

Looking for the Individual: An Examination of Personal Adornment  
in the European Upper Palaeolithic

by

Tamara Lynn Trupp  
B.A., University of Manitoba, 2003

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in the Department of Anthropology

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**Abstract**

A new focus in Palaeolithic archaeology is to look at the possibility of the individual as a unit of analysis in the prehistoric record. This involves looking at the Palaeolithic actor as more than just an invisible entity that had a minor role in the production of long term patterns. The Palaeolithic individual was a ‘lived life’, with all aspects of agency, identity, and decision-making abilities. One area that is potentially illuminating for the examination of the individual is personal adornment, as this can lead to an understanding of the body and identity and the role of material culture in social life and self-making. A catalogue of Upper Palaeolithic sites in Europe and Siberia with evidence of items of personal adornment was recorded. From this information, patterns and sites that potentially show the individual are discussed through the categories of body, identity, and material culture.

## **Table of Contents**

<b>Supervisory Committee</b> .....	ii
<b>Abstract</b> .....	iii
<b>Table of Contents</b> .....	iv
<b>List of Tables</b> .....	vii
<b>List of Figures</b> .....	ix
<b>Acknowledgments</b> .....	x

## **Chapter 1: Introduction**

1.1. Introduction.....	1
1.2. Outline of Chapters.....	2

## **Chapter 2: The Individual and Related Topics**

2.1. Introduction.....	6
2.2. Introduction to the Individual.....	6
2.2.1. Should We Look for the Individual in the Archaeological Record?.....	8
2.2.2. Examples of Previous Attempts to Include the Individual.....	10
2.3. Introduction to Behavioural Modernity.....	12
2.3.1. What is Behavioural Modernity? .....	13
2.3.2. The Trait List.....	13
2.3.3. The Pace of the Emergence of Modern Behaviours.....	15
2.3.4. The Social Basis of Behavioural Modernity.....	17
2.3.5. Personal Adornment and Behavioural Modernity.....	18
2.4. Material Culture and Personal Adornment.....	19
2.4.1. Craft as Art.....	20
2.4.2. Uses of Personal Adornment.....	21
2.5. Introduction to Style.....	23
2.5.1. Defining Style.....	24
2.5.2. Stylistic Variation.....	25
2.6. Body and Identity.....	26
2.6.1. Some Views of the Body.....	27
2.6.2. Body as Lived Experience.....	28
2.6.3. The Connection between Body and Identity.....	29
2.6.4. Individual Identity and the Body.....	29
2.6.5. Social Identity and the Body.....	30
2.6.6. The Individual and Body and Identity.....	30
2.7. Conclusion.....	31

## **Chapter 3: Personal Adornment Background**

3.1. Introduction.....	34
3.2. Materials.....	35
3.2.1. Teeth.....	35
3.2.2. Bone.....	35
3.2.3. Shells.....	36
3.2.4. Ivory.....	36

3.2.5. Bone and Antler.....	37
3.2.6. Stone.....	37
3.3. Qualities of Materials.....	38
3.3.1. Hardness.....	38
3.3.2. Colour.....	38
3.3.3. Sheen/Luster.....	39
3.3.4. Texture.....	39
3.3.5. Size and Shape.....	39
3.4. Availability- exotic vs. local.....	40
3.4.1. Shell.....	41
3.4.2. Stone.....	42
3.4.3. Ivory, Bone, and Teeth.....	42
3.5. Techniques.....	43
3.5.1. Preparation.....	43
3.5.2. Perforation.....	44
3.5.3. Segmenting.....	46
3.5.4. Enhancements.....	47
3.5.5. Replication/Imitation.....	49
3.5.6. Standardization.....	50
3.6. Conclusion.....	51

## **Chapter 4: Geographical and Temporal Background**

4.1. Introduction.....	52
4.2. Geographical Background.....	53
4.2.1. Western Europe.....	53
4.2.2. Central Europe.....	54
4.2.3. Eastern Europe and Siberia.....	55
4.3. Time Periods/Cultural Entities Background.....	55
4.4. Transitional Industries.....	57
4.4.1. Western Europe.....	57
4.4.2. Central Europe .....	58
4.4.3. Eastern Europe .....	59
4.5. Upper Palaeolithic Industries.....	59
4.5.1. Aurignacian (40,000-28,000 years BP) .....	59
4.5.2. Gravettian (28,000-22,000 years BP) .....	61
4.5.3. Solutrean (22,000-18,000 years BP) .....	62
4.5.4. Epigravettian (21,000- 10,000 years BP) .....	62
4.5.5. Magdalenian (18,000-11,000 years BP) .....	63
4.6. Conclusion.....	64

## **Chapter 5: Methods, Analysis, and Results**

5.1. Introduction.....	65
5.2. Limitations.....	65
5.2.1. Availability.....	66
5.2.2. Excavation Bias and Taphonomic Consideration.....	67
5.3. Description of Catalogue.....	67

5.3.1. Basic Site Information.....	68
5.3.2. Archaeological Culture.....	68
5.3.3. Artifact Information.....	71
5.4. Analysis of Body, Identity, and Actions through Personal Adornment.....	72
5.5. Body.....	72
5.5.1. General Discussion.....	73
5.5.2. Basic Patterns in Burials.....	74
5.5.3. Who is Buried? .....	77
5.5.4. Grave Goods.....	81
5.5.5. Time and Labour.....	82
5.6. Identity.....	84
5.6.1. General Discussion.....	84
5.6.2. Ivory.....	85
5.6.3. Shells.....	87
5.6.4. Bone and Stone.....	89
5.6.5. Teeth.....	91
5.6.6. Unique Materials.....	96
5.6.7. Unique Forms.....	98
5.6.8. Style.....	99
5.7. Actions.....	100
5.7.1. Workshops and Craftsmanship.....	101
5.7.2. Time and Labour.....	104
5.7.3. Individual Actions.....	105
5.8. Conclusion.....	107
<b>Chapter 6: Conclusion</b>	
6.1. Discussion.....	110
6.2. Is the Individual There?.....	112
6.3. Further Research.....	113
6.4. Final Conclusion.....	114
<b>Literature Cited.....</b>	<b>116</b>
<b>Appendices</b>	
Appendix A: Site Catalogue.....	135
Appendix B: Transitional and Dateless Sites.....	163
Appendix C: Aurignacian Sites.....	165
Appendix D: Gravettian Sites.....	172
Appendix E: Solutrean Sites.....	180
Appendix F: Epigravettian Sites.....	182
Appendix G: Magdalenian Sites.....	185

## **List of Tables**

Table 1: Table of the cultural entities within the Upper Palaeolithic in Europe.....	56
Table 2: Table of the total number of sites sorted by archaeological culture (N/A signifies that it is not an applicable industry to the area, / signifies that there are no recorded sites in that country or industry).....	68
Table 3: Number of sites that have burials with ornaments as grave goods (Number in parantheses is the total number of sites, N/A signifies that it is not an applicable industry to the area, / signifies no recorded sites in that time period, 0 signifies that there are no recorded sites with burials).....	75
Table 4: Number of sites that specify ivory as a medium for personal adornment (Number in parantheses is the total number of sites, N/A signifies that it is not an applicable industry to the area, / signifies that there are no recorded sites in that country or industry, 0 signifies that none of the recorded sites referred specifically to ivory).....	86
Table 5: Number of sites that specify shells as a medium for personal adornment (Number in parentheses is the total number of sites, N/A signifies that it is not an applicable industry to the area, / signifies that there are no recorded sites in that country or industry, 0 signifies that none of the recorded sites specified shells).....	88
Table 6: Number of sites that feature stone as a medium for personal adornment (Number in parentheses is the total number of sites, N/A signifies that it is not an applicable industry to the area, / signifies that there are no recorded sites in that country or industry, 0 signifies that none of the recorded sites specified stone).....	89
Table 7: Number of sites that feature bone as a medium for personal adornment (Number in parentheses is the total number of sites, N/A signifies that it is not an applicable industry to the area, / signifies that there are no recorded sites in that country or industry, 0 signifies that none of the recorded sites specified stone).....	90
Table 8: Number of sites that feature teeth as a medium for personal adornment (Number in parentheses is the total number of sites, N/A signifies that it is not an applicable industry to the area, / signifies that there are no recorded sites in that country or industry, 0 signifies that none of the recorded sites specified teeth).....	91
Table 9: Number of sites that specify fox teeth (Number in parentheses is the total number of sites with teeth, N/A signifies that it is not an applicable industry to the area, / signifies that there are no recorded sites in that country or	

industry, 0 signifies that none of the recorded sites specified fox teeth).....	92
Table 10: Number of sites that specify wolf teeth (Number in parentheses is the total number of sites with teeth, N/A signifies that it is not an applicable industry to the area, / signifies that there are no recorded sites in that country or industry, 0 signifies that none of the recorded sites specified wolf teeth).....	93
Table 11: Number of sites that specify deer teeth (Number in parentheses is the total number of sites with teeth, N/A signifies that it is not an applicable industry to the area, / signifies that there are no recorded sites in that country or industry, 0 signifies that none of the recorded sites specified deer teeth) .....	95
Table 12: Number of sites that specify amber as a medium for personal adornment (Number in parentheses is the total number of sites, N/A signifies that it is not an applicable industry to the area, / signifies that there are no recorded sites in that country or industry, 0 signifies that none of the recorded sites specified amber).....	96
Table 13: Number of sites that specify gagat/lignite as a medium for personal adornment (Number in parentheses is the total number of sites, N/A signifies that it is not an applicable industry to the area, / signifies that there are no recorded sites in that country or industry, 0 signifies that none of the recorded sites specified gagat/lignite).....	97
Table 14: Number of sites that specify more than 30 items of personal adornment (Number in parentheses is the total number of sites, N/A signifies that it is not an applicable industry to the area, / signifies that there are no recorded sites in that country or industry, 0 signifies that none of the recorded sites specified a more than 30 items of personal adornment).....	101



## **List of Figures**

Figure 1: Example of a <i>Homalopoma sanguineus</i> L. shell. Not to scale. (After Taborin 2000b:13).....	36
Figure 2: The shell, <i>Dentalium</i> , (including cross-section) used for the creation of Upper Palaeolithic beads. Not to scale. (After Taborin 2000b:13).....	40
Figure 3: Example of a contour découpés horse head crafted on hyoid bone from the Magdalenian site of Tito Bustillo, Spain. Not to scale (After Behrmann et al. 2002:597).....	49
Figure 4: Example of an Aurignacian basket-shaped bead. Not to scale. (After White 1997:100).....	49
Figure 5: Map showing European geographical areas.....	53

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# **Chapter 1: Introduction**

## **1.1. Introduction**

Archaeologists have recently begun to study the individual in prehistory. Because archaeological patterns are normally believed to reflect long term changes, the individual and individual actions are often overlooked as they are considered to be archaeologically invisible (Gamble and Porr 2005). However, we cannot ignore the individual, as cultural change is the result of individual choices, actions, and innovations (Gamble and Porr 2005). Although the definition of the individual is debated (see Harris 1989), I have defined the prehistoric individual as a person with agency based on Gamble and Porr's (2005) definition. The individual has the ability to act, make decisions, and create a sense of self as well as affect other individuals (Gamble and Porr 2005). By defining the prehistoric individual as an acting person, we allow them the same basic attributes that we assign to living individuals (Lesure 2005). This thesis attempts to determine if it is possible to study the individual in prehistory through the cataloguing and analysis of information on personal adornment. It focuses on three areas integral to the individual: body, identity, and actions involved in the creation of material culture.

In Europe, the first widespread appearance of items of personal adornment occurs during the Upper Palaeolithic (40,000-10,000 years BP). Items of personal adornment include any items that would have been worn on or near the body such as beads and bracelets. The classification of ornaments tends to be based on the shape and assumed function of the item (Hawkes 1974). These items are created from a variety of different materials including shells, ivory, bone, teeth, and stone (White 1997).

In order to examine the potential of studying the individual in prehistory, I have created a catalogue of European Upper Palaeolithic sites with items of personal adornment from the sources available to me. This is the first catalogue that covers the range of sites in the Upper Palaeolithic that have items of personal adornment. My examination of the range of sites and items of personal adornment revealed a variety of patterns and sites that are useful for studying of the individual in the Upper Palaeolithic.

## **1.2. Outline of Chapters**

In this thesis, I explore the relationship between the individual and personal adornment in the Upper Palaeolithic. In Chapter Two, I discuss the issues surrounding the use of the individual as a unit of analysis in prehistoric studies. This includes the definition of the individual and a discussion of the importance of including the individual in prehistoric research. The emergence of behavioural modernity is also discussed as modern behaviours, particularly symbolic behaviours, are related to both the individual and items of personal adornment. The individual is responsible for the changes to and the transmission of new behaviours. One of these new symbolic behaviours is the use of personal adornment.

Another important theme in Chapter Two related to the individual and personal adornment is an examination of the role that material culture plays in social life. Material culture is integral to the creation and maintenance of relationships. For example, the process of exchange is an important part of social interactions (Weiner 1985). The materials involved in exchange both affect and are affected by the relationships that are created during exchange. This examination of the function of material culture also

includes looking at how personal adornment has been treated in prehistoric research. Individuals are responsible for the creation of material culture but there are a number of factors that affect the actualization of these items such as style. Although there is some degree of individual choice in the production of an artifact, there are still constraints in both material availability and the degree of conformity to societal rules. The resulting stylistic variations of artifacts reflect these constraints.

In Chapter Two, I also discuss how the body and identity are both connected to the individual and personal adornment. The body is the physical structure of bones and organs and the thinking, decision-making actor (Joyce 2005:141) while identity involves the creation of a self in response to others, both between individuals and between groups (Moore 1994:1). Items of personal adornment are in actual physical contact with the body, allowing for a connection between the material and the body (Frank 1991). Items of personal adornment are intimately tied to a variety of modern cultural practices including the individual process of creating identity (Vanhaeren 2005). Modifying, embellishing, and beautifying the body can enact a modification, embellishment, and beautification in the person (Turner 1995). In this way, the body and its decoration is a potential way to create and express identity.

There is a wide variety of materials that is used for the creation of ornaments in the Upper Palaeolithic. These materials, the qualities of the materials, and the techniques used in the manufacture of ornaments are discussed in Chapter Three. These are the materials that have survived in the archaeological record, although it is possible that items of personal adornment included materials that did not preserve. This chapter

provides a general framework within which to understand the choices available for the creation of items of personal adornment in the Upper Palaeolithic.

Chapter Four defines and describes the Upper Palaeolithic in Europe. This time period was selected to examine the individual in prehistory because it corresponds to the first major appearance of items of personal adornment in Europe. The Upper Palaeolithic in Europe dates from 40,000 to 10,000 years BP and includes sites found in Western, Central, and Eastern Europe and Siberia. The Upper Palaeolithic is divided into a number of cultural periods: several transitional industries, the Aurignacian (40,000-28,000 BP), the Gravettian (28,000-21,000 BP), the Solutrean (22,000-18,000 BP), the Epigravettian (21,000-10,000 BP), and the Magdalenian (18,000-11,000 BP).

The catalogue of Upper Palaeolithic sites with items of personal adornment is discussed in further detail in Chapter Five. For each site I recorded the country, date, material, context, and number of ornaments. This information was then analyzed to determine the presence of any patterns that are the result of individual choices. Certain individual sites were also examined in further detail. These sites were selected based on the level of detail that was provided about the sites or the artifacts found at the sites. I focused on patterns related to the body, identity, and actions. The body can be examined through the analysis of sites that feature burials. Identity is examined through the comparison of the presence of certain materials or styles of ornaments between regions and time, as well as sites that feature unique materials, styles, or ornaments. Individual actions can be examined through the analysis of the workmanship of artifacts.

In Chapter Six I summarize and resituate these patterns back into the broader picture of the Upper Palaeolithic. I also address the certainty of ‘finding’ the individual in

the prehistoric record and suggest a few future avenues of research that would enhance this situation.

The individual is an important contributor to the archaeological record. Seeing the individual in the prehistoric record is challenging, as the patterns that we witness are often attributed to the group, or as an accumulation of the actions of many individuals (Wells 1998). However, there is the potential to use the individual as a unit of analysis to understand the process of change and innovation in the Upper Palaeolithic through the analysis of items of personal adornment. Personal adornment is an important category to attempt to study the individual in prehistory as ornaments are intimately tied to the body and identity. It is a symbolic behaviour that is made, used, and changed by the individual.

## **Chapter 2: The Individual and Related Topics**

### **2.1. Introduction**

The study of the individual in prehistoric research is a problematic topic. The degree to which the individual is responsible for the patterns witnessed in prehistory is often underestimated. This is a problem within prehistoric research overall, but this thesis addresses it within the Upper Palaeolithic of Europe. There are three main areas that are important for beginning to examine the potential of the individual as a unit of analysis in prehistoric studies. These are examining evidence of the body and identity as well as the actions involved in the creation of material culture. Importantly, these three areas are connected to the creation and use of items of personal adornment.

An examination of the role of the individual in the prehistoric record, by focusing on personal adornment, centers on a few theoretical areas that will be discussed in this chapter. First, I will consider the issue of behavioural modernity and the relationship of symbolic behaviour to the individual. Second, I will examine known ethnographic uses of personal adornment in order to show how material culture plays an important role in social life. Third, I will examine how the style of an artifact can be used to communicate messages about identity. Finally, I will define and discuss issues of the body and identity in relation to personal adornment.

### **2.2. An Introduction to the Individual**

Defining and finding the individual in prehistory is an intriguing topic. In general, the individual is ignored in prehistoric studies, as the patterns that we see in the archaeological record appear to be evidence of group actions and long term changes



(Gamble 1998). The individual becomes invisible when archaeological patterns are generally seen as long term accumulations of change. Some argue that “in the Palaeolithic, the individual exists so far as he ceases to be an individual” (Gamble and Porr 2005:3). The assumptions that lead to the ignored, invisible individual are being contested (e.g. Gamble and Porr 2005). The individual is important in archaeological patterns and findings. Change cannot occur without individual choices and innovation. It is through individual behaviour and adaptations that new and unique things happen and are created (Gamble and Porr 2005). The archaeological record was created through the “accumulations of individual changes in behaviour and practice and their transmission from one individual to the other” (Gamble and Porr 2005:11). In essence, the long term changes that are archaeologically visible are the results of repeated and variable choices and changes that originate from the individual. Not only do these changes happen at the individual level but are proliferated through the interactions between individuals. Continued change must be acknowledged, accepted, and maintained by a group but the idea and action stems from an individual. The individual and interactions between individuals are responsible for the changes that occur to and within symbolic material, meaning, and forms (Henshilwood and Marean 2003).

Although there are various ways to define the individual and selfhood which are debated in anthropological literature (see Ewing 1990, Harris 1989), I am defining the individual as an acting person. This does not refer to a historically specific individual but to a general definition of what it means to be an individual. This means that the prehistoric individual has all the basic thinking and feeling attributes that we assign to living individuals (Lesure 2005). They have agency and the potential to create a self or a

personhood (Gamble and Porr 2005). Agency refers to “a person exercising their power to impact on the world through intended actions” (David 2004:68). Intentions are “the active and conscious reflection on the work of something, prior to its eventuality” (David 2004:68). This suggests that the individual does not simply exist but has motives and desires. This also highlights the fact that any individual intention and action will also include reflection on past experiences. The individual can think about and reflect on the past, present, and future.

This current interest in the individual in archaeology reflects a desire within the discipline to “humanize the ancient world” (Looper 2003:26). This involves an attempt to show the importance of individual choices and lives involved in the creation of the archaeological record. An emphasis on the individual highlights a number of important features that are absent when only the group or a ‘long term’ pattern is studied. First, the individual is a “knowledgeable actor able to influence outcomes and [is] involved in the self-creation of social life” (Gamble and Gaudzinski 2005:175). This emphasizes the importance of agency and the dynamics of ‘lived lives’. Individuals can think and know. They can act on this knowledge. The individual in this sense must exist in the context of other individuals (Sinclair and McNabb 2005). This aspect of ‘self-awareness’ involves constructing some form of self in contrast to others and recognizing the ability for and reality of self-awareness in others (Sinclair and McNabb 2005).

### **2.2.1. Why Should We Look for the Individual in the Archaeological Record?**

There are a few challenges to accepting and using the individual, an active, decision-making person, as a unit of analysis. It becomes difficult to distinguish between actual

individuals because of the similarity in patterns and artifacts (Henshilwood and d'Errico 2005). It is also difficult to distinguish individuals and individual actions in a site with multiple occupations. Actions blend together and it is difficult, if not impossible, to distinguish actions from one time frame to another (Close 1989). The benefits of the individual as a unit of analysis can be challenging to recognize as the group is still emphasized (Gamble and Porr 2005).

The individual as a unit of analysis is useful for explaining change in the archaeological record, explaining how material culture is used within a group, and exploring the importance of the body. As the patterns that emerge in the archaeological record are an accumulation of individual choices, the individual is ideal for explaining changes in patterns. The individual is the source of change, he/she are the decision making agent (Gamble and Porr 2005). The individual is useful for explaining and understanding change but also for understanding unique archaeological situations (Looper 2003). Focusing on the individual allows us to focus on questions of why some individuals chose to behave in certain manners (Wells 1998). The individual would also be useful in emphasizing the interactive nature of material culture. Individuals do not just act in a certain manner, they react. Their actions involve an awareness of and reactions to the social context within which they live. A focus on the individual emphasizes practice, as how society is created through the actions and interactions of individuals (Erickson and Murphy 1998:180). It also emphasizes agency and gives the power of choice and action to the individual and not to the group or institution (Lesure 2005). This also helps center on a further understanding of how artifacts were made and used. The

archaeological record becomes a result of the “complex networks of people and material objects...over time and space” (Gamble and Porr 2005:9).

Focusing on the individual also underscores the importance of the body within cultural groups. The individual is “an embodied actor” (Gamble and Porr 2005:9). This places individual actions within a social context and emphasizes the dynamic nature of the interaction between people and objects. At the level of the body, objects intimately interact with the individual and are often useful in defining aspects of the self (Gamble and Porr 2005). The inclusion of the individual will also mean an inclusion of such variables as age, gender, and power relationships that are important aspects in the creation of identity (Dobres 2005).

### **2.2.2. Examples of Previous Attempts to Include the Individual**

There have been a few attempts to include the individual in the study of prehistory. One method of examining the individual in prehistoric studies is through the examination and application of the *chaîne opératoire*. The *chaîne opératoire* is the study of the “conventionalized sequence of technical operations, which are inherently cultural” that are involved in the creation of an artifact (Soffer and Conkey 1997:10). The creation of an artifact is partially limited by physical qualities of the raw material, such as hardness, shape, or grain. However, the end product is a result of the knowledge of the knapper or artisan and the interaction with that material (Gamble 1999). There are choices in the “what and how of any technical process” and this comes from a social context and not just the material constraints (Gamble 1999:83). Through the *chaîne opératoire* approach we can begin to see how small, individual events may be evident in the archaeological

record (Gamble and Porr 2005). The *chaîne opératoire* is frequently used when examining lithic materials but it has also been applied to Aurignacian beadmaking by White (1997).

Another example is the examination of the mobility of prehistoric people. Previous reconstructions of mobility tend to show larger scale movement or multiple movements of homogenous groups of people (Close 2000). The common technique of mapping raw material sources and artifact locations shows raw material movement but tends to show the shortest distance between the source and final artifacts rather than the actual route and action of movement. However, when examining mobility, “we cannot analyze the composite behavior if we know nothing about the individual event” (Close 2000:53). Raw material movement is a combination of individual movements and behaviours. It is important to develop methods to see these individual movements. One way that this has been successful is in the combination of raw material movement with the refitting of stone artifacts. Finding refits between sites can show more minute movements of a material and helps in describing individual behaviour (Close 2000).

Porr (2004) also attempted to study the individual by examining nineteen Aurignacian figurines from four German caves. He focused on the figurines as products of “unique and individual motives” (Porr 2004:264). This was based on the size and unique nature of the figurines. These figurines were each very different and unique creations and required a significant amount of time to make. The size of the figurines is also relatively small, indicative of an item that would have been carried around. He argues that these figurines were associated with individual people throughout the life-history of the items (Porr 2004). They were created, used, and carried by individuals.

This is particularly relevant to personal adornment as several of the figurines found in the Upper Palaeolithic feature perforations and are relatively unique creations.

### **2.3. Introduction to Behavioural Modernity**

The emergence of modern behaviours is a heavily debated issue in Palaeolithic archaeology. This debate focuses on the timing, construction, and definition of behavioural modernity. Behavioural or cultural modernity refers to the makeup and presence of behaviours that modern humans are capable of expressing (Clark 1992:211). Personal adornment in the Upper Palaeolithic is one aspect of behavioural modernity and the beginnings of symbolic behaviour. Although it is argued that in the research of the origin of modern behaviours and symbolism the individual is not an important focus (see Gamble and Porr 2005), I have included the individual in this discussion of behavioural modernity because any invention, including new symbolic behaviour, stems from the individual mind and actions before it can be adopted by many individuals (Hovers and Belfer-Cohen 2006). It is the individual who is responsible for changes in symbols and symbolic meanings (Henshilwood and d'Errico 2005).

There is no clear consensus as to when these types of behaviours appear in the archaeological record. In addition, there is little consensus as to what exactly modern behaviours entail. Often a 'trait-list' of archaeological evidence that signifies a switch to modern behaviours (Henshilwood and Marean 2003) is compiled. One of these traits is the appearance of items of personal adornment. Evidence of personal ornamentation is one way to suggest symbolic behaviours of early people from the archaeological record.

The definition of behavioural modernity, the pace of the emergence of these behaviours, and the connection of these to personal adornment will now be examined in further detail.

### **2.3.1. What is Behavioural Modernity?**

At a very basic level, behavioural modernity refers to those behaviours that are ‘like us today’ (Clark 1992). It is based on the presumption that early humans “possess[ed] the same potential for intellectual ability as does our own kind” (Clark 1992:211). It involves the actualization of new behaviours as well as the capacity for them (Hovers and Belfer-Cohen 2006). For most researchers there is a consensus that behavioural changes are reflected in changes in material and symbolic evidence (Bar-Yosef 2002). However, beyond this, the definition of what it means to be behaviourally modern varies.

McBrearty and Brooks (2000) describe a list of archaeological signatures related to the appearance of modern behaviours. These signatures relate to ecological, technological, economic or social, and symbolic aspects or features that are archaeologically recognizable (McBrearty and Brooks 2000). There is also the creation of a trait list of behaviours assumed to be indicative of modern behaviours (Mellars 2005). In comparison, Wadley (2001) suggests that modern behaviours are present once hominins begin to store symbols outside of the brain. One example of the external storage of symbols is items of personal adornment. Ornaments are a material symbol on the body that store and communicate information about the wearer (Wadley 2001).

### **2.3.2. The Trait List**

Behavioural modernity is often defined by the presence or absence of specific traits (Henshilwood and Marean 2003). This list of traits is seen to “demonstrate the acquisition of behavioural modernity” (d'Errico 2003:189). These traits often include new and improved lithic technology, the use of organic materials for the creation of tools, the appearance of items of personal adornment, the appearance of representational art and music, long distance exchange networks, increased specialization in subsistence patterns and structured spatial organization within sites (Mellars 2005).

The trait list involves looking for the appearance of specific categories of material culture to determine the presence of behavioural modernity instead of looking at how modern behaviours are responsible for new material culture (Henshilwood and Marean 2003). The presence/absence ‘check list’ is problematic because there is not an *a priori* reason for linking these material cultures and new techniques to symbolic behaviour (Wadley 2001). Wadley (2001:207) argues that “technical objects can only become symbolic through their motivation”. The innovation of new techniques and objects does not always mean changes in cognitive and symbolic behaviours. It is the use and the role of that object in social life that determines its symbolic nature (Wadley 2001).

There is also the problem of whether the ‘entirety’ of the trait package is required in order to signify behavioural modernity (Wadley 2001). There is the question of how to take into account the frequency, consistency and the context in which these traits appear (d'Errico 2003). Some of these traits may be more regionally based and variable, such as the appearance of mobile and rock art (Bar-Yosef 2002). These traits developed locally within some regions and not in others. The other problem with the frequency in which these behaviours occur, relates to taphonomy. There is significant discontinuity within



the archaeological record (McBrearty and Brooks 2000). It is entirely probable that the current evidence is biased by the fact that some items do not preserve well (Henshilwood and Marean 2003). Organic materials are less likely to preserve in the archaeological record and there are often debates on the anthropogenic nature of early finds (e.g. d'Errico and Nowell 2000). Therefore, it is entirely possible that there are earlier symbolic artifacts that have not survived in the archaeological record.

However, Henshilwood and Marean (2003) argue that although there are many inherent problems with the trait list, some of the concepts should not be discarded. The main idea that behavioural modernity is signaled by a social intelligence and “symbolically organized behaviours” is still valid (Henshilwood and Marean 2003:635).

### **2.3.3. The Pace of the Emergence of Modern Behaviours**

The pace of the emergence of behavioural modernity is often questioned, especially when evidence from across the Old World is taken into account. Much of the earlier work on the emergence of modern behaviours was based on the European Upper Palaeolithic record. However, the evidence from Europe does not easily apply to other areas of the Old World (McBrearty and Brooks 2000). The theories on the emergence of modern behaviours generally fall into one of two camps of thought, a sudden emergence versus a gradual emergence of modern behaviours. A sudden emergence involves an abrupt change to the archaeological record (Byers 1994). A gradual emergence involves a more slow expression of modern behaviours.

#### ***Sudden vs. Gradual Emergence***

Advocates of a sudden emergence of behavioural modernity generally dismiss earlier examples of modern behaviours for a variety of reasons and commonly promote the idea that modern behaviours appear around 40,000 years BP (Brumm and Moore 2005).

Isolated instances of modern behaviours before the transition from the Middle to the Upper Palaeolithic are often not seen as the result of symbolic behaviour because of their rarity. They are too isolated to have allowed for “information flow and widely-shared cultural values” (Wadley 2001:203).

Many other areas of the Old World do not reflect a sudden emergence of new behaviours at approximately 40,000 years BP. Africa, in particular, has scattered remains of potentially symbolic behaviours predating the Upper Palaeolithic (McBrearty and Brooks 2000). Advocates of a gradual emergence of behavioural modernity suggest that modern behaviours slowly developed with modern anatomy in Africa (McBrearty and Brooks 2000). Any geographically and chronologically isolated situations of potentially modern behaviours provide evidence for an earlier emergence of these behaviours (Brumm and Moore 2005). These “isolated instances are said to represent behaviour that may be more widespread than can be detected archaeologically” (Wadley 2001:204).

### *Patchy Emergence*

The emergence of modern behaviours has a patchy appearance in other areas of the Old World. From the Australian evidence of a ‘patchy’ distribution of modern behaviours, Brumm and Moore (2005) conclude that an explosion-like situation of new behaviours may have less to do with biological modernity and more to do with social and demographic changes or situations. This means that the absence of certain types of

modern behaviours may be a result of an absence of the need to create and display symbolic objects rather than the capability of making or visualizing them (Brumm and Moore 2005). These new behaviours would appear at different times in different regions affected by population density and population isolation (McBrearty and Brooks 2000). This particular idea of the emergence of modern behaviours takes into account the variations among different areas (Henshilwood and Marean 2003). Other cultural ‘revolutions’, such as writing and agriculture, appeared and developed at different times in different regions (d’Errico 2003). Early symbolic behaviours may have emerged in a similar manner. A patchy emergence of behavioural modernity also emphasizes the importance of the interactions (or lack of interactions) between individuals. It is the social interactions between individuals that influences whether such behaviours as the creation and use of items of personal adornment is witnessed.

#### **2.3.4. The Social Basis of Behavioural Modernity**

Many researchers highlight the social aspects of behavioural modernity. The “definition of modern behaviour depends not on the *capacity* for symbolic thought but rather on the *use* of symbolism to organize behaviour” (Wadley 2001:226, author's emphasis). The capacity or innovation of new technology or behaviours does not signify modernity until the function of these takes on a symbolic role in social life (Henshilwood and Marean 2003). Modern behaviour can be inferred from the presence of archaeological evidence for the use and manipulation of symbols external to the body, materially and spatially or what Wadley (2001) refers to as symbolic storage. Wadley (2001:205) emphasizes the importance of looking for the “point at which technology started to participate in the

social lives of people” rather than the point when there was the new biological potential for these behaviours. This is directly significant to the role of the individual as the interactions between individuals will influence how and when technology is used in social life.

### **2.3.5. Personal Adornment and Behavioural Modernity**

Personal adornment is one of the traits that characterize modern behaviours. It is generally agreed that ornaments do represent symbolic, and, therefore, modern behaviours (Wadley 2001). Personal adornment does seem to appear at varying times throughout the Old World. At Blombos cave in South Africa, there are 39 perforated shell beads dating to 75,000 years BP (Henshilwood et al. 2004). There are also a few examples of early ornaments in the Levant with shell beads and pendants found at the sites of Ksar ‘Akil in Lebanon and Üçağizli Cave in Turkey that date between 41,000 and 39,000 years BP (Kuhn, Stiner, and Güleç 2004). However, within Europe, personal adornment appears rapidly and with surprising richness during the Aurignacian and continues throughout the Upper Palaeolithic (Henshilwood and Marean 2003).

Personal adornment also provides some support for a patchy emergence of modern behaviours. In a crowded geographical setting, or with new contact occurring between unknown people, there would be a need for visually identifying group cohesion or membership (Brumm and Moore 2005). Body ornamentation is one of the best ways to symbolize and express group identity as it is a visual indication of group membership.

Personal adornment also relates to the idea of symbolic storage as an indicator of behavioural modernity. These are symbolic items that are very obviously stored outside,

and, in fact, on the body (Wadley 2001). These items also relate to the social use of symbolic objects. These materials can be seen as symbolic of many aspects of individual and cultural life, such as identity and other information about the wearer (Wadley 2001).

## **2.4. Material Culture and Personal Adornment**

Material culture is the visible remains of human behaviour. It is the “residue” of productive actions (Fisher and DiPaolo Loren 2003:226). Material culture is also an active part of interactions and exchanges among people. As Howell (1989) discusses, the relationship between person and material is complex and often material has an active role in a variety of aspects of daily life. Material culture is highly important in social relationships. Objects have the power to “elicit and channel particular sensory response” that would not occur without those objects present (Gosden 2001:165). Objects are used in a wide variety of contexts, and exploitation of these objects can affect the outcome of a situation (Lesure 2005). There are many anthropological discussions on the power of material things and their exchange (e.g. Mauss 1990, Weiner 1985, Weiner 1994). Items can become “symbolically dense” with cultural meaning (Weiner 1994:394). By imbuing items with cultural power and significance, certain items come to mean more or hold a greater power over status (Weiner 1985). These can even symbolize power and authority in the case of adornment items that are associated with chiefs or other symbolically important individuals (Weiner 1994). Further, the use and display of items allow these individuals to display their status, generating a way to create and announce an identity (Smith 1999). Because of the durable nature of these items, they can be handed down

through many generations. Also, by giving a durable item, the owners can give a piece of themselves and tie the recipient to them (Herrmann 1997).

The actual medium greatly affects the message that an item communicates. This can relate to the exotic and rare nature of a material, as well as the properties of the material and knowledge of techniques of production that are associated with it (Roe 1995). For example, in Southern Italy, mammoths were extremely infrequent during the Gravettian. Certain items made from ivory, such as a few of the Grimaldi figurines, imply an interaction with others, either through the trade of material or information (Mussi 2000). They may have been the result of the exchange of already crafted ivory figurines. They may have also involved the trade of information as the same techniques are used throughout Europe in the crafting of ivory artifacts. The individual artist may have come from a foreign location with knowledge of ivory crafts. This individual may have used stray local finds of ivory or imported ivory (Mussi, Cinq-Mars, and Bolduc 2000). Ivory was a rare and desired material. Both the rarity of the material and the skill needed to work it may have increased the desire for and status of the material.

#### **2.4.1. Craft as Art**

Personal adornment is an often ignored and disregarded category of ‘art’ in the Palaeolithic. Often these items are seen as mere ‘craft’ and not of the same importance as other types of art, such as painted caves and figurines. Crafts tend to be defined more by their practical purposes rather than their artistic potential (Costin 1998). In his discussion of some imagery in Eastern European Gravettian sites, Oliva (2000b:225, my emphasis) states that “disregarding numerous personal adornments, *real* works of art are known

only from four large sites”. This view of personal adornment was also discussed by White (1992). One problem is the use of the term ‘art’ because certain assumptions are applied to early representational artifacts (White 1992). The value and use of art is seen as “self-evident” (White 1992:539). Art is often restricted to depiction, overlooking other “forms in which humans construct and represent beliefs, values, and social identity”, such as ornaments (White 1992:539). Art is also often restricted to certain types of items that prioritize the invocation of certain senses, emphasizing a bias towards specific sensory values (Gosden 2001). For example, the visual properties of items tend to predominate but other sensory qualities such as tactile properties may be just as important.

As Sassaman (1998:93) says, “all humans craft”. Crafting is a human behaviour that involves the creation of something with an intended goal, such as the form or type of object (Costin 1998). Craft production is highly important in social life as it and the crafted objects are integral in the creation of identity and social interactions (Roe 1995). How important and prestigious crafting is in relation to identity is impacted by the values that the society places on the products and skills required for that craft (Wright 1998).

#### **2.4.2. Uses of Personal Adornment**

There are many known uses of personal adornment. It is relatively common in modern ethnographies (e.g. Rosenblatt 1997, Turner 1995) to see the category of personal adornment and ornaments used as a “source of insight” into a social group (White 1992:539). The function of personal adornment can be quite complicated and is multifaceted, making it difficult to distinguish a particular use (Vanhaeren 2005). These functions are not always tied to a specific time or event but can be connected to a person

throughout their entire life (Sciama 1998). Personal adornment can derive significance from its association with certain people and events (Gosden and Marshall 1999).

Items of personal adornment are often used as a means of beautifying and distinguishing the body. This is related both to aesthetics and also to the separation of the self from animals and to the self as self (Vanhaeren 2005). This desire to beautify the body is quite common across many groups of people. All cultures have some aesthetic ideal of what physical beauty consists (Sciama 1998). Because alteration, modification, and decoration of the body are also seen as a method of enhancing reproduction, decoration can be a means of attracting the opposite sex (Brain 1979, Vanhaeren 2005).

Personal adornment can also be used as a way of expressing group identity. This is a way of visually distinguishing ‘us’ from ‘them’ (Vanhaeren 2005). It is also a way of marking social identity, to show affiliation with a specific group or stage. This can be any sort of affiliation such as lineage, wealth standing, gender, biological stage, and age class (Vanhaeren 2005). Personal adornment can also mark the individual as an individual. The decoration of the body can serve as a way of distinguishing ‘me’ from ‘you’ and ‘me’ as ‘me’. It can be a simple way of marking the body as a “special kind of individual” (Brain 1979:187). It can also relate to specific and unique individual status, such as items worn by those in high positions of power (e.g. crowns and monarchy) (Vanhaeren 2005).

