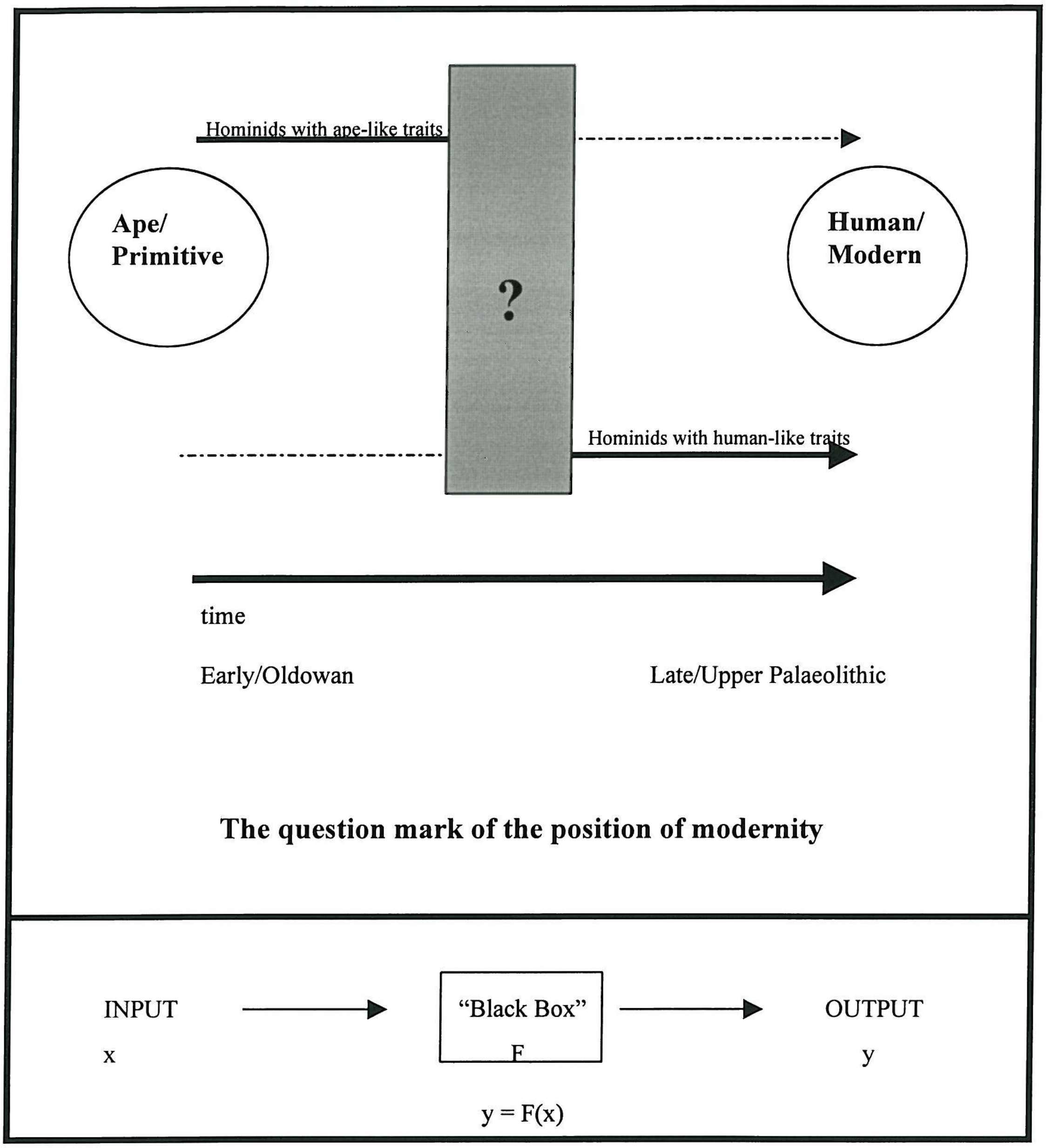


Figure 6.2 – Problematising the position of modernity in human evolution. This shows the current view on changes from early hominids to modern human groups. It uses a model that looks at ape and human traits to approach the question of the origin point of modernity. This modernity model resembles the 'Black Box' model that was used by Leach (1973: 765) to critique the parallels drawn by researchers between ethnographic evidence and archaeological situations. He argued that the mechanism of F could not be inferred through simply observing the patterning of y and x.

evidence) to look at the gradual separation of hominids from their natural 'apeness' to their cultural 'humanness' (figure 6.2). Using this approach, hominids have only two parts to them rather than considering hominids as composed of several parts that can not be bounded into a simple/complex whole. The objective should be to address issues of hominid behaviour, culture and identity through material bodies instead of investigating the body as the subject.

6.2.3 The Cultural Mind: Material Modernity

Just as the body has been a 'subject' of investigation, so the mind has been objectified as a biological thinking-machine whose extension beyond the body-subject is visible in the production of material culture. This section investigates the allied themes of mind and material culture and how their relationships with the concept of modernity influence the creation of hominid identities.

The archaeological interpretations of Middle Pleistocene material culture are based on only two forms of identity; 1, their alliance to the modern or non-modern human (table 6.1) and 2, their culture group (e.g. MSA, Acheulean, Fauresmith, etc.). The focus is on a description of the archaeology in relation to preconceived notions of how material culture can be slotted into these particular groups (recent examples include (Henshilwood et al. 2002, Klein 2001, Ronen and Weinstein-Evron 2000). There is little or no discussion of the relative importance or assumptions made within the category assignment itself, only why it should 'fit' into this category. As Clark forcibly points out, there can be no 'Aurignacianness' (or for the purposes of this thesis 'Acheuleanness', 'MSAness' or 'humanness') without resorting to essentialism (Clark 2001). The time-space distribution of these units of analysis far exceeds the possibility of allowing us to create a singular social identity or culture (see Chapter Four). However, it is within this framework of identity that cognitive archaeology is applied to create interpretations of material culture, as members of the same species are assumed to share the same cognitive abilities.

Cognitive research in archaeology developed out of the processual archaeology of the 1960's and 70's (e.g. Marshack 1972). It has concentrated on the study of the ancient mind through biological, mathematical and computer sciences (Mellars and Gibson 1996, Mithen 1996, Renfrew 1994). Although this research began as an outgrowth of processualism, the cognitive approach only came to the fore as a dominant discourse for the Palaeolithic in the early 1990's and has remained a leading approach for interpretation, particularly of change. Cognitive archaeology has not only been used to explain change but has been applied to research on language, social interaction (often under the guise of intelligence), curation and transport, technology and subsistence. Since the 1980's there has been an increasing focus on symbolic and cognitive issues, some of which have been direct responses to post-processualism (e.g. Renfrew 1994). While some researchers followed a hermeneutic and semiotic line, prehistoric research kept within the scientific and empirical discourse. The agenda followed by many cognitive archaeologists can be summed up in a quote from Layton that is supported by Bradley (1994: 104).

> "Looking for specific meanings in Palaeolithic motifs is frustrating and relatively unproductive. Looking for structure is easier, although there are problems in being sure that the structures we measure are always the direct reflection of Palaeolithic culture. Given the nature of human cognitive systems, however, it is surely less interesting to know whether, for example, the horse exemplified masculinity or femininity, than to show that Palaeolithic rock art has a structure comparable in its complexity, to that of modern hunter gatherers." (Layton 1987: 232)

Given this viewpoint it is easy to see how different types of stone tools have been associated with different mental templates (Gowlett 1984). A direct relationship between tool types and cognitive structures was initially associated with the ascent of man to great intelligence but has been recently pursued through more complicated systems of neural networks (closely related to the systems theories of the 70's only under a different guise). Modern cognitive abilities have been arguably traced back to the Oldowan (Gibson 1991, Mithen 1996) while bifaces have been viewed as templates containing complex spatial concepts such as three-dimensional symmetry and three-dimensional rotations (Gowlett 1986). These concepts are applied to the study of the operational chain to argue for differing levels of intelligence, which are then related to potential social behaviours and the origins of language (Noble and Davidson 1996). In the Middle Pleistocene several researchers have stressed how important the emergence of prepared core technology is, as it is thought to be an expression of the turning point in the whole conceptual and cognitive basis of lithic technology. Subsequently it has been emphasised that perhaps there was a much greater degree of forward planning, time depth and strategic problem-solving involved in the knapping process (Mellars 1991, Roebroeks, Kolen, and Rensink 1988). However, dissimilar archaeological signatures could be markers of identity rather than indicators of differing intelligence.

A main supporter of the cognitive approach is Mithen (1996) who takes a specifically biological approach to hominid cultural abilities and change through time, arguing for increased accessibility between neural modules resulting in generalised intelligence. By dividing up cognition into modules he has separated the social and technical domains which I would argue are automatically combined in the learning and subsequent production of material culture. This approach uses the Pleistocene archaeological record to interpret hominids over time through the gradual building of the biological animal and then subsequent additions of the mind, soul and self-understanding. This mis-reading of evolution has led to the discussion of brain expansion in developmental terms. The idea of ontogeny recapitulating phylogeny has been used to look at long-term developmental changes, particularly focusing on intelligence and brain encephalisation (Mithen 1996, Wynn 1979, 1981). If this approach is followed through, we could equate earlier Palaeolithic hominids with a child-like form, which matures to become a modern adult *Homo sapiens*. The interpretations of childhood in archaeology have recently been heavily criticised by Derevenski (2000) in a manner that is here considered to be equally revealing about the interpretation of Palaeolithic hominids (*ibid.*: 8).

> "...the biological basis for the identification of children is frequently transformed into a social unit as a series of ethnocentric assumptions about the link between biological development and social involvement are imposed."

Likewise, the imposition of Western attitudes to humanness are extrapolated back into the past, prioritising the 'modern' as complete and thereby viewing earlier hominids as

> "...the child – the incomplete and therefore lacking sub-adult (James, Jenks, and Prout 1998). As long as the child is defined solely through the body as a universal developmental phenomenon, it lacks elements of social or cultural difference upon which to hook a contextually specific and culturally constructed child." (*ibid.*: 8).

Similarly early hominids can be equated with the child as primitive, unknowing, unsocialised and natural, while by comparison modern humans are adult, sophisticated, intelligent, socialised and nurtured. Continuing on this tack, material culture becomes part of a developmental process, which prioritises those artefacts that are either seen as more advanced or fit into the universal developmental norm. Hominids (because of their presumed lack of complexity) are not seen to internalise things or subvert norms through culture. Their material culture is seen to operate through a mental template and it is this rigid structure through which raw material, function and random variation are seen to be the cause of different artefact types and shapes.

The arguments against cognitive archaeology do not mean that we can remove ourselves from interpreting the way that hominids were thinking. However the extent to which one can empathise with past peoples is a problem right across archaeology regardless of one's theoretical perspective (Boado and Vasquez 2000). My argument here is that structuring cognition as a biological model does not provide a satisfactory interpretation of material culture. Interpretations of cognitive abilities are adjusted according to perceived levels of hominid intelligence required to produce particular stone tool types. Cognition is studied on a species basis and therefore a universal structure is applied to all material culture that is thought to be produced by that species. Likewise, the concept of the individual is present when a theory of mind is applied (see section 6.3.4 for a critique of this concept). The approach to the mind structures action and therefore there is no reflexive link between culture and thinking. Ways of thinking are culturally created through social relationships they are not biologically driven. For example the Hagen, an ethnographic group from Papua New Guinea, view bodies and minds as multiple, in that each child is seen as created through a metonymic transaction between parents, each contributing substance but all three maintaining their distinctiveness (Strathern 1988: 262). Given the necessity of context for social relations to occur, there can be no mind, body, group or modern-ness that can be used as structures in the interpretation of material culture.

6.2.4 'Apes to Angels': Ethnographic Comparisons

The 17th century Cartesian bifurcation of mind and body is still the philosophical basis underlying present understandings of human origins. This split in the archaeological record between the bodily evidence concerning fossils and genetics, and the mindful production of cultural objects, has been demonstrated above. Situated within this split are the ethologies of present-day apes and ethnologies hunter-gatherer groups, which are used to set up categories for interpreting the archaeological degrees of humanness. Pleistocene research tends to use apes and hunter-gatherers as analogies for the respective categories of primitive and modern (see quote from Layton given in previous section and figure 6.2). Interestingly the further back in measured time that we go the more spatial distance we feel between hominids and ourselves. This distance is thought to be differentiation but rather than making hominids different there is a tendency to interpret them as generalised or child-like versions of ourselves. A good insight into the way that early hominid activities are treated is evident in this quote, which labels palaeoanthropology as "the work of the 'monkeys and stones' brigade" (Hawcroft and Dennell 2000: 89). However, ethnographies should rather be used to alert us to other ways of both viewing the world and therefore asking different questions of our evidence and through our approach. Not only should we use ethnography to question our past but also those using ethnographic evidence need to be more reflexive about their relationship with the past in the present as,

> "...the West has used the non-Western world to contemplate the prehistories of its future, and that the contradictory results have shaped a multitude of social discourses worldwide. There seems to be no end to that dynamic, and no reason to suppose that the present has been freed from working out its complicity in it." (Barkan and Bush 1995: 19)

6.2.5 Issues of Identity: Questioning Modern Human Origins

Human origins are the focus of intense debate. However so far, much of the research has only re-centred the origin point of modernity rather than questioned the approach itself to understanding hominid palaeo-anthropology. Where modernity is questioned, it is only in terms of diagnosing what is modern and what is not (*c.f.* Stringer 2002), not the underlying concept of the modern. Pinpointing a date or place for origin points is discussed as if finding this ideal would enable us to understand them (see Chapter Five on origin points). Through the use of biological and scientific methods of analysis it is felt that archaeologists can get at the truth of our human origins. The primacy attached to biological identification is such that hominid fossils adjust the interpretation of archaeological material. The labelling of fossils has created hominids whose lives, experiences and identities remain unexplored as the developmental perspective relegates the non-modern as incomplete and therefore lacking elements of social and cultural difference. Because of the distance to the past it is felt that only essentialist arguments can hold up over great lengths of time. Therefore the system becomes extant independently of the social agents. The ideas of alternative meanings and alternative histories plays havoc with the standard interpretation of a unilineal development towards modern populations.

Equally important is archaeology's place in the present and several researchers have argued for the necessity of a more self-reflexive approach to interpretation that is aware of the political discourse within which archaeologists are engaged (Clark 2001, Hodder 1992, Shanks and Tilley 1987) and the subjectivity of archaeological understanding (Wylie 1994). Modernity is a form of identity constructed in the present and overlaid on the past. The public popularity of human origins makes it very important that researchers are aware of the potential implications and uses of their work. In many widely circulated articles the Palaeolithic is used as justification and validation for and against the present human condition. For example, in a Guardian article on racial politics (Monbiot 1999) it was argued that "Britain has been multicultural since the Palaeolithic." The concept of modernity is directly related to distance in time and thereby distance from humanness. This approach can have a harmful outcome, as the 'modern' identity we create both distances us from those in the present who do not fit into our categories and also those in the past who we are so struggling to understand.

The idealised image of the modern privileges a particular ontology. These normative constraints both produce and regulate the interpretations of the materiality of things. The use of the term modern and the search for its origin point formulates the current model that is used as a framework for research questions of cultural change in the Middle Pleistocene. This has negative implications both for the construction of past identities and present political discourse for the following reasons.

1. The interpretation of modern human origins as a product of the Upper Palaeolithic revolution is argued to be a misreading of the evidence stemming from a Eurocentric bias that is a consequence of research history and the richness of the European record (McBrearty and Brooks 2000: 534). In preference McBrearty and Brooks put forward an alternate modern human identity purporting African roots for us all. This directly follows the mood of the present post-apartheid political climate demanding an "African Renaissance" (e.g. Mbeki 1998). Origins research is linked to the production and consolidation of identity (Alexandri 1995) and therefore often has nationalistic and racial outcomes. Although the use of archaeology to political ends can be constructive (Wadley 2000), without an awareness of the present-day political implications, the discussion of the modern in an archaeological context could be very undesirable even when it is attempting to redress a balance. As written by Edward Said,

> "Can one divide human reality, as indeed human reality seems to be genuinely divided, into clearly different cultures, histories, traditions, societies, even races, and survive the consequences humanly? I mean to ask whether there is any way of avoiding the hostility expressed by the division, say, of men into 'us' (Westerners) and 'they' (Orientals)." (Said 1985 (1978): 45)

2. Shifting the goalposts to construct a modern human identity for the end of the Middle Pleistocene tells us nothing about their behaviour at this time. Dividing the archaeological record into modern and non-modern segments separates behaviour patterns into two abstract categories devoid of meaning (Latour 1993). In archaeology this essential and fixed opposition of modern and non-modern gives priority to one side over the other according to chronological time and associated assemblage type. This would suggest that if we can pinpoint a date or place of modernity then we will understand hominids in the past. It also implies that we can directly overlay a present day analogue onto the past. There is no one meaning to being *Homo sapiens*. Being human does not enable us to define all the experiences had by humans. Definitions of being human are generalisations abstract from the world of meaning. *Homo sapiens* is a category resulting from specific discursive practices, it therefore can not have an origin but is an affect of current discourse. Rather than give meaning to a species as a

somatotype, it is through material culture that archaeologists can pursue interpretations of past practices and sociality.

3. We have never been modern (Latour 1993), as modern is only what we are at this precise moment. We only have to look as far as the concept of races a couple of hundred years ago to know that 'modern man' was not a term that would have been ascribed to all *Homo sapiens*. The term modern is constantly shifting and therefore can not be applied as a meaningful adjective. For example, the changing image of Neanderthals has said more about our personal relationship to the archaeological record over the last 150 years than about the intricacies of hominid behaviour (Drell 2000, Roebroeks 1995, Trinkaus and Shipman 1993). After the Second World War the conceptualisation of the Neanderthal image changed from a brutish, primitive nature to a more humanised creature with increased intelligence and social sophistication (Drell 2000). This occurred because the debate shifted away from the evolutionary relationship between Neanderthals and *Homo sapiens* as, for the most part, Neanderthals have been relegated to 'cousin' status and therefore they are not as significant to our human lineage. They are now more frequently used in comparison with modern humans to indicate the traits that modern humans have and that Neanderthals do not. The problem is that the binary opposition of animal/human must be removed in order to strip these traits of their meaning.

4. Use of the word modern allows us to assume factors from the present without explanation. For example,

> "One might argue that notions of ethnic identity are inappropriate when considering the archaic hominids of the Lower and Middle Palaeolithic. However, where the archaeology of anatomically (and presumably behaviourally) modern humans is concerned it is appropriate to consider the possibility that ethnic identities and signatures were contained within material discarded across archaeological sites." (Charles 2000: 45-46)

My case here is not to argue for a particular ethnic identity in the Lower Palaeolithic but it is to question the normative notion that anatomically modern humans or the Upper Palaeolithic revolution must follow the kind of behavioural patterns that present-day hunter-gatherer groups have because they are the same species. Non-modern is associated with a natural state whereas modern assumes cultural behaviour patterns like our own today. This suggests that as hominids move closer to culture they become more modern and so move further from nature and the natural state. In this way the archaeological record loses its own context and the meanings that went with the experience of being in particular times and places.

5. The research agenda has been dominated by attempts to label behaviour as modern or non-modern thereby constructing lists of material culture that are divided between two ideals. These two opposing categories allow the categorisation and description of material culture in the same terms. This creates a tautological explanation of material culture, as it is both a category for and the explanation of the archaeological record. These fixed entities are applied to all aspects of Middle Pleistocene life and result in our missing the subtleties of their life experience. In doing this we are drawn in to looking for specific traits that are derived from our concept of modernity which leads us to focus on the upper limits of technology rather than the whole pattern of their behaviour. Describing archaeology as 'modern' gives us the false link of feeling closely associated with these beings. It seems to give us permission to discuss them in relation to modern groups without the need to explain the analogy. Thereby modernity becomes a description of hominid behaviours without any inherent understanding of what the hominids are actually doing.

To sum up, the different threads of material culture are all part of the tapestry of hominid lives. Researchers should be aware of the identity crisis they have unintentionally created within studies of the Middle Pleistocene, as to leave out the 'non-modern' and emphasise the 'modern' elements of hominid material culture is to miss out on the life experience of that group. These rigidly defined research categories do not allow for the wider exploration of hominid lifeways that were most likely to have been very different from our own. It is likely that different hominids had alternate patterns of growth and development (Hawcroft and Dennell 2000) and that the inclusion of different ages in society would be represented by very different forms of relations (Roveland 2000). The problem of origins research is that we have become too caught up in determining what is modern rather than interpreting the social groups in their own context. In this way the record is objectified and subsumed into the term modern thereby losing the potential to tease out alternative identities. Rather we should be looking at specific ways in which the hominids are a part of their world and turn our attention to the actions of cultural practice.

6.3 ALTERNATIVE PERSONALITIES: CHANGING IDENTITIES

6.3.1 Introduction

It has been argued above that it is no longer tenable to involve ourselves in a discourse aimed at the identification and location of the 'modern'. The archaeology of the Middle Pleistocene has been bound up in the identification of the modern human with little reflexivity in the relationship between the interpretation of the past and the present day discourse. By isolating 'humanness' as the single structuring principle there is an underlying assumption of a pre-cultural and transhistorical commonality between all *Homo sapiens* bodies that has led to the kind of universalising theories and typologies which have been so strongly opposed in discussions of womens' bodies (*cf.* Meskell 1998). Recently attempts have been made to break from the pure physicality of bodies/material culture and to move away from methodologies situated in the assumptions of structuralism towards the reflexivity of a post-structural approach. To orient my research goals towards this more reflexive approach an alternative theoretical proposal is assembled by answering the following three questions; what is identity, where is it located and how is it constructed? The key words here, which answer all three questions, are 'social relations'. To expand from this starting point, I begin with a definition of identity through an understanding of embodiment theory (section 6.3.2). An examination of the identities of subjects (section 6.3.3) and objects (section 6.3.4) follows this to investigate how relations can construct identities in the archaeological past and present. The present-day is particularly important as most discussions of Middle Pleistocene archaeology display a distinct lack of awareness about its current implications in contemporary discourse. This leads on to a wider discussion on the materiality of social relations in the following section (6.4).

6.3.2 Redefining the Body: defining identity

The dogmatic structure identified in the critique above (section 6.2) stems from physical anthropology, which focuses on the body as a biological subject that is examined as a nomothetic category of artefact. The importance of the body as a vehicle for cultural discourse has only been recently realised within archaeology as a focus of interpretation (Hamilakis, Pluciennik, and Tarlow 2002b, Pettitt 2000). This is partly a reaction to the Cartesian mind-body dualism and the privileging of the cultural mind over the biological body, particularly in early archaeology (*cf.* Gibson 1991, Mellars and Gibson 1996, Mithen 1996). Nowhere in archaeology is this more plainly visible than with the concept of the modern human (see above and for examples (Goren-Inbar and Belfer-Cohen 1998, Klein 2001). The aim here is not, however, to privilege the body and consequently reverse the mind/body polarity, but to approach them as a single organism. Thereby 'embodiment' could just as easily be 'enmindment' (Ingold 2000) as both incorporate each other. To redress the balance, the medium of the body (inclusive of the mind) can be used in the exploration of a number of interpretations (Hamilakis, Pluciennik, and Tarlow 2002a&b), which here are combined into three types of approach.

1. The relationship of bodies as persons; the self, the individual and the subject (section 6.3.3).
2. The meaning of the body as material culture; symbols, artefacts, medium or metaphor (section 6.3.4)
3. The body as experienced; embodiment of the 'past as lived', sensual experience and phenomenology (discussed in Chapter Four).

Here the body is not passively described but lived in and through, being interwoven amongst systems of meaning, social relations and experiences. As Mauss was the first to suggest (Mauss 1979 (1936)), the movement of the body is not biologically based and therefore there is no 'natural way' of walking or swimming for example. The sociality of the body means that bodies perform in particular culturally defined ways that are learned (*ibid.*). Important for this chapter and thesis, are that these new approaches to the body have led to the reinsertion of agency into archaeological social theory (Bourdieu 1977, 1990a, Giddens 1984) an appreciation of technologies of the body (Dobres 2000, Mauss 1979 (1936), Pfaffenberger 1992) and the role of the body as a cultural variable (Strathern 1988). By grounding cultural, historical and personal difference in theories of embodied practice 'doing' is not overlain onto subjects or objects but becomes the *way* of being in and of the world. Following this approach identity is no longer a static list of 'things' that make up a modern human 'package', but a multi-layered and shifting concept established through the different expressions of social relations.

6.3.3 Scales of Analysis: locating identity

If the corporeal body is no longer central to social relations then how can we locate identity? In Middle Pleistocene research the 'individual' has been used as a way of injecting intentionality and personality into the hominid record as a part of a scalar model for society (e.g. family, group, region, etc.). The application of social systems to culture in archaeology has created an antinomy between 'society' and the 'individual' (see table 5.1). The paradox of this dualism is that the term society implies a collective but is conceptually distinct from the relations that bring them together (Strathern 1988). This Western understanding of social 'systems' is historically derived from the European Enlightenment, which produced a very particular understanding of personhood that is largely located around the concept of the individual (Thomas 2002). In this context the individual occupies the body, both 'possessing it' and being bounded by it. The individual body 'as person' is the origin point for action, carrying the mind, the soul and agency. It is regarded as the neutral template through which people live out their life/self (Fowler 2002). In contrast ethnographic research has questioned these normative assumptions of identity. Mauss' exposition on the subject of the self demonstrated that the person might actually exceed the body in its participation with other people, artefacts, animals and places (Mauss 1985). This does not reject the notion of individuality (free will is an important aspect within agency, *cf.* Moore 2000): 260) but allows for the extension of agents and agency beyond the individual-body-subject. From this viewpoint the conceptualisation of bodies and entities is far less clearly drawn (*cf.* Fowler 2002). Persons can be as dividually as they are individually conceived (Marriott 1976: 111) and likewise, the collective action of 'society' often presents the image of one body/group thereby creating a singular unit (Strathern 1988: 13). Pluralising the person and singularising sociality is not intended to recreate the opposing dualism but is to be used as a way of expressing that relations involve homologies and analogies rather than hierarchy (*ibid.*). The body is a social microcosm of diversity and multiple identities dependent on context. This multiplicity is important as it undermines binary modes of thinking and the possibility of applying typological terms such as modern/non-modern to either individuals or groups. The multiple person is produced as the object of multiple relationships and it is this plurality which allows partibility and therefore the disposition of parts in relation to others (Strathern 1988: 185). In consequence a dividual or 'person' is composed *of* rather than *has* relations, i.e.,

> "...*knows* himself only by the relationships he maintains with others. He exists only insofar as he acts his role in the course of his relationships (1979:153, my emphasis)." This quote (Leenhardt 1979 (1947)) was taken from Strathern (*ibid.*: 268-9).

Therefore if social relations construct identity we need to think about how relations are made apparent. Possibly the most appropriate analogy for the location of identity is a comparison between the onion and personhood (*cf.* Gell 1998: 139-140). This quote from Peer Gynt summarises this understanding nicely (*ibid.*),

> "-Why, you're simply an onion-
> and now, my good Peter, I'm going to peel you
> and tears and entreaties won't help in the least.
> ...[*He peels off several layers at once.*]
> What an incredible number of layers!
> Don't we get to the heart of it soon?
> [*He pulls the whole onion to pieces.*]
> No, I'm damned if we do. Right down to the centre
> there's nothing but layers-smaller and smaller...
> Nature is witty!" (Ibsen 1966: 191)

As the onion is layered, so identity is both an accretion of biographical experience and a fractal of multi-layered relations. Hence the five locations of identity given in table 6.3 can be accentuated separately (the text below draws them out in bold), as well as combined and recombined.

SPATIAL CONTEXT	SOCIAL SPACE AS...	TIME & THE RELATIONSHIP TO TIME THROUGH CHANGE		COMMENT TIMING CHANGE IN A SOCIALLY DEFINED SPATIAL CONTEXT	LOCATION OF IDENTITY		CASE STUDIES CHAPTERS 7 & 8 NEW INTERPRETATIONS
1. Location of the site in relation to world	Existential	Directional. Time as past, present & future		Directional time is • The result of intentional action and intended consequences leading to change through **difference**. • Experience connects structure and process, emphasising the significance of human agency in making history.	**DIFFERENCE** = variation via change		Handaxe tips as shaping agency (7.3)
2. Location of the site itself	Perceptual	Reversible. Time as past, present & future	**A** **C**	Reversible time is • The result of unintentional actions and unintended consequences leading to change. • Tradition is generally the medium of reversible time supplementing daily life with institutional structures through routine and social **memory**.	**MEMORY** = agent via structure	***P*** ***R***	Artefact accumulations (8.2)
3. Internal structure of the site	Architectural	Linear. Time as a (multi-directional) channel for movement	**T** **I**	Linear time is • Physical as can only be in one place at one time. • Cultural construction of positioning in time & space by agreed social referents, i.e., the **habitus**. • Establishes ontological security in the social institution.	***HABITUS*** = time via space	***A*** ***X***	Flake dorsal scar patterns & modernity (7.2)
4. Individual stratigraphic levels of the site	Cognitive	Cumulative. Time as chains of action	**O** **N**	Cumulative time is • The result of social learning of ways of action, i.e. acculturation, but at the same time, a reflexive relationship with structure evident in variation. • **Routinization** of day-to-day life in the taskscape.	**ROUTINIZATION** = structure via agent	***I*** ***S***	Retouched pieces & concepts of variation (7.4)
5. Materials within each level of the site	Somatic	Circular. Time as movement		Circular time is • Orientated around changes in the body over the life cycle • Change in **positioning** of relationships • Biographies of peoples, objects and their relationships are constantly transformed as they gather time and movement.	**POSITIONING** = space via time		Cores and the body, cycles of life and patterns of production (8.3)

Table 6.3 – Showing the location of identity in a socially defined context (see also Chapters Four & Five and tables 4.2 & 5.2)

The accretion of biographical experience can be interpreted through an understanding of structuration theory (Giddens 1984), which considers relations to be recursive between structure/object and agency/subject. The structural elements of society only exist insofar as they are reproduced in social conduct across time and space. This allows social rules and cultural conventions to be understood, but at the same time their use can be manipulated creatively rather than followed passively. In this way the structure can be both reinforced and transformed. For the most part, knowledgeable agents continue their day-to-day lives through practical consciousness, which has little discursive expression, but is bound up in the **routinization** of social contexts. Routine is the habitual actions that are repeated during the course of day-to-day life. The routinization of social practice is vital to ontological security as social relations can only be formed in the context of social **memory**, which draws on 'stocks of knowledge' to understand how to interpret the actions taking place. The contexts of interaction within which social relations occur are structured by both the routinization of the actions taking place and the 'fixity' of the setting within which their occur. This setting is structured by the *habitus* and positioning but is not to be equated with social stability (*ibid.*: 87). Positioning is used here to infer the **positioning** of material culture in its widest sense. In other words the positioning of the body in relation to others (*cf.* Goffman 1959), as well as the positioning of all other subjects/objects, i.e., it is all that concerns social relations in respect to position. It therefore expands beyond Giddens' meaning which focuses on the agent and thus overlaps with the concept of ***habitus*** which establishes the architecture within which positioning occurs. Bourdieu's (1977) concept of the *habitus* allows the body to be a material phenomenon that both constitutes and is constituted by society. Acquiring the techniques of the body, the *habitus*, occurs through conventions established in social relations (Mauss 1979 (1936)). Although both the terms *habitus* and positioning are used for discussing identity, they are actually very similar things. The underlying difference between them is that positioning emphasises time over space (Giddens 1984): 84) while *habitus* emphasises space over time (Bourdieu 1977: 90-1).

The multiple layers of social relations are better approached through ideas stemming from anthropology where the **difference** of intentional actions is emphasised over the deference to traditional actions (Chapter Five, section 5.3.2, (Yates 1990). While

Giddens' (1984) focus is on the composition of social relations through a study of the constitution of society, other academics such as Gell (1998) and Strathern (1988), have focused more on the de-composition of social relations through the constitution of personhood. For example the Melanesian approach would view relations

> "...through its decomposition into a series of other images. Men's body would be seen to contain the children of women, and looking at the maternal body would be looking at the transactions of men." (Strathern 1988: 343)

Both authors look at the effects of objects and how they are created and used in social relations. The mediation of relationships through metonymic and metaphoric artefacts leads to the construction of different identities. Metonymic artefacts (i.e. artefacts that symbolise something else, like a crown for a king) lead to the retention of distinct identity and therefore an independent relationship is formed. Metaphoric artefacts (i.e. artefacts that are something in themselves, like money gives power) lead to the transformation of identity (prestige) and therefore a dependency relationship is formed.

Above all it is most important when following this approach to remember that,

> "...there is no objectification of work apart from its performance. It is social relations that are objectified in pigs and gardens: work cannot be measured separately from relationships." (Strathern 1988: 160)

This brings us to the important concept of ***praxis***, which can be defined as the practical working of relationships through engagement with materials. The processes underlying this knowledge of 'doing' leads us towards an understanding of agency (Gell 1998: ix), which is the link between the forms of materiality that draw together structure and agent. As Ingold (Ingold 1993b: 438) says,

> "...the productive forces appear as the embodied qualities of human subjects – as their technical skills. Such qualities cannot be generalized: whereas a technology is indifferent to the personhood of its operators, techniques are active ingredients of personal and social identity. Thus the very practice of a technique is itself a statement about identity...".

This leads us on to the next section, which looks at forms of 'doing' or *praxis* to construct and relay identity.

6.3.4 Contextualising the Distributed Person: constructing identities

Using the theoretical approach described in the previous section it is now necessary to think through the ways in which social relations construct identities in the archaeological record. Most archaeologists characteristically classify attributes of material culture to draw out identity. However, we need to be wary of commodifying relationships as 'things', as this supports the notion that diverse cultural forms generate multitudinous different societies (Strathern 1988: 342). In more recent archaeological and anthropological studies, material culture is seen to re-present people, social relationships and personal biographies. As there are a multiplicity of subject positions in any discourse, so people and parts of people are discussed as circulating in many different ways (Chapman 2000).

> "Social identity is a fleeting, transient thing, constantly changing, constantly being renegotiated. It simply does not persist for millennia, nor across vast reaches of time and space." (Clark 2001: 44)

This establishes identity as autochthonous in that its meaning is formed in the place where it is found. Artefact biographies have been used to trace the changing nature of artefacts (Gosden and Marshall 1999), as bodies have been considered as material culture. Cultural practice generates both a proliferation and diversity of things (*ibid.*). The materialisation of 'things' is the process by which the world reveals itself to us in an intelligible form (Hull 1997: 23, *cf.* Thomas 2002: 33). Assertions of cultural identity through marking of bodies, land, stones, artefacts, pots, etc. are intermingled and can often be related (Pluciennik 2002, Rainbird 2002, Robb 1997). Biographies are active constructions of social relations through practice and experience. The detachability of items does not create alienation but rather parts circulate as parts of persons (Strathern 1988: 192). The dividual aspects of people can therefore be interpreted through the synechdochal or metonymic functions of material culture (Strathern 1988), in that artefacts can represent persons and particular forms of identity associated with them.

In interpreting material culture, persons do not have relationships with items but have relations through others with respect to the item (Strathern 1988). Identity is culturally and temporally situated and therefore it is through social action and interaction that the redistribution of identity takes place. However the activities taking place do not express a rigid identity but instead generate particular sorts of experience. These experiences take place within the historical process but,

> "It is not individuals who have experience but subjects who are constituted through experience." (Scott 1991: 779)

It is during their performance that transitions or more literally transformations occur and therefore personhood is something one *does* not something one *is* (Thomas 2002).

This section has retold the manner in which social relations are constructed through materiality in such a way that it is apparent that there is no choice but to address our own identities within the archaeology of the past. Just as there are problems with attempting to interpret the past, equally there are problems with interpreting the past in the present. One way to approach this issue sensibly is perhaps to follow the words of Strathern (*ibid.*: 16).

> "Their ideas must be made to appear through the shapes we give to our ideas."

In other words, although we can not escape the knowledge that our ideas are already formed and constituted by the politics and 'reality' of our day, this does not negate the possibility of establishing histories that are both related to and informative on the past. The following section demonstrates ways in which objects can materialise social relations.

6.4 ALTERNATIVE MATERIALITIES: TRANSFORMING TYPES

6.4.1 Introduction: the Fabrication of Histories

Approaching the archaeology of the Middle Pleistocene from a physical spatial context creates a history of artefacts as a disembodied amalgamation, which form a homogenised culture. Artefact types are grouped into rigid categories and industries for interpretation (a good example is the General Discussion on the Yarbrudian and Micoquian in Ronen & Weinstein-Evron 2000: 225-231). This focus on types and their perceived functions has limited other potential research avenues, as detailed investigations into social differences have been relegated to second place. The aim here is to interpret the production and circulation of stone tools in the context of social relations. As by the very nature of archaeology we must begin with the material artefacts presented to us, the formulation of a new approach expands from the following three areas;

1. from the objects themselves
   to investigate agency and *praxis* (section 6.4.2)
2. from collections of objects
   to investigate citation and *oeuvre* (section 6.4.3)
3. from the technology and techniques of objects
   to investigate the taskscape and performativity (section 6.4.4)

6.4.2 Partible *Praxis*: Fractal Identities

The methodological view put forward here is that things-in-motion illuminate the social context. Unlike previous forms of post-processualism, particularly those associated with structuralism and post-structuralism (Hodder 1989, 1992b, Tilley 1989), I argue that we cannot get at meaning, i.e., the direct manifestation of identities, but we can look at how 'doing' may structure potential meanings (Gell 1998) and the forms of life/identity expressed in those activities. This shift from a search for meaning through the reading of objects 'as if' they were texts (Hodder 1989, 1992b), to the interpretation of social actions through the mediation of objects (Gell 1998) is both more appropriate when investigating early hominids (as it avoids linguistic and cognitive issues) and more convincing when analysing stone tools, which are inherently active. In this understanding, social relations are considered to exist only through the manifestation of actions (Gell 1998: 26). Therefore in this approach theory and practice are intertwined in what is referred to by Marxist authors as *praxis* (McGuire 1992). All social life is essentially practical and consequently both theory and practice are inextricably part of human activity (Kitching 1988, Marx and Engels 1970: 28). An understanding of objects cannot be arrived at through a description of their attributes alone, as stone tools have to be mobilised and sustained by a social process. It is the embodiment of this social process which creates identity, and identity is expressed in artefacts through *praxis* and its five forms of manifestation (table 6.3); memory, routinization, positioning, *habitus* and difference, as will be demonstrated in the case studies presented in Chapters Seven & Eight.

	FIVE GENERAL PRINCIPLES - From Dobres & Robb (2000b: 8)
A	1. material conditions of social life
G	2. simultaneous constraining and enabling influence of social, symbolic and material structures and institutions, habituation and beliefs
E N	3. importance of the motivations and actions of agents
C	4. dialectic of structure and agency
Y	5. it is a socially significant quality of action, not reducible to action itself

Table 6.4 – General principles of agency

Why focus on *praxis* and not on agency? Agency is currently a central concept within archaeology but the understandings of this term are widely varied and inherently contradictory (Dobres and Robb 2000a). Here, I follow the generally accepted principles of agency given in table 6.4, although even these terms can be utilised and interpreted in many different ways (Dobres and Robb 2000b: 9). I define agency in the widest sense possible, as the active, the verb of events. Using this definition, agency is situated within *praxis*, which is defined as the active operations (practice) of social relations through (theoretical-cultural) knowledge. In this sense agency is a part of *praxis* but the term *praxis* is preferred for several reasons.

1. The wide range of definitions for agency is problematic as it can mask the diversity of underlying interpretative approaches and frameworks. This also makes agency difficult to criticise, as there is not really a single body of understanding.
2. There is greater potential for readers to misinterpret the intended outcomes of a text because they have established their own reading through a difference of opinion in the meaning and application of the concept of agency. In contrast *praxis* is a less loaded term within archaeology, (although it has a long history in philosophy, see *praxis* definition in (Bottomore et al. 1983: 384-9), which allows for clearer expression of my approach.
3. *Praxis* combines theory and practice within a situated, historical context and this dialectic approach also leads to self-reflexive *praxis* by the researcher.
4. *Praxis* is intimately involved in knowing (theory) regardless of whether action takes place intentionally or unintentionally, and in a discursive or non-discursive situation. This term can be invoked without the need to combine structural oppositions such as

structure and agent, or individual and group. In contrast, agency demands structure and agents, and can not be separated from them. Hence it is easy to use agency as a mechanism rather than as a social context. Although the concept of agency has reconfigured the interplay of individuals and structures it has in some cases allowed the retention of static notions of the individual and groups. Agency theories often proffer almost unidimensional views of the actor (Robb 2001). The problems with concepts of the individual and with structures or societies have been previously discussed (6.3.3).

The concept of *praxis*, as developed by Marx (*c.f.* Bottomore et al. 1983: 384-389) concerns the understanding of society and social change through knowledge and practice. It is made up of a continuing dialectic between the ideas that shape actions and the actions that shape ideas. Gramsci brought this into focus by arguing that knowledge derives from social relations, not objects, and that it is specific historical conditions which bring action and ideas into being (Gramsci 1971, McGuire 1992). Action and practice are learned during socialisation (Bourdieu 1990a) so that during the process of making objects particular bodily action and interactions are used and particular perceptions are performed and expected. In an archaeological context, this position would argue that artefacts assert the constitutive role of transformative agency in the reproduction and transformation of social forms. With this understanding of *praxis* I follow Korsch's perspective that it is human action and consciousness that are the source of change (Korsch 1970, McGuire 1992: 34). Changes in social relations result from a mixing of the old and the new. Old social forms are not replaced but are re-made, albeit differently, and this change alters our perspective and knowledge of the world. Therefore the focus of technology should not be on why change occurs but on the effect that change has. This is because change can only come through the incorporation of differences within the social field. Akrich (1993) clearly demonstrates in her ethnography that introducing the same technology (in this case energy) into a different region (Costa Rica) can be ineffective without cultural references. Actions and ideas can only be understood in terms of the system of social practice in which they are implicated. Hence we need to throw out the notion that "practice makes perfect" and therefore an understanding of the world as Fordist bodies of production. Instead I believe the focus should be a notion of "*praxis* is people" where the creation of history is centred on being in the world.

6.4.3 Bodies of Material: Contextualising the *Oeuvre*

Within the physical context model, problems have continually risen in relation to the process of analysing groups of artefacts that may range widely in age and are therefore considered to derive from a 'mixed' context. The solution to this problem in the Middle Pleistocene has been firstly, to remain descriptive rather than interpretative, secondly, to use typology and technology to establish an age range for the artefacts, and finally, to interpret the style/function of stone tools through comparison with the archaeological period as a whole (e.g. Acheulean). These approaches have been critiqued above and in earlier chapters. An alternative strategy has been usefully employed in Bronze Age archaeology to interpret disparate sets of artefacts (Jones 2001) through pairing the concepts of citation (Butler 1993) and *oeuvre* (Gell 1998). The notion of citation is encapsulated in action, as the performance of actions must reference at least components of previous actions to make sense. Thereby repetition of an artefact form is neither a replica, nor a mental template of same-ness, but the expression of a particular set of social relations (Butler 1993: 226-7). The unintentional replication of previous works of art/objects is necessary in the production of new things because coherence to a social framework and "painterly" praxis demand it (Gell 1998: 234). Material production is therefore both (re)presenting previous practices (retentions) and creating fresh categories in the formulation of the present and for the future (protentions; Gell 1998: 235). As such, different material performances may relate to and inform on different citations/social relations. This relationship between materiality and citation can be effectively explored by collecting them within the notion of *oeuvre*. Gell (*ibid.*: 232-51) developed the concept of *oeuvre* to investigate related works of art that are extended across time and space but possess common elements. His definition (*ibid.*: 236) of an *oeuvre* is a

> "...set of material objects; they are not a person or a set of subjective experiences (cognitive states). They comprise a set of indexes from which the artist's personhood and agency can be abducted".