Items of personal adornment are often involved in ritual, by decorating and identifying participants and leaders as well as functioning in ritual behaviour (Vanhaeren 2005). They can be associated with specific rituals, such as rites of passage or rites of transition (Sciama 1998). In these cases, wearing specific items would signify the individual’s participation in a specific ritual or signify their status as a person in a certain



ritual role. The use in other rituals, such as marriage and the decoration of a bride, can signify the giving of a rich and beautiful gift (Werbener 1990). It can also be used as a form of offerings to the gods or other spiritual beings. Many forms of personal adornment may act as amulets and talismans, to either protect or secure prosperity. These may also be used to enhance healing (Vanhaeren 2005).

An important use of personal adornment is as an exchange media. These items are quite small and light and can easily be transported larger distances. When used in exchange, these items can be used to “reinforce social ties” over long distances as well as act as “prestige symbols” (Vanhaeren 2005:531). Items are also often inalienable possessions (Weiner 1985). They develop a sacred quality and are not to be given away. Unlike many of the other functions of adornment, inalienable possessions are often ones that are not to be seen, and the length of time and history of these items only add to their special quality (Vanhaeren 2005). When removed from the common exchange cycle, these items can gain significance because of their rarity (Sciama 1998).

## **2.5. Introduction to Style**

One aspect of the study of material culture that is potentially illuminating for the inclusion of the individual in prehistoric studies is style. Style is one way that material culture can convey information (Clark 1999). Artifact style has been intensely studied for a variety of artifact types, such as ceramics (e.g. Sackett 1977), arrowheads (e.g. Wiessner 1983), and stone tools (e.g. Close 1989). It is also a highly important aspect of studying personal adornment, in historic or prehistoric contexts. Style, as Hodder

(1990:45) states, as a “way of doing”, involves the individual. The individual is the source of action and of ‘doing’.

### **2.5.1. Defining style**

Style is “the imposition of arbitrary form on material” (Chase 1991:193). This ‘arbitrary’ nature means that there is some aspect of choice and personal input involved in the creation of an object. Roe (1995) discusses several important characteristics of style. Style is “an intentional, structured system of selecting certain dimensions of form, process or principle, function, significance, and affect from among known, alternate possibilities to create pleasing variability within a behavioral-artifactual corpus” (Roe 1995:31). Style must be apparent. In order for different styles to have any form of social effect, the audience must be able to distinguish any differences between forms of artifacts (Braun 1995). These differences can be subtle but have to be visible enough to be recognized. There must be a certain degree of time spent on the manufacture of the artifact that is not necessary for utilitarian purposes. In other words, there must be some degree of effort involved in the creation of the artifact (Roe 1995). Style is also highly dependent on the medium. Style requires something physical to act as the “vehicle for behavior” (Roe 1995:30). The properties of a medium and the knowledge of the artisan (both in technique and how to work with certain properties) will affect the outcome and choices available for the creation of an artifact (Roe 1995). Style is also contextual. It is specific to a time and place, and to a people (Roe 1995). Style can be “historically diagnostic because it is historically unique” (Sackett 1977:371). It is also indicative of a specific group of people as it goes beyond the limitations of function, raw material, and

technological techniques (Chase 1991). There must be the existence of potential variability. Style involves selection for a certain effect, indicating intention (Roe 1995). From this variability, there is also some degree of standardization, suggestive of the “normative nature” of the intent (Roe 1995:31). The creation of artifacts and the continuation of aspects of style take place within a group, whether the artifact style is reproduced by one individual within that group or by multiple individuals. There will be group norms that limit choices and define what is acceptable variability. There must also be the possibility of the transmission of the stylistic choice and ‘repeated decision-making’ (Roe 1995). There has to be the opportunity for individuals to interact with others so that the communication of ideas is possible. Finally, there is a qualitative experience involved in the creation of objects. There is an aspect of and line between emotion, creativity, and aesthetics, and the tradition involved in production (Roe 1995).

### **2.5.2. Stylistic Variation**

Stylistic variation has been most notably discussed by Sackett (1977) and Wiessner (1983). This debate on the nature of stylistic variation centers on the degree to which it results from conscious and active or unconscious and passive processes. Stylistic variation can also communicate aspects of group or individual identity.

Wiessner (1983) sees stylistic variation as more purposeful and active. It involves planning and well thought-out manipulation of a material in order to communicate information (Chase 1991). Style has a role in the regulation of identities and is therefore active (Porr 2005). Emblematic style is the “formal variation in material culture that has a distinct reference and transmits a clear message to a defined population [Wobst 1977]

about conscious affiliation or identity” (Wiessner 1983:257). As it communicates information about belonging to a group, there would be a strong selection for stylistic conformity (Wiessner 1983). Wiessner (1983:258) also discusses assertive style which is the “formal variation in material culture which is personally based and which carries information supporting individual identity”. This type of style would be useful in order to distinguish the self from others, compared to the group from other groups (Voss and Young 1995).

However, others, like Sackett (1985) make an additional distinction between stylistic variations. Stylistic variation can also be a more passive, incidental result of cultural ideals and the implications of interaction between the creator and the material of an object. Style comes from the choice of one of any equally viable options for the creation of an object (Sackett 1985). This isochrestic style involves the arbitrary choices made during production. It is not an intentional planning of the creation of an object to communicate something specific and deliberate (Chase 1991). In this way, the group identity expressed materially stems more from an encultured ideal of the way something should be made and consistency within a group to make things that same way (Sackett 1985).

## **2.6. Body and Identity**

The body is a very important category in archaeological studies as both a physical and a theoretical category. As Van Wolputte (2004:251) states, “We all have and we all are a body”. We both find actual bodies (i.e. skeletal remains) as well as theorize about how the hypothetical body was constructed and how it acted. Bodies are involved in action

and are therefore a part of the creation of the archaeological record. The body is more than just a physical shell. It is a complicated interaction of mental and physical actions and substances (Joyce 2005). Within the concept of the individual, the body can, in a sense, be seen as a “bounded individual” (Turner 1991:28). The body is also a site of communication and transformation (Hill 2000).

### **2.6.1. Some Views of the Body**

How the body has been conceptualized has changed throughout time. One of the common views of the body is that of the social body. The body is marked by social relationships and status (Turner 1991). This perspective allows for the body to be viewed and examined as “a tool...to think and represent social relationships” (Van Wolputte 2004:254). Another view of the body, the body as artifact or object, examines what was done to the body. Modifications and decorations that are done to the surface of the body are a method of expressing inclusion and conformity to a group (Turner 1995). This can relate to marking the individual in some “already-given aspects” such as with status or gender or as a way to communicate a social identity (Joyce 2005:142). Marking the body in some manner, whether with jewelry, tattoos, or clothing, is a visible mark to others that can signify group participation (Joyce 2005). What people “do to and with their bodies in general, forms an important part of the flow of information – establishing, modifying, and commenting on major social categories” (White 1992:540). The surface of the body also becomes important as marking the boundary between the individual and society (Joyce 2005).

### **2.6.2. Body as Lived Experience**

The view of the body as a social body does not allow for the dynamic role that the body plays in social life (Joyce 2005). The body is not just a surface to be inscribed upon or a mediator between what is ‘natural’ and what is ‘social’. The individual and the social are not easily dichotomized (Joyce 2005). The body has an active role in society. As Grosz (1995:104) states, the body is “a concrete, material, animate organization of flesh, organs, nerves, skeletal structure and substances, which are given a unity and cohesiveness through psychical and social inscription of the body’s surface”. This definition also emphasizes the multiplicity of the substance of the body. It is the actual physical and biological entity but it is also an experiential and thinking being. This highlights the interesting role that the body plays in the material world. It is simultaneously a part of and a creator of the material world. It is not just material but it is also action (Lesure 2005). It is important to consider the materials of and on the body and their use.

This leads us to the concept of embodiment-- the way that bodies are “constituted through their experiences in the world” (Fisher and DiPaolo Loren 2003:227).

Embodiment emphasizes this interaction of body and mind within a specific context. This highlights the importance of the connectedness of bodies, actions, and the group (Csordas 1994). Actions and bodies are always located within an interactive time and space.

Embodiment also provides a way to “bridge” physical and social categories (Moore 1993:279). Focusing on the body can lead to a separation between the physical nature of the body and the social nature of the mind. Embodiment bridges this as it emphasizes the interaction between these two areas (Moore 1993:279).

### **2.6.3. The Connection between Body and Identity**

The body is highly tied to the creation and expression of identity (Turner 1995).

Modifying, embellishing, and beautifying the body modifies, embellishes, and beautifies the person. In this way the body and its decoration are used to create and act out identity. Identity, in general, is “the construction of a self in relation to other selves” (Moore 1994:5). Although the self can be defined differently and this is also debated (see Ewing 1990), the self can be defined as “an individual’s own formulations and theories about being an entity” (Voss and Young 1995:78). This ‘self-ness’ relates to both individual identity and group identity.

Identity is also not a set, unchanging entity. It is fluid and dynamic (Gosselain 2000). Identity is always in a state of change and creation. It is also not a single representation. It is multiple-sided and can involve a multitude of different aspects of the self (Fisher and DiPaolo Loren 2003).

### **2.6.4. Individual Identity and the Body**

Individual identity is a person’s self-awareness (Sökefeld 1999). It is the person’s own idea of who they are within the context that they have lived, do live, and may live. As with the general definition of identity, it is constantly changing and being created and acted out. Individual identity can be expressed in sometimes subtle ways of distinguishing a self as a unique individual, as different from someone else (Sökefeld 1999). The individual can choose what aspects of themselves they wish to present to others (Voss and Young 1995). This can also relate to individual control and “manipulation of techniques for making items” as a method of constructing and

expressing individual identity (Sinclair and McNabb 2005:193). One thing to note is that individual identity is still based on and constructed within a social setting. It is still socially sanctioned. Self-making depends on distinguishing how the self is different from something else while maintaining cultural standards of conformity (Wells 1998).

#### **2.6.5. Social Identity and the Body**

Identity is also used to distinguish between social categories such as age and gender as well as between groups. People incorporate ways of expressing group membership to distinguish ‘us’ from ‘them’ (Vanhaeren 2005).

Defining and distinguishing the self will ultimately require something to be compared to (Voss and Young 1995). Aspects that are important to the process of self-making are also learned from interactions with other people. An individual will learn what to use, how to use it, appropriate interactions and reactions and so forth (Gosselain 2000). Although what is chosen at any one time to represent and create the self may be very individual, it is always taking place within a social context and leads to a “socially sanctioned self-image” (Van Wolputte 2004:262).

#### **2.6.6. The Individual and Body and Identity**

Focusing on the body, particularly as an embodied experience, allows for the inclusion of other important aspects of the individual. The actions of the body will include such variables that affect those actions such as gender and age (Gosselain 2000). The individual is a body that has actually acted. The individual and the relationship to the body also include skills, dispositions, and agency (Lesure 2005). Embodiment also



emphasizes the importance of the individual. It highlights the importance of individual experience and the process of self-making (Van Wolputte 2004). There is some individual control over how things are used and created to express aspects of themselves both as a unique self and as a member of any given group or status (Sinclair and McNabb 2005). The inclusion of agency stresses how important the individual is in the creation and maintenance of social life (Gamble 1998). Using the individual to examine the prehistoric record implies the acceptance of such bodily and identity related issues as gender (Dobres 2005) as well as the implications this has on the body as “a site of inequality” (Turner 1995:28).

## **2.7. Conclusion**

The prehistoric individual is an acting person with all the basic attributes assigned to living individuals. As identifying a specific individual in the prehistoric record is extraordinarily difficult, I am not defining the individual as a historically specific person. However, the individual is an agent, capable of making decisions and affecting the creation of social life. The actions and decisions of the individual result in the patterns witnessed in the archaeological record. Including and searching for the individual in archaeological patterns allows us to study concepts of agency, body and identity, as well as individual actions in prehistory. The category of personal adornment is vital to the study of the body and the individual in prehistory. Items of personal adornment are made by and worn directly on the individual body. These are important objects that can be seen as having been a part or extension of the body (Gamble and Porr 2005).

The emergence of behavioural modernity is a complex debate within Palaeolithic archaeology. What modernity consists of, how to recognize it, and how it is interpreted varies. The appearance of ornaments is considered one of the defining traits of the Upper Palaeolithic. It is a symbolic behaviour that potentially goes back to 75,000 years BP as evidenced by the perforated shells at Blombos Cave (Henshilwood et al. 2004). However, it is most certainly an important modern behaviour in the Upper Palaeolithic in Europe. At this point in this region, ornaments appear more frequently in the archaeological record (Henshilwood and Marean 2003). Examining personal adornment provides a unique look into aspects of symbolic behaviour. Understanding how this behaviour may have emerged and proliferated is important as the individual is responsible for the invention and spread of new ideas and symbolic behaviour (Henshilwood and d'Errico 2005). These behaviours, by virtue of their social nature, require the actions and thoughts of the individual.

Material culture also acts as an important vehicle for the communication of information about the self and the group. Material culture has an important role to play in social life, including providing implicit and explicit messages about the individual. This can be accomplished through style, in the implicit messages that the form of an artifact can convey. The category of personal adornment should not be underestimated in Palaeolithic research. It is not simply a craft but plays a vital role in the interactions between individuals. Every item made and used has meaning to the individual (Wells 1998).

Ornaments are carried and worn on the body as well as being created through the actions of the body. They are intimately connected to a variety of bodily actions but also

interact with other social processes. These items interact with the body directly and are likely visible to others, allowing a multiple experience of the body, the decoration, and the self (Fisher and DiPaolo Loren 2003). It is an 'embodied action', one way that "individuals created and experienced themselves through their bodies" (Fisher and DiPaolo Loren 2003:229). Personal adornment is one way to create and express identity through the modification of the body. Ornaments carry complex meanings of identity from "their presence, absence, association, or position on the body" (d'Errico et al. 1998:S21). Identity is then "the material outcome of a series of choices made by the individual regarding the character of the material culture they employ in their lives" (Wells 1998:243).

Body, identity, and material culture are integral to the examination of the individual. These are areas that can be examined through the category of personal adornment in the Upper Palaeolithic. Studying the appearance of personal adornment throughout this time period is key to understanding whether it is possible to study the individual in prehistory.

## **Chapter 3: Personal Adornment Background**

### **3.1. Introduction**

The first widespread appearance of personal adornment in Europe occurs in the Upper Palaeolithic (Jochim 2002). In the Upper Palaeolithic a wide variety of materials were selected to create these ornaments, although the range of potential materials available far outnumbers the amount that was actually chosen (White 1992). These materials all have different qualities and availabilities that would have affected their selection for use as ornaments. There were also a variety of techniques used to fashion these different materials into ornaments. The selection of certain materials over others and how they were worked are important in understanding how these objects were used within daily life.

Personal adornment includes any items that would have been worn on or near the body, in the Upper Palaeolithic. This category includes such artifacts as necklaces, bracelets, diadems and rings. It also includes beads and pendants that may have been strung into bracelets and necklaces or sewn onto clothing and head decorations. Ornaments are often classified based on the shape and assumed function of the item (Hawkes 1974).

In this chapter I discuss the main categories of materials that are used for the creation of items of personal adornment. This includes examining the physical and aesthetic qualities of these materials. I also discuss the variety of techniques used in the creation of these items.

### **3.2. Materials**

Items of personal adornment in the Upper Palaeolithic are created from a variety of different materials including “limestone, schist, talc-schist, talc, mammalian teeth, bone, antler and ivory, fossil and contemporary species of marine and freshwater shells, fossil coral, fossil belemnite, jet, lignite, hematite, and pyrite” (White 1997:98). These are the materials that have survived in the archaeological record, although it is possible that items of personal adornment included materials and techniques that would not have preserved.

#### **3.2.1. Teeth**

Animal, particularly mammal, teeth were frequently utilized as ornaments. The teeth from carnivores, such as fox and wolf, as well as herbivores, such as deer and reindeer, were selected for the creation of ornaments. Some species were less frequently used but still present such as beaver and horse (Taborin 2000a). There was the occasional use of human teeth for the creation of beads and pendants (Vanhaeren and d'Errico 2006). There was also the selection for certain teeth among the different species. Carnivore canines and herbivore molars were frequently used as pendants.

#### **3.2.2. Bone**

Not only were teeth from mammals used as ornaments but their bones were as well. There are a few occurrences of beads or pendants crafted from phalanges or metacarpals and hyoid bones (Vanhaeren and d'Errico 2006). Other animal bones such as fish

vertebrae and bird bones are easily rendered into beads. These are relatively hollow bones that can easily be used as a tube-like bead.

### 3.2.3. Shells

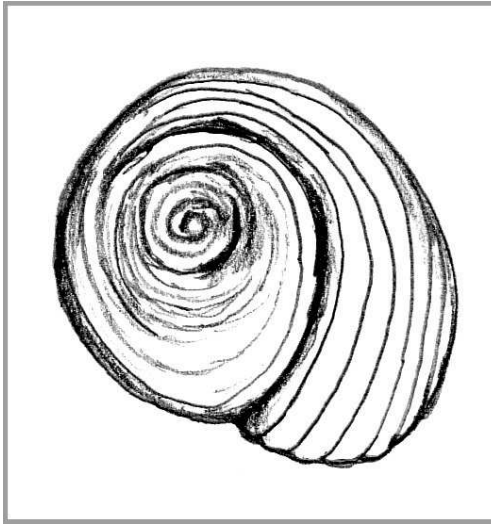


Figure 1: Example of a *Homalopoma sanguineus* L. shell. Not to scale (After Taborin 2000b:13).

There was also a variety of different marine and freshwater shell species of fossil or contemporary origin used for ornaments. Contemporary marine shells in Europe generally originated from the Atlantic or the Mediterranean (Taborin 2000a). Of the available shells that could have been used for ornamentation, there was a limited number of species selected (White 1992). A couple of the more common species are *Cycloperitea*, *Homalopoma sanguineus* L., *Trivia europea* Mtg. and *Dentalium* (Taborin 2000a) (see Figure 1).

### 3.2.4. Ivory

Items of personal adornment were frequently crafted from mammoth ivory. Ivory, obtained as mammoth tusks, can be collected directly from a mammoth carcass or found

as stray finds. Tusks, as “specialized teeth”, have layers of dentine around the pulp cavity of the tooth (White 1997:100). In between these layers of ivory, are “broad concentric rings” (White 1997:102). Fresh ivory is not structurally weak along these lines as they are composed of collagen. Collagen in older ivory, however, has decomposed creating areas of structural weakness. This means that older ivory tends to break along these points (White 1997). Ivory does have desirable characteristics. When it is fresh it is a firm and elastic material that can be worked into various shapes and forms (Abramova 1993). Overall, ivory is a very hard material that requires extensive skill to be successfully worked (Mussi, Cinq-Mars, and Bolduc 2000). Certain sections of the ivory are extremely difficult to work, such as the inner core (White 1997).

### **3.2.5. Bone and Antler**

Like ivory, bone and antler are desirable materials to work. Due to their composition, a mix of hard and stable crystallized minerals with elastic collagen properties, bone and antler are hard and robust while still being resistant to breaking (Guthrie 2005).

### **3.2.6. Stone**

Items of personal adornment were also often crafted from a variety of stones including talc, steatite, and jet. These vary in texture and hardness, as some are harder or softer stones. These can also be found in varying sizes, as pebbles or as larger outcrops of stone. The location and shape of the stone nodules found would affect the amount of time spent on finding and extracting the resource (Mussi 2000).

### **3.3. Qualities of materials**

Each of the materials that were chosen for the production of items of personal adornment has different desirable and undesirable qualities. These qualities are both visual and tactile (Gamble 1999). This involves differences in hardness, colour, sheen/luster, texture, and shape and size.

#### **3.3.1. Hardness**

Many of the materials vary in hardness. Soft materials, such as talc and steatite, are easier to work, making it less problematic for the crafter to produce a shaped item. Other materials are harder and may require a different or additional technique to create an item. For example ivory is easier to work after it has been boiled in water thus influencing the time and labour required (White 1997). In experimental studies done by White (1997), one Aurignacian<sup>1</sup> ivory basket-shaped bead may take one to two hours to create but one made from talc will take about half an hour. This is particularly significant when large amounts of time-consuming beads are found in one site.

#### **3.3.2. Colour**

Materials may have been selected for their similarity or uniqueness in colour. Some shells were colourful and striped. Certain stones have varied colourful appearances. For example, steatite is sometimes found coloured and translucent (Mussi, Cinq-Mars, and Bolduc 2000). These materials may have been chosen for their striking or unusual colours. Many materials are also similar in colour. Many tend to have a white colouring

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<sup>1</sup> For a further description of the Upper Palaeolithic cultural traditions, including the Aurignacian, see chapter 4 and table 1.



or creamy appearance, such as ivory, talc, and teeth. The colour of some materials can also be enhanced through other actions. For example, when talc is heated, the colour of the stone is deepened (White 1997).

### **3.3.3. Sheen/Luster**

The materials selected for personal adornment also vary in the degree of sheen and luster they have. A material can be naturally lustrous, such as teeth and shells. The luster of other materials such as ivory can be enhanced with polishing or abrasion (White 1997). Some materials once enhanced with polishing, retain that sheen and an appearance of warmth (Franco Mata 2007).

### **3.3.4. Texture**

The texture of a material may have also been a desirable quality in the selection of a material. Teeth and some shells are naturally quite smooth. Many of the materials used in the Upper Palaeolithic have a smoother texture, particularly when worked and polished. This includes ivory, bone, and antler. Other materials, such as several species of shells have a rougher or ridged texture. Some items may have been intentionally altered through engraving to provide a more textured surface.

### **3.3.5. Size and shape**

Shape, including size, may have influenced the choice of a material for the use in the crafting of ornaments. Certain sizes and shapes of shells may have supported a particular style or use for ornamentation. For example the shape of the shell, *Dentalium*, promoted

its use as a tube-like bead (see Figure 2). The long, cylindrical shape allows the material to be segmented into smaller tubes (Vanhaeren and d'Errico 2005). Some material may have been selectively used for their size. For example, there appears to have been a selection for smaller specimens of *Dentalium* in the Magdalenian burial of a child from La Madeleine, France. The smaller shells were used to create more 'miniaturized' tube beads (Vanhaeren and d'Errico 2005).

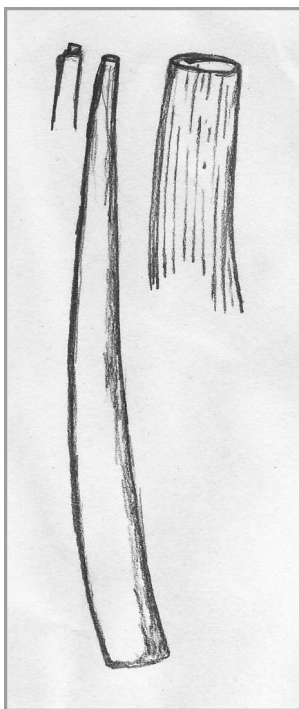


Figure 2: The shell, *Dentalium*, (including cross-section) used for the creation of Upper Palaeolithic beads. Not to scale (After Taborin 2000b:13).

### 3.4. Availability- exotic vs. local

Some of the materials selected for the creation of ornaments were often found at considerable distances from the original raw material source. There is a choice to use easier to find and locally available materials versus an exotic, imported material. Rarity of a material can mean that it is simply difficult to find or obtain due to its natural distribution or that it is located at a remote distance (Vanhaeren and d'Errico 2005). There

are often certain assumptions involved in the preference and use of exotic materials. For example the distance something has traveled can influence the sense of importance and power of both the material and the individual bringing or wearing it (Helms 1988).

### **3.4.1. Shell**

Shells often have a very limited distribution. In the Upper Palaeolithic, both fossil and contemporary shells were utilized, as well as marine and freshwater shells (White 1992). There are many examples of perforated and unperforated 'foreign' shell species found at Upper Palaeolithic sites. For example, in southwest France and northern Europe there are Atlantic species found in Mediterranean sites as well as Mediterranean species found in sites along the Atlantic (Vanhaeren et al. 2004). There are also various fossil shells found in areas throughout Europe. There are several outcrops of fossil shells that would have been exposed during these time periods. This means that certain fossil shells could only have come from very specific locations. There are Eocene shells from the Parisian basin found in areas of Central Europe, as well as Pliocene shells from the Rhône valley found in Italy (Vanhaeren et al. 2004). There were also distinct ranges for some of the shell species that were used. Contemporary shells were more common in certain areas. Gastropods tend to be very climate-specific (Vanhaeren et al. 2004). With temperature and sea level changes throughout the glacial periods, the range and environment of certain species would shift. However, there are many shell species that have overlapping ranges and environments and thus cannot be sourced. There are also many that cannot be identified due to preservation and similarity to other contemporary and fossil shells (Vanhaeren et al. 2004).

### **3.4.2. Stone**

Some types of stone had a more limited availability in the landscape. For example, the metamorphic rock steatite was frequently used in regions of Italy. However, it was only found as small pebbles in river beds or with other rock outcrops in the mountains (Mussi 1990). The use of this resource would involve the painstaking search for this material (Mussi, Cinq-Mars, and Bolduc 2000). The use of some other softer stones is also dependent on availability. One example of the limited availability of soft stone is talc. Talc is found at a few sources in the Pyrénées. Although it was used within that area, the use of talc decreases at further distances from the Pyrénées (White 1997).

### **3.4.3. Ivory, Bone, and Teeth**

The availability of ivory, teeth, bone, and antler depends on the availability of the animals that the particular material is extracted from. For example, in areas of France (White 1992) as well as Italy, mammoth ivory was not readily available (Mussi 2000). Mammoths were not a locally available resource and there were likely only a few fossil, stray finds of ivory available. There are, however, ivory artifacts found in these regions. The presence of ivory indicates exchange between people with the material traveling there from a distance (Mussi 2000). Another example is the use of red deer teeth for ornaments in Spain. The most frequent choice is vestigial upper molars of male red deer (Straus 1992). These particular teeth occur irregularly and their use would depend on the chance of them occurring in the deer.

### **3.5. Techniques**

There are a variety of techniques that were used during the Upper Palaeolithic to create items of personal adornment. Some of these techniques are applied to a variety of materials while others are more restricted. Some materials require different techniques in order to create and change their shape. The main techniques that will be discussed are the preparation of the material, perforation, segmenting, enhancements, replication/imitation, and standardization.

#### **3.5.1. Preparation**

Many of the materials from which items of personal adornment are crafted are prepared in some manner, prior to other actions such as perforation. This is generally to facilitate further modification to the material.

#### ***Ivory***

Through the use of experimental archaeology, researchers have been able to determine techniques for ivory working (e.g. White 1997). One of the more common techniques in the early Upper Palaeolithic was a percussion and wedge technique. This is most useful on older pieces of ivory. The tusk is split into long sections by directly striking wedges into the tusk (White 1997). Flakes of ivory could also be used (White 1997). A technique used later in the Upper Palaeolithic was the ‘groove and splinter’ technique (White 1997:106). This technique involved the incision of segments of ivory from the tusk surface (White 1997). In the later Upper Palaeolithic, tusks were prepared by heating or boiling the tusk which softens it, making it easier to work (White 1997). Any of these

techniques may have involved the soaking of thinner sections of ivory in water to make them softer (White 1997). Water was also used throughout the process of working ivory to soften and lubricate the surface of the ivory (White 1997).

### ***Teeth and Bone***

Teeth do not require as much time to prepare and work, as they are a “more-or-less finished package” (White 1992:554). Teeth are often prepared at the root by scraping and thinning it to make it an easier surface to perforate. Bone is often soaked in water for a period of time to soften the material, making it easier to work (Guthrie 2005).

### ***Shells***

Like teeth, shells often do not require a lot of preparation for creating items of adornment. There are often areas of the shell that are naturally weaker and easier to perforate (Madariaga de la Campa 1966). However, like teeth, they are occasionally scraped down before perforation (Mussi 2001). This involves thinning an area for the anticipated perforation.

### **3.5.2. Perforation**

Many of the perforation techniques can be used on a variety of materials, and are often quite similar for ivory, teeth, bone, antler, shells, and stone. A hole may be punctured into a material by pecking or gouging the material. Perforation can also be accomplished by drilling (White 1992). This involves rotating a tool against the sides of a material to create a hole. This can be done with a pointed stone tool, on one side which creates a

conical hole, or both sides, which creates a biconical hole. Some drilled perforations show the use of specific tools. For example, on some perforated figurines from Italy from the Gravettian, the drilled hole is even rather than conical. This suggests that the hole was created by drilling with a small burin or burin spall (Mussi, Cinq-Mars, and Bolduc 2000). Materials can also have single or double perforations. Ornaments with two perforations are rarer but are present in some artifacts such as several of the Aurignacian ivory beads in Germany (White 1997) as well as a few of the deer molars from the Magdalenian site of Aven des Iboussières, France (d'Errico and Vanhaeren 2002).

### *Shells*

Shells are often naturally perforated by predators and other environmental forces (Madariaga de la Campa 1966). Natural or predator perforations will often have a different appearance than those made by tools. Perforations made by predators, such as other shellfish, are often smaller and more regular in shape (Madariaga de la Campa 1966). Some of these naturally perforated shells may have been used as ornaments. Natural perforations can be a result of the actions of water and wind on the shell (Madariaga de la Campa 1966).

The perforation of shells will also depend on what type of shape and form the shell has (David 1985). Some shells were perforated by drilling. A sharp pointed tool will create a rough, irregular hole (David 1985). Shells can also be perforated by sawing. The hinge of the shell can be grooved and then sawed until a hole is created in the concave area of the shell. This creates a smooth, long hole (David 1985). In some areas of Italy, in the Early Upper Palaeolithic, shells were perforated by gouging. They were gouged and

scraped with sharp pointed tools until the tool could eventually be pushed or pierced through the shell (Mussi 2001).

### ***Teeth***

Teeth were also perforated by gouging. Teeth were gouged at the sides of the stem until a tool could be pushed through to create a hole (Mussi 2001). Often both sides of the root of the tooth are gouged. One example of this technique is the perforated teeth from the Aurignacian site at Bacho Kiro, Bulgaria (White 1993). Many teeth were not hung via a perforated hole. Instead, an incision is carved around the stem or root of the tooth creating a groove that the pendant could be suspended by (White 1992).

### **3.5.3. Segmenting**

Many of the materials were segmented into smaller pieces for the creation of small, uniform beads. This technique produces highly standardized blanks or beads. Ivory, soft stone, and some species of shells were segmented.

### ***Ivory and Soft Stone***

One technique used for both ivory and steatite beads was the creation and use of thin rods of the material that were incised and broken into smaller segments or “blanks” (White 1992:550). The equally sized blanks were then thinned at one or both ends to create an easier surface area to perforate. In France, during the Aurignacian, this technique was used to create basket shaped beads. The blank was thinned on one end and then perforated by gouging the thinned end to create a hole. In the Aurignacian within



Germany, this same technique was used but a different form of bead was created. The blank was thinned at both ends and a hole was gouged in at each thinned end. From this point, the bead could be ground and polished into the preferred form with coarse and fine abrasives (White 1997). Segmenting was also used for ivory beads in the later Palaeolithic. At the Epigravettian site of Yudinovo in Russia researchers were able to reconstruct the production sequence of ivory beads. Ivory plates were segmented into smaller, square blanks that could then be worked into beads (Abramova 1993).

### *Shells*

Segmenting was also used for shells and other fossils. Tube-like shells, like *Dentalium*, do not require perforation and are instead segmented through sawing or snapping the shell to create small tube beads (Vanhaeren et al. 2004). Fossil belemnite (an extinct form of squid) can also be segmented into bead blanks. The technique used for the creation of belemnite beads at the Spitsinskayan site of Kostenki XVII in Russia was to segment the fossil and then split the segments in half. These blanks could then be perforated and polished (White 1992).

### **3.5.4. Enhancements**

Besides preparing and perforating the materials, many ornaments were altered through other techniques. This includes polishing the material as well as a variety of techniques for etching and engraving the items.

### *Polishing*

Many of the materials were polished during or after bead production. Polishing affects the overall appearance and texture of the item. Ivory, in particular takes on a lustrous appearance that is similar to other materials, such as tooth enamel, when it is polished (White 1997). Evidence suggests that hematite or red ochre was frequently employed to polish many beads. Red ochre may have been used as both a colourant to change the colour of the material, but it also works as an abrasive. When it is used with water, it does not stain the material but smoothly polishes it (White 1997).

### *Etching/Notching*

Some ornaments are decorated with engravings. These may be simple notches drawn into the surface of the ornament with a sharp tool, such as some of the deer teeth from the Magdalenian site of Aven des Iboussières, France (d'Errico and Vanhaeren 2002). These may also be more figural, with images of animals engraved, such as the decorated bear canines from Duruthy, France (Bahn 1983).

### *Contour Découpés*

Contour découpés is a specific technique that appears in the Magdalenian for ornaments, as well as cave and other mobiliary art. It is an engraving technique that creates a thin, outlined and shaped object (White 2003). The image is engraved onto the surface of the material to create shape (see Figure 3). For ornaments, this technique is often applied to thin bones, including horse hyoids and scapulae (White 2003). Many of the Magdalenian ornaments produced with this technique are shaped as a horse's head with a single perforation, such as those at Labastide, France (Bahn 1983).

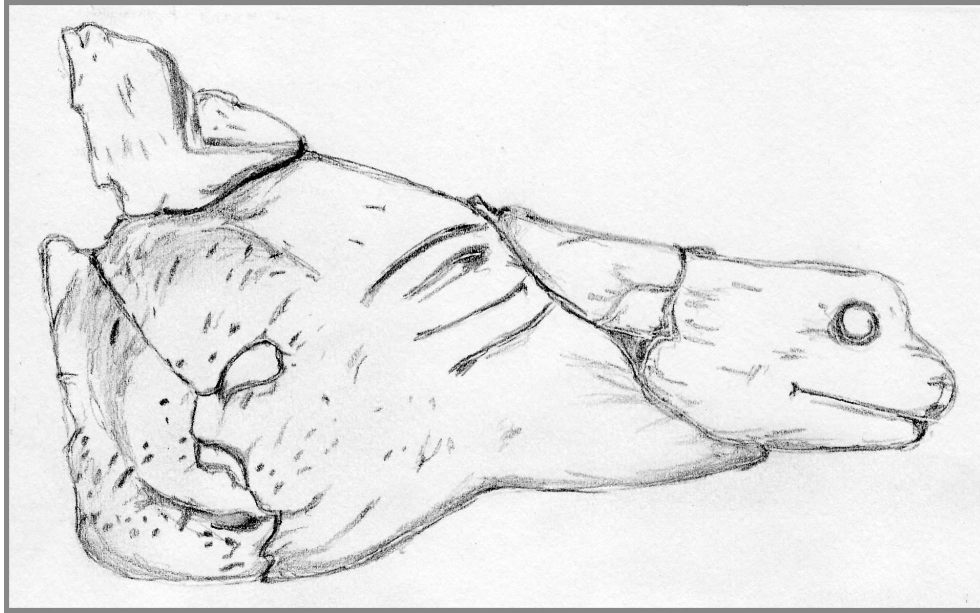


Figure 3: Example of a contour découpés horse head crafted on hyoid bone from the Magdalenian site of Tito Bustillo, Spain. Not to scale (After Behrmann et al. 2002:597).

### 3.5.5. Replication/Imitation



Figure 4: Example of an Aurignacian basket-shaped bead. Not to scale (After White 1997:100).

One technique that is common at various times throughout the Upper Palaeolithic is the crafting of ornaments to look like other materials or types of ornaments. For example, during the Aurignacian, there are ivory and stone beads that were crafted in what is termed a basket-shaped style (White 1997). These appear to imitate beads made from a specific species of gastropod, *Cyclope neritea* (see Figure 4). During the Aurignacian,

there are also numerous beads crafted from ivory and stone that imitate ornaments crafted from red deer molars (White 1992).

### **3.5.6. Standardization**

Some of the bead production techniques allow for a large degree of standardization in the size and shape of the bead created. Standardization of size and shape would allow for an easier arrangement of beads, as they could be set in a desired pattern. Some beads are also purposefully designed to hang in specific patterns (White 1992). This can involve the method of scoring the material prior to completion. This technique was used for some of the beads found at the Gravettian site of Sungir, Russia. The blanks were scored in a particular manner prior to perforation. Scoring allowed the beads, once strung, to fall in an interlocking pattern and present a specific visual arrangement (White 1993).

Importantly for researchers, this patterning allows a more accurate analysis of the use and presentation of the ornaments.

### ***Ivory***

Starting in the Aurignacian, rods of ivory were segmented, allowing for small, even-sized beads. The segmentation of a rod of ivory along incised sections allows for the maintenance of specific and regulated sizes (White 1992). There is also evidence for scoring and standardization of beads in later time periods. At the Epigravettian site of Yudinovo, Russia, ivory beads were created from thin plates of ivory that were further scored into rectangular beads. There is also evidence on some bead blanks of scoring the central hole to create a guide of where to perforate the ivory blank (Abramova 1993).

### *Shells*

Standardization of ornament size and shape was also evident in the use of certain shells in the creation of beads. For example, at the Magdalenian child burial at La Madeleine, France, the shell species, *Dentalium*, was used to create numerous beads for the burial. Due to the tube-like quality of the gastropod shell, it can easily be segmented into small sections of equally sized tubes (Vanhaeren et al. 2004). These tube-like beads would have been easily sewn onto items of clothing (Vanhaeren et al. 2004).

### **3.6. Conclusion**

Personal adornment in the Upper Palaeolithic is a dynamic and versatile category. A wide variety of exotic and local materials were used, including teeth, ivory, and a range of different stones (White 1992). These materials were selected from a wide range of potential resources. The qualities of the materials would have been important in the tactile and aesthetic appeal of the materials as well as the amount of labour required. These materials could be worked in a variety of manners, dependent on the nature of the material, and the tools available. There were a number of different techniques used to create ornaments, including many different methods of perforation and decoration. Many of the materials and the techniques would have required specialized knowledge that was not held by every member of a group (Vanhaeren and d'Errico 2005). It is important to consider the choices that were available and made in the creation of items of personal adornment.

## **Chapter 4: Geographical and Temporal Background**

### **4.1. Introduction**

While items of personal adornment appear at different times in different areas of the Old World, I focus on the evidence for personal adornment in Europe and Siberia during the Upper Palaeolithic (40,000-10,000 years BP). This is a period of time when items of personal adornment occur in unprecedented numbers. Europe and Siberia are often divided into three regions: Western Europe, Central Europe, and Eastern Europe and Siberia. These are superficial boundaries, though, as people and animals were constantly in motion.

Europe, throughout the Upper Palaeolithic, experienced numerous climatic changes. The glacial and interglacial periods had varying effects on plant, animal, and human populations. Some areas of Europe appear to ‘empty out’ during periods of the Upper Palaeolithic, particularly during the Last Glacial Maximum (20,000-18,000 BP) (Jochim 2002). Other areas, such as southwest Europe, are continuously occupied and provide areas of refuge for populations of humans and animals (Jochim 2002).

Europe in the Upper Palaeolithic is divided into three main areas: Western, Central, and Eastern Europe (see Figure 5). Although these are general, relatively arbitrary divisions, there are some patterns in the appearance of certain cultural traditions that correspond to these approximate areas. There are three main groupings that occur in the earlier half of the Upper Palaeolithic: local transitional industries, the Aurignacian, and the Gravettian. In the later half of the Upper Paleolithic there are three industries that will be discussed: the Solutrean, the Epigravettian, and the Magdalenian.

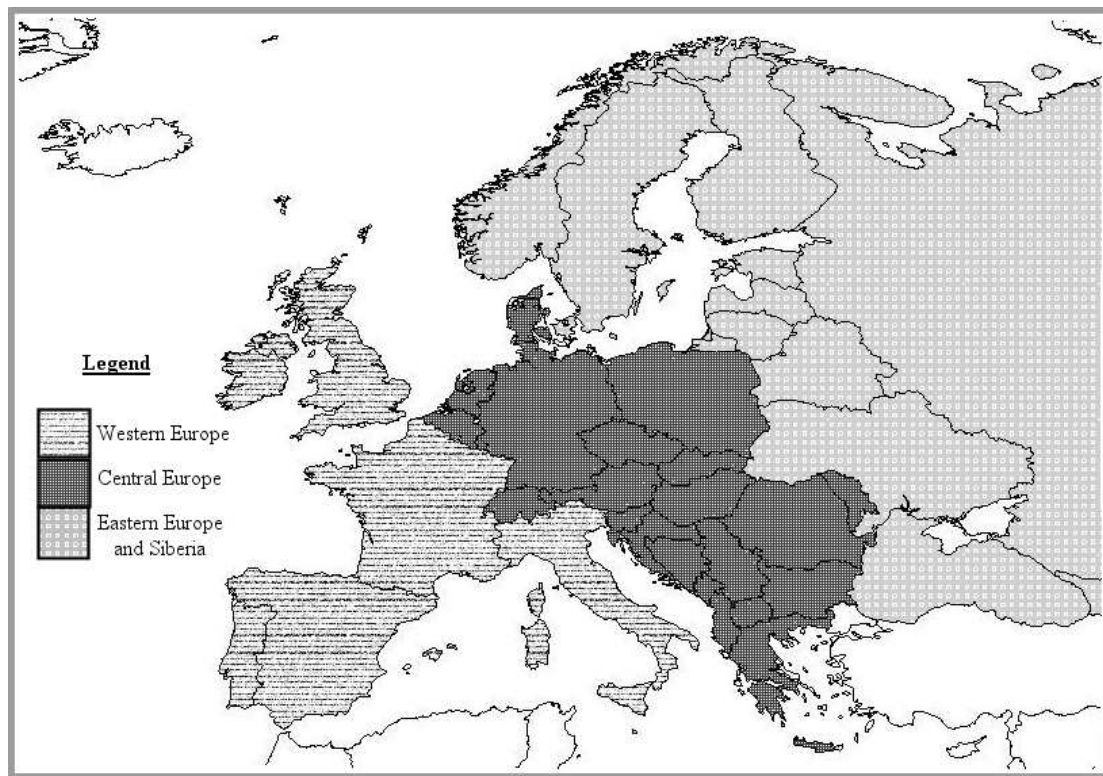


Figure 5: Map showing European geographical areas (Blank map from About.com 2007, <http://geography.about.com/library/blank/blxeurope.com>).

## 4.2. Geographical Background

### 4.2.1. Western Europe

Western Europe in the Upper Palaeolithic includes Portugal and Spain (Iberia), France, Britain, and Italy. This area shows some of the earliest undeniable evidence for new symbolic behaviours, including cave art and personal adornment. The earliest evidence for significantly large amounts of items of personal adornment is found in France in the Aurignacian, at such sites as Abri Castanet (Jochim 2002). The earliest painted cave currently known, Chauvet, was also found in France (Jochim 2002). The presence of these symbolic behaviours continues, culminating near the end of the Upper Palaeolithic with a number of painted caves, such as the cave of Lascaux, France (Jochim 2002) and intricate personal adornment, such as the engraved deer teeth found in association with

the female burial at St. Germain-la-Rivière, France (Vanhaeren and d'Errico 2005).

Western Europe was extremely important during periods of glaciations, especially during the Last Glacial Maximum. Areas of Iberia and France remained hospitable to animals and humans in this time period of extreme glacial conditions (Jochim 2002). This means that unlike other areas of Europe, these areas had relatively consistent occupation throughout the Upper Palaeolithic.

#### **4.2.2. Central Europe**

Central Europe encompasses Germany, the Czech Republic, and Moravia (the former Austrian-Hungarian Empire) (Svoboda, Ložek, and Vlček 1996). This region, throughout the Upper Palaeolithic, had distinct shifts in population density and appeared to have often 'emptied' of people. This was likely related to shifting settlements due to temperature and environmental conditions (Montet-White 1994). Certain areas of Central Europe were also highly important for both human and animal populations and these areas periodically became distinct 'centres' of activity. In particular, Moravia and areas within it acted as a pathway for people and animals due to its strategic location as a corridor for movement (Svoboda, Ložek, and Vlček 1996). It connected parts of Poland/northern European Plain to Austria/Danube valley in the south. As well, in the Gravettian (28,000-22,000 years BP), this area became highly important as a centre of artistic creativity and there are several large centres or 'mega-sites' that developed, such as the Gravettian occupation at Dolní Věstonice in the Czech Republic.



### **4.2.3. Eastern Europe and Siberia**

Eastern Europe includes the area from the Eastern European Plains to Siberia, including Russia, Ukraine, and Siberia. Siberia refers to the region that is covered from the Ural Mountains to the Arctic/Pacific watershed (Vasil'ev 2000). Within Eastern Europe, particularly in Siberia, art and related objects appear quite suddenly around 30,000 years BP. There are a few major sites dating to this time period, such as the Gravettian layers at Mal'ta in Siberia, that show a large amount of creative expression through the appearance of numerous artistic artifacts including figurines and ornaments (Vasil'ev 2000). There are also several important sites that date to the last 10,000 years of the Upper Palaeolithic (Vasil'ev 2000).

### **4.3. Time Periods/Cultural Entities Background**

At the Middle to Upper Palaeolithic transition in Europe (between 50,000-40,000 years BP), there are several new developments that correspond to the appearance of anatomically modern humans moving into areas of Europe. There are a variety of new behaviours that are present, including the appearance of items of personal adornment. Within these areas, there are often local Mousterian-derived industries at the beginning of the Upper Palaeolithic (Jochim 2002).

The Upper Palaeolithic is generally subdivided into several different cultural entities or traditions (see Table 1) (Jochim 2002). These traditions are defined by the appearance of similar assemblages that appear in the same time frame and region (Klein 1999). These are frequently based on certain lithic traits such as the presence of particular types of tools or techniques. There may also be an appearance or increase in the use of

various materials, such as bone or antler. These industries were not homogenous in appearance across Europe. During the early part of the Upper Palaeolithic, two hominin species co-existed. From 40,000 to 30,000 years ago, both anatomically modern humans (AMH) and Neandertals shared areas of Europe (Jochim 2002). After 30,000 years BP, any cultural expressions are assumed to be a product of the only surviving hominin species, modern humans, but prior to this, there is some ambiguity surrounding which species is responsible for these early cultural traditions, particularly the Aurignacian (Jochim 2002).

<b>Cultural Entity</b>	<b>Date</b>	<b>Geographical Distribution</b>
Szeletian, Jankovichian	43,000-35,000 BP	Central Europe: Moravia (Hungary and Austria), Romania
Spitsinskayan	40,000-30,000 BP	Russia and Ukraine
Châtelperronian	40,000-30,000 BP	North France to North Spain
Uluzzian	35,000-30,000 BP	Central and Southern Italy
Aurignacian	40,000-28,000 BP	Most of Western Europe: excluding areas of Greece, Italy and Iberia, into areas of Central Europe but is rare past Russia
Gravettian	28,000-21,000 BP	Widespread across Western, Central and Eastern Europe
Solutrean	22,000-18,000 BP	France, Spain, and Portugal
Epigravettian	21,000-10,000 BP	Areas of Central and Eastern Europe, Italy
Magdalenian	18,000-11,000 BP	Widespread across Western Europe except Italy and Central Europe up to Poland and the Czech Republic

Table 1: Table of the cultural entities within the Upper Palaeolithic in Europe.

#### **4.4. Transitional Industries**

The early Upper Palaeolithic is characterized by several transitional industries that feature a mix of both Middle and Upper Palaeolithic characteristics. The Middle Palaeolithic technology may be fully maintained or modified in some manner. Although there is some potential for the presence of symbolic and artistic activity (e.g. ochre use), there are few examples of items of personal adornment that are unambiguously associated with transitional industries (Svoboda, Ložek, and Vlček 1996). The transitional industries that will be discussed are those which had some evidence of personal adornment.

##### **4.4.1. Western Europe**

###### ***Châtelperronian (40,000-30,000 years BP)***

The Châtelperronian is a Mousterian-derived technology that is largely found at sites in France although it does refer to sites located from northern France to northern Spain (Bricker 1976). It is characterized by curved backed points (Gamble 1999). It also shows a mix of characteristically Upper Palaeolithic elements, such as endscrapers and burins, and the local Mousterian of Acheulean Tradition Type B (Klein 1999). This industry does show evidence of symbolic behaviours although the origin of these behaviours is heavily debated (d'Errico et al. 1998). However, the Châtelperronian is “unambiguously associated with...Neandertal remains” (Zilhão et al. 2006:12643). At Grotte du Renne and Saint Césaire at Arcy-sur-Cure, France, there are Neandertal remains in direct association with Châtelperronian artifacts (Jochim 2002). There is evidence for the appearance of some ornaments at the Grotte du Renne and Grotte des Fées in France

(Zilhão et al. 2006). There is still some debate over the association and stratigraphy of some other Châtelperronian finds (Zilhão et al. 2006).

#### ***Uluzzian (35,000-30,000 years BP)***

The Uluzzian is a locally derived complex relatively similar to the Châtelperronian. The approximately 50 known Uluzzian sites are located in areas of southern and central Italy and also possibly into areas of Greece (Koumouzelis et al. 2001a). The main diagnostic feature of the Uluzzian is an arch-backed blade that is often crafted from flakes (Mussi 2001). This characteristic blunted backed blade is similar to those that are diagnostic of the Châtelperronian (Gamble 1986). There is some evidence for ornamentation such as the perforated shells from Grotta del Cavallo, Italy (Mussi 2001). However, this evidence is potentially problematic as there is the possibility of intermixing with other layers (Mussi 2001).

#### **4.4.2. Central Europe**

##### ***Szeletian (43,000-35,000 years BP)***

The Szeletian is a local derivative of the Mousterian located in Central Europe, with its type site located in Hungary at Szeleta Cave (Gamble 1986). The Szeletian is found in areas of Central Europe including Hungary, Romania, and Moravia (Smith 1982). It is based on characteristic bifacial, leaf-shaped points that are similar to the points found during the Solutrean but with a different production sequence (Gamble 1986). Unlike the Châtelperronian and the Uluzzian, the arched backed blade industries of Eastern Europe persist until 28,000 to 25,000 years BP, corresponding to the Gravettian in some areas

(Kozłowski 2004). There is also the occurrence of the Jankovichian, which is similar enough to the Szeletian to be referred to as the “Trans-Danubian Szeletian” (Allsworth-Jones 1986:112). There is limited evidence of personal adornment associated with either industry, mainly from the Jankovichian site of Csákvár, Hungary (Allsworth-Jones 1986).

#### **4.4.3. Eastern Europe**

##### ***Spitsinskayan (40,000-30,000 years BP)***

The Spitsinskayan is an early Upper Palaeolithic industry that is located in Russia and Ukraine (Jochim 2002). It is an “Upper Palaeolithic industry without archaic elements” predominated by burins and features a few bone implements (Valoch 1968:360). There is limited evidence for personal adornment, namely from Kostenki XVII in Russia in the form of perforated teeth, fossils, and stone (Vishnyatsky and Nehoroshev 2004).

#### **4.5. Upper Palaeolithic Industries**

##### **4.5.1. Aurignacian (40,000-28,000 years BP)**

The Aurignacian is the first intrusive culture within the Upper Palaeolithic (Bar-Yosef 2002). The Aurignacian is relatively widespread across Europe, appearing throughout Western and Central Europe (Tattersall, Delson, and Van Couvering 1988). A few characteristically Aurignacian tool forms occasionally appear in local traditions in Eastern Europe, but the tradition never fully appears there (Jochim 2002). The Aurignacian is not represented equally in time and space throughout the rest of Europe either (Jochim 2002). It develops at different times, as early as 40,000 years BP in France and as late as 30,000 years BP in Italy (Jochim 2002). Objects of personal adornment

associated with this industry do not appear in the same quantities throughout Europe. For example, items of personal adornment are extremely rare in Iberia (Spain and Portugal) but are abundant in areas of France (Straus 1992). In fact, “a few square meters at certain Aurignacian sites have yielded more representational objects than are known for the entire planet in the period before 40,000 years ago” (White 2003:68).

The Aurignacian is characterized by a variety of stone and bone technologies and the appearance of a variety of art forms. It features an increase in the appearance of blades produced with prismatic core technology. These blades are also used to make other tools, including burins and endscrapers (Jochim 2002). Bone and antler are often used for the creation of tools. There is the first major appearance of art, through cave art (e.g. Chauvet, France), and figurines (e.g. Hohlenstein-Stadel, Germany), as well as a significant appearance of items of personal adornment (e.g. Abri Castanet, France) (Jochim 2002).

It is problematic that there are no human remains securely associated with the earliest Aurignacian. It is generally assumed to be an anatomically modern human tradition but the hominin remains that are found in association are often undiagnostic and there are no burials (Jochim 2002). By the end of the Aurignacian, there are definite AMH skeletal remains in association with the tradition (Jochim 2002). One example is the eight AMH individuals from Mladeč, Czech Republic, dating to between 35,000-30,000 years BP (Jochim 2002).

#### **4.5.2. Gravettian (28,000-22,000 years BP)**

The Gravettian first appears as early as 30,000 years BP and overlaps in time with some Aurignacian sites (Jochim 2002). It is fairly widespread throughout Western Europe, at sites in France, Italy, and Spain. It is also relatively well known in areas of Central and Eastern Europe (Tattersall, Delson, and Van Couvering 1988). It is derived from characteristic straight-backed points and burins (Tattersall, Delson, and Van Couvering 1988). The Gravettian, particularly in Moravia, shows a sharp increase in the presence of bone and ivory industries, personal adornment, and burials, as is evident from such sites as Dolní Věstonice in the Czech Republic (Soffer 2000). The Gravettian is well known for the female figurines that appear in the archaeological record at this time. There are figurines of varying styles found in France (e.g. Brassempouy), Italy (e.g. the Grimaldi caves), Czech Republic (e.g. Dolní Věstonice), and Siberia (e.g. Mal'ta). The Gravettian is only associated with modern humans based on AMH remains in burials (Jochim 2002). The extinction of Neandertals also takes place at the beginning of the Gravettian (Bar-Yosef 2002).

In Central and Eastern Europe, the Gravettian is more prevalent. Some researchers, such as Neustupný and Neustupný (1961), suggest it began in this area. It is also referred to as the Pavlovian in Central Europe, particularly in the Czech Republic (Tattersall, Delson, and Van Couvering 1988). Central Europe is home to numerous large sites with evidence for a varied and active symbolic/artistic life. For example, the site of Pavlov I, Czech Republic, has provided over 300 art and jewelry objects (Jochim 2002).

This is also the period of time in which we start to see more activity in parts of Russia and Siberia. Siberia was sparsely populated up until the Gravettian (Vasil'ev

2000). During this period, the Siberian record also shows a relative richness in personal adornment, as evidenced by sites such as Mal'ta (Vasil'ev 2000).

#### **4.5.3. Solutrean (22,000-18,000 years BP)**

The Solutrean is a purely Western European tradition. It approximately coincides with the beginning of the Last Glacial Maximum and is of relatively brief duration, only a couple of thousand years (Wymer 1982). Sites are found in areas of France, Spain, and Portugal (Straus 1992). This industry is characterized by unifacial and bifacial leaf shaped points of varying sizes. These may have been used as spear points, knives, or even ceremonial tools (Jochim 2002). There are no burials within the Solutrean but there is evidence for the production of ornaments (Straus 1992). There are a few painted caves as well as several bone, ivory, and shell ornaments (Jochim 2002).

#### **4.5.4. Epigravettian (21,000-10,000 years BP)**

As the Solutrean was largely restricted to areas of Western Europe, the Epigravettian developed in the rest of Europe. This includes most areas of Central and Eastern Europe (Svoboda, Ložek, and Vlček 1996) but also areas in Italy (Tattersall, Delson, and Van Couvering 1988). In Italy, the Epigravettian begins around 20,000 BP and the beginnings were roughly contemporaneous with the Solutrean (Mussi 2001). The Epigravettian is basically an extension of the Gravettian (Jochim 2002). It is similar to the Magdalenian (see below) in Western Europe, in that there is a focus on microliths (Gamble 1986). However, in the Epigravettian, there is no development of a Magdalenian-like bone and antler industry (Svoboda, Ložek, and Vlček 1996).



#### **4.5.5. Magdalenian (18,000-11,000 years BP)**

The Magdalenian is the last relatively widespread cultural industry in the Upper Palaeolithic. There is variation as to how and when the Magdalenian appears throughout Western and Central Europe. It does not ever really reach Eastern Europe. There is no evidence for the Magdalenian in Central Europe until around 15,000 years BP. In other areas, such as Iberia, the typical Magdalenian industries (e.g. harpoons) do not appear until 15,000 BP (Straus 1992). It “is an archaeological construct, an identifiable, repeated association of certain stone, bone, and antler tools, occurring in late glacial contexts in Western Europe” (Jochim, Herhain, and Starr 1999:131). This time period sees an increased focus on the production of microliths (Tattersall, Delson, and Van Couvering 1988). These small lithic tools were potentially used for composite tools and projectiles (Jochim 2002). The lithic industry consists of blades, bladelets, and burins (Jochim 2002). Another diagnostic feature is the appearance of highly decorated and finely crafted carved ivory, bone, and antler harpoons (Nilsson 1983). This is also the time period where there is a significant expansion of cave art in Western Europe (Nilsson 1983). Besides the further appearance of cave art, there is also a greater frequency of engravings, female figurines, and personal adornment (Tattersall, Delson, and Van Couvering 1988). There are also several burials from this time period in Western Europe, with impressive grave goods (Jochim 2002).

#### 4.6. Conclusion

Europe, throughout the Upper Palaeolithic, underwent a variety of environmental, climatic, and most importantly, cultural changes. This is the main period of modern human expansion into and throughout Europe and Siberia. There are numerous technological innovations, including lithic technologies and new methods for working a variety of materials including bone, antler, and ivory (Jochim 2002). It is the time period of the first major appearance of many archaeologically visible cultural achievements such as art, ritual, exchange systems, and burials<sup>2</sup> (Jochim 2002). Personal adornment appears in large quantities in the early Aurignacian and the presence of these items increases throughout this period, culminating in the Magdalenian. Because items of personal adornment undeniably appear in the archaeological record of the Upper Palaeolithic in Europe, this time is of the utmost importance to an examination of the role of the individual.

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<sup>2</sup> There are a few Middle Palaeolithic burials. However, richly decorated and very variable formal burials first appear during the early Upper Palaeolithic (see Harrold 1980).

## **Chapter 5: Methods, Analysis, and Results**

### **5.1. Introduction**

To examine how items of personal adornment can be used to study the role of the individual in prehistory, I compiled a catalogue of Upper Palaeolithic sites that contain evidence of personal adornment. This is the first catalogue of information on items of personal adornment encompassing the entire European Upper Palaeolithic. The information I recorded is based on a literature survey. The various resources utilized, including books and journal articles, were obtained through several university libraries and various databases. I focused on archaeological data that specified Upper Palaeolithic sites as well as sources that discussed the European Upper Palaeolithic and personal adornment in general. There were several sources that specified personal adornment within the article title. However, most resources were found from searching for specific keywords related to personal adornment, including synonyms for ornaments and the various common raw materials. Using this information, I compared the available data to look for patterning that might be indicative of individual behaviour. The three main areas that are most useful for examining the individual are the body, identity, and actions. These are investigated through items of personal adornment found in relation to burials, raw material usage and style, and contexts that provide insight into individual actions.

### **5.2. Limitations**

This catalogue of sites is not a complete record of Upper Palaeolithic sites featuring personal adornment. Although there were numerous sources that provided useful data, there were several limitations that affected the information I was able to collect. These

were related both to the availability of materials, the level of detail in the written accounts, and the nature of the excavations and types of materials that are commonly found.

### **5.2.1. Availability**

The site information recorded depended on what information there was available. There are limited resources written about the Upper Palaeolithic. Many of the documents that have been written are spread throughout a variety of institutions, including many international institutions. Access to these documents and institutions is limited.

Documents are often only available in foreign languages. I was able to utilize several resources written in French but there were many resources written in languages beyond my personal translating abilities. As many of these sites have been excavated at various times throughout the last century, the original documents are old and have restricted access. Many of these earlier resources were difficult if not impossible to obtain.

Another bias in the written material is which types of sites or items get a significant amount of attention. Sites with unusual items, ‘impressive’ items, or large amounts of items tend to have a larger focus in the literature. For example, the burials at Sungir, Russia are often included in examples of Upper Palaeolithic personal adornment due to the large amount of items found in association with the bodies, as well as the intriguing situation that two of the individuals were juveniles. An example of a bias related to ‘impressive’ items is that of the Gravettian site of Pair-non-Pair, France. A large ivory pendant imitating a cowry shell was found. However, there is little written about whether there were any other items of personal adornment found at the site.

### **5.2.2. Excavation Bias and Taphonomic Considerations**

The final set of limitations of the documentary evidence relates to the excavation of sites and the materials that ornaments are commonly made of. The excavation methods employed in earlier years were not conducive to the recovery of small, fragile ornaments. As many items of personal adornment are very small in size, the act of sieving, the size of the sieve, and the excavation tools employed will all influence the number of artifacts recovered. Many of these materials, such as shells, are also fragile and end up fragmented.

With these limitations in mind, there are still numerous sites that aid in analyzing the individual in the Upper Palaeolithic. Some sites are extensively and accurately written about, such as the numerous resources written on Abri Pataud, France (e.g. Movius jr. 1977). Over the last two decades excavators have employed improved excavation techniques that increase the recovery rate of smaller items. There has also been more attention paid to the category of Palaeolithic ornamentation over the last decade. This means that there are a number of recent resources that have provided some general patterns of material use and ornament styles during periods in the Upper Palaeolithic (e.g. Taborin 2000a, Vanhaeren and d'Errico 2006).

### **5.3. Description of Catalogue**

I recorded, whenever possible, the layer, country, region, archaeological culture, date in years BP, context of finds, and quantity of items of personal adornment.

### 5.3.1. Basic Site Information

The layer or level that the items were found in was recorded if it was provided. The layer may also be a description of which part of the site it was found in such as ‘upper area’ or ‘bone bed’. The country that the site is within was recorded and the designation of Western, Central, or Eastern Europe based on earlier definitions was applied.

### 5.3.2. Archaeological Culture

	Transitional	Aurignacian	Gravettian	Solutrean	Epigravettian	Magdalenian	No Date	<b>Total</b>
Britain	/	/	4	N/A	N/A	5	/	<b>9</b>
France	7	54	25	17	N/A	92	/	<b>195</b>
Italy	3	9	17	N/A	6	N/A	/	<b>35</b>
Portugal	/	/	1	3	N/A	2	/	<b>6</b>
Spain	2	16	6	15	N/A	12	/	<b>51</b>
<b>Western Totals</b>	<b>12</b>	<b>79</b>	<b>53</b>	<b>35</b>	<b>6</b>	<b>111</b>	<b>/</b>	<b>296</b>
Austria	/	5	2	N/A	2	/	/	<b>9</b>
Belgium	/	7	5	N/A	/	2	/	<b>14</b>
Bohemia	/	/	/	N/A	/	2	/	<b>2</b>
Czech Republic	/	1	12	N/A	/	7	/	<b>20</b>
Germany	/	12	13	N/A	/	19	/	<b>44</b>
Greece	1	1	1	N/A	1	/	/	<b>4</b>
Hungary	1	1	1	N/A	/	/	/	<b>3</b>
Poland	/	/	1	N/A	/	/	/	<b>1</b>
Romania	/	2	1	N/A	/	/	/	<b>3</b>
Switzerland	/	/	/	N/A	/	4	/	<b>4</b>
<b>Central Totals</b>	<b>2</b>	<b>29</b>	<b>36</b>	<b>N/A</b>	<b>3</b>	<b>34</b>	<b>/</b>	<b>104</b>
Bulgaria	/	1	/	N/A	/	N/A	/	<b>1</b>
Croatia	/	1	/	N/A	/	N/A	/	<b>1</b>
Georgia	/	/	1	N/A	1	N/A	1	<b>3</b>
Russia	2	3	13	N/A	10	N/A	/	<b>28</b>
Siberia	/	1	17	N/A	13	N/A	1	<b>32</b>
Ukraine	/	1	1	N/A	2	N/A	/	<b>4</b>
<b>Eastern Totals</b>	<b>2</b>	<b>7</b>	<b>32</b>	<b>N/A</b>	<b>26</b>	<b>N/A</b>	<b>2</b>	<b>69</b>
<b>Overall Totals</b>	<b>16</b>	<b>115</b>	<b>121</b>	<b>35</b>	<b>35</b>	<b>145</b>	<b>2</b>	<b>469</b>

Table 2: Table of the total number of sites sorted by archaeological culture (N/A signifies that it is not an applicable industry to the area, / signifies that there are no recorded sites in that country or industry).

The time period in which the author placed the site and finds was recorded. There were some sites that were not directly assigned a time period. For those sites, the appropriate culture based on the age in years, description, and geographical area was applied in italics. If the source provided a radiocarbon date or a general time frame, this was

recorded. However, many sites only had a generic time frame so the corresponding date based on previous definitions was employed.

In order to examine any patterns that might be indicative of the individual, the sites were sorted into their respective time periods (see Table 2). A basic description of the site information from each archaeological culture follows.

### ***Transitional Industries (Appendix B)***

The Upper Palaeolithic transitional industries show very limited appearance of items of personal adornment. There are twelve transitional sites in Western Europe, two in Central Europe, and two in Eastern Europe. Only a few Châtelperronian sites show an unambiguous presence of items of personal adornment within the industry. The Uluzzian sites are problematic in that some of them show possible signs of intermixing with other layers. There are only four Uluzzian sites that are not problematic in their stratigraphic association (d'Errico et al. 1998). The transitional sites in Central and Eastern Europe that have items of personal adornment are often ambiguously associated with the local industry. Even those Châtelperronian sites that have unambiguous items of personal adornment are contested, although this is more in relationship to the potential of interactions between AMH and Neandertals. As the Châtelperronian is associated with Neandertals, the question becomes one of behavioural modernity and the Neandertal individual.

### ***Aurignacian (Appendix C)***

The catalogue of Aurignacian sites is probably the most complete and current listing of sites with ornaments, as a result of the recent research by Vanhaeren and d'Errico (2006) but there are also overall less Aurignacian sites that have been found and recorded. In comparison to the number of transitional sites, there are a significantly greater number of Aurignacian sites. This supports the view of those who posit an 'explosion' of symbolic behaviour in Europe at this time.

#### *Gravettian (Appendix D)*

The Gravettian is a highly significant period of time in the Upper Palaeolithic especially in Central and Eastern Europe. There is approximately the same number of sites recorded from the Gravettian as the Aurignacian but the number of recorded sites with items of personal adornment in Eastern Europe jumps from seven sites during the Aurignacian to 32 in the Gravettian.

#### *Solutrean (Appendix E)*

The Solutrean has a very limited spatial and temporal range. There are 35 sites with items of personal adornment recorded in Western Europe. There is less information available on Solutrean sites generally and the catalogue information is biased towards Spain and France with less information available on Portugal.

#### *Epigravettian (Appendix F)*

There is unfortunately less information on the Epigravettian in comparison to other contemporary industries. There are only three Central European Epigravettian sites



recorded and 26 in Eastern Europe. Especially in Central Europe, there has been less work done at or reported on Epigravettian sites (Montet-White and Williams 1994).

### ***Magdalenian (Appendix G)***

Within the list of Magdalenian sites and information, there are a number of useful sites that potentially show individual actions. However, for the number of sites that had reliable and definite information written, there were also many sites that were far less informative, providing only vague references to items of personal adornment. There were also many more sites with small numbers of items, with 77 of the 145 sites having specified less than ten items of personal adornment.

#### **5.3.3. Artifact Information**

The level of detail provided on items of personal adornment ranged quite dramatically, from simply mentioning the presence of these types of items to a full description of the type and materials that were found. Species of teeth and bone were recorded if they were provided. Due to the ambiguity of some shell identification and the inconsistent use of Latin and common names, I did not record shell species in the catalogue data (see Alvarez Fernandez 2006). However, for certain sites I will discuss the shell species that were found as there are some reliable authors who have studied and written on patterns of shell species in the Upper Palaeolithic (e.g. Alvarez Fernandez 2001, Taborin 2000a). Some items were also generically described as ‘beads’, ‘pendants’ and so on. If this was the only description provided, this is what was recorded. If a source provided the quantity of a certain item found, this was also recorded. An estimated number of ornaments are

provided for those sites that offered some combination of numbers on types of ornaments. This is accomplished by providing a minimum number of ornaments based on adding up the numbers of different types. However, many of the sites did not provide a count of items found. Finally, if there was a specific context in which these finds were located, this was recorded. This includes such features as burials, habitation areas, or rock shelters.

#### **5.4. Analysis of Body, Identity, and Actions through Personal Adornment**

The main areas that appear to be most useful for studying the individual in the Upper Palaeolithic in relation to personal adornment are body, identity, and actions. The following sections use these categories to further analyze any patterns in Upper Palaeolithic ornaments. The number and percentages of sites that feature various characteristics of personal adornment, such as the association with burials or various materials, are compared to determine the presence of any patterns. Depending on the material, this comparison may be between the presence of that specific material and the total number of sites that feature the generic material-- for example the number of sites that feature deer teeth is compared to the number of sites that feature teeth. There are also several sites that will be discussed in further detail as they provide potential information on individual actions.

#### **5.5. Body**

The body is used as an “instrument” to reflect the individual and the individual within a societal construct (Gamble 1998:431). For the Upper Palaeolithic sites examined,

studying the body specifically involves looking at those sites that have burials with associated items of personal adornment.

### **5.5.1. General Discussion**

Many of the sites that contained a significant amount of well recorded items of personal adornment were in burial contexts (see Table 3). In these cases there is an actual body that has been buried directly with a variety of goods, including ornaments. Sometimes these ornaments have been interpreted as having direct contact with the body-- for example, where these items may have been sewn onto items of clothing.

Studies of Upper Palaeolithic burials (e.g. Harrold 1980, Riel-Salvatore and Clark 2001) often include other important data such as the age, sex, and health status of the interred individual. This information taken in combination with the grave goods found and their location in relationship to the body can potentially provide information on the status of that individual. It can also lead to an understanding of symbolic behaviours of past people, through looking at potential burial rituals.

The problem that arises from using burials to examine the individual is that burials are not equally represented throughout the Upper Palaeolithic. This results in periods of time for which we do not know how people were treating their deceased. There are also a variety of burials that do not feature ornaments as grave goods, or have any grave goods at all. Whether this is a variation in what has been buried with the individual or a lack of preservation, we may never know. It is entirely possible that a variety of ideas on individual adornment are invisible due to the lack of preservation of many organic materials. There is also the problem of who is actually being represented in the

burial. These items were placed in association with an individual (or multiple individuals). However, it is interesting to question whether it is a representation of the individual or of the society's perception of that individual (Hill 2000).

There is significant variation in the characteristics of Upper Palaeolithic burials. Some burials feature single individuals while in others, multiple individuals were interred. Individuals are also buried in a variety of bodily positions (e.g. flexed or extended) and with a variety of items. These variations in burial practices may be related to individual differences, particularly in status. However, this may be due to group and regional differences on how to treat the dead (Harrold 1980).

### **5.5.2. Basic Patterns in Burials**

In the Aurignacian, especially in the early Aurignacian, there are few human remains and no burials (White 1989). Therefore we do not have any physical individuals in association with ornaments. In addition, there are few human remains and burials known from the Solutrean. This may reflect the burial practices of the time but it may also be a reflection of the limited information on Solutrean sites (Jochim 2002). With no actual bodies found, examining ideas of the individual body in the Aurignacian or the Solutrean is difficult.

There are also some countries that do not have any recorded burials with ornaments as grave goods. In Central Europe, only the Czech Republic has any burials and these are restricted to the Gravettian. In Central Europe, after the Gravettian, there is little evidence of burials (Jochim 2002). In Western Europe, there are few recorded burials with ornaments in France until the Magdalenian and none in Spain throughout the

Upper Palaeolithic. In Eastern Europe, there are only burials with items of personal adornment recorded from Russia and Siberia and these are concentrated during the Gravettian.

	Transitional	Aurignacian	Gravettian	Solutrean	Epigravettian	Magdalenian	No Date	<b>Total</b>
Britain	/	/	2 (4)	N/A	N/A	1 (5)	/	<b>3 (9)</b>
France	0 (7)	0 (54)	2 (25)	1 (17)	N/A	4 (92)	/	<b>7 (195)</b>
Italy	0 (3)	0 (9)	14 (17)	N/A	2 (6)	N/A	/	<b>16 (35)</b>
Portugal	/	/	1 (1)	0 (3)	N/A	0 (2)	/	<b>1 (6)</b>
Spain	0 (2)	0 (16)	0 (6)	0 (15)	N/A	0 (12)	/	<b>0 (51)</b>
<b>Western Totals</b>	<b>0 (12)</b>	<b>0 (79)</b>	<b>19 (53)</b>	<b>1 (35)</b>	<b>2 (6)</b>	<b>5 (111)</b>	<b>/</b>	<b>27 (296)</b>
Austria	/	0 (5)	0 (2)	N/A	0 (2)	/	/	<b>0 (9)</b>
Belgium	/	0 (7)	0 (5)	N/A	/	0 (2)	/	<b>0 (14)</b>
Bohemia	/	/	/	N/A	/	0 (2)	/	<b>0 (2)</b>
Czech Republic	/	0 (1)	7 (12)	N/A	/	0 (7)	/	<b>7 (20)</b>
Germany	/	0 (12)	0 (13)	N/A	/	0 (19)	/	<b>0 (44)</b>
Greece	0 (1)	0 (1)	/	N/A	0 (1)	/	/	<b>0 (4)</b>
Hungary	0 (1)	0 (1)	0 (1)	N/A	/	/	/	<b>0 (3)</b>
Poland	/	/	0 (1)	N/A	/	/	/	<b>0 (1)</b>
Romania	/	0 (2)	/	N/A	/	/	/	<b>0 (3)</b>
Switzerland	/	/	/	N/A	/	0 (4)	/	<b>0 (4)</b>
<b>Central Totals</b>	<b>0 (2)</b>	<b>0 (29)</b>	<b>7 (36)</b>	<b>N/A</b>	<b>0 (3)</b>	<b>0 (34)</b>	<b>/</b>	<b>7 (104)</b>
Bulgaria	/	0 (1)	/	N/A	/	N/A	/	<b>0 (1)</b>
Croatia	/	0 (1)	/	N/A	/	N/A	/	<b>0 (1)</b>
Georgia	/	/	0 (1)	N/A	0 (1)	N/A	0 (1)	<b>0 (3)</b>
Russia	0 (2)	0 (3)	4 (13)	N/A	0 (10)	N/A	/	<b>4 (28)</b>
Siberia	/	0 (1)	1 (17)	N/A	1 (13)	N/A	0 (1)	<b>2 (32)</b>
Ukraine	/	0 (1)	0 (1)	N/A	0 (2)	N/A	/	<b>0 (4)</b>
<b>Eastern Totals</b>	<b>0 (2)</b>	<b>0 (7)</b>	<b>5 (32)</b>	<b>N/A</b>	<b>1 (26)</b>	<b>N/A</b>	<b>0 (2)</b>	<b>6 (69)</b>
<b>Overall Totals</b>	<b>0 (2)</b>	<b>0 (115)</b>	<b>31 (121)</b>	<b>1 (35)</b>	<b>3 (35)</b>	<b>5 (145)</b>	<b>0 (2)</b>	<b>40 (469)</b>

Table 3: Number of sites that have burials with ornaments as grave goods (Number in parentheses is the total number of sites, N/A signifies that it is not an applicable industry to the area, / signifies no recorded sites in that time period, 0 signifies that there are no recorded sites with burials).

However, there are several burials that can be examined to elicit some ideas of the individual. There are a number of well documented burials (with and without grave goods) that have the potential to provide information on the individual. Sites with burials associated with items of personal adornment account for 9% of all Upper Palaeolithic sites in Western Europe, 7% of all Upper Palaeolithic sites in Central Europe and 9% of all Upper Palaeolithic sites in Eastern Europe. There is the greatest percentage of sites with burials and items of personal adornment during the Gravettian, at 26% of all Gravettian sites.

The first major appearance of complex burials is during the Gravettian. This is best exemplified by the burials from the Czech Republic and Italy. Burials account for 58% of all recorded sites in the Czech Republic. The Czech Republic site, Dolní Věstonice, accounts for the majority of the Gravettian burials in the Czech Republic with five of the seven burials. Burials account for 82% of all Gravettian sites recorded in Italy. These burials are generally concentrated in the Grimaldi Cave complex.

There are a number of graves known from the Magdalenian in Western Europe, particularly in France. The majority of burials in France during the Upper Paleolithic are from the Magdalenian (Jochim 2002). The percentage of Magdalenian sites with burials appears small but there are four major French burial sites, Aven des Iboussières, La Madeleine, St. Germain-la-Rivière, and Laugerie-Haute-Est, which account for more than 2000 of the recorded ornaments.