In relation to this Jones (2001: 340) points out that archaeologists assume artefacts to be temporally or spatially co-extensive if they appear the same. Rather than viewing this as a concern, he utilises this assumption, linking pottery and metalwork through Gell's notion of the *oeuvre* to analyse the citations and social relations encapsulated by it. In a similar fashion, Middle Pleistocene stone tools can be viewed as a 'network of stoppages' (Gell 1998: 249) where the agency of these material forms are argued to objectify social relations. To quote Jones (2001: 340) paraphrasing Gell (1998: 250), "each object is a place where agency stops and assumes material form". However, stone tools in this context are not just the 'doings' of agents, nor are they the culmination/end products of action but rather the distributed extension of personhood. In this sense there is an inseparable transition between the agency in objects and the actual human agents, both stone works and working stone constitute bodies of action. In the Pleistocene these transitory actions are generally represented through the *chaîne opératoire*.

6.4.4 'Doing' Time: Unchaining the Operational Spaces

The *chaîne opératoire* is a descriptive model used to interpret the rhythms and forms linking varied actions. This approach was formalised by Leroi-Gourhan in his study of the evolution of society through human action providing insights into the structure of action and demonstrating the social nature of technical acts (Leroi-Gourhan 1993). The work of Mauss (Lemonnier 1993, Mauss 1979 (1936)) describing the sociality of the body strongly influenced Leroi-Gourhan and led to his work embodying material techniques. The sequence of gestures described in the *chaîne opératoire* has been used by archaeologists as a means of studying artefact production. In the Palaeolithic the *chaîne opératoire* has tended to be synonymous with the 'lithic reduction sequence' (Hodder 1990: 157). This may not be surprising given that, as Graves (Graves 1994): 440) has noted, Leroi-Gourhan (1993: 253) retained a Cartesian separation of internal/external environments. Therefore while privileging the body as a social collective, he nevertheless maintained the notion of the symbolic object as a medium between the individual and the collective. However, more important here is the positive contribution he made, arguing for the fusion of action with social representation, which has led in archaeology to interpretations of embodied sequences of manufacture, use and discard (e.g. Dobres 2000). The use of the *chaîne opératoire* has united technical and social processes thereby removing the style and function dualism (White 1993) and allowing 'interplay between fixed and flexible' properties of materiality (Schlanger

1994: 144). It has also been used as a link between spaces in the landscape (Boëda, Geneste, and Meignen 1990, Gamble 1999, Geneste 1988a&b). Unfortunately problems remain with the application of this systematic approach to Palaeolithic archaeology as the *chaîne opératoire*:

1. has a tendency to follow the 'use life' of an artefact. This approach can be described as a linear and therefore sequential model, which results in the economic quantification of the process of manufacture. This leads to concerns about the length of the production sequence, the number of different actions and the level of complexity of the actions taking place, which in turn leads to interpretations of functions, planning depth and cognitive ability (see critique of these in section 6.2 above).
2. acknowledges that stone tool production is socially learned, but this is not taken further to look at how the social process is sustained and transformed through knapping actions (Edmonds 1990).
3. tends to focus on or pick out the routine in preference to considering differences, which has in many interpretations led to the typology of technology (e.g. the Acheulean "technocomplex") and the standardisation of descriptions into categories of standardisation and innovation (see also the critique of variation in Chapter Five). It is imperative to consider the polysemous context of action in which handaxes operate. The great time span of the handaxe type does not mean that all such lithics can be interpreted according to a single, universal scheme.
4. can be easily applied to scalar models of time and space, which have been critiqued in Chapter Four. Often the overall character of knapping at a site will be described rather than differences in production both through space and time.
5. is often object orientated. This allows the compartmentalisation of different stages of the operational chain (see table 6.5) thereby disembodying the social from the actions allowing a split between subject and object, which isolates the artefact from its material and historical context. For example, when raw materials are isolated as objects the location is not contextually situated as it is only quantified in relation to sourcing distance.
6. characterises artefacts as passive. This is because at each stage in the operational chain material things are interpreted as 'acted on' rather than as a part of the action.

QUALITATIVE	QUANTITATIVE		
	Unmodified Stock	**Impoverished Stock**	**Enriched Stock**
Chaîne opératoire complete	MODE 1 All phases All products	MODE 2 All phases Insufficient blanks/tools	MODE 3 All phases Excess of blanks/tools
Chaîne opératoire slightly incomplete	MODE 4 Roughout forms present Primary flaking present Cores absent		
Chaîne opératoire mostly incomplete	MODE 5 Blank production waste Corresponding products	MODE 6 Blank production waste Insufficient blanks/tools	MODE 7 Blank production waste Excess of blanks/tools
Chaîne opératoire represented only by the intentional products of débitage	MODE 8 Blank production waste absent Blanks/tools only		

Table 6.5 – Classification and description of the eight possible modes of lithic exploitation by Féblot-Augustins (1997: 24-5 and table 1) within the chaîne opératoire framework (translation assisted by Gamble 1999: 243).

CHAÎNE OPÉRATOIRE	SCHEMATIC OUTLINE (Combining information from White 1997: 95 & 108)
	Cultural assumptions about personhood
	Beliefs about the relationship between materials, representational acts & constructs
	Choice and acquisition of raw materials (by extraction or exchange)
	Choice of forms, textures, colours or subject matters
	Organisation of production (social, temporal and spatial)
	Combination of culturally coherent gestures and tools into techniques for production
	Representation of desired signifiers of social identity through production
	Use of object representations in meaningful acts
	Purposeful or accidental disposal of object

Table 6.6 – Redefining the chaîne opératoire in a social context

7. can be understood as a linking chain and therefore there is an underlying belief that the interpretation must be cohesive, rather than contradictory, and continuous, rather than disrupted.
8. establishes an origin point for action (*contra* arguments in Chapter Five) and supports the 'finished artefact fallacy' (*contra* Davidson and Noble 1993: 365). It often follows that interpretations are described as preconceived goal-orientated actions. This is related to the 'typing' of an artefact and then 'working back' from this type to look at the manufacturing process.

Tables 6.5 and 6.6 on the following page allow the reader to contrast two systems of analysis that incorporate the *chaîne opératoire* concept. Table 6.5 shows the practice of lithic analysis that has been critiqued over the previous eight points. Table 6.6 demonstrates the potential alternatives when the concept is orientated towards a socially sensitive interpretation. This social approach is expanded on.

I propose that due to the underlying problems associated with this concept, the term *chaîne opératoire* should be incorporated within Ingold's notion of the 'taskscape' (Ingold 1993). This term is defined as "an array of related activities" (*ibid.*: 158) that is unbounded by time or space. The taskscape is continuous, only coming into being through activity. Its temporality stretches beyond a segment of action towards the interpretation of social life as a "complex interweaving of very many concurrent cycles" (*ibid.*: 160). So time becomes the manner by which action occurs and there are many different times/actions occurring at once; directional, reversible, linear, cumulative and circular (see tables 5.2 and 6.3). This changes the outlook on hominid activities and identities from a stone tool production or reduction sequence model to the material performance of social life (table 6.6). In this context even routinised deposition of the 'end product' is an intentional action ordered by cultural schemes (*cf.* Chapter Four; Blankholm 1987, Pollard 2001, Thomas and Tilley 1993). Deposits of stone tools would have both created meanings and references.

If in 'doing' time we move away from a linear approach to the *chaîne opératoire* and look at the different relationships of time through change (see table 6.3), we can open up new operational spaces of identity through *praxis*. When the subject and the object are divided, action is based on material and not contextualised within the matter around it. Hence it is not surprising that stone tools are only described, as the person can not be seen physically and so social behaviours are thought to be difficult or impossible to view. When the subject and object are connected and mutually created, i.e. embodied in and embedded in action, the performativity of personhood and thereby social relations can be interpreted. In this context, Butler's (1993) concept of performativity is an important and useful concept for an embodied archaeology that wants to move away from a linear chain of actions. This view holds that,

> "...performativity is the vehicle through which ontological effects are established... the discursive mode by which ontological effects are installed." (Osborne and Segal 1994)

The notion of performance presumes a subject whereas performativity contests this notion, while remaining focused on action (of speech/discourse in Butlers' examples; (1993: 223-242) as central to social relations. This draws on an understanding of production as always containing a certain element of repetition and recitation, which implies that discourse (or in my terms action) has a history. In other words skilfully constructed forms of social action draw on existing notions of correct action. Therefore production can not be considered as one act because it contains reiterative and citational practices. This decentres the present or presence of the subject as the origin point for action.

The important question to ask of this approach is how can these concepts be incorporated in Middle Pleistocene interpretations? It is argued that a material culture involving complicated knapping sequences, large sites and long distance artefact transport suggests that artefacts are intrinsically social. However, in Palaeolithic studies functional descriptions rather than the interpretations of social action have been the focus of research. This is because social lives have been seen either as unobtainable, or as obtainable only through adaptive functional meanings, which is a physical and testable science. Dobres and Hoffman (1994) argue that even the minutiae of functional and technological details have socially reproductive meanings. The meaning of material culture shifts according to the activity. Therefore raw material collection, the manufacturing process and each of the different elements in stone tools, all have different but continuous meanings in directional, reversible, linear, cumulative and circular time (see table 6.3 and Chapters Seven & Eight). The knowledge of activities is socially based and it is therefore the agency of things that structures the way in which people deal with them. Dobres (2000) uses the *châine opératoire* as a framework into which she weaves both the social and technical aspects to produce an understanding of social contexts and meaningful experiences of the agents involved. Dobres (1995) interprets social relations through the human agency of site-specific (i.e., context orientated) technical variability in material culture production. She uses the empirical study of artefacts as a way into studying the gendered social agency of Magdalenian organic technology. She argues that our interpretations of technology have become divorced from the people who produced it, rather than investigating technology as a social frame of action and interaction. Although there are raw material restrictions to stone tool manufacture, it is the cultural acceptability of the right or wrong way to make and use material culture that directs hominid actions (Lemonnier 1990). There is a reflexive relationship between the production of artefacts by the agent and the rules and resources (or structure) of manufacturing artefact forms in a critical monitoring of the situation during knapping activities (Pelegrin 1990). As cultural attitudes are embodied in the production and use of stone tools, so stone tools may provide an introduction into hominid ways of being. In this way, stone tools can no longer be confined to the functional production line of making, using and then discarding. Technology must be redefined as the materially grounded space of social interaction in the form of the planning, production, use, reworking and discard of material culture (Dobres and Hoffman 1994). It is within this context that I turn to the artefact analysis procedures.

6.5 *PRAXIS* IN THE PLEISTOCENE: ARTEFACT ANALYSES

6.5.1 Methodology and Site Choice

Interpretations of Middle Pleistocene industries have tended to either concentrate on specific sites or to make broad, sweeping statements of a global nature. I have completed an in depth study of small localities from selected areas of the globe, but I have also looked more widely at my study regions to include as many sites as possible from South Africa, England & Jersey and northern France. This investigation compares and contrasts the ways in which hominids differed in their technological strategies from the Acheulean to the MP/MSA in different regions between OIS 12 and 6. However, if social relations are context specific and society is a generalisation creating universalism how can we compare the archaeology across time and space within this theoretical framework? One way around this may be by referring to Strathern's study of Melanesian sociality (Strathern 1988). Here she suggests that although there is no such thing as 'society', there is a widespread sharing of established conventions over one region, and that therefore comparisons can be made between Melanesian and Western sociality as a consequence of their separate cultural conventions (*ibid.*: 342). It is logical to argue that the performance of actions must be comprehensible culturally to be interpreted by other agents. Conceptions of the order of society find expression through material mediums, but at the same time one must recognise that no aspect of identity or cultural convention is sufficiently knowable for its universality to be established (Thomas 2002). The differences and diversity of the past are opened up for wider appreciation through this archaeology of materiality.

The analysis of stone tool assemblages aims to describe different knapping procedures as a route into the interpretation of hominid social practice. A study of the technological approach applied to raw materials and the techniques of manufacture are used to look at knapping patterns. At present there are two types of stone tool analysis, technological and typological. Both of these methods will be employed during this study. The use of these techniques for this study is discussed (section 6.5.2) and then artefact types are considered in more detail (section 6.5.3). Although my methodology needs specification, for the most part I follow fairly standard methods of stone tool analysis, combining technological and typological aspects in my examination. Data collection includes both analyses of lithic material and published data from other researchers as this allows for a more comprehensive cover of my study regions. The amount of published data used varies according to its availability and potential for incorporation into my own work. The details of my methodology can be found in

Appendix I and the reader is also encouraged to look at the site profiles in Appendices II & III before reading the case studies (Chapters Seven & Eight).

6.5.2 Technological Analyses

These were undertaken through four interrelated processes;

1. Technical procedures consider the knapping process from raw material selection to discard. This looks at flake production in terms of technique (i.e. hard/soft hammer and free hand/hammer and anvil) and technology (i.e. prepared core technology, retouch, radial flaking, etc.).
2. Raw material abundance, transport distances, size, shape and quality all have an influence on the knapping procedure and must be taken into account during the assessment of each industry.
3. Replication helps the analyst understand the potential avenues taken to achieve certain stone tool types. I will be using flint knapping as a heuristic device to aid my observations on assemblages, as it will increase the likelihood that the pieces studied are recorded correctly. The experimental data cannot be applied as an interpretative tool of the archaeological evidence but it is useful for improving the researcher's knowledge of flint-knapping and their sensibility towards understanding the observed technical features (Boëda 1986).
4. Refitting helps the analyst assess the knapping procedure and gain insights into which artefacts have been removed from a site. Although refitting has not been personally undertaken in this study, as it is too time consuming for a three-year project concentrating on such a wide area of the globe, I have used others research work to contribute to my interpretations.

6.5.3 Typological Analyses

It is recognised that by typing pieces meaning is often automatically attributed to them. Where possible I have tried to refer to the technological attributes rather than list names for pieces. The analysis of so many stone tools requires a degree of amalgamation through the naming of particular types as otherwise it would be impossible to make interpretations, however this is done with extreme caution. The techno-typological categories are as follows and the planned procedure for analysis is also given (see also Appendix I).

1. The significance of handaxe morphological variation has been debated for over 100 years. Their initial significance was as considered to be as cultural markers, and this has continued as technological variations within this theme. The technological factors have focused on raw material, reduction and function. In addition cognitive elements have been identified. However so far there has been no attempt to see handaxes as a social practice. Variability in bifaces is still seen as the result of "populations coping with the exigencies of a heterogeneous environment, using different resources in an adaptive, flexible manner" (White 1998b: 15). However, the making of a handaxe needs a series of skills and competencies both in the production of the object and the nature of social relationships before, during and after the making of the object. All previous interpretations of shape have been made on the basis of empirical measurements, which I feel, has led to the present models I have discussed here. I have developed a new method of looking at handaxes, which derives from the influence of a paper by Dobres (1995) on the analyses of Upper Palaeolithic bone tools. She organises the bone tools into three equal portions to contrast their working and the degree of refinement. Her study of blanks versus repaired tools led to an argument for different production contexts. Consequently, my own approach to handaxe analysis focuses on production contexts by drawing each biface in outline and then recording the amount of flaking on the handaxe to measure the ways that flakes have been removed across each handaxe (see Appendix I & Chapter 7).
2. Prepared cores and prepared flakes also receive more detailed analysis. All prepared flakes are drawn and the cores are recorded in terms of the flaking that has been used. Flaking using the prepared core approach may be organised in a unipolar, bipolar, convergent or centripetal fashion with flake removal geared towards a single removal, a set of flakes (linear) or recurrent removals with intervening repreparation of the core and/or striking platform. Proto-Levallois is not a term that is used in this thesis as something is either made using the Levallois technique or it is made using another method. As stone tools are not progressing towards a method of manufacture, they cannot be named in advance of what they may become.
3. Cores and flakes that are not prepared are also recorded in some detail. This study considers the core technology of both prepared and non-prepared cores, as non-

prepared cores are rarely emphasised to assess behaviour. Bordes does not adequately deal with the cores or core technology in his system. Equally researchers such as Boëda and Geneste concentrate on the prepared core element. Unprepared cores are used only to reconfirm what the flake analysis has already told us. Most published works to date label cores typologically. Unprepared cores are analysed through the description of cortex amount, blank to core ratio (i.e. the degree of core reduction), the size of the cores and the number of scars. This says very little about actual core reduction flaking techniques. Roth and Dibble (1998) conclude that the intensity of core reduction has a significant effect on a number of assemblage characteristics. Dibble (1991) argues that blank form is the underlying cause of typologically different scrapers. Core analysis avoids the "style versus function" debate as in most cases cores are not utilised but have a single function as flake dispensers and therefore the style of flaking is not masked and choices in reduction strategy are clearly visible. Studies of prepared cores indicate that the *same* flakes are produced using *different* techniques. Hence the importance of studying the cores in their own right. There is much diversity in the assemblage makeup through both core shaping and the flake varieties produced.

4. Retouched pieces will be sampled randomly in order to allow more sites to be incorporated within the study. The sample will vary according to the manner in which the artefacts have been stored and therefore data already published on assemblages will be used to extend their discussion of them.

6.5.4 Combining Method and Theory for New Directions

Research on Middle Pleistocene lithic assemblages continues to be traditionally typological. Artefact types are continually taken out of their contexts and studied as discrete groups for the identification of norms of manufacture and regional norms or presence over time. The consideration of social practice in archaeology has tended to be reserved for structured features such as monuments or hearths and religious or symbolic practices such as art. Stone tools have only featured as a part of these rituals or as highly stylised implements that are used in ritual or symbolic exchange. The analysis of stone tools for the interpretation of social practices in Middle Pleistocene day-to-day life has not been discussed. In contrast this study views material culture as *bricolage*, not constructed through an underlying pattern, but as part of a constant reworking, casting of and reviving of elements in ever changing complexes. This avoids essentialising culture and makes it subject to human agency, as it does not exist outside of history. Stone tools can not only be seen to mediate between the hominid and the task to be completed. The disparate elements of culture create a fabric of meaning and belief that is consistent and mutually reinforcing. Thus the entire *chaîne opératoire* is culturally mediated. It is with these thoughts in mind that I proceed to the following case studies.

This thesis employs data analysis and methodological procedures that have been developed and practised in archaeology for over 20 years: technology, typology and measurement. These approaches need not be rejected despite their positivist and objectivist outlook, but can be engaged with using new interpretative framework centring on roles of 'doing' or action through which social roles, time, and biographies are played out. Technological studies are particularly amenable to this, as the material record itself is evidence of these actions (Sinclair 2000). These recent theoretical ideas have not been related to the practice of Middle Pleistocene archaeology. Thus, one of the major goals of this thesis has been to overcome the problems of linking science, archaeology and theory to demonstrate ways in which a social framework can be used to interpret Middle Pleistocene archaeology in a politically informed manner.

6.6 SUMMARY

This chapter has demonstrated the problems of establishing modernity as the yardstick for the construction of hominid identity. In this process I have critiqued the Cartesian split between body/object and mind/subject and suggested that this dualism should be reunited in archaeology through a notion of materiality. This has emphasised the body and embodiment to propose how one might go about re-constructing alternative identities in *praxis*. It has been suggested that past identities can be constructed through social relations and are visible to us in the present through context specific materials. In response to these issues I draw on anthropological notions of social relations to attempt a new approach to the construction of artefact/hominid biographies. Techniques and technology offer contextually situated avenues into social relations. Although the *châine opératoire* conjures up a linear approach, there are many useful concepts within it that can be taken and incorporated within the concept of the taskscape and performativity. The materiality of stone tools within this conceptual domain is best viewed through Strathern's interpretation of objectification,

> "By objectification I understand the manner in which persons and things are construed as having value, that is, are objects of people's subjective regard or of their creation. Reification and personification are the symbolic mechanisms or techniques by which this is done." (Strathern 1988: 176)

The interactive nature of the terms and approach given in this chapter will be worked through in the following case studies in Chapters Seven and Eight.

CHAPTER SEVEN

CASE STUDIES: BODIES OF MATERIALITY

CONTENTS OF CHAPTER SEVEN

7.1 INTRODUCTION

My aim in this Chapter is to take the concepts from Chapter Six and look at the more detailed aspects of stone tool production, as a means for interpretation of Middle Pleistocene identities. To reiterate the main goal from Chapter One, in this thesis I aim to investigate Palaeolithic hominid social relations by studying technological continuity and change during Middle Pleistocene. Specifically, my objective is to explore the concept of 'transitions' in archaeology during the later Acheulean and early Middle Palaeolithic, or more precisely from OIS 12 to 6, in Europe and Africa. This concept is studied by analysis of stone tool technology to understand how the artefacts were produced and why varying tactics for manufacture may have been adopted at different times both at the same site and in different places. Chapters Four and Five have attempted to demonstrate some of the structural problems underlying the present interpretations of the Palaeolithic and have focused on setting a social context (tables 4.2 & 5.2) through which the interpretative methodology was then established (table

6.3). Using the locations of identity and methods of materiality put forward in Chapter Six, I examine different stone tool types to locate social relations over the next two Chapters (see table 7.1). To summarise the critique, stone tools are currently still viewed as passive artefacts devoid of agency that are acted upon rather than part of the action. The re-activation of lithics with subjectivity gives them agency and allows us to interpret their role in social relations through *praxis*. A combination of technological analysis in this Chapter and contextual information in Chapter Eight has the potential to address some of the lifeways of hominid populations during this time period.

<table>
<tr><td colspan="3">SPACE = Africa & Europe</td></tr>
<tr><td colspan="3">TIME = Acheulean, Middle Palaeolithic (MP) and Middle Stone Age (MSA)</td></tr>
<tr><td colspan="3">CONTEXT = Performativity</td></tr>
<tr><td>LOCATION
OF IDENTITY
(& see Table 6.3)</td><td colspan="2">DISCUSSION
OF PRAXIS</td></tr>
<tr><td>1 Difference</td><td>Handaxe tips as shaping agency</td><td>Chapter 7</td></tr>
<tr><td>2 Memory</td><td>Artefact accumulations & manuports with movement</td><td>Chapter 8</td></tr>
<tr><td>3 Habitus</td><td>Flake dorsal ridge patterns & modernity</td><td>Chapter 7</td></tr>
<tr><td>4 Routinization</td><td>Retouched pieces & concepts of variation</td><td>Chapter 7</td></tr>
<tr><td>5 Positioning</td><td>Cores and the body, cycles of life and patterns of production</td><td>Chapter 8</td></tr>
</table>

Table 7.1 – Summary of identities in the discussion of *praxis* at Middle Pleistocene South African and European sites. (Also see table 6.3.)

Currently there are three main areas of lithic analysis for the interpretation of the Middle Pleistocene transition; 1, the absence or presence and type of biface, 2, the absence or presence and type of prepared core technology and 3, the absence or presence and type of retouch. In this Chapter the case studies are each designed to look at one of these different technologies (biface, prepared core, retouch) to counter different problems in current interpretations (raw materials, modernity, shape) and emphasise a different form of identity (difference, *habitus*, routinization). These three technological forms were chosen as they crosscut the whole of the Middle Pleistocene time span.

7.2 CASE STUDY ONE: SIZING UP SHAPE, TIPS FOR HANDAXE DIFFERENCE

7.2.1 Introduction: Handaxe Hubris

Although most researchers would agree that bifaces are cultural objects socially transmitted across time and space little description is given of the relationships that might transpire from this. Handaxes have mainly been assessed on the basis of their ability to contribute to the chronological framework (through style and typology) and to indicate hominid functional activities, raw material economy or brain capacity (table 7.2). In other words the focus has been on natural and pre-determined elements of handaxe manufacture.

MODEL	FIRST USED...	FOCUS OF INTERPRETATION	MAIN AUTHORS
1. Culture sequence	**Late 1700's**	Tools given a typological classification, which was used to order the archaeological record chronologically. Artefacts were thought to increase in refinement over time.	All writers on handaxes up to and including the 1900's.
2. Function	1960's	Tool shape is activity dependent, a result of specific or multipurpose tasks (e.g. butchery or wood). Debate on the relationship of reduction intensity to style and function	Binford 1966, Roe 1968, 1981; Leakey 1971, Dibble 1987, 1992; McPherron 1995
3. Environ-ment	1960's	The adaptation and selection of stone tool types and shapes was due to the changing climatic conditions.	Coon 1962 Rolland 1981 Kuhn 1995
4. Mobility	1980's	Mapping of artefact scatters and transport distances to indicate levels of planning depth in landscape. Focus on effects of group subsistence strategies and mobility on technological strategies.	Geneste 1989, Roebroeks 1988, Barton 1990, Stiner 1992, Gamble 1996, Féblot-Augustins 1999
5. Raw material	1980's	Research focus on raw material type, size, shape & quality and their effect on tool typology and technology. Sourcing materials to establish mobility patterns as above.	Toth 1982 Geneste 1985 Ashton & McNabb 1994 White 1998
6. Cognitive	1980's	Stylistic quality of some tools thought to mark levels of cognitive ability. Desire for handaxe symmetry led to mental template idea. PCT thought to be a cognitive development.	Gowlett 1986, 1996 Mithen 1996 Wynn 1995

Table 7.2 - Stone tool interpretations over the last 200 years (c.1795-1995)

This conflicts with studies of production contexts by anthropologists, which describe material culture as social acts (Lemonnier 1986, Pfaffenberger 1999). But how can we approach the study of social relations in the Lower Palaeolithic? The presumption has always been that handaxes were an identity badge for Acheulean hominids, discarded artefacts that "...constitute fossilised visiting cards." (Isaac 1981: 136.) Recognition of similarities between bifaces has led to a notion of pan-global affinity, which I conclude has developed into universal interpretations and static behaviour patterns. Handaxes do construct identity, but these identities were multiple and I believe that it is through the investigation of the detailed aspects of flaking on bifaces that our understandings of features of hominid intentionality are enhanced and differing social relations can be interpreted. This is the practical link between the application of a new method of handaxe analysis (fig. 7.1, Appendix I) and the approach given in Chapter Six for investigating hominid cultural behaviour. This case study presents my results from several handaxe samples from Europe and Africa (table 7.3).

COUNTRY	SITE*	DATE RANGE	HANDAXE SAMPLE SIZE
UK	Boxgrove	OIS 12-13	21
	Dovercourt	OIS 8-11	68
	Elveden	OIS 8-11	34
	La Cotte de St Brelade	OIS 6-7	9
France	Gouzeaucourt, Level G	OIS 8	33
	Gouzeaucourt, Level H	OIS 8	109
	Cagny La Garenne	OIS12	21
	Cagny L'Epinette	OIS 8-9	28
South Africa	Cave of Hearths Beds 1-3	M. Pl.	60
	Muirton	M. Pl.	8
	Pniel 6 Area C	M. Pl.	108
	Samaria Road	M. Pl	27

*For further details see site profiles in Appendices II & III.
M. Pl. = Middle Pleistocene, a more precise date is unknown

Table 7.3 – Sites and Sample Sizes for Case Study One

Using the handaxes from these sites I problematise two issues, one about typology and one about raw materials. The following statements generate the argument (points 1 & 2) around which the interpretations arise (points 3 & 4).

1. It is widely thought that the outline of handaxe shape is influenced by raw material shape and that raw material shapes may have been intentionally selected. Although this often the case, this tells us more about the raw materials than what the hominids and their handaxes are doing.
2. I do not think handaxe outlines should be divided into categories such as ovates, limande, pick, etc. (section 7.2.2).
3. I suggest that we need to look closer at individual portions of the biface to interpret hominid behaviour. Middle Pleistocene hominids are making handaxes with particular cultural shapes as a part of the creation and addition of meaning to and within their societies (section 7.2.3).
4. Choosing to make a particular tip shape on a handaxe, for example, is one way in which hominids created meaning in their world and this meaning was a sign of social action and interactions (section 7.2.4).

7.2.2 Discussion: Shaping Raw Material

To understand the basis for these arguments, it is necessary first of all to take a brief look at the history of the archaeological interpretation of handaxes. Variation in handaxe morphology has been at the centre of debates for several centuries now, and to date there are six broad models for interpreting handaxe shapes (table 7.2). Since these models are generally well known I will not expand on their details here except where there are direct links to this work.

Roe was the first to show through quantitative analyses that different handaxe shapes are not related to unilinear chronological development (Roe 1981). He argued that bifaces reflected two main cultural traditions of manufacture, points and ovates, with the controlling factors of handaxe variability being function and the type of site (*ibid.*: 203). Individual handaxes were for specific purposes and whole industries for particular group activities. He stated that the question was not simply about points versus ovates but that the variation was for specific functions.

More recently it has been argued that some biface shapes are the result of raw material shape and that there is a continuum of variation in shape (Ashton and McNabb 1994). Further research established raw material dimensions and techno-functional strategies as the model for interpretation of the patterning of the British Acheulean (White 1998b). This model led to the conclusion that handaxe patterning reflects the nature of resources available at a site and the hominid procurement and technological strategies used to exploit them. Knapping according to the raw material's potential, i.e. the path of least resistance, was more widely appreciated than Ashton & McNabb (1994) had acknowledged. The two traditions (ovates and points) did not represent different biface making populations (*c.f.* Roe 1981) but the same population coping with different resources in a flexible manner (White 1998b). So, in summary, raw material and outline shape have been the foci for interpretations. It is therefore argued that the ovate and pointed handaxe categories devised at the turn of last century are no longer useful.

1. They create large categories that miss variation.
2. They universalise and compact hominid behaviours
3. The implication is that these two categories had some inherent meaning in the hominid world. In fact typologies have created 'classic' images of handaxes that form what could be described as a modern 'mental template' (Ashton & McNabb 1994).
4. Instead Ashton & McNabb (1994) describe bifaces as a continuum of variation. Although this highlights the fact that the ovate/point division is wrong, they do explain some of the variation as a factor of raw material variability.
5. The argument that raw material is the underlying variable of most handaxe shapes implies that once the blank had been selected (either intentionally or unintentionally), the knapping outcome of shape was set. The interpretation of knapping becomes a two-way description of the events taking place between the subject (knapper) and the object (knapped). This results in interpretations of the ways hominids went about conforming to and/or dealing with a raw material rather than the interpretation of knapping relationships within the social environment.
6. Functional considerations in and of themselves do not determine the stone tool shape. The shape does not need to be the most economic to get the job done. The considerations should rather focus on what handaxe shapes were culturally

acceptable in different situations. Many Palaeolithic people may not have had choices in the way that they made handaxes, but learned a specific and fixed way to make them.

7. The rules that we have set ourselves to judge handaxes may not be the most important ones, as the focus has been on what edges cut the best, what raw material makes what shape and what knapping produces what outcome. This focus does not consider hominid behaviours, but are natural constructs of how objects can work and be worked in the modern world.

Although there have been many developments in archaeology over the past 20 years, these six models (table 7.2) still lie at the basis of modern interpretations. Researchers have tended to disentangle the variables that lead to handaxe manufacture and focus in on one particular element, such as raw material, arguing for its greater contribution to artefact form. Perhaps instead we could argue that some of the models are a part of a larger cultural web of the understanding of stone tools. Raw material choice, handaxe shape, reduction intensity and functional activity were all considerations in the hominid world. However, these factors are learned behaviours. This cultural web can not be divorced from the hominids. Society and handaxes come into being through peoples actions in time and space. It is the changing actions and interactions of hominids, which in turn creates sets of social rules about resources that sets in motion particular meanings for and practices of handaxe production, use and discard. Here, my aim is to show how hominid intentions can be viewed in the Lower Palaeolithic record. To try and interpret the handaxes from this new point of view I feel there is a need for a new methodology.

All previous interpretations of shape have been on the basis of empirical measurements that analyse whole outlines, which I feel has led to the present models discussed previously. The idea behind this new method of looking at handaxes came from a paper by Dobres analysing Upper Palaeolithic bone tools (Dobres 1995). She separates each bone tool into three portions to look at their working and the degree of refinement (*ibid.*: 32). Her study of blanks versus repaired tools led to an argument for different production contexts. This has given me a platform from which to apply this approach to handaxes (fig. 7.1, Appendix I). Hence I am looking at patterns of handaxes production because I believe that this is where there is evidence for aspects of social behaviour.

We can not only look at metrical indices to approach an interpretation of hominid behaviour. Roe's (1968) metrical system of handaxe analysis has been used to great effect in Britain. However, across the globe, the typological and metrical systems used for analyses are still based on whole biface outlines to describe handaxe type and shape. Interpretations of these handaxe outlines come down to notions of style and how we view style as a concept (Chapter Six). When we interpret handaxes using the physical outline we get one very particular form of interpretation based on style as represented in table 7.4.

STYLE is...	***OEUVRE* is...**
Physical	Social
Whole. The artefact is bounded by the outline	Form. The artefact is a set of choices but only part of the network
Limited by raw material	Raw material is part of the chain of expressions
Functional	Relational
Subject & Object	Subjectivity
Individual & Group	Collective expressions of accumulation and fragmentation
Person	Personhood

Table 7.4 – Contrasting the concepts of style and *oeuvre* in relation to artefact interpretations

For example, I believe that the way bifaces are divided up by Roe does not allow for a fair comparison of artefact types (Roe 1968: 31) as numerous different tip types are categorised within the same type because of the metrical outline focus. Instead I argue that tip shapes can be used to formulate an oeuvre as they are distinct from biface shape and not a logical consequence of raw material shape as,

1. Handaxe variety exceeds the constraints of raw material shape.
2. Overall size and shape of the biface do not constrict the shape of the handaxe tip.
3. As the tip is the most fully flaked area of the handaxe this is where I can be more secure in my inference of hominid intention.

Figure 7.1 - Handaxe Analysis Procedure (& see Appendix I.2)

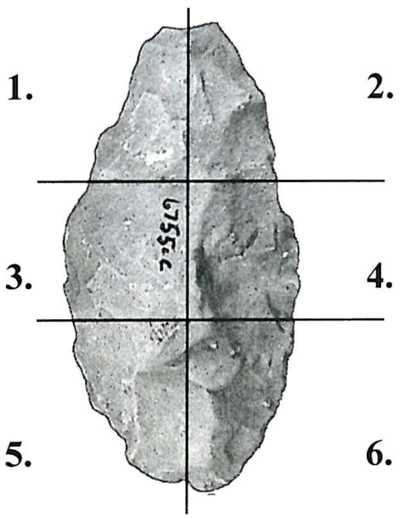
a. Roe's (1968) measurement scheme (L1 not included)
b. Blank type (indeterminate, flake, clast)
c. Presence of a twist (present, absent)
d. Handaxe named on the basis of the shape of the tip (top 1/3 of handaxe)

POINTED | CONVERGENT ROUNDED | ROUNDED | SQUARE

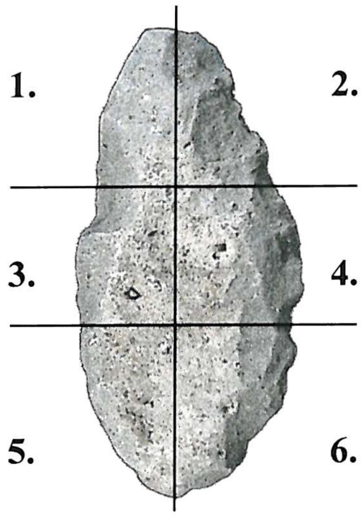
e. Handaxe is divided into six equal portions for the study of the flaking index (both sides of the handaxe are studied independently.
   CX = square mostly cortical
   FL = square mostly flaked
   RT = square mostly retouched

SO FOR EXAMPLE…

HANDAXE SIDE ONE



HANDAXE SIDE TWO



PNIEL 6
HANDAXE SIDE ONE

FL	FL
FL	FL
FL	FL

PNIEL 6
HANDAXE SIDE TWO

FL	FL
CX	FL
CX	CX

ASSESSMENT OF DIFFERENT MANUFACTURING PATTERNS ACROSS BIFACES = ASPECTS OF SOCIAL BEHAVIOUR

4. This pattern of flaking emphasises that hominids are deliberately choosing to make different tip shapes.
5. Patterns of tip shapes can be considered together for the interpretation of social relations.

These points are discussed in the following section (7.2.3) and then in conclusion the sites are discussed collectively in relation to the Middle Pleistocene transitions in Europe and Africa (section 7.2.4). The aim is to put bifaces into a context of social relations, moving from concepts of cultural style to an *oeuvre* encompassing relations of production.

7.2.3 Interpretations: Top Tips

To begin with I would like to establish the comparability and quality of the data by discussing handaxe raw material types, sizes, tip types and tip shapes.

1. RAW MATERIAL TYPES. In Europe all the handaxes studied were made on flint. In South Africa the handaxes were made on a variety of raw materials including, andesite, shale, chert and quartzite. I have found that handaxe variety exceeds the constraints of raw material shape through my study of tip types (see point 4).
2. SIZES. All the European sites have handaxe volumes within a comparable size range (fig. 7.2). Although the handaxes from Gouzeaucourt are smaller, they fit within the same size trend when compared by length and width (figs. 7.3 & 7.4). In South Africa handaxe volumes are not as comparable across the sites (fig. 7.2), but they all follow the same trend when compared by length and width (fig. 7.5). It is well known that handaxe comparisons by length and width show correlation across a site (Gowlett 1984) and between regions (Dibble 1989). Interpretations of biface standardisation have differed, including arguments relating to cognitive ability (Gowlett: *ibid.*), technological variability and our own classificatory system (Dibble: *ibid.*). The wide range places and ages represented by the sites discussed here suggest that similarity in biface size means very little when interpreted on a universal or inter-site scale.
3. TIP TYPES. To independently assess my pointed and rounded tip categories I measured the tip breadth 1/5 of the way down the handaxe. Where the handaxes are of a similar overall size, one would expect breadth to be greater for rounded than for

Figure 7.2
Interquartile range of handaxe volumes from British (UK), French (F) and South African (SA) sites

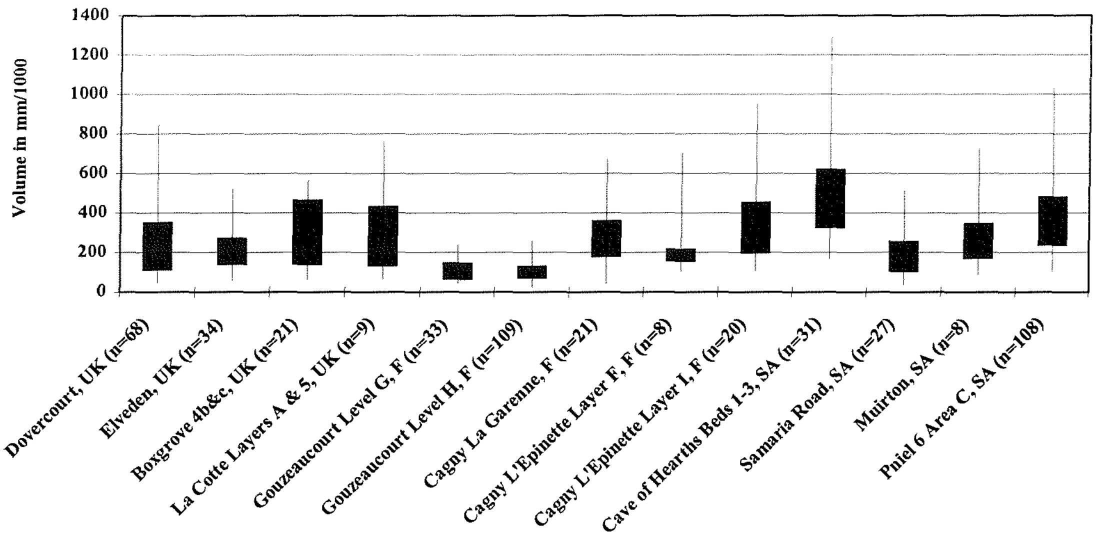


Figure 7.3
Handaxe lengths and widths from British sites

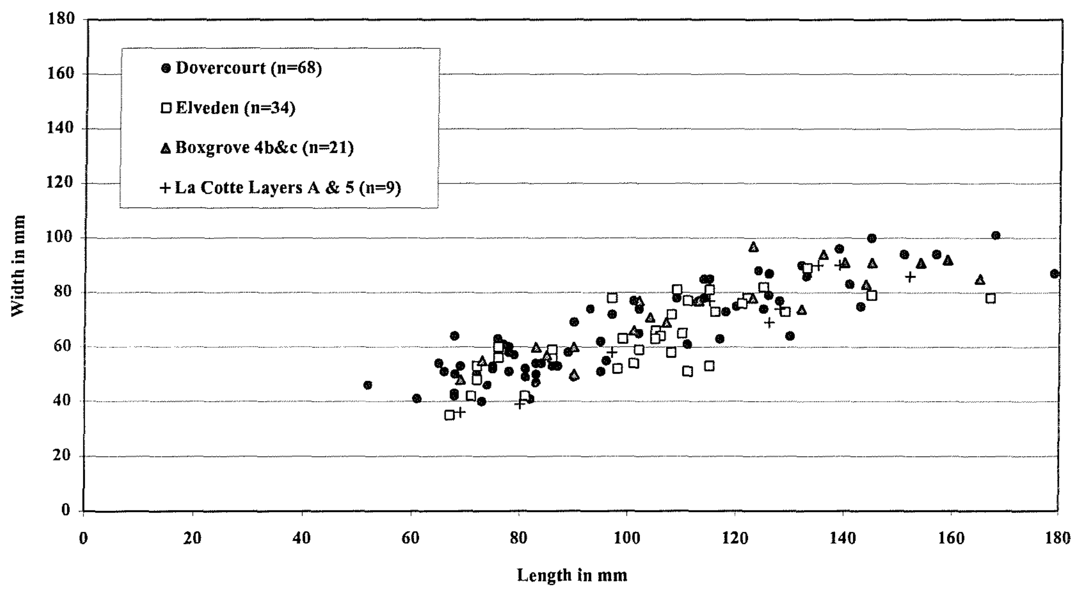


Figure 7.4
Handaxe lengths and widths from French sites

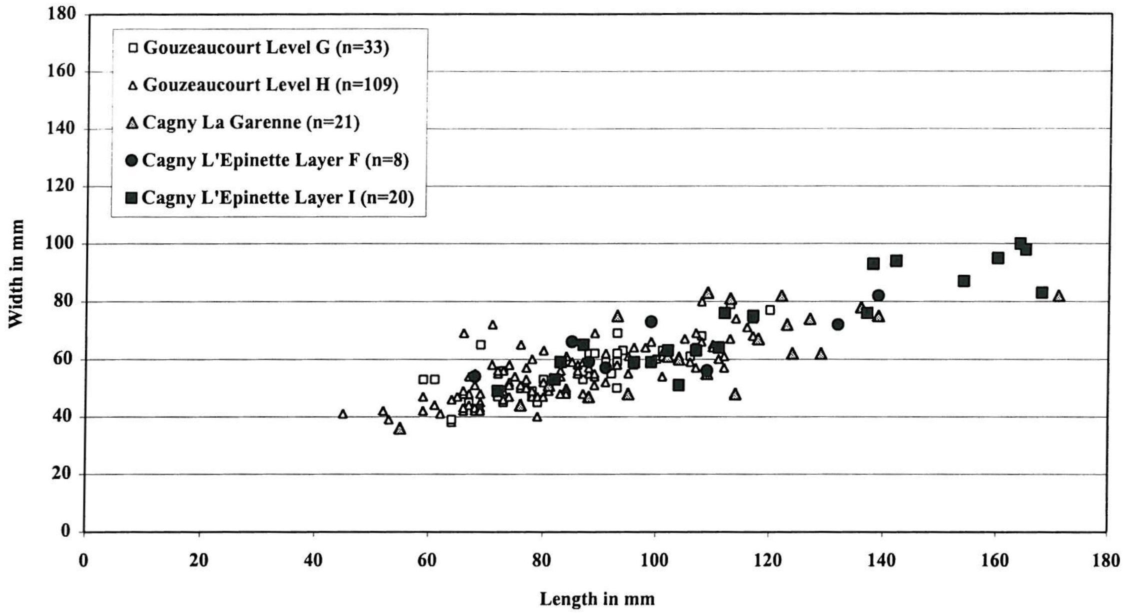
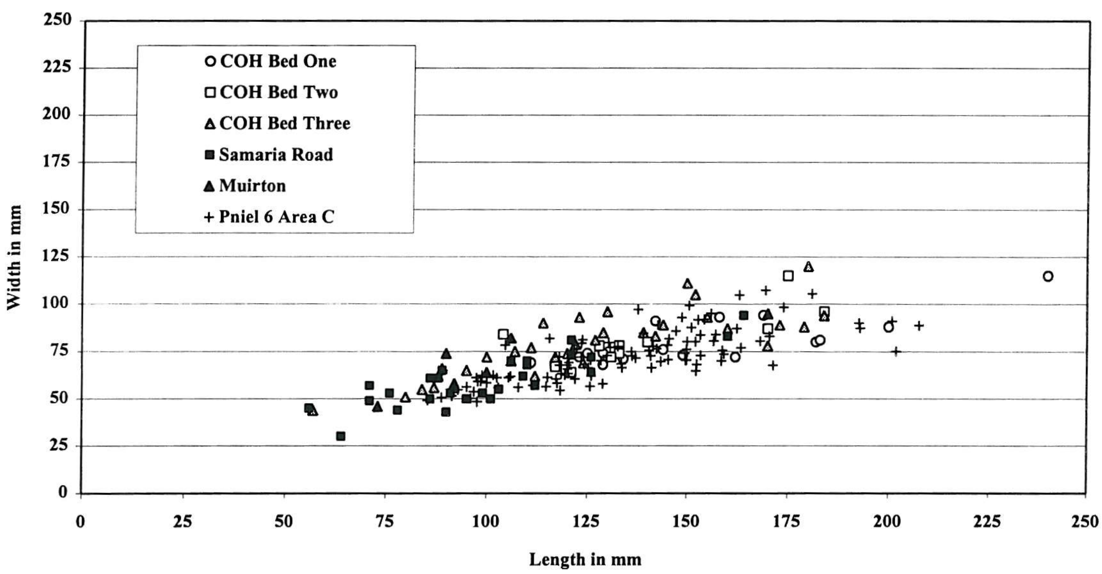


Figure 7.5
Handaxe lengths and widths from South African sites



pointed tips. Handaxes from Gouzeaucourt demonstrate that there is a clear separation between these two categories. In figure 7.6 rounded tip types have consistently broader breadths than pointed tip types. This suggests that my judgement of rounded and pointed tip types is consistent. However, it does not imply that measurements alone can be used to determine tip types, as demonstrated by the number of convergent tip forms that overlap both of these categories.