Burials provide important information on how the body is treated after death. Particularly in the Gravettian there is a change in the treatment of the dead. The Gravettian has several elaborate burials in which individuals are buried individually or in multiples, with a variety of types and quantities of grave goods, in a number of different positions, and with a variety of associated features (see below). Although we may never know exactly why some individuals were provided elaborate burials, the sudden appearance of a wide variety of burials is an important turning point of the Upper Palaeolithic. A small percentage of the population is treated differently in the nature and details of their burials (Harrold 1980).

### 5.5.3. Who is buried?

Although individuals within burials account for a small portion of the population, many different individuals are represented, albeit unequally. Of the recorded sites with items of personal adornment, there are 17 children (under age 12) and juveniles, 29 adults, and 32 unspecified individuals. There are both females and males represented, with 10 adult females and 19 adult males. In general, burials of adolescents and adult males are more frequent. However, when females and children are uncovered, they appear to have been buried in the same ornate and complex manner (Harrold 1980). Based on the catalogue, it appears that child burials are emphasized in Eastern Europe, as four of the six recorded burials involve children. There are more adults represented in Western and Central Europe, with 22 of the 65 individuals in Western Europe and six of the seven individuals in Central Europe. Although adults represent approximately a third of the total number of sites with burials, it is still important to note that children and juveniles represent 21% of the recorded burials and unspecified individuals represent 41% of the burials.

The Italian Gravettian and Epigravettian burials provide an interesting example of the range in age and sex of the individuals interred. Of the 21 individuals from the 16 burials located in the Grimaldi Cave complex in Italy, there are no juveniles under the age of twelve, at least ten of the adults are male, and three are female (Mussi 1990). The selection of who gets buried in this manner is related to age and sex. At least four of the individuals who received burial treatment in these caves had sustained injuries or a traumatic event prior to death or possibly as the cause of death (Mussi 1990). In this situation, with the bias in age and gender, Mussi (1990) interprets this burial treatment as less related to descent and inherited status and more to personal characteristics and

achievements. With the bias towards males and traumatic bodily injuries, Mussi (1990) also hypothesized that these individuals were potentially hunters. In general, the individuals are all buried in the same flexed positions, with similar goods and similar locations in the caves (Mussi 1990). This suggests that this was an important place in the landscape for the purpose of burying certain individuals.

Sungir (Russia) is another important Gravettian burial site. There were three richly decorated burials found at Sungir. An elderly male and two juveniles were uncovered, each with thousands of ornaments associated with the bodies (Soffer 1985). The two juveniles were buried together in a head to head position (Formicola and Buzhilovo 2004). The large amount of ornamental items found in association with the bodies (over 10,000 items), and the ages of the individuals, suggests that these individuals held a special place in society. Although the interpretations of these burials are not uniformly agreed on by researchers (e.g. Straus 1994), there is the possibility for some interpretations of the status of the individuals. The elderly male could have had achieved status, with his importance based on his personal achievements or qualities. As this individual was older, he would have had the opportunity to be held in esteem for his personal accomplishments. However, the two children would not have had the same lifetime of opportunity to accumulate experience. Therefore it is more likely that these two children were important because of their descent or ascribed status (White 1989). They were buried in an intricate manner because of who they were related or important to rather than what they had accomplished in life (White 1993). This may also be a reflection of a sense of profound loss of these children (White 1993). Another unique feature of this burial is the burial position of the two children. They were buried head to



head, an unusual position in Upper Palaeolithic burials (Formicola and Buzhilovo 2004). The youngest individual, Sungir 3, had some femoral deformities (Formicola and Buzhilovo 2004). This burial is also intriguing because the two children were buried with an equal or greater amount of ornaments than the elderly male. As these are children, one may question how distinct and formed is the sense and expression of self in a child. Thus, is the representation in these burials of the individual child or what that child meant to others?

The other main cluster of burials with items of personal adornment is the Gravettian burials at Dolní Věstonice in the Czech Republic. There are five individuals represented in a total of three burials. Unlike the Italian burials, these individuals are all adults. There are two females and three males. None of these burials are associated with more than 30 items of personal adornment. One of the more intriguing burials from the Gravettian layers at Dolní Věstonice II is the triple burial of Dolní Věstonice (DV) XIII, DV XIV, and DV XV. These three individuals are young adults, the two outside skeletons are males and the central individual is a female, although the sex attribution is not definite (Formicola, Pontrandolfi, and Svoboda 2001). The positioning of the individuals is unusual in terms of how the outside individuals were placed in relation to the central individual. One was placed face down and the other was placed on its side with the hands positioned over the pelvis of the central individual (Formicola, Pontrandolfi, and Svoboda 2001). The individuals all have a few ornaments arranged on their bodies as well as significant amounts of red ochre. The teeth and ivory beads are generally concentrated around the skulls of the individuals. This burial is interesting for a number of reasons. As already mentioned, this burial features three individuals who were

placed in unusual positions. However, it is also another burial that features relatively young individuals, between the ages of 17-23 (Svoboda 2006b). One of the individuals, the central individual, also had several skeletal deformities like the Sungir 3 child (Formicola 2007).

During the Upper Palaeolithic, a very small percentage of the overall population is represented through burials. Examining the range of who was buried provides some information on who merited complex burials. With the age bias in the Italian examples, the interred individuals had likely achieved a status worthy of that particular type of burial. In comparison, the children buried from Sungir were more likely to have had special burial treatment due to descent rather than experience. There is also the possibility that “physical diversity” may have been an important factor in the burials of certain individuals (Formicola, Pontrandolfi, and Svoboda 2001:378). One of the individuals from the Dolní Věstonice triple burial had some skeletal deformities, as well as the male from the Gravettian burial at Brno 2 in the Czech Republic, one of the children from Sungir, and the potential injuries that were suffered by the individuals from a few of the burials in the Grimaldi caves (Formicola, Pontrandolfi, and Svoboda 2001). This suggests that some individuals with physical differences were perceived of and treated differently in both life and death (Formicola 2007). Differential treatment of individuals based on their physical diversity may be a result of fear, reverence, extra care, or even hatred of those individuals (Formicola 2007). The burial of certain bodies was based on age, gender, physical status, and individual status. All of these features help us to understand the possible reasons for the selection of certain individuals over others for an elaborate and rich burial.

#### **5.5.4. Grave Goods**

There is significant variation in the materials that are found in burial contexts. All main categories of personal adornment (teeth, shells, bone etc.) are represented. There is also a large range in the number of ornaments found in relation to the interred bodies, from only a few to more than 1000. The position of these grave goods to the interred body is also an important way to examine the individual.

One interesting association of Gravettian grave goods and burials is the association of fox canines in the Gravettian burials in Central and Eastern Europe. Two sets of burials from Russia, the Sungir burials and the young child at Kostenki XV, all had perforated fox canines in association with the bodies. In Central Europe, two of the five individuals at Dolní Věstonice were also associated with fox canines. The presence of fox teeth in the burials suggests that this particular material was regionally important as an ornament for deceased individuals. As fox canines are also common in sites unrelated to the burials in these countries, it can be inferred that these fox teeth were an important group and individual marker.

The burials in the Grimaldi Cave complex in Italy are a rich source of information for examining the relationship of ornaments to the interred individual(s). There are eight ornate burials with ornaments concentrated at the heads of the individuals. One example in the Gravettian is the male burial of Arene Candide which features an arrangement of approximately 100 shells (Pettitt et al. 2003). These were all found clustered around the skull of the individual, suggestive of a cap. Another of the burials from this complex, the Barma Grande triple burial, also features a concentration of ornaments surrounding the

heads of the three individuals. Interestingly, they also feature ornaments concentrated around the upper chest of each individual. These concentrations are taken as representing an intricately layered necklace (Mussi 1990). As all of these burials feature items of personal adornment focused around the skull and neck, head and neck decorations must have been an important part of the procedure and ritual of caring for the dead.

Another burial from the Gravettian that features distinct concentrations of ornaments is the male burial at Paviland, England. Although some of the finds from this site did not survive after excavation, specifically the shells that were associated with the body, their original position in relation to the body is well-documented (Campbell 1977b). The shells that were documented throughout the excavation of the body disintegrated when removed from the ground. The 600 *Dentalium* shells were found clustered together near the hand of the individual, suggestive of a pocket or a bag. The large number of shells suggests that these were items that were of high importance to be buried with the deceased individual.

The position of items in association with the deceased individual provides information as to what types of items were essential for the individual to be buried with. This includes bags, caps, necklaces, and clothing. The frequency of these complex ornaments in burials suggests that it was important for the individual to be decorated in death, possibly as a final representation of that individual.

#### **5.5.5. Time and Labour**

Grave goods, particularly items of personal adornment, require time to collect the materials and to create the items. Although the time necessary to make an item will vary

depending on the material and the skill of the artisan, there are some estimates of the length of time required to make a bead, particularly ivory beads. From estimates based on the ivory beads at Sungir, one ivory bead will take approximately 60 minutes to make (White 1993). Although there is significant variation in the number of ornaments associated with burials, there are twelve burials that are associated with more than 30 items. A significant amount of time and effort in the creation of items for the decoration of the deceased individual suggests the importance of that individual to other people. There was some reason to elaborately outfit the individual in death.

The ornaments in association with the burials at Sungir are the best example for showing the investment of time and energy into the production of grave goods. With over 10,000 items, these grave goods would have required over 9000 hours of labour to create (Jochim 2002). This large investment in time and effort to create just the beads that are associated with the burials suggests the importance of the interred individuals assuming the existence of hierarchies in these societies.

One interesting Magdalenian burial is that of the child burial from La Madeleine, France. This is another child burial that has a large number of ornaments in association. There are four teeth, one bone and 1557 shell ornaments. These ornaments were clustered around the child's head and arm and leg joints (Vanhaeren et al. 2004). Reminiscent of the importance paid to the children's burials at Sungir, one wonders about the status of this young individual. The shell beads were likely sewn onto an item of clothing (Vanhaeren et al. 2004). The care taken in creating the beads and then the garment reflect the importance of this child to other people.

## **5.6. Identity**

It is also possible to examine some aspects of identity, specifically social or group identity. Certain species of shells and animals are continuously utilized as ornaments. There are also some styles and forms of ornaments that appear to have a limited temporal and/or geographical range. Any object can convey important information about the individual and the group, through style and material selection (Gamble 1982).

### **5.6.1. General Discussion**

The two main areas that are used to examine identity are material use in time and space and the use and appearance of unique raw materials and stylistic differences. The materials that are selected from numerous potential materials reflect group influences and preferences. The use of a previously underutilized material reflects an expansion in the innovative use of materials. Continuity in the use of materials is also significant because this suggests that there is enough societal influence to maintain the exploitation of certain materials. Although a regional and temporal pattern of material use is more indicative of group and ethnic identity, it is still important for considering the individual. These patterns will be influenced by individual innovation. The individual is also responsible for conformity to or changes in the use of materials to communicate identity.

There are two questions that are important to keep in mind when examining the range of the form or material of an ornament. These are: to what degree is resource availability a factor and how much contact can we assume between groups of people? A contributing factor to material use is the natural abundance of the material and the ease of access (Taborin 2000a). Often the materials that are used for the creation of ornaments

are traveling a significant distance from their original source or have limited availability within the area. However, the use of these materials to represent a group self suggests a certain amount of contact with other groups and that there is a need to differentiate one group from another. As there is no direct evidence of an exact amount of contact, this can only be hypothesized and surmised from more indirect evidence such as the frequency of exotic materials.

Another trend in the Upper Palaeolithic is the continuity of certain species and styles of ornaments throughout the entire period. Some shell species are used throughout the Upper Palaeolithic, including *Homalopoma sanguineus* L., *Trivia europea* MTG., *Columbella rustica* L., *Cypraea* sp., and *Cyclope neritea* L. (Taborin 2000a). There are also some styles and forms of beads that appear at a variety of times and sites throughout the Upper Palaeolithic. For example, ivory claviform beads that appear at some sites in Italy (e.g. Arene Candide) during the Gravettian seem to be replicated at some Magdalenian sites in France (e.g. La Marche) (Taborin 2000a).

### **5.6.2. Ivory**

Ivory is one of the main materials that is used for ornaments in the Upper Palaeolithic and is represented at 21% of the total sites recorded (see Table 4). It is most prevalent in Central European sites (41%) although more in the Aurignacian, at 59% of all sites, and the Gravettian, at 53% of all sites. In all regions, the use of ivory appears to decrease after the Last Glacial Maximum, possibly reflecting a decrease in the availability of the material. The availability of mammoth does fluctuate in different regions of Europe

throughout the Upper Palaeolithic as the climate and corresponding environments shift (Montet-White 1994).

	Transitional	Aurignacian	Gravettian	Solutrean	Epigravettian	Magdalenian	No Date	<b>Total</b>
Britain	/	/	1 (4)	N/A	N/A	0 (5)	/	<b>1 (9)</b>
France	2 (7)	14 (54)	7 (25)	1 (17)	N/A	8 (92)	/	<b>32 (195)</b>
Italy	0 (3)	0 (9)	2 (17)	N/A	0 (6)	N/A	/	<b>2 (35)</b>
Portugal	/	/	0 (1)	0 (3)	N/A	0 (2)	/	<b>0 (6)</b>
Spain	0 (2)	2 (16)	0 (6)	2 (15)	N/A	1 (12)	/	<b>5 (51)</b>
<b>Western Totals</b>	<b>2 (12)</b>	<b>16 (79)</b>	<b>10 (53)</b>	<b>3 (35)</b>	<b>0 (6)</b>	<b>9 (111)</b>	<b>/</b>	<b>40 (296)</b>
Austria	/	0 (5)	0 (2)	N/A	0 (2)	/	/	<b>0 (9)</b>
Belgium	/	7 (7)	4 (5)	N/A	/	1 (2)	/	<b>12 (14)</b>
Bohemia	/	/	/	N/A	/	0 (2)	/	<b>0 (2)</b>
Czech Republic	/	0 (1)	3 (12)	N/A	/	1 (7)	/	<b>4 (20)</b>
Germany	/	9 (12)	10 (13)	N/A	/	3 (19)	/	<b>22 (44)</b>
Greece	0 (1)	0 (1)	0 (1)	N/A	0 (1)	/	/	<b>0 (4)</b>
Hungary	1 (1)	1 (1)	0 (1)	N/A	/	/	/	<b>2 (3)</b>
Poland	/	/	1 (1)	N/A	/	/	/	<b>1 (1)</b>
Romania	/	0 (2)	0 (1)	N/A	/	/	/	<b>0 (3)</b>
Switzerland	/	/	/	N/A	/	2 (4)	/	<b>2 (4)</b>
<b>Central Totals</b>	<b>1 (2)</b>	<b>17 (29)</b>	<b>18 (36)</b>	<b>N/A</b>	<b>0 (3)</b>	<b>7 (34)</b>	<b>/</b>	<b>43 (104)</b>
Bulgaria	/	0 (1)	/	N/A	/	N/A	/	<b>0 (1)</b>
Croatia	/	0 (1)	/	N/A	/	N/A	/	<b>0 (1)</b>
Georgia	/	/	0 (1)	N/A	0 (1)	N/A	0 (0%)	<b>0 (3)</b>
Russia	1 (2)	1 (3)	3 (13)	N/A	1 (10)	N/A	/	<b>6 (28)</b>
Siberia	/	0 (1)	6 (17)	N/A	2 (13)	N/A	0 (0%)	<b>8 (32)</b>
Ukraine	/	0 (1)	1 (1)	N/A	1 (2)	N/A	/	<b>2 (4)</b>
<b>Eastern Totals</b>	<b>1 (2)</b>	<b>1 (7)</b>	<b>10 (32)</b>	<b>N/A</b>	<b>4 (26)</b>	<b>N/A</b>	<b>0 (0%)</b>	<b>16 (69)</b>
<b>Overall Totals</b>	<b>4 (16)</b>	<b>34 (115)</b>	<b>38 (121)</b>	<b>3 (35)</b>	<b>4 (35)</b>	<b>16 (145)</b>	<b>0 (0%)</b>	<b>99 (469)</b>

Table 4: Number of sites that specify ivory as a medium for personal adornment (Number in parentheses is the total number of sites, N/A signifies that it is not an applicable industry to the area, / signifies that there are no recorded sites in that country or industry, 0 signifies that none of the recorded sites referred specifically to ivory).

During the Aurignacian in France, Belgium, and Germany, ivory is frequently used in the manufacturing of ornaments as evidenced from such sites as Abri Castanet in France, Spy in Belgium, and Geißenklosterle in Germany (White 2004). As previously discussed, ivory has a number of desirable characteristics, specifically certain tactile, elastic, and visual properties. Ivory can be both polished and shaped to take on the qualities and forms of other materials. In the Aurignacian this is evident in the creation of ivory basket shaped beads that mimic the appearance of certain shells (White 1992).



Ivory's adaptable form means that it would be a highly desirable material for the creation of ornaments. The focus on ivory and the forms it takes would then be related to some sense of an aesthetic appeal of the material and the social preferences for a material that could be manipulated to take on the form and qualities of other materials.

There are some interesting differences in ivory use. Ivory is frequently used in many Central European sites during the Gravettian. At most Gravettian sites in Belgium (80%), and Germany (77%), ivory is used for the creation of ornaments. In comparison, some areas in Western Europe have few ivory ornaments recorded. For example, Britain has only one recorded site that has ivory ornaments. Ivory is used for the production of other artifacts within Britain such as ivory awls and carved-base points (Campbell 1977a). This means that, excluding taphonomic and excavation biases, there was a choice to use materials other than ivory for the creation of ornaments. In comparison, Italy, which also has few ivory ornaments, does not feature many other ivory artifacts. Mammoths were not locally available in Italy and other materials, such as steatite, were used in place of ivory (Mussi 2000).

### **5.6.3. Shells**

Identity can also be examined through the use and distribution of shells. Shells are extensively used throughout the Upper Palaeolithic particularly in Western Europe, occurring in 73% of all sites (see Table 5). Shells are used in the majority of Western European sites, although this varies in time. During the Solutrean, shells seem to be strongly emphasized, at 97% of the recorded Solutrean sites with ornaments. This could

be a result of the proximity to several sources of shells or a strong preference for the use of shells but it could also be a result of a bias in the available literature.

However, the situation is different in Central Europe. In Central Europe the use of shell as an ornamental material increases in time. Only 28% of Aurignacian sites feature shells but 56% of Magdalenian sites have shell ornaments. This could be a result of a greater emphasis on shells as ornaments but could also be a result of population contact. As the environment improved after the Last Glacial Maximum, group mobility and corresponding group contact was enhanced (Jochim, Herhain, and Starr 1999).

	Transitional	Aurignacian	Gravettian	Solutrean	Epigravettian	Magdalenian	No Date	Total
Britain	/	/	3 (4)	N/A	N/A	3 (5)	/	<b>6 (9)</b>
France	2 (7)	39 (54)	18 (25)	17 (17)	N/A	64 (92)	/	<b>140 (195)</b>
Italy	3 (3)	8 (9)	7 (17)	N/A	4 (6)	N/A	/	<b>22 (35)</b>
Portugal	/	/	1 (1)	3 (3)	N/A	2 (2)	/	<b>6 (6)</b>
Spain	2 (2)	10 (16)	6 (6)	14 (15)	N/A	9 (12)	/	<b>41 (51)</b>
<b>Western Totals</b>	<b>7 (12)</b>	<b>57 (79)</b>	<b>35 (53)</b>	<b>34 (35)</b>	<b>4 (6)</b>	<b>78 (111)</b>	<b>/</b>	<b>215 (296)</b>
Austria	/	5 (5)	2 (2)	N/A	2 (2)	/	/	<b>9 (9)</b>
Belgium	/	2 (7)	3 (5)	N/A	/	1 (2)	/	<b>6 (14)</b>
Bohemia	/	/	/	N/A	/	1 (2)	/	<b>1 (2)</b>
Czech Republic	/	0 (1)	4 (12)	N/A	/	2 (7)	/	<b>6 (20)</b>
Germany	/	0 (12)	5 (13)	N/A	/	13 (19)	/	<b>18 (44)</b>
Greece	1 (1)	1 (1)	1 (1)	N/A	1 (1)	/	/	<b>4 (4)</b>
Hungary	0 (1)	0 (1)	0 (1)	N/A	/	/	/	<b>0 (3)</b>
Poland	/	/	0 (1)	N/A	/	/	/	<b>0 (1)</b>
Romania	/	0 (2)	1 (1)	N/A	/	/	/	<b>1 (3)</b>
Switzerland	/	/	/	N/A	/	2 (4)	/	<b>2 (4)</b>
<b>Central Totals</b>	<b>1 (2)</b>	<b>8 (29)</b>	<b>16 (36)</b>	<b>N/A</b>	<b>3 (3)</b>	<b>19 (34)</b>	<b>/</b>	<b>47 (104)</b>
Bulgaria	/	0 (1)	/	N/A	/	N/A	/	<b>0 (1)</b>
Croatia	/	0 (1)	/	N/A	/	N/A	/	<b>0 (1)</b>
Georgia	/	/	0 (1)	N/A	0 (1)	N/A	0 (1)	<b>0 (3)</b>
Russia	1 (2)	2 (3)	4 (13)	N/A	7 (10)	N/A	/	<b>14 (28)</b>
Siberia	/	0 (1)	0 (17)	N/A	0 (13)	N/A	0 (1)	<b>0 (32)</b>
Ukraine	/	1 (1)	1 (1)	N/A	1 (2)	N/A	/	<b>3 (4)</b>
<b>Eastern Totals</b>	<b>1 (2)</b>	<b>3 (7)</b>	<b>5 (32)</b>	<b>N/A</b>	<b>8 (26)</b>	<b>N/A</b>	<b>0 (2)</b>	<b>17 (69)</b>
<b>Overall Totals</b>	<b>9 (16)</b>	<b>68 (115)</b>	<b>56 (121)</b>	<b>34 (35)</b>	<b>15 (35)</b>	<b>97 (145)</b>	<b>0 (2)</b>	<b>279 (469)</b>

Table 5: Number of sites that specify shells as a medium for personal adornment (Number in parentheses is the total number of sites, N/A signifies that it is not an applicable industry to the area, / signifies that there are no recorded sites in that country or industry, 0 signifies that none of the recorded sites specified shells).

There are some differences in shell usage within regions as well. In Eastern Europe, shells are used fairly consistently in Russia. However, there are no Siberian sites that showed evidence of shell ornaments. Although these two countries cover a

significant size of land, the lack of use of the material suggests that shells were important in creating a separate identity.

One trend within Central Europe is the increased appearance of shells in Germany. During the Aurignacian, there are no sites with shells. This slowly increases through the Gravettian (38%), culminating in the Magdalenian, where shells are represented at 68% of sites. The increase in shell use would suggest an ever increasing importance of the material. This may be through contact as many of the shells do come from areas in Western Europe (Weniger 1990).

#### 5.6.4. Bone and Stone

	Transitional	Aurignacian	Gravettian	Solutrean	Epigravettian	Magdalenian	No Date	<b>Total</b>
Britain	/	/	0 (4)	N/A	N/A	0 (5)	/	<b>0 (9)</b>
France	1 (7)	8 (54)	1 (25)	0 (17)	N/A	16 (92)	/	<b>26 (195)</b>
Italy	0 (3)	3 (9)	1 (17)	N/A	0 (6)	N/A	/	<b>4 (35)</b>
Portugal	/	/	0 (1)	0 (3)	N/A	0 (2)	/	<b>0 (6)</b>
Spain	0 (2)	2 (16)	1 (6)	0 (15)	N/A	0 (12)	/	<b>3 (51)</b>
<b>Western Totals</b>	<b>1 (12)</b>	<b>13 (79)</b>	<b>3 (53)</b>	<b>0 (35)</b>	<b>0 (6)</b>	<b>16 (111)</b>	<b>/</b>	<b>33 (296)</b>
Austria	/	1 (5)	0 (2)	N/A	0 (2)	/	/	<b>1 (9)</b>
Belgium	/	2 (7)	0 (5)	N/A	/	1 (2)	/	<b>2 (14)</b>
Bohemia	/	/	/	N/A	/	1 (2)	/	<b>1 (2)</b>
Czech Republic	/	0 (1)	2 (12)	N/A	/	3 (7)	/	<b>5 (20)</b>
Germany	/	2 (12)	4 (13)	N/A	/	10 (19)	/	<b>16 (44)</b>
Greece	0 (1)	0 (1)	0 (1)	N/A	0 (1)	/	/	<b>0 (4)</b>
Hungary	0 (1)	0 (1)	1 (1)	N/A	/	/	/	<b>1 (3)</b>
Poland	/	/	0 (1)	N/A	/	/	/	<b>0 (1)</b>
Romania	/	0 (2)	0 (1)	N/A	/	/	/	<b>0 (3)</b>
Switzerland	/	/	/	N/A	/	0 (4)	/	<b>0 (4)</b>
<b>Central Totals</b>	<b>0 (2)</b>	<b>4 (29)</b>	<b>7 (36)</b>	<b>N/A</b>	<b>0 (3)</b>	<b>15 (34)</b>	<b>/</b>	<b>26 (104)</b>
Bulgaria	/	0 (1)	/	N/A	/	N/A	/	<b>0 (1)</b>
Croatia	/	0 (1)	/	N/A	/	N/A	/	<b>0 (1)</b>
Georgia	/	/	1 (1)	N/A	0 (1)	N/A	0 (1)	<b>1 (3)</b>
Russia	1 (2)	0 (3)	2 (13)	N/A	1 (10)	N/A	/	<b>4 (28)</b>
Siberia	/	0 (1)	5 (17)	N/A	4 (13)	N/A	0 (1)	<b>9 (32)</b>
Ukraine	/	0 (1)	0 (1)	N/A	0 (2)	N/A	/	<b>0 (4)</b>
<b>Eastern Totals</b>	<b>1 (2)</b>	<b>0 (7)</b>	<b>8 (32)</b>	<b>N/A</b>	<b>5 (26)</b>	<b>N/A</b>	<b>0 (2)</b>	<b>14 (69)</b>
<b>Overall Totals</b>	<b>2 (16)</b>	<b>17 (115)</b>	<b>18 (121)</b>	<b>0 (35)</b>	<b>5 (35)</b>	<b>21 (145)</b>	<b>0 (2)</b>	<b>13 (469)</b>

Table 6: Number of sites that feature stone as a medium for personal adornment (Number in parentheses is the total number of sites, N/A signifies that it is not an applicable industry to the area, / signifies that there are no recorded sites in that country or industry, 0 signifies that none of the recorded sites specified stone).

Animal bone and a variety of stones are also used to create ornaments throughout the Upper Palaeolithic. Both of these categories of materials are used fairly consistently throughout the time period (see Tables 6 and 7). However, there are a few regional differences.

	Transitional	Aurignacian	Gravettian	Solutrean	Epigravettian	Magdalenian	No Date	Total
Britain	/	/	0 (4)	N/A	N/A	1 (5)	/	<b>1 (9)</b>
France	1 (7)	13 (54)	2 (25)	2 (17)	N/A	16 (92)	/	<b>34 (195)</b>
Italy	0 (3)	2 (9)	1 (17)	N/A	0 (6)	N/A	/	<b>3 (35)</b>
Portugal	/	/	0 (1)	1 (3)	N/A	0 (2)	/	<b>1 (6)</b>
Spain	0 (2)	3 (16)	1 (6)	1 (15)	N/A	2 (12)	/	<b>7 (51)</b>
<b>Western Totals</b>	<b>1 (12)</b>	<b>18 (79)</b>	<b>4 (53)</b>	<b>4 (35)</b>	<b>0 (6)</b>	<b>19 (111)</b>	<b>/</b>	<b>46 (296)</b>
Austria	/	0 (5)	0 (2)	N/A	0 (2)	/	/	<b>0 (9)</b>
Belgium	/	2 (7)	3 (5)	N/A	/	1 (2)	/	<b>6 (14)</b>
Bohemia	/	/	/	N/A	/	0 (2)	/	<b>0 (2)</b>
Czech Republic	/	1 (1)	0 (12)	N/A	/	3 (7)	/	<b>4 (20)</b>
Germany	/	1 (12)	4 (13)	N/A	/	1 (19)	/	<b>6 (44)</b>
Greece	0 (1)	0 (1)	0 (1)	N/A	0 (1)	/	/	<b>0 (4)</b>
Hungary	0 (1)	1 (1)	0 (1)	N/A	/	/	/	<b>1 (3)</b>
Poland	/	/	0 (1)	N/A	/	/	/	<b>0 (1)</b>
Romania	/	0 (2)	0 (1)	N/A	/	/	/	<b>0 (3)</b>
Switzerland	/	/	/	N/A	/	0 (4)	/	<b>0 (4)</b>
<b>Central Totals</b>	<b>0 (2)</b>	<b>5 (29)</b>	<b>7 (36)</b>	<b>N/A</b>	<b>0 (3)</b>	<b>5 (34)</b>	<b>/</b>	<b>17 (104)</b>
Bulgaria	/	0 (1)	/	N/A	/	N/A	/	<b>0 (1)</b>
Croatia	/	0 (1)	/	N/A	/	N/A	/	<b>0 (1)</b>
Georgia	/	/	1 (1)	N/A	1 (1)	N/A	1 (1)	<b>3 (3)</b>
Russia	0 (2)	1 (3)	4 (13)	N/A	3 (10)	N/A	/	<b>8 (28)</b>
Siberia	/	1 (1)	9 (17)	N/A	3 (13)	N/A	1 (1)	<b>14 (32)</b>
Ukraine	/	0 (1)	1 (1)	N/A	2 (2)	N/A	/	<b>3 (4)</b>
<b>Eastern Totals</b>	<b>0 (2)</b>	<b>2 (7)</b>	<b>15 (32)</b>	<b>N/A</b>	<b>9 (26)</b>	<b>N/A</b>	<b>2 (2)</b>	<b>28 (69)</b>
<b>Overall Totals</b>	<b>1 (16)</b>	<b>25 (115)</b>	<b>26 (121)</b>	<b>3 (35)</b>	<b>9 (35)</b>	<b>24 (145)</b>	<b>2 (2)</b>	<b>91 (469)</b>

Table 7: Number of sites that feature bone as a medium for personal adornment (Number in parentheses is the total number of sites, N/A signifies that it is not an applicable industry to the area, / signifies that there are no recorded sites in that country or industry, 0 signifies that none of the recorded sites specified stone).

There appears to be a greater emphasis on the use of stone and bone for ornaments in both Central and Eastern Europe. Both areas show greater percentages of sites with the use of stone for ornaments than Western Europe. Eastern Europe has a significantly higher percentage of sites (41%) that feature bone for ornamental purposes than either Central or Western Europe.

With bone, the varying percentages of sites that feature bone as a material for ornaments could be a result of taphonomic processes as bone does not always preserve

but it could also reflect an emphasis on other durable resources that are available. In contrast to the pattern of shell use in Western Europe compared to Eastern Europe, it is possible that shells were not widely available or easily obtained in areas of Eastern Europe, and another durable material was used instead, in this case bone and stone.

### 5.6.5. Teeth

Animal teeth are a very common material used in the creation of items of personal adornment in the Upper Palaeolithic (see Table 8). There are a few species of animals that are regularly selected for the purpose of creating ornaments of teeth. I will examine the appearance and use of fox canines, wolf teeth, and deer teeth. These particular teeth do show some regional distinctions in their use.

	Transitional	Aurignacian	Gravettian	Solutrean	Epigravettian	Magdalenian	No Date	Total
Britain	/	/	3 (4)	N/A	N/A	2 (5)	/	5 (9)
France	6 (7)	33 (54)	9 (25)	7 (17)	N/A	43 (92)	/	98 (195)
Italy	0 (3)	4 (9)	8 (17)	N/A	5 (6)	N/A	/	17 (35)
Portugal	/	/	1 (1)	0 (3)	N/A	0 (2)	/	1 (6)
Spain	0 (2)	9 (16)	2 (6)	5 (15)	N/A	5 (12)	/	21 (51)
<b>Western Totals</b>	<b>6 (12)</b>	<b>46 (79)</b>	<b>23 (53)</b>	<b>12 (35)</b>	<b>5 (6)</b>	<b>50 (111)</b>	<b>/</b>	<b>142 (296)</b>
Austria	/	0 (5)	1 (2)	N/A	0 (2)	/	/	1 (9)
Belgium	/	5 (7)	0 (5)	N/A	/	1 (2)	/	6 (14)
Bohemia	/	/	/	N/A	/	0 (2)	/	0 (2)
Czech Republic	/	1 (1)	10 (12)	N/A	/	1 (7)	/	12 (20)
Germany	/	8 (12)	5 (13)	N/A	/	13 (19)	/	26 (44)
Greece	0 (1)	1 (1)	0 (1)	N/A	0 (1)	/	/	1 (4)
Hungary	1 (1)	0 (1)	0 (1)	N/A	/	/	/	1 (3)
Poland	/	/	0 (1)	N/A	/	/	/	0 (1)
Romania	/	2 (2)	0 (1)	N/A	/	/	/	2 (3)
Switzerland	/	/	/	N/A	/	3 (4)	/	3 (4)
<b>Central Totals</b>	<b>1 (2)</b>	<b>17 (29)</b>	<b>16 (36)</b>	<b>N/A</b>	<b>0 (3)</b>	<b>18 (34)</b>	<b>/</b>	<b>52 (104)</b>
Bulgaria	/	1 (1)	/	N/A	/	N/A	/	1 (1)
Croatia	/	1 (1)	/	N/A	/	N/A	/	1 (1)
Georgia	/	/	1 (1)	N/A	0 (1)	N/A	0 (1)	1 (3)
Russia	1 (2)	3 (3)	6 (13)	N/A	1 (10)	N/A	/	11 (28)
Siberia	/	1 (1)	5 (17)	N/A	4 (13)	N/A	0 (1)	10 (32)
Ukraine	/	1 (1)	0 (1)	N/A	2 (2)	N/A	/	3 (4)
<b>Eastern Totals</b>	<b>1 (2)</b>	<b>7 (7)</b>	<b>12 (32)</b>	<b>N/A</b>	<b>7 (26)</b>	<b>N/A</b>	<b>0 (2)</b>	<b>27 (69)</b>
<b>Overall Totals</b>	<b>8 (16)</b>	<b>70 (115)</b>	<b>51 (121)</b>	<b>12 (35)</b>	<b>12 (35)</b>	<b>68 (145)</b>	<b>0 (2)</b>	<b>221 (469)</b>

Table 8: Number of sites that feature teeth as a medium for personal adornment (Number in parentheses is the total number of sites, N/A signifies that it is not an applicable industry to the area, / signifies that there are no recorded sites in that country or industry, 0 signifies that none of the recorded sites specified teeth).

Fox teeth are present in 27% of all sites that specified teeth as a material for ornaments (see Table 9). There are several distinct time periods and regions where fox teeth are more prevalent. During the Aurignacian and Gravettian in France, fox canines are mentioned in 52% and 44%, respectively, of all sites featuring teeth. This drastically decreases in the Solutrean (29%) and Magdalenian (12%). In general, in Western Europe, fox teeth are more prevalent only in the Aurignacian. This pattern is similar to the situation in Central Europe, where fox teeth appear to be more prevalent in the earlier Upper Palaeolithic. This suggests that in both Western and Central Europe, fox teeth were emphasized more in the earlier Upper Palaeolithic, as a temporally and regionally important resource.

	Transitional	Aurignacian	Gravettian	Solutrean	Epigravettian	Magdalenian	No Date	Total
Britain	/	/	0 (3)	N/A	N/A	1 (2)	/	<b>1 (5)</b>
France	2 (6)	17 (33)	4 (9)	2 (7)	N/A	5 (43)	/	<b>30 (98)</b>
Italy	0 (0)	1 (4)	0 (8)	N/A	0 (5)	N/A	/	<b>1 (17)</b>
Portugal	/	/	0 (1)	0 (0)	N/A	0 (0)	/	<b>0 (1)</b>
Spain	0 (0)	2 (9)	0 (2)	0 (5)	N/A	0 (5)	/	<b>2 (21)</b>
<b>Western Totals</b>	<b>2 (6)</b>	<b>20 (46)</b>	<b>4 (23)</b>	<b>2 (12)</b>	<b>0 (5)</b>	<b>6 (50)</b>	/	<b>42 (142)</b>
Austria	/	0 (0)	0 (1)	N/A	0 (0)	/	/	<b>0 (1)</b>
Belgium	/	3 (5)	0 (0)	N/A	/	0 (1)	/	<b>3 (6)</b>
Bohemia	/	/	/	N/A	/	0 (0)	/	<b>0 (0)</b>
Czech Republic	/	0 (1)	3 (10)	N/A	/	0 (1)	/	<b>3 (12)</b>
Germany	/	3 (8)	2 (5)	N/A	/	1 (13)	/	<b>6 (26)</b>
Greece	0 (0)	0 (1)	0 (0)	N/A	0 (0)	/	/	<b>0 (1)</b>
Hungary	0 (1)	0 (0)	0 (0)	N/A	/	/	/	<b>0 (1)</b>
Poland	/	/	0 (0)	N/A	/	/	/	<b>0 (0)</b>
Romania	/	1 (2)	0 (0)	N/A	/	/	/	<b>1 (2)</b>
Switzerland	/	/	/	N/A	/	0 (3)	/	<b>0 (3)</b>
<b>Central Totals</b>	<b>0 (1)</b>	<b>7 (17)</b>	<b>5 (16)</b>	<b>N/A</b>	<b>0 (0)</b>	<b>1 (18)</b>	/	<b>13 (52)</b>
Bulgaria	/	0 (1)	/	N/A	/	N/A	/	<b>0 (1)</b>
Croatia	/	0 (1)	/	N/A	/	N/A	/	<b>0 (1)</b>
Georgia	/	/	0 (1)	N/A	0 (0)	N/A	0 (0)	<b>0 (0)</b>
Russia	1 (1)	2 (3)	6 (6)	N/A	1 (1)	N/A	/	<b>10 (2)</b>
Siberia	/	1 (1)	0 (5)	N/A	1 (4)	N/A	0 (0)	<b>2 (3)</b>
Ukraine	/	0 (1)	0 (0)	N/A	0 (2)	N/A	/	<b>0 (3)</b>
<b>Eastern Totals</b>	<b>1 (1)</b>	<b>3 (7)</b>	<b>6 (12)</b>	<b>N/A</b>	<b>2 (7)</b>	<b>N/A</b>	<b>0 (0)</b>	<b>12 (27)</b>
<b>Overall Totals</b>	<b>3 (8)</b>	<b>30 (70)</b>	<b>15 (51)</b>	<b>2 (12)</b>	<b>2 (12)</b>	<b>7 (12)</b>	<b>0 (0)</b>	<b>59 (221)</b>

Table 9: Number of sites that specify fox teeth (Number in parentheses is the total number of sites with teeth, N/A signifies that it is not an applicable industry to the area, / signifies that there are no recorded sites in that country or industry, 0 signifies that none of the recorded sites specified fox teeth).

In Eastern Europe, fox canines are emphasized more than in comparison to Western and Central Europe, at 44% of all Eastern European sites that specified teeth. Throughout the Upper Palaeolithic the greatest occurrence of fox canines is in Russia (91% of all sites that specify teeth). Many Russian sites have fox canine ornaments in larger amounts. For example, at Kostenki XV there are 150 fox canine pendants in association with a child burial (Soffer 1985). In comparison, other areas in Eastern Europe have very few if any occurrences of fox canines. For example, only 20% of Siberian sites that specify teeth have fox canines. This pattern suggests that fox canine ornaments were an important resource for those individuals within Russia, as potential markers of group membership.

	Transitional	Aurignacian	Gravettian	Solutrean	Epigravettian	Magdalenian	No Date	<b>Total</b>
Britain	/	/	1 (3)	N/A	N/A	0 (2)	/	<b>1 (5)</b>
France	2 (6)	8 (33)	0 (9)	0 (7)	N/A	5 (43)	/	<b>15 (98)</b>
Italy	0 (0)	0 (4)	0 (8)	N/A	0 (5)	N/A	/	<b>0 (17)</b>
Portugal	/	/	0 (1)	0 (0)	N/A	0 (0)	/	<b>0 (1)</b>
Spain	0 (0)	0 (9)	0 (2)	0 (5)	N/A	0 (5)	/	<b>0 (21)</b>
<b>Western Totals</b>	<b>2 (6)</b>	<b>8 (46)</b>	<b>1 (23)</b>	<b>0 (12)</b>	<b>0 (5)</b>	<b>5 (50)</b>	/	<b>16 (142)</b>
Austria	/	0 (0)	0 (1)	N/A	0 (0)	/	/	<b>0 (1)</b>
Belgium	/	2 (5)	0 (0)	N/A	/	1 (1)	/	<b>3 (6)</b>
Bohemia	/	/	/	N/A	/	0 (0)	/	<b>0 (0)</b>
Czech Republic	/	1 (1)	1 (10)	N/A	/	0 (1)	/	<b>2 (12)</b>
Germany	/	1 (8)	2 (5)	N/A	/	0 (13)	/	<b>3 (26)</b>
Greece	0 (0)	0 (1)	0 (0)	N/A	0 (0)	/	/	<b>0 (1)</b>
Hungary	0 (1)	0 (0)	0 (0)	N/A	/	/	/	<b>0 (1)</b>
Poland	/	/	0 (0)	N/A	/	/	/	<b>0 (0)</b>
Romania	/	0 (2)	0 (0)	N/A	/	/	/	<b>0 (2)</b>
Switzerland	/	/	/	N/A	/	0 (3)	/	<b>0 (3)</b>
<b>Central Totals</b>	<b>0 (1)</b>	<b>4 (17)</b>	<b>3 (16)</b>	<b>N/A</b>	<b>0 (0)</b>	<b>1 (18)</b>	/	<b>8 (52)</b>
Bulgaria	/	0 (1)	/	N/A	/	N/A	/	<b>0 (1)</b>
Croatia	/	0 (1)	/	N/A	/	N/A	/	<b>0 (1)</b>
Georgia	/	/	0 (1)	N/A	0 (0)	N/A	0 (0)	<b>0 (1)</b>
Russia	0 (1)	0 (3)	0 (6)	N/A	0 (1)	N/A	/	<b>0 (1)</b>
Siberia	/	0 (1)	0 (5)	N/A	0 (4)	N/A	0 (0)	<b>0 (10)</b>
Ukraine	/	0 (1)	0 (0)	N/A	1 (2)	N/A	/	<b>1 (3)</b>
<b>Eastern Totals</b>	<b>0 (1)</b>	<b>0 (7)</b>	<b>0 (12)</b>	<b>N/A</b>	<b>1 (17)</b>	<b>N/A</b>	<b>0 (0)</b>	<b>1 (27)</b>
<b>Overall Totals</b>	<b>2 (8)</b>	<b>12 (70)</b>	<b>4 (51)</b>	<b>0 (12)</b>	<b>1 (12)</b>	<b>6 (68)</b>	<b>0 (0)</b>	<b>25 (221)</b>

Table 10: Number of sites that specify wolf teeth (Number in parentheses is the total number of sites with teeth, N/A signifies that it is not an applicable industry to the area, / signifies that there are no recorded sites in that country or industry, 0 signifies that none of the recorded sites specified wolf teeth).

Wolf teeth are present in fewer sites than fox teeth but are still one of the animal teeth most often selected (see Table 10). They are present in 11% of all Upper Palaeolithic sites that specify teeth as a material used for the creation of ornaments. They are particularly important in French Aurignacian sites, at 24% of all sites that specify teeth, compared to other contemporary Western European sites. Within France, wolf teeth also decrease in use throughout the Upper Palaeolithic. They are a more important resource for ornaments during the Aurignacian and decrease in importance to 12% of sites with teeth by the Magdalenian. Wolf teeth are also more frequently used in Aurignacian and Gravettian sites in Central Europe than during the Epigravettian and Magdalenian.

However, in Eastern Europe, there are no wolf teeth mentioned in sites until the later Upper Palaeolithic, during the Epigravettian. This is also limited to a few sites in the Ukraine. Whether this involved a population movement or a change in group ideas, it still reflects the appearance of a previously unemphasized material for the creation of ornaments.

Deer teeth appear to be the most frequently used type of teeth (see Table 11). While they are used consistently throughout the Upper Palaeolithic in Western Europe, there is still some variation in their use in this region. In Italy, deer teeth are frequently used in both Gravettian (63%) and Epigravettian sites (100%). Deer teeth are also an important material during the Magdalenian. In Spain, red deer vestigial canines are frequently used (60%) for ornaments more than in earlier periods (Straus 1992). Deer teeth also seem to be highly coveted at some French sites. Both burial sites at St. Germain-la-Rivière and Aven des Iboussières feature larger numbers of deer canine



ornaments. With this selection for a particular type of animal, there are a significant number of animals used for the extraction of teeth. For example, the 69 deer canines at St. Germain-la-Rivière came from 63 individual deer (Vanhaeren and d'Errico 2005).

	Transitional	Aurignacian	Gravettian	Solutrean	Epigravettian	Magdalenian	No Date	<b>Total</b>
Britain	/	/	1 (3)	N/A	N/A	1 (2)	/	<b>2 (5)</b>
France	2 (6)	18 (33)	3 (9)	1 (7)	N/A	17 (43)	/	<b>41 (98)</b>
Italy	0 (0)	3 (4)	5 (8)	N/A	5 (5)	N/A	/	<b>13 (17)</b>
Portugal	/	/	1 (1)	0 (0)	N/A	0 (0)	/	<b>1 (1)</b>
Spain	0 (0)	5 (9)	1 (2)	1 (5)	N/A	3 (5)	/	<b>10 (21)</b>
<b>Western Totals</b>	<b>2 (6)</b>	<b>26 (46)</b>	<b>11 (23)</b>	<b>2 (12)</b>	<b>5 (5)</b>	<b>21 (50)</b>	<b>/</b>	<b>67 (142)</b>
Austria	/	0 (0)	0 (1)	N/A	0 (0)	/	/	<b>0 (1)</b>
Belgium	/	5 (5)	0 (0)	N/A	/	0 (1)	/	<b>5 (6)</b>
Bohemia	/	/	/	N/A	/	0 (0)	/	<b>0 (0)</b>
Czech Republic	/	0 (1)	0 (10)	N/A	/	0 (1)	/	<b>0 (12)</b>
Germany	/	3 (8)	3 (5)	N/A	/	7 (13)	/	<b>13 (26)</b>
Greece	0 (0)	0 (1)	0 (0)	N/A	0 (0)	/	/	<b>0 (1)</b>
Hungary	1 (1)	0 (0)	0 (0)	N/A	/	/	/	<b>1 (1)</b>
Poland	/	/	0 (0)	N/A	/	/	/	<b>0 (0)</b>
Romania	/	0 (2)	0 (0)	N/A	/	/	/	<b>0 (2)</b>
Switzerland	/	/	/	N/A	/	1 (3)	/	<b>1 (3)</b>
<b>Central Totals</b>	<b>1 (1)</b>	<b>8 (17)</b>	<b>3 (16)</b>	<b>N/A</b>	<b>0 (0)</b>	<b>8 (18)</b>	<b>/</b>	<b>20 (52)</b>
Bulgaria	/	0 (1)	/	N/A	/	N/A	/	<b>0 (1)</b>
Croatia	/	1 (1)	/	N/A	/	N/A	/	<b>1 (1)</b>
Georgia	/	/	0 (1)	N/A	0 (0)	N/A	0 (0)	<b>0 (1)</b>
Russia	0 (1)	0 (3)	0 (6)	N/A	0 (1)	N/A	/	<b>0 (11)</b>
Siberia	/	1 (1)	2 (5)	N/A	2 (4)	N/A	0 (0)	<b>5 (10)</b>
Ukraine	/	1 (1)	0 (0)	N/A	0 (2)	N/A	/	<b>1 (3)</b>
<b>Eastern Totals</b>	<b>0 (1)</b>	<b>3 (7)</b>	<b>2 (12)</b>	<b>N/A</b>	<b>2 (7)</b>	<b>N/A</b>	<b>0 (0)</b>	<b>7 (27)</b>
<b>Overall Totals</b>	<b>3 (8)</b>	<b>37 (70)</b>	<b>16 (51)</b>	<b>2 (12)</b>	<b>7 (12)</b>	<b>29 (68)</b>	<b>0 (0)</b>	<b>94 (221)</b>

Table 11: Number of sites that specify deer teeth (Number in parentheses is the total number of sites with teeth, N/A signifies that it is not an applicable industry to the area, / signifies that there are no recorded sites in that country or industry, 0 signifies that none of the recorded sites specified deer teeth).

In Central Europe, deer teeth are unevenly represented. Their use appears to fluctuate in different time periods. Interestingly, in the Gravettian they are represented in 60% of German sites but are not present in any Czech Republic sites. This suggests that the use of deer teeth for ornaments was geographically and temporally restricted within Central Europe. The use of these teeth to represent a group boundary fluctuated in time and space.

Eastern Europe provides one of the best examples of the varied use of deer teeth. They are a common material in Siberian sites, at 50% of all sites that specified teeth, but

are not present in any Russian sites. When this is taken into consideration with the pattern associated with fox canines, a picture emerges of regionally important materials. Fox teeth were regionally emphasized in Russian sites whereas deer teeth were regionally emphasized in Siberian sites.

### 5.6.6. Unique materials

There are several situations where a material has a limited use within a site, region, or country. These unique situations are important because they represent the possible innovation of the use of other local materials for ornamental purposes and for regionally specific social identities.

	Transitional	Aurignacian	Gravettian	Solutrean	Epigravettian	Magdalenian	No Date	<b>Total</b>
Britain	/	/	0 (4)	N/A	N/A	0 (5)	/	<b>0 (9)</b>
France	0 (7)	1 (54)	1 (25)	0 (17)	N/A	3 (92)	/	<b>5 (145)</b>
Italy	0 (3)	0 (9)	0 (17)	N/A	0 (6)	N/A	/	<b>0 (35)</b>
Portugal	/	/	0 (1)	0 (3)	N/A	0 (2)	/	<b>0 (6)</b>
Spain	0 (2)	1 (16)	0 (6)	0 (15)	N/A	0 (12)	/	<b>1 (51)</b>
<b>Western Totals</b>	<b>0 (12)</b>	<b>2 (79)</b>	<b>1 (53)</b>	<b>0 (35)</b>	<b>0 (6)</b>	<b>3 (111)</b>	/	<b>6 (296)</b>
Austria	/	0 (5)	0 (2)	N/A	0 (2)	/	/	<b>0 (9)</b>
Belgium	/	0 (7)	0 (5)	N/A	/	0 (2)	/	<b>0 (14)</b>
Bohemia	/	/	/	N/A	/	0 (2)	/	<b>0 (2)</b>
Czech Republic	/	0 (1)	0 (12)	N/A	/	0 (7)	/	<b>0 (20)</b>
Germany	/	0 (12)	0 (13)	N/A	/	2 (19)	/	<b>2 (44)</b>
Greece	0 (1)	0 (1)	0 (1)	N/A	0 (1)	/	/	<b>0 (4)</b>
Hungary	0 (1)	0 (1)	0 (1)	N/A	/	/	/	<b>0 (3)</b>
Poland	/	/	0 (1)	N/A	/	/	/	<b>0 (1)</b>
Romania	/	0 (2)	0 (1)	N/A	/	/	/	<b>0 (3)</b>
Switzerland	/	/	/	N/A	/	1 (4)	/	<b>1 (4)</b>
<b>Central Totals</b>	<b>0 (2)</b>	<b>0 (29)</b>	<b>0 (36)</b>	<b>N/A</b>	<b>0 (3)</b>	<b>3 (34)</b>	/	<b>3 (104)</b>
Bulgaria	/	0 (1)	/	N/A	/	N/A	/	<b>0 (1)</b>
Croatia	/	0 (1)	/	N/A	/	N/A	/	<b>0 (1)</b>
Georgia	/	/	0 (1)	N/A	0 (1)	N/A	0 (1)	<b>0 (3)</b>
Russia	0 (2)	0 (3)	0 (13)	N/A	0 (10)	N/A	/	<b>0 (28)</b>
Siberia	/	0 (1)	0 (17)	N/A	1 (13)	N/A	0 (1)	<b>1 (32)</b>
Ukraine	/	0 (1)	0 (1)	N/A	1 (2)	N/A	/	<b>1 (3)</b>
<b>Eastern Totals</b>	<b>0 (2)</b>	<b>0 (7)</b>	<b>0 (32)</b>	<b>N/A</b>	<b>1 (26)</b>	<b>N/A</b>	<b>0 (2)</b>	<b>1 (69)</b>
<b>Overall Totals</b>	<b>0 (16)</b>	<b>2 (115)</b>	<b>1 (121)</b>	<b>0 (35)</b>	<b>2 (35)</b>	<b>6 (145)</b>	<b>0 (2)</b>	<b>11 (469)</b>

Table 12: Number of sites that specify amber as a medium for personal adornment (Number in parentheses is the total number of sites, N/A signifies that it is not an applicable industry to the area, / signifies that there are no recorded sites in that country or industry, 0 signifies that none of the recorded sites specified amber).

In Eastern Europe and parts of Central Europe, amber was used for ornaments (see Table 12). Although amber was used sporadically at other sites and times in the Upper Palaeolithic, the Epigravettian in Eastern Europe shows the greatest percentage of sites with amber, at 14%, such as the amber beads found at Mezhirich in Ukraine (Pidoplichko 1998). It has been suggested that amber was used as an important exchange good during this time (Jochim 2002).

	Transitional	Aurignacian	Gravettian	Solutrean	Epigravettian	Magdalenian	No Date	Total
Britain	/	/	0 (4)	N/A	N/A	0 (5)	/	0 (9)
France	0 (7)	0 (54)	0 (25)	0 (17)	N/A	2 (92)	/	2 (195)
Italy	0 (3)	0 (9)	0 (17)	N/A	0 (6)	N/A	/	0 (35)
Portugal	/	/	0 (1)	0 (3)	N/A	0 (2)	/	0 (6)
Spain	0 (2)	0 (16)	0 (6)	0 (15)	N/A	0 (12)	/	0 (51)
<b>Western Totals</b>	<b>0 (12)</b>	<b>0 (79)</b>	<b>0 (53)</b>	<b>0 (35)</b>	<b>0 (6)</b>	<b>2 (111)</b>	<b>/</b>	<b>2 (296)</b>
Austria	/	0 (5)	0 (2)	N/A	0 (2)	N/A	/	0 (9)
Belgium	/	0 (7)	0 (5)	N/A	/	0 (2)	/	0 (14)
Bohemia	/	/	/	N/A	/	0 (2)	/	0 (2)
Czech Republic	/	0 (1)	0 (12)	N/A	/	2 (7)	/	2 (20)
Germany	/	0 (12)	2 (13)	N/A	/	10 (19)	/	12 (44)
Greece	0 (1)	0 (1)	0 (1)	N/A	0 (1)	/	/	0 (4)
Hungary	0 (1)	0 (1)	0 (1)	N/A	/	/	/	0 (3)
Poland	/	/	0 (1)	N/A	/	/	/	0 (1)
Romania	/	0 (2)	0 (1)	N/A	/	/	/	0 (3)
Switzerland	/	/	/	N/A	/	0 (4)	/	0 (4)
<b>Central Totals</b>	<b>0 (2)</b>	<b>0 (29)</b>	<b>2 (36)</b>	<b>N/A</b>	<b>0 (3)</b>	<b>12 (34)</b>	<b>/</b>	<b>14 (104)</b>
Bulgaria	/	0 (1)	/	N/A	/	N/A	/	0 (1)
Croatia	/	0 (1)	/	N/A	/	N/A	/	0 (1)
Georgia	/	/	0 (1)	N/A	0 (1)	N/A	0 (1)	0 (3)
Russia	0 (2)	0 (3)	0 (13)	N/A	0 (10)	N/A	/	0 (28)
Siberia	/	0 (1)	0 (17)	N/A	0 (13)	N/A	0 (1)	0 (32)
Ukraine	/	0 (1)	0 (1)	N/A	0 (2)	N/A	/	0 (4)
<b>Eastern Totals</b>	<b>0 (2)</b>	<b>0 (7)</b>	<b>0 (32)</b>	<b>N/A</b>	<b>0 (26)</b>	<b>N/A</b>	<b>0 (2)</b>	<b>0 (69)</b>
<b>Overall Totals</b>	<b>0 (16)</b>	<b>0 (115)</b>	<b>2 (121)</b>	<b>0 (35)</b>	<b>0 (35)</b>	<b>14 (145)</b>	<b>0 (2)</b>	<b>16 (469)</b>

Table 13: Number of sites that specify gagat/lignite as a medium for personal adornment (Number in parentheses is the total number of sites, N/A signifies that it is not an applicable industry to the area, / signifies that there are no recorded sites in that country or industry, 0 signifies that none of the recorded sites specified gagat/lignite).

One interesting material that appears at the Epigravettian site of Krasny Yar in Siberia is ostrich eggshell (Medvedev 1998b). These ostrich eggshell bead blanks were found in a hearth. There is little to no evidence for the use of ostrich eggshells in Eurasia for ornamental purposes before this site. There is also no evidence for ostrich within the region that Krasny Yar is located, the Angar region. The closest area that the ostrich

could have come from is the Trans-Baikal area (Medvedev 1998b). Therefore this material was either transported or exchanged into the site. This suggests that there is some innovation and exchange occurring in the use of new materials for ornaments.

One material used for the creation of beads that has a distinct bounded appearance in time and space is gagat or fossilized wood (see Table 13). Often referred to as lignite, gagat outcrops are relatively limited to a few areas in Western and Central Europe (Franco Mata 2007). This material is used in a few limited German Gravettian sites (15% of sites). However, it is used in over half the German Magdalenian sites and a third of the sites in the Czech Republic. The increase in the use of this material reflects both innovation in the use of a local material for ornaments and also the increase in the importance of this material reflecting group preferences.

#### **5.6.7. Unique forms**

Individual identity can be seen in some examples of the unique decorations or forms of ornaments. There are examples of the further decoration and shape of an ornament that are unique in comparison to other forms and do not distinctly change the overall general form and shape of the item. These decorations are relatively unique in form compared to other ornaments from the same time, region, or site.

One example of unique ornaments is the various perforated figurines or figural pendants. There are several perforated figurines from the Grimaldi cave complex crafted from various materials, including steatite and antler. Eight of the figurines were perforated (White 1997). Due to the variability and unique appearance of these figurines, it is suggested that they may have been produced by individuals, and for individual use.

Items of personal adornment that possibly show the influence of individual identity are the few examples of animal teeth that are decorated with various lines and figures. One example is the set of engraved bear canines from the Magdalenian site of Duruthy in France. These teeth were engraved with various lines, a fish, and a seal (Bahn 1983). As the use of teeth as ornaments do not require further working past the perforation process and the fact that these decorations would not be visible from a distance suggest that these decorations could serve a more individual purpose.

#### **5.6.8. Style**

There are some stylistic differences in some ornament types in the Aurignacian. For example, ivory beads in France tend to be basket-shaped, in Germany there are double perforated beads, and in Belgium ivory beads are often elongated in form (White 1989, White 1997). These stylistic differences are not a result of different manufacturing techniques as they are generally produced in the same manner. Thus this is an arbitrary stylistic choice related more to ideals of the appearance and use of the final product.

One of the interesting style and production techniques that appear during the Magdalenian is the appearance of items produced through the technique of contour *découpés*. These items appear during the middle of the Magdalenian (White 2003). They are often made on specific bones-- scapulae or hyoid bones and are frequently horse bones. There are six French and two Spanish Magdalenian sites that specify horse hyoid bone as a material or contour *découpés* type pendants. Although contour *découpés* pendants are often in the shape of horse heads, there are a few that are differently shaped. One of the eighteen pendants from Labastide, France, is shaped like an ibex (Bahn 1983)

and the one from Grappin's Cave in France, is shaped like a fish (Cupillard and Welte 2006). This style of decoration is similar in areas throughout the Pyrénées and Perigord (Jochim 2002). There are no similar items recorded in any other Magdalenian sites throughout Central and Eastern Europe. This particular selection for the material, the technique of contour découpés, and the shape (often horse heads) must have held a particular importance and purpose in this limited range in time and space.

### **5.7. Actions**

Individual actions can be revealed through the examination of the production sequences of ornaments and the analysis of particular aspects of ornaments. Focusing on individual actions highlights how important individual choices and actions are in the creation and continuation of social life (Gamble 1998). It is possible to explore the individual in prehistory through the examination of artifacts where a sequence of actions is visible, allowing us to reconstruct the *chaine opératoire*. There are a few sites where there is evidence of the sequence of the creation of items of personal adornment. Another vehicle for studying the individual is through the examination of individual workmanship. If items can be examined and compared with similar items found at a site or other contemporary sites, we may be able to determine whether one person or many were making these items. This is also relevant for craft specialization and apprenticeship as well as the status related to craftsmanship.

### 5.7.1. Workshops and Craftsmanship

There are a number of sites that contained a large number of ornaments (30 or more).

Based on the catalogue, this accounts for 8% of Western European sites, 9% of Central European sites, and 13% of Eastern European sites (see Table 14). Some of the sites with large numbers of ornaments are related to burials, such as the Gravettian burials at Sungir, although others are not, such as the Solutrean occupation at Reclau Viver and the Magdalenian occupation at Petersfels.

	Transitional	Aurignacian	Gravettian	Solutrean	Epigravettian	Magdalenian	No Date	<b>Total</b>
Britain	/	/	1 (4)	N/A	N/A	1 (5)	/	<b>2 (9)</b>
France	1 (7)	6 (54)	3 (17)	1 (17)	N/A	7 (92)	/	<b>18 (195)</b>
Italy	0 (3)	1 (9)	2 (1)	N/A	1 (6)	N/A	/	<b>4 (35)</b>
Portugal	/	/	0 (1)	0 (3)	N/A	0 (2)	/	<b>0 (6)</b>
Spain	0 (2)	0 (16)	0 (6)	1 (13)	N/A	0 (12)	/	<b>1 (51)</b>
<b>Western Totals</b>	<b>1 (12)</b>	<b>7 (79)</b>	<b>6 (53)</b>	<b>2 (35)</b>	<b>1 (6)</b>	<b>8 (111)</b>	<b>/</b>	<b>25 (296)</b>
Austria	/	0 (5)	1 (2)	N/A	0 (2)	/	/	<b>1 (9)</b>
Belgium	/	0 (7)	0 (5)	N/A	/	1 (2)	/	<b>1 (14)</b>
Bohemia	/	/	/	N/A	/	0 (2)	/	<b>0 (2)</b>
Czech Republic	/	0 (1)	1 (12)	N/A	/	0 (7)	/	<b>1 (20)</b>
Germany	/	0 (12)	3 (13)	N/A	/	3 (19)	/	<b>6 (44)</b>
Greece	0 (1)	0 (1)	0 (1)	N/A	0 (1)	/	/	<b>0 (4)</b>
Hungary	0 (1)	0 (1)	0 (1)	N/A	/	/	/	<b>0 (3)</b>
Poland	/	/	0 (1)	N/A	/	/	/	<b>0 (1)</b>
Romania	/	0 (2)	0 (1)	N/A	/	/	/	<b>0 (3)</b>
Switzerland	/	/	/	N/A	/	0 (4)	/	<b>0 (4)</b>
<b>Central Totals</b>	<b>0 (2)</b>	<b>0 (29)</b>	<b>5 (36)</b>	<b>N/A</b>	<b>0 (3)</b>	<b>4 (34)</b>	<b>/</b>	<b>9 (104)</b>
Bulgaria	/	0 (1)	/	N/A	/	N/A	/	<b>0 (1)</b>
Croatia	/	0 (1)	/	N/A	/	N/A	/	<b>0 (1)</b>
Georgia	/	/	0 (1)	N/A	0 (1)	N/A	0 (1)	<b>0 (3)</b>
Russia	1 (2)	0 (3)	4 (13)	N/A	2 (10)	N/A	/	<b>7 (28)</b>
Siberia	/	0 (1)	1 (17)	N/A	0 (13)	N/A	0 (1)	<b>1 (32)</b>
Ukraine	/	0 (1)	1 (1)	N/A	0 (2)	N/A	/	<b>1 (4)</b>
<b>Eastern Totals</b>	<b>1 (2)</b>	<b>0 (7)</b>	<b>6 (32)</b>	<b>N/A</b>	<b>2 (26)</b>	<b>N/A</b>	<b>0 (2)</b>	<b>9 (69)</b>
<b>Overall Totals</b>	<b>2 (16)</b>	<b>7 (115)</b>	<b>17 (121)</b>	<b>2 (35)</b>	<b>3 (35)</b>	<b>12 (145)</b>	<b>0 (2)</b>	<b>43 (469)</b>

Table 14: Number of sites that specify more than 30 items of personal adornment (Number in parentheses is the total number of sites, N/A signifies that it is not an applicable industry to the area, / signifies that there are no recorded sites in that country or industry, 0 signifies that none of the recorded sites specified a more than 30 items of personal adornment).

There are a few examples of sites that have a large number of items of personal adornment in the Aurignacian. The sites within the Castelmerle valley in France have

been studied extensively. At the Abris Castanet, Blanchard and la Souquette numerous items of personal adornment-- and most specifically ivory beads-- have been recovered. As these beads are quite standardized in size and shape, these sites are often considered to be workshops or seasonal aggregations (White 1992, 1997). These beads were also made on site as there is evidence of the different stages of bead production. Interestingly, the three sites show varying amounts of these stages of production through debitage remains (White 1997). The idea of a workshop location and seasonal use of the sites for bead creation also addresses the possibility of other individual characteristics associated with crafting such as apprenticeship, gender, and age. Although a comparison of all ivory beads in order to look for potential individual workmanship has not been undertaken, this section of France accounts for over 600 of the known French Aurignacian ivory beads. The large number of standardized beads suggests that either few people were responsible for making them or that there was sufficient societal standards and teaching that promoted conformity to a specific size and shape of bead.

Other sites have been characterized as workshop or crafting centres based on the richness of finds. One such site is the French site of Isturitz, and particularly the Magdalenian occupation layers (Bahn 1983). This cave was used from the Aurignacian throughout the rest of the Upper Palaeolithic often during colder seasons (Bahn 1983). During the Magdalenian there are large accumulations of flint, bone, and antler. There are several contour *découpés* pendants, pierced teeth, and perforated shells (Bahn 1983). The strategic location of this cave in relation to resources as well as the presence of numerous artistic items suggests that Isturitz was an important place on the landscape for various social and symbolic activities.



In general, there are few sites in the Solutrean that have a large number of items of personal adornment. One notable exception is the site of Reclau Viver in Spain that has an unusually large number of shells. At Reclau Viver, there are 3500 *Homalopoma sanguineus* shells, the majority of which are perforated (Alvarez Fernandez 2002a). This large number of shells suggests that this site may have functioned as a workshop or a collection area for these shells.

The Magdalenian layer at Petersfels in Germany is one of the sites that was found to have a large number of ornamental items, more than 5000 items. In particular, there were 5000 reindeer teeth found here (Alvarez Fernandez 2001). As there was no specification of type of tooth (incisor, premolar, molar or canine) taking into consideration that a deer generally has 32 teeth in total, there are a minimum of 156 deer present. This would involve a significant amount of time and energy invested in one location to collect and perforate the teeth.

There are also some regions that have very few sites with examples of ornaments. This seems not to be a result of the availability of information but from a true lack of sites with ornaments. For example there are only a few British sites during the Gravettian, and with the exception of the burial at Paviland Cave, each site only has a small number of ornaments. In comparison some sites in Central Europe during the Gravettian show an equal or greater appearance of ornaments such as the Gravettian layers at Geißenklosterle or Brillenhöhle in Germany. The large scale production of ornaments was less emphasized in some regions or took place at other sites.

### **5.7.2. Time and Labour**

One area that is striking is the investment of time and energy in the production of ornaments. This relates both to the actual craftsmanship but also to the collection of materials. As there is a range in the number of items that are found at any one site throughout the Upper Palaeolithic, the time required for the creation of items of personal adornment impacts the amount of time invested in each site.

The large amounts of items associated with some of the Gravettian burials are one such example of the investment of time and energy in the creation of ornaments. As previously discussed, the three burials at Sungir are associated with approximately 10,000 beads which would have commanded at least 9000 hours of labour (White 1993). Even if this was accomplished by multiple individuals, it is still a significant investment of time for ornaments that are going to be buried with deceased individuals.

A number of the sites that have more than 30 items of personal adornment have large numbers of shells and animal teeth. Although shells and teeth do not require the same type of time and effort for preparation as ivory and bone, there is still time spent on collecting the raw materials. For teeth, the animals must be killed (or scavenged) and the teeth extracted. Contemporary shells must be collected from various shores. At such sites as the Gravettian burial at Kostenki XV, the associated 150 fox canines translates to at least 38 animals if all four canines are used from each animal (Soffer 1985, 1997). The time spent on collecting and perforating the teeth must relate to the importance of that material to be placed or worn by that particular person.

### 5.7.3. Individual Actions

There are some sites that show a range of individual actions. This is related to the presence of items that show the range of techniques and actions involved in the production of ornaments. There have also been some ornaments that were analyzed that show individual workmanship.

Two sites in Eastern Europe were found that showed the range of production for two different materials. At Mezhirich in Russia, there are sixteen bison teeth that show the preparation and production of these teeth for adornment. Through the examination of these types of artifacts, one can look at how these items are created (Pidoplichko 1998). There is also the ostrich eggshell bead blanks found at Krasnyy Yar, Siberia, that show part of the production sequence for the creation of these ornaments. The bead blanks were found in a hearth, possibly part of the preparation of the material for bead creation (Medvedev 1998b). This is particularly important in understanding the creation of beads as Kandel and Conard (2005) identified burning as one possible step in the creation of ostrich eggshell beads in Africa. These sites show not just the sequence of events in the creation of ornaments but also some of the important techniques used to create these items.

Two sites in the Magdalenian provide evidence of the actions of individuals in the creation of ornaments: Aven des Iboussières and St. Germain-la-Rivière. At Aven des Iboussières, the 196 deer canine beads were analyzed by d'Errico and Vanhaeren (2002). They examined the actions and locations of perforation on the teeth. Interestingly there was variation between the different teeth in the direction and motion of perforation as well as the location of the hole. However, when sides of the teeth were compared, they

reflected similar motions and tool use suggesting the completion of perforation on a tooth by a single person. Similarly, at St. Germain-la-Rivière, the 71 deer teeth show some variations in workmanship (Vanhaeren and d'Errico 2005). Although there are variations in the motion and location of perforation, there is still some general standardization as to overall location and size of the perforations. What this suggests is that several individuals worked on creating these ornaments, but with a preconceived idea of how and where teeth were perforated. It also means that, although several people were capable of creating these ornaments, one individual was responsible for the entire perforation. One individual completed the perforations on a tooth but this was done with certain societal rules on the perforation technique and location.

At both Aven des Iboussières and St. Germain-la-Rivière, a few pairs of teeth were found within each collection. Six pairs were located at St. Germain-la-Rivière (Vanhaeren and d'Errico 2005) and four pairs were found at Aven des Iboussières (d'Errico and Vanhaeren 2002). With the pairs of teeth, it appears that the same individual worked on both teeth. At Aven des Iboussières, the pairs of teeth were notched with lines. These notches were compared in size, shape, and location. As the notches on pairs of teeth were similar in decoration, size, shape, and location, it is likely that one tool and one individual prepared, perforated, or decorated each pair of teeth (d'Errico and Vanhaeren 2002). This lead d'Errico and Vanhaeren (2002) to suggest that these teeth were important exchange items. An individual made a pair of teeth pendants and one of the pair was potentially intended as an exchange item.

There are a few other sites that would be useful in looking for hints of individual action and workmanship. One example from the Magdalenian is the series of engraved

bear canines from Duruthy, France. This series of about 13 perforated bear teeth were individually engraved (Bahn 1983). There are also nine deer teeth that were found at the Magdalenian site of Rascaño, Spain. These teeth were found placed in an arrangement that suggests that these were once a necklace (Straus 1992). Approximately half of the teeth are simply perforated and the other half are engraved. A further look at the technique and tools used for engraving may reveal more information about who was producing these items. Although neither of these sites' artifacts has been examined for individual differences or similarities in workmanship, they are two examples that could provide information on individual actions.

## **5.8. Conclusion**

Through the examination of Upper Palaeolithic sites, I have attempted to see if it is possible to study the role of the individual in prehistory using items of personal adornment. There are several sites that allow some access to the individual. The areas that are most informative are examining the body through the presence of grave goods in burials, examining identity through the variability in style and material use in ornaments, and analyzing individual actions.

Overall, looking at burials that have associated grave goods suggests certain individuals received significant care and ornamentation at their death. These ornaments are a reflection of some aspect of that individual, whether it is the actual individual or their status within that group. Especially in the Gravettian, the treatment of the deceased seems particularly important. Although there are a few burials from the Middle Palaeolithic, richly decorated burials first appear during the Upper Palaeolithic. The

burials in the Upper Palaeolithic are extremely varied, many with elaborate and numerous items of personal adornment. Even more intriguing are the very unique burials that feature individuals in distinctive positions and with various physical injuries and deformities.

The expression of identity is most usefully examined through analyzing the materials used for ornaments and the forms these ornaments take. While this provides a picture of a social rather than individual identity, this is still an integral part of 'the individual' as it is individuals who actively adopt, reproduce, and change the styles and forms used to showcase adherence to a particular group. Some aspects of individual identity can also be hinted at. For those burials that are found with personal ornaments, those items may reflect some idea of that individual's identity, if those items can be interpreted as personal objects. In addition, there are some ornaments that have been decorated or worked in a more individual manner.

Those sites that show evidence of individual workmanship are highly important to this area of research as they are indications of moments of action. Looking at the creation of items of personal adornment, whether through operational sequences or through individual workmanship, is the most productive for examining finer grained situations that involve the individual. For example, the French Magdalenian sites of St. Germain-la-Rivière and Aven des Iboussières provide relatively contemporary examples of how and possibly why deer teeth ornaments are crafted.

In summary, although some of the information available on personal adornment in the Upper Palaeolithic is limited in what is presented and how it can be used, there are still numerous sites that do provide angles from which to examine the individual. The

individual can be included when research and excavations focus and provide information on more individual actions and contexts. Not only can the individual be included but is also of utmost importance in understanding how social life is created and changed.

## **Chapter 6: Conclusion**

### **6.1. Discussion**

Personal adornment allows us to examine the potential of studying the individual in the Upper Palaeolithic. One of the defining characteristics of the Upper Palaeolithic in Europe is the presence of items of personal adornment. Therefore, this time period is ideal to study personal adornment in relationship to the individual in a prehistoric setting. This is accomplished through a closer examination of sites and items of personal adornment that allow us to examine the body, identity, and individual actions in an archaeological context.

The category of the body is challenging to examine in prehistoric studies when there are no bodies found. However, during the Upper Palaeolithic, particularly from the Gravettian and on, some portions of the population were interred in various manners. This crucial change in the treatment of the deceased allows us to get a glimpse into a highly important cultural practice. By looking at the contexts and the contents of the burials as well as the demographics of the interred individuals, an analysis of the treatment of the physical body can be achieved. Differential treatment of the dead is often connected to the status of individuals, including the importance of age and gender.

A highly important part of any individual is identity. It is an expression of self (Moore 1994). As identity is multi-faceted, at any one time identity can be related to an individual expression of self or an expression of belonging. From the information available on items of personal adornment in the Upper Palaeolithic, there are some regional and temporal patterns in the use of certain materials. An overall pattern of material use that is restricted in time or space is vital for suggestions of social and ethnic



identity. Regional patterns of material use such as the examples of fox and deer teeth, suggest that there were regionally important materials during certain periods of time and space in the Upper Palaeolithic.

The most important section for examining how the individual influences the material record is through looking for evidence of individual actions and workmanship. There are many artifacts that can show individual actions either through the microscopic analysis of the artifact's production or through the production sequence of many artifacts.

The use of personal adornment as a characteristic of the Upper Palaeolithic is justified when comparing the presence of ornaments in transitional sites and Aurignacian sites. These are often roughly contemporaneous industries and there is approximately seven times the amount of known Aurignacian sites with items of personal adornment as there are transitional sites.

The Gravettian is often exemplified as a 'Golden Age' and the evidence provided from examining items of personal adornment supports this (Mussi, Roebroeks, and Svoboda 2000). Richly decorated and extremely varied burials appear in the Gravettian. In fact, the burials that feature the largest numbers of items of personal adornment are almost all dated to the Gravettian. In particular, the Gravettian is important in areas of Central Europe. There are numerous burials from this time period. The evidence of items of personal adornment in combination with other important artifacts such as figurines and ceramics supports the interpretation of this area as a centre of activity (Svoboda, Ložek, and Vlček 1996). In Eastern Europe, the number of sites with personal adornment increases dramatically from the Aurignacian. Generally, in all regions, the Gravettian corresponds to the time period with the greatest percentages of sites with more than 30

items of personal adornment. This could be a result of a greater emphasis within groups to create and use ornamentation. However, it could also be a result of a more sedentary occupation of certain areas or more repeated visiting of specific areas.