4. TIP SHAPES. The overall size and shape of the handaxes do not constrict the shape of the handaxe tips as demonstrated at the sites of Dovercourt and Elveden (fig. 7.7), Boxgrove (fig. 7.8) and Pniel 6 (fig. 7.9). While there is commonality in the recognised attributes of the handaxe, there is considerable variability in size, shape, shaping and flaking patterns. To begin, the overall pattern of flaking on the bifaces at each of these sites is described.

BOXGROVE

1. All of the handaxes are fully flaked with very little cortex left on any of them (*c.f.* Roberts et al. 1997: fig. 26; Roberts and Parfitt 1999: figs. 236 & 249). Most of the handaxes are quite finely finished. As there were only a few bifaces, my flake pattern analysis is not applicable.
2. There are differences in sizes and outline shapes.
3. There are similarities in the production of tranchet flakes and the rounding of handaxe bases. The tranchet flakes are not produced for sharpness or edge angle but are part of the butchery performance (see Chapter Eight).

DOVERCOURT

1. Handaxes have a similar pattern of flaking (fig. 7.10). There is consistently more flaking on the upper 2/3 of the biface.
2. Difference is apparent when looking at the retouch. Retouch goes further down the sides of the handaxe when making pointed handaxe tips.
3. The different retouch approaches to different tip types do not appear to be accidental.

Figure 7.6
Comparison of Gouzeaucourt (Levels G & H) handaxe tips by volume and tip breadth

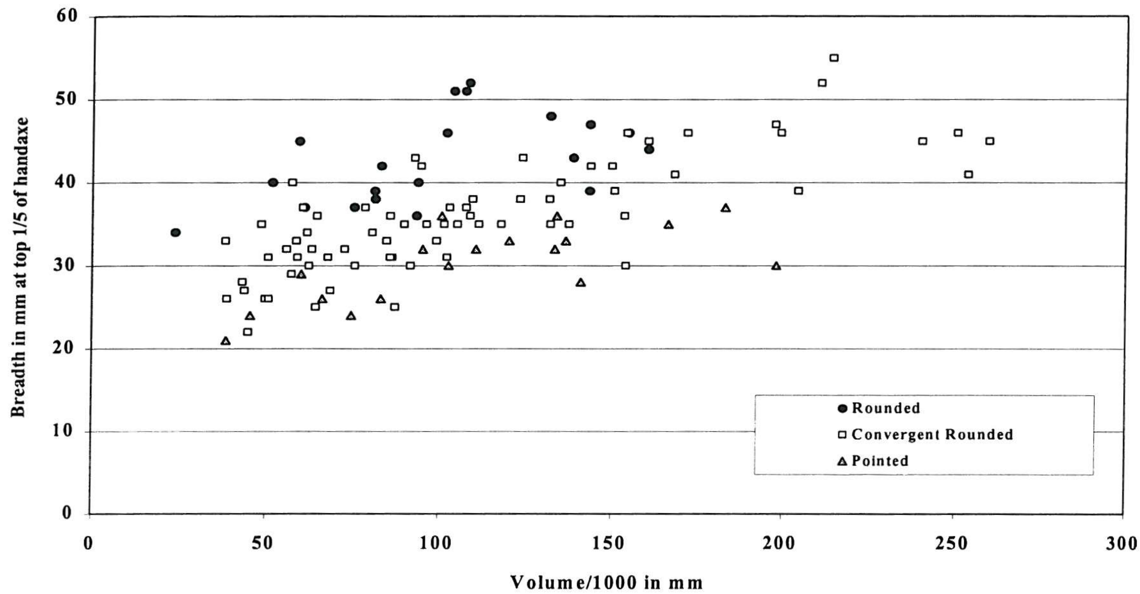


Figure 7.7
Comparison of Dovercourt (D) and Elveden (E) handaxe tip types by area and thickness

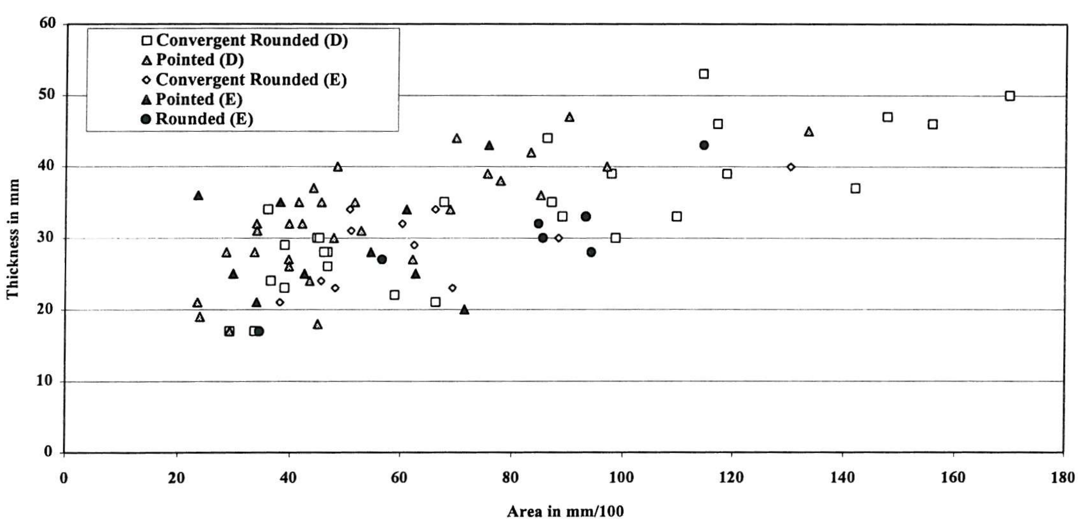


Figure 7.8
Comparison of Boxgrove handaxe tip types by area and thickness

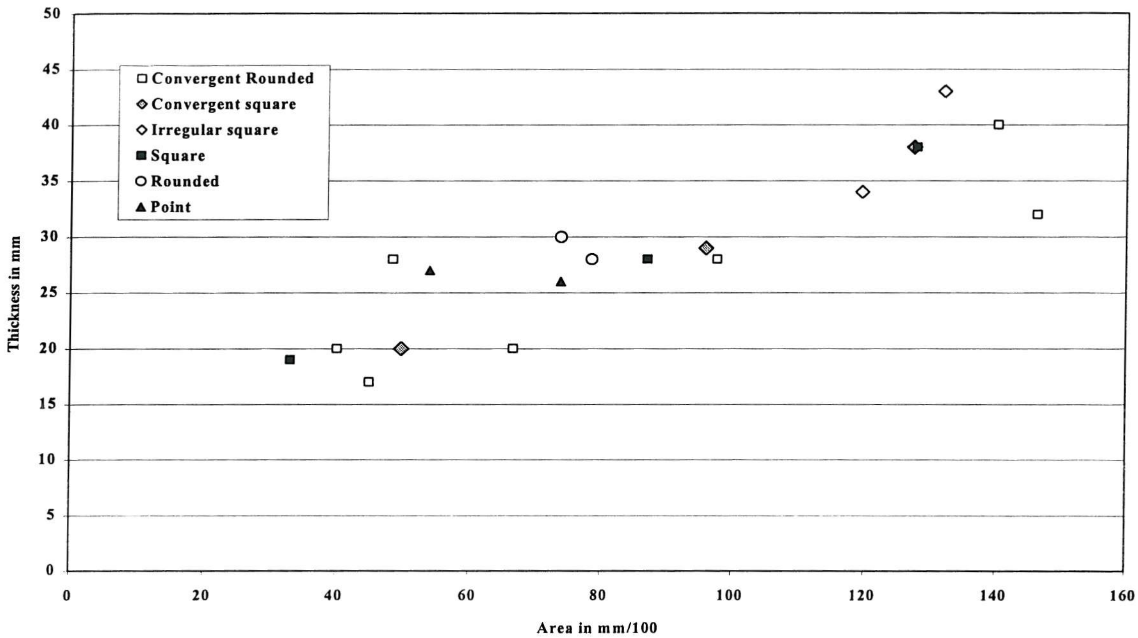


Figure 7.9
Comparison of Pniel 6 Area C handaxe tip types by area and thickness

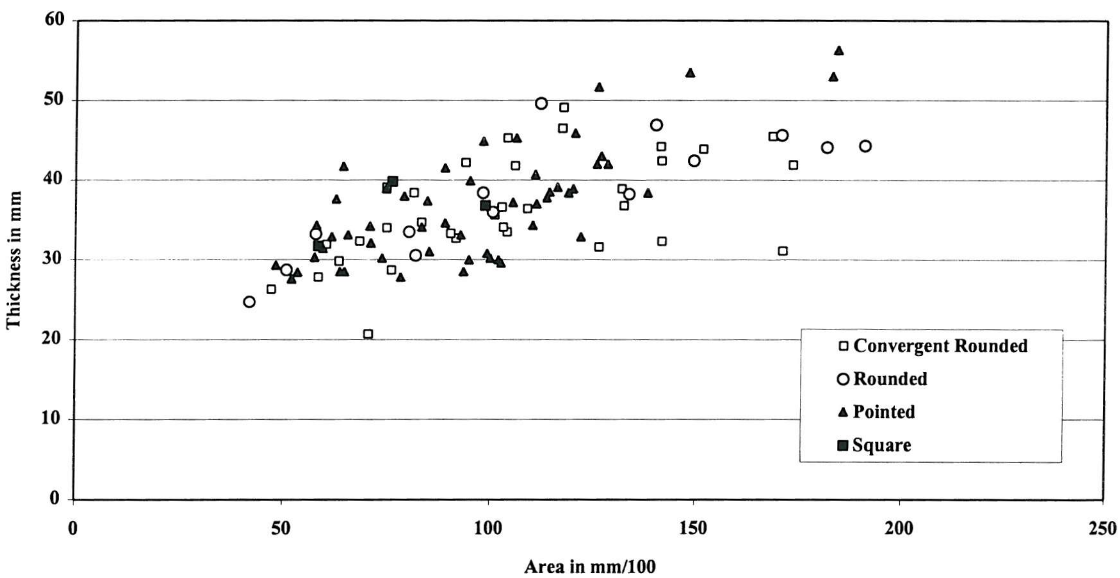


Figure 7.10 – Dovercourt handaxe flaking patterns

CONVERGENT ROUNDED HANDAXES - FLAKING INDEX

HANDAXE SIDE ONE		HANDAXE SIDE TWO	
100% (n=27)	100% (n=27)	100% (n=27)	100% (n=27)
96% (n=26)	100% (n=27)	100% (n=27)	100% (n=27)
85% (n=23)	78% (n=21)	85% (n=23)	78% (n=21)

POINTED HANDAXES - FLAKING INDEX

HANDAXE SIDE ONE		HANDAXE SIDE TWO	
97% (n=29)	100% (n=30)	100% (n=30)	100% (n=30)
97% (n=29)	100% (n=30)	97% (n=29)	97% (n=29)
77% (n=23)	67% (n=20)	83% (n=25)	87% (n=26)

CONVERGENT ROUNDED HANDAXES - RETOUCH INDEX

HANDAXE SIDE ONE		HANDAXE SIDE TWO	
26% (n=7)	22% (n=6)	19% (n=5)	30% (n=8)
11% (n=3)	7% (n=2)	11% (n=3)	19% (n=5)
4% (n=1)	7% (n=2)	4% (n=1)	0% (n=0)

POINTED HANDAXES - RETOUCH INDEX

HANDAXE SIDE ONE		HANDAXE SIDE TWO	
33% (n=10)	27% (n=8)	23% (n=7)	27% (n=8)
27% (n=8)	23% (n=7)	13% (n=4)	20% (n=6)
10% (n=3)	13% (n=4)	7% (n=2)	10% (n=3)

Diagram indicating the percentages of flaking for each area of the handaxe. The flaking must dominate the square before it is counted. Percentages are averaged within the square not between squares. = a significant amount in this square, = some in this square, = little in this square.

Figure 7.11 – Elveden handaxe flaking patterns

ROUNDED & CONVERGENT ROUNDED HANDAXES - FLAKING INDEX

HANDAXE SIDE ONE		HANDAXE SIDE TWO	
100% (n=18)	100% (n=18)	100% (n=18)	100% (n=18)
100% (n=18)	100% (n=18)	100% (n=18)	100% (n=18)
100% (n=18)	100% (n=18)	100% (n=18)	94% (n=17)

POINTED HANDAXES - FLAKING INDEX

HANDAXE SIDE ONE		HANDAXE SIDE TWO	
100% (n=10)	100% (n=10)	100% (n=10)	100% (n=10)
90% (n=9)	90% (n=9)	100% (n=10)	100% (n=10)
100% (n=10)	90% (n=10)	100% (n=10)	100% (n=10)

CONVERGENT ROUNDED HANDAXES - RETOUCH INDEX

HANDAXE SIDE ONE		HANDAXE SIDE TWO	
18% (n=2)	36% (n=4)	18% (n=2)	46% (n=5)
18% (n=2)	27% (n=3)	0% (n=0)	36% (n=4)
27% (n=3)	27% (n=3)	9% (n=1)	18% (n=2)

POINTED HANDAXES - RETOUCH INDEX

HANDAXE SIDE ONE		HANDAXE SIDE TWO	
50% (n=5)	60% (n=6)	30% (n=3)	30% (n=3)
20% (n=2)	40% (n=4)	40% (n=4)	10% (n=1)
50% (n=5)	30% (n=3)	20% (n=2)	20% (n=2)

Diagram indicating the percentages of flaking for each area of the handaxe. The flaking must dominate the square before it is counted. Percentages are averaged within the square not between squares. = a significant amount in this square, = some in this square, = little in this square.

ELVEDEN

1. Bifaces share a similar pattern of flaking (fig. 7.11)
2. There is no retouch on the handaxes with rounded tips, but these pieces are heavily flaked all the way around the handaxe edges.
3. A comparison between the two sites indicates that there is a greater amount of working over the total area of the biface at Elveden. There is also a greater amount of retouch over the whole biface. However, interestingly, even where there is greater flaking over the surface and more retouch around the edges, different tip types are still assumed. If we were to argue that ovates were the preferred form, why, when a long retouched edge is present, is a pointed tip produced?

LA COTTE DE ST BRELADE (LCB)

1. Very few of the bifaces could be located (n=9) when I went to study this collection in Jersey and hence most of the data comes from the LCB volume (Callow and Cornford 1986).
2. Bifaces from Layer A deserve further comment (table 7.5), as this is the only level with a significant number of pieces (each of the other Layers have less than fifteen whole handaxes and the four lowermost levels have none at all). Even in this layer bifaces are relatively infrequent in terms of the overall size of Layer A. The lithic assemblage from this layer comprises about 40% of the total number of artefacts from the Saalian deposits at LCB.
3. It is therefore suggested that because they are not common in any level of the site, they are not a part of an established tradition.
4. For the most part the handaxes are roughly made and disparate in form (*ibid.*: 294 & 296, figs. 26.32 - 26.33) and typology should not be used to consider these pieces as Acheulean-like tools, contra Callow (1986: 221). "The handaxes which occur in these later layers include examples of classic Acheulian form as well as the morphologically less well characterised types". Handaxe typology is here tied to a tradition belonging to a different age. In this context the names mean nothing in relation to hominid behaviour. The lack of patterning and the relatively few well made handaxes suggest that they are not a part of everyday life, nor do they have a consistent role in social relations.

Biface type (from Callow & Cornford 1986)	Flint	Other/ Stone	Quartz	Number in Layer A	TOTALS from Layer A
Amygdaloid	18	7	0	25	
Nucleiform	22	1	2	25	**Rough forms**
Discoidal	7	0	0	7	**68**
Miscellaneous	2	1	1	4	**(=76%)**
Partial	4	3	0	7	
Lanceolate	2	0	0	2	
Ficron	1	0	0	1	**Well finished forms**
Cordiform	2	0	0	2	**8**
Ovate	1	0	0	1	**(=9%)**
Limande	2	0	0	2	
Pick	1	1	0	2	**Other forms**
Cleaver (bifacial)	4	3	0	7	**13**
Flake-cleaver	0	4	0	4	**(=15%)**
TOTAL	**66**	**20**	**3**	**89**	**100%**

Table 7.5 – Bifaces from La Cotte de St Brelade

GOUZEAUCOURT LEVELS G & H

1. All of the bifaces are small and well flaked, with very little cortex remaining on any of the pieces (figs. 7.12 & 7.13).
2. There are no cortical handaxe butts. It would seem that a number of them were made from flakes, particularly given the thinness of these pieces. It was only possible to establish this directly on some of the pieces, as most of them were too heavily flaked to be sure.
3. Flaking patterns are similar over the whole biface surface area (figs. 7.12 & 7.13).
4. There is not much retouch, but there are different levels of intensity in the flaking.
5. At Gouzeaucourt the level of flaking intensity seems to increase over time. Hence for this site I looked at the relationship between primary flaking (large initial handaxe flake removals) and secondary or intense flaking (the thin shaping handaxe flake removals). A comparison of the convergent rounded handaxes demonstrates that Level H has an average of 33% handaxes with an intense flaking pattern whereas Level G has an average of 57% (figs. 7.12 & 7.13).

Figure 7.12 – Gouzeaucourt Level G handaxe flaking intensity patterns

POINTED HANDAXES (n=2) – INTENSE FLAKING INDEX

HANDAXE SIDE ONE

50%	50%
50%	50%
50%	0%

HANDAXE SIDE TWO

50%	50%
50%	50%
100%	100%

CONVERGENT ROUNDED HANDAXES (n=25) – INTENSE FLAKING INDEX

HANDAXE SIDE ONE

56%	56%
52%	56%
56%	56%

HANDAXE SIDE TWO

60%	60%
60%	60%
60%	52%

ROUNDED HANDAXES (n=6) – INTENSE FLAKING INDEX

HANDAXE SIDE ONE

83%	83%
83%	83%
83%	67%

HANDAXE SIDE TWO

83%	83%
83%	83%
83%	83%

Diagram indicating the percentages of intense flaking for each area of the handaxe. The flaking must dominate the square before it is counted. Percentages are averaged within the square not between squares. = a significant amount in this square, = some in this square, = little in this square.

GOUZEAUCOURT LEVEL G	Pointed Handaxes	Convergent Rounded Handaxes	Rounded Handaxes	TOTAL
Number of handaxes with cortical squares	0	3	0	3/33 = 10%
Number of handaxes with retouch	0	1	0	1/33 = 3%

Figure 7.13 – Gouzeaucourt Level H handaxe flaking intensity patterns

POINTED HANDAXES (n=16) – INTENSE FLAKING INDEX

HANDAXE SIDE ONE

56%	50%
44%	44%
44%	38%

HANDAXE SIDE TWO

44%	44%
38%	44%
31%	38%

CONVERGENT ROUNDED HANDAXES (n=52) – INTENSE FLAKING INDEX

HANDAXE SIDE ONE

37%	35%
33%	33%
27%	29%

HANDAXE SIDE TWO

37%	35%
35%	35%
33%	29%

ROUNDED HANDAXES (n=16) – INTENSE FLAKING INDEX

HANDAXE SIDE ONE

19%	13%
19%	6%
13%	0%

HANDAXE SIDE TWO

25%	25%
19%	19%
19%	19%

Diagram indicating the percentages of intense flaking for each area of the handaxe. The flaking must dominate the square before it is counted. Percentages are averaged within the square not between squares. = a significant amount in this square, = some in this square, = little in this square.

GOUZEAUCOURT LEVEL H	Pointed Handaxes	Convergent Rounded Handaxes	Rounded Handaxes	TOTAL
Number of handaxes with cortical squares	2	2	4	8/84 = 9.5%
Number of handaxes with retouch	5	8	5	18/84 = 21%

CAGNY LA GARENNE

1. These bifaces are quite diverse in size.
2. The biface butts are generally irregular and some are completely cortical.
3. There were too few bifaces to do my flake pattern analysis.

CAGNY L'EPINETTE

1. These bifaces are quite diverse in size and made mainly on nodules.
2. The biface butts are generally irregular and some are completely cortical.
3. There were too few bifaces to do my flake pattern analysis.

CAVE OF HEARTHS

1. All three Beds have a similar size profile.
2. The flaking pattern seems to be different between the earlier beds (Beds 1 & 2) and Bed Three (fig. 7.14). Bed Three handaxes are less fully flaked over the entire handaxe.
3. Beds One and Two have a high portion of indeterminate handaxe blanks probably because of the greater amount of flaking over these handaxes (table 7.6).
4. There is a decline in the percentage of handaxe circumference that is flaked between Beds One and Three (fig. 7.15).
5. This contrasts with flake scar counts (fig. 7.16) which are similar across all three beds.
6. It is suggested that the style of flaking changes in Bed Three as it is concentrated on specific portions of the biface rather than outline shape, as in Bed One. It would seem that there is a shift to the use of predominantly end-struck flakes as blanks for bifaces. This suggests a shift in the core reduction method.
7. The handaxes are mostly convergent in tip form (table 7.7).

Figure 7.14 – Cave of Hearths handaxe flaking patterns

BED ONE (n=17) - FLAKING INDEX

HANDAXE SIDE ONE		HANDAXE SIDE TWO	
82%	88%	82%	88%
82%	94%	76%	88%
71%	71%	65%	71%

BED TWO (n=11) - FLAKING INDEX

HANDAXE SIDE ONE		HANDAXE SIDE TWO	
82%	82%	91%	100%
82%	82%	91%	91%
55%	73%	55%	45%

BED THREE (n=32) – FLAKING INDEX

HANDAXE SIDE ONE		HANDAXE SIDE TWO	
69%	72%	63%	69%
66%	81%	81%	78%
59%	66%	66%	66%

ALL BEDS (n=60) – FLAKING INDEX

HANDAXE SIDE ONE		HANDAXE SIDE TWO	
75%	78%	73%	80%
75%	85%	82%	83%
78%	68%	63%	63%

Diagram indicating the percentages of flaking for each area of the handaxe. The flaking must dominate the square before it is counted. Percentages are averaged within the square not between squares. = a significant amount in this square, = some in this square, = little in this square.

Table 7.6 – Cave of Hearths handaxe blank types

	Flake Blank		Clast		Split Piece		Indeterminate		TOTAL
	N=	%	N=	%	N=	%	N=	%	
Bed 1	6	35	0	0	0	0	11	**65**	17
Bed 2	2	18	1	9	0	0	8	**73**	11
Bed 3	15	**47**	2	6	3	9	12	38	32

Figure 7.15
Cave of Hearths percentage of handaxe circumference flaked

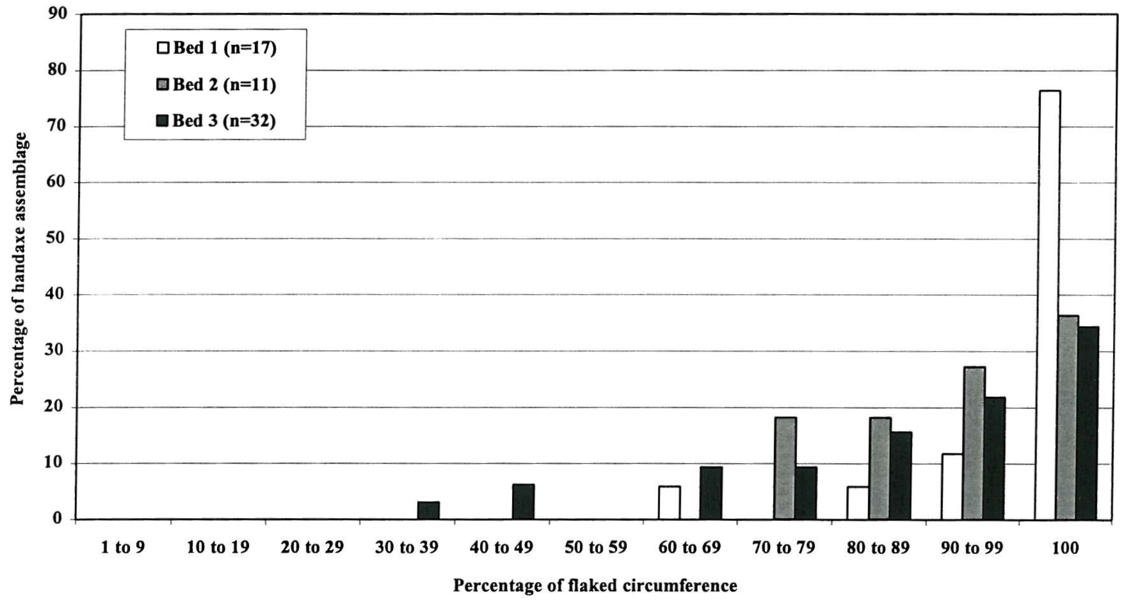
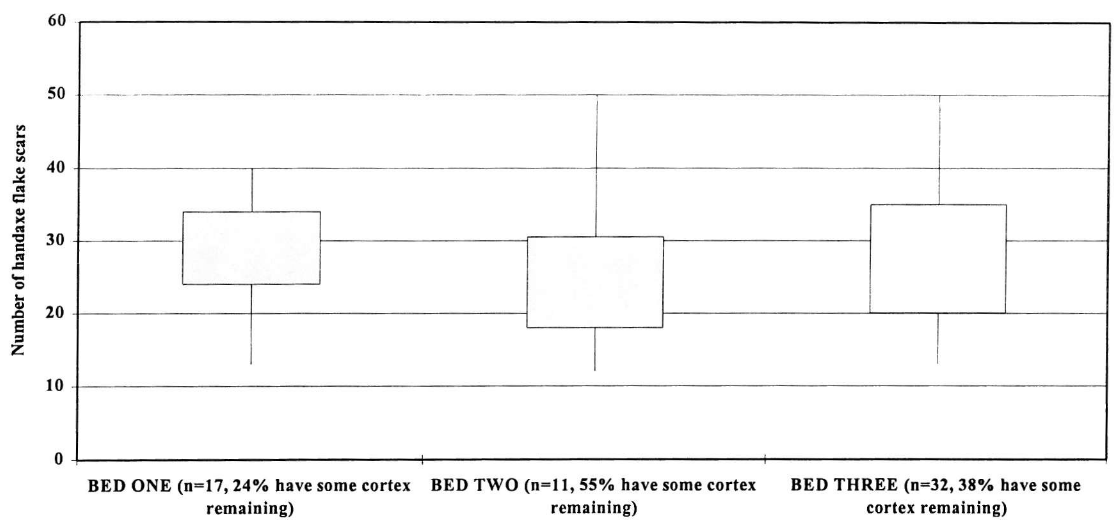


Figure 7.16
Number of flake scars on handaxes at the Cave of Hearths



Handaxe Tip Type	Cave of Hearths Beds 1-3		Muirton		Pniel 6 Area C		Samaria Road	
	N =	% =	N =	% =	N =	% =	N =	% =
Rounded	0	0	0	0	14	13	2	7
Convergent	37	**62**	1	12.5	33	30	6	22
Pointed	15	25	6	**75**	53	**49**	18	**67**
Square	5	8	0	0	3	3	0	0
Irregular	3	5	1	12.5	5	5	1	4
TOTAL	**60**	**100**	**8**	**100.0**	**108**	**100**	**27**	**100**

Table 7.7 – African handaxe tip types

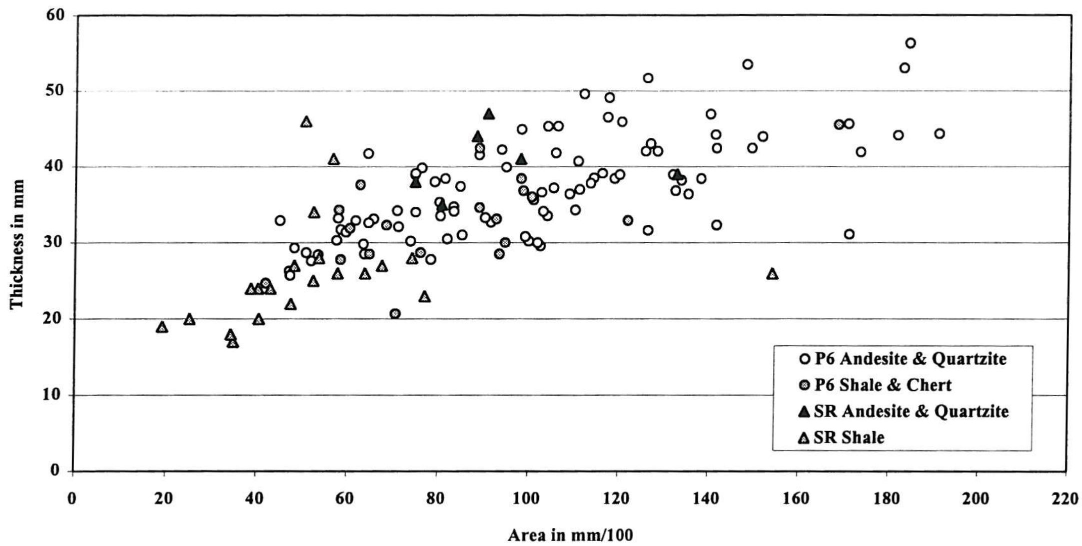
MUIRTON

1. Handaxes are roughly made for the most part.
2. They are mainly pointed at the tip (table 7.7).
3. They are flaked around the whole circumference.
4. There were too few bifaces to undertake my flake pattern analysis.

PNIEL 6 (AREA C)

1. I collated the handaxe data from photographs and tables (Marshall et al. 2002), hence the flake pattern analysis was not undertaken. However, the majority of these handaxes are fully worked around their circumference (average circumference worked = 90%).
2. The quartzite and andesite handaxes are larger in size than the shale and chert handaxes but are similar in proportions (fig. 7.17). The handaxe tip type is not influenced by raw material type.
3. Pointed handaxes predominate at this site (table 7.7).
4. The interesting element here is the number of double-ended handaxes. There are thirteen of these and the majority are pointed (n=10). These suggest a different concept of handaxes and a different orientation of them in relation to the body as both ends rather than one end are shaped.

Figure 7.17
Pniel 6 (P6) and Samaria Road (SR) handaxes compared by size and raw material types



SAMARIA ROAD

1. The handaxes are all fully flaked.
2. The quartzite and andesite handaxes are larger in size than the shale handaxes but are similar in proportions (fig. 7.17). The handaxe tip type is not influenced by raw material type.
3. The majority has pointed tips (table 7.7).

7.2.4 Conclusion: Intentional Difference

Analyses focusing on the biface outline do reflect raw material shape, but this leads to an object orientated interpretation emphasising how objects can work and be worked in the modern world. I hope I have effectively demonstrated how my system of data collection allows for the assessment of different manufacturing patterns, which is orientated towards subjectivity and social interpretations. Although this method is not applicable to very small handaxe samples, it is useful as it draws out patterns, even where there are sites of both 'mixed' and 'undated' contexts. In addition we can see places where hominids created intentional shapes in their handaxes, and therefore approach the interpretation of social relations. I have not broached the topic of what these intentional shapes might mean, and so I finish with these points,

1. At sites where the assemblages are very mixed and not in a primary context, such as at Dovercourt and Elveden, it is extremely difficult, if not impossible to assign

specific meaning to handaxe patterns. In this regard maybe we should take a cue from Conkey's work (1995, 1996) and argue that perhaps we should be asking of the past how meaning was made rather than what those meanings might have been.

2. I think that one important element in this work has been to show that meaning is present in the Middle Pleistocene record. Furthermore, that the system of analysis that I have devised allows for the assessment of different manufacturing patterns that can lead to this kind of interpretation. It would seem that the performance of handaxe manufacture separates into several forms of identity. Handaxe *praxis* combines the routine tradition of every-day process with the positioning of the manufacturing place and accumulated memory (table 6.3). This theoretical body of knowledge is combined with the practice of handaxe knapping and the statement of difference, or social discourse, can be found at certain localities in the tip.
3. All pieces are not equal and it is necessary to locate the part where there is a concentrated emphasis of expression. At several sites in this study handaxe tips accentuate the significance of human agency. One example of this is the focus on the handaxe tip at Boxgrove through the consistent production of a tranchet flake, which emphasises the exercising of control over the process of biface production (table 7.8). It may be suggested that this reflects some form of social control over the carcass and the butchery procedure (for further discussion see Chapter Eight).

Context (tables 4.1 & 4.2)	**Action (tables 5.1 & 5.2)**	**Identity in *praxis* (table 6.3)**
PHYSICAL Transition Assemblage variation	Tranchet removal creates functional sharp edge for butchery	Relationship between hominid and tool. Tool indicates hominids processed carcasses and were meat-eating.
SOCIAL Transformation Assemblage difference	Tranchet removal is a social practice informing on point of power in butchery process	Relationship between hominids through the tool. Tool indicates control of social relations in butchery process through control in lithic production.

Table 7.8 – Differences in handaxe interpretations exemplified by Boxgrove

4. A singular portion of the handaxe, such as the tip, is not always the main focus. Other biface portions may also be emphasised (e.g. s-twisted handaxes). Pniel 6 is distinct as it has a recurrent trend of double-ended handaxes. These would have been utilised differently to handaxes with a single tip in the way they were flaked, held and used. Different positioning of the body in relation to this type of handaxe would have projected a different identity and thus altered social relations. At

Elveden, the flaking pattern suggests a greater emphasis on the length of the flaked edge, because of the intensity of flaking down the handaxe sides.

5. At the COH changes in biface flaking patterns over time suggest changing social relations. The same number of flakes were removed from handaxes, implying there is no change in labour intensity, but there is a shift in emphasis on handaxe production techniques from end to side struck flake blanks. This has an effect on flaking procedures. Whereas in Bed One there is a focus on the flaking of the handaxe outline, in Bed Three knapping is concentrated on particular biface portions. Following this pattern, I suggest that the emphasis in social reproduction moves from knapping the biface form to making the biface blank. The main social act has shifted from knapping of the biface, probably at the COH site, to collecting the blank form (either a natural slab or a knapped flake) away from the site.
6. In general commentaries of a global nature it is often noted that small, refined bifaces were made at the end of the Acheulean. At the sites of Gouzeaucourt (attributed to the late Acheulean or the Paléolithique moyen de faciès cambrésian (Tuffreau and Bouchet 1985) and Samaria Road (attributed to the late Acheulean or Fauresmith, Beaumont 1990) small refined bifaces have been found. I would argue that these are not the same things, nor did they produce similar identities, as they are a result of completely different sequence of events. At Gouzeaucourt hominids are using flakes as blanks for bifaces, which fits in with the style of the production of other artefacts at this time. In other words they are changing techniques to incorporate old traditions within a new style of flaking. At Samaria Road hominids are flaking old forms of biface on new materials, adjusting the style of production to suit the use of a different raw material (shale) at this time. In other words they were changing raw materials, not techniques, to incorporate old traditions onto a new form of stone, which in turn did have some repercussion on flaking techniques.
7. Similarly, handaxes have different roles in MP contexts indicating that handaxe variation is not just about refinement over time. Variation needs to be incorporated within the social relations of the MP rather than relying on the typological ties we make with the Acheulean Industrial Complex. At LCB handaxes are unusual and many seemed to be linked to the core production process. This is very different to Gouzeaucourt where handaxes are common and tied to the flake production process.

I have shown how differences in bifaces create differences in social relations. With these considerations in mind it is necessary to discuss the ways in which the Middle Pleistocene is transforming (table 7.9). How do bifaces relate to general assemblage changes during the Middle Pleistocene? I believe that bifaces in Europe were changing as a part of a set. As the set changed, so identities altered, and we can see gradual shifts in assemblage composition, as bifaces became less frequent. However, bifaces are still important, as they are a part of the chain of production methods. The mode of raw material collection did not change, and so traditions such as handaxe production could be maintained, as exemplified by sites such as Gouzeaucourt. This is different to the situation in Africa where bifaces were not phased out, but disappear completely in a much more dramatic manner. I suggest that this was because shifts in stone tool production did not allow for the continuation of bifaces, and therefore they dropped out of the cycle of production quicker. This is not the case in all areas of Africa, or even in southern Africa, for example the core axes of the Sangoan, the lanceolates of the Lupemban and bifaces associated with blades at sites such as Muirton. However, across South Africa in general, the social process of raw material collection emphasises new procedures. The mode of raw material collection changed, which broke with tradition, as hominids visited different patches in the landscape. With this shift in raw material types blanks were often not big enough, or suitable for, maintaining traditional techniques of biface production. However, raw materials did not change in all places. At the Cave of Hearths techniques seem to change prior to the raw materials used. Here it is suggested that the emphasis on blade production and smaller flakes excluded the collection of large cobbles and production of biface flake blanks.

	TRANSFORMATIONS		
1	Maintain tradition in time and space	Assemblages form sets as the old and new change together	Difference (the new) is incorporated within memory (the old) thereby maintaining the habitus across changing artefact forms
	CONTEXT ⇔	**ACTION** ⇔	**IDENTITY**
2	Changing spaces changes time, i.e. the active production methods	Assemblages form networks as the new takes over from the old	Positioning (the new) demands altered routines, and thereby (the old) links are broken to establish ontological security in changing artefact forms

Table 7.9 – Summary of possible transformations in materials and social relations during the Middle Pleistocene. Transformation 1 could be applicable to sites such as Gouzeaucourt while transformation 2 could be applicable at the Cave of Hearths.

7.3 CASE STUDY TWO: FLAKE DORSAL SCARS AND PATTERNS OF *HABITUS*

7.3.1 Introduction: Preparing for modernity?

This case study is particularly linked with the critique of origin points and the debate on modernity and humanness presented in Chapter Six. It analyses the Middle Pleistocene transition incorporating the southern African Earlier to Middle Stone Age and European Lower to Middle Palaeolithic with special attention to prepared core technology (PCT). The focus of this study has been to investigate how PCT influences Acheulean and MP/MSA knapping practices. My aim here is to demonstrate that the presence of PCT is not indicative of a singular behavioural pattern (orientated around the concept of the modern) but reflects several very different situated events that interplay with other non-prepared elements of each assemblage. Therefore PCT should not be used as a chronological marker but discussed as situated practices where comparisons within and between sites can be made but progressive models are not applicable.

At present Middle Pleistocene research is focused on the explanation of the origin of *Homo sapiens* in Africa (anatomically modern humans = AMH) and *Homo neanderthalensis* in Europe, and evidence for the presence of cultural modernity. Central to this theme are the hominids themselves, the appearance of PCT and their theoretical origin points. This can be broken down into three intertwined themes,

Origins	=	arrival of AMH/Neanderthals & PCT
Modernity	=	new cultural and biological package(s)
Change	=	chronologically and typologically driven transition

These three concepts were discussed in Chapters Five and Six. Here I will briefly outline the problems with these present strategies before putting forward new interpretations for my stone tool data.

To summarise, the major problem of origins research is that archaeologists have become too caught up in the determination of what is modern rather than the interpretation of the social groups in their own context. The study of PCT from this perspective establishes the modern/non-modern boundaries that I argue against. The technology is used as a specific marker and as a link between Acheulean and MSA hominid groups. Other problems with the current artefact interpretations for the Middle Pleistocene are that

1. There is a tendency to emphasise PCT and the blade producing aspects of various assemblages without considering the greater range of variability visible in the subtleties of the entire assemblage.
2. The spread of this technology is understood only in its presence or absence at very early dates, while its appearance in relation to assemblage variability has been tackled less adequately.
3. PCT has been used as an indicator of cognitive ability rather than investigated in terms of its role in the materiality of social relations. In this way it is a marker point in a long chronology of development rather than part of cultural meaning.

Rather than look for origin points, I would view change as a constant but not a consistent process. It is an ongoing process that is not directional in its movement. Presently, we materialise the body through the normative and comprehensible naming of the modern. In this way the record is objectified and subsumed into the term modern. To leave out the 'non-modern' and emphasise the 'modern' elements of hominid material culture is to miss out on the life experience of that group. Instead we should be looking at specific ways in which hominids were a part of their world. Stone tools should be viewed as a part of human action and interaction that create and recreate social institutions. The action of artefact production is both the medium and the outcome of practices. By deviating the citational chain of the 'modern' to alternative values I attempt to demarcate different bodily terrains through stone tool technology.

7.3.2 Discussion: Changing patterns of flaking

How then do I reconstruct the changes during this time period? First it is necessary to look at the general South African and European archaeological records and the specific sites that I have chosen (table 7.10).

In Europe some Middle Pleistocene sites have both Levallois and biface technology, although often only one of these practices is present. There are no continually occupied

COUNTRY	SITE*	FLAKE SAMPLE SIZE	TYPOLOGICAL INDUSTRY CATEGORY
UK	La Cotte de St Brelade, Level H	30	Middle Palaeolithic (MP)
	La Cotte de St Brelade, Level D	28	Middle Palaeolithic (MP)
	La Cotte de St Brelade, Level 5	52	Middle Palaeolithic (MP)
France	Gouzeaucourt, Level G	20	Middle Palaeolithic (earliest)
	Gouzeaucourt, Level H	149	Middle Palaeolithic (earliest)
	Cagny La Garenne, Level CXV	138	Acheulean (A)
	Cagny L'Epinette, Level F	191	Acheulean (A)
	Cagny L'Epinette, Level I	67	Acheulean (A)
South Africa	Cave of Hearths Bed 3	197	Acheulean (A)
	Cave of Hearths Bed 4	132	Middle Stone Age (MSA IIa)
	Bushman Rockshelter, Levels 96 - 107	389	Middle Stone Age (MSA I)
	Bushman Rockshelter, Levels 86 – 95	374	Middle Stone Age (MSA I)
	Bushman Rockshelter, Levels 67 - 69	59	Middle Stone Age (MSA I)
	Canteen Koppie, Unit 2a	632	Victoria West (VW or LA)
	Canteen Koppie, Unit 2b	254	Victoria West (VW or LA)
	Muirton	62	Late Acheulean (LA)
	Pniel 6, Sandy Unit	149	Middle Stone Age (MSA I)
	Taung DB3	140	Late Acheulean (LA or VW)
John Lord Experimental Blade Collection		121	Experimental

*For further details see site profiles in Appendices II & III.

Table 7.10 – Sites and Sample Sizes for Case Study Two

sites in this region over the period from OIS 12 to 6 so changes have to be compared regionally. This is done using sites in France and Jersey. In addition I have included data from my study of an experimental blade assemblage knapped by John Lord.

In Africa we find Late Acheulean assemblages with radial prepared cores and blade technology and early MSA assemblages dating back at least as far as 250ka. There are no transitional assemblages and there are no sites where there is a continuous record between the Acheulean and MSA. Although this means that I have to be somewhat generalised in my interpretations, it does not prohibit the attempt. I have looked at several assemblages in the Kimberley region from sites designated as Late Acheulean and MSA. I have also looked further north and east at Bushman Rock Shelter (which is early MSA) and the Cave of Hearths that has both Acheulean and MSA layers.

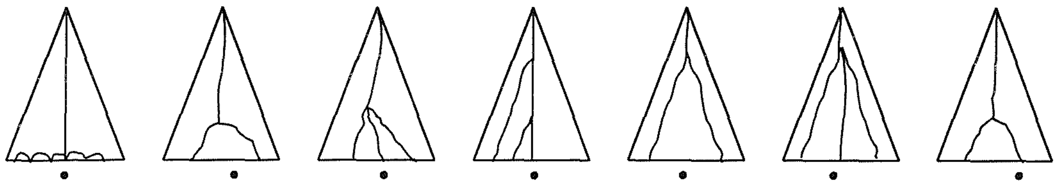
I have focused on one element of lithic analysis to illustrate my arguments. Using the non-PCT flakes from these Middle Pleistocene assemblages I have further developed an approach, originally instituted by McNabb (pers. comm.), for looking at dorsal ridge patterns (fig. 7.18). This new analysis system allows me to look at the patterns of flaking to analyse how hominids were structuring their flaking during the knapping process.

Four graphs compare the patterns of flaking in Europe and Africa (figs. 7.19-7.22). The reader should particularly note the number of flakes under the dorsal ridge type category 0, as these are the flakes that have no recognisable pattern (see fig. 7.18). These graphs demonstrate that,

1. There are differences between the Acheulean and the MSA/MP dorsal ridge patterns.
2. In Europe, the main difference to the African Acheulean is in the large number of biface thinning flakes in the assemblages (fig. 7.23). Unfortunately, the MP stone tools show fewer differences than the MSA African material. Radial flaking is more predominant in the MP, for example at LCB (fig. 7.24) and this does not show up as clearly amongst my dorsal ridge patterns. In brief, the dorsal ridge system I devised is more suitable for picking up patterns in assemblages with linear dorsal ridge patterns. It was only on completion of this analysis that this came to my attention. This means that the European dorsal ridge pattern is not as consistent or as outstanding as it is for the African assemblages.
3. In Africa, the Kimberley assemblages indicate that there is a shift in the types of dorsal ridge patterns from the late Acheulean sites to the MSA sites (fig. 7.25). A comparison across regions is interesting as the Cave of Hearths Bed 3 Acheulean (COH3) flakes are nearly 90% type 0, while the later Acheulean sites in the Kimberley area show a greater variety of dorsal ridge types with less than 70% type 0. At both the COH and BRS there are changes through time. At the COH there is an increase over time in convergent and parallel flake forms (fig. 7.26). At BRS flakes show increasing levels of structured dorsal ridge patterns over time. The MSA stone tools show a change to greater amounts of blade production, which is reflected

Figure 7.18 – Explanation of Dorsal Ridge Patterns

Convergent flakes

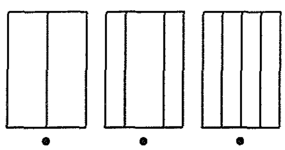


1 2 3 4 5 6 7

(dot = percussion point)

1 = convergent flake scars, this flake must be pointed or it belongs in the parallel flake section.
2 = convergent flake scars in a Y ridge pattern
3 = convergent flake scars in a fork ridge pattern
4 = convergent flake scars in a fork ridge pattern where the bulb of percussion is not centred
5 = convergent flake scars in a Y ridge pattern where the length of the central scars are over half the length of the flake
6 = convergent flake scars in a fork ridge pattern where the length of the central scars are over half the length of the flake
7 = convergent flake in a Y ridge pattern where the percussion point or bulb is not in the centre of the flake

Parallel flakes



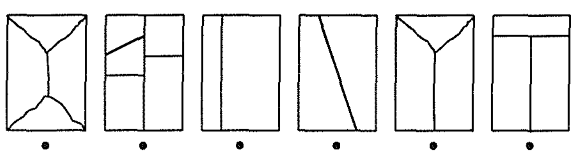
8 9 10

8(p) = parallel flake with one dorsal ridge
9 (p)= parallel flake with two dorsal ridges
10(p) = parallel flake with three or more dorsal ridges
(p) = this is added to the number if distal end is pointed

Radial flakes

11 = Radial scar pattern
12 = Levallois radial scar pattern

Other important flake ridge patterns



13 | 15 17 18 19 20

13/14(p) = Double Y pattern, p = pointed at the distal end
15/16(p) = Coincidental scars, p = pointed at the distal end
17 = Parallel flake scars but not in line with point of percussion or bulb
18 = Across ridge dorsal pattern
19 = Reverse Y ridge pattern
20 = T ridge pattern

Flakes with other ridge patterns

21 = Biface shaping flakes
22 = Biface tranchet flakes
0 = Flakes with scar patterns that do not follow any of the patterns above

Figure 7.19
Comparison of all flake dorsal ridge patterns from La Cotte de St Brelade (LCB) & the Experimental Collection (ExC)
(flakes used in this analysis do not include Levallois pieces)

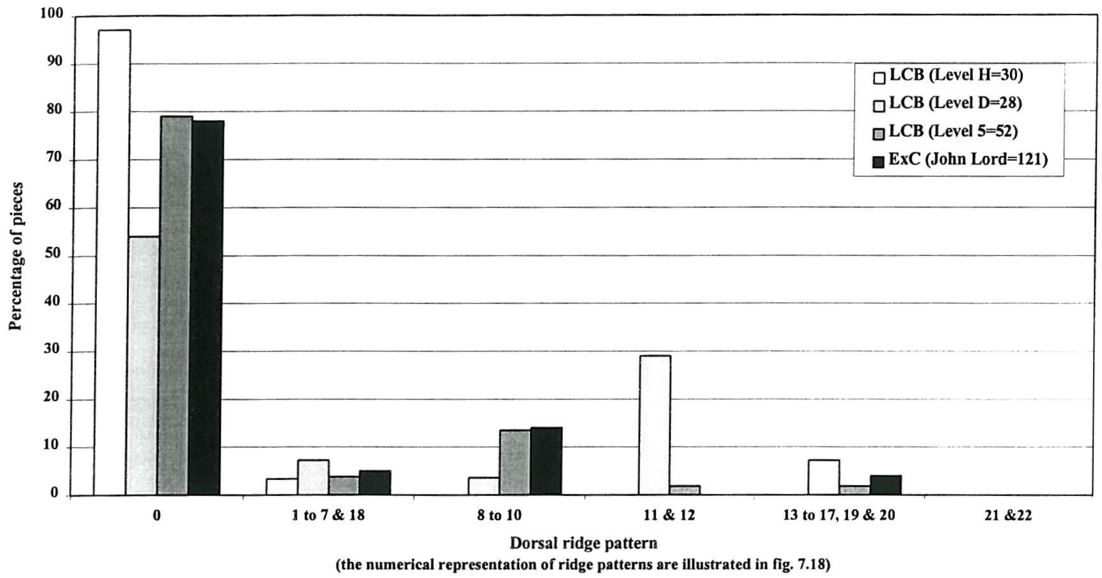


Figure 7.20
Comparison of all flake dorsal ridge patterns from French sites & Experimental Colletion
(flakes used in this analysis do not include Levallois pieces)

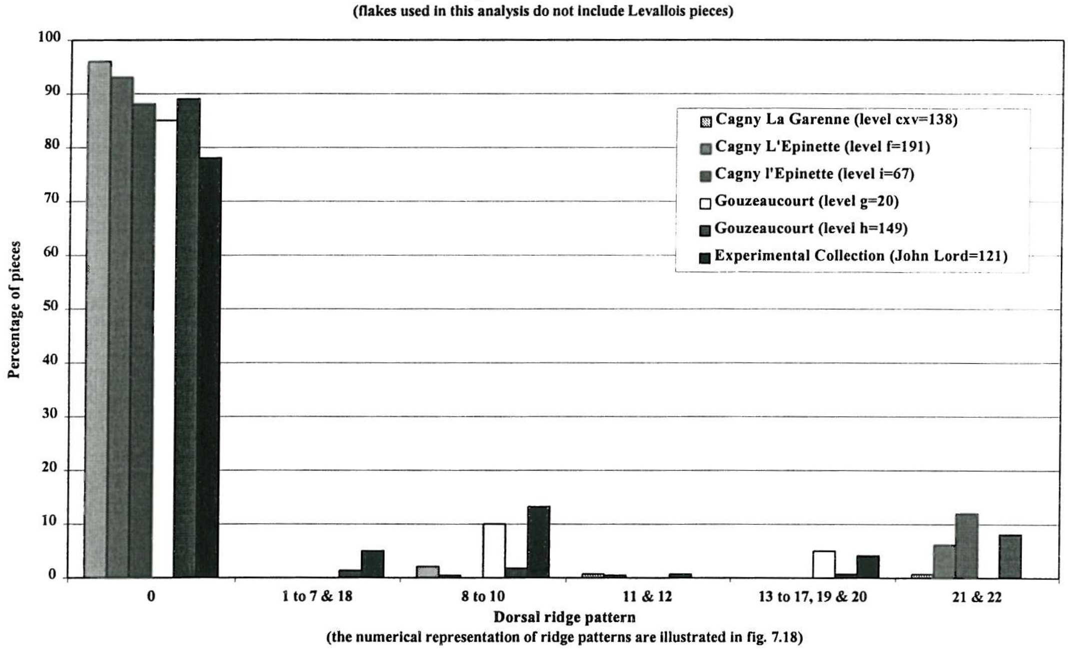


Figure 7.21
Comparison of all flake dorsal ridge patterns between South African sites in the Kimberley area
(flakes used in this analysis do not include Levallois pieces)

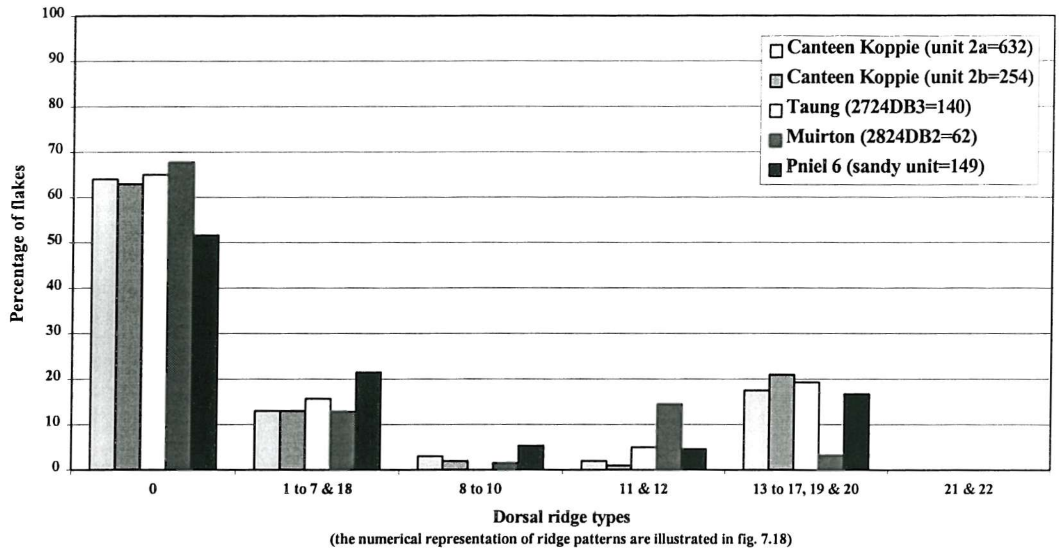


Figure 7.22
Comparison of all flake dorsal ridge patterns between northern South African sites
(flakes used in this analysis do not include Levallois pieces)

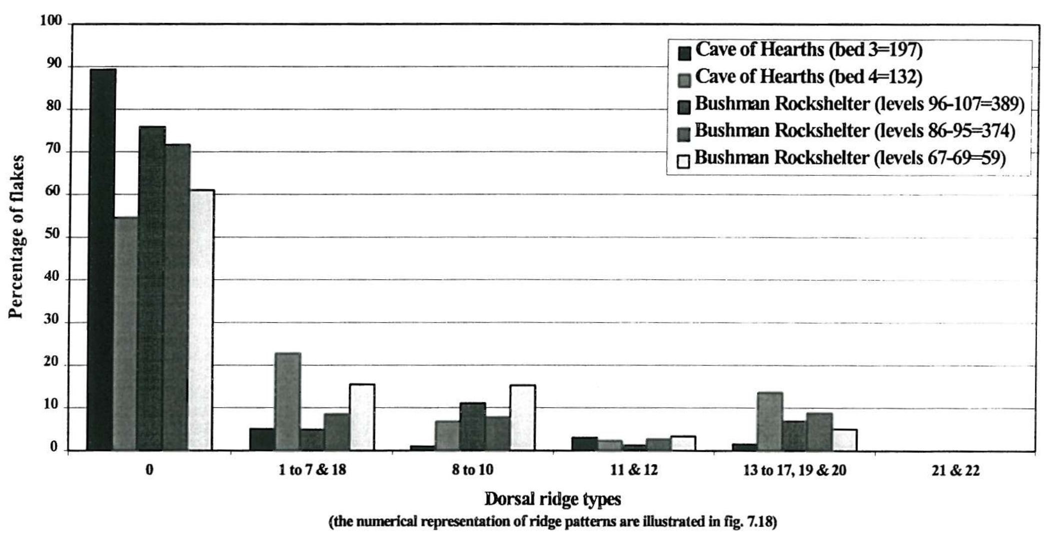


Figure 7.23
Comparison of flakes with dorsal ridge patterns from French sites & Experimental Colletion
(flakes used in this analysis do not include Levallois pieces)

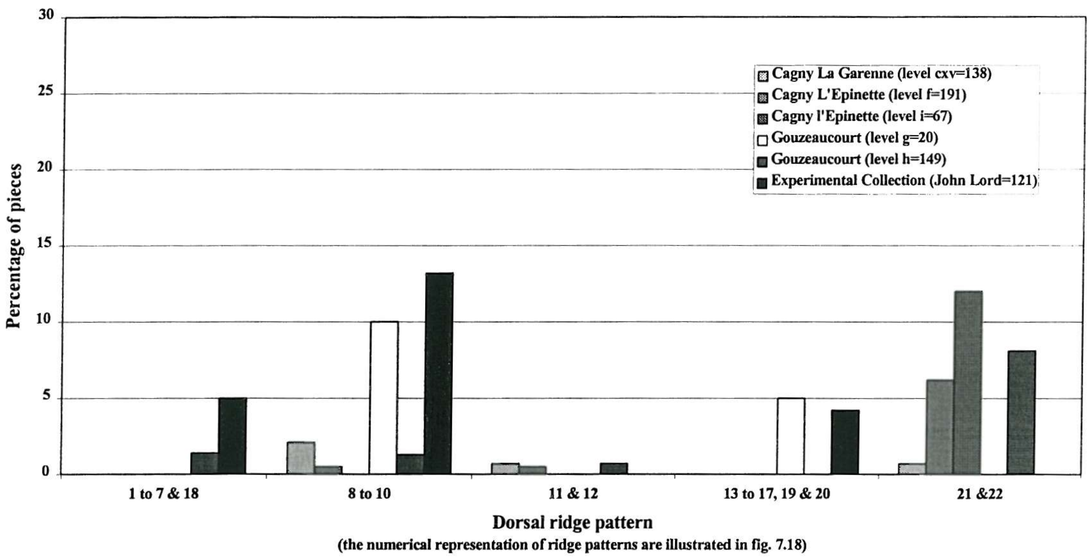


Figure 7.24
Comparison of flakes with dorsal ridge patterns from La Cotte de St Brelade (LCB) & the Experimental Collection (ExC)
(flakes used in this analysis do not include Levallois pieces)

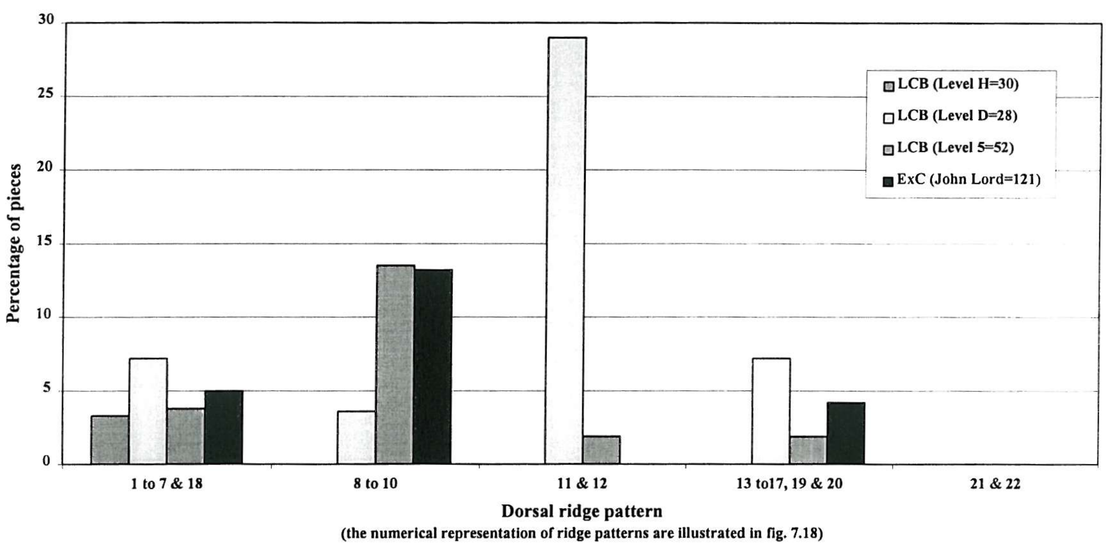


Figure 7.25
Comparison of flakes with dorsal ridge patterns between South African sites in the Kimberley area
(flakes used in this analysis do not include Levallois pieces)

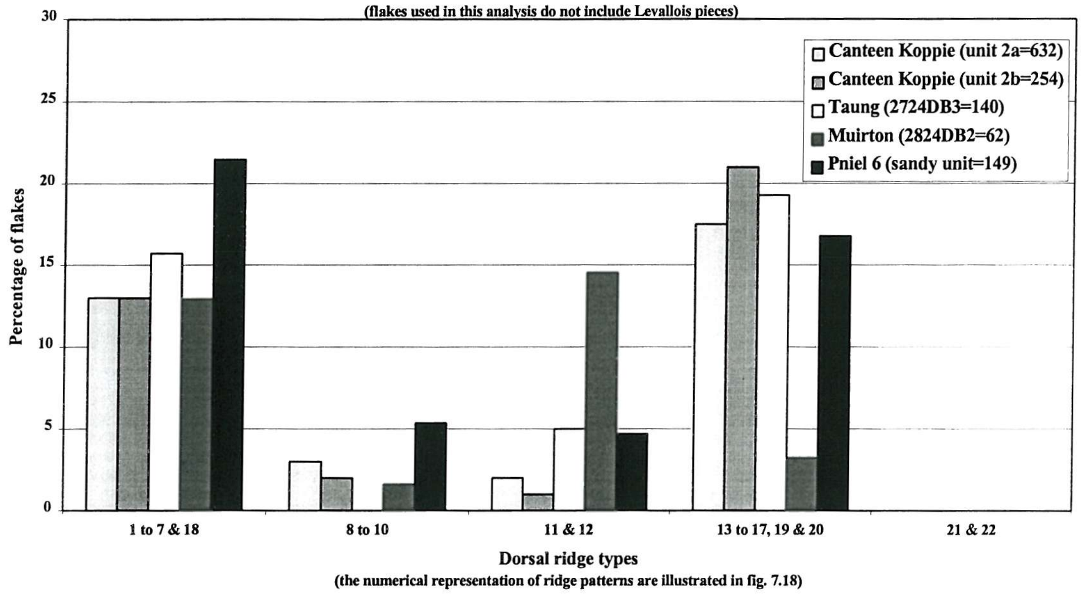
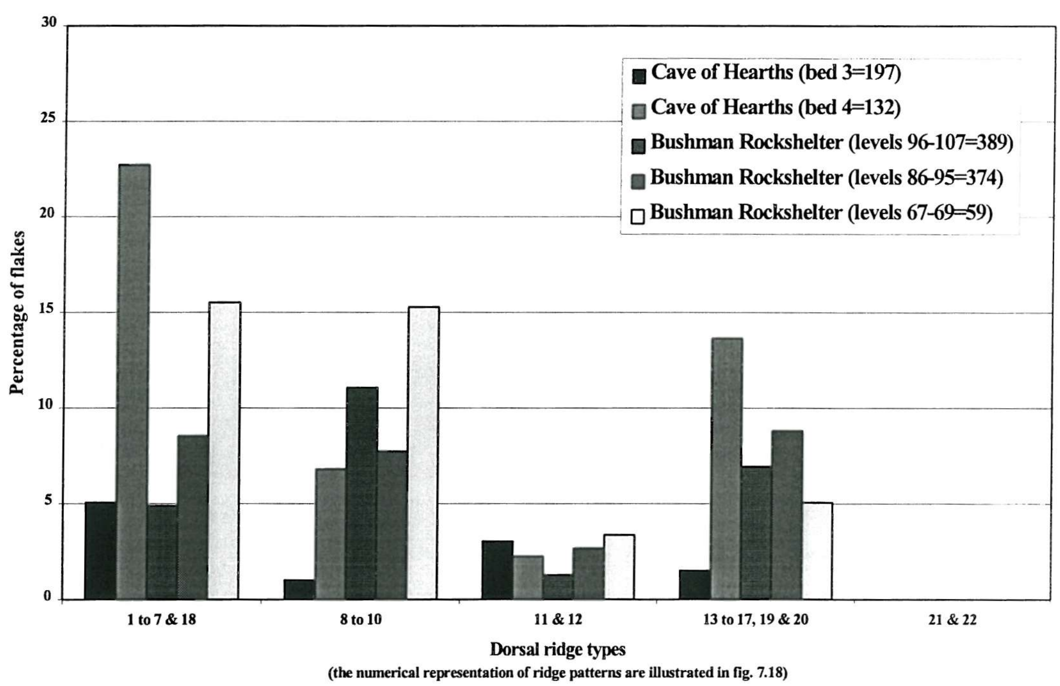


Figure 7.26
Comparison of flakes with dorsal ridge patterns between northern South African sites
(flakes used in this analysis do not include Levallois pieces)



in the linear dorsal ridge patterns overall. This is argued to represent a more rigid style of flaking regardless of whether hominids were producing prepared pieces or not. This is evident in the way that most of the flakes are knapped in the same manner, following a particular form of flaking, while the Acheulean flakes are knapped much more randomly and without specific dorsal ridge patterns. This is not meant to imply that the hominids aimed to produce particular styles of ridge pattern on their flakes, rather, they have a more structured manner of reducing a piece of raw material.

4. The experimental assemblage emphasises dorsal ridge pattern types 8 and 9, with parallel dorsal ridges significant in number. This is to be expected in an assemblage associated with blade production.

7.3.3 Interpretation: Social structure in ridge patterns

I have found is that the interpretations for the transition in Africa and Europe are very different and so I will discuss them independently. Comparisons are only made in the conclusion, when general pictures of each area are contrasted.

EUROPE

1. Flakes with dorsal ridge patterns (i.e. not type 0) are not common in the Acheulean or earliest MP. The only assemblages with patterns represented at levels greater than 20% are the later LCB Levels and the Experimental Collection.
2. There are many biface thinning flakes at the French sites (fig. 7.25). Although no biface thinning flakes were found in my study of South African sites this does not mean that they were not present. On the whole my study of handaxe flaking patterns has indicated that the handaxes were not as fully flaked in South Africa, which would lead to the production of fewer handaxe thinning flakes.
3. As radial flaking methods dominate in both the Acheulean and MP it is difficult to make interpretations of material using the dorsal ridge patterns. This is very different for the African assemblages where a significant contribution to the interpretation of the Middle Pleistocene can be made.

AFRICA

1. The patterns of flaking are very different between the Acheulean and MSA assemblages regardless of the presence of PCT.
2. This indicates that an overarching typology of technology can not be used alone for interpretation. Documenting the presence and continuation of PCT does not show how this is incorporated into an overall approach to making stone tools. A focus on PCT as <u>the</u> indicator does not reveal how this is acted out within the social framework.
3. The Acheulean and MSA flaking structures are so different that even with the same technology the approach used indicates a completely different behavioural makeup. This would suggest that a single technology cannot be equated with one behaviour, but rather the inscription of meaning occurs in the way it is used in particular settings at particular times.
4. The presence of PCT in the Acheulean has been seen as a forerunner to the MSA. In this way it has become a part of the proto or pre-modern path to eventual modernity. As I have argued, this concept is misleading and does not allow us to look at the incorporation of PCT within its own social dynamic. One of the interesting things that I have discussed in Chapter Three is the number of different ways in which PCT is used in the Acheulean.

Having broken down the boundary of the modern-non-modern concept, how do I look at the Acheulean to MSA change in the archaeological record?

1. Change in the Middle Pleistocene is a constant but not a consistent process. In this ongoing process stone tools should be viewed as a part of hominid action and interaction that create and recreate social institutions. The action is both the medium and the outcome of practises. We are never going to find the underlying reason for these changes, as change is not directional in its movement. Change is the result of multiple dynamics and cannot be explained in terms of a single underlying factor. What I see as important is the way this change is incorporated and reinterpreted by the societies that move into the MSA.
2. The evident change of production strategies described from the analysis of dorsal ridge patterns at South African sites suggests a relatively large change in group

structure occurs with the MSA. Social structures provide a framework for action and a change in lithic production would suggest a recursive change in the social order. Meaning is constructed through these social practices and although we may not be able to get at the precise everyday meanings the overall themes within which agents construct and reconstruct their world can be interpreted through their repetition in practice and space. This MSA change in the organisation and process of knapping suggests a change in the pattern of learning. The more structured approach to the perceived way of knapping, as demonstrated by the dorsal ridges, suggest alterations in social interaction that may imply a stricter code of behaviour.

7.3.4 Conclusions: Inhabiting change and changing habits

It is significant that the transformation between Acheulean and MP/MSA does seem to have been occurring at almost precisely the same time in Europe and Africa (precise being 10,000 years or so for the Pleistocene). But one must be wary. Although this is an extraordinary phenomenon, it does not mean that interpretations of these hominid groups should follow the same premises. So how is it that these changes are affecting group dynamics in different areas of the world?

In Europe Acheulean and MP ridge patterns at the French sites and La Cotte are all orientated around radial flaking. This contrasts with the flaking process at South African sites, which show changes between the Acheulean and MSA through differences in blade/laminar form. A change in the form of production is argued here to affect the architecture of the *habitus* (table 6.3) and in a reflexive process knapping projects were altered over time. In Europe, hominids were circling old courses with new approaches to raw material. The flaking process was maintained as mostly circular (radial) knapping of raw materials. The change is visible in the style of flaking as hominids move from shaping cobbles to preparing flakes. This is different in South Africa where the flaking process was altered as it changes from circular to linear knapping. In Africa, hominids are departing from their traditional knapping pattern to take on different raw material forms and a new linear route that leaves behind old places and reformulates the new ones. This is expressed in both raw material acquisition (changing from flake blanks to cobble blanks) and stone tool production. In this sense there are different forms of time being established in different places, which I argue synchronically alters identities.

7.4 CASE STUDY THREE: RETOUCH ROUTINES

7.4.1 Introduction: Borders of the past

Retouched stone tools are a key area of lithic analysis for the investigation of changes during the Middle Pleistocene and interpretations of hominid intentionality. The Mousterian and MSA are often characterised as having more variability through time and space than the earlier industries (Klein 1999(1989): 442). Generally, over the course of the Middle Pleistocene in Europe and Africa, retouch increases both in its quantity within lithic assemblages and in its regularity over the artefact surface. Variation in retouch types and amounts have been related to changes in style (Sackett 1982, 1985), function (Wiessner 1983, 1985) and cognition (Mellars 1996). In light of this information the following three issues are highlighted in this case study.

1. Retouched tools are discussed as a conceptual category (section 7.4.2). Previous work on retouched pieces is discussed in relation to technological and typological analyses and my own research on artefacts in Europe and Africa is described (table 7.11).
2. Social relations are interpreted from retouched artefacts at different sites (section 7.4.3). Previous work interpreting retouch patterns is critiqued. There is a new focus on the incorporation of retouch in the routinization of day to day life and the interpretation of agents identity via structure (refer to table 6.3).
3. Transformations in social relations during the Middle Pleistocene are discussed (section 7.4.4).

This case study demonstrates potential interpretations from my theoretical and practical approach, but stresses that the reader should view my account as preliminary, requiring further investigation. During the data collection procedure, my approach was not fully formulated. Categories of analysis were added to over time, and hence some site descriptions are more detailed than others. In addition, I had initially thought that I could draw heavily on data from published analyses for making further and broader

COUNTRY	SITE*	RETOUCH SAMPLE SIZE
UK	La Cotte de St Brelade, Level 5	5
	La Cotte de St Brelade, Level A	14
	La Cotte de St Brelade, Level D	37
	La Cotte de St Brelade, Level H	30
France	Gouzeaucourt, Level G	13
	Gouzeaucourt, Level H	24
	Cagny La Garenne, CXV	8
	Cagny L'Epinette, Level F	32
	Cagny L'Epinette, Level I	3
South Africa	Bushman Rockshelter, Levels 67-69 (70-85 not studied)	10
	Bushman Rockshelter, Levels 86-89 (none in 90-95)	3
	Bushman Rockshelter, Levels 96-99	26
	Bushman Rockshelter, Levels 100-102 (none in 103-107)	28
	Canteen Koppie, Unit 2a	36
	Canteen Koppie, Unit 2b	16
	Muirton	47
	Pniel 6 MSA	10
	Taung DB3	9

*For further details see site profiles in Appendices II & III.

Table 7.11 – Sites and Sample Sizes for Case Study Three

interpretations, and therefore I limited my sample size at some sites. I had not realised the wide range of possibilities for interpretation arising from the investigation of retouched pieces in the way presented here (and Appendix I.4) or the many problems with the typological process (section 7.4.2). In addition some sites only have a few retouched pieces, which suggests that emphasis on social relations was not here and habitual discourse took place through an alternate medium of artefact production.

7.4.2 Discussion: Touching on Relations

Retouch remains an important category in stone tool analysis, as it is a visible production of a working edge that establishes hominid intention and adds emphasis to particular flakes and tool edges. There are two main approaches to lithic analyses; typology (e.g. Bordes 1961a, Debenath & Dibble 1994) and technology (e.g. Boëda 1993a), which are usually linked for interpretation (e.g. Thackeray & Kelly 1988, Inizan et al. 1992). The problem with both typological and technological analyses is that there is a tendency either to name an object as one 'thing' or to emphasise one element of the technology over others. So object variations tend to be totalled as one figure and we end up with singular categories such as end scraper, denticulate, or backed blade, which do not compare the variation within that individual type (see variation arguments in Chapter Five). Typologies and the typology of technology have a host of problems (table 7.12) and critiques of this approach to analysis have been ongoing for several years (Sackett 1988, Villa 1991). In this critique of present analytical procedures there is a focus on the Bordes typology (1961a) as it has continued to play a dominant role in Lower and Middle Palaeolithic studies as well as influencing research further afield in Africa (table 7.12). However this critique is applicable to many of the other typological schemes.

Problems with Typological Analysis	Critique by
1. System is overtly subjective	Bisson 2000
2. System was designed for the limited research objective of culture chronology.	Sackett 1991
3. There is a mix of technological and functional variables. Mixing variables conceals other important relationships.	Mellars 1996, Bisson 2000
4. Analytical variables are not equally weighted across artefact types. There are more scraper types (n=24) than denticulated types.	Bisson 2000
5. Typology is two-dimensional, based largely on flake plan form and thereby ignoring the third dimension of edge angle (a factor in only 5 of Bordes' 63 types).	Bisson 2000
6. Typological emphasis could be on one or combinations of factors related to flake blank or edge.	Bisson 2000, Wobst 2000
7. Typological analyses incorporate assumptions of cognition and behaviour in description.	Rolland 1981; Dibble 1987, 1989, 1995a; Barton 1988
8. Problem as a typological system implies standardisation, but investigations suggest that individual classifiers see the same artefact types differently.	Dibble 1995b

Table 7.12 – Problems with typological analyses of lithic assemblages

The problem with typological research does not lie in appellations. For the interpretation of lithic assemblages we need to name characteristics that establish patterns in the data. Patterns come about through applying standard, replicable criteria to order data for comparison and description. Bordes (1961a) provided a preliminary framework for this, but his system has since proved to be incompatible with modern research knowledge (table 7.12). Rather than continue within this framework, Bisson (2000: 22) proposes that we move from an artefact typology to an attribute typology looking at artefacts through a tripartite scheme of variables. However, I believe that the retouch methodology set out by Inizan et al. (1992: 68) gives a wider range of possibilities for interpretation by using seven criteria (listed in Appendix I.4 and table 7.13). This may also limit the problematic differences between researchers (Dibble 1995b, point 8 in table 7.12), as each artefact is classified into several smaller units of analysis. I believe that it is necessary to examine a wide range of retouch attributes within the different tool type categories. In this sense reconstructing constellations of knowledge that cross boundaries in modern perceived tool form to create a pattern of lithic reduction (Sinclair 2000). This follows the approach to interpretation applied in the other two case studies, which focus on portions of the biface and patterns across flake types. Rather than focusing only on outline shape combined with retouch type, the analysis focuses on sets of techniques that are socially mediated across retouched lithic artefacts. Within recognised attributes there is considerable variability. It is this variation on forms that embodies changing relationships between form, raw material and techniques. From this viewpoint retouch is the study of hominid action via material interference (c.f. Wobst 2000). Wobst (*ibid.*: 45-6) suggests new potential directions in retouch interpretation by proposing a series of very interesting questions to answer. I have made use of some of these questions to direct the analysis and interpretation of my own data (table 7.13). To begin, I describe the data from each site and this is followed in the next section (7.4.3) by my interpretations.

QUESTION	CATEGORY	RETOUCH ANALYSIS*
1. Is the working edge the same over many tool types?	Tool type	Morphology & Angle
2. Does the working edge link particular sets of lithics together?	Raw material	Angle & Delineation
3. Are some working edges bound by particular measurements?	Size	Position & Delineation
4. To what degree are working edges tied to particular context(s)?	Level	Delineation & Morphology
5. What is the relationship between the frame (blank/other edges) and the working edge?	Blank type	Location & Position
6. What disrupts the allocation of form?	Whole flakes	Extent & Distribution
7. What forms of lithic variation manipulate the rule-boundedness of given social relations?	Tool type	Distribution & Extent

* See also retouch recording procedure in Appendix I.4.

Table 7.13 – Retouch analysis questions and procedure

CAGNY LA GARENNE - CXV

1. I found eight retouched pieces, all flint flakes, amongst the assemblage that I studied. These results are numerically similar to Lamotte's investigation (2001).
2. The retouched flakes (length = 57-85mm) were almost in the middle of the size range of all whole flakes (length = 45-126mm).
3. The are six nibbled pieces, one notched piece and one combined piece with nibbling and a notch. All of the pieces are retouched on one side of the flake blank and have some cortex on their surface. There is a focus on the distal end (n=6) and continuous retouch along the edge of these six pieces. The retouched edges are either concave (n=2) or convex (n=5) and one retouched piece has both. All retouch is restricted to the edge of the artefact and the retouch is relatively steep in angle.

CAGNY L'EPINETTE

1. This discussion focuses on the 32 retouched pieces from Level F (table 7.14), as there were only 3 from my sample of Level I. The size range of the retouched pieces (length=54-116mm) is comparable to the whole flakes (length=54-116mm).
2. Retouch in Level F is mostly parallel flaking (n=23) along the lateral edges (n=19). Half of the pieces have retouch confined to the artefact margin, while the other half have invasive retouch. The angle tends to be semi-abrupt (n=28) regardless of retouch type. Most retouch is on one side of the artefact (n=21) and is partial and continuous (n=29) along the margin. Some artefacts have alternate retouch (n=7).

Cagny L'Epinette – study sample				
Retouch type	**Description**	**Level**		**Total**
		F	**I**	
Single type	**Nibble**	16	2	**18**
	Denticulate	5	1	**6**
	Notch	4	-	**4**
	Point	1	-	**1**
	Flake chopper	1	-	**1**
Multiple type	**Nibble & Denticulate**	1	-	**1**
	Nibble & Notch	1	-	**1**
	Denticulate & Flaked flake	1	-	**1**
	Denticulate & Notch	2	-	**2**
TOTAL		**32**	**3**	**35**

Table 7.14 – Retouched tool sample from Cagny L'Epinette

3. In Level F retouch delineation displays a variety of morphologies (concave = 4, convex = 2, concave and convex = 2, pointed = 1, straight = 16 and notched = 4).

GOUZEAUCOURT – LEVELS G & H

1. I discuss the two levels together, as they have produced similar results (table 7.15).
2. Retouched pieces (length = 42-89mm) are within the size range of all whole flakes (length = 26-92mm).
3. For the most part retouch is only the dorsal surface of the flakes (n=25).
4. Retouch is mostly continuous (n=21) and either straight (n=10) or convex (n=14) in delineation.
5. Retouch is located on a combination of lateral and distal sides (n=27). It should be noted, in Level H there are 4 artefacts with retouch around their circumference.
6. The artefacts divide into two groups with half having long and/or invasive retouch and the other half having retouch confined to the artefact margin.
7. Retouched edge angles are low in Level G (n=11), but steeper in Level H (n=16).

Gouzeaucourt – study sample				
Retouch type	**Description**	**Level**		**Total**
		G	**H**	
Single type	**Nibble**	7	15	**22**
	Denticulate	1	5	**6**
	Notch	1	1	**2**
	Point (convergent nibble)	3	1	**4**
Multiple type	**Nibble & Denticulate**	-	1	**1**
	Nibble & Denticulate (convergent)	1	-	**1**
	Nibble & Notch	-	1	**1**
TOTAL		**13**	**24**	**37**

Table 7.15 – Retouched tool sample from Gouzeaucourt

LA COTTE DE ST BRELADE (LCB)

1. Retouched artefacts in the four layers (5, A, D, and H) studied occurs on between 13% and 25% of the flint artefact assemblage (Callow & Cornford 1986), which makes this process a regular practise at LCB. Retouched artefact size (length=23-119mm) matches the flake range (length =21-119mm).

2. My sample (table 7.16) follows one of the patterns described by Callow (*ibid.*), as amongst the flint tools, notches and denticulated artefacts dominate in Layer H, while the later layers (D, A and 5) have a high percentage of scrapers (in my study nibble retouch). This contrasts with the quartz tools where denticulated and notched artefacts are nearly equal in number to scrapers.
3. Layer H has much steeper retouched edge angles across the tool types (steep n=14) than the later layers (steep n=4 and all of these are from Layer D).
4. The majority of my sample has only dorsal retouch (n=52). The most common type is along just one lateral edge (n=30). There are 8 pieces retouched around the circumference. Retouch is mostly confined to the artefact margin (n=63).