The Magdalenian is often cited as having origins in Western Europe (Jochim, Herhain, and Starr 1999). Especially in France, there are the most recorded Magdalenian sites in Western Europe. The increase in the number of sites with items of personal adornment is likely related to population movements as the environment improved. The greater occurrence of fewer items of personal adornment in known sites could also relate to an increase in population mobility as people are moving between locations more frequently. As there is a greater chance of population contact, new materials are used to create ornaments. Shells become more frequent in Central and Eastern Europe. There is also the reemphasis on materials such as the use of deer teeth for ornaments in Central Europe.

## **6.2. Is the Individual There?**

Within the Upper Palaeolithic, the prehistoric individual is challenging to see. 'Finding' the individual is skewed by taphonomic processes. There are only ever a small percentage of human actions that are archaeologically preserved. In relation to personal adornment, some aspects of the individual can be seen, such as the treatment of the body and the methods of production of select items. However, based on the available literature and research techniques, individual actions are lost. Identity is very challenging to discuss beyond looking at patterns of material use and the presence of some stylistic variations.

Many of the patterns that are revealed are more related to group preferences of materials over time.

The individual can be seen from archaeological evidence if the site is excavated and researched with the individual in mind. This means taking efforts to retrieve small items and to record fine details on site stratigraphy and artifact locations. It also means examining artifacts microscopically for evidence of individual actions. However, this is often challenging due to site limitations and funding.

### **6.3. Further Research**

This catalogue is, most importantly, the first major attempt to systematically record the evidence for personal adornment throughout the Upper Palaeolithic. It is a resource that can be used to further research on Palaeolithic ornaments. It can be supplemented with information on new sites as well as further information on already recorded sites.

From examining the variety of sites that were recorded, it is clear that there are many sites that could provide information on the individual. There are several sites that could provide more information on individual actions. Perforations of ornaments could be microscopically examined, to determine the range of motion, the similarities in perforation location, and the range of tools that were used to create the ornaments. As was determined by d'Errico and Vanhaeren (2002) in regards to the deer teeth from Aven des Iboussières, this type of close examination can show whether ornaments were made by one or many individuals. The engraved teeth from Duruthy have the potential to show individual actions through the closer examination of the engravings on the perforated teeth. Similarities between the actions that created and decorated these teeth could

demonstrate the number of individuals that worked on these teeth. A further analysis of these items would provide a greater understanding of the manufacturing techniques of ornaments. More importantly, it has the potential to provide richer answers to why these items were being made and used.

It is also clear that there is the potential for further analysis of the items of personal adornment. Although there were a few resources that described experimental studies on manufacturing techniques (e.g. White 1997), there is still the potential for further studies. There are various materials and ornamental forms that may have required different production techniques. The techniques and materials used for the stringing of beads are also infrequently discussed. Further experimental studies and use-wear analysis on beads, both the perforation as well as the surface of the bead, could potentially provide information on the materials used for stringing and how the beads were strung together.

#### **6.4. Final Conclusion**

This research has provided an opening for further study of both items of personal adornment in the Upper Palaeolithic as well as the role of the individual. Although the conclusions that can be made from the catalogue of Upper Palaeolithic site with items of personal adornment are limited due to the availability and quality of information, it does hint at the possibility of including the individual in prehistoric studies. There is evidence of the treatment of the body, of some aspects of identity, and of the importance and role of material culture. These are important elements in the use and production of items of personal adornment. Understanding personal adornment in the Upper Palaeolithic is vital for studying the individual in this time period. The first major appearance of ornaments in

Europe is at the beginning of the Upper Palaeolithic. This correlates to a wider change in cultural behaviours. These changes are a product of the actions and interactions of individuals. A further emphasis on the individual is crucial in archaeological research, as it is these actions and interactions that are responsible for the evidence that we find.

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## Appendix A: Site Catalogue

SITE NAME	LAYER	COUNTRY	REGION	TIME PERIOD	TIME (years)	DETAILS	TOTAL NUMBER	CONTEXT	AUTHOR
Aggsbach		Austria	Central	Epigravettian	22000-11000	shells			(Taborin 2000a)
Grubgraben		Austria	Central	Epigravettian	22000-11000	shells			(Taborin 2000a)
Krems		Austria	Central	Aurignacian	40000-28000	shells; stone			(Vanhaeren and d'Errico 2006)
Krems-Hundsteig		Austria	Central	Aurignacian	40000-28000	shells			(Taborin 2000a, Vanhaeren and d'Errico 2006)
Krems-Hundsteig		Austria	Central	Gravettian	28000-22000	shells (66)	>66		(Alvarez Fernandez 2006)
Langmannersdorf		Austria	Central	Aurignacian	40000-28000	shells			(Vanhaeren and d'Errico 2006)
Senftenberg		Austria	Central	Aurignacian	40000-28000	shells			(Vanhaeren and d'Errico 2006)
Willendorf	II-IV	Austria	Central	Aurignacian	40000-28000	shells		open air site complex	(Bhattacharya 1977, Scheer 2000, Vanhaeren and d'Errico 2006)
Willendorf	V-IX	Austria	Central	Gravettian	28000-22000	shells; teeth			(Bhattacharya 1977)
Chaleux (Grotte de)		Belgium	Central	Magdalenian	18000-11000	ivory; stone			(Moreau 2003)
Fonds-de Fôret		Belgium	Central	Gravettian	28000-22000	ivory; bone-bird			(Moreau 2003)
Goyet		Belgium	Central	Aurignacian	40000-28000	teeth- bear, fox, deer, horse, wolf; bone-horse; ivory; antler			(Vanhaeren and d'Errico 2006)
Goyet		Belgium	Central	Gravettian	28000-22000	shells (7); ivory	>7		(Moreau 2003)
Goyet	third cave	Belgium	Central	Magdalenian	18000-11000	teeth (62)- bovid (21), horse (4), wolf (1); bone/antler (1); shells (80+)	>89		(Moreau 2003)
Maisieres-Canal		Belgium	Central	Gravettian	28000-22000	shells (15); bone-bird	>15	open air	(Moreau 2003)
Marche-les-Dames		Belgium	Central	Aurignacian	40000-28000	ivory working			(Moreau 2003)
Pont-a-Lesse	couche 3	Belgium	Central	Aurignacian	40000-28000	rings (1.5) (remnants of ivory working)	1.5		(Moreau 2003)
Prince		Belgium	Central	Aurignacian	40000-28000	teeth- deer; ivory			(Vanhaeren and d'Errico 2006)

Princesse (Grotte de la)		Belgium	Central	Aurignacian	40000-28000	teeth- deer; ivory; antler			(Moreau 2003, Vanhaeren and d'Errico 2006)
Spy		Belgium	Central	Aurignacian	40000-28000	shells (2); ivory; stone (18); teeth- fox, deer, wolf, boar; bone- bird	>20	cave	(Moreau 2003, Vanhaeren and d'Errico 2006)
Spy		Belgium	Central	Gravettian	28000-22000	shells (5); ivory	>5		(Moreau 2003)
Trou Magrite		Belgium	Central	Aurignacian	40000-28000	teeth- fox, deer; shells; ivory			(Moreau 2003, Vanhaeren and d'Errico 2006)
Trou Magrite		Belgium	Central	Gravettian	28000-22000	ivory; bone- bird			(Moreau 2003)
Děravá		Bohemia	Central	Magdalenian	18000-11000	shells			(Lázničková- Gonyševová 2002)
Hostim		Bohemia	Central	Magdalenian	12420+/-420	stone- ochre			(Lázničková- Gonyševová 2002)
Aveline's Hole		Britain	Western	Gravettian	28000-22000	shells; teeth- pig (2), cervine (1)	>3	burial	(Campbell 1977b)
Aveline's Hole		Britain	Western	Magdalenian	18000-11000	shell (60+)	>60		(Campbell 1977b)
Church Hole		Britain	Western	Magdalenian	18000-11000	bone	1		(Campbell 1977b)
Gough's Cave		Britain	Western	Magdalenian	18000-11000	teeth (2)-Vulpes (fox); shell (1)	3		(Campbell 1977b)
Kendrick's Cavern		Britain	Western	Magdalenian	18000-11000	teeth (4+)- bear, deer, bison	>4	burial- 3 adults, 1 child (possibly grave goods)	(Campbell 1977b)
Kent's Cavern		Britain	Western	Gravettian	28000-22000	teeth (1)- badger canine	1		(Campbell 1977b)
Paviland		Britain	Western	Gravettian	18400 or 25840+/-280	shells (600); ivory bracelets (2); teeth- wolf (5), reindeer (2), bear? (1)	>611	burial- male	(Campbell 1977b, Moreau 2003, Roebroeks 2000)
Pin Hole		Britain	Western	Gravettian	28000-22000	shell (1)	1		(Campbell 1977b)
Pin Hole		Britain	Western	Magdalenian	18000-11000	shell (1); mother-of pearl? (1)	<2		(Campbell 1977b)
Bacho Kiro		Bulgaria	Eastern	Aurignacian	43000	teeth (2)	2		(Gamble 1999, White 1993)

Šandalja	G-E	Croatia	Eastern	Aurignacian	22660+/-460, 23540+/-180, 27800+/-800, 25340+/-170, 26970+/-632	teeth (4)- red deer (2), Bovid (1), badger	4		(Karvanić 2003, Vanhaeren and d'Errico 2006)
Adlerova		Czech Republic	Central	Magdalenian	18000-11000	teeth; shells			(Lázničková- Gonyševová 2002)
Brno II		Czech Republic	Central	Gravettian	23690+/-200	shells (600+); stone rings (2)-marl slate; teeth- horse	>602	burial- male 31-40	(Oliva 2000a, Riel- Salvatore and Clark 2001, Svoboda, Ložek, and Vlček 1996)
Býči Skála		Czech Republic	Central	Magdalenian	18000-11000	stone			(Lázničková- Gonyševová 2002)
Dolní Věstonice II		Czech Republic	Central	Gravettian	30000-20000	teeth (4)- fox	4	near DVXIII, DVXIV, DVXV	(Svoboda 2006a, Svoboda 2006b, Svoboda, Ložek, and Vlček 1996)
Dolní Věstonice III	DVI	Czech Republic	Central	Gravettian	28000-22000	teeth (10)-fox	10	burial- female 38-42	(Riel-Salvatore and Clark 2001)
Dolní Věstonice VIII		Czech Republic	Central	Gravettian	28000-22000	teeth (1)- human	1		(Svoboda 2006a, Svoboda 2006b)
Dolní Věstonice XIII	DVII	Czech Republic	Central	Gravettian	28000-22000	teeth (20); ivory	>20	burial- male 17-23	(Riel-Salvatore and Clark 2001, Svoboda 2006a, Svoboda 2006b)
Dolní Věstonice XIV	DVII	Czech Republic	Central	Gravettian	28000-22000	teeth (3)- wolf; ivory	>3	burial- male 17-23	(Riel-Salvatore and Clark 2001, Svoboda 2006a, Svoboda 2006b)
Dolní Věstonice XV	DVII	Czech Republic	Central	Gravettian	28000-22000	teeth (4)- fox	4	burial- female 17-23	(Riel-Salvatore and Clark 2001, Svoboda 2006a, Svoboda 2006b)
Dolní Věstonice XVI	DVII	Czech Republic	Central	Gravettian	28000-22000	teeth (4); shells	>4	burial- male 40-50	(Gamble 1999, Riel- Salvatore and Clark 2001, Svoboda 2006a, Svoboda 2006b)
Křižova		Czech Republic	Central	Magdalenian	15000-10000	bone			(Lázničková- Gonyševová 2002)
Kůlna		Czech Republic	Central	Magdalenian	18000-11000	shells			(Lázničková- Gonyševová 2002)

Mladeč I		Czech Republic	Central	Aurignacian	40000-28000	teeth (20)- wolf, bear, beaver, horse, moose; bone- moose, reindeer	>20		(Riel-Salvatore and Clark 2001, Svoboda 2004, Vanhaeren and d'Errico 2006, White 1995)
Ochzká		Czech Republic	Central	Magdalenian	18000-11000	stone-jet	1		(Lázničková-Gonyševová 2002)
Pavlov 2		Czech Republic	Central	Gravettian	28000-22000	shells (1)	1		(Alvarez Fernandez 2006)
Pavlov 25	PI	Czech Republic	Central	Gravettian	2800-22000	teeth (7)- human (1); shells (3)	10		(Svoboda 2006a, Svoboda 2006b)
Pavlov I		Czech Republic	Central	Gravettian	27000-25000	ivory diadems; stone-siltstone		mega-site	(Svoboda et al. 2000, Svoboda, Ložek, and Vlček 1996)
Pekárna Cave		Czech Republic	Central	Magdalenian	12940+/-250, 12670+/-80	stone- schist, lignite; bone; ivory			(Lázničková-Gonyševová 2002)
Předmostí 22		Czech Republic	Central	Gravettian	28000-22000	teeth- hare (1)	1	burial- juvenile 9-10	(Riel-Salvatore and Clark 2001)
Ryřířská		Czech Republic	Central	Magdalenian	18000-11000	bone/antler	1		(Lázničková-Gonyševová 2002)
Angles sone Anglins		France	Western	Magdalenian	18000-11000	shells (7)	7		(Alvarez Fernandez 2001)
Aven des Iboussières		France	Western	Magdalenian	10210+/-80	shells (1000+); teeth (196)- deer	>1196	multiple burials- 4 adults, 3 juveniles, 1 infant	(d'Errico and Vanhaeren 2002, Vanhaeren and d'Errico 2005)
Badegoule		France	Western	Magdalenian	18000-11000	shells (13); teeth (20)- horse (6), Bovine (1+), wolf (1+), fox (1), reindeer	>33		(Hemingway 1980)
Badegoule		France	Western	Solutrean	22000-18000	shells			(Alvarez Fernandez 2006)
Balauzerie		France	Western	Aurignacian	40000-28000	shells; teeth- deer	>2		(Vanhaeren and d'Errico 2006)
Bay		France	Western	Magdalenian	18000-11000	bone- horse (1)	1		(Delporte 1974)
Belvis		France	Western	Magdalenian	18000-11000	shells (fr.)			(Sacchi 1976)
Birac III		France	Western	Magdalenian	18000-11000	pendants (1)	1		(Hemingway 1980)
Blanchard (Abri)		France	Western	Aurignacian	34000-32000	shells; teeth; ivory; urchin; bone	>30		(Vanhaeren and d'Errico 2006, White 1997, White 2004)

Blot		France	Western	Gravettian	28000-22000	bone- bird (1)	1		(Delporte 1974)
Bois Laiterie		France	Western	Magdalenian	18000-11000	teeth; shells			(Straus 2006)
Bois-Ragot		France	Western	Magdalenian	18000-11000	teeth- red deer			(Chollet, Reigner, and Boutin 1974)
Brassempouy		France	Western	Gravettian	28000-22000	ivory (1)	>1		(Taborin 2000a)
Caminade Est		France	Western	Aurignacian	37200+/-1500, 35400+/-1100, 34140+/-990	shells			(Vanhaeren and d'Errico 2006, White In Press, Zilhão and d'Errico 2000)
Campalou		France	Western	Magdalenian	12800+/-300	teeth- red deer (1), reindeer, marmot; shells	1		(Combier 1977)
Canecaude 1		France	Western	Aurignacian	40000-28000	teeth- bear	1		(Vanhaeren and d'Errico 2006)
Canecaude 1	couche II	France	Western	Magdalenian	18000-11000	shells (11); teeth; stone; bone	>11		(Alvarez Fernandez 2001, Alvarez Fernandez 2002a)
Cap Blanc		France	Western	Magdalenian	18000-11000	shells			(Alvarez Fernandez 2006)
Cassegros (grotte de)		France	Western	Magdalenian	18000-11000	shells (3); teeth (3)- cervid (1); ivory	>7		(Hemingway 1980, Rigaud 1978)
Castanet (Abri)		France	Western	Aurignacian	34000-32000	ivory; stone- talc; teeth- hyena, fox, Bovid, deer; shells	>30		(Vanhaeren and d'Errico 2006, White 1997, White 2004)
Cauna de Belvis		France	Western	Chatelperronian	40000-30000	shells			(d'Errico et al. 1998)
Cellier (Abri)		France	Western	Aurignacian	40000-28000	shells; teeth-wolf; ivory	<10		(White 1989)
Champveyres		France	Western	Magdalenian	18000-11000	amber			(Alvarez Fernandez 2001)
Châtelperron		France	Western	Chatelperronian	40000-30000	teeth			(d'Errico et al. 1998)
Chevre (Ia)		France	Western	Aurignacian	40000-28000	shells; bone- bird			(Vanhaeren and d'Errico 2006)
Chevre (Ia)		France	Western	Solutrean	22000-18000	shells			(Alvarez Fernandez 2006)
Chinchon		France	Western	Magdalenian	18000-11000	shells (1)	>1		(Alvarez Fernandez 2001)
Combe		France	Western	Aurignacian	40000-28000	teeth- human, deer; shells			(Vanhaeren and d'Errico 2006, White 2003)
Combe Capelle		France	Western	Aurignacian	40000-28000	urchin			(Vanhaeren and d'Errico 2006)

Combe Capelle		France	Western	Gravettian	28000-22000	shells; ivory; teeth-fox canines		burials - 40-50 year old male	(Riel-Salvatore and Clark 2001)
Combe Cullier		France	Western	Magdalenian	18000-11000	shells			(Alvarez Fernandez 2006)
Combe-Saunière		France	Western	Solutrean	22000-18000	bone; ivory; shells; teeth- fox, deer, bison			(Rigaud 1980)
Combette		France	Western	Aurignacian	40000-28000	shells			(Vanhaeren and d'Errico 2006)
Cottés		France	Western	Aurignacian	40000-28000	teeth			(Bhattacharya 1977, Gamble 1999)
Créancey	couche 3	France	Western	Magdalenian	18000-11000	teeth (1); ivory (1)	2		(Thévenot 1982)
Cro-Magnon		France	Western	Gravettian	28000-22000	ivory (3); shells (~300)	>303	burials- 50 year old male, 20-30 year old female, 30-40 year old male, infant	(Alvarez Fernandez 2006, Moreau 2003)
Crouzade	couche 10	France	Western	Gravettian	28000-22000	teeth (6)-deer (2)	6		(Sacchi 1976)
Crouzade	couche 2	France	Western	Gravettian	28000-22000	teeth; shells			(Sacchi 1976)
Crouzade		France	Western	Magdalenian	18000-11000	bone (1)-reindeer	1		(Sacchi 1976)
Crouzade		France	Western	Magdalenian	18000-11000	shells (2); teeth (8)	>10		(Sacchi 1976)
Durif a Enval (l'abri)		France	Western	Magdalenian	18000-11000	antler; bone; teeth-bear (1)	>6		(Bonifay 1978, Bonifay 1980, Mazieré 1982)
Duruthy		France	Western	Magdalenian	12230, 11890, 11560, 12550, 9200, 9350	teeth (17)- bear; ivory; stone- calcaire	>17	seasonal-fall?	(Arambourou 1976a, Bahn 1983, Bordes 1974, Straus 2006)
Embuilla	couche 1	France	Western	Solutrean	22000-18000	teeth (1); shells (2?)	~3		(Sacchi 1976)
Embuilla	sector C	France	Western	Solutrean	22000-18000	teeth (1); shell (1)	2		(Sacchi 1976)
Enlene (Morts)		France	Western	Magdalenian	18000-11000	shells (2); teeth (23); bone (7); amber (2); stone- lignite (9)	41		(Alvarez Fernandez 2001, Clottes 1981)
Ermitage (grotte de l')	III	France	Western	Magdalenian	18000-11000	shells (1)	1		(Desbrosse 1976a)
Espéche		France	Western	Magdalenian	13370, 13060, 11420, 11110	shells (~1)	>1		(Bahn 1983)
Espeluges		France	Western	Magdalenian	11220, 9800, 11110	shells (15); ammonite; stone- steatite	>15		(Alvarez Fernandez 2001, Bahn 1983)

Etiolles		France	Western	Magdalenian	18000-11000	shells (1)	1		(Alvarez Fernandez 2001)
Farincourt Cave III		France	Western	Magdalenian	18000-11000	shells (1)	1		(Hemingway 1980)
Fées (Grotte des)	B	France	Western	Chatelperronian	40000-30000	teeth (2)- fox (1), deer (1)	2		(Allsworth-Jones 1986, Zilhão et al. 2006)
Ferrassie (la)	F	France	Western	Aurignacian	40000-28000	shells; teeth- deer, Bovid; urchin; bone- bird; ivory; antler; ammonite			(Bhattacharya 1977, Vanhaeren and d'Errico 2006)
Ferrassie (la)		France	Western	Gravettian	28000-22000	shells			(Alvarez Fernandez 2006)
Festons		France	Western	Aurignacian	40000-28000	shells; urchin; ammonite			(Vanhaeren and d'Errico 2006)
Figuier		France	Western	Aurignacian	40000-28000	shells			(Vanhaeren and d'Errico 2006)
Flageolet I (le)		France	Western	Aurignacian	34300+/-1100, 33800+/-1800, 32040+/-850	teeth- red deer (2), fox; shells (10); ivory	>12		(Vanhaeren and d'Errico 2006, White 1989, Zilhão and d'Errico 2000)
Flageolet I (le)		France	Western	Gravettian	28000-22000	shells			(Alvarez Fernandez 2006)
Fourneau du Diabolo		France	Western	Solutrean	22000-18000	shells			(Alvarez Fernandez 2006)
Fours (Grotte des)		France	Western	Aurignacian	40000-28000	bone- bird			(Vanhaeren and d'Errico 2006)
Fritsch (Abri)		France	Western	Magdalenian	18000-11000	shells; teeth; pendants (4)	>4		(Hemingway 1980)
Garenne		France	Western	Magdalenian	18000-11000	bone- reindeer (1)	1		(Allain 1978)
Gargas (grotte de)	6	France	Western	Gravettian	28000-22000	teeth (2)	2		(Clottes 1976)
Gatzarria		France	Western	Aurignacian	40000-28000	teeth- fox, deer, ibex, horse; ivory; bone- bird, fish vertebrae; stone; antler			(Vanhaeren and d'Errico 2006, White 2006)
Gaudry		France	Western	Magdalenian	18000-11000	ammonite			(Vandermeersch 1976)
Gazel		France	Western	Magdalenian	18000-11000	teeth (11); shells (15); antler (2); stone (2?)	~31		(Sacchi 1976)

Gazel	couche 7	France	Western	Magdalenian	18000-11000	shells (3); bone (2); teeth (2)- fox, reindeer; stone (?)			(Sacchi 1976)
Gourdan		France	Western	Magdalenian	18000-11000	shells			(Bahn 1983)
Grande Baume (grotte de la)		France	Western	Magdalenian	18000-11000	teeth- wolf (1)	1		(Desbrosse 1976b)
Grande Grotte de Bize		France	Western	Magdalenian	18000-11000	shells (2); teeth (1)	3		(Sacchi 1976)
Grande Grotte de Bize		France	Western	Solutrean	22000-18000	shells (1); teeth (1)	2		(Sacchi 1976)
Grappin's Cave		France	Western	Magdalenian	15320+/-320	teeth (6)- wolf (1), deer (2), bovid (1), fox (2); bone- bovid vertebrae, deer (CD); ivory; stone- lignite (1)	>7		(Cupillard and Welte 2006)
Gravette (la)		France	Western	Gravettian	28000-22000	shells			(Alvarez Fernandez 2006)
Hyènes (Grotte des)		France	Western	Aurignacian	30600+/-200, 33600+/-240	teeth (31)- fox (19), red deer (4), deer (3), lion, wolf, human (1); shells (12); ivory (1); stone (44)- calcite (2), talc (10), chlorite (32); bone (2); bracelets (fr.) (2)	>89		(Gamble 1999, Vanhaeren and d'Errico 2006, White 1996, White In Press)
Isturitz	4c and 4d	France	Western	Aurignacian	34630+/-560, 36550+/-610	shells (+15); stone- calcite/talc; teeth- horse, hyena, wolf, bear, fox, deer, Bovid, horse, human (1); bone- reindeer; amber	>16		(Taborin 2000a, Taborin 2000b, Vanhaeren and d'Errico 2006, White In Press)
Isturitz	III	France	Western	Aurignacian	40000-28000	shells (6); teeth	>6		(Bahn 1983, Bhattacharya 1977)
Isturitz	IV	France	Western	Gravettian	28000-22000	shells (65)	65		(Bahn 1983)
Isturitz	V	France	Western	Gravettian	28000-22000	teeth; shells; amber			(Bhattacharya 1977)
Isturitz	VI	France	Western	Gravettian	28000-22000	teeth; shells			(Bhattacharya 1977)
Isturitz	II	France	Western	Magdalenian	18000-11000	shells (132); bone; teeth- seal	>132		(Bahn 1983)



Isturitz	I/II	France	Western	Magdalenian	18000-11000	shells (14)		"craft- centre", "meeting place"	(Bahn 1983)
Isturitz	S III	France	Western	Aurignacian	40000-28000	shells (73)	>73		(Bahn 1983)
Jean-Blancs (les)		France	Western	Magdalenian	18000-11000	shells (1); teeth (1)- bovid	2	rock shelter	(Hemingway 1980, Taborin 1977)
Jeans Blanc (les)		France	Western	Solutrean	22000-18000	shells			(Alvarez Fernandez 2006)
Labastide (grotte de)		France	Western	Magdalenian	12310	bone (18)- horse hyoid; teeth	>18		(Bahn 1983, Clottes 1976)
Labattut		France	Western	Solutrean	28000-18000	teeth; shells		burial- child- 1 year old	(White 2003)
Lacave		France	Western	Solutrean	22000-18000	shells			(Alvarez Fernandez 2006)
Lachaud	C3	France	Western	Magdalenian	18000-11000	shells (1)	1		(Alvarez Fernandez 2001, Alvarez Fernandez 2006)
Lachaud		France	Western	Solutrean	22000-18000	shells			(Alvarez Fernandez 2006)
Laouza		France	Western	Aurignacian	40000-28000	shells			(Roudil 1974, Vanhaeren and d'Errico 2006)
Lartet (abri)		France	Western	Aurignacian	40000-28000	shells			(Vanhaeren and d'Errico 2006)
Lartet (abri)		France	Western	Magdalenian	18000-11000	shells (1); teeth	>1		(Alvarez Fernandez 2001, Vandermeersch 1978)
Lascaux		France	Western	Magdalenian	18000-11000	stone (1); possible beads (7)	~7		(Taborin 1979)
Laugerie Haute-Est		France	Western	Magdalenian	18000-11000	shells (1); teeth (6)- Bovine, wolf, cervid, fox, ibex; ivory	>8		(Alvarez Fernandez 2001, Hemingway 1980)
Laugerie-Basse		France	Western	Magdalenian	18000-11000	shells (20); teeth- red deer; bone beads (2); bone pendant (1)	>23	male burial, seasonal occupation	(Alvarez Fernandez 2001, Rigaud 1976, Taborin 1974, Vanhaeren and d'Errico 2005)
Lespugue-Rideaux		France	Western	Gravettian	28000-22000	ivory (1); shells	>1		(Alvarez Fernandez 2006, Taborin 2000a)
Lestruque		France	Western	Magdalenian	18000-11000	shells			(Alvarez Fernandez

									2006)
Longue Roche		France	Western	Magdalenian	18000-11000	shells (3)	3		(Alvarez Fernandez 2001)
Lourdes		France	Western	Magdalenian	18000-11000	teeth- horse	1		(Bahn 1983)
Madeleine		France	Western	Magdalenian	18000-11000	shells (39)	33	living area	(Vanhaeren et al. 2004)
Madeleine I		France	Western	Magdalenian	10190+/-100	teeth- deer, fox; bone; shells	1564+	3-7 year old child burial	(Taborin 1974, Vanhaeren and d'Errico 2005, Vanhaeren et al. 2004)
Mairie (grotte de la)		France	Western	Magdalenian	18000-11000	fossil coral			(White 2003)
Marche (la)		France	Western	Magdalenian	18000-11000	shells (1)	1		(Alvarez Fernandez 2001)
Marsoulas		France	Western	Magdalenian	18000-11000	stone (1)	1		(Clottes 1976)
Mas d'Azil		France	Western	Magdalenian	11690, 11450, 11250	shells (27)	27		(Alvarez Fernandez 2001, Alvarez Fernandez 2002a, Bahn 1983)
Masnaigre		France	Western	Gravettian	28000-22000	ivory	1		(Taborin 2000a)
Montgauder		France	Western	Magdalenian	18000-11000	shells (1)	1		(Alvarez Fernandez 2001)
Moreau		France	Western	Magdalenian	18000-11000	stone- schist (1)	1		(Combier 1977)
Pages		France	Western	Aurignacian	40000-28000	teeth- wolf, fox			(Vanhaeren and d'Errico 2006)
Pair-non-Pair		France	Western	Gravettian	28000-22000	ivory (1)	1		(Taborin 2000a)
Pasquet		France	Western	Aurignacian	40000-28000	shells			(Vanhaeren and d'Errico 2006)
Passagere et Colomb	couche 2	France	Western	Magdalenian	18000-11000	shells (3)	3		(Alvarez Fernandez 2001, Desbrosse 1976a)
Patary		France	Western	Aurignacian	40000-28000	teeth- bear			(Vanhaeren and d'Errico 2006)
Pataud (Abri)	level 14 (C')	France	Western	Aurignacian	33300+/-760, 34250+/-675, 33330+/-410	shells (+1); bone- ibex, reindeer, fox; teeth- lion, fox, Bovid, wolf; ivory	>1		(Bricker and David 1984, David 1985, Movius jr. 1975, Movius jr. 1977, Vanhaeren and d'Errico 2006)
Pataud (Abri)	eboulis 3-4 (H)	France	Western	Gravettian	after 26000	shells (3)	3		(Bricker and David 1984, David 1985, Movius jr. 1975, Movius jr. 1977)

Pataud (Abri)	eboulis 4-5	France	Western	Gravettian	after 26000	shells (1)	1	(Bricker and David 1984, David 1985, Movius jr. 1975, Movius jr. 1977)
Pataud (Abri)	4a	France	Western	Gravettian	after 26000	shells (1); teeth (9)-fox, badger, Bos, deer	>10	(Bricker and David 1984, David 1985, Movius jr. 1975, Movius jr. 1977)
Pataud (Abri)	level 4 (I)-Mid	France	Western	Gravettian	27060+/-370	shells (23); shells (29); bone tube (14); teeth (7)-badger, bear, fox	73	(Bricker and David 1984, David 1985, Movius jr. 1975, Movius jr. 1977)
Pataud (Abri)	level 3 (G)	France	Western	Gravettian	23010+/-170, 21540+/-160	shells (10); stone (1); teeth (5)- fox, deer reindeer	16	(Bricker and David 1984, David 1985, Movius jr. 1975, Movius jr. 1977)
Pataud (Abri)	level 2 (E)	France	Western	Magdalenian	~21000	shells (3)	3	(Bricker and David 1984, David 1985, Movius jr. 1975, Movius jr. 1977)
Pataud (Abri)	level 5 (K)-Low	France	Western	Solutrean	21780+/-215	shells (22); teeth (20); bone tube (3)	45	(Bricker and David 1984, David 1985, Movius jr. 1975, Movius jr. 1977)
Pêcheurs (les)		France	Western	Aurignacian	40000-28000	teeth- deer; shells		(Vanhaeren and d'Errico 2006)
Pêcheurs (les)		France	Western	Magdalenian	18000-11000	shells (1)	1	(Alvarez Fernandez 2001, Alvarez Fernandez 2002a)
Pêcheurs (les)		France	Western	Gravettian	28000-22000	shells		(Alvarez Fernandez 2006)
Pegourie		France	Western	Magdalenian	18000-11000	teeth (9)- cervid	9	(Hemingway 1980)
Petite Grotte de Bize		France	Western	Magdalenian	18000-11000	teeth (1)	1	(Sacchi 1976)
Petite Grotte de Bize	couche 5	France	Western	Magdalenian	18000-11000	teeth (1); bone (1)	2	(Sacchi 1976)
Petite Grotte de Bize	couche 3	France	Western	Magdalenian	18000-11000	shells (2)	2	(Sacchi 1976)
Petite Grotte de Bize		France	Western	Solutrean	22000-18000	shells (4)	4	(Sacchi 1976)
Peyrony (Abri)		France	Western	Aurignacian	40000-28000	teeth- deer, fox; shells		(Vanhaeren and d'Errico 2006)
Piage (le)		France	Western	Aurignacian	40000-28000	teeth- fox, shark, ibex, Bovid, deer		(Vanhaeren and d'Errico 2006)

Pierre Châtel		France	Western	Magdalenian	18000-11000	bone- horse hyoid; teeth- reindeer; shells (3); ivory working; amber	>3		(Alvarez Fernandez 2001, Alvarez Fernandez 2002a, Desbrosse 1976a)
Piscine		France	Western	Magdalenian	18000-11000	shells			(Vandermeersch 1978)
Placard (le)	C4	France	Western	Magdalenian	18000-11000	shells (6); teeth	>6		(Alvarez Fernandez 2001, Taborin 1974, Taborin 1977)
Placard (le)		France	Western	Solutrean	22000-18000	shells			(Alvarez Fernandez 2006)
Poisson (Abri)		France	Western	Aurignacian	40000-28000	shells			(Vanhaeren and d'Errico 2006)
Pont-Neuf		France	Western	Aurignacian	40000-28000	shells			(Vanhaeren and d'Errico 2006)
Poron des Cuéches		France	Western	Magdalenian	18000-11000	teeth- wolf (1)	1		(Hemingway 1980, Leroi-Gourhan, Brézillon, and Schmider 1976)
Portel		France	Western	Magdalenian	18000-11000	stone (1)	1		(Clottes 1976)
Pouzet		France	Western	Magdalenian	18000-11000	shells (1)	1		(Alvarez Fernandez 2001)
Pugieu (abri du)		France	Western	Magdalenian	18000-11000	shells; teeth- red deer			(Alvarez Fernandez 2001, Desbrosse 1976a)
Quina (la)		France	Western	Aurignacian	40000-28000	teeth- fox (1), hyena, Bovid, horse, wolf; shells	>1		(Vanhaeren and d'Errico 2006, White 1989)
Rainade 12		France	Western	Magdalenian	18000-11000	shells (1)	1		(Alvarez Fernandez 2001)
Régismont		France	Western	Aurignacian	40000-28000	shells			(Vanhaeren and d'Errico 2006, White 2002)
Renne (Grotte de)	VII	France	Western	Aurignacian	30800+/-250, 31800+/-1240	teeth- bear; shells (1); stone (1)- stalactite; ivory (5+)	>7		(d'Errico et al. 1998, Vanhaeren and d'Errico 2006, White 2002, Zilhão and d'Errico 1999)

Renne (Grotte de)	X-VIII	France	Western	Chatelperronian	33000-32000	teeth- wolf, fox, Bovid, bear, reindeer, marmot, rhino, hyena, horse; shells; bone- bird, reindeer; stone- calcaire; ivory; belemnite	36	(d'Errico et al. 1998, Leroi-Gourhan, Brézillon, and Schmider 1976, White 2002, Zilhão et al. 2006)
Renne (Grotte de)	VI-IV	France	Western	Gravettian	20150+/-500	shells		(d'Errico et al. 1998, Taborin 2000a)
Rhodes II		France	Western	Magdalenian	18000-11000	shells		(Alvarez Fernandez 2006)
Roc de Combe		France	Western	Aurignacian	34800+/-1200, 33400+/-1100	teeth- lynx, fox, Bovid; bone- fish vertebrae		(Vanhaeren and d'Errico 2006, Zilhão and d'Errico 2000)
Roc de Combe		France	Western	Chatelperronian	40000-30000	teeth		(d'Errico et al. 1998)
Roc de Marcamps		France	Western	Magdalenian	18000-11000	shells		(Alvarez Fernandez 2006)
Roc de Sers		France	Western	Solutrean	19000-17000	teeth- fox; shells		(Alvarez Fernandez 2006, Pettitt 2005)
Roc du Doulet		France	Western	Magdalenian	18000-11000	shells (3)	3	(Alvarez Fernandez 2001)
Roche fort-sur-Neumon		France	Western	Aurignacian	40000-28000	ivory working		(Moreau 2003)
Roche-au-Loup		France	Western	Chatelperronian	40000-30000	teeth; ivory rings		(d'Errico et al. 1998)
Roche-du-Quinçay		France	Western	Chatelperronian	40000-30000	teeth- wolf (1)		(d'Errico et al. 1998, Zilhão and d'Errico 1999)
Rocher de la Caille		France	Western	Magdalenian	12210+/-480	stone- chlorite-schist (1)	1	(Combier 1977, Pettitt 2005)
Rocher de la Peine (grotte)		France	Western	Magdalenian	18000-11000	shells; teeth (4)-bear, lion	>4	(White 2003)
Rochette		France	Western	Aurignacian	40000-28000	teeth- lion, fox; shells; bone		(Vanhaeren and d'Errico 2006)
Rois		France	Western	Aurignacian	40000-28000	teeth- hyena, wolf, fox, reindeer, deer, human, Bovid, horse; shells; bone; urchin; antler		(Vanhaeren and d'Errico 2006)