La Cotte de St Brelade – study sample						
Retouch type	**Description**	**Layer**				**Total**
		5	**A**	**D**	**H**	
Single type	**Nibble**	4	14	29	8	**55**
	Denticulate	-	-	1	9	**10**
	Notch	-	-	3	10	**13**
Multiple type	**Nibble & Denticulate**	1	-	-	-	**1**
	Nibble & Notch	-	-	4	1	**5**
	Notch & Denticulate	-	-	-	2	**2**
TOTAL		**5**	**14**	**37**	**30**	**86**

Table 7.16 – Retouched tool sample from La Cotte de St Brelade

BUSHMAN ROCKSHELTER (BRS)

1. I analysed the entire excavated sample from several levels at this site (table 7.11). There are very few retouched pieces within the BRS assemblage (table 7.17). This is thought to be characteristic of South African MSA I assemblages (Volman 1984).
2. Retouched pieces from Levels 67 to 69 (n=10) are all laterally nibbled pieces with the exception of one flaked flake and one broken denticulate. Levels 86 to 89 (n=3) have two broken denticulated prepared flakes (1 levallois, 1 blade) and one piece with a notch on the platform. There are only two other prepared flakes amongst the whole collection of retouched pieces and there are no other flakes with notches on their platforms.
3. The rest of the discussion concentrates on the earlier levels, Levels 96 to 99 and 100 to 102, which are discussed together as no stark contrasts were found between them.

Bushman Rockshelter – Retouched Artefacts							
BRS Level	Blank	Chert	Hornfels	Quartz	Quartzite	Total	% of total assemblage
67 to 69	Flake	-	2	2	1	5	N=670 %=1.50
	Incomplete Flake	-	-	1	-	1	
	Broken retouched piece	-	1	3	-	4	
	TOTAL	**0**	**3**	**6**	**1**	**10**	
86 to 89	Flake	-	1	-	-	1	N=1364 %=0.22
	Blade	1	-	-	-	1	
	Levallois incomplete flake	-	1	-	-	1	
	TOTAL	**1**	**2**	**0**	**0**	**3**	
96 to 99	Flake	-	-	6	1	7	N=2569 %=1.01
	Incomplete flake	1	3	9	1	14	
	Levallois flake	-	1	-	-	1	
	Broken	-	1	1	2	4	
	TOTAL	**1**	**5**	**16**	**4**	**26**	
100 to 102	Flake	1	5	5	3	14	N=1958 %=1.43
	Incomplete flake	2	1	2	-	5	
	Incomplete blade	-	-	-	1	1	
	Chunk	-	-	1	-	1	
	Broken	-	3	2	2	7	
	TOTAL	**3**	**9**	**10**	**6**	**28**	
GRAND TOTAL		**5**	**19**	**32**	**11**	**67**	N=5891 %=1.14

Table 7.17 – Bushman Rockshelter retouched artefact blanks and raw material types

4. The majority of the retouched pieces are made in quartz raw materials, which is consistent with the overall assemblage pattern. Worked edges are similar across raw material types, except for those pieces with combination edge types (i.e. artefacts with more than one of the following; denticulate, notch and nibble), of which five out of the six pieces are in hornfels (the other one is in quartz).
5. Both of the retouched convergent points are from Level 96.
6. Different types of working edge crosscut artefact blanks and sizes. The retouch size range (length=17-76mm) sits within the whole flake size range (length=6-117mm). Nearly half of the retouch is stepped (n=24) and most retouch is limited to the tool edge (n=37). The majority of the pieces have retouch on just one side of the blank (n=42), usually the dorsal surface (n=36), and mostly on the lateral edges (n=45).

The distribution of retouch is not usually discontinuous (n=10) along the edge. There are only a few pieces with a combination of working edges (n=6), most lithics have a singular form of retouch of nibble (n=23), denticulate (n=12), notch (n=9) or flaked flake (n=4).

CANTEEN KOPPIE

1. The retouched piece size range is mostly between 81-160mm (unit 2a = 61%, unit 2b = 75%), which is larger than the average flake size where only 30% are in the 81-160mm size range. Andesite is the dominant raw material type (unit 2a = 72%, unit 2b = 87%) for retouched pieces, which is consistent with the assemblage pattern.
2. Unit 2a is dominated by scrapers and flaked flakes (table 7.18). It is interesting to note that both of the retouched points are not made in andesite.
3. Unit 2b is dominated by denticulates (table 7.18).

Canteen Koppie			
Retouch type	**Unit 2a**	**Unit 2b**	**TOTAL**
Scraper	18	2	20
Denticulate	2	9	11
Points	2	1	3
Flaked Flakes	13	2	15
General retouch	1	2	3
TOTAL	**36**	**16**	**52**

Table 7.18 – Retouched tool sample from Canteen Koppie

MUIRTON

1. The retouched pieces (length=28-104mm) are all quartzite, except for 1 shale piece. They are similar in raw material and size range to the whole assemblage (length=21-146mm). I found far fewer retouched pieces than Humphreys (1969, Table III.5).
2. The retouch is mostly nibbled edges on one side of the artefact (table 7.19).
3. There are three flakes that are retouched around their circumference.
4. The delineation of retouch is varied across tool types (straight = 48%, convex = 22%, concave = 15%, convergent = 11%, concave & convex = 4%).
5. Most of the retouched edges have a low angle (80%) and the extent of the retouch is confined to the artefact margin (66%).

Muirton – study sample				
Retouch type	**Description**	**Retouch Position**		**Total**
		1 Side of artefact	**2 Sides of artefact**	
Single type	**Nibble**	19	8	**27**
	Denticulate	6	4	**10**
	Notch	1	-	**1**
	Flaked flake	3	2	**5**
	Bulb removal	1	1	**2**
Multiple type	**Nibble & Denticulate**	-	1	**1**
	Nibble & Notch	1	-	**1**
TOTAL		**31**	**16**	**47**

Table 7.19 – Retouched tool sample from Muirton

PNIEL 6 - MSA

1. The retouched pieces follow the assemblage trend, as felsite is dominant (n=8) and there is one opaline and one quartz piece. These pieces fit well within the size range (length = 26-82mm) of the rest of the debitage (length = 21-174mm).
2. There are very few retouched pieces here, only ten out of over one thousand flakes and flake fragments (Appendix III.5.2).
3. The retouched pieces are mostly on whole non-cortical flakes (n=7), although there is one chunk.
4. There is a mix of retouch types (table 7.20)

Retouch type	**Pniel 6 – MSA**		**Taung DB3**
	TOTAL		**TOTAL**
Scrapers	1		-
Denticulates	1		1
Backed Segment	1		-
Notched Pieces	-		1
Flaked Flakes	4		1
General retouch	3		6
TOTAL	**10**		**9**

Table 7.20 – Retouched tool samples from Pniel 6 MSA and Taung DB3

TAUNG DB3

1. All retouched flakes (table 7.20) are quartzite (length = 58-141mm), following the overall assemblage profile in raw material type and size range (length = 21-253mm).

2. The retouch is always unifacial although it occurs more frequently on the ventral (n=5) than the dorsal (n=2) surface.
3. Three of the general retouch pieces have retouch on the ventral surface with the specific intention of thinning the flake and removing the bulb.
4. All of the retouched edges have an acute angle.

7.4.3 Interpretation: Styling stone?

So far, table 7.13 has only been used to assist in the description of retouch at the different sites. This section combines those previous questions and the ensuing descriptions to produce interpretations. However, to begin there is a discussion of previous interpretations of retouched artefacts.

The key importance for interpreting retouch at both a technological and typological level is variation. Currently the interpretative process can be summarised in table 7.21. The main problem with these interpretations is that they tend to be orientated around a tool – tool relationship, i.e., tools are related to tools not their users. Table 7.21 demonstrates that there is little interpretation of hominid input into action as retouch is

Current Interpretations of Variation in Retouched Lithic Artefacts	***Argument put forward by****
Determines the cultural sequence.	Bordes 1961b
Establishes preferred style or ethnic group.	Bordes 1961b
Indicates cognitive abilities in shape and symmetry through understanding retouched tools as having an 'imposed form'.	Bordes 1965; Mellars 1989, 1991
Consequence of function within culture and the environment.	Binford & Binford 1966; Binford 1973
Consequence of the reduction of different raw material types.	Rolland 1981
Consequence of the reduction process, as shape is determined by resharpening.	Jelinek 1976, Dibble 1995a
Consequence of the reduction process, as shape is determined by initial blank form.	Kuhn 1992, Mellars 1996

* Only some of the main authors are referenced although these views are discussed by many other researchers.

Table 7.21 – Current interpretations of variation in retouched lithic artefacts

predetermined by raw material type, function or a style representing group structure. Rather, I suggest that instead, it could be argued that raw material offers opportunities for the exploitation of hominid expressions (Sinclair 2000: 208). Similarly, tool functions and styles are also a part of hominid interaction and social relations.

Another problem with current interpretations is that the use of typology usually leads to the study of the whole artefact thereby focusing on the endpoint of action rather than the variety of attributes on any one piece. Studying the different actions taking place through multiple attribute analysis puts stone tools in a more dynamic sphere. There has been a focus on the structure behind retouch rather than the retouch itself (Bisson 2000). This has tended to focus on the choice of blank form for retouch (*ibid.*) rather than the interpretation of social relations through altered retouch forms. This is unfortunate as the reworked edge, which is visible as retouch, provides direct evidence that can help establish agency and therefore *praxis*. Visibly, retouch both interferes with tools and social relations, as it is direct evidence of actions that both contest and hold up social structures. This is now discussed in the interpretation of the European and African lithic samples.

EUROPE

1. The Acheulean assemblage of Cagny La Garenne has very few retouched pieces and they are all very similar in form. Similarly, at Boxgrove retouch is barely mentioned in the site report (Roberts and Parfitt 1999) and therefore seems to be only rarely present. There are a few flake tools from Unit 4c. Interestingly the illustrated transverse scraper from GTP27 (Roberts 1999: 345) looks as though it was a flake from the biface production process. At the Acheulean sites that I have examined, retouch is not a regular means by which relations are contested and the focus of expression seems to lie in the biface forms.
2. This is different to the MP where there are significantly more retouched pieces. This can be developed in relation to a framework of accumulation and fragmentation (table 7.22), where in some cases there is a transformation of edge type across tools and in others edge type is particular to a tool type.

CONTEXT	ACTION	RETOUCHED TOOLS	IDENTITY
Performance emphasising ACCUMULATION*	Sets Tools match together	**Edges same** Tool types different	Transformations through routinization
Performance emphasising FRAGMENTATION*	Networks Tools are a mix of types	**Edges different** Tools different	Transformations through positioning

These concepts originate from Chapman (2000) but have been developed further here, particularly in Chapter Eight (see table 8.4).

Table 7.22 – The changing relations of retouched pieces in the materialisation of social identity. (See link with Case Study One, table 7.9)

3. Level F at Cagny L'Epinette has a very mixed delineation of edges suggesting that the outline is not standardised and transformation is occurring through positioning (table 7.22). This is supported by the several pieces with mixed retouch types, which suggests a performance emphasising fragmentation. There are a number of pieces with alternate retouch, which may suggest a link to biface manufacture, abundant at this site.
4. A repeated lithic form is not an indicator of group ethnicity but a contested identity shored up through material interference (Wobst 2000: 47). At Gouzeaucourt knapping techniques were closely monitored across bifaces and retouched pieces in a performance suggesting accumulation (table 7.22). The small but significant number of pieces with retouch around the entire circumference could be used to suggest that hominids are spacing action of hominids in relation to retouch spacing as a circular and accumulative process. Here retouch may be considered in relation to the accumulation of artefact sets and hominids, perhaps to unify a group through identifying with similar actions and forms. Here transformations are occurring as agents establish their identity in different tool types via the structure of similar tool edges.
5. At LCB retouch was a routine part of everyday performance which seemed to demand particular edges with particular raw material types. The use of retouch on specific raw materials to contest relations is not surprising at a site where raw material has to be collected from some distance. This suggests a pattern of

fragmentation, perhaps tied into networks of hominids and raw materials, as different edges are positioned on different raw material types.

AFRICA

1. At Canteen Koppie the retouched points are made in an infrequently used raw material. It could be suggested that this may embody an identity of boldness as differential raw material choice may have demanded exactitude in production.
2. Unusually, at Taung DB3 the focus of retouch is on the ventral surface. It could be suggested that marking the ventral side of artefact and the removal of the bulb was significant. It may have been that artefact knapping was undertaken in private and the process was hidden from view by removal of the bulb.
3. Muirton is one of the few sites with pieces retouched around their circumference (BRS also has two pieces). Although there is variation in the retouch position and delineation, in general only one form of retouch type is present on each piece.
4. Although at the Acheulean sites retouch is infrequent, where it is present it does seem to have very particular purposes such as bulb removal or point production. This suggests that when retouch is a part of the process it is important in determining social relations.
5. This is different to the early MSA sites where although there are not many retouched pieces, they also do not stand out as significant in contesting and establishing relations. At both BRS (table 7.17) and Pniel 6 MSA retouch is not a standard procedure. Although there are similar numbers of retouched pieces to the other sites, proportional to the number of flakes present, there are far fewer. At BRS retouch is not present in many of the levels that I studied. Where it does occur, the retouch is very particularly placed, such as on the platform or on prepared flakes suggesting that it holds a particular significance. The working edges are the same across raw material types, which may suggest that contesting relations does not relate to the collection and use of different raw materials. At Pniel 6 the few retouched artefacts present are very diverse in form and it is suggested that they did not constitute a part of everyday interaction.

7.4.4 Conclusion: On the edge of transformation

In summary, for social relations to be recognised and differentiated, variation needs to be allowed to vary. This may seem a somewhat trite conclusion but the importance is that artefact attribute differences should not be combined into a singular type for interpretation, particularly when looking at many sites that may emphasise very different variables. For example, some sites seem to contest social relations through raw material type, such as Canteen Koppie, which may emphasise particular levels of social control in the collection and distribution of raw materials and artefacts. Other sites, such as Cagny L'Epinette have a very mixed delineation of retouched edges that may suggest the constant testing of the boundaries of social relations. Overall, once again there is a very different pattern in the lithics between Europe and Africa. Retouched pieces in the Acheulean of South African seem focused towards specific relations while in Europe retouch seems to be more sporadic. In contrast, in the MP retouch becomes an important factor, while in the early MSA of South Africa retouch is virtually non-existent. In light of this, how do transformations work in relation to retouch and the Middle Pleistocene?

One way of approaching this question is through a combination of retouch analysis and overall assemblage variability that combines the other two case studies from this Chapter. In Europe there are similarities to the discussion on biface flaking patterns. Again, the possibility exists to look at the relationship between bifaces and retouched pieces, but this time through an investigation of the working edge. It is argued that during the Acheulean working edges were materialised through bifaces and hence retouched pieces have a different relationship within the assemblage composition to that of the MP. At the Europe Acheulean sites I have studied, biface production was the dominant place for social discourse. At both Cagny La Garenne (CLG) and Boxgrove there are interesting flaking procedures, large flake removals from bifaces at CLG, and tranchet removals from Boxgrove bifaces. Hence I suggest that the reason for a lack of retouched pieces, is because relations were not regularly contested through this form of action. This changes towards the end of the Middle Pleistocene. As bifaces become flaked from flake blanks rather than cobbles, at sites such as Gouzeaucourt, flakes were also reflaked. The artefacts were linked as one approach crosses different types. The number of alternately retouched flakes at Cagny L'Epinette also supports this argument. The pattern of circular flaking applied to bifaces, retouched and Levallois pieces may have been a way of bringing hominids together through different artefact forms with similar patterns to accumulate artefacts as a set and establish group cohesion.

It would seem that in the South African Acheulean, retouch is more important than during the same time period in Europe. This may be related to an enchainment process of actions. As large boulders were marked by flake scars so the flakes they produced were marked as a representation of the actions taking place. As blank production was important in establishing position in social relations so marking the blanks would have deferred this relationship. However, in the lead up to and during the earliest MSA there is a shift in raw materials and flaking technology. Raw materials changed in type, to shales and opalines, and in form, to smaller slabs and cobbles, as new procedures in the form of laminar flaking were also instigated. I suggest that retouch was not continued as a regular practice in the MSA because retouch amongst Acheulean assemblages was specific to the particular activities I have described above. When these activities were no longer used, retouch did not continue as a practice. In addition the focus on laminar production in the MSA for particular flake forms is thought to have emphasised control over the production process. If control was produced in these forms, retouching may have undermined this.

With all of these knapping procedures in mind, I now turn in Chapter Eight to look at the implications of these events within the wider taskscape, as hominids move between actions and locations and situate themselves within the varying contexts of Middle Pleistocene life.

CHAPTER EIGHT

CASE STUDIES: LANDSCAPES & TEMPORALITY

"If you seek a monument, gaze around."
Inscription, St. Paul's Cathedral, London, attributed to the son of Sir Christopher Wren

CONTENTS OF CHAPTER EIGHT

8.1 INTRODUCTION

Stone Age interpretations have remained in theoretical isolation from research on later archaeological periods partly because of the barriers drawn up by the perceived distance in, and conflation of, time and space. This has limited potential alternative interpretations because contexts are not thought to be detailed enough (spatially) or precise enough (chronologically) to divulge hominid social behaviours. Hence change and variation are discussed at a broad scale and interpreted according to universal schemes. Here I take the five forms of context (tables 4.1 & 5.1) to highlight how these problems, discussed in Chapters Four and Five, are present in interpretations of specific Middle Pleistocene archaeological sites. These sites are then re-interpreted using the alternative approaches I have developed in Chapters Four through Six, and their relationship to the Acheulean-MP/MSA transition is discussed. Only essential site details, relevant to the interpretation, are mentioned in the text, and so the reader is encouraged to look at the site profiles found in Appendices II & III.

My arguments are stressed differently in these two case studies with one focused on the contextual issues covered in Chapter Four and the other on change and variation from Chapter Five. Case Study Four examines how space is constructed through time and time is constructed by space in South Africa (**section 8.2**). Case Study Five uses the social context to interpret time through change in Europe in relation to material culture (**section 8.3**). The intention of both studies is to demonstrate possible means by which the methodology put forward in Chapter Six can be used to interpret the ways in which hominids used their landscape through time to project and contest a series of specific social and cultural identities. However, precision is not a possibility when looking at life and culture where a multiplicity of meanings and actions occur. Rather, the goal is to look at changes in the rhythms of social life during the Middle Pleistocene. An overall summary is not provided at the end of this chapter. The purpose of Chapter Nine is to provide a conclusion by threading together all the Case Studies in a discussion of the hominid world during the Middle Pleistocene.

8.2 CASE STUDY FOUR: SOUTH AFRICA, SOCIAL PLACES & TIMING SPACES

8.2.1 Introduction

It has been argued in Chapter Four that current research on the Middle Pleistocene is lacking an awareness of the structural relations between hominids, places and stone tools. This case study looks at the South African Acheulean and Middle Stone Age using what I have defined as a social spatial context (table 4.2). The aim is to explore the five forms of social context through South African archaeological sites to discuss the social practices embedded in their taskscapes (Ingold 1993). In table 8.1 the social context is divided into five variations indicating that its expression in the taskscape is multiple. Therefore I do not follow these five forms of context rigidly in a step-by-step approach but combine them to make interpretations. The first section (8.2.2) examines the structuring of place in the past and the present at landscape level. This leads into section 8.2.3 that deals with the structuring of place through knapping actions. The last discussion in section 8.2.4 looks at particular artefact types and techniques to discuss place and regionalisation. Finally, section 8.2.5 summarises this work, drawing together an interpretation of places in the South African Middle Pleistocene.

SPACE = South Africa	
TIME = Acheulean and Middle Stone Age	
CONTEXT = Social	
SOCIAL CONTEXT (& see tables 4.2 & 6.3)	DISCUSSION OF TASKSCAPE
1 Existential	Locality of sites/place in the environment (section 8.2.2)
2 Perceptual	Sense of place through knapping actions (section 8.2.3)
3 Architectural	Place type as an understanding of space in the past and present (section 8.2.2)
4 Cognitive	Artefact accumulations as understandings of place (section 8.2.3)
5 Somatic	Different knapping techniques in different regions (section 8.2.4)

Table 8.1 – Summary of the use of a social context in the discussion of Middle Pleistocene South African sites.

8.2.2 The Architecture of Place in the Past and Present

The first aim of this section is to demonstrate how modern excavation space influences interpretations of the Acheulean and MSA. I demonstrated in section 4.2.2 that specific contexts are lost when behavioural models are used in archaeology as they separate the mutual production of space and time. If our modern understanding of space is altered, so interpretations of Middle Pleistocene archaeology can also be reconsidered. This leads into the second aim, which approaches space in the past from an architectural and existential point of view to establish new interpretations of hominid social relations.

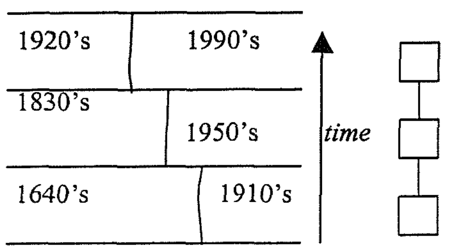
The first question asked here is how is time constructed by modern excavation space? In archaeological excavations time and space are divided into seemingly logical units where time is a vertical phenomenon and space is a horizontal area. This is a problem, because if space is treated separately, time becomes an abstract sequence of events (Shanks and Tilley 1987: 120). In this context time has boundaries that are logical and sequential, while space is divided into time slices containing things that are variable and unordered. This is effectively explored through archaeologists perceptions of the relationship between the Acheulean and MSA, where modern archaeological excavation space affects the manner in which we view hominid space and time. The Acheulean is usually interpreted as a static and largely unchanging industry across space and time. This interpretation is made because there are few long sequences and the artefacts, particularly handaxes, are perceived as a universal phenomenon, and hence unified in their behavioural meaning. This establishes a sense of timelessness, as stone tools lose their specific contexts, thereby drifting in an uncertain temporal and spatial relationship to each other. This has had an affect on the way archaeologists construct hominid space and the engendering of materiality as both take place in a temporal cycle. In contrast, the MSA is examined in blocks of time due to its long stratigraphic sequences. It is portrayed as a more variable industry across space and time and this difference in interpretation is largely a consequence of the distinct types of site available for excavation. Acheulean sites are mainly found in open contexts, often with only one or two vertical stratigraphic levels. By contrast MSA research has mainly focussed on those sites with long excavation sequences situated in caves. So, the architecture of the site influences the ways that sites are related together. Because we give preference to vertical stratigraphies, Acheulean sites are united across space and time by archaeologists rather than focussing on the spatial differences (figure 8.1). In comparison, MSA variation is better accounted for due to the chronology implicated by vertical stratigraphies, and therefore by the law of superposition. This can be summarised in the following format;

PHYSICAL CONTEXT		**INTERPRETATION**	
Chronometric Time	**Static Space**	**Archaeology**	**Explanation**
Horizontal level	Open site	Acheulean	Static behaviour
Vertical stratigraphy	Cave site	Middle Stone Age	Variable behaviour

In a physical context the MSA is separated into stratigraphic units of variability thereby limiting concepts of space and time. When time is put into chronological segments and matched with a vertical stratigraphy, change becomes a problem, as there are continual breaks in time rather than a constantly flowing motion of change (see figure 8.1). This interpretation of time is altered when our understanding of context changes from a

Figure 8.1 – Time and space in context

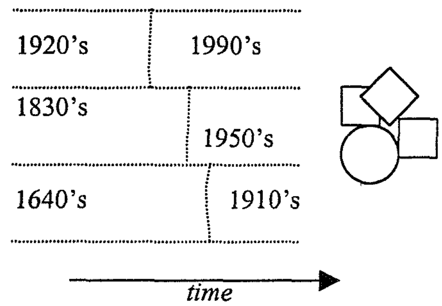
<u>PHYSICAL SPATIAL CONTEXT</u>
CHRONOMETRIC TIME
STATIC SPACE



ARTEFACT = TIME + SPACE

<u>Vertical stratigraphy</u>
1. Time is synchronic.
2. Archaeologists use vertical stratigraphy to study contexts as a static chronology, which is rationally calculated.
3. Time is measured and managed into repetitive segments of regular succession (Shanks & Tilley 1987), as a static and rational calculation.
4. Space is synchronic. Therefore time becomes uniform, compressed into blocks and events are universalised within space.

<u>SOCIAL SPATIAL CONTEXT</u>
TEMPORAL SPACE
VARIABLE TIME



ARTEFACT TIME = ARTEFACT SPACE

<u>Horizontal context</u>
1. Time is diachronic
2. Time in the present and future are a part of the past. Palimpsests can be studied as active accumulations of social relations.
3. There is submission to the passage of time. Time is blended through social practice.
4. Space is diachronic and time becomes temporality, marked in space by social *praxis*.

These diagrams allow the reader to imagine a historic city still inhabited today (such as London). If we were to undertake archaeological excavations there, the likely pattern would be similar to that provided in the physical spatial context diagram – building structures would be discussed in blocks of chronometric time. However, if we were to walk around that same city today, you would probably experience a horizontal stratigraphy of lived-in space amongst the buildings. The important point here is that space (and buildings) are reused and reincorporated in daily life and can not be viewed as static blocks of time.

<u>Implications for Middle Pleistocene archaeology</u>

1. Preference is given to vertical stratigraphy. Horizontal stratigraphy tends to be conflated into one context.
2. Artefacts are about production rather than reproduction.
3. Hominids are divorced from place
4. Hominid behaviours are interpreted in terms of their repeated actions at a site, but this is neither related to their encounter with this site as a place nor how their encounter with this place affected their actions.

ACHEULEAN*	SITE LOCATION	MIDDLE STONE AGE*
Cave of Hearths	**CAVE SITES**	Cave of Hearths
Montagu Cave		Border Cave
Olieboompoort	Acheulean = 17%	Bushman Rockshelter
Peers Cave	MSA = 54%	Peers Cave
Wonderwerk		Equus Cave
		Elands Bay Cave
		Klasies River
Bosman's Crossing	**OPEN SITES**	Duinefontein 2
Brakfontein	**spring/pan sites**	Florisbad
Bundu	**river sites**	Hoedjiespunt
Doornlaagte	**ocean sites**	Orangia 1
Elandskloof	Acheulean = 83%	Orange River Scheme
Elandsfontein	MSA = 46%	Seacow Valley
Fort Hare campus		
Homestead		
Hopefield		
Muirton		
Nooitgedacht 2		
Roseberry Plain		
Taung DB3		
Wonderboom		
Amanzi		
Kathu Pan		
Rooidam		
Blaauwbank		
Canteen Koppie		
Cornelia		
Orange River Scheme		
Pniel 6		
Seacow Valley		
Hangklip		

* This is not a complete list of Acheulean and MSA sites but is intended to cover the main sites from the Middle Pleistocene, i.e. the later Acheulean and the earlier portion of the MSA.

N.B. Site types are not listed in terms of formation processes but in terms of their relationship to a general landscape setting such as a river or an open setting.

Table 8.2 – List of location types for the main Middle Pleistocene South African sites from the later Acheulean and earlier Middle Stone Age.

physical context to a social one (figure 8.1). The effects of this can be demonstrated in a discussion of current interpretations.

Present evidence from South Africa suggests that caves were more frequently occupied during the MSA (see table 8.2). There are far fewer Acheulean cave sites, and where caves are used, for example at the Cave of Hearths in the Northern Province, the density of artefact concentrations are often low compared with the MSA levels above (table 8.3, particularly the highlighted numbers). This does vary though, as at Montagu Cave in the

Cave of Hearths Bed Number	**Depth at cross section CD in feet**	**Re-calculated in meters (/3.281)**	**Area (in m^2)**	**Volume (in m^3)**	**Artefact totals**	**Number of artefacts per m^3**
1 (ESA)	3	0.9	54	48.6	284	5.8
2 (ESA)	6	1.8	54	97.2	126	1.3
3 (ESA)	5	1.5	54	81.0	**3587**	**44.3**
4 (MSA)	4	1.2	9	10.8	**3061**	**283.4**

The MSA data is from an area approximately 9 sq. m. and the ESA data is from an area of approximately 54 sq. m. (Mason 1988: 64). Given the nature of the deposits here, it is difficult to work out precise volumes of material removed from each level. However cross section CD (*ibid.*: 74 and figure 24) indicates the approximate thickness of the Beds at one point and therefore an estimate volume can be calculated. The artefact totals are taken from Mason's artefact counts (1988).

Table 8.3 – Comparison of artefact quantities between Cave of Hearths ESA and MSA levels.

Western Cape there are over 150,000 stone artefacts in Layers 3 and 5 (Keller 1973), but this is extremely unusual. Therefore I am not contesting the interpretation that caves were used less frequently during the Acheulean. Instead my argument is that we must go further in our examination of space to look at how changes into the MSA and cave spaces transforms social relations. In open space there is only distance and therefore almost equal opportunities to radiate closer or further away within the landscape. In a cave there is a back and a front, an entrance and an exit. The cave formulates a physical boundary, a limit to the possibilities of hominids positioning themselves within the world. I would like to suggest that with this change from open locations to closed cave spaces, the position between hominid bodies and therefore social relations is transformed. This approach allows us to ask several different questions of the archaeological record.

1. How do changes in the MSA from open to cave sites affect social relations?
2. Given the importance of cave sites the interpretation of the MSA, how can open sites be used to enrich interpretations of MSA social relations?
3. How do open sites structure social relations in the Acheulean? (see section 8.2.3)
4. How can we use the horizontal stratigraphies at sites to look at change and variation in the Acheulean and consequently make social interpretations? (see section 8.2.4)

The problem the first question is that until now, the interpretation of space has been confined to excavation pits and ecological contexts. Cave space has generally been interpreted in relation to its functional properties (e.g. Clark 2001a) as either a strategic location for the exploitation of food resources (e.g. hunting, plants, or seafood) or special resources (e.g. pigments, salt, or raw materials), or its use as a shelter (e.g. for ceremonies or in adverse weather conditions). There are exceptions, but these interpretations tend to focus on the later MSA and LSA deposits (Wadley 1996). When space is seen as intimately involved in social relations then it is possible to consider the effects of change on social structures in changes between open and cave sites. Cave space both structures and is structured by hominids. By applying the notion of temporality, spaces are not constructed in terms of measured time, but there are physical limits to action and agreed societal referents (table 4.3). Social behaviours are disciplined through the *habitus*, i.e., they are effective through control and structuring of space (Foucault 1977, Tilley 1994). Therefore as more activities take place in caves more often and more habitually, this reflects on how social space is constructed and therefore the architecture is a part of the restructuring of social relations. Thereby changes in spaces affect the construction of social action which is where transformations are located. I argue that MSA hominids may have become more aware of their positioning in the world and in relation to each other, both in terms of caves as providing particular viewsheds as well as their restriction of potential movements in space. Shifts in emphasis of areas of importance can be related to changes in social structure and therefore perhaps the MSA hominids felt a heightened awareness of the political nature of place brought about by the cave structure. Different experiences would have been encountered through touch, sight and sound both in terms of the materiality of stone tools and the relationships between open and closed spaces. The soundscape could also have been very important, as the acoustic of rock on rock and the rhythm of action could be important both at the moment of knapping and as memory (Rainbird 2002). It also sends out auditory signals that may indicate inclusion or exclusion of events.

Using the early MSA levels from Bushman Rockshelter as an example, I have chosen to personify the archaeology by thinking about each stratigraphic layer as a generation. This personification should not be linked to numerically measured time, but used as a way of thinking through temporality (section 4.3.3), where archaeological stratigraphy is viewed as a living population. This would mean that in the lowest levels at the site, between Levels 107 and 86, there were twenty-two generations, between Levels 85 and 70 (not studied) there are sixteen generations, and between Levels 69 and 67 there are three generations. What is striking about the levels that have been studied is that over the forty-one generations this span encompasses there is repeated occupation of the site as a favoured locality but there is little change in the types or knapping strategies used within the cave. This is mostly a quartz-based industry with only a very few, informal retouched pieces, and some prepared pieces using mainly laminar technology. This is very interesting as it suggests that, at least in this area during the early part of the MSA, there is a very stable lifestyle. It is not that the meanings of artefacts may not shift over time but that difference between them over time is minimal, particularly with respect to overall group structure and dynamics in their interaction with the stone tool aspects of their material culture. MSA research has become so caught up in the search for change and the origin of modern humans that we forget or miss out on the mundane, repetitive activities of day to day life. These Levels in the site serve as a reminder of the importance of continuity in hominid lifeways.

When we look at cave sites often a particular layer will not span the whole area of the cave. This is never utilised in behavioural interpretations but is discussed as a problem of site formation processes. Perhaps rather we should be looking at the edges of these levels, remembering that the cave is not a singular space but will have social boundaries imposed upon it that may not relate to the walls of the cave. In this sense the structural relations of hominids can then be 'carried over' into their open sites. Here, I suggest that the structured use of space in caves influenced and helped establish a more formalised pattern of behaviour in the open environment that is not seen in earlier Acheulean open sites. For example the repeated visits to the open site of Florisbad indicate structural relations between the hearths and butchery events (Brink and Henderson 2001), which can also be seen in the cave sequences such as the repeated hearth levels at the Klasies River Mouth site (KRM; Singer and Wymer 1982). The earliest levels 37-40 in Cave 1 at KRM have several ash accumulations, particularly in layer 38, which is described as having a "palimpsest of laminated ash hearths" (*ibid.*: 17).

Given that MSA interpretations have been made on the basis of cave sites, it is rare to find material from open sites discussed. A survey of two popular archaeological textbooks, *The Human Career* (Klein 1989 (1999)) and *Human Beginnings in South Africa* (Deacon and Deacon 1999), revealed that with the exception of two sites (Orangia 1 and Duinefontein 2), open sites were only mentioned where fossil hominids had been found. This is not a criticism of either book but it is intended to demonstrate the general attitude of researchers to MSA open sites (see also table 8.2). For the most part, only passing mention is made of MSA open sites in the archaeological literature as few are excavated because of their lack of chronological and spatial integrity. However, it is frequently argued that Acheulean hominids are closely tied to water, while in the MSA there is a move away from water sources and a more common use of caves (Klein 1999: 337-8). In contrast I suggest that there is no move away from water sources and that open sites from the MSA alter this picture of interpretation. Although bias of preservation is acknowledged as a factor, this has tended to be connected with a lack of Acheulean cave sites rather than a deficiency in the recording of MSA open sites. Within South Africa excellent survey work has been done by Sampson in the Seacow Valley (Sampson 1985). A study of his site distribution maps (particularly figures 19 and 24, *ibid.*) demonstrate that Acheulean and MSA sites occur along watercourses in the same places. More recent work by Beaumont on the Vaal River at sites such as

Pniel 6 (Beaumont 1990b, 1998a) also demonstrate the presence of Acheulean and MSA sites along watercourses at the same locations. So instead of numerically linking Middle Pleistocene sites with water or other physical features, we need to think about how interaction with these places can be used to demonstrate different elements of hominid behaviour.

8.2.3 Accumulating Place through Knapping Actions

Acheulean accumulations at open sites are well known for the large quantities of stone tools and knapping debris, for example at sites along the Vaal River such as Canteen Koppie (Beaumont and Morris 1990). The interpretation of behaviour from these large palimpsests of stone tools has always been a problem, as they are not considered to be in a 'good' context. This section explores the structure of social relations at Acheulean open sites. The central question here is: how do we interpret space in the Palaeolithic where there is no structure to the archaeological record? In most cases, archaeological consideration of monumentality and the phenomenological experience have been confined to urban situations and ritual contexts. There is a perception that the Palaeolithic lacks a 'built' environment that would qualify it for this type of theoretical approach. However it should not matter that there is no visible internal structure (monuments, hearths, shelters, etc) to the sites. The re-visiting of one area suggests that Acheulean hominids are not randomly moving through the landscape but also have focal points which both structure and are structured by action.

It is argued that these large Acheulean accumulations of material culture are part of the system of reference that create space and time in which further actions occur. Spaces change but they are related to previously constructed spaces (Tilley 1994: 9-11) and in this way a horizontal chronology can be developed without precise boundaries. Acheulean places acquire a history and these locales and landscapes provide ontological security (*ibid.*: 26, Giddens 1984). Ontological security is maintained in *praxis* (see Chapter Six) and the stability of material culture forms may have been important as hominids went through many changes in life (Gosden 1994: 31). In addition continuity in handaxe forms and technological practices would have bound people together both in the presence of direct action at a single locality and across time and space. Action and interaction as a medium for time and space is vividly discussed in rock art (Conkey 1982). It is argued that rock art is not a single event consisting of the creation of paintings, but comprises many events incorporating its viewers and their interaction with these images. Similarly, later handaxes mimic earlier productions, which implies memory and interaction with the past. Style and content are followed in terms of location and action and a 'landscape of habit' is formed (Gosden 1994: 182). Social practice is embedded in this inherited taskscape (Ingold 1993).

The taskscape is an extremely useful concept for the interpretation of social relations at times when the internal structure of relations were not necessarily focused around materials such as hearths, shelters or monuments. In the absence of institutions the alternative means of maintaining social reproduction is through repetitive social practices (Bourdieu 1990b). Hence the repetition of stone tool forms is not simple, stupid or boring but constitutes active restructuring of relations. The land is brought into these social relationships through knapping. However the amount of production is also not directly related to the immediate availability of a great amount of raw materials, as if hominids had really wanted to save time they would have used old handaxes with greater frequency. Mobile groups would not have seen boundaries in the same way as us. Marking the land could have provided an indication of preparedness for social action (Rainbird 2002). So knocking big flakes off boulder cores could have been an indication of this. Marking the land is a transformation in itself. With hominids, place is not visible through structures but is constructed through knapping and its relationship with the surrounding hills, rivers, or other now-altered features. If so, this would indicate that hominids had a spatial awareness that can be viewed through landscapes of habit. Acheulean hominids experienced space by physically adding to the pre-existing landscape and it is through actions such as knapping that their cultural identity may have been externalised. Along the Vaal River at localities surrounding Pniel 6 and Canteen Koppie indicate a gradual expansion and loss of landscape along the river edge through knapping practices at different locations. In some cases knapping overprinted that of previous occupants while in others activities were performed alongside. Visits to places would have left the imprints of living through smells, bones, stones and freshly knapped flake scars. In addition the stone materials and the other remnants of occupation may have formed some kind of boundary between other places (sites) and the river itself. In this manner although spaces change they are related to previously constructed spaces (Tilley 1994: 9-11) and in this way can be developed as horizontal chronologies without precise boundaries. In taking the 'scatters between the patches' argument for artefacts one step further, we regard the spaces between and surrounding artefacts as part of social relations rather than just the position of the artefacts in the ground. We only 'see' production because we choose to objectify stone tools rather than experience their location in time and space. Even looking at today's material culture, not all of us use the same objects in the same way. Objects both define us and are defined by our context. The way that technology is 'read' depends on the social context, not just tool typology.

There are wide conceptual differences between large and small accumulations of artefacts at sites in terms of interaction. The larger sites would have gradually become fixed locales of interaction (e.g. Pniel 6) while others would have been smaller, more transitory, moments of action (e.g. Taung DB3). There would have been a different atmosphere at sites and different types of performances created through social relations. For example we can compare these two Acheulean sites from the same region,

Pniel 6	Taung DB3
Large site	Small site
Memories of prior action	Transient place
River side	Hill side

These locations can then be contrasted by their knapping pattern. At Pniel 6, the pattern of repetitive flake cleaver production that I have observed, is very different to the raw material blanks used for more casual and varied handaxe production at Taung DB3. This may suggest that at sites where repeated visits were made there was also a more formal manner of stone tool production and relations between hominids were more structured to specific roles than during periods of transient movement.

Returning to the Acheulean/MSA transition, an examination of the cultural landscape suggests changes in space-time geography between them. There are no sets of universal rules governing the combination or arrangement of materials, which highlights the 'performative' nature of depositional practices (Pollard 2001, Thomas 1999). Instead, there may well have been radical shifts in the daily paths and projects of hominid groups, not caused by environmental changes, but directly related to the rebuilding of the cultural landscape through changes in knapping patterns. In the Acheulean the use of larger boulders would have meant that hominids would have had to be a certain size and strength to remove flakes. Positioning in Acheulean knapping practices emphasised the body's orientation around the stone. In the MSA the use of smaller cobbles may suggest that stone would have been orientated around the body. The ways that different stones were used would have involved different relationships to the material. During the Middle Pleistocene I would suggest that there is a shift in performance emphasis from accumulation to fragmentation. The changing relationships of action presented in Table 8.4 show these two modalities of hominids. Although this is not a fixed and universal opposition and these two approaches to action are combined as an unfolding and unfinished project, there does tend to be an emphasis of one form over the other. In the Acheulean in many cases the flake was removed from a stationary large boulder and therefore action was centred on place and the accumulation of stone tools. Where we see a good pattern of similarly made handaxes we can suggest that there was a continued

ACTION	SINGLE SITE	MANY LOCATIONS	FOCUS OF RELATIONS ON...
Performance emphasising ACCUMULATION*	Same thing Same place Growth	Different things Different places	1. The materiality of place structuring the social context 2. the present or presence
Performance emphasising FRAGMENTATION*	Different things Same place Distribution	Same things Different places	1. The materiality of artefacts structuring the social context 2. the memory or absence

* These concepts originate from Chapman (2000) but have been developed further here.

Table 8.4 – The changing relationships of materiality

rhythm and a conjoined social setting at that locality. Where the handaxes do not show similarities in form or technique it is more difficult to make interpretations, but it can be suggested that the locality was perhaps a temporary, disjoined social setting or that difference was important in production. In the MSA raw materials were moved around the landscape as required (although not necessarily over any great distance) and then knapped, i.e. fragmented from their place. Thereby knapping action was centred on the artefact rather than particular localities. This alters the social relations as Acheulean knappers focused on the materiality of place through bodies while the MSA knappers focus on material bodies to establish place.

8.2.4 Traversing Techniques in the Taskscape

The focus of this section is to discuss how interpretations of horizontal stratigraphies can be made, and hence here there is a particular focus on the Acheulean time period. At present the regionalisation of stone tool types is one of the defining factors of the MSA, used as a criterion for behavioural modernity (McBrearty and Brooks 2000: 497-500). The current view is that Acheulean diversity is a product of variation on the same theme, i.e., static, and related to raw material availability and function (Clark 2001b). I argue that the Acheulean is variable because it comprises many different social relations expressed through differences in stone tool types and production methods. The popularity of finding bifaces or defining industries on prepared core technology has meant that we often miss out on the actual study of particular events in the landscape, instead focusing on similar objects that we can tie together across sites to construct a chronology. By comparing performances at the sites that I have studied, large amounts of variation are evident in South Africa alone. Chronological differences at these sites are not important as the aim is to demonstrate that the Acheulean is not a unitary period but comprised of multiple events of difference that can produce many different behavioural interpretations. For example one of the main features of the Acheulean is bifaces, but the investigation of bifaces at different Acheulean sites reveals the following;

Canteen Koppie	=	biface production is infrequent (McNabb 2001)
Kathu Pan	=	bifaces are made on banded ironstone (Beaumont 1990a) and it is estimated that there are some 2 billion artefacts present at this site (Beaumont 1998b)

Cave of Hearths	=	bifaces made on flakes, unlike Kathu Pan this site is not a favoured place as was previously believed
Taung DB3	=	bifaces made on slabs

This highlights the number of different styles represented in the Acheulean and therefore the different foci of hominids. By pulling all these sites together we can summarise the differences as demonstrating that bifaces can not be labelled as one group but are context specific and both constitutive of and by social relations.