Romaines		France	Western	Magdalenian	18000-11000	shells (5+); teeth-deer reindeer (16), ibex (4), marmot(2); ivory	>27		(Alvarez Fernandez 2001, Combier 1977)
Rond-du-Barry (grotte du)		France	Western	Magdalenian	15400+/-400, 12380+/-280	shells (5); teeth (1)-reindeer; ivory pendant (1)	>7		(Delporte 1974, Hemingway 1980)
Rothschild		France	Western	Aurignacian	40000-28000	shells; stone; ammonite; teeth- deer			(Vanhaeren and d'Errico 2006)
Saint Thibaud-le-Couz		France	Western	Magdalenian	18000-11000	shells (24?)	~24		(Taborin 1995)
Saint-Cesaire		France	Western	Aurignacian	40000-28000	teeth- deer, Bovid; shells			(Vanhaeren and d'Errico 2006)
Sainte Eulalia	couche II+B	France	Western	Magdalenian	18000-11000	teeth			(Lorblanchet 1976)
Sainte Eulalia	couche III_C	France	Western	Magdalenian	18000-11000	stone			(Lorblanchet 1976)
Salpêtrière (la)		France	Western	Aurignacian	40000-28000	shells			(Vanhaeren and d'Errico 2006)
Salpêtrière (la)		France	Western	Magdalenian	18000-11000	shells (1)	1		(Alvarez Fernandez 2001)
Salpêtrière (la)		France	Western	Solutrean	22000-18000	shells			(Alvarez Fernandez 2006)
Solutré		France	Western	Aurignacian	34000-29000	ivory			(Pettitt 2005, Vanhaeren and d'Errico 2006)
Solutré		France	Western	Magdalenian	12580	teeth; shells			(Pettitt 2005, Thévenot 1978)
Solutré		France	Western	Solutrean	19590+/-280	shells			(Alvarez Fernandez 2006, Pettitt 2005, Thévenot 1978)
Souci (le)		France	Western	Magdalenian	18000-11000	shells			(Alvarez Fernandez 2006)
Souquette (Abri la)		France	Western	Aurignacian	40000-28000	ivory; stone- talc, soapstone; shells; teeth- fox, hyena, deer, Bovid; ammonite; antler; urchin	580		(Gamble 1999, Vanhaeren and d'Errico 2006, White 1989)
Souquette (abri la)		France	Western	Magdalenian	18000-11000	teeth; shells			(Delage 1938)
Sous-le-Roc		France	Western	Aurignacian	40000-28000	shells			Vanhaeren and

									d'Errico 2006(Vanhaeren and d'Errico 2006)
Sous-les-vignes		France	Western	Aurignacian	40000-28000	teeth- deer, fox; shells			(Vanhaeren and d'Errico 2006)
St. Germain-la-Rivière		France	Western	Magdalenian	18000-11000	teeth- reindeer; stone- steatite; urchin; bone- reindeer metacarpal	24	living area	(Alvarez Fernandez 2001, Vanhaeren and d'Errico 2005)
St. Germain-la-Rivière		France	Western	Magdalenian	15780+/-200	teeth (71)- deer; shells (4); stone- steatite (1)	~75	burial- female	(Vanhaeren and d'Errico 2005)
St. Jean de Verges		France	Western	Aurignacian	40000-28000	shells (60); ivory beads	>60		(Bahn 1983, White 1997, White 2004, White 2006)
St. Michel d'Arudy (grotte de)		France	Western	Magdalenian	18000-11000	teeth- horse; bone (1)- horse hyoid	>1		(Arambourou 1976b, Bahn 1983, White 2003)
Tarté		France	Western	Aurignacian	40000-28000	teeth- human			(White In Press)
Tournal (le)		France	Western	Aurignacian	40000-28000	shells; teeth			(Alvarez Fernandez 2006, White 2006)
Tournal (le)	IVA	France	Western	Magdalenian	18000-11000	shells (4)	4		(Alvarez Fernandez 2001, Alvarez Fernandez 2002a)
Tournal (le)	IVC	France	Western	Magdalenian	18000-11000	shells (3)	3		(Alvarez Fernandez 2001, Alvarez Fernandez 2002a)
Trilobite (Grotte de)	level 13	France	Western	Aurignacian	40000-28000	bone (1)-deer phalange	1		(Leroi-Gourhan, Brézillon, and Schmider 1976)
Trilobite (Grotte de)		France	Western	Gravettian	28000-22000	shells			(Taborin 2000a)
Trilobite (Grotte de)	couche V	France	Western	Magdalenian	18000-11000	teeth- wolf (1); shells; stone	>1		(Schmider et al. 1995)
Trou de la Mere Clochette		France	Western	Aurignacian	40000-28000	teeth- bear; ivory			(Moreau 2003, Vanhaeren and d'Errico 2006)
Tuc d'Audoubert		France	Western	Aurignacian	40000-28000	antler			(Vanhaeren and d'Errico 2006)
Tuto de Camalhot		France	Western	Aurignacian	40000-28000	shells; teeth- fox, deer, Bovid; stone; bone			(Clottes 1976, Vanhaeren and d'Errico 2006)
Tuto de Camalhot		France	Western	Gravettian	28000-22000	ivory			(Taborin 2000a)

Vache (la)		France	Western	Magdalenian	10900, 10590, 9700	shells (3-5)	<5		(Alvarez Fernandez 2001, Alvarez Fernandez 2002a, Bahn 1983)
Vachons		France	Western	Aurignacian	40000-28000	teeth- wolf, fox, deer; shells			(Vanhaeren and d'Errico 2006)
Zouzette (grotte de la)	grotte 3	France	Western	Magdalenian	18000-11000	shells (1)	1		(Desbrosse 1976b)
Gwardzilas Klde		Georgia	Eastern	Upper Palaeolithic	No date	bone			(Meshveliani, Bar-Yosef, and Belfer-Cohen 2004, Nioradze and Otte 2000)
Sakažhia- Sagwardazile		Georgia	Eastern	Epigravettian	11700+/-80	bone (2)	2		(Nioradze and Otte 2000)
Sazurbliia		Georgia	Eastern	Gravettian	28000-22000	teeth; bone; stone			(Nioradze and Otte 2000)
Andernach-Martinsberg 2	pit 12, KII	Germany	Central	Magdalenian	15500	teeth- roe deer(2), reindeer(74), bovid(3); shells (48)	127		(Alvarez Fernandez 2001, Alvarez Fernandez 2002a)
Andernach-Martinsberg 2	surface	Germany	Central	Magdalenian	18000-11000	shells (8); teeth	>8		(Alvarez Fernandez 2001, Alvarez Fernandez 2002a)
Bockstein Hohle		Germany	Central	Aurignacian	40000-28000	teeth- bear			(Vanhaeren and d'Errico 2006)
Bockstein-Törle	I	Germany	Central	Aurignacian	40000-28000	stone- schist ring; teeth- Bovid; ivory			(Moreau 2003, Vanhaeren and d'Errico 2006)
Bockstein-Törle	VI	Germany	Central	Gravettian	28000-22000	ivory; stone- steatite (2)	>2		(Weniger 1990)
Breitenbach		Germany	Central	Aurignacian	40000-28000	teeth- fox			(Vanhaeren and d'Errico 2006)
Brillenhöhle	VII	Germany	Central	Gravettian	28000-22000	teeth (5)-fox; shells (31); bone tubes (4); ivory (34); bone (2); stone (1)	77		(Bhattacharya 1977, Hahn 1995, Scheer 1995, Scheer 2000, Weniger 1990)
Brillenhöhle		Germany	Central	Magdalenian	18000-11000	ivory (13)	13		(Hahn 1995)
Felsställe		Germany	Central	Magdalenian	18000-11000	ammonites; shells; gagat			(Weniger 1990)
Geißenklösterle	level I	Germany	Central	Aurignacian	33000	teeth- deer, fox (2); antler; ivory	>2	cave	(Richter et al. 2000, Scheer 2000, Vanhaeren and d'Errico 2006, Zilhão



									and d'Errico 2000)
Geißenklösterle	Ia/IIb	Germany	Central	Gravettian	23625+/-290	teeth (7)- deer (1); shells (1); bone tubes (2); ammonites (3); ivory (56); bone- fish vertebra (1)	60		(Scheer 1995, Scheer 2000, Weniger 1990)
Gnirshöhle		Germany	Central	Magdalenian	18000-11000	shells (2); gagat	2		(Alvarez Fernandez 2001, Weniger 1990)
Gönnersdorf		Germany	Central	Magdalenian	15500	shells (27); teeth- deer (6), fox (100); amber; gagat	133		(Alvarez Fernandez 2001, Alvarez Fernandez 2002a, Bhattacharya 1977, Hahn 1995, Weniger 1990)
Hohle Fels		Germany	Central	Aurignacian	40000-28000	teeth- deer, ibex; ivory			(Vanhaeren and d'Errico 2006)
Hohle Fels		Germany	Central	Gravettian	29000	teeth (5); shells (2); bone tube (1); ivory tube (1); ammonites (2); ivory (20)	31		(Hahn 1995, Scheer 2000)
Hohle Fels		Germany	Central	Magdalenian	18000-11000	teeth- roe deer (2); shells (3); ivory; gagat	>5		(Alvarez Fernandez 2001, Weniger 1990)
Hohlenstein Stadel		Germany	Central	Aurignacian	40000-28000	teeth- fox; ivory			(Hahn 1995, Vanhaeren and d'Errico 2006)
Ilsehöhle	layer 7	Germany	Central	Gravettian	28000-22000	bone-reindeer phalanges			(Bhattacharya 1977)
Kaufertsberg		Germany	Central	Magdalenian	18000-11000	teeth; shells; gagat			(Weniger 1990)
Kesslerloch-5		Germany	Central	Magdalenian	18000-11000	teeth- roe deer (5)	5		(Alvarez Fernandez 2001)
Kiriegrotte		Germany	Central	Magdalenian	18000-11000	teeth; ivory; shells; stone- steatite; gagat			(Weniger 1990)
Klausenhöhle		Germany	Central	Gravettian	28000-22000	ivory (2)	2		(Hahn 1995)
Koblenz-Metternich		Germany	Central	Gravettian	28000-22000	gagat	1		(Weniger 1990)
Lommersum		Germany	Central	Aurignacian	40000-28000	ivory			(Hahn 1995, Vanhaeren and d'Errico 2006)

Magdalenahöhle		Germany	Central	Aurignacian	40000-28000	ivory			(Moreau 2003)
Magdalenahöhle		Germany	Central	Gravettian	25540+/-720	teeth-deer, wolf; ivory bracelets (3 fr)	>3		(Bosinski 2000, Hahn 1995, Weniger 1990)
Mainz-Linsenberg		Germany	Central	Gravettian	28000-22000	shells (17); ivory; gagat	>17		(Bosinski 2000, Weniger 1990)
Munzingen		Germany	Central	Magdalenian	18000-11000	shells (2); teeth; gagat	>2	open air	(Alvarez Fernandez 2002a, Bhattacharya 1977, Weniger 1990)
Napoleonskopf		Germany	Central	Magdalenian	18000-11000	shells; gagat/lignite			(Weniger 1990)
Neuchâtel-Monruz		Germany	Central	Magdalenian	18000-11000	teeth- reindeer			(Alvarez Fernandez 2001)
Obere Klause		Germany	Central	Gravettian	28000-22000	ivory			(Scheer 2000)
Petersfels		Germany	Central	Magdalenian	18000-11000	teeth- reindeer (5000), bovid (1), ibex (5), marmot (1); shells (1); ammonite; stone-steatite; amber; bone- reindeer phalanges; gagat	5008		(Alvarez Fernandez 2001, Alvarez Fernandez 2002a, Bhattacharya 1977, Hahn 1995, Weniger 1990)
Risliisberg		Germany	Central	Magdalenian	18000-11000	teeth- reindeer			(Alvarez Fernandez 2001)
Sirgenstein		Germany	Central	Aurignacian	40000-28000	ivory	1		(Hahn 1995, Vanhaeren and d'Errico 2006)
Sprendlingen		Germany	Central	Gravettian	28000-22000	shells (9)	9		(Bosinski 2000)
Teufelsbrücke		Germany	Central	Magdalenian	18000-11000	teeth; gagat			(Weniger 1990)
Teufelsküchen		Germany	Central	Magdalenian	18000-11000	shells			(Bhattacharya 1977)
Torle VI		Germany	Central	Gravettian	28000-22000	ivory (2)	2		(Hahn 1995)
Vogelherd		Germany	Central	Aurignacian	34000-32000	teeth- deer; bone; ivory (2)	>2		(Hahn 1995, Vanhaeren and d'Errico 2006)
Weinberghöhlen (Mauer)		Germany	Central	Gravettian	28000-22000	ivory (15); teeth-fox (6), wolf, reindeer, bear	>21		(Bhattacharya 1977, Hahn 1995, Scheer 2000, Weniger 1990)
Weinberghöhlen (Mauer)		Germany	Central	Magdalenian	18000-11000	teeth (25)	25		(Hawkes 1974)
Weisbaden-Igstadt		Germany	Central	Magdalenian	18000-11000	shells (fr.) (1)	1	open air	(Alvarez Fernandez 2001)

Wildscheuer		Germany	Central	Aurignacian	40000-28000	teeth- wolf, horse; stone			(Vanhaeren and d'Errico 2006)
Wildscheuer III		Germany	Central	Aurignacian	40000-28000	ivory rings, beads		cave	(Moreau 2003)
Kastritsa		Greece	Central	Gravettian	28000-22000	shells			(Alvarez Fernandez 2006)
Kastritsa		Greece	Central	Epigravettian	22000-11000	shells			(Alvarez Fernandez 2006)
Klisoura	V	Greece	Central	Uluzzian	40200	shells		cave	(Koumouzelis et al. 2001a)
Klisoura	IIIb	Greece	Central	Aurignacian	40000-28000	shells; teeth (1)	>1	cave	(Koumouzelis et al. 2001a, Vanhaeren and d'Errico 2006)
Csákvár		Hungary	Central	Jankovichian/Szeletian	43000-35000	ivory arm bands (5); teeth (2)- red deer	7		(Allsworth-Jones 1986)
Istállosko		Hungary	Central	Aurignacian	44300+/-190, 39700+/-90	antler; ivory; bone (1)- phalange	>1		(Bhattacharya 1977, Churchill and Smith 2000, Vanhaeren and d'Errico 2006)
Mount Henye		Hungary	Central	Gravettian	28700+/-300	stone			(Bhattacharya 1977)
Agnano		Italy	Western	Gravettian	24410+/-320	headdress, bracelets		20-30 year old female burial with infant	(Mussi 1990, Riel-Salvatore and Clark 2001)
Arene Candide		Italy	Western	Epigravettian	11000-10500	teeth- deer; shells		multiple burials (20)	(Formicola et al. 2005)
Arene Candide	I	Italy	Western	Gravettian	23440+/-190	ivory (4); teeth- deer; shells (100+)	>104	burial- male	(Mussi 1990, Mussi 2000, Pettitt et al. 2003)
Balzi Rossi/Grimaldi Caves		Italy	Western	Gravettian (Epigravettian)	32600+/-3000 (22000-11000)	figurines (6-9)-stone- steatite, chlorite; ivory	>6	some figurines may date to Epigravettian	(Bisson, Tisnerat, and White 1996, Mussi 1990, Mussi, Cinq-Mars, and Bolduc 2000)
Balzo della Torre I		Italy	Western	Gravettian	28000-22000	headdress, necklace, bracelet, armband; teeth-bear (1), deer; shells	>1	burial- male 25-30	(Bhattacharya 1977, Mussi 2001, Riel-Salvatore and Clark 2001)
Balzo della Torre II		Italy	Western	Gravettian	28000-22000	necklace, armband, "kneecap"; shells; teeth-deer		burial- male 16-30	(Bhattacharya 1977, Mussi 2001, Riel-Salvatore and Clark 2001)

Barma Grande		Italy	Western	Gravettian	28000-22000	shell; teeth; bone		burials- 4 individuals	(Bhattacharya 1977)
Bombrini	III	Italy	Western	Aurignacian	40000-28000	shells			(Onoradini 2004, Vanhaeren and d'Errico 2006)
Broion (grotta del)		Italy	Western	Gravettian	25000	teeth (6)- deer	6	cave	(Mussi 1990)
Cala		Italy	Western	Aurignacian	40000-28000	shells			(Vanhaeren and d'Errico 2006)
Cala		Italy	Western	Epigravettian	22000-11000	teeth-deer (1)	1		(Mussi 1990)
Casa della Ossa	P	Italy	Western	Gravettian	28000-22000	shells			(Mussi 1990)
Castelcivita		Italy	Western	Aurignacian	40000-28000	shells			(Vanhaeren and d'Errico 2006)
Castelcivita		Italy	Western	Uluzzian	32470+/-650, 33220+/-780	shells (1)	1		(d'Errico et al. 1998, Mussi 2001)
Cavallo		Italy	Western	Aurignacian	40000-28000	shells			(Vanhaeren and d'Errico 2006)
Cavallo	EIII-I, D	Italy	Western	Uluzzian	35000-30000	shells		cave	(d'Errico et al. 1998, Mussi 2001)
Caviglione I		Italy	Western	Gravettian	28000-22000	headdress, "kneecap"		burial- male 16-30	(Riel-Salvatore and Clark 2001)
Enfants (Grotte des)		Italy	Western	Gravettian	28000-22000	shells; bracelets, head decorations		burials- 3 individuals	(Bisson, Tisnerat, and White 1996)
Enfants (Grotte des)		Italy	Western	Epigravettian	18000-11000	shells; teeth-deer		burials	(Alvarez Fernandez 2001, Bhattacharya 1977)
Fanciulli		Italy	Western	Aurignacian	40000-28000	shells; teeth- deer			(Vanhaeren and d'Errico 2006)
Fanciulli	F	Italy	Western	Epigravettian	22000-11000	teeth-deer			(Mussi 1990)
Fanciulli I		Italy	Western	Gravettian	28000-22000	headdress		burial- male 16-30	(Mussi 1990)
Fanciulli II		Italy	Western	Gravettian	28000-22000	bracelets		burial- female 31-40	(Mussi 2001)
Fossellone		Italy	Western	Aurignacian	40000-28000	antler; stone- steatite; teeth- fox, red deer			(Vanhaeren and d'Errico 2006)
Ostumi 1		Italy	Western	Gravettian	28000-22000	shells; teeth (1)- horse	>1	burial- female	(Taborin 2000a)
Paglicci		Italy	Western	Gravettian	24700-23000	teeth (30)-deer	30	burial- 12-13 year old	(Mussi 2001)

Paglicci II		Italy	Western	Gravettian	28000-22000	headdress, necklace, bracelet, "anklet"		burial- male 11-15	(Mussi 2001, Riel-Salvatore and Clark 2001)
Paglicci III		Italy	Western	Gravettian	28000-22000	"diadem"		burial- female 18-20	(Mussi 2001, Riel-Salvatore and Clark 2001)
Riparo di Fumane	A3-A2	Italy	Western	Aurignacian	40000-28000	shells (95); teeth (10)-deer	96		(Mussi 2001, Vanhaeren and d'Errico 2006)
Riparo Mochi	F/II	Italy	Western	Aurignacian	40000-28000	shells; bone; stone			(Bhattacharya 1977, Mussi 2001, Vanhaeren and d'Errico 2006)
Riparo Mochi	V	Italy	Western	Epigravettian	12000-9000	shells (100)	100		(Alvarez Fernandez 2002b, Bhattacharya 1977, Mussi 2000)
Riparo Mochi	I	Italy	Western	Uluzzian	35000-30000	shells			(Bhattacharya 1977)
Riparo Mochi	G/II	Italy	Western	Aurignacian	37000+/-1300, 32280+/-580, 33400+/-580, 35700+/-850	teeth (1); stone and bone (6); shells	>7		(Bhattacharya 1977, Onorardini 2004, White 2006)
Romanelli	A	Italy	Western	Epigravettian	11930+/-520	shells; teeth-deer			(Bhattacharya 1977)
Venera Parabitta II		Italy	Western	Gravettian	28000-22000	headdress		burial- female >25	(Riel-Salvatore and Clark 2001)
Mamutova Cave		Poland	Central	Gravettian	30000-20000	ivory			(Weniger 1990)
Caldeirão (gruta do)		Portugal	Western	Solutrean	26000+/-320	bone- red deer phalanges (12); shells	12		(Duarte et al. 1999, Zilhão 1990)
Caldeirão (gruta do)		Portugal	Western	Magdalenian	18000-11000	shells			(Alvarez Fernandez 2006)
Lagar Velho I		Portugal	Western	Gravettian	24500, 20200+/-180, 21380+/-810	shells (2); teeth (4)-deer	6	burial- juvenile ~3	(Duarte et al. 1999, Formicola and Buzhilovo 2004, Vanhaeren and d'Errico 2005)
Lapa de Picareiro		Portugal	Western	Magdalenian	18000-11000	shells			(Alvarez Fernandez 2006)
Salemas	II-III	Portugal	Western	Solutrean	22000-18000	shells (9)	9		(Zilhão 1990)
Vale Boi		Portugal	Western	Solutrean	22000-18000	shells			(Alvarez Fernandez 2006)
Cioclovina		Romania	Central	Aurignacian	40000-28000	teeth- bear			(Vanhaeren and d'Errico 2006)
Climăuți II		Romania	Central	Gravettian	28000-22000	shells (2)	2		(Alvarez Fernandez 2006)

Ohaba-Ponor		Romania	Central	Aurignacian	40000-28000	teeth- fox			(Vanhaeren and d'Errico 2006)
Amvrosievka		Russia	Eastern	<i>Epigravettian</i>	22000-15000	shells (4)	4	base camp	(Krotova and Belan 1993, Soffer 1990)
Amvrosievka	bone bed	Russia	Eastern	<i>Epigravettian</i>	22000-15000	shells (1)	1	bone bed	(Soffer 1990)
Bryndzeny Cave I	layer III	Russia	Eastern	Szeletian	43000-35000	ivory (1)	1		(Kozłowski 1986)
Chulatovo II		Russia	Eastern	<i>Gravettian</i>	30000-20000	shells	4		(Soffer 1985)
Eliseevichi		Russia	Eastern	<i>Epigravettian</i>	20570+/-430, 17340+/-170, 15600+/-1350, 14470+/-100, 12970+/-140	shells (105); bone (24)	129		(Soffer 1985)
Gagarino		Russia	Eastern	<i>Gravettian</i>	28000-22000	teeth-fox			(Bhattacharya 1977)
Kapova Cave	level I	Russia	Eastern	<i>Epigravettian</i>	14680+/-150, 13390+/-300	stone (3)-serpentine	3	cave	(Dolukhanov 1997)
Khotylevo 11		Russia	Eastern	<i>Gravettian</i>	24950+/-400, 23660+/-270	bone (1)	1		(Soffer 1985)
Kostenki I	layer III	Russia	Eastern	<i>Gravettian</i>	22300+/-230, 21300+/-400, 22300+/-200, 22800+/-200, 23000+/-500, 23500+/-200, 24100+/-500	shells; teeth (1)- fox; ivory	>1	gathering?	(Iakovleva 2000, Vanhaeren and d'Errico 2006, Vishnyatsky and Nehoroshev 2004)
Kostenki I		Russia	Eastern	Aurignacian	40000-28000	teeth-fox; shells; ivory			(Vanhaeren and d'Errico 2006)
Kostenki VIII Telmanskaia		Russia	Eastern	<i>Gravettian</i>	27700+/-750	ivory			(Moreau 2003)
Kostenki XIV	layer III	Russia	Eastern	Aurignacian	32420+/-440/420	bone (4)- fox, bird shells (3) teeth	>7		(Alvarez Fernandez 2006, Sinitsyn 2003)
Kostenki XIX		Russia	Eastern	<i>Epigravettian</i>	20000-18000	shells (2)	2		(Soffer 1990)
Kostenki XV		Russia	Eastern	<i>Gravettian</i>	27000-24000, 21720+/-570	teeth- fox (150)	150	child burial	(Soffer 1985, Soffer 1997)
Kostenki XVII	II	Russia	Eastern	Spitsinskayan	36000	fossil coral; belemnite; teeth- fox (37); stone; shells	>50		(Vishnyatsky and Nehoroshev 2004, White 1993)
Molodova	IV	Russia	Eastern	<i>Epigravettian</i>	22000-11000	teeth-fox			(Bhattacharya 1977)

Molodova	VIII	Russia	Eastern	Gravettian	28000-22000	shells			(Bhattacharya 1977)
Muralovka		Russia	Eastern	<i>Aurignacian</i>	40000-28000	teeth- fox			(Vanhaeren and d'Errico 2006)
Pushkari I		Russia	Eastern	<i>Epigravettian</i>	16775+/-605	bone (1)	1	base camp	(Soffer 1985)
Semenovka 2		Russia	Eastern	Epigravettian	22000-11000	shells			(Alvarez Fernandez 2006)
Semenovka 3		Russia	Eastern	Epigravettian	22000-11000	shells			(Alvarez Fernandez 2006)
Sungir		Russia	Eastern	<i>Gravettian</i>	23830+/-220	ivory; belemnite	20	residential site, disturbed layer	(Pavlov and Indrelid 2000, Soffer 1997, Vishnyatsky and Nehoroshev 2004)
Sungir 1		Russia	Eastern	<i>Gravettian</i>	25500+/-200, 24 430+/-400	headdress, necklace, bracelets, pins, rings; bone ornaments (2); teeth- fox	2936	burial- male 55-65	(Formicola and Buzhilovo 2004, Soffer 1985, White 1995)
Sungir 3		Russia	Eastern	<i>Gravettian</i>	22500+/-600, 21800+/-1000	beaded clothes, headdress, bracelets, pins, rings; stone; bone; teeth- fox (100)	5274	burial- juvenile 7-9	(Formicola and Buzhilovo 2004, Soffer 1985, White 1995)
Sungir 2		Russia	Eastern	<i>Gravettian</i>	20540+/-120, 16200+/-400	beaded clothes, headdress, bracelets, pins, rings; stone; shells; teeth- fox	4903	burial- juvenile 12-13	(Formicola and Buzhilovo 2004, Soffer 1985, White 1995)
Suponevo		Russia	Eastern	<i>Gravettian</i>	30000-20000	bone beads, pins	16	living area	(Soffer 1985)
Talitsky		Russia	Eastern	<i>Gravettian</i>	30000-24000	beads			(Pavlov and Indrelid 2000)
Yudinovo		Russia	Eastern	<i>Epigravettian</i>	15000-14000, 15660+/-180, 13830+/-850, 13650+/-200	ivory; bone; shells (150)	>150		(Abramova 1993, Soffer 1985)
Achinskaia		Siberia	Eastern	<i>Epigravettian</i>	22000-16000	ivory (1)	1		(Vasil'ev 2000)
Afontova Gora II	lowest layer	Siberia	Eastern	<i>Epigravettian</i>	20900+/-300	teeth- fox, deer			(Derev'anko and Markin 1998c)
Buret'		Siberia	Eastern	<i>Gravettian</i>	~23000, 21190+/-100	stone (1)-serpentine	1		(Medvedev 1998a, Medvedev 1998b, Vasil'ev 2000)
Chernooz'or'ye	layer 1	Siberia	Eastern	<i>Epigravettian</i>	11000-10000	bone- pendants and diadems			(Derev'anko and Markin 1998b)

Denisova Cave	layer 9	Siberia	Eastern	<i>Aurignacian</i>	66000+/-16000, 50000+/-12000, 46000+/-2300	teeth- red deer, fox; bone ring		pits	(Derev'anko and Markin 1998a)
Dvuglazka	layer IV	Siberia	Eastern	<i>Epigravettian</i>	22000-16000	pendants		rock shelter	(Derev'anko and Markin 1998c, Vasil'ev 2000)
Kamenka	Complex A	Siberia	Eastern	<i>Gravettian</i>	35845+/-695, 31060+/-530, 30460+/-430, 26760+/-265	bone- mammoth bracelet, bird; stone			(Goebel 2004)
Kashtanka I	layer 1	Siberia	Eastern	<i>Gravettian</i>	24000-21000	ivory; antler			(Vasil'ev 2000)
Kokorevo		Siberia	Eastern	<i>Epigravettian</i>	13330+/-10 (earlier)	teeth			(Derev'anko and Markin 1998c)
Krasnyy Yar	Layer VII	Siberia	Eastern	<i>Epigravettian</i>	30000-19000, later than 19100+/-100	ostrich eggshell bead blanks (7); stone (3)	10	bead blanks in hearth	(Medvedev 1998b)
Krasnyy Yar	Layer VI	Siberia	Eastern	<i>Epigravettian</i>	19100+/-100	teeth (9)- reindeer, pendant (1)	10		(Medvedev 1998b)
Kurtak IV	Stratum 11	Siberia	Eastern	<i>Gravettian</i>	23000	ivory; bone			(Vasil'ev 2000)
Maloialomanskaia		Siberia	Eastern	<i>Gravettian</i>	33350+/-1145	teeth (1)-red deer	1	cave	(Goebel 2004)
Mal'ta		Siberia	Eastern	<i>Gravettian</i>	23000+/-500	ivory; bone- fish vertebrae; stone- nephrite, calcite, schistose; ivory waste		occupation site	(Medvedev 1998a, Medvedev 1998b, Vasil'ev 2000)
Mal'ta		Siberia	Eastern	<i>Gravettian</i>	23000+/-500	ivory; teeth	120	child(ren) burial (1-2)	(Medvedev 1998a, Medvedev 1998b, Vasil'ev 2000, White 2003)
Sabanikha		Siberia	Eastern	<i>Gravettian</i>	23000	stone			(Vasil'ev 2000)
Satanay (Gubskiy VII)		Siberia	Eastern	<i>Epigravettian</i>	22000-11000	teeth- horse		rock shelter	(Beliaeva 1997)
Shestakovo		Siberia	Eastern	<i>Gravettian</i>	23000	ornamental items?			(Vasil'ev 2000)
Sokhatino 4	layer 3	Siberia	Eastern	<i>Gravettian</i>	25000-22000, 26110+/-200	bone (~2)	>2		(Kirillov and Derev'anko 1998)
Sokhatino 4	layer 7	Siberia	Eastern	<i>Gravettian</i>	25000-22000	bone (~8)	>8		(Kirillov and Derev'anko 1998)
Stud'onor	layer 10-12	Siberia	Eastern	<i>Epigravettian</i>	12500+/-200, 12510+/-80, 12510+/-475	bone- 'uken'			(Goebel 2004)



Tarachikha		Siberia	Eastern	<i>Upper Palaeolithic</i>	<i>no date</i>	bone (1)	1		(Derev'anko and Markin 1998c)
Tolbaga		Siberia	Eastern	<i>Gravettian</i>	35000-25000	bone (2)	2		(Goebel 2004)
Ui 1	2	Siberia	Eastern	<i>Gravettian</i>	28000-22000	teeth			(Vasil'ev 1993)
Ui 2		Siberia	Eastern	<i>Epigravettian</i>	22000-11000	stone; bone			(Vasil'ev 1993)
Ushki' I	layer 6	Siberia	Eastern	<i>Epigravettian</i>	10860+/-400, 10760+/-100	stone (1)- steatite	1		(Vasil'evskiy 1998)
Ushki' I, V	layer 7	Siberia	Eastern	<i>Epigravettian</i>	13600+/-250	stone; amber; agamite		burial (?)	(Vasil'evskiy 1998)
Ust Kanskaia		Siberia	Eastern	<i>Gravettian</i>	28000-22000	bone (1); bone blank (1)	1	cave	(Goebel 2004, Rudenko, Wormington, and Chard 1961)
Ust 'Kova		Siberia	Eastern	<i>Gravettian</i>	34000-28000 or 24000	ivory and bone pendants, beads, rings; teeth			(Medvedev 1998b, Vasil'ev 2000)
Ust' Kova		Siberia	Eastern	<i>Epigravettian</i>	14270+/-100	ivory			(Larichev, Khol'ushkin, and Laricheva 1990)
Varvarina Gora		Siberia	Eastern	<i>Gravettian</i>	34900+/-780, 30600+/-500	stone (fr.) (1)	1		(Goebel 2004, Kirillov and Derev'anko 1998, Larichev, Khol'ushkin, and Laricheva 1990)
Voennyi Gospital		Siberia	Eastern	<i>Gravettian</i>	29700+/-500	ivory, bone, antler rings (10); teeth-red deer	>10		(Goebel 2004, Medvedev 1998b)
Abrerda(I')		Spain	Western	Solutrean	22000-18000	shells			(Alvarez Fernandez 2006)
Aitzbarte IV		Spain	Western	Solutrean	22000-18000	shells			(Alvarez Fernandez 2006)
Alkerdi		Spain	Western	Gravettian	28000-22000	shells			(Alvarez Fernandez 2006)
Altamira		Spain	Western	Magdalenian	18000-11000	shells			(Alvarez Fernandez 2006)
Amalda		Spain	Western	Gravettian	28000-22000	teeth; shells			(Straus 1992)
Amalda		Spain	Western	Solutrean	22000-18000	shells			(Alvarez Fernandez 2006)
Ambrossio		Spain	Western	Solutrean	22000-18000	shells			(Alvarez Fernandez 2006)

Arbreda (I')	I	Spain	Western	Aurignacian	37340+/-1000, 35480+/-820	shells (fr.) (8); ivory blanks	>8		(Maroto, Soler, and Fullola 1996, Vanhaeren and d'Errico 2006)
Arbreda (I')		Spain	Western	Chatelperronian	40000-30000	shells (8)	8		(Zilhão and d'Errico 1999)
Beneito		Spain	Western	Aurignacian	40000-28000	teeth- lynx; shells			(Vanhaeren and d'Errico 2006)
Bolinkoba		Spain	Western	Gravettian	28000-22000	shells			(Straus 1992)
Buxú (El)		Spain	Western	Solutrean	22000-18000	teeth (1)- cave bear; shells	1	with cave art	(Alvarez Fernandez 2006, Straus 1992)
Caldas (las)	8	Spain	Western	Solutrean	22000-18000	ivory (1); teeth- mammoth			(Alvarez Fernandez 2002b, Straus 1992)
Castillo (El)		Spain	Western	Chatelperronian	42000-39000	shells	2		(Alvarez Fernandez 2002a, Straus 1992)
Cau des Gages		Spain	Western	Solutrean	22000-18000	teeth; shells			(Alvarez Fernandez 2002a, Bhattacharya 1977, Weniger 1990)
Cendres (les)		Spain	Western	Magdalenian	18000-11000	shells			(Alvarez Fernandez 2006)
Cendres (les)		Spain	Western	Solutrean	22000-18000	shells			(Alvarez Fernandez 2006)
Cobalejos		Spain	Western	Aurignacian	40000-28000	teeth- fox, deer; shells antler			(Vanhaeren and d'Errico 2006)
Cueta de la Mina		Spain	Western	Aurignacian	40000-28000	shells			(Straus 1992)
Cueto de la Mina		Spain	Western	Solutrean	22000-18000	teeth- mammoth; shells			(Alvarez Fernandez 2006, Straus 1992)
Cueva Morin		Spain	Western	Aurignacian	40000-28000	teeth			(Vanhaeren and d'Errico 2006)
Cueva Morin		Spain	Western	Gravettian	28000-22000	shells			(Alvarez Fernandez 2006)
Ermittia		Spain	Western	Solutrean	22000-18000	shells			(Alvarez Fernandez 2006)
Foradada		Spain	Western	Aurignacian	40000-28000	shells; teeth- lynx			(Vanhaeren and d'Errico 2006)
Garma (la)		Spain	Western	Aurignacian	40000-28000	stone; bone			(Vanhaeren and d'Errico 2006)
Garma (la)	zone III	Spain	Western	Magdalenian	14000-13500	teeth (1)-horse; shells	>1	occupation	(Ontañón 2003)
Garma (la)		Spain	Western	Gravettian	21650+/-760	shells; bone (1)- ibex metacarpal	>1		(Peñalver et al. 2007)

Garma (la)		Spain	Western	Solutrean	22000-18000	shells			(Alvarez Fernandez 2006)
Horno (El)		Spain	Western	Magdalenian	18000-11000	shells			(Alvarez Fernandez 2006)
Juyo (el)		Spain	Western	Magdalenian	18000-11000	teeth-deer; shells			(Alvarez Fernandez 2006, Klein 1989)
Labeko Koba	VII, V	Spain	Western	Aurignacian	40000-28000	shells; amber (fr.)			(Arrizabalaga et al. 2003)
Llonín		Spain	Western	Magdalenian	18000-11000	ivory (1)	1		(Alvarez Fernandez 2002b)
Miron (El)		Spain	Western	Aurignacian	40000-28000	shells			(Straus 1992)
Miron (El)		Spain	Western	Solutrean	22000-18000	shells			(Alvarez Fernandez 2006)
Miron (El)		Spain	Western	Gravettian	28000-22000	stone; teeth-red deer; shells			(Straus 1992)
Mollet		Spain	Western	Aurignacian	33780+/-730	teeth- deer		cave	(Maroto, Soler, and Fullola 1996, Vanhaeren and d'Errico 2006, Zilhão and d'Errico 2000)
Nerja		Spain	Western	Magdalenian	18000-11000	shells			(Alvarez Fernandez 2006)
Otero		Spain	Western	Aurignacian	40000-28000	teeth- fox, deer, ibex			(Vanhaeren and d'Errico 2006)
Pendo (El)		Spain	Western	Aurignacian	40000-28000	teeth- deer; stone- steatite; ivory			(Straus 1992, Vanhaeren and d'Errico 2006, White 1995)
Pielago II (El)		Spain	Western	Magdalenian	18000-11000	shells			(Alvarez Fernandez 2006)
Rascaño Cave	level 2 (E)	Spain	Western	Magdalenian	18000-11000	teeth (9)	9		(Straus 1992)
Reclau Viver		Spain	Western	Aurignacian	40000+/-1400	teeth- deer; bone- ibex femur			(Vanhaeren and d'Errico 2006, Zilhão and d'Errico 2000)
Reclau Viver		Spain	Western	Solutrean	22000-18000	shells	2450		(Alvarez Fernandez 2002a)
Riera (la)		Spain	Western	Magdalenian	18000-11000	teeth (~1)- red deer; shells (~1)	~2		(Straus 1992)
Riera (la)	III-IV	Spain	Western	Solutrean	22000-18000	teeth (1)- red deer; bone (1); ivory (2); shells	2		(Alvarez Fernandez 2002b, Alvarez Fernandez 2006, Straus 1992)

Romaní (Abric)		Spain	Western	Aurignacian	40000-28000	teeth; shells; bone-fish vertebrae		rock shelter	(Maroto, Soler, and Fullola 1996, Straus 1996)
Ruso 1 (El)	V	Spain	Western	Aurignacian	40000-28000	shells (2)	2		(Alvarez Fernandez 2006)
Ruso 1 (El)		Spain	Western	Solutrean	22000-18000	shells			(Alvarez Fernandez 2006)
Tito Bustillo		Spain	Western	Magdalenian	16000-14500	shells (8); teeth- goat, red deer; antler; bone (4)- horse hyoid	>8	living area	(Alvarez Fernandez 2002a, Behrmann et al. 2002)
Viña (la)		Spain	Western	Aurignacian	40000-28000	shells			(Straus 1992)
Viña (la)		Spain	Western	Magdalenian	18000-11000	bone- horse hyoid			(Alvarez Fernandez 2002a)
Hollenberg		Switzerland	Central	Magdalenian	18000-11000	teeth (1)	1		(Sauter 1976)
Kesslerloch		Switzerland	Central	Magdalenian	18000-11000	antler (1); ivory; amber; teeth; shells	1		(Bhattacharya 1977, Sauter 1976)
Kohlerhöhle		Switzerland	Central	Magdalenian	18000-11000	teeth- roe deer(1), reindeer (2); shells (1)	>4		(Alvarez Fernandez 2001, Alvarez Fernandez 2002a)
Rosenhalde		Switzerland	Central	Magdalenian	18000-11000	ivory (1)	1		(d'Errico and Cacho 1994)
Gontsy		Ukraine	Eastern	Epigravettian	22000-11000	bone-bear; teeth-wolf (1)	>1	occupation	(Pidoplichko 1998)
Mezhirich		Ukraine	Eastern	Epigravettian	19280+/-600, 19100+/-500, 18470+/-550, 18020+/-600, 17855+/-950, 15245+/-1080, 14700+/-500, 14530+/-300, 14320+/-270, 14300+/-300	bone; teeth- bison (16), bear (1); ivory; shells	28	winter base camp	(Jochim 2002, Pidoplichko 1998, Soffer 1985)
Mezin		Ukraine	Eastern	Gravettian	29700+/-800, 29100+/-700, 27500+/-800, 21600+/-2200	ivory beads (44) and bracelets (5); bone; shells (600+)	>644	living area	(Kozłowski 1986, Pidoplichko 1998, Soffer 1985)
Siouren		Ukraine	Eastern	Aurignacian	40000-28000	shells; teeth- deer, beaver			(Vanhaeren and d'Errico 2006)