8.2.5 Summarising Places in the Pleistocene: Re-muddling the Middle

One of the main goals of Middle Pleistocene research for over thirty years has been to unravel the 'muddle in the middle' (Isaac 1975). In place of this I argue that by re-contextualising archaeology in a social manner there is no option but to see several threads of conflicting evidence of hominid social behaviour. I would argue that the muddle must remain, because it is within this diversity that the expression of hominid culture and lifeways can be located. Space is not neutral ground upon which action happens but is intimately involved in the cultural process of the taskscape. Changes in the Middle Pleistocene take on different forms of expression in material culture, setting and choice of location. Both Acheulean and MSA hominids located themselves near water, in caves and out on the open plains, involving themselves in their landscape. To unite space through time amalgamates behaviours, establishes united explanations of cultural stages and leaves unacknowledged the present understandings of space and time. Expression of social relations is apparent within both these groups, going beyond amalgamation and fragmentation to produce a combination of stone tool types where emphasis through choices in production performance provide the structure and delivery of narratives. Hence the Acheulean is not a unitary social phenomenon but a diverse set of events orientated around knapping accumulations. Different sites have different emphases, which is evident in handaxe production (e.g. handaxe tips Chapter Seven). The transitory movement of Acheulean hominids through sites avoided the buildup of dense spatial rules. With the MSA comes a change in spatial awareness that restructures the relations of open and closed space creating greater political interaction and more intense social structure. These changes are also reflected in the fragmentation of stone during the MSA as a way of building social relations across spaces. The materiality of MSA objects became emphasised over the seriality of Acheulean performances.

8.3 CASE STUDY FIVE: EUROPE, CHANGING TIMES

8.3.1 Introduction

This case study looks at the European Acheulean and Middle Palaeolithic using different forms of time to define change (table 8.5). The aim is to explore the five forms of time through European archaeological sites to discuss the transformation of knapping practices as changing social relations. By investigating similar knapping practices across different time periods, I hope to show the contextual nature of change and the importance of integrating multiple approaches for investigating assemblage details when attempting to interpret social relations. Table 8.5 shows that although time can be separated into five variations their expression in the transformation of social relations is multiple. Therefore these elements of time are combined in my

SPACE = Europe	
TIME = Acheulean and Middle Palaeolithic	
CONTEXT = Action	
TIME THROUGH CHANGE (& see 5.2)	DISCUSSION OF TRANSFORMATION
1 Directional	Prepared core technology (section 8.3.2)
2 Reversible	Clactonian/Pebble Tools (section 8.3.3)
3 Linear	Raw material movements (section 8.3.4)
4 Cumulative	Handaxe accumulations (section 8.3.4)
5 Circular	Levallois flake variability (section 8.3.2)

Table 8.5 – Summary of the use of time, in the discussion of change through Middle Pleistocene European sites.

interpretations. The first section examines variation and difference through a study of prepared core technology in the directional and circular time of the Middle Pleistocene (section 8.3.2). In contrast, the second investigates reversible time through similarities and traditions to look at how change is present in pebble tool forms throughout Europe (section 8.3.3). The final section (8.3.4) analyses cumulative and linear time through the materiality of changing artefact accumulations in the Acheulean and Middle Palaeolithic. Finally a summary of the work draws together time and transformations in the European Middle Pleistocene (section 8.3.5).

8.3.2 Prepared Core Directions, Circling Variation

Directional time is the time of intentionality, where hominid agency transforms objects through difference. It is these differences that affect social relations. Here the focus is on prepared core technology (including Levallois) whose arrival in late Middle Pleistocene Europe is currently viewed as an important moment of difference in the Acheulean archaeological record. During the transformation into the MP, prepared core variation in production techniques and the resulting types are key to the interpretation of circular time where biographies of objects and peoples are transformed by reproduction. This section of the case study looks at change through directional and circular time using the sites from northern France.

Currently discussions of prepared core technology revolve around the description of the reduction sequence, often with only a small section devoted to the interpretation of hominid behaviours. There are four main lines of inquiry into prepared cores;

1. technological origins,
2. cognitive implications,
3. technical variations and
4. activity/mobility patterns.

Each of these concepts is critiqued in more general terms during the course of this thesis (mobility in 4.2, origins and variation in 5.2, cognition in 7.2). Here I problematise these concepts in direct relation to particular sites and show the benefits of my own approach discussing social time through change in Middle Pleistocene stone tool assemblages.

At present prepared core technology is argued to arise from biface production (White and Pettitt 1995: 33). One of the earliest examples in Europe to demonstrate the technological link between these production methods is the OIS 12 site of Cagny La

Garenne (CLG) in northern France (Tuffreau and Antoine 1995). This site is effectively used to stress the false nature of the classical divide between the Lower and Middle Palaeolithic (*ibid.*). Levallois cores are described here (Tuffreau, Lamotte, and Marcy 1997), and there is argued to be a conceptual link between prepared core technology and the production of bifaces, where a large flake is preferentially removed from some of them (*ibid.*: 152-3). The behavioural interpretation of this site in combination with others located nearby in the Somme Valley argues for systematic exploitation of the landscape, the existence of specialised sites, group mobility and the mastery of complex operational chains that were spatially separated into different stages (*ibid.*: 238). This is used to argue for behaviour of a very modern kind, in that Acheulean populations are not seen as significantly different to those in the MP.

In my own analysis of artefacts from Cagny La Garenne I have come to a somewhat different conclusion to those of previous studies. Unfortunately, due to the manner in which the collection was stored, it was not possible to examine the bifaces with large flake removals or to analyse the entire assemblage from any one level and hence the figures given in my tables are somewhat different to those provided in work done by others. For this reason I also refer to several publications on the site, using their illustrations and data on the stone tools (Lamotte 2001, Tuffreau 1995, Tuffreau and Antoine 1995). Below, in table 8.6, is the portion of the collection that I personally examined.

Artefact type*	**Total number of pieces**
Chips (<20mm)	1
Chunks	1
Incomplete Flakes	78
Whole Flakes	139
Retouched Pieces	8
Core Fragments	1
Cores	19
Broken Bifaces	1
Bifaces	6
Manuports	2
TOTAL	**256**

*All artefacts were made in flint. The manuports are made of sandstone.

Table 8. 6 – Cagny La Garenne Level CXV stone tool analysis sample

From these combined sources I believe there is no Levallois technology at Cagny La Garenne in Level CXV for the following reasons,

1. I found no Levallois cores. Those cores thought to represent Levallois technology do not have sufficient platform preparation to suggest the intentional removal of large flakes. The flake scars on the cores are not of a sufficiently large size relative to the size of the cores to be clearly preferential (see figure 8.2). Levallois flakes usually stand out as larger than other flakes (*cf.* Schlanger 1996: 241) and this is not the case here (see figure 8.3).
2. I found no Levallois flakes. I believe that the 'Levallois-like' flakes found at this site are: one, a result of biface thinning flakes, and two, because a particular core reduction method is used due to raw material shape. Many of the flint nodules are very oblong in shape (Lamotte 2001: 39, figure 24 nos. 3 & 4), which leads to repeated flaking from a single platform at either one or both 'ends' of the raw material. This process often produces laminar 'blade-like' pieces but these are not produced by Levallois or blade technologies. A similar argument has been made in a discussion of some Near Eastern sites where biface by-products were mistaken as Levallois (Copeland 1995). In hindsight Copeland would now argue that the occurrence of "Levallois" pieces in a Middle Acheulean context is probably fortuitous and part of the biface manufacturing process. Where Acheulean sites yield few Levallois pieces and several bifaces one should be wary. For this reason the identification of the earliest Levallois must be made only at sites where there are no bifaces or biface products, or where evidence for prepared cores and flakes is overwhelming.
3. I believe bifaces with a large flake removal are not equal to prepared core technology. The importance of prepared core technology is that it demonstrates the intention of hominids to prepare and maintain core surfaces for the recurrent production of particular flake forms (Boëda 1988a, Boëda, Geneste, and Meignen 1990, Van Peer 1992). The interpretation of stone tools as exhibiting the intention of making particular flake forms is only clearly made in the archaeological record where there is a repeated pattern. Although at Cagny La Garenne 'rather high percentage of bifaces' (Tuffreau, Lamotte, and Marcy 1997: 230) is described, only "some bifaces" demonstrate characteristics of a prepared core technique (*ibid.*: 231) and only one

Figure 8.2
Cagny La Garenne: Comparison of Core size and maximum flake scar size

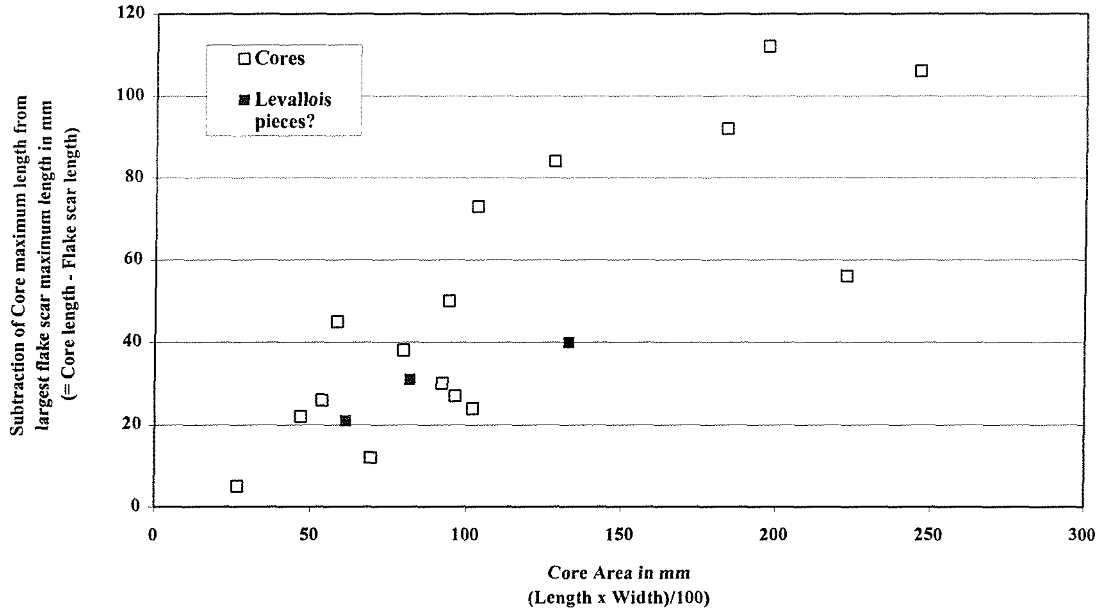
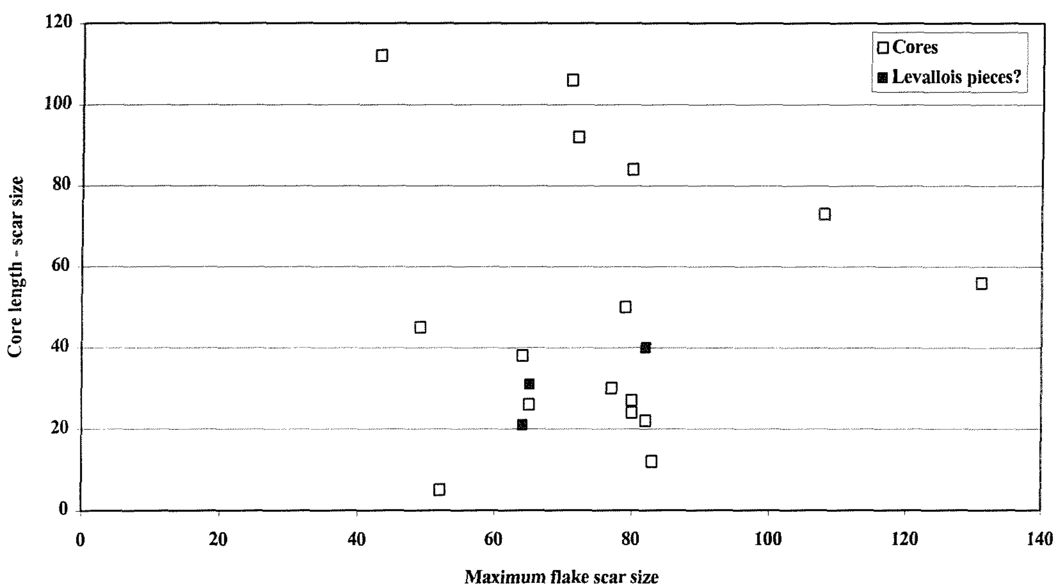


Figure 8.3
Cagny La Garenne: Comparison of Maximum flake scar size and core size



artefact of this type has been illustrated (Tuffreau and Antoine 1995: 153; Tuffreau 1995: 418). In addition there is no clear evidence that it is the flake from the biface that these hominids were interested in. Isolated examples of large 'Levallois like' removals on bifaces have also been found at sites such as High Lodge and Stoke Newington. These have been interpreted as a technique for thinning relatively thick biface butts (Callow 1976). Hence I would argue that although the emphasis on this interesting phenomenon is justified, its interpretation should not be based around concepts of either prepared core technology, or the Lower to Middle Palaeolithic boundary or modernity.

I suggest that the importance of change in this instance is not in the origin point of prepared core technology but in its effects on social relations, as this is where we can make behavioural interpretations. It is argued here that the reported Levallois element at CLG should not be described as an early example of this form of technology or related to the MP. It is a part of its own chain of differences in social relations. The description of changes in terms of technology may well be correct, in that the possibility of making Levallois may well have developed from the knowledge of biface production. However, its accidental arrival or intended innovation has to be sustained by a social process before we will find it in the archaeological record. This means that searching for origin points is futile as changes have already happened before we find them reflected as a recognisable pattern in the archaeological record. Rather, perhaps, we should concentrate on interpretations of how the social process is re-orientated by the social relations of prepared core technology. Instead we should look at Levallois as a transformation in the relations of production. At CLG there are no prepared cores, but the diversity in biface types suggests that perhaps it is the performance rather than the product that is at the centre of the social narrative. To follow up this argument I will turn to the later OIS 8 site of Gouzeaucourt (Tuffreau 1992, Tuffreau and Bouchet 1985), where bifaces and prepared core technology are both present.

Gouzeaucourt is a site with over 500 bifaces, retouched tools and some Levallois pieces (Lamotte 2001, Tuffreau 1992). The retouched tools are interesting in that they are particularly refined, and likewise the bifaces are all very similar in form (figures 8.4 &

8.5). What is apparent is that there was directional change as hominids expressed relations in similar ways through biface production. A comparison of handaxe sizes between CLG and Gouzeaucourt shows that although artefacts from both sites have similar lengths and widths (figure 8.6), those from CLG demonstrate many more diverse shapes when the tip and butt ends are compared (figure 8.7). At CLG the wide range of biface shapes suggests that performance (the actions of making an artefact/biface) is more important than the product (the biface). The emphasis lies not in the formulation of a specific handaxe composition but in the actions of making using and perhaps exchanging them. In contrast, at Gouzeaucourt the bifaces are all very similar in size and shape and are produced hundreds of times over. It is therefore suggested that at Gouzeaucourt there was also circular change as the relationships between bifaces, retouched tools and prepared core technology change each other as they change themselves. As the arena of social power shifts, the rigorous process of preparing cores is reflected in the standardisation in biface forms and each affects the other in a situation of increasing social connectedness. There is a similar monitoring of the different reduction processes in a reflexive way to shape the outcome. Prepared core technology is often seen as the cognitive leap to greater intelligence (e.g. Mithen 1996), but Schlanger's work on Marjorie's Core (Schlanger 1996) concludes that we can not separate out doing, i.e., the actions of making prepared flakes, and thinking, i.e., the mental intentions for and of action. Likewise I argue that we should not always separate out alternative methods of knapping. In dividing up production techniques it is forgotten that these processes and hominids are working together in tandem. Although bifaces, retouched flakes and prepared cores are made in both different and similar ways, their relationship is evident not in their technologies but in the form of the artefact produced as a part of a social milieu of a more organised and structured way of life. Just like artefacts, people were also being more carefully monitored and shaped into particular forms in the loose structure of social relations. The importance then, lies not in the number of technological 'steps' taken but in the (re)presentation of particular forms. This style of reproduction in both forms can be considered part of the same *oeuvre* (Chapters 6 & 7).

Figure 8.4
Gouzeaucourt Handaxe Lengths and Widths

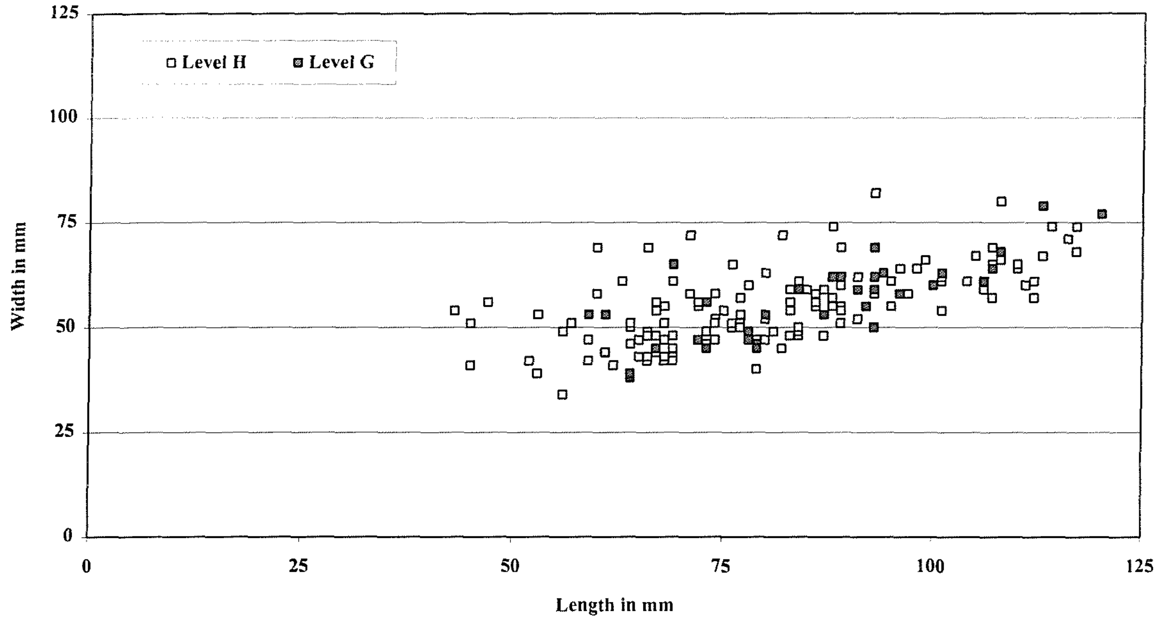


Figure 8.5
Gouzeaucourt Handaxe Area and Thickness

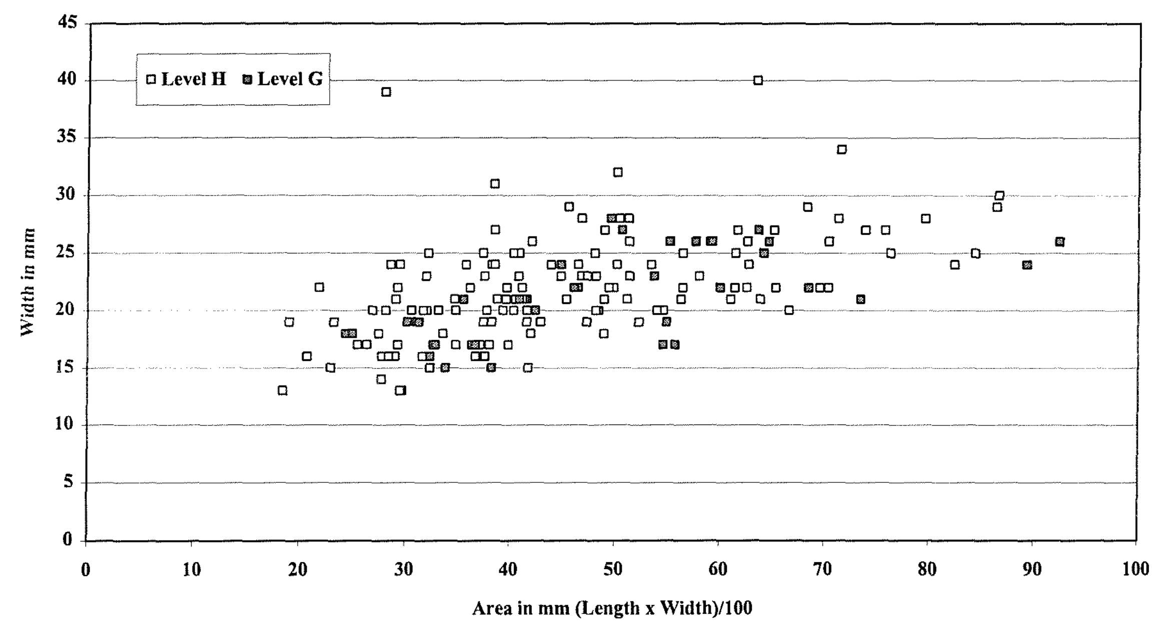


Figure 8.6
Comparison of Handaxe Size between Gouzeaucourt and Cagny La Garenne

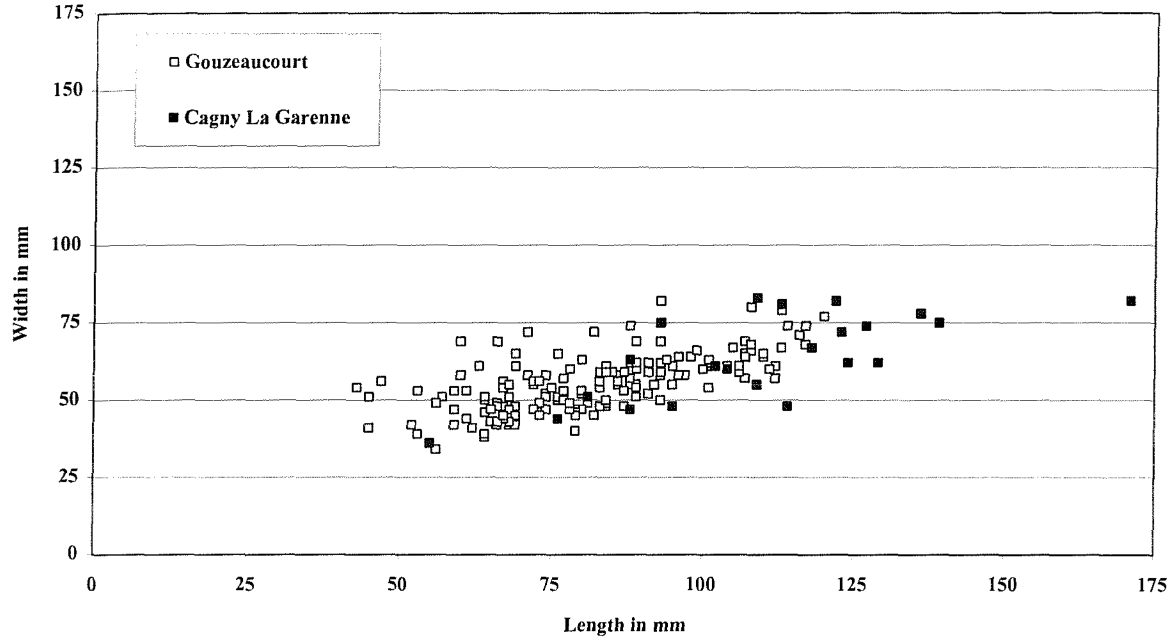
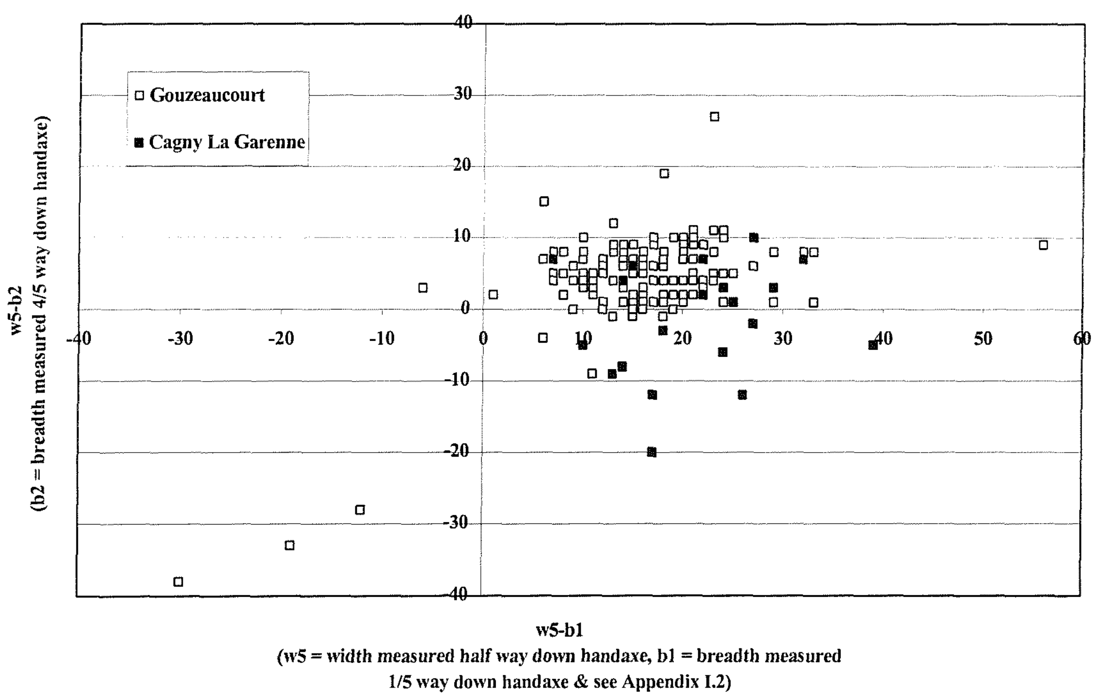


Figure 8.7
Comparison of handaxes from Gouzeaucourt and Cagny La Garenne



8.3.3 Returning to Pebble Tools in the Middle Palaeolithic

Previously (in Chapter Five) I have problematised the universal models put forward for the Acheulean and MP as these lead to the amalgamation of time into two blocks that are linked by a single transition (see fig 5.1). One manner of reformulating this is through a study of pebble tools, which are present throughout Europe during the Lower and Middle Palaeolithic. As Gamble illustrates, pebble tool technology is found in all places and in all time periods from the Lower to the Upper Palaeolithic (Gamble 1986: 278). Hence here, reversible time can be effectively employed to look at change, as this is the time of tradition, linking the actions guided by cultural routine with ongoing changes in daily life. Thereby although traditions are often maintained over hundreds of years there will be gradual (and sometimes reversible) changes in meanings, techniques and technologies. It may seem unusual to investigate tradition for the purpose of analysing change, but it is often forgotten that tradition is always renegotiated in the context of the moment.

The discussion of pebble tools tends to be based around the typology of rocks rather than the sociology of events. Often these pebble tool sites are considered to be separate industries (e.g. the Clactonian or Pontinian) and sometimes to have been manufactured by different peoples, which by implication leads to separate interpretations. When interpretations are made of pebble tools they tend to be functionally orientated, which usually guides the interpretation towards situational factors such as raw materials (Mussi 1995), environment or site function (Svoboda 1989), colonisation (White 2000b, White and Shreve 2000a) and/or variation in collection and excavation procedures (White and Pettitt 1995: 31). However, it has been argued that differences from the Acheulean are only present in terms of thinning in knapping technology and at a level of formalised typology (McNabb 1992). Regardless of typology, the important factor here is that sites with pebble tools are present during the entire Middle Pleistocene and therefore their presence needs to be interpreted within the social network of relations rather than simply studied as separate collections of artefacts with particular behavioural functions.

The typology of pebble tool industries is based on the absence of other types, such as bifaces or Levallois technology. In the search for difference and industry-defining 'types' we have left out interpretations of those pieces produced most frequently. There is no discussion of the 'average' production but a focus on the 'special' pieces in interpretations of the industry. If a wider study of other sites is made, to include Acheulean and MP artefact collections, it is clear that there are pebble tools (particularly choppers) present at these sites also. The repetition of handaxe making may not always have been necessary or important. Differential stone tools may represent different techniques of the body (*c.f.* Mauss 1979 (1936)) as each society has its own habits. From this discussion three questions are put forward to be answered,

1. Where are the pebble tool sites?
2. Where are choppers present in Acheulean and Middle Palaeolithic sites?
3. How might pebble tool sites and sites with choppers contribute to our understanding of changing social relations during the Middle Pleistocene?

Pebble tool sites are actually fairly few and far between. In the UK only six localities are known between OIS 12 and 6 (White 2000b); Globe Pit, Cuxton, Purfleet, Clacton, Swanscombe and Barnham. Some of these sites may have bifaces associated with them (*ibid.*: 19-21), but this is dependent on the interpretation of contextual evidence at these sites and different individual typological classifications of stone tools (such as the inclusion of non-classic bifaces from Swanscombe Lower Gravel, (McNabb 1996a). In the Acheulean, bifaces are associated with particular kinds of movement of raw materials in and out of sites (see Chapter Seven). This is different from both MP accumulations and at sites where there are no bifaces and few Levallois pieces such as the Pontinian (Kuhn 1995). In contrast, choppers can be common at both Acheulean and MP sites. I believe that these designated 'industry types' should not be separated from each other for comparisons. Sites of similar ages should not be divided up into types for comparison but must be linked with events. In the next section I include pebble tool localities in a chain of investigation into material movements at Middle Pleistocene sites.

8.3.4 Lining up Material Movements, Changing Accumulations

This section discusses artefact accumulations during the European Middle Pleistocene. The physicality of their presence channels time (linear time), as following the laws of physics it is only possible to be in one location at one time. However, concepts of materiality enter time and objects into multi-directional channels where the partibility of people and things allows for their fragmentation and distribution across space and time. Therefore time can also be extended backwards into the past, as cumulative time. This has an effect on the interpretation of artefact accumulations as cumulative time is played out in changes through accumulation (of experience, knowledge, stone tools, etc.). This section investigates the movement of things and time in the changing importance of material accumulation, particularly in relation to handaxes and Levallois flakes and cores, during the Acheulean and Middle Palaeolithic in Europe.

The physical actions of knapping time in the Middle Pleistocene have been approached through two related models that divide the archaeological record, one is the Roe Line (Gamble and Marshall 2001) and the other I call the Bipartite Reduction Model (Boëda, Geneste, and Meignen 1990). The Roe Line runs through Israel and across the Mediterranean between Spain and West Africa, drawing a division between the north where bifaces are knapped from pebbles, and south of this line, where right across Africa bifaces are largely made on flakes. This can be linked with the Bipartite Reduction Model, which approaches Pleistocene stone tool knapping in terms of two reduction methods, *façonnage*, to obtain bifaces and pebble tools, and *débitage*, to produce various flake based technologies (Boëda, Geneste, and Meignen 1990). In Europe, north of the Roe line, the change in emphasis from *façonnage* to *débitage* over the course of the Middle Pleistocene has been described in great detail. These technological changes have been linked to altered mobility strategies as a consequence of the climatic downturn (White and Pettitt 1995). The problem is that accumulations of artefacts have been time averaged and therefore sites are amalgamated into a network by 'connecting the dots'. This has resulted in interpretations of mobility by calculating the movements between the dots (e.g. Féblot-Augustins 1999), rather than by focusing on changing movements at particular places. As a result, little consideration is given to the differences in social relations that these two contrasting types of production (*façonnage* vs. *débitage*) may have been associated with, or the possible alterations in social relations that may be implicated in these changes. (A similar argument was made for the South African sites in section 8.2.3.)

Here, it is argued that the processes of fragmentation and accumulation were embedded in the mobility of social relations (table 8.7). Raw material studies have suggested that there is a shift from the provisioning of *place*, to the provisioning of *people on the move* (Féblot-Augustins 1999: 206). I would like to take this interpretation one step further to suggest that changes in the way relationships are bonded together is also reflected in stone tool knapping patterns. In the Lower Palaeolithic material is transported as one block, to one place, for one result. The knapping of handaxes can be said to be associated with the process of accumulation. Production is usually orientated

CONTINENT	ACHEULEAN	MP/MSA
Europe	*Façonnage* Bifaces mostly from pebbles Raw material moved	*Débitage* Levallois pieces removed mostly from pebbles Raw material moved
	ACCUMULATION	FRAGMENTATION
Africa	*Façonnage & débitage* Bifaces mostly from flakes Raw material not moved	*Débitage* Levallois pieces removed mostly from pebbles Raw material moved

Table 8.7 – Predominant production techniques and raw material movement in the Acheulean and MP/MSA

specifically towards the creation of a single handaxe out of a single block of raw material, as for example at the Horse Butchery Site at Boxgrove (Roberts and Parfitt 1999). These single artefacts then tend to be related to places of specific action. In the Middle Palaeolithic material is transported in stages, as several pieces for several places and artefacts travelling the greatest distances were retouched and Levallois pieces (Féblot-Augustins 1999). In contrast the knapping of retouched tools and Levallois is a process of organised fragmentation, controlling the breaking of the stone into many parts. At the same time in the MP there is evidence for the regular use of composite tools, which bring these fragmented pieces together as sets (Chapman 2000: 7). Although arguably these concepts could be (and sometimes were) reversed, the emphasis on fragmentation or accumulation is different at different times. There are many different stone tool forms, but it is the repeated patterns that we can view as archaeologists that lead us to particular interpretations of the structure of events. In the Acheulean the focus of production is on the preparation of the edge and on accumulation, while in the MP the focus of production on the preparation of the surface for controlled fragmentation. To investigate this, the movement of material at three different sites is considered; firstly the Acheulean site of Boxgrove, then the Lower Loam Knapping Floor at Swanscombe labelled as a Clactonian site, and finally the early Middle Palaeolithic levels at La Cotte de St Brelade.

Studies by Féblot-Augustins (1997, 1999) demonstrate that bifaces were rarely moved any great distance. However I argue here that the way that hominids moved raw materials and bifaces at the local level is interesting in itself. It is argued that Acheulean materials move only short distances because the making of handaxes is part of the ritualised performance of other activities. For example, at Boxgrove the knapping is a part of the butchery performance. This can be tied to specific social relations, but first I discuss the site more generally (see also Appendix II). Boxgrove is a Middle Pleistocene Acheulean site situated under a cliff face in southern England. The many trenches excavated at this site clearly demonstrate *in situ* knapping floors of handaxes, flakes and retouched pieces. The land surface of Unit 4c at Boxgrove is only considered to have been open for only twenty to a hundred years and Unit 4b may be even less. It is suggested here, that these may have been produced by just one socially interactive group, as so many of the handaxes have a tranchet tip (table 8.8). It is unusual to find so many handaxes with such a distinctive tip form from a single site.

Refitting work and careful description of the artefacts allows for more detailed interpretation of the evidence. Table 8.9 shows the handaxe and flake numbers and types, discussed by each excavation area.

	TRENCH	UNIT	TOTAL NUMBER OF HANDAXES	NUMBER OF HANDAXES WITH TRANCHET TIPS	% OF HANDAXES WITH TRANCHET TIPS
1.	Q1/A	4c	5	5	100
2.	Q1/A	4b	3	2	66
3.	Q1/B	4c	8	4	50
4.	Q2/C	4c	5	3	60

Data taken from (Roberts and Parfitt 1999: 309-61).

Table 8.8 – Handaxes and tranchet tips from excavations at Boxgrove

1. Q1/A, 4c. This is a knapping scatter excavated over a large area. There is some patination and iron salt staining although mostly the artefacts are in a fresh condition. There are no identifiably discrete knapping episodes and it is suggested that the hominids responsible may have moved around between knapping episodes. There are no flake tools and only a small amount of butchered bone. The distribution of artefacts reflects *in situ* human activity (Roberts 1999: 322), as 86% of the stone pieces is less than 20mm. However this could be an accumulation over some years as the land surface was stable.

2. Q1/A, 4b. This is an *in situ* isolated scatter produced by a sitting knapper. The artefacts are fresh with no patination, staining or abrasion. The handaxes were brought in rather than manufactured there. There are many chips, a considerable amount of flint dust and two refitting sequences of over 20 flakes.

3. Q1/B, 4c. There were at least three knapping events here (Roberts 1999: 354). The final three flakes removed from handaxe 95 have been refitted. Otherwise, none of the rest of the débitage relates to the handaxes.

4. Q2/A, 4c. A variety of flint forms were brought to this area including nodules, roughouts and finished biface (Roberts 1999: 361). Refitting studies have indicated that in addition to these artefact types at the site, several finished tools were also carried away.

Boxgrove Excavation Level		Handaxes		Flakes						
		(with refits)	(no refits)	Rough out %=	Thin-ning %=	Finish-ing %=	N=	% refit	No. in longest se-quence	Size of bulk of scatter in m^2
1.	Q1/A 4c	x	5	14.5	29.1	56.4	124	31	4	>2.00
2.	Q1/A 4b	x	3	x	27.0	73.0	59	51	24	0.25
3.	Q1/B 4c	1^{+}	7	11.0	36.0	53.0	253	47	13	>2.00
4.	Q2/A 4c	1*	3	52.1	27.7	20.2	213	17	10	>2.00

+ Three flakes refitted to this unfinished, rough out handaxe.
* Two tranchet flakes refitted to the tip of this handaxe (total of 3 refits, 1 whole and 2 broken flakes).
Data taken from the Boxgrove site report volume (Roberts and Parfitt 1999: 309-61) and the following paper (Roberts et al. 1997).

Table 8.9 – Handaxes and Flakes from Boxgrove

Also published is a preliminary description of the Horse Butchery Site GTP 17, which describes the import of six to seven nodules onto the site, the likely production of handaxes from these nodules and the subsequent removal and discard of the handaxes elsewhere. Sharp handaxes are found in large numbers elsewhere in the quarries (Pitts and Roberts 1997: 201) and certainly, were not being discarded because they were worn out. It has been suggested that the significant number of handaxes produced could be explained as either knapping enjoyment or an act of social significance (*ibid.*: 287). The site of GTP 17 is considered to be a discrete event (Roberts 1999: 374), where hominids brought all these nodules to the site to knap handaxes. Interestingly the distribution pattern of flakes indicates that the handaxes were roughed out and finished at adjacent locations (table 8.9, (Roberts and Parfitt 1999: 349). The combination of sites at Boxgrove, including the information given for GTP 17, suggest that there is a repeated pattern at these sites and the following model (figure 8.8) can be formulated for the movement of materials at this location.

This model suggests that there may be a form of enchainment process going on where imported handaxes remain, and new ones are made and taken away to maintain the chain of relations with that place, the actions taking place (butchery/plant processing), and the people that they are involved with. There seems to be a consistent separation between bifaces and flakes. Evidence from GTP17 suggests that several hominids were involved in the processing of this large carcass which implies a context of social negotiation. The staged knapping of handaxes suggests that there was probably equally a procedure for the carcass. The timely removal of the tranchet flake from a handaxe may be related to a particular form of butchery time. This pattern of specific deposition is not restricted to this cliff face but is a part of ongoing movement of hominids through the landscape.

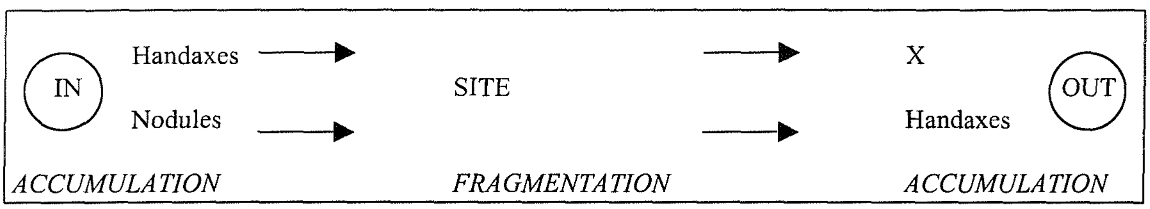


Figure 8.8 – Model of possible material movements at Boxgrove

Like Boxgrove, the Lower Loam knapping floor at Swanscombe may also be a butchery site, but although there are no associated bifaces or biface débitage here (table 8.10). It is therefore suggested that neither the same movements of raw material nor the same relationship between accumulation and fragmentation (given in fig. 8.8) pertained at this site. Here (table 8.10), all cores were carried into and out of the site. The knapping process is neither begun nor finished there, although pieces made on location have remained. It is therefore suggested that hominids were not marking or remembering place in the same way here. This site was a temporary land surface in a damp marshy area. The hominid focus was probably not on deposition at the place, but they were returning to the same stretch of riverbank.

SWANSCOMBE – LOWER LOAM KNAPPING FLOOR*				
NODULE		REFITS	MODIFIED FLAKES	CORE
Nodule number and amount of knapping prior to importation into the site		**Flake refits**	**Modified flakes Type**	**Is the core present?**
1	Extensive	4 + some shatter	None.	No
2	Little	2	Retouched incomplete flake	No
3	?	10/11 + some shatter	None.	No
4	Little	2 + 1 flaked flake spall	Flaked flake with 1 of the 3 spalls present	No
5	None	2	None	No
6	n/a	2	Large flake with macro damage (wedge) + flake removed	n/a = no core, flakes brought in
7	?	8 + 2 flaked flake spalls + some shatter	1 flaked flake, 2 refitting flake flake spalls	No
8	Some	15	1 Denticulate	No
9	Some	2	None.	No

THE GENERAL PICTURE		
IN MODIFIED NODULES TAKEN TO SITE	**ACTIONS** FLAKES REMOVED & SOME RETOUCHED	**OUT** CORES REMOVED FROM SITE

* Table summarised from information presented in Ashton and McNabb (1996).

Table 8.10 – Summary of the artefacts from Swanscombe Lower Loam Knapping Floor and a possible model for material movements.

At the MP site of La Cotte de St Brelade the situation is different again, and this can also be approached through the analysis of refits. Here, the lack of refits suggests that the manufacture and deposition of artefacts was occurring at different points (table 8.11). From a published study of 2,476 resharpening flakes, no refits were found (Cornford 1986). The exception is a single refit from Layer 5 (*ibid.*: fig. 29.3), a later level that is not included here. It would seem that those artefacts knapped on-site were taken elsewhere and those deposited here were made in a separate location. The growing use of tranchet flakes at La Cotte is actually considered to be a response to the diminishing supplies of flint (*ibid.*: 337) and these unmodified edges are thought to have been deliberately manufactured for use. However, in Layer A, there is a relatively greater percentage of quartz than flint burins. In addition, although bifaces are found in many levels, it is only in Layer A that bifaces are found with tranchet tips (table 8.11). I would like to suggest instead, that there is a particular cultural way of making, using and reusing stone tools during this time period, which demands these particular edges.

LA COTTE DE ST BRELADE*										
TYPE	**LEVEL**									**TOTAL**
	H	**G**	**F**	**E**	**D**	**C**	**B**	**A**	**3**	
32-Flint Typical burin	0	7	3	4	6	9	10	91	0	130
33-Flint Atypical burin	0	1	3	3	3	4	4	58	4	80
Relative % of burins	0	1.2	0.7	1.1	1.2	1.4	2.2	4.2	3.1	2.4
Total - Flint tools	296	685	917	650	757	948	639	3561	129	8582
Total - Quartz burins/ total tools	0 /4	0 /16	0 /20	5 /53	2 /96	3 /28	4 /45	23 /421	2 /163	39 /846
Relative % of burins	0	0	0	9.4	2.1	10.7	8.9	5.5	1.2	4.6
Long sharpening flakes (flint)	131					250		1814		2195
Transverse sharpening flakes (flint)	67					63		151		281
Burin spalls (flint)	15					17		72		104
Total	213					330		2037		2580
Bifaces with tranchet tips	0	0	0	0	0	0	0	6	0	5
Bifaces Total number	0	0	0	0	6	11	5	98	2	122

* Information taken from Callow & Cornford (1986).

Table 8.11 – La Cotte de St Brelade Artefact Counts for Burins, Bifaces and Resharpening Flakes

Compared to other MP cave sites there are also a significant number of bifaces present at La Cotte. These can also be investigated in terms of the accumulation and fragmentation of objects. Handaxes are not present in the lower levels although there is arguably one partial quartz biface in Layer H (Callow 1986: 223). The handaxes present are described by Callow (*ibid.*: 221) as including both classic forms and more morphologically diverse types. Callow points out that handaxes only occur in scraper-dominated series (*ibid.*: 310) and that they form only a very small percentage of the total number of tools. Layer A has most bifaces and a large sample compared with other cave sites of a similar age. What is interesting about the handaxes here is the wide range of variation. They fit into two categories. More irregular types and core forms and those manufactured on flakes, which are larger replicas of the Mousterian tools.

These three sites should not be considered as models for all Acheulean, Clactonian and MP sites, but should be regarded as different sites demonstrating different ways of doing things. Some wider implications can be suggested but these are preliminary. Previous studies of the Lower Palaeolithic have emphasised the proximity of raw materials to knapping locations in a negative way, as an argument against seeing complexity in these hominid lives. Instead, perhaps the focus should be on local networks of interaction. Rather than calculating distances, what is really interesting is how material was actually moving about, not just the scale on which it was moving. This study has suggested that in the Acheulean, place is marked through the knapping of stone tools and remembered through their transfer across the landscape. In contrast, in the MP it is argued that greater amounts of fragmentation implies larger networking groups, which demand different tasks, as social relations also involve political separation.

8.3.5 Summary: Timing Changes

This case study has demonstrated that we can not measure change through time, we can only look at the effects of difference and transformation. Transformations and differences can not be judged on <u>a</u> tool type, <u>a</u> site, or <u>a</u> technique but must be looked at as the product of social relations in a specific context. All of these factors are thus combined through an understanding of the taskscape as comprised of places of accumulation and fragmentation. Particularly important is the connected relationship of technologies during change through time. Bifaces and Levallois change together at Gouzeaucourt, while at other sites bifaces change in other ways, such as through tranchet flaking at Boxgrove or large flake removals at CLG. Each set of actions had specific relations with place, space and time and the interpretations of these events may be linked through time, not progressively, but as alternatives. To investigate the detail of these relations a more thorough study of hominid identities through the body and material culture is required. In the conclusion I return to the more detailed interpretations of the artefacts given in Chapter Seven and mesh them with the wider taskscape interpretations presented here to formulate a discussion on transitions in the hominid world from OIS 12 to 6.

CHAPTER NINE

CONCLUSIONS: THE HOMINID WORLD

STAGES 12 TO 6

What makes his case out, quite ignores the rest.
It's a History of the World, the Lizard Age,
The Early Indians, the Old Country War,
Jerome Napoleon, whatsoever you please.
All as the author wants it. Such a scribe
You pay and praise for putting life in stones,
Fire into fog, making the past your world.
There's plenty of 'How did you contrive to grasp
The thread which led you through this labyrinth?
How build such solid fabric out of air?
How on so slight foundation found this tale,
Biography, narrative?' or, in other words,
'How many lies did it require to make
The portly truth you here present us with?'

Extract from the poem 'Mr Sludge, "the Medium"' by R. Browning

CONTENTS OF CHAPTER NINE

9.1 INTRODUCTION

At the heart of this thesis lies the question; What is a transition in archaeology? To address this issue I have drawn together the role and effect of the concept of archaeological transitions, through a description of current explanations of hominid behaviour, to illustrate its main problems. In contrast, I have discussed a range of current social theories in an attempt to approach the Acheulean to MP/MSA transition in an alternative manner. I have stressed that there is neither a singular cause nor causes for change that can be identified, but what we can look for are the consequences of change, interpreting the transformation of social relations through changing patterns in artefact types. Table 6.3 is the culmination of my thought processes. It combines the three base words of archaeological discourse; time (linked with space), change (linked with variation) and identity (linking the object and subject), into a framework for interpretation through action and praxis. The heavy weighting toward theory within this body of research has been essential to establish an alternative context for Pleistocene archaeology. The aim of this thesis has not been to produce a grand narrative for the Middle Pleistocene from this framework, but rather to show one set of potential interpretations in a polyvocal material record. Therefore, the goal has been to create a different story, not a more robust one. I believe that further data from other sites would not generate a more robust picture but a different one.

This chapter summarises my endeavour to alter the current concept of transitions (section 9.2) and to demonstrate the effectiveness of an alternative approach through the interpretation of lithic assemblages from the African and European Middle Pleistocene (section 9.3). I conclude by considering the challenges encountered in the course of this thesis (section 9.4). This expands my discussion to address the wider implications of my critique for archaeological research and potential future directions for investigation of the Middle Pleistocene.

9.2 THE TRANSFORMATION

To answer the question set out at the start of the previous section, a transition in archaeology is a consequence of structuring time according to a measured chronology. In effect, this orders the archaeological record into blocks of time and thereby establishes boundary points for transition. A transition implies a link between two suspended states, leading to the interpretation of static units of universal behaviours (Chapter Five & fig. 5.1). In preference, I believe we should approach archaeology through temporality, using the concept of transformations, as this organises time in terms of human action. Three levels of discussion were required to arrive at this conclusion (table 9.1). These were, firstly, establishing a social context (Chapter Four), secondly, transforming knapping actions (Chapter Five) and finally reworking hominid identities through praxis (Chapter Six). Table 9.1 emphasises the key words incorporated in my ideology.

CHAPTER	FRAMEWORK	CRITIQUED APPROACH	MY APPROACH
FOUR (tables 4.1, 4.2 & 4.3)	1. Context	Time	Temporality
		Space	Taskscape
		Explanation	Interpretation
FIVE (tables 5.1, 5.2 & 5.3)	2. Action	Change	Difference
		Variation	Supplement
		Transition	Transformation
SIX (tables 6.2 & 6.3)	3. Identity	Individual	Dividual
		Object	Materiality
		Meaning	Doing

Table 9.1 – Summary of the Research Framework for Archaeological Interpretation

Over the course of this thesis I have argued that, in Middle Pleistocene archaeology, social production is measured through change and variation in lithic artefacts. Implicit in this arrangement is an understanding of how change occurs in time and it is difficult to unravel the assumptions of archaeological analysis without questioning the foundations of our current thoughts on time (Chapter Four). Transitions are structured by measured time, and hence the underlying problem is that time becomes separated from space and human action. I believe that my approach to change and variation in archaeology, as material transformations, is preferable because it puts change within human time (Chapter Five). It does not try to reduce time or change to essences but views them both as multiple forms created through lived experience. A focus on time through change contextualises events as lived experiences situated in space. Hence differences in artefacts are seen as relating to the fluid transformation of social relations through actions. For archaeologists, the embodiment of these social processes can be viewed through the habitual modes of conduct objectified in artefact praxis.

So I have removed the concept of transitions and begun to look at change in terms of situated practice. But why should you care? What is the importance of establishing this position? The importance lies in the construction of identity. Identity is always present in archaeology, but there are different ways of looking at it. What I have argued is that we cannot identify origin points for modern humans, the Middle Palaeolithic or the

Middle Stone Age (Chapter Six). There is no juxtaposition of periods that allow us to contrast archaeological types across a transition point to locate hominid identity. This recognition opens up other possibilities such as looking at performance in stone tool knapping through memory, routinization, positioning, habitus and difference (table 6.3) to establish identity. It is my view that the process of knapping is not a step-wise preparation towards a goal (table 6.5), but that each part of the knapping process is a performance, an active construction of varying social relations through stone tool production (table 6.6).

One debate arising from my theoretical approach, is the applicability of the recent social theories that I use to early hominid groups. In response to this I argue that although history relates to and informs on the past, ideas are always constituted in the 'reality' of the present day. In this sense we can not move outside of a 'modern' human approach to the archaeological record. Here it is worth returning briefly to the modernity argument put forward in Chapter Six. Although it is unlikely that hominids were social in the same way as us today, equally we can not remove or compartmentalise aspects of sociality. All living groups of animals, including humans, interact with and react to others through social relations. The use of material forms in these constant interactions, is a contact point from which we can analyse artefacts to access this sociality. Recently, Porr (2000) has described the transition of material culture from primate to human society as an incremental enlargement of material culture incorporated into social relations. Hence, concerns should not be orientated around whether artefacts were 'hard-wired' cognitive productions or not. It is the manner in which, and the amount and type of materials incorporated within social relations that should be at issue.

If one accepts this view, the difficulty then lies in making this theoretical construction of identities work with the data available from Middle Pleistocene artefact assemblages to enable alternative interpretations. Although this thesis criticises the current framework, it accepts that not everything can be altered at once and that some points of reference must be maintained. It is impossible to start again and so one must use the current framework, altering some of the concepts within it, in the hope that this will eventually lead to greater incremental changes. Hence I do not attempt to escape the use of typology, as to describe and rename artefacts would serve no purpose other than to confuse and would not add to the understanding of hominid social life. Instead, the key is to select contexts and compartments within the typological scheme to take apart and reconstruct, thereby enabling new interpretations. Accordingly, this thesis has followed the standard terminology for time periods (Acheulean, MP and MSA) and artefacts (e.g. handaxes). With these typological categories, interpretations of entities (e.g. the handaxes have been deconstructed) are subsequently constructed through details within that category (e.g. handaxe tips) to establish forms of identity and social relations. To reiterate, my methodological approach is the detailed analyses both of aspects of flaking and bodily positions (subjects & objects) in context, which enhances understanding of hominid intentionality. Most importantly, it means that artefact production can demonstrate social relations that are located outside of the functional paradigm. With this in mind, three theoretical conclusions stemming from the framework summary (table 9.1) have been reached.

1. CONTEXT - Space is constructed by hominids through material relations.
2. ACTION - Hominid relations are constructed through many artefacts, and cannot be characterised by just one artefact type.
3. IDENTITY - The unitary categorisation of types, such as the handaxe, is not sufficient for the interpretation of identities.

Given the theoretical approach summarised above, the question is; what has been learned about the Middle Pleistocene through these three points and how do they apply to understanding transformations in this time period? This is answered in the following section and summarised in table 9.2. The three points given in the framework are separated here for clarity, however they are not separate entities but work together, as will become clear in further discussion of this table in my conclusions regarding the Middle Pleistocene.

9.3 THE MIDDLE PLEISTOCENE

In both Europe and Africa, and in both the Acheulean and the MP/MSA biface technology, retouched pieces and prepared core technology are present. From this, the Middle Pleistocene can be described, in summary, as a set of diverse histories incorporating similar lithic technologies. These are played out differently in the social arena through the application of varying techniques that lead to particular outcomes. In Chapters Seven and Eight I discussed the interpretation through different forms of archaeology, looking at both the particulars of stone tool technology and the wider implications of assemblage accumulations across the landscape. Here I draw those results together to summarise the Acheulean and MP/MSA in terms of the three points given in table 9.2, and discuss the transformations taking place in order to interpret the identities forming in Europe and South Africa over this time period. I do not draw comparisons between these two regions, as I do not feel that the interpretation of social relations can be made from generalisations about groups of peoples across continents. However, I do contrast these regions as a way of drawing out the uniqueness of their situations and relations.

Frame-work	Archaeology	Theory & Data	EUROPE	
			Acheulean	**Middle Palaeolithic**
1. Context	Space	Approach	Accumulation &Fragmentation	
		Lithics	Façonnage Biface thinning flakes	Débitage PCT surface
		Sites	CLG & CLE	GOU & LCB
2. Action	Assemblages	Approach	*Oeuvre*	
		Lithics	Handaxes	Handaxes & PCT
		Sites	CLG, D, E	GOU & CLE
3. Identity	Types	Approach	Chaîne Opératoire	
		Lithics	Tranchet flakes	Tranchet flakes
		Sites	BOX	LCB
Frame-work	**Archaeology**	**Theory & Data**	**AFRICA**	
			Acheulean	**Middle Stone Age**
1. Context	Space	Approach	Accumulation &Fragmentation	
		Lithics	Façonnage & Débitage Boulders, Open scatter	Débitage Pebbles, Cave structure
		Sites	MUI, CK, TAU	BRS, COH
2. Action	Assemblages	Approach	*Oeuvre*	
		Lithics	Handaxes	Dorsal ridge patterns
		Sites	SAM, PN6	PN6
3. Identity	Types	Approach	Chaîne Opératoire	
		Lithics	Handaxe blanks	Flake blanks
		Sites	COH Beds 1-3	COH Bed 4, BRS

CLG = Cagny La Garenne, CLE = Cagny L'Epinette, GOU = Gouzeaucourt, LCB = La Cotte de St Brelade, D = Dovercourt, E = Elveden, PCT = Prepared Core Technology, BOX = Boxgrove, MUI = Muirton, CK = Canteen Koppie, BRS = Bushman Rockshelter, SAM = Samaria Road, PN6 = Pniel 6, COH = Cave of Hearths

Table 9.2 – Summary of the Research Procedures for Lithic Analysis and Interpretation

The fragmentation and accumulation of lithic assemblages in the European Pleistocene extends relations in time as well as space. In Europe bifaces are accumulated, as are cobbles from the production of biface forms via the process of *façonnage* (table 8.7). Raw material forms are moved around and a good example of this comes from the site of Boxgrove. There seems to be an enchainment process in operation, which is evident in the refitting studies made at this site. Raw materials that were brought to a particular location were knapped and the handaxes produced were removed. Handaxes that were brought to a location already knapped remained there (fig. 8.8). This is different to the processes visible at the sites of Swanscombe (table 8.10) and La Cotte de St Brelade (table 8.11), where stone tool production does not seem to have been a part of remembering the landscape in the same way. At Boxgrove we can see particular relations played out as part of the butchery process. It is suggested that the controlled removal of the tranchet flake from the biface tip is integral in control of the butchery (table 7.8).

Where there is variability in handaxe form there may well have been a greater number of choices. It is where difference is present in handaxes that we can view choices in the field of play in social relations. Similarities and differences are both a part of social integration. Perhaps the large flake removals on the Acheulean bifaces at CLG represent an expression of these choices, displaying something different in deference of particular activities. Perhaps also it is the performance of knapping rather than the biface product that is central to social relations. In this case, rather than the form of the composition, it is the display of knapping and the subsequent movement of raw materials and stone tools across the landscape that is important.

In this thesis I recognised that it was important to address the issue of bifaces in the Middle Palaeolithic, as the interpretation of these pieces has usually been related to the Acheulean or discussed as an oddity. Biface production in the MP takes many forms. At LCB handaxes are rare and many are linked to the core production process. In contrast at Gouzeaucourt handaxes are common and tied to the flake production process. This may suggest that they had very different parts to play in the mediation of social relations.

Through the Middle Pleistocene there is a change in stone tool productions as the emphasis shifts from accumulation to fragmentation visible in the shift from *façonnage* and biface production to *débitage* and prepared core technology. What emerges from the changes visible in Middle Pleistocene Europe is an awareness of the growing relationship between sets of artefacts. While at Cagny La Garenne a wide range of biface types is present, by the times of Gouzeaucourt there is both a standardisation in biface form, and a cross referencing between lithics, seen in the standardisation of retouched types and prepared flake forms, that could be construed as an *oeuvre* of stone tool forms. Here importance lies not in the number of technological 'steps' taken to achieve particular artefact forms but the re-presentation of similar forms through different techniques. This change to the maintenance of outlines and surfaces differs to the earlier focus on the maintenance of parts of the edge form, suggesting that hominid relational networks may be intensifying.

In Middle Pleistocene South Africa identities were transformed as contexts were made and altered by changing times and spaces. This was expressed through the accumulation of material forms. In archaeology we can see the cumulative aftereffect of time in the interpretation of stone tool accumulations as centres of social gravity. The large quantities of stone tools at sites such as Canteen Koppie indicate that Acheulean places are areas constructed through knapping, and that knocking big flakes off boulder cores is probably an indication of their marking of the landscape. It is suggested that at more frequently revisited sites, e.g. Pniel 6, stone tool production was conducted in a more formal manner as relations between hominids were more structured to specific roles than during the periods of transient movement visible at sites such as Taung DB3. Here the materiality of place structures the social context, and performance emphasises the accumulation of materials (table 8.4).

Labelling bifaces as a single group enforces the amalgamation of many social relations. Different sites emphasise different activities and this is evident in differences in handaxe production. The number of different bifaces styles and therefore the different foci of hominids represented in the Acheulean supports this argument. For example differences in handaxe tips from the site of Pniel 6 Area C where there are several with double ended pointed tips. To my knowledge, nothing similar has been described for other sites in the Vaal River area. In addition those handaxes with two pointed ends would have been differently used to other handaxes with one end simply in the positioning of the hand, which extends onto the position of the body and the position of both these in relation to others.

I have also argued that the construction of hominid identity overrode constraints of raw material. At some of the later Acheulean sites, such as Samaria Road, there is a change in raw material types used. However, hominids produced the same biface forms on these new materials, suggesting that traditions were being maintained even as hominids moved through the landscape in a different way, focusing on different raw materials. Changes are apparent in the redistribution of objects in time and space. Raw material changes do seem to have broken the pattern of manufacture, as the collection of different raw materials emphasise different procedures and breaks traditions as hominids visit different patches in the landscape to collect raw materials. This is not, however, true of all South African localities. At the COH techniques seem to change prior to raw materials. It is suggested that changes in flake blanks, i.e., the switch to blade production, exclude the possibility of large biface flake and cobble blanks.

The structuring of social relations changes in a different way as hominids move into the MSA. In the MSA there is a greater use of cave space. Bodily positions would have changed because the physical boundaries of caves would have limited actions and movements. I believe that the re-structuring of hominid spaces through their greater use of caves, would have lead to an increased structuring of open space, perhaps indicating a more close-knit social identity. This is linked to positioning in knapping practices. In the Acheulean, hominids located themselves around stones to remove flakes. In the MSA, this changes so that pebbles are orientated around the body for knapping. These processes are all inter-linked and knapping performance in the MSA emphasises fragmentation and the materiality of artefacts, structuring a more intense social context. Within and working alongside this process is a shift in emphasis toward blade production, and the focus on laminar flaking also suggests that the MSA has a more structured social context.

In summary, these key arguments establish that the Middle Pleistocene incorporates a diverse set of identities, and that transformations are a constant part of this process, shifting in different ways across the continents. They can not be established via a single tool type, site or technique, and relational 'norms' should not be applied across sites or regions. A simple comparison of the relations between hominids, raw materials and stone tools is indicative of differing social relations in Africa and Europe. Even the collection of raw materials would have been a very different experience for these groups of hominids. While a hominid group in France would have been searching out stones from which to construct a handaxe, another hominid group in South Africa would have been looking for stones from which to detach handaxes. Acknowledgement of the differential roles that this singular handaxe 'type' may assume, can help undermine the concept of 'Acheulean-ness'. Similarly, comparing detailed flaking patterns both between and across artefact types can help establish new approaches to hominid relations.

9.4 THE FUTURE

This thesis has set out to question our notion of transitions, and through this it has laid out a framework that challenges current understandings of time, space, change and variation (table 9.1). Although this alternate framework is orientated towards the interpretation of the Middle Pleistocene, the tables 4.2, 5.2 and 6.3 have a general applicability across archaeology for constructing context, action and identity. All periods of archaeology are placed within a measured chronology, and often transition points are a research focus. Change in archaeology is key to interpretation and alterations of this concept can be applied across this discipline. I hope my research will allow others within archaeology to move away from research that looks at specific points of change, towards transformations that are constantly, albeit not consistently, taking place. This should move the research focus away from the perceived 'key areas' of change to cover a wider range of aspects across any one time period, which should lead to a better understanding of human histories.

Turning to focus on the Middle Pleistocene, I think that breaking down the singular description of an Acheulean Industry to interpret differences in social relations could be done effectively by applying my biface methodology on a wider scale. It has the potential to show a wider range of narratives for hominid lives. I would also like to apply my approach to a much larger sample of retouched artefacts at a location where there are significant number of tools, such as returning to La Cotte de St Brelade for a larger data collection programme. In this research, the sample sizes used to establish patterns in the data have been small, and different lithic analysis strategies have been applied to different groups of artefacts. This can be summarised as a problem of praxis. My data was collected prior to the firm formulation of my theoretical approach and hence the framework described in this thesis was not practised during data collection. Thus only some of the data collected could be presented here in support of my arguments. As a consequence, the sample sizes I could use in the analysis were not always sufficient to be confident in my interpretative links. However, there are always components of any research project that could have been done differently, and it is these elements that drive us forward into future directions. What I hope that I have achieved here is to show the reader the potential avenues of lithic research using social theory, and some of the possible directions that interpretations can take when informed by the notions of temporality and transformations.

To conclude, I do not have a grand synthesis, as my aim has not been to seek out a universal system. I see the challenge of archaeology as lying not in the construction of systems and categories but rather in the particularity of material culture in local contexts. It is these contexts that open up the possibility of studying the deep and rich histories of interaction through material culture. The importance for Pleistocene research lies not in broad scale transitions as they rest on such slight foundations, but in the detail of material transformations. I see the future direction of research as focusing on the detail of this historical labyrinth to bring forward understandings of hominid social relations. From this we should take issue with hominid studies and, rather than constantly searching for their origin point and measuring their finishing time, we should explore and enjoy their journey.

APPENDIX I

LITHIC DATA ANALYSIS RECORDING PROCEDURES

CONTENTS OF APPENDIX I

I.1 CORE RECORDING PROCEDURE

1. Maximum length in mm
2. Width relative to length in mm
3. Thickness relative to lengthin mm
4. Raw material type
5. Condition (fresh; slightly worn, worn, very worn)
6. Number of scars (including any prepared core flake scars)
7. Percentage of cortex, 0 = no cortex, 1 = 1-25% cortex, 2 = 26-50% cortex, 3 = 51-75% cortex, 4 = 76-99% cortex
8. Max length of largest scar
9. Core typology follows Leakey (1971) and Kuman et al. (1997) and for prepared cores I follow Boëda (1995) and McNabb (2001)

Non-Levallois

Chopper	Edge core
Discoid	Discoidal (irregular but radially worked)
Polyhedron (classic near spherical)	Irregular polyhedron (not spherical)
Cuboid (very small often cube like)	Boulder (usually big cores with working from natural angles and edges)

Levallois (L.) /Prepared Core Technology

L. flake core - parallel	L. flake core – radial
L. flake core – convergent	L. blade core
L. core – rough out	L. core – indeterminate
Victoria West (VW) core – side	VW core – end
VW core – rough out	VW core – indeterminate

10. Note whether the flake(s) were removed preferentially, unidirectionally or bipolar.
11. Note number of Levallois flakes removed

I.2 HANDAXE RECORDING PROCEDURE

1. Draw the outline of both faces carefully on a plain sheet of paper. Centre the handaxe along the vertical line. Remember to rotate the artefact in sequence - face-side-face.
2. Mark handaxe number from the recording sheet.
3. Draw both sides of biface along the central axis
4. Mark lines at 1/3 and 2/3
5. Mark thickest point with *
6. Mark in major flake scar pattern
7. Mark Dorsal/ventral and the bulb and removal direction
8. Record any defining features in the scar pattern (e.g. tranchet flake scar)
9. Fill in handaxe drawing

Refined retouch (definition I.4)

Secondary Flaking

Intense flaking away from margin

Primary flakes

Cortex

Utilisation

10. Do edge drawing around the circumference of the handaxe

Straight   Curvy   Wavy   Twisted   …….. Cortical

11. Note the following on the record sheet
    - Spit or level
    - Maximum length in mm
    - Maximum width in mm
    - Maximum thickness in mm
    - B1 = breadth 1 (width of tip at $1/5^{th}$ down from tip)
    - B2 = breadth 2 (width of base at $1/5^{th}$ up from base)
    - W5= width 0.5 (width at half way up)
    - Distance (distance from widest point to base)
    - Raw material type
    - Condition (fresh, weathered, abraded, patinated)
    - Symmetry (yes or no)
    - Plano-convexity (yes or no)

12. Note type of artefact. The following types have been identified already or have been suggested to be present; handaxe, uniface (thinning and especially shaping from one face only), pick, rough-outs for a bifacial piece.

I.3 WHOLE FLAKE RECORDING PROCEDURE

1. Record artefact type

a. Flake	c. Levallois point	f. Biface thinning flake
b. Core rejuvenation flake	d. Levallois radial	g. Biface tranchet flake
c. Bladelet	e. Levallois blade	h. Victoria West flake

In addition you can find Levallois biproducts – but you must be absolutely convinced to call it this.

2. For all whole flakes record

• RM	Raw material type
• Size in mm	Length, width and platform thickness
• Condition	fresh, weathered, very weathered, abraded, rolled
• Utilisation	present/absent
• Tip present	note whether distal tip is present on the flake
• RCE present	Note if flake has a relic core edge (RCE)
• Bulb	whether flake is end, side or corner struck
• Retouch	presence or absence and see retouch procedure (I.4)
• Toth type	Amount of cortex on flake according to system set out by Toth (1982)

3. For all Toth type 6 flakes, i.e., flakes that are completely non-cortical, the following information is recorded.

• Butt	platform type (plain, dihedral, polyhedral, or facetted)
• DRS	dorsal ridge pattern (see fig. 7.16)

I.4 RETOUCH RECORDING PROCEDURE

Retouch is defined as the regular occurrence of small flake scars that are distinct from the random and often rolled scars of natural processes. Record the following information on retouch (from the system devised by Inizan et al. 1992: 68) and draw each of these pieces on the reverse side of the recording page.

1. Distribution	Record the length of the retouch across the artefact as continuous, discontinuous, or partial.
2. Position	Record position of retouch as direct, inverse, alternate, alternating, crossed or bifacial.
3. Localisation	Record position(s) of retouch on the artefact as lateral (put whether this is on 1 or 2 sides), distal (just on the end), proximal, mesial, transverse, left, right or basal.
4. Morphology	Record whether retouch is scaled, stepped, sub-parallel or parallel.
5. Delineation	Record one or several of the following; the retouch is straight, convex, or concave and nibbled, notched, or denticulated. Note whether the retouch is parallel or convergent if this is applicable.
6. Angle	Record the edge angle as either low (less than 45°), semi-abrupt or abrupt (steep, near to 90°)?
7. Extent	How invasive is the retouch? Is it short, long, invasive or covering? Invasive retouch is visible near to the centre of piece. Long retouch is on the edge of the piece to about ¼ of the way across the flake. Short retouch is the fine trimming retouch that is just a small nibble along the very edge of the piece.
8. Condition	Record the artefact condition as fresh, weathered, very weathered, abraded, or rolled.
9. Blank/Toth	Mark down whether the piece is a whole flake (include Toth type, see I.3 for explanation), broken flake, or chunk. If the flake is broken, make clear whether it is a broken retouched flake or a retouched broken flake.
10. Type	List the standard typology, e.g., scraper, retouched point, denticulate, backed knife, etc.
11. Size	Record flake length, width and platform thickness for whole flakes or the maximum length for other artefact types in millimetres.

APPENDIX II

EUROPEAN SITE DATA

CONTENTS OF APPENDIX II

II.1 BOXGROVE

LOCATION: Eartham Quarry, 7km east of Chichester, England
ARCHAEOLOGICAL TYPOLOGY: Acheulean
NEAREST RIVER: English Channel
SITE TYPE: Open, coastal plain

REGIONAL GEOLOGY/GEOGRAPHY: Site is situated in Cretaceous Upper Chalk of the South Downs. The chalk slope was cut by Middle Pleistocene high sea level event. The palaeoenvironment suggests open grassland with some bushes and shrubs.

HISTORY: Areas discussed in this thesis were excavated between 1983 and 1992 and published in the following reports (Roberts and Parfitt 1999, Roberts et al. 1997).

STRATIGRAPHY: Artefact scatters are largely *in situ* with small amounts of winnowing by surface erosion.

DATES: OIS 12-13, between about 420-524 ka.

FAUNA: Horse butchery and rhino butchery localities. Argument for deliberate hunting, 100s of cutmarks, had time, not threatened by other animals. Scapula with hole is argued to be a spear jab. A *Homo heidelbergensis* tibia was found in Q1/B layer 4c (Roberts, Stringer, and Parfitt 1994).

ARTEFACT ANALYSES: Many 1000s of tools made on the spot.

Artefact Numbers	Trench	Unit	Reference	Page number	Figure number
2286, 3096, 3097	Q1/A	4b	Roberts et al. 1999	325 & 326	236
54, 1349, 1739, 1906, 2128	Q1/A	4c	Roberts et al. 1999	323-325	236
1, 2, 78, 95, 96, 205, 315, 754	Q1/B	4c	Roberts et al. 1999	346 & 347	249
150, 148, 149, 338, 431	Q2/C	4c	Roberts et al 1997	337	26

Table II.1 - Boxgrove data used in this thesis

II.2 CAGNY LA GARENNE

LOCATION: Near Amiens, France

ARCHAEOLOGICAL TYPOLOGY: Acheulean

NEAREST RIVER: Havre River

SITE TYPE: Open, river terrace

REGIONAL GEOLOGY/GEOGRAPY: The site is situated at the foot of the chalk talus at the limit of the alluvial plane.

HISTORY: There are two excavations at Cagny La Garenne (CLG); CLG1 was excavated between 1986 and 1987 and an area of $50m^2$ was opened. Continuing excavations at CLG2 began in 1993. I have looked at artefacts from both excavations.

STRATIGRAPHY: The earlier excavation at CLG1 was $50m^2$ in a strip of 2m wide and 25m long, which made it difficult to do spatial work. At CLG1 the sequence of fluvial silts is inter-stratified with debris derived from chalk talus. The following table displays the stratigraphy (from youngest to oldest);

Cagny La Garenne Stratigraphic Sequence	
CLG1	**CLG2**
Brown soils	Brown soils
Yellow soils (cold phase at 30ka)	Between 15cm and 1m thick grey soil with flooding lenses from the river, may match with the grey level from CLG1
Red soil (hiatus)	
Saalian glacial soils with pedogenesis (200ka)	
15cm lense of thin grey level from interglacial OIS8/11?	
CXV = abraded	Gravels
CXB = pebbly limestone	4 levels of rognons with clearly defined lenses such as the grey lens.
LJ & LG fluvatile silts	
CXCA & CA = gravels fresh state of flint artefacts in chalky debris suggest a primary context	
	Chalk

DATES: Sediments date to OIS 12, ESR date of 400 ± 101ka (Tuffreau, Lamotte, and Marcy 1997).

FAUNA: Bone fragments are rare.

ARTEFACT ANALYSES: The site functions are suggested to be biface manufacture and flake knapping at CLG1 and the collection of raw materials from CLG2 (Lamotte 2001, Tuffreau, Lamotte, and Marcy 1997). CXB and CXV are said to have Levallois cores (Lamotte 2001). Some of the assemblage is quite patinated while other pieces are significantly fresher. Retouched edges on most pieces are natural. Nodules are not heavily flaked. Scars tend to be largish and deep. All conform to the cobble shape. Some flakes removed and then the cobble looks as if it has been used with the cortex where the hand is placed. The flakes are mainly cortical or with a unidirectional flaking pattern. Most flakes are at least partly cortical.

Level CXV	
Type	**Number of Pieces**
Chips	1
Chunks	1
Incomplete Flakes	78
Whole Flakes	136
Core Fragments	1
Cores	19
Retouched Pieces	8
Levallois Blades	3
Broken bifaces	1
Bifaces	6
Manuports	2
TOTAL	256
Other Levels Studied	
Level	**Artefacts**
CXB	1 broken biface, 3 cores
I2	1 biface, 1 Levallois flake
I4	9 bifaces, 1 core
J	5 bifaces

Table II.2 – Sample Studied from Cagny La Garenne

II.3 CAGNY L'EPINETTE

LOCATION: Near Amiens, France

ARCHAEOLOGICAL TYPOLOGY: Acheulean

NEAREST RIVER: Havre River

SITE TYPE: Open, river terrace

REGIONAL GEOLOGY/GEOGRAPY: Site occupied at the end of the interglacial when the landscape consisted of grassy meadows and light forest.

HISTORY: Over 180m^2 has been excavated since 1980's.

STRATIGRAPHY: Site is in a fluvial context, situated at the edge of a channel running along a chalk talus. The archaeological layers are in fine fluviatile sediments (Tuffreau et al. 1986). There is also carnivore action.

Cagny L'Epinette Stratigraphic Sequence		
OIS STAGE	**LEVEL**	**COMMENTS**
8	E	-
	E0	-
	E1	-
	E2	-
	F	Studied for this thesis
	G	-
	H	-
9	I	Studied for this thesis. These three levels may be mixed as one level due to refits across space.
	I1a	
	I1b	

DATES: Site occupied during the Holsteinian OIS 9 at the end of the interglacial with open forests and grassy steppes. There is an ESR date of 296 ± 53ka (Laurent et al. 1994).

FAUNA: Acheulean with dominant species of *C. elaphus* (NR=>100, NMI=7) *and B. primigenius* (NR=>100, NMI=6). Other species *E. mosbachensis* (NMI=3). There is spatial zonation at the site and all elements of anatomy are present (Auguste 1993).

There is some fluvial striation and carnivore activity on the bones. Land use interpretation suggests the exploitation of large herbivore carcasses beside the channel (Tuffreau, Lamotte, and Marcy 1997).

ARTEFACT ANALYSES: There are many refits (Lamotte 2001). Lithics more heavily worked than at CLG. There is no Levallois and virtually no cores. There are handaxes and it may be that handaxe production accounts for a lot of the flakes at this site. It is my impression that there is not much retouch. The Level F artefacts are quite fresh and include finely made ovate bifaces and several refitting pieces. There is very little small débitage and what is present is a huge range from fresh to abraded so it would seem that much of the smallest pieces are winnowed out of the site. The cores are fractured cobbles with alternate and parallel flaking. There are no polyhedral cores. Bifaces were mainly knapped from nodules. The flint is not high enough quality for removing large flakes. 80% of the pieces are cortical or semi-cortical flakes, mostly ranging between 40-80mm in maximum length.

Artefact type	**Level**									**Total**
	F	**F1**	**F2**	**I**	**I0**	**I1**	**I1a**	**I1b**	**I2**	
Chunk	4		3							7
Broken flakes	80	29	82							191
Cortical flakes	13	4	7	5						29
Partly cortical flakes	47	16	77	35	1	1	5	4	1	187
Non-cortical flakes	14	3	10	5			7	3		42
Bifaces	1	2	5	1	2	6	1	7	3	28
Broken bifaces	3	3	22							28
Core fragment	2	2	3							7
Broken Cores		3	4							7
Cores	3	5	8	3						19
Core tools		1	1	1						3
Retouched Pieces	6	4	22	1			1	1		35
Manuports							1	4		5
TOTAL	**173**	**72**	**244**	**51**	**3**	**7**	**15**	**19**	**4**	**588**

Table II.3 – Sample Studied from Cagny L'Epinette

II.4 DOVERCOURT

LOCATION: Essex, England

ARCHAEOLOGICAL TYPOLOGY: Acheulean

NEAREST RIVER: Stour River

SITE TYPE: Open site

REGIONAL GEOLOGY/GEOGRAPY: This site is on the estuary of the River Stour and it is thought to be a locally derived site swept together in a bank of sand and gravel (Roe 1981: 176). This accumulation is interpreted as a terrace that formed very rapidly and hence the artefacts are thought to be of a similar age.

HISTORY: The site of Dovercourt, or Gant's Pit, is the most important of the handful of sites from this period in the Stour Valley and it is the richest handaxe site in Essex. The site is discussed in the literature by Underwood (1911, 1913), Warren (1932), Roe (1968, 1981) and Wymer (1985, 1999).

STRATIGRAPHY: The artefacts have a depth from 2 to 9 feet and the patination decreases with depth suggesting post depositional percolation of water.

DATES: The artefacts are considered to be post-Anglian but there is no absolute date. Wymer (1999: 144-5) puts the occupation of this site during the latter part of Period 2 (OIS 8-11) as this small patch of gravel with handaxes is banked against (and therefore younger than) the pre-Anglian Oakley Gravel defined by Bridgland (1988). The fauna is also typical of an interglacial (Wymer 1999).

FAUNA: Typically interglacial, including beaver, rhino, fallow and red deer, ox, and straight tusked elephant (Wymer 1999).

ARTEFACT ANALYSES: There are reportedly many delicate handaxe-trimming flakes only the handaxes were studied for this research. Dovercourt is considered to be a point dominated assemblage with ovates as Roe (1981: 154) places the Dovercourt handaxes in the Pointed Tradition, Group II with ovates, sub-group B, with Hoxne & Hitchin. I have looked at 68 bifaces from the Warren Collection held at the British Museum.

II.5 ELVEDEN

LOCATION: East Anglia, England

ARCHAEOLOGICAL TYPOLOGY: Acheulean

NEAREST RIVER: Little Ouse

SITE TYPE: Open, lakeside

REGIONAL GEOLOGY/GEOGRAPY: The artefacts are found in kettle-hole lake sediments and the area is considered to have been in a lacustrine environment at the time of hominid occupation (Roe 1981). The local chalk was the primary source of raw material and a secondary source comes from coarse solifluction gravel in the middle of the loam sequence that has angular flint blocks and smaller derived cobbles. The coarse lag gravel had large nodules but they were often frost fractured. The chalk cliffs contained better quality large nodules but there were less in quantity (White 1998b).

HISTORY: The Elveden brickpit was opened in 1897 and the bulk of the artefacts were removed from the brickearth during the period from 1897 to 1900. Patterson & Fagg (1940) undertook the first archaeological excavations about 25 years after the pit had been closed in the late 1930's. Later, during the 1960's and early 1970's Sieveking excavated the site and more recently still Nick Ashton resumed excavations (Wymer 1999: 160).

STRATIGRAPHY: Elveden brickpit has 13m of deposits that fill a depression in the Anglian Till (Wymer 1999).

DATES: Roe considers this site to be Middle Acheulean, as does Wymer (1999), who puts this site in Period 2 between OIS 8 and 11. The pollen indicates an early Hoxnian date for the lake muds (*ibid.*).

FAUNA: There are shells but no bone.

ARTEFACT ANALYSES: Although a range of artefact types were collected, only the handaxes are discussed here. Roe (1968) notes that at Elveden the handaxes are inclined to be narrow but he does not relate this to raw material size. Roe places these handaxes in group VI, sub-group B, with Allington Hill, as an ovate dominated assemblage with points. Roe (1981) notes that Elveden is particularly similar to Allington Hill nearby but does not suggest that any of the sites can be clustered together in terms of handaxe shapes. I have looked at 34 handaxes from the British Museum.

II.6 GOUZEAUCOURT

LOCATION: 15km SSW of Cambrai

ARCHAEOLOGICAL TYPOLOGY: Paléolithique moyen de faciès cambrésian or earliest Middle Palaeolithic

NEAREST RIVER: Tributary of the Escant

SITE TYPE: Open air

REGIONAL GEOLOGY/GEOGRAPY: Site is situated on the base of the Muid Valley on the eastern slope. The site is in the silty eastern region of the north of France (Sommé 1977). There are several archaeological levels in a Middle Pleistocene sequence of old loesses.

HISTORY: 1985 was the first season at Gouzeaucourt and the excavations continued between 1986-1993 under the direction of A. Tuffreau and A. Lamotte. The total area of excavation is in the region of 183m^2.

STRATIGRAPHY: The geological stratigraphy of the site is as follows (translated from Lamotte 1994);

1. Vegetation to 0.3m
2. Silts, at points black, yellow brownish (10YR 6/6), very sandy, thickness 0.2 – 0.3m thick
3. Sandy silts, yellow reddish (7.5YR 6/6) with manganese, thickness 0.5m.
4. Sandy silts, oxidised iron with lots of little vertical faults, thickness 0.1m.
5. Dark brown silts (7.5YR 5/8) with a number of degraded greyish tongues of clay, thickness of 1m.
6. Silts with black spots, brown-yellowish (10YR 6/4) sands with bits of flint, thickness 0.3m.
7. Flint gravel, not thick, discontinuous with some flint artefacts, a few cm thick.
8. Silty dark brown (7.5YR 5/6) with coating of clay 0.4m thick. This silt rests on the chalky substrate.

The artefacts from levels G and H are in the silts of level 5. Gouzeaucourt is in a silty area where the ancient loesses are better conserved and have filled in the pockets that are affected by the chalky substrate. The site is situated on a fluctuating dolina surface.

DATES: The silts of level five go back as far as a minimum of the 3rd glaciation before the present, based on the presence of three old soils (Tuffreau and Bouchet 1985). Thought to be OIS 8 based on the fact that the artefacts look younger rather than older. Level G is attributed to a phase of the ancient Middle Palaeolithic. Levels G, H, I and R are all attributed to the Saalian and OIS 8.

FAUNA: No bone

ARTEFACT ANALYSES: The raw material for artefacts is all flint. Flint from the Upper Cretaceous, both the Turonien and Coniacien stages, is found at the site and is abundant in the 15km range. Tuffreau attributes the Gouzeaucourt industry to the Paléolithique moyen de faciès cambrésian or PMC for short (Tuffreau 1992). This industry is defined on the presence of numerous bifaces, retouched tools and rare levallois pieces.

A summary of the artefacts can be made from a study done by Tuffreau (1992). This site contains over 500 flat bifaces, which account for over one-third of the tools recovered from an excavation of 120 sq. m. Oval and cordiform types dominate, while elongated types are completely absent. Most of flake tools are notches and denticulates, but the scrapers, with very scaled retouch, which is unusual for this part of France, are very well made. Levallois débitage is rare.

The Level H industry was initially interpreted as without Levallois. The artefacts now include a huge richness of bifaces dominated by ovate and limande forms, scraper-bifaces, scrapers with thinned backs and an abundance of classic utilised pieces of Middle Palaeolithic type (Lamotte 1994). Level H has 5467 artefacts (not including the excavations of 1993). They are made on flint from the chalk. The biface index has been elevated. Choppers are in the minority when compared to bifaces. The stone tools from this site are exceptional for the region.

Type	**Level**		**Total**
	G	**H**	
Chunks	-	21	**21**
Broken flakes	22	219	**241**
Broken flakes <20mm	3	-	**3**
Retouched pieces	13	24	**37**
Flakes	8	3	**11**
Cortical flakes	-	7	**7**
Partly cortical flakes	9	82	**91**
Non-cortical flakes	3	57	**60**
Broken Bifaces	-	24	**24**
Bifaces	33	111	**143**
Core fragments	-	1	**1**
Broken Cores	-	1	**1**
Cores	-	14	**14**
Split Pebble	-	1	**1**
TOTAL	**91**	**565**	**655**

Table II.4 – Gouzeaucourt Study Sample Assemblage Profile

II.7 LA COTTE DE ST BRELADE

LOCATION: Jersey, Channel Islands, UK

ARCHAEOLOGICAL TYPOLOGY: Middle Palaeolithic sequence

NEAREST RIVER: English Channel

SITE TYPE: Cave, coastal plain

REGIONAL GEOLOGY/GEOGRAPY: The cave has formed from Cambrian granite complex nearly 600 million years old (Renouf 1986). The structure at La Cotte is still dominated by the original pattern of cooling strains. The cave is a 15m wide fissure running into the granite cliff face. Palaeoecological evidence indicates interglacial to glacial herbaceous steppe with gallery forest and marshes.

HISTORY: All the archaeology and history of this site is summarised from the seminal volume on La Cotte (Callow and Cornford 1986). Dancaster and Saunders first found Flints at the mouth of the cave in 1881. Dancaster and Sinel were the first to carry out systematic excavations at La Cotte à La Chèvre during the 1880's. Sinel was one of major contributors to the formation of the museum of the Société Jersiaise. Société Jersiaise, founded in 1873, acquired their present building in 1893 and served as the headquarters and principle museum. Since 1977 the archaeological collections from La Cotte have been housed in a complex of buildings at La Hougue Bie. Before the Second World War a huge volume of the deposit (all material from the last ice age) was excavated. Unfortunately the excavations from 3 to 4 feet of occupation dug from 1910 to 1919 were thought to be from the same context and therefore the whole lot was merged together. Father Christian Burdo concluded his work due to the German occupation. Burdo, who had been digging the upper layers, began a second phase of excavation in the older layers during the 1950s. He found Acheulean type handaxes and Mousterian artefacts in much deeper levels than previously but although he published a short monograph (Burdo 1960), sadly his work was very poorly recorded. From 1961-1978 Professor C. McBurney excavated over 100,000 artefacts from deposits earlier in date than the last interglacial. The North ravine was the focus of much of their work.

Further excavations were made during 1980-1982 by Callow. Small areas were excavated for soil samples.

STRATIGRAPHY: There are levels from the Saalian to the Flandrian, and the Eemian is clearly present as a marker of this interglacial. This research is only concerned with the earlier Saalian levels, Layers H to 6.1 or Stages II and III. Layer E is the only archaeological level, which is technically *in situ*. Deposits from the earliest occupation only survive in the northern ravine. Bottom of the sequence has not yet been found. The archaeological finds are all in ravines as the sea has destroyed any other remains.

DATES: The La Cotte artefact sequence is Saalian incorporating OIS 6 and 7. The favoured date suggests that Layer D is probably OIS 7 about 210ka. There is an absolute date of 238 ± 35 ka (OX-TL 222; (Huxtable 1986).

STAGE	OIS	EPISODE	LAYER	DATES	NUMBER OF ARTEFACTS
III	6 COLD	20-21	6.1	-	95
		18-19	4.5	-	3,378
		16-17	3	-	1,185
		15	A	-	39,312
		13-14	B	-	5,821
II	7a	12	C	-	9,623
		10-11	D	238±35ka	7,610
		8-9	E	-	640
	7b	6-7	F	-	6,328
		5	F&G	-	4,825
	7c	4	G	-	
		3	H	-	2,144
I	8	1-2	-	-	-

Table II.5 - La Cotte de St Brelade Dates and Artefacts (after Callow and Cornford 1986)

FAUNA: Dense masses of bone found and two or possibly three major accumulations of mammoth and woolly rhinoceros bones which are thought to be the result of a specialised hunting technique. Nine hominid teeth were found on the 25 August 1910 and a further four were found during 1911. These teeth were inspected by A. Keith and he believed them to belong to Neanderthal man.

ARTEFACT ANALYSES: The artefacts have been designated Middle Palaeolithic for the entire Saalian sequence. There are a large number of flake tools, including Levallois technology and some handaxes. Here is a summary of the levels that I have looked at drawn from the LCB site report (Callow and Cornford 1986).

LAYER H Stage II, episode 3, layer H is a reworked loess deposit formed in water-laid silt, pollen suggests that the climate is temperate with mixed woodland, maritime grass, heath and marsh with maritime elements. This may be interglacial or interstadial. The assemblage is dominated by notched pieces (majority notched, mostly Clactonian notches) and denticulates. Side scrapers are quite rare, no handaxes, one chopping tool. This is the only series in which Tayac points play a significant part. Thick pseudo-Levallois points are both unretouched and as blanks for retouched tools.

LAYER D Stage II, episode 10-11, layer D is a deposit in granitic sand, climate is temperate although slightly deteriorated (evidence of pollen and gelifraction of bones) with mixed woodland, grassland, heath and marsh with maritime elements and probably OIS 7 about 210ka is the favoured date. Absolute date is 238 ± 35 ka (OX-TL 222). Lack of open ground taxa, may be indicative of a former closed forest environment, perhaps of interglacial rank. Side scrapers exceed 50% of the reduced total and 23% of them are side scrapers with inverse and alternate retouch.

LAYER A Stage III, episode 15, layer A is a reworked loess deposit, cool climate and extremely rich archaeological layer. No pollen or spores but oak (*Quercus sp.*) charcoal. Mammoth and last of the reindeer (but no lemmings). Horse most abundant in layer A. The first appearance of mammoth is present from Layer C onwards and reindeer, present until end of layer A. Typologically layers A-C form a well-defined group, though one in which changes take place through time. Side scrapers (particularly those with convex edges) are always the principle element. Bifaces of classic Acheulean type appear for the first time, Levallois blanks frequently used during tool manufacture but unretouched Levallois flakes are rare, and inverse and alternate scrapers rarer. Inverse truncations like Kostienki knives become increasingly common (by Layer A present on 10.7% of retouched tools) and often associated with dorsal scaling or with resharpening by means of the long sharpening flake technique. May be related to growing shortage of flint. Burins very common in layer A, chiefly angle burins on breaks, use wear thought to be adaptation for gripping or hafting.

LAYER 5 Stage III, episode 19, layer 5 is a reworked loess deposit, cool climate, pollen is mosaic and rich archaeological layer. Steppe-tundra environment with trees lacking and much open and disturbed ground. Mammoth and base of the upper 'bone heap' is in this layer. Huge drop in the number of flint pieces, only 39.9% (lowest previously was 69.9% from Layer A).

La Cotte de St Brelade					
Type	**5**	**A**	**D**	**H**	**Total**
Incomplete flake	-	-	2	1	3
Flakes – partly cortical	13	0	4	17	34
Flakes – non-cortical	40	7	27	16	90
Core rejuvenation flake	-	-	-	-	0
Thinning flake	-	-	-	-	0
Levallois – flake	1	1	3	1	6
Levallois – convergent	-	2	2	1	5
Levallois – point	-	1	2	1	4
Levallois – radial	1	23	10	3	37
Broken Levallois flake	-	1	2	-	3
Blade	2	19	3	2	26
Broken blade	-	-	-	1	1
Retouched chunk	-	1	-	-	1
Retouched flake	4	9	21	21	55
Retouched Levallois	1	-	6	-	7
Retouched blade	-	1	-	-	1
Retouched broken flake	-	2	9	7	18
Retouched broken blade	-	-	-	1	1
Flaked flake	-	14	4	2	20
Cores	29	122	31	40	222
Levallois Cores	-	4	-	2	6
Handaxe	3	2	-	-	5
Cleaver	-	3	-	-	3
Biface	2	1	-	-	3
TOTAL	96	213	126	116	551

Table II.6 – La Cotte de St Brelade study sample

II.8 JOHN LORD EXPERIMENTAL COLLECTION

This collection is held by the Centre for the Archaeology of Human Origins (CAHO), Department of Archaeology, University of Southampton. It is a flint assemblage knapped by John Lord during May 2002. The lithics were knapped to re-create an entire Aurignacian typological assemblage. All débitage (>20mm) was collected during the knapping process. I studied artefacts (n = 121) that had all of the following attributes,

1. Whole flakes
2. Not retouched or modified
3. Completely non cortical
4. Not blades or levallois (although they were part of the blade-making process)

APPENDIX III

AFRICAN SITE DATA

CONTENTS OF APPENDIX III

II.1 BUSHMAN ROCK SHELTER

LOCATION: Ohrigstad, South Africa

ARCHAEOLOGICAL TYPOLOGY: Middle Stone Age sequence (including MSAI)

NEAREST RIVER: Ohrigstad River

SITE TYPE: Rock shelter

REGIONAL GEOLOGY/GEOGRAPY: Bushman Rockshelter (BRS) is situated on a south-facing dolomite ridge near Ohrigstad. This large open cave overlooks a tributary of the Ohrigstad River lying 15m below on the valley floor. This shelter is the remnant of an old cave developed through basal-sapping by a once higher-lying river, in the Malmani dolomites of the Transvaal System. The shelter is about 170ft wide and 75ft deep, with a maximum height of 45ft (Louw 1969). The floor of the cave is 160ft wide with a maximum of 60ft from the back wall to the edge of the deposit (*ibid.*). Excavations at BRS have revealed a long and deep stratigraphy encompassing Iron Age, Later Stone Age (LSA) and Middle Stone Age (MSA) deposits.

HISTORY: Initially, part of the talus slope and part of the deposit at the front of the shelter was removed and used as road fill. Archaeological interest was first raised when MSA artefacts were collected by J.J. Malan and shown to R.J. Mason. Louw (1969) then proceeded to investigate the site with a trial excavation in July 1965. He removed a 5ft by 5ft block (roughly 1,52m x 1,52 m) and sieved all the soil using a 3 to 12mm size (Plug 1978: 49). Further excavations adjacent to Louw's were then undertaken by Eloff (1969) for a few weeks each year between 1967 and 1978 (Volman 1981). Louw did not reach bedrock in his excavations but Eloff's excavations with the University of Pretoria reached either bedrock or a rock ledge at about 7m (*ibid.*). This study focuses on the MSA deposit (Levels 15-107), particularly the lower levels from 86-107, which were excavated by Eloff and the University of Pretoria during the 1970's. Louw originally laid out the grid in feet, and to ensure a matching excavation, Eloff followed this system. However their vertical stratigraphy differs with Louw's Level 41 corresponding to Eloff's Level 21 (for full details see Plug 1981). Plug converted the horizontal grid squares into metres when writing her thesis (Plug 1978).

STRATIGRAPHY: To begin with, the stratigraphy needs to be discussed as two different numbering systems have been used. Initially Louw's excavation numbered levels 1-43, but subsequent excavations by Eloff involved renumbering the stratigraphic levels and a deeper excavation. It is Eloff's excavation material that has been studied here and therefore his numbering system is used. The two numbering systems have been equated by Plug (1981: 14). All work here uses the Eloff numbering system except where direct use of Louw's work is made.

A study of the stone tool assemblage table III.1 suggests that Levels 103 and 104 are virtually sterile. However, given the small area of excavation this may well change if further work is undertaken at the site. One other interesting comparison is the number of total artefacts compared to the width of the BRS stratigraphic Levels. Differences in the number of artefacts seem to reflect differences in level thickness. Levels 89 and 90 to 95 are thin levels showing fewer numbers of artefacts, particularly fewer cores, retouched pieces and prepared core pieces. In contrast Levels 96 to 101 are thicker levels with greater numbers of artefacts. This may suggest different degrees of occupation at different times, differential sediment compaction or erosion, or different patterns of sedimentation. Some sedimentological work has been done on this sequence by Butzer and Vogel (1979) and is summarised here.

Period	Category	Level	Size of unit (cm)	Interpretation (Butzer & Vogel 1979)
Iron Age	BRS 7	1	0-8	The Holocene has a modern microenvironment
LSA	BRS 6C	2-5	8-60	
	BRS 6B	6-11	60-114	
	BRS 6A	12-14	114-130	Mechanical weathering at 12
L/MSA	BRS 5	15-18	130-155	
MSA	BRS 4	19-20	155-174	Level 19 at the beginning of this section there is a huge rockfall of weathering.
	BRS 3	21-30	174-294	
	BRS 2	31-37A	294-350	At beginning of this section there is a huge rockfall. The surface of unit 31 long weathering – warm and damp – thought to be OIS 5e.
	BRS 1	38-71	350-480	
	Not sampled	72-107	480-690	

DATES: For the LSA and late MSA deposits (back to Level 21) there are radiocarbon dates (Vogel 1969), although the early use of this technique here means that their reliability may need to be tested again. The MSA from Level 21 has dates ranging from 30,075 B.P. to 53,000 B.P. and a tooth from the now extinct *Equus capensis*. The lowest levels of the cave, below Level 31, are thought to be MSA I and have been suggested to fit in to OIS 6 on the basis of the artefact and sedimentary sequences (Butzer and Vogel 1979, Volman 1981).

FAUNA: The fauna and flora is well preserved to level 28 and minimal below level 50 (Volman 1981). Carbonised wood and seeds are present to level 70 while bone is present throughout this sequence (*ibid.*). There are ash concentrations throughout the sequence although there is no description of these or their spatial patterning. Both the LSA and MSA bone is highly fragmented (Brain 1981). A new study of the MSA fauna and flora is currently under investigation by Dr Plug and Professor Wadley.

ARTEFACT ANALYSES: Little has been published on the stone tools from the MSA levels of this excavation. The most comprehensive study has been of the LSA levels (Plug 1978, 1981, 1982), while stone tools from the earlier levels have been very briefly discussed by Plug (1979) and Volman (1981).

The goals of this investigation were to provide a descriptive analysis of the MSA stone tool levels from BRS and to make a new interpretation using current techniques and understandings of the MSA. During June and July 2001 I spent five weeks analysing the MSA stone tools from the lowest levels of the BRS sequence. A total of 8201 stone artefacts were analysed from Levels 67 to 69 and 86 to 107 (see table III.1). The main focus of this analysis was on Levels 86 to 107, while a sample from a few of the later levels (67 to 69) was taken to look at continuity and change in the broader time frame of this site. In addition to the stone tool analysis completed a visit to the site was also made to study the cave, its environs and to collect raw material samples.

The artefacts are mainly made on hornfels and quartz. In addition quartzite, diabase, chert and dolomite, all found within a few kilometres of the site, were also used. The assemblage is mostly in a good condition. The debitage suggests *in situ* knapping took place. Knapping strategies include radial, alternate, parallel, convergent and bipolar flaking techniques. Retouched pieces are rare.

Table III.1 – Bushman Rockshelter Assemblage Profile

Type	Total	67	68	69	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105*	106	107
DEBITAGE & CORES																										
Chips <10mm	917	28	45	36	7	56	16	38	1	4	6	10	1	7	241	50	3	9	3	155	47			130	8	16
Chunks	388	12	15	22	14	66	12	23	3		10	12	6		78	38	5	5	24	7	17			15	1	3
Broken flakes	5159	54	95	130	100	165	206	273	187	138	76	183	147	226	695	508	67	347	308	800	339	13		81	18	3
Broken flakes (parallel scars)	193	9	11	18	3	14	10	13	7	2		1	5		8	14	4	20	14	29	7			4		
Broken flakes (converg. scars)	71	3	6	11	1	5	6	4	5	1	1				3	9	2	3	3	4	3				1	
Broken flakes (radial scars)	8					4		2	1										1							
Cortical flakes	10		1						1			1			3	2		1						1		
Partly cortical flakes	355	7	17	31	5	28	20	25	13	6	6	20	15	20	38	41	4	17	5	23	8			4	1	
Non cortical flakes	811	19	22	30	21	41	53	73	41	17	13	29	25	38	52	142	22	44	24	52	25	1		25	3	1
Core fragments	9					1	1									2		2	1	2						
Broken Core	2					1								1												
Alternate Core	2															2										
Direct anvil/bipolar Core	5													1	2					2						
Casual Core	1														1											
Radial Core	3		1													1								1		
Flaked Flakes	2															2										
Opposed Cores	2																1	1								
Parallel Cores	1																			1						
Multi-facetted Cores	4														1		1	1		1						

* = Included in Layer 105 are the "loose cleaning above layer 105". This includes 1 core, 13 whole flakes, 2 blades and 51 other pieces of flaking debris.

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Table III.1 – Bushman Rockshelter Assemblage Profile

Type	Total	67	68	69		86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105*	106	107
RETOUCHED & LEVALLOIS TOOLS																											
Outile ecaille	**1**																				1						
Retouched chunks	**1**																				1						
Retouched broken flakes	**20**			1												2	6	2	4		5						
Retouched flakes	**27**	1	3	1		1										1	4	1	1	2	12						
Retouched broken blade	**1**						1																				
Retouched broken levallois flake	**1**								1																		
Retouched blade	**1**																										
Retouched levallois flake	**1**															1						1					
Broken retouched flakes	**15**		1	3														2	2		7						
Blade	**79**	5	8	7		2	7	5	4	6		2		1	1	3	6	2	9	2	6				2		
Bladelet	**2**								1							1											
Blade core rejuvenation flakes	**2**															1	1										
Levallois	**20**		1	5		4			5					1			2				2						
Levallois convergent	**31**	2	2	3			3	1	2		1				1	4	1	2	1	1	3	2			1		
Levallois point	**30**		1	3		2	3	2	3	1			1	1		2	6	1	1			1	1		1		

* = Included in Layer 105 are the "loose cleaning above layer 105". This includes 1 core, 13 whole flakes, 2 blades and 51 other pieces of flaking debris.

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Table III.1 – Bushman Rockshelter Assemblage Profile

Type	Total	67	68	69		86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105*	106	107
FOREIGN STONES & HIGHLY ERODED PIECES																											
Manuport (cobble/pebble)	6															1	1				4						
Magnetite	1																		1								
Crystal pieces	2												1												1		
? highly eroded pieces	2																2										
TOTAL	11												1			1	3		1		4				1		

Type	Total	67	68	69		86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105*	106	107
GRAND TOTAL	8201	140	229	301		163	399	334	468	266	169	114	258	202	295	1139	842	119	469	388	1119	451	15	0	266	32	23

*Included in Layer 105 are the "loose cleanings above layer 105". This includes 1 core, 13 whole flakes, 2 blades, and 51 other pieces of flaking debris.

III.2 CANTEEN KOPPIE

LOCATION: Near Barkly West, South Africa

ARCHAEOLOGICAL TYPOLOGY: Fauresmith, Victoria West and Acheulean sequence

NEAREST RIVER: Vaal River

SITE TYPE: Open

REGIONAL GEOLOGY/GEOGRAPY: Site situated near the edge of the Vaal river. Artefacts have been deposited here in a colluvium from the adjacent hills (Beaumont 1999). Although only a small portion of this area has been excavated, on my own visit to this site it is clear that the stone tool scatters cover a very wide area.

HISTORY: Diamond mining continued at this site until at least 1927. It became a national monument in 1948.

STRATIGRAPHY:	STRATUM 1 –	Hutton sands LSA/MSA
	STRATUM 2 –	11m of angular andesite clasts and a few exotic pebbles. There are two units,
	2a	Fauresmith and Victoria West
	2b	Acheulean
	BEDROCK	Below stratum 2 is andesite bedrock.

DATES: There are no absolute dates but a Middle Pleistocene age has been suggested (McNabb 2001).

FAUNA: Bone not preserved (Beaumont 1999).

ARTEFACT ANALYSES: The condition of the lithics are fresh through to very abraded. The upper reaches of unit 2a is thought to be a Fauresmith Industry (McNabb 2001) with blades and points. The lower part of the unit has no blades but has Victoria West cores and many handaxes (some very large, one is 385mm in length). Unit 2b is an earlier Acheulean unit where prepared cores are absent. The lithics are fresh and consist of flakes, informal cores and rare cleavers.

Artefact Type	Areas 1&2 Unit 2a	Area 1 Unit 2b	TOTAL
DEBITAGE			
Chips <20mm	97	69	166
Broken flakes >20mm	7512	3466	10978
Chunks >20mm	29	0	29
Core fragments	15	0	15
Trimmer flakes 20-40mm	1101	196	1297
Whole flakes (cortex not recorded) >40mm	1581	317	1898
Cortical whole flakes >40mm	98	40	138
Partly cortical whole flakes >40mm	867	396	1263
Non cortical whole flakes >40mm	823	286	1109
Thinning flakes	29	0	29
Flaked flake spalls	8	3	11
PREPARED FLAKES			
Kombewa spalls	4	4	8
Victoria West flakes	1	0	1
Levallois flakes - general	8	0	8
Levallois flakes - blade	77	4	81
Levallois flakes - convergent	60	4	64
Levallois flakes - parallel	19	0	19
Levallois flakes - radial	11	3	14
RETOUCHED PIECES			
Retouched flake flakes	13	2	15
Retouched pieces	23	14	37
LARGE 'TOOLS'			
Biface	34	5	39
Cleaver	23	9	32
Bifacial Point	2	0	2
Uniface	3	1	4
Roughout	7	2	9
Indeterminate	9	0	9
CORES			
Cores	356	130	486
Levallois Cores	20	1	21
Victoria West Cores	62	1	63
TOTAL	**12,892**	**4,953**	**17,845**

N.B. Unit 2a from Areas 1 and 2 do not tie together spit for spit.

Table III.2 – All artefacts from Canteen Koppie, counted by Unit (lithic analysis undertaken and database collated by Dr J McNabb)

III.3 CAVE OF HEARTHS

LOCATION: 19km east-north-east of Potgietersrus, South Africa
ARCHAEOLOGICAL TYPOLOGY: Acheulean and MSA (including MSAIIa)
NEAREST RIVER: Makapan Stream & Dorpspruit
SITE TYPE: Cave

REGIONAL GEOLOGY/GEOGRAPY: The Makapansgat valley is flanked by both dolomitic and quartzite formations. The COH is part of a dolomitic limestone cave system that runs through the valley. There are many other sites in this region. Other ESA sites nearby include 1. Skoonheid Donga, Skoonheid, 2. Potgietersrus Town Lands, Dorlagsfontein, 3. Maguire's Donga, 4. Flint Creek and 5. River Terraces at Makapansgat (Maguire 1998).

HISTORY: The total floor area of the cave is 100 x 50 foot but only a small fraction of this was excavated as the rest was destroyed by lime miners (Mason 1988). Excavation of the ESA and MSA took place in 1953-4. Mason used nearly two tonnes of dynamite and removed 2,300 tonnes of waste from the cave. The site was excavated in horizontal square yards and vertically in 12 inch intervals. Except where directly referenced, all of the information present here has been extracted from Mason's Cave of Hearths Volume (1988).

STRATIGRAPHY: The COH has levels from the ESA right the way through to the Iron Age. My focus is on the earlier beds. I have studied artefacts from the ESA Beds 1-3 and the earliest MSA Bed 4 (the MSA continues through to the top of Bed 9). The total floor area of the cave 100' x 50' but only a small fraction of this was excavated as lime miners had destroyed the rest. Most of the MSA comes from an area of only 9 sq. m. or 10' x 10'. MSA concentrated in the centre rear corner of the cave. The rear corner yielded one of the main stratified series of deposits. Bed 4 extends to 28 ft in the southern central area (rear part of cave deposit) where there is subsidence. Therefore the central part of bed 4 extends between 23 – 26ft. The subsidence is thought by Mason to have taken place slowly as the stratigraphy is still in lace. At the top of Bed 5 there is an abrupt change to hard, consolidated bed marked with abrupt change. Most of the stone is fresh but there are many that are waterworn.

DATES: The Acheulean is considered to be Middle Pleistocene although there are no absolute dates as yet. The MSA is dated on the basis of the artefact types and depth of deposits to MSAIIa in Bed 4 (Volman 1984).

FAUNA: Bone is present in all beds but it is mostly very fragmented, which makes identification difficult. There are some *Homo* fragments from the ESA.

ARTEFACT ANALYSES: The assemblage composition (tables III.3 & III.4) is collated from Masons analysis at the COH (Mason 1988). I did a sample selection on Beds 1-3 and Bed 4. I was also very kindly given access to the ESA database compiled by Dr J McNabb for my own handaxe and flake analyses. The ESA and earliest MSA assemblages are predominantly made on quartzite. This does not change until Bed 5 when there is an increase in the use of chert and the use of some other raw materials.

CAVE OF HEARTHS - ESA BEDS (after Mason 1988)				
TOOL TYPE		**BED 1**	**BED 2**	**BED 3**
Handaxes	Hemi-lemniscate	12	10	21
	Oval	4	8	37
	Elliptical	-	-	4
	TOTAL=96	**16**	**18**	**62**
Cleavers	Parallelogrammatic	26	7	155
	Oval	12	5	37
	Trapizoid	4	3	28
	TOTAL=277	**42**	**15**	**220**
Cuboids		11	1	173
Bifacial Quadrilaterals		-	-	19
Discoids		1	1	58
Spheroids		11	6	227
Irregulars		11	8	272
Choppers		3	1	67
	TOTAL=870	**37**	**17**	**816**
Cores	Ellipsoid	6	4	295
	Cuboid	2	2	6
	Disc	2	-	12
	Irregular	-	-	15
	TOTAL=344	**10**	**6**	**328**
Flakes	Parallel	15	21	122
	Irregular endstruck	48	23	657
	Irregular sidestruck	42	22	420
	Knives	2	1	30
	TOTAL=1403	**107**	**67**	**1229**
Waste Flakes	**TOTAL=1007**	**72**	**3**	**932**
GRAND TOTAL	**TOTAL=3997**	**284**	**126**	**3587**

Table III.3 – Cave of Hearths ESA Artefact Assemblage Profile

CAVE OF HEARTHS – MSA BEDS (after Mason 1988)				
TOOL TYPE		**BED 4**	**BED 5**	**BED 6-9**
Irregular artefacts mainly heavy pieces		31	48	72
Anvils		5	5	-
Choppers		2	-	-
Heavy edged flaked pieces		24	24	39
Spheroids		16	5	*36
Outils ecaille		-	-	54
	TOTAL=361	**78**	**82**	**201**
Cores	Irregular	32	44	107
	Parallel	7	-	-
	Disc	15	-	-
	Elliptical Paraboloid	1	15	7
	Discoid	-	27	84
	TOTAL=339	**55**	**86**	**198**
Flakes[1]	Parallel	275	503	351
	Irregular endstruck	462	821	59
	Irregular sidestruck	44	73	16
	Convergent	25	59	71
	TOTAL=2759	**806**	**1456**	**497**
Waste Flakes	**TOTAL=5259**	**2122**	**1700**	**1437**
GRAND TOTAL	**TOTAL=8718**	**3061**	**3324**	**2333**

[1] In Beds 6-9 Mason is very confusing about the totals in his tables. This is the smaller and more easily interpreted table but there is also a total given for "quantitative features of \beds 6-9 flake classes" of 1174 specimens.
* There are also five "pounding stones" that are not included in this assemblage count.

Table III.4 – Cave of Hearths earlier MSA Artefact Assemblage Profile

III.4 MUIRTON

LOCATION: Near Kimberley, South Africa

ARCHAEOLOGICAL TYPOLOGY: Fauresmith or Later Acheulean

NEAREST RIVER: Vaal

SITE TYPE: River terrace

REGIONAL GEOLOGY/GEOGRAPY: According to geological work in this area Muirton is considered to be a sealed sample in a "Fauresmith 1" geological context (Humphreys 1969, van Riet Lowe 1937: 90-1). Site is 742.5m west of the Vaal River and 12.7m above it (Humphreys 1969) on an alluvial-colluvial apron (Helegren 1978).

HISTORY: This site was discovered and sampled in 1963 by Sampson. Later, in 1968 Humphreys took a sample and excavated $25m^2$ adjacent to Sampson's cutting.

STRATIGRAPHY: Artefacts lay on the surface of calcified sand. This sand is overlain by red sand. The artefacts are not in a primary context. However, it is a sealed sample and is therefore considered by the excavator to be relatively free of distortion (Humphreys 1969).

DATES: This site is considered to be Later Acheulean – "Acheulean" because of the character of the assemblage and "Later" because of its position in geological time (Humphreys 1969).

FAUNA: There is no fauna preserved.

Sampson & Humphreys' Excavations*		
Artefact types		**Total number of artefacts**
DEBITAGE		
Whole flakes		128
Broken flakes		97
RETOUCHED & UTILISED PIECES		
Large Scrapers (>100mm)		2
Small Scrapers (<100mm)		118
Utilised whole flakes		156
Utilised broken flakes		116
LARGE TOOLS		
Handaxes (mean = length 102mm, breadth 70mm)		9
Cleavers		2
Knives		1
Broken Ha/Cl/Kn		6
Hammerstones		1
CORES (& POSSIBLY CORE TOOLS)		
Cores		
Micro (<50mm)	9	
Prepared	6	
Pebble	8	
Large (>50mm)	13	
Miscellaneous	50	
TOTAL	86	86
Trimmed Waste		130
Discoids		4
Core scrapers		6
Choppers		5
Spheroids		1
TOTAL		**868**

*Artefact types are as presented in the author's text (Humphreys 1969: 89), but the artefacts have been grouped according to my own sub-headings.

Table III.5 – Artefact Assemblage Profile according to Sampson & Humphreys' Excavations

ARTEFACT ANALYSES: Above is the artefact assemblage profile of the Muirton excavations. Both papers on Muirton debate the true status of the Fauresmith through their descriptions of these artefacts (Humphreys 1969, Sampson 1972). From both excavations a total of 868 artefacts were recovered (table III.5) while my own study of this collection stored at the McGregor Museum in Kimberley only found 775 of these pieces (table III.6).

My own artefact analysis found handaxes, cleavers, and cores (including discoids), but very few retouched pieces. Some pieces have been rolled but most are in a fresh condition. The raw material is mainly quartzite although there are just a few other raw materials including shale, jasper, quartz and chert.

ARTEFACT TYPE	ARTEFACT SUB-TYPE	TOTAL	TOTAL
Chips	Chips	1	1
Chunks	Chunks	27	27
Core Fragments	Core Fragments	14	14
Broken Flakes	Broken Flakes	427	427
Whole Flakes	Cortical	5	158
	Partly cortical	84	
	Non-cortical	69	
Levallois Flakes	Blade	1	7
	Blade (thin)	1	
	Blade?	1	
	Blade? (thin)	1	
	Broken blade?	1	
	Atypical convergent Levallois flake	1	
	Radial Levallois flake	1	
Retouched pieces	Retouched piece	5	42
	Chunk	2	
	Broken flake	14	
	Flake	21	
Flaked flakes	Flaked flake?	1	5
	Flaked flake	4	
Cores	Casual core	6	74
	Chopper core	12	
	Discoid core	10	
	Discoidal core	19	
	Edge core	6	
	Irregular Polyhedral core	17	
	Polyhedral core	4	
Levallois cores	Blade core unidirectional	1	2
	Levallois core? unidirectional	1	
Bifaces	Handaxes	8	13
	Cleavers	2	
	Broken bifaces	3	
Cobbles	Hammerstones	3	5
	Split cobbles	1	
	Highly eroded artefacts	1	
GRAND TOTAL			775

Table III.6 – Artefacts studied from Muirton

III.5 PNIEL 6

III.5.1 AREA C at Pniel 6

LOCATION: Near Kimberley (23km north-east), South Africa

ARCHAEOLOGICAL TYPOLOGY: Acheulean

NEAREST RIVER: Vaal River

SITE TYPE: Open, river terrace

REGIONAL GEOLOGY/GEOGRAPY: This is a very rich region and there are sites all the way along the Pniel farm riverbanks. The Acheulean and MSA units discussed in this thesis are artefact collections from slightly different places at Pniel 6. The Acheulean Area C sits about 100m downstream of the Pniel 6 Beaumont & McNabb excavation (G. Marshall pers. comm.).

HISTORY: The deposits in this area were largely destroyed by diamond diggers from c. 1926-86. Archaeological material was first described here by van Hoepen (1926, 1927) and then later by other authorities (Beaumont 1990b, Burkitt 1928, Goodwin 1928, Goodwin and van Riet Lowe 1929).

STRATIGRAPHY: In 1993 Beaumont collected a sample of stone artefacts from the pile of gravel churned up by diamond mining in the area (Marshall et al. 2002).

DATES: Upstream at the Powers site there are Acheulean artefacts typologically similar to Pniel 6 associated with *Elephas recki recki* (Beaumont 1990b, Klein 1988), which suggests an age of greater than 800ka (Beaumont 1999).

FAUNA: None

ARTEFACT ANALYSES: The handaxes discussed in this thesis were found and accessioned by Beaumont in 1993 and are held by the McGregor Museum in Kimberley (museum accession number 6755). The data for this Acheulean sample comes from the

ADS database (Marshall et al. 2002). I have only used bifaces typed as 'handaxe' in this database, which comes to a total of 108 artefacts. I have made my own observations on the handaxe tip types using the photographs provided.

III.5.2 BEAUMONT & MCNABB EXCAVATION at Pniel 6

LOCATION: Near Kimberley (23km north-east), South Africa
ARCHAEOLOGICAL TYPOLOGY: Fauresmith, MSA (possibly MSAI)
NEAREST RIVER: Vaal River
SITE TYPE: Open, river terrace

REGIONAL GEOLOGY/GEOGRAPY: This site lies in the channel and on the south bank of the Vaal adjacent to a low Pre-Karoo andesite hill.

HISTORY: Beaumont (1990) began investigations here in 1984. The artefacts discussed here were excavated by Beaumont & McNabb in 2000. I was a part of the excavation team that worked on this site and I also analysed all of the artefacts with McNabb.

STRATIGRAPHY: This site consists of four strata devised by Beaumont (1990).
Stratum 1: Up to 5m of grey overbank silts with a few cobbles at the base, termed Riverton V by Butzer *et al* (1973). This stratum has been significantly eroded, mainly by gullies draining from behind its crest. C14 and TL dating in progress. There is some undiagnostic LSA at the base of this stratum.
Stratum 2: Up to 11m of beige overbank silts with moderately heavy calcified upper reaches. The northernmost base is c. 1m below the present Vaal midwinter level. Mossel Bay artefacts and a single luminescence date suggesting last interglacial age (OIS5e).
Stratum 3: About 0.5m of downslope fining andesite clasts with a small amount of foreign pebbles in a sand-grit matrix. The northernmost base is c. 1.5m below the present Vaal midwinter level. Artefacts have similarity to the Florisbad 'old collection' and are interpreted as Fauresmith (Beaumont 1999). Beaumont (*ibid.*) believes that the

faunal and typological similarities to Florisbad may date this site to OIS 8 (between 242-201ka). This was the stratum of the Beaumont & McNabb excavation.

Stratum 4: Lithologically similar to Stratum 3, this unit lenses in below 3 at the water's edge and overlies the bedrock for up to c.150m into the Vaal. This is perhaps a lateral accumulation as the meander bend shifted southwards (Helegren 1979). Acheulean artefacts associated with this stratum.

DATES: There is a single luminescence reading from the base of the silts, which produced an age of about 120ka (Beaumont, Miller, and Vogel 1992). This date comes from above all of the excavated material discussed here.

FAUNA: Over 1000 fragments of bone were found but they have not yet analysed.

ARTEFACT ANALYSES: Beaumont (1990, 1999) considers this industry to be Fauresmith as his earlier excavations at this site found small handaxes and cleavers, narrow blades, convergent points, convex-edged scrapers, segments and bifacial and long laterally retouched points. The data collected for this analysis (table III.7) has been kindly lent to me by Beaumont and McNabb.

PNIEL 6 – BEAUMONT & MCNABB EXCAVATION (after McNabb database pers. comm.)			
ARTEFACT TYPE	ARTEFACT SUB-TYPE	N = ARTEFACTS	GRAND TOTAL
Chips	Chips	243	243
Chunks	Chunks	23	23
Core fragments	Core fragments	3	3
Blade core fragments	Blade core fragments	2	3
	Blade core rejuvenation fragments	1	
Broken flakes	Broken flakes	870	871
	Broken pointed flakes	1	
Flakes	Flakes	382	411
	Pointed flakes	17	
	Triangular trimmers	12	
Levallois flakes	Levallois flakes	16	122
	Bipolar recurrent	2	
	Blade	28	
	Crested blade	8	
	Flake blade	6	
	Pointed blade	14	
	Convergent	42	
	Radial	6	
Broken Levallois	Levallois broken flakes	3	183
	Bipolar recurrent	1	
	Blade	136	
	Crested blade	2	
	Flake blade	17	
	Pointed blade	5	
	Convergent	18	
	Radial	1	
Retouched pieces	Retouched backed	1	8
	Retouched denticulate	1	
	Retouched end	1	
	Retouched flaked flake	3	
	Retouched scraper	1	
	Retouched	1	
Broken retouched	Broken retouched	2	2
Cores	Casual core	1	58
	Chopper core	4	
	Discoid core	8	
	Discoidal core	9	
	Edge core	5	
	Flat core	3	
	Flat bipolar core	2	
	Flat unipolar core	1	
	Flat discoidal core	4	
	Irregular polyhedral core	17	
	Polyhedral core	4	
Blade cores	Blade bipolar	2	8
	Blade unipolar	1	
	Bladelet bipolar	2	
	Bladelet unipolar	3	
Levallois cores	Levallois core convergent unipolar	2	8
	Levallois core unipolar	1	
	Levallois core radial	1	
	Levallois core recurrent bipolar	1	
	Levallois core recurrent unipolar	1	
	Indeterminate core	1	
	Indeterminate bipolar core	1	
GRAND TOTAL			1943

Table III.7 – Pniel 6 Beaumont & McNabb Excavation Artefact Assemblage Profile

III.6 SAMARIA ROAD (ROSEBERRY PLAIN 1)

LOCATION: Near Kimberley (15km to the north-east), South Africa
ARCHAEOLOGICAL TYPOLOGY: Fauresmith, Later Acheulean
NEAREST RIVER: Vaal River
SITE TYPE: Open

REGIONAL GEOLOGY/GEOGRAPY: Open sections along the Samaria road exposed up to 3m of Hutton sands overlying bedrock (Beaumont 1990a, Mason 1988).

HISTORY: This site was first investigated in the 1940's and 50's (Power 1949) and later described by Mason (1988) and Beaumont (1990). This site is also known as Roseberry Plain 1, but in this thesis it is referred to as Samaria Road.

STRATIGRAPHY: Most of the lithics lie in the basal reaches of these Hutton Sands (Mason 1988).

DATES: None, probably Middle Pleistocene.

FAUNA: None.

ARTEFACT ANALYSES: Prepared and single platform cores, blades and convergent points, rare long laterally retouched points, and bifaces (almost all are small handaxes often with S twist edges; Mason 1988, Beaumont 1990). Beaumont (*ibid.*) did metrical analysis on ten hornfels handaxes and the mean length of them is 94.2mm. Masons' assemblage analysis totalled 209 artefacts (table III.8). Amongst the artefacts curated by the McGregor Museum in Kimberley I personally looked at 21 cores, 27 handaxes, 3 cleavers, 4 roughout bifaces, and 4 broken bifaces from this site.

Samaria Road Artefact Assemblage (Mason 1988: 611)	
Artefact types	**Total number of artefacts**
DEBITAGE	
Whole flakes (irregular end and side struck flakes)	64
Waste and broken flakes	57
Parallel flakes	15
Convergent flakes	9
Convergent flake with reduced butt	1
RETOUCHED & UTILISED PIECES	
Trimmed flakes (irregular end and side struck flakes)	16
Trimmed parallel flakes	4
LARGE TOOLS	
Handaxes	11
Cleavers	1
Broken Handaxe	1
CORES	
Cores	14
OTHER	
Irregular artefacts	16
TOTAL	**209**

*Artefact types are as presented in the author's text (Mason 1988: 611), but the artefacts have been grouped according to my own sub-headings.

Table III.8 – Samaria Road Artefact Assemblage Profile according to Mason

III.7 TAUNG DB3

LOCATION: Near Taung, South Africa

ARCHAEOLOGICAL TYPOLOGY: Victoria West, Acheulean

NEAREST RIVER: Dry Harts River

SITE TYPE: Open, factory site

REGIONAL GEOLOGY/GEOGRAPY: Eleven ESA localities were found in this area but only one was excavated due to time limitations. This site can be located on map number 2724 in quadrant DB. It is located on an isolated ridge-top high above the tributary bed.

HISTORY: This excavation was part of a regional survey for sites upstream of the dam wall along the Harts River prior to the flooding of this region. All information on the site comes from an as-yet unpublished report (Kuman submitted).

STRATIGRAPHY: There are no other Stone Age sites around DB3 to suggest mixing of deposits and the site is thought to be of good integrity. Soil is mostly Aeolian sands with some contribution of the parent rock. The outcrop is 200m long and most of the ground behind the cliff edge was extensively covered with lithics. There is no spatial patterning at the site although the greatest concentration is at the southern end of the outcrop a good distance from the cliff edge. Small debitage suggests *in situ* flaking in a good context.

DATES: None.

FAUNA: None.

ARTEFACT ANALYSES: Victoria West with handaxes and cleavers. Acheulean quarried quartzites and sandstone with a limited amount of hornfels. The hornfels was exploited from an outcrop near DB5 (a test excavation here found Acheulean artefacts mixed with later material). Chert was exploited during the MSA but apparently not before. The quartzite was exploited directly from the outcrop by detaching big flakes and chunks. There are numerous flake scars on the outcrops. Exfoliated chunks and slabs were also used to make stone tools. There are no artefacts on river cobbles. There has been some trampling of the artefacts by people and animals and a large portion of the flake breaks is attributed to this. As the artefacts are all in the same condition it is thought that they are the same age. There are however 15 examples of artefacts with a different patina that indicate older material was later reworked here. Most of the reworked artefacts were on chunks or flakes with 4 having extensive, fresh, lateral retouch. This assemblage has radial, convergent and parallel levallois flaking patterns. Kuman (submit.) argues that proto-Levallois is not an earlier version of the Levallois technique but they are prepared cores in a large raw material at an early stage of reduction. Although I looked over the whole collection I only studied the whole flakes in detail (n=140). Therefore the artefact assemblage profile of Kuman is given (table III.9).

TAUNG DB3 ASSEMBLAGE (after Kuman submit.)			
Artefact type	**Surface 25m2**	**General Surface**	**Total**
CHIPS & SMALL FLAKES <20mm	0	0	0
CHUNKS	55	0	55
INCOMPLETE FLAKES >20mm	686	0	686
INDETERMINATE FLAKES	61	0	61
COMPLETE FLAKES >20mm	274	0	274
CORE TRIMMING FLAKES	39	0	39
CORE FRAGMENTS	4	0	4
CORES TOTAL	44	5	49
Prepared	2	3	5
Radial	9	2	11
Sub-Radial	8	0	8
Irregular/Multi-Platform	21	0	21
On Flake	4	0	4
FORMAL TYPES TOTAL	290	24	311
Handaxes/Roughouts	12	7	21
Cleavers	2	1	3
Core-axes	1	0	1
Picks?	4	0	4
Pointed Flakes	19	4	23
Broken Pointed Flakes	1	2	3
Knives/Cutting Tools	30	4	34
Awls?	1	0	1
Miscellaneous Retouched	173	0	173
Miscellanous Large Removals	41	0	41
Broken Retouched	1	0	1
Scaled Pieces	1	0	1
Cleaver-edged Flakes	4	1	5
GRAND TOTAL	1453	24	1479

Table III.9 – Taung DB3 Artefact Assemblage Profile

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