## Appendix B: Transitional and Dateless Sites

SITE NAME	LAYER	COUNTRY	REGION	TIME PERIOD	TIME (years)	DETAILS	TOTAL NUMBER	CONTEXT	AUTHOR
Cauna de Belvis		France	Western	Chatelperronian	40000-30000	shells			(d'Errico et al. 1998)
Châtelperron		France	Western	Chatelperronian	40000-30000	teeth			(d'Errico et al. 1998)
Fées (Grotte des)	B	France	Western	Chatelperronian	40000-30000	teeth (2)- fox (1), deer (1)	2		(Allsworth-Jones 1986, Zilhão et al. 2006)
Renne (Grotte de)	X-VIII	France	Western	Chatelperronian	33000-32000	teeth- wolf, fox, Bovid, bear, reindeer, marmot, rhino, hyena, horse; shells; bone-bird, reindeer; stone- calcaire; ivory; belemnite	36		(d'Errico et al. 1998, Leroi-Gourhan, Brézillon, and Schmider 1976, White 2002, Zilhão et al. 2006)
Roc de Combe		France	Western	Chatelperronian	40000-30000	teeth			(d'Errico et al. 1998)
Roche-au-Loup		France	Western	Chatelperronian	40000-30000	teeth; ivory rings			(d'Errico et al. 1998)
Roche-du-Quinçay		France	Western	Chatelperronian	40000-30000	teeth- wolf (1)			(d'Errico et al. 1998, Zilhão and d'Errico 1999)
Arbreda (I')		Spain	Western	Chatelperronian	40000-30000	shells (8)			(Zilhão and d'Errico 1999)
Castillo (El)		Spain	Western	Chatelperronian	42000-39000	shells	2		(Alvarez Fernandez 2002a, Straus 1992)
Kostenki 17	II	Russia	Eastern	Spitsinskayan	36000	fossil coral; belemnite; teeth- fox (37); stone; shells	~50		(Vishnyatsky and Nehoroshev 2004, White 1993)
Bryndzeny Cave I	layer III	Russia	Eastern	Szeletian	43000-35000	ivory (1)	1		(Kozłowski 1986)
Castelcivita		Italy	Western	Uluzzian	32470+/-650, 33220+/-780	shells (1)	1		(d'Errico et al. 1998, Mussi 2001)

Cavallo	EIII-I, D	Italy	Western	Uluzzian	35000-30000	shells		cave	(d'Errico et al. 1998, Mussi 2001)
Riparo Mochi	I	Italy	Western	Uluzzian	35000-30000	shells			(Bhattacharya 1977)
Csákvár		Hungary	Central	Jankovichian/Szeletian	43000-35000	ivory arm bands (5); teeth (2)- red deer	7		(Allsworth-Jones 1986)
Klisoura Cave	V	Greece	Central	Uluzzian	40200	shells		cave	(Koumouzelis et al. 2001a, Koumouzelis et al. 2001b)
Gwardzilas Klde		Georgia	Eastern	Upper Palaeolithic	<i>No date</i>	bone			(Meshveliani, Bar-Yosef, and Belfer-Cohen 2004, Nioradze and Otte 2000)
Tarachikha		Siberia	Eastern	<i>Upper Palaeolithic</i>	<i>no date</i>	bone (1)	1		Derev'anko and Markin 1998

## Appendix C: Aurignacian Sites

SITE NAME	LAYER	COUNTRY	REGION	TIME (years)	DETAILS	TOTAL NUMBER	CONTEXT	AUTHOR
Krems		Austria	Central	40000-28000	shells; stone			(Vanhaeren and d'Errico 2006)
Krems-Hundsteig		Austria	Central	40000-28000	shells (66)	>66		(Alvarez Fernandez 2006, Taborin 2000a, Vanhaeren and d'Errico 2006)
Langmannersdorf		Austria	Central	40000-28000	shells			(Vanhaeren and d'Errico 2006)
Senftenberg		Austria	Central	40000-28000	shells			(Vanhaeren and d'Errico 2006)
Willendorf	II-IV	Austria	Central	40000-28000	shells		open air site complex	(Bhattacharya 1977, Scheer 2000, Vanhaeren and d'Errico 2006)
Goyet		Belgium	Central	40000-28000	teeth- bear, fox, deer, horse, wolf; bone- horse; ivory; antler			(Vanhaeren and d'Errico 2006)
Marche-les-Dames		Belgium	Central	40000-28000	ivory working			(Moreau 2003)
Pont-a-Lesse	couche 3	Belgium	Central	40000-28000	rings (1.5) (remnants of ivory working)	1.5		(Moreau 2003)
Prince		Belgium	Central	40000-28000	teeth- deer; ivory			(Vanhaeren and d'Errico 2006)
Princesse (Grotte de la)		Belgium	Central	40000-28000	teeth- deer; ivory; antler			(Vanhaeren and d'Errico 2006)
Spy		Belgium	Central	40000-28000	shells (2); ivory; stone (18); teeth- fox, deer, wolf, boar; bone- bird	>20	cave	(Moreau 2003, Vanhaeren and d'Errico 2006)
Trou Magrite		Belgium	Central	40000-28000	teeth- fox, deer; shells; ivory			(Moreau 2003, Vanhaeren and d'Errico 2006)
Bacho Kiro		Bulgaria	Eastern	43000	teeth (2)	2		(Gamble 1999, White 1993)
Šandalja	G-E	Croatia	Eastern	22660+/-460, 23540+/-180, 27800+/-800, 25340+/-170, 26970+/-632	teeth (4)- red deer (2), Bovid (1), badger	4		(Karavanić 2003, Vanhaeren and d'Errico 2006)
Mladeč I		Czech Republic	Central	40000-28000	teeth (20)- wolf, bear, beaver, horse, moose; bone- moose, reindeer	>20		(Riel-Salvatore and Clark 2001, Svoboda 2004, Vanhaeren and d'Errico 2006, White 1995)
Balauzerie		France	Western	40000-28000	shells; teeth- deer	>2		(Vanhaeren and d'Errico 2006)

Blanchard (Abri)		France	Western	34000-32000	shells; teeth; ivory; urchin; bone	>30		(Vanhaeren and d'Errico 2006, White 1997, White 2004)
Caminade Est		France	Western	37200+/-1500, 35400+/-1100, 34140+/-990	shells			(Vanhaeren and d'Errico 2006, White In Press, Zilhão and d'Errico 2000)
Canecaude 1		France	Western	40000-28000	teeth- bear	1		(Vanhaeren and d'Errico 2006)
Castanet (Abri)		France	Western	34000-32000	ivory; stone- talc; teeth- hyena, fox, Bovid, deer; shells	>30		(Vanhaeren and d'Errico 2006, White 1997, White 2004)
Cellier (Abri)		France	Western	40000-28000	shells; teeth-wolf; ivory	<10		(White 1989)
Chevre (la)		France	Western	40000-28000	shells; bone- bird			(Vanhaeren and d'Errico 2006)
Combe		France	Western	40000-28000	teeth- human, deer; shells			(Vanhaeren and d'Errico 2006, White 2003)
Combe Capelle		France	Western	40000-28000	urchin			(Vanhaeren and d'Errico 2006)
Combette		France	Western	40000-28000	shells			(Vanhaeren and d'Errico 2006)
Cottés		France	Western	40000-28000	teeth			(Bhattacharya 1977, Gamble 1999)
Ferrassie (la)	F	France	Western	40000-28000	shells; teeth- deer, Bovid; urchin; bone- bird; ivory; antler; ammonite			(Bhattacharya 1977, Vanhaeren and d'Errico 2006)
Festons		France	Western	40000-28000	shells; urchin; ammonite			(Vanhaeren and d'Errico 2006)
Figuier		France	Western	40000-28000	shells			(Vanhaeren and d'Errico 2006)
Flageolet I (le)		France	Western	34300+/-1100, 33800+/-1800, 32040+/-850	teeth- red deer (2), fox; shells (10); ivory	>12		(Vanhaeren and d'Errico 2006, White 1989, Zilhão and d'Errico 2000)
Fours (Grotte des)		France	Western	40000-28000	bone- bird			(Vanhaeren and d'Errico 2006)
Gatzarria		France	Western	40000-28000	teeth- fox, deer, ibex, horse; ivory; bone- bird, fish vertebrae; stone; antler			(Vanhaeren and d'Errico 2006, White 2006)



Hyènes (Grotte des)		France	Western	30600+/-200, 33600+/-240	teeth (31)- fox (19), red deer (4), deer (3), lion, wolf, human (1); shells (12); ivory (1); stone (44)- calcite (2), talc (10), chlorite (32); bone (2), bracelets (fr.) (2)	>89		(Gamble 1999, Vanhaeren and d'Errico 2006, White 1996, White In Press)
Isturitz	4c and 4d	France	Western	34630+/-560, 36550+/-610	shells (+15); stone- calcite/talc; teeth- horse, hyena, wolf, bear, fox, deer, Bovid, horse, human (1); bone- reindeer; amber	>16		(Taborin 2000a, Taborin 2000b, Vanhaeren and d'Errico 2006, White In Press)
Isturitz	III	France	Western	40000-28000	shells (6); teeth	6		(Bahn 1983, Bhattacharya 1977)
Isturitz	S III	France	Western	40000-28000	shells (73)	>73		(Bahn 1983)
Laouza		France	Western	40000-28000	shells			(Roudil 1974, Vanhaeren and d'Errico 2006)
Lartet		France	Western	40000-28000	shells			(Vanhaeren and d'Errico 2006)
Pages		France	Western	40000-28000	teeth- wolf, fox			(Vanhaeren and d'Errico 2006)
Pasquet		France	Western	40000-28000	shells			(Vanhaeren and d'Errico 2006)
Patary		France	Western	40000-28000	teeth- bear			(Vanhaeren and d'Errico 2006)
Pataud (Abri)	level 14 (C')	France	Western	33300+/-760, 34250+/-675, 33330+/-410	shells (+1); bone- ibex, reindeer, fox; teeth- lion, fox, Bovid, wolf; ivory	>1		(Bricker and David 1984, David 1985, Movius jr. 1975, Movius jr. 1977, Vanhaeren and d'Errico 2006)
Pêcheurs (les)		France	Western	40000-28000	teeth- deer; shells			(Vanhaeren and d'Errico 2006)
Peyrony (Abri)		France	Western	40000-28000	teeth- deer, fox; shells			(Vanhaeren and d'Errico 2006)
Piage (le)		France	Western	40000-28000	teeth- fox, shark, ibex, Bovid, deer			(Vanhaeren and d'Errico 2006)
Poisson (Abri)		France	Western	40000-28000	shells			(Vanhaeren and d'Errico 2006)
Pont-Neuf		France	Western	40000-28000	shells			(Vanhaeren and d'Errico 2006)
Quina (la)		France	Western	40000-28000	teeth- fox (1), hyena, Bovid, horse, wolf; shells	>1		(Vanhaeren and d'Errico 2006, White 1989)
Régismont		France	Western	40000-28000	shells			(Vanhaeren and d'Errico 2006, White 2002)
Renne (Grotte de)	VII	France	Western	30800+/-250, 31800+/-1240	teeth- bear; shells (1), stone (1)- stalactite; ivory (5+)	>7		(d'Errico et al. 1998, Vanhaeren and d'Errico 2006, White 2002, Zilhão and d'Errico 1999)

Roc de Combe		France	Western	34800+/-1200, 33400+/-1100	teeth- lynx, fox, Bovid; bone- fish vertebrae			(Vanhaeren and d'Errico 2006, Zilhão and d'Errico 2000)
Roche fort-sur-Neumon		France	Western	40000-28000	ivory working			(Moreau 2003)
Rochette		France	Western	40000-28000	teeth- lion, fox; shells; bone			(Vanhaeren and d'Errico 2006)
Rois		France	Western	40000-28000	teeth- hyena, wolf, fox, reindeer, deer, human, Bovid, horse; shells; bone; urchin; antler			(Vanhaeren and d'Errico 2006)
Rothschild		France	Western	40000-28000	shells; stone; ammonite; teeth- deer			(Vanhaeren and d'Errico 2006)
Saint-Cesaire		France	Western	40000-28000	teeth- deer, Bovid; shells			(Vanhaeren and d'Errico 2006)
Salpêtrière (la)		France	Western	40000-28000	shells			(Vanhaeren and d'Errico 2006)
Solutré		France	Western	34000-29000	ivory			(Pettitt 2005, Vanhaeren and d'Errico 2006)
Souquette (Abri la)		France	Western	40000-28000	ivory; stone- talc, soapstone; shells; teeth- fox, hyena, deer, Bovid; ammonite; antler; urchin	580		(Gamble 1999, Vanhaeren and d'Errico 2006, White 1989)
Sous-le-Roc		France	Western	40000-28000	shells			(Vanhaeren and d'Errico 2006)
Sous-les-vignes		France	Western	40000-28000	teeth- deer, fox; shells			(Vanhaeren and d'Errico 2006)
St. Jean de Verges		France	Western	40000-28000	shells (60); ivory beads	>60		(Bahn 1983, White 1997, White 2004, White 2006)
Tarté		France	Western	40000-28000	teeth- human			(White In Press)
Tournal (le)		France	Western	40000-28000	shells; teeth			(Alvarez Fernandez 2006, White 2006)
Trilobite (Grotte de)	level 13	France	Western	40000-28000	bone (1)-deer phalange	1		(Leroi-Gourhan, Brézillon, and Schmider 1976)
Trou de la Mere Clochette		France	Western	40000-28000	teeth- bear; ivory			(Moreau 2003, Vanhaeren and d'Errico 2006)
Tuc d'Audoubert		France	Western	40000-28000	antler			(Vanhaeren and d'Errico 2006)
Tuto de Camalhot		France	Western	40000-28000	shells; teeth- fox, deer, Bovid; stone; bone			(Clottes 1976, Vanhaeren and d'Errico 2006)
Vachons		France	Western	40000-28000	teeth- wolf, fox, deer; shells			(Vanhaeren and d'Errico 2006)

Bockstein Hohle		Germany	Central	40000-28000	teeth- bear			(Vanhaeren and d'Errico 2006)
Bockstein-Törle	I	Germany	Central	40000-28000	stone- schist ring; teeth- Bovid; ivory			(Moreau 2003, Vanhaeren and d'Errico 2006)
Breitenbach		Germany	Central	40000-28000	teeth- fox			(Vanhaeren and d'Errico 2006)
Geißenklösterle	level I	Germany	Central	33000	teeth- deer, fox (2); antler; ivory	>2	cave	(Richter et al. 2000, Scheer 2000, Vanhaeren and d'Errico 2006, Zilhão and d'Errico 2000)
Hohle Fels		Germany	Central	40000-28000	teeth- deer, ibex; ivory			(Vanhaeren and d'Errico 2006)
Hohlenstein Stadel		Germany	Central	40000-28000	teeth- fox; ivory			(Hahn 1995, Vanhaeren and d'Errico 2006)
Lommersum		Germany	Central	40000-28000	ivory			(Hahn 1995, Vanhaeren and d'Errico 2006)
Magdalenahöhle		Germany	Central	40000-28000	ivory			(Moreau 2003)
Sirgenstein		Germany	Central	40000-28000	ivory	1		(Vanhaeren and d'Errico 2006)
Vogelherd		Germany	Central	34000-32000	teeth- deer; bone; ivory (2)	>2		(Hahn 1995, Vanhaeren and d'Errico 2006)
Wildscheuer		Germany	Central	40000-28000	teeth- wolf, horse; stone			(Vanhaeren and d'Errico 2006)
Wildscheuer III		Germany	Central	40000-28000	ivory rings, beads		cave	(Moreau 2003)
Klisoura	IIIb	Greece	Central	40000-28000	shells; teeth (1)	>1	cave	(Koumouzelis et al. 2001a, Koumouzelis et al. 2001b, Vanhaeren and d'Errico 2006)
Istállosko		Hungary	Central	44300+/-190, 39700+/-90	antler; ivory; bone (1)- phalange	>1		(Bhattacharya 1977, Churchill and Smith 2000, Vanhaeren and d'Errico 2006)
Bombrini	III	Italy	Western	40000-28000	shells			(Onoradini 2004, Vanhaeren and d'Errico 2006)
Cala		Italy	Western	40000-28000	shells			(Vanhaeren and d'Errico 2006)
Castelcivita		Italy	Western	40000-28000	shells			(Vanhaeren and d'Errico 2006)
Cavallo		Italy	Western	40000-28000	shells			(Vanhaeren and d'Errico 2006)
Fanciulli		Italy	Western	40000-28000	shells; teeth- deer			(Vanhaeren and d'Errico 2006)
Fossellone		Italy	Western	40000-28000	antler; stone- steatite; teeth- fox, red deer			(Vanhaeren and d'Errico 2006)
Riparo di Fumane	A3-A2	Italy	Western	40000-28000	shells (95); teeth (10)- deer	96		(Mussi 2001, Vanhaeren and d'Errico 2006)
Riparo Mochi	F/II	Italy	Western	40000-28000	shells; bone; stone			(Bhattacharya 1977, Mussi 2001, Vanhaeren and d'Errico 2006)

Riparo Mochi	G/II	Italy	Western	37000+/-1300, 32280+/-580, 33400+/-580, 35700+/-850	teeth (1); stone and bone (6); shells	>7		(Bhattacharya 1977, Onoratini 2004, White 2006)
Cioclovina		Romania	Central	40000-28000	teeth- bear			(Vanhaeren and d'Errico 2006)
Ohaba-Ponor		Romania	Central	40000-28000	teeth- fox			(Vanhaeren and d'Errico 2006)
Kostenki I		Russia	Eastern	40000-28000	teeth-fox; shells; ivory			(Vanhaeren and d'Errico 2006)
Kostenki XIV	layer III	Russia	Eastern	32420+/-440/420	bone (4)- fox, bird; shells (3); teeth	>7		(Alvarez Fernandez 2006, Sinitsyn 2003)
Muralovka		Russia	Eastern	40000-28000	teeth- fox			(Vanhaeren and d'Errico 2006)
Denisova Cave	layer 9	Siberia	Eastern	66000+/-16000, 50000+/-12000, 46000+/-2300	teeth- red deer, fox; bone ring		pits	(Derev'anko and Markin 1998a)
Arbreda (I')	I	Spain	Western	37340+/-1000, 35480+/-820	shells (fr.) (8); ivory blanks	>8		(Maroto, Soler, and Fullola 1996, Vanhaeren and d'Errico 2006)
Beneito		Spain	Western	40000-28000	teeth- lynx; shells			(Vanhaeren and d'Errico 2006)
Cobalejos		Spain	Western	40000-28000	teeth- fox, deer; shells; antler			(Vanhaeren and d'Errico 2006)
Cueta de la Mina		Spain	Western	40000-28000	shells			(Straus 1992)
Cueva Morin		Spain	Western	40000-28000	teeth			(Vanhaeren and d'Errico 2006)
Foradada		Spain	Western	40000-28000	shells; teeth- lynx			(Vanhaeren and d'Errico 2006)
Garma (la)		Spain	Western	40000-28000	stone; bone			(Vanhaeren and d'Errico 2006)
Labeko Koba	VII, V	Spain	Western	40000-28000	shells; amber (fr.)			(Arrizabalaga et al. 2003)
Miron (El)		Spain	Western	40000-28000	shells			(Straus 1992)
Mollet		Spain	Western	33780+/-730	teeth- deer		cave	(Maroto, Soler, and Fullola 1996, Vanhaeren and d'Errico 2006, Zilhão and d'Errico 2000)
Otero		Spain	Western	40000-28000	teeth- fox, deer, ibex			(Vanhaeren and d'Errico 2006)
Pendo (El)		Spain	Western	40000-28000	teeth- deer; stone- steatite; ivory			(Straus 1992, Vanhaeren and d'Errico 2006, White 1995)
Reclau Viver		Spain	Western	40000+/-1400	teeth- deer; bone- ibex femur			(Vanhaeren and d'Errico 2006, Zilhão and d'Errico 2000)

Romaní (Abric)		Spain	Western	40000-28000	teeth; shells; bone- fish vertebrae		rock shelter	(Maroto, Soler, and Fullola 1996, Straus 1996)
Ruso 1 (El)	V	Spain	Western	40000-28000	shells (2)	2		(Alvarez Fernandez 2006)
Viña (la)		Spain	Western	40000-28000	shells			(Straus 1992)
Siouren		Ukraine	Eastern	40000-28000	shells; teeth- deer, beaver			(Vanhaeren and d'Errico 2006)

## Appendix D: Gravettian Sites

SITE NAME	LAYER	COUNTRY	REGION	TIME (years)	DETAILS	TOTAL NUMBER	CONTEXT	AUTHOR
Krems-Hundsteig		Austria	Central	28000-22000	shells			(Alvarez Fernandez 2006)
Willendorf	V-IX	Austria	Central	28000-22000	shells; teeth			(Bhattacharya 1977)
Fonds-de Fôret		Belgium	Central	28000-22000	ivory; bone-bird			(Moreau 2003)
Goyet		Belgium	Central	28000-22000	shells (7); ivory	>7		(Moreau 2003)
Maisieres-Canal		Belgium	Central	28000-22000	shells (15); bone-bird	>15	open air	(Moreau 2003)
Spy		Belgium	Central	28000-22000	shells (5); ivory	>5		(Moreau 2003)
Trou Magrite		Belgium	Central	28000-22000	ivory; bone- bird			(Moreau 2003)
Aveline's Hole		Britain	Western	28000-22000	shells; teeth- pig (2), cervine (1)	>3	burial	(Campbell 1977a, Campbell 1977b)
Kent's Cavern		Britain	Western	28000-22000	teeth (1)- badger canine	1		(Campbell 1977a, Campbell 1977b)
Paviland		Britain	Western	18400 or 25840+/-280	shells; ivory bracelets (2); teeth- wolf (5), reindeer (2), bear? (1)	>11	burial	(Campbell 1977a, Campbell 1977b, Moreau 2003, Roebroeks 2000)
Pin Hole		Britain	Western	28000-22000	shell (1)	1		(Campbell 1977a, Campbell 1977b)
Brno II		Czech Republic	Central	23690+/-200	shells (600+); stone rings (2)-marl slate; teeth- horse	>602	burial- male 31-40	(Oliva 2000a, Riel-Salvatore and Clark 2001, Svoboda, Ložek, and Vlček 1996)
Dolní Věstonice II		Czech Republic	Central	30000-20000	teeth (4)- fox	4	near DVXIII, DVXIV, DVXV	(Svoboda 2006a, Svoboda 2006b, Svoboda, Ložek, and Vlček 1996)
Dolní Věstonice III	DVI	Czech Republic	Central	28000-22000	teeth (10)-fox	10	burial- female 38-42	(Riel-Salvatore and Clark 2001)
Dolní Věstonice VIII		Czech Republic	Central	28000-22000	teeth (1)- human	1		(Svoboda 2006a, Svoboda 2006b)
Dolní Věstonice XIII	DVII	Czech Republic	Central	28000-22000	teeth (20); ivory	>20	burial- male 17-23	(Riel-Salvatore and Clark 2001, Svoboda 2006a, Svoboda 2006b)
Dolní Věstonice XIV	DVII	Czech Republic	Central	28000-22000	teeth (3)- wolf; ivory	>3	burial- male 17-23	(Riel-Salvatore and Clark 2001, Svoboda 2006a, Svoboda 2006b)

Dolní Věstonice XV	DVII	Czech Republic	Central	28000-22000	teeth (4)- fox	4	burial- female 17-23	(Riel-Salvatore and Clark 2001, Svoboda 2006a, Svoboda 2006b)
Dolní Věstonice XVI	DVII	Czech Republic	Central	28000-22000	teeth (4); shells	>4	burial- male 40-50	(Gamble 1999, Riel-Salvatore and Clark 2001, Svoboda 2006a, Svoboda 2006b)
Pavlov 2		Czech Republic	Central	28000-22000	shells (1)	1		(Alvarez Fernandez 2006)
Pavlov 25	PI	Czech Republic	Central	2800-22000	teeth (7)- human (1); shells (3)	10		(Svoboda 2006a, Svoboda 2006b)
Pavlov I		Czech Republic	Central	27000-25000	ivory diadems; stone-siltstone		mega-site	(Svoboda et al. 2000, Svoboda, Ložek, and Vlček 1996)
Předmostí 22		Czech Republic	Central	28000-22000	teeth- hare (1)	1	burial- juvenile 9-10	(Riel-Salvatore and Clark 2001)
Blot		France	Western	28000-22000	bone- bird (1)	1		(Delporte 1974)
Brassempouy		France	Western	28000-22000	ivory (1)	>1		(Taborin 2000a)
Combe Capelle		France	Western	28000-22000	shells; ivory; teeth- fox canines		burials - 40-50 year old male	(Riel-Salvatore and Clark 2001)
Cro-Magnon		France	Western	28000-22000	ivory (3); shells (~300)	>303	burials- 50 year old male, 20-30 year old female, 30-40 year old male, infant	(Alvarez Fernandez 2006, Moreau 2003)
Crouzade	couche 10	France	Western	28000-22000	teeth (6)-deer (2)	6		(Sacchi 1976)
Crouzade	couche 2	France	Western	28000-22000	teeth; shells			(Sacchi 1976)
Ferrassie (la)		France	Western	28000-22000	shells			(Alvarez Fernandez 2006)
Flageolet I (le)		France	Western	28000-22000	shells			(Alvarez Fernandez 2006)
Gargas (grotte de)	6	France	Western	28000-22000	teeth (2)	2		(Clottes 1976)
Gravette (la)		France	Western	28000-22000	shells			(Alvarez Fernandez 2006)
Isturitz	IV	France	Western	28000-22000	shells (65)	65		(Bahn 1983)
Isturitz	V	France	Western	28000-22000	teeth; shells; amber			(Bhattacharya 1977)
Isturitz	VI	France	Western	28000-22000	teeth; shells			(Bhattacharya 1977)

Lespugue-Rideaux		France	Western	28000-22000	ivory (1); shells	>1		(Alvarez Fernandez 2006, Taborin 2000a)
Masnaigre		France	Western	28000-22000	ivory	1		(Taborin 2000a)
Pair-non-Pair		France	Western	28000-22000	ivory (1)	1		(Taborin 2000a)
Pataud (Abri)	eboulis 3-4 (H)	France	Western	after 26000	shells (3)	3		(Bricker and David 1984, David 1985, Movius jr. 1975, Movius jr. 1977)
Pataud (Abri)	eboulis 4-5	France	Western	after 26000	shells (1)	1		(Bricker and David 1984, David 1985, Movius jr. 1975, Movius jr. 1977)
Pataud (Abri)	4a	France	Western	after 26000	shells (1); teeth (9)-fox, badger, Bos, deer	>10		(Bricker and David 1984, David 1985, Movius jr. 1975, Movius jr. 1977)
Pataud (Abri)	level 4 (I)-Mid	France	Western	27060+/-370	shells (23); shells (29); bone tube (14); teeth (7)-badger, bear, fox	73		(Bricker and David 1984, David 1985, Movius jr. 1975, Movius jr. 1977)
Pataud (Abri)	level 3 (G)	France	Western	23010+/-170, 21540+/-160	shells (10); stone (1); teeth (5)- fox, deer reindeer	16		(Bricker and David 1984, David 1985, Movius jr. 1975, Movius jr. 1977)
Pêcheurs (les)		France	Western	28000-22000	shells			(Alvarez Fernandez 2006)
Renne (Grotte de)	VI-IV	France	Western	20150+/-500	shells			(d'Errico et al. 1998, Taborin 2000a)
Trilobite (Grotte de)		France	Western	28000-22000	shells			(Taborin 2000a)
Tuto de Camalhot		France	Western	28000-22000	ivory			(Taborin 2000a)
Sazurbliia		Georgia	Eastern	28000-22000	teeth; bone; stone			(Nioradze and Otte 2000)
Bockstein-Törle	VI	Germany	Central	28000-22000	ivory; stone- steatite (2)	>2		(Weniger 1990)
Brillenhöhle	VII	Germany	Central	28000-22000	teeth (5)-fox; shells (31); bone tubes (4); ivory (34); bone (2); stone (1)	77		(Bhattacharya 1977, Hahn 1995, Scheer 1995, Scheer 2000, Weniger 1990)
Geißenklösterle	Ia/IIb	Germany	Central	23625+/-290	teeth (7)- deer (1); shells (1); bone tubes (2); ammonites (3); ivory (56); bone- fish vertebra (1)	60		(Scheer 1995, Scheer 2000, Weniger 1990)



Hohle Fels		Germany	Central	29000	teeth (5); shells (2); bone tube (1); ivory tube (1); ammonites (2); ivory (20)	31		(Hahn 1995, Scheer 2000)
Ilsehöhle	layer 7	Germany	Central	28000-22000	bone-reindeer phalanges			(Bhattacharya 1977)
Klausenhöhle		Germany	Central	28000-22000	ivory (2)	2		(Hahn 1995)
Koblenz-Metternich		Germany	Central	28000-22000	gagat	1		(Weniger 1990)
Magdalenahöhle		Germany	Central	25540+/-720	teeth-deer, wolf; ivory bracelets (3 fr)	>3		(Bosinski 2000, Hahn 1995, Weniger 1990)
Mainz-Linsenberg		Germany	Central	28000-22000	shells (17); ivory; gagat	>17		(Bosinski 2000, Weniger 1990)
Obere Klaus		Germany	Central	28000-22000	ivory			(Scheer 2000)
Sprendlingen		Germany	Central	28000-22000	shells (9)	9		(Bosinski 2000)
Torle VI		Germany	Central	28000-22000	ivory (2)	2		(Hahn 1995)
Weinberghöhlen (Mauer)		Germany	Central	28000-22000	ivory (15);teeth-fox (6), wolf, reindeer, bear	>21		(Bhattacharya 1977, Hahn 1995, Scheer 2000, Weniger 1990)
Kastritsa		Greece	Central	28000-22000	shells			(Alvarez Fernandez 2006)
Mount Henye		Hungary	Central	28700+/-300	stone			(Bhattacharya 1977)
Agnano		Italy	Western	24410+/-320	headdress, bracelets		20-30 year old female burial with infant	(Mussi 1990, Riel-Salvatore and Clark 2001)
Arene Candide	I	Italy	Western	23440+/-190	ivory (4); teeth-deer; shells (100+)	>104	burial- male	(Mussi 1990, Mussi 2000, Pettitt et al. 2003)
Balzi Rossi/Grimaldi Caves		Italy	Western	32600+/-3000 (22000-11000)	figurines (6-9)-stoner- steatite, chlorite; ivory	>6	some figurines may date to Epigravettian	(Bisson, Tisnerat, and White 1996, Mussi 1990, Mussi, Cinq-Mars, and Bolduc 2000)
Balzo della Torre I		Italy	Western	28000-22000	headdress, necklace, bracelet, armband; teeth-bear (1), deer; shells	>1	burial- male 25-30	(Bhattacharya 1977, Mussi 2001, Riel-Salvatore and Clark 2001)
Balzo della Torre II		Italy	Western	28000-22000	necklace, armband, "kneecap"; shells; teeth-deer		burial- male 16-30	(Bhattacharya 1977, Mussi 2001, Riel-Salvatore and Clark 2001)

Barma Grande		Italy	Western	28000-22000	shell; teeth; bone		burials- 4 individuals	(Bhattacharya 1977)
Broion (grotta del)		Italy	Western	25000	teeth (6)- deer	6	cave	(Mussi 1990)
Casa della Ossa	P	Italy	Western	28000-22000	shells			(Mussi 1990)
Caviglione I		Italy	Western	28000-22000	headdress, "kneecap"		burial- male 16-30	(Riel-Salvatore and Clark 2001)
Enfants (Grotte des)		Italy	Western	28000-22000	shells; bracelets, head decorations		burials- 3 individuals	(Bisson, Tisnerat, and White 1996)
Fanciulli I		Italy	Western	28000-22000	headdress		burial- male 16-30	(Mussi 1990)
Fanciulli II		Italy	Western	28000-22000	bracelets		burial- female 31-40	(Mussi 2001)
Ostumi I		Italy	Western	28000-22000	shells; teeth (1)- horse	>1	burial- female	(Taborin 2000a)
Paglicci		Italy	Western	24700-23000	teeth (30)-deer	30	burial- 12-13 year old	(Mussi 2001)
Paglicci II		Italy	Western	28000-22000	headdress, necklace, bracelet, "anklet"		burial- male 11-15	(Mussi 2001, Riel-Salvatore and Clark 2001)
Paglicci III		Italy	Western	28000-22000	"diadem"		burial- female 18-20	(Mussi 2001, Riel-Salvatore and Clark 2001)
Venera Parabitta II		Italy	Western	28000-22000	headdress		burial- female >25	(Riel-Salvatore and Clark 2001)
Mamutova Cave		Poland	Central	30000-20000	ivory			(Weniger 1990)
Lagar Velho I		Portugal	Western	24500, 20200+/-180, 21380+/-810	shells (2); teeth (4)- deer	6	burial- juvenile ~3	(Duarte et al. 1999, Formicola and Buzhilovo 2004, Vanhaeren and d'Errico 2005)
Climăuți II		Romania	Central	28000-22000	shells (2)	2		(Alvarez Fernandez 2006)
Chulatovo II		Russia	Eastern	30000-20000	shells	4		(Soffer 1985)
Gagarino		Russia	Eastern	28000-22000	teeth-fox			(Bhattacharya 1977)
Khotylevo 11		Russia	Eastern	24950+/-400, 23660+/-270	bone or ivory (1)	1		(Soffer 1985)

Kostenki I	layer III	Russia	Eastern	22300+/-230, 21300+/-400, 22300+/-200, 22800+/-200, 23000+/-500, 23500+/-200, 24100+/-500	shells; teeth (1)- fox; ivory	>1	gathering?	(Iakovleva 2000, Vanhaeren and d'Errico 2006, Vishnyatsky and Nehoroshev 2004)
Kostenki VIII Telmanskaia		Russia	Eastern	27700+/-750	ivory			(Moreau 2003)
Kostenki XV		Russia	Eastern	27000-24000, 21720+/-570	teeth- fox (150)	150	child burial	(Soffer 1985, Soffer 1997)
Molodova	VIII	Russia	Eastern	28000-22000	shells			(Bhattacharya 1977)
Sungir		Russia	Eastern	23830+/-220	ivory; belemnite	20	residential site, disturbed layer	(Iakovleva 2000, Pavlov and Indrelid 2000, Soffer 1997, Vishnyatsky and Nehoroshev 2004)
Sungir 2		Russia	Eastern	25500+/-200, 24 430+/-400	headdress, necklace, bracelets, pins, rings; bone ornaments (2); teeth- fox	2936	burial- male 55-65	(Formicola and Buzhilovo 2004, Soffer 1985, White 1995)
Sungir 3		Russia	Eastern	22500+/-600, 21800+/-1000	beaded clothes, headdress, bracelets, pins, rings; stone; bone; teeth- fox (100)	5274	burial- juvenile 7-9	(Formicola and Buzhilovo 2004, Soffer 1985, White 1995)
Sungir 4		Russia	Eastern	20540+/-120, 16200+/-400	beaded clothes, headdress, bracelets, pins, rings; stone; shells; teeth- fox	4903	burial- juvenile 12- 13	(Formicola and Buzhilovo 2004, Soffer 1985, White 1995)
Suponevo		Russia	Eastern	30000-20000	bone beads, pins	16	living area	(Soffer 1985)
Talitsky		Russia	Eastern	30000-24000	beads			(Pavlov and Indrelid 2000)
Buret'		Siberia	Eastern	~23000, 21190+/-100	stone (1)-serpentine	1		(Medvedev 1998a, Medvedev 1998b, Vasil'ev 2000)
Kamenka	Complex A	Siberia	Eastern	35845+/-695, 31060+/-530, 30460+/-430, 26760+/-265	bone- mammoth bracelet, bird; stone			(Goebel 2004)
Kashtanka I	layer 1	Siberia	Eastern	24000-21000	ivory; antler			(Vasil'ev 2000)

Kurtak IV	Stratum 11	Siberia	Eastern	23000	ivory; bone			(Vasil'ev 2000)
Maloialomanskaia		Siberia	Eastern	33350+/-1145	teeth (1)-red deer	1	cave	(Goebel 2004)
Mal'ta		Siberia	Eastern	23000+/-500	ivory; bone- fish vertebrae; stone-nephrite, calcite, schistose; ivory waste		occupation site	(Medvedev 1998a, Medvedev 1998b, Vasil'ev 2000)
Mal'ta		Siberia	Eastern	23000+/-500	ivory; teeth	120	child(ren) burial (1-2)	(Medvedev 1998a, Medvedev 1998b, Vasil'ev 2000, White 2003)
Sabanikha		Siberia	Eastern	23000	stone			(Vasil'ev 2000)
Shestakovo		Siberia	Eastern	23000	ornamental items?			(Vasil'ev 2000)
Sokhatino 4	layer 3	Siberia	Eastern	25000-22000, 26110+/-200	bone (~2)	>2		(Kirillov and Derev'anko 1998)
Sokhatino 4	layer 7	Siberia	Eastern	25000-22000	bone (~8)	>8		(Kirillov and Derev'anko 1998)
Tolbaga		Siberia	Eastern	35000-25000	bone (2)	2		(Goebel 2004)
Ui 1	2	Siberia	Eastern	28000-22000	teeth			(Vasil'ev 1993)
Ust Kanskaia		Siberia	Eastern	28000-22000	bone (1); bone blank (1)	1	cave	(Goebel 2004, Rudenko, Wormington, and Chard 1961)
Ust 'Kova		Siberia	Eastern	34000-28000 or 24000	ivory and bone pendants, beads, rings; teeth			(Medvedev 1998b, Vasil'ev 2000)
Varvarina Gora		Siberia	Eastern	34900+/-780, 30600+/-500	stone (fr.) (1)	1		(Goebel 2004, Kirillov and Derev'anko 1998, Larichev, Khol'ushkin, and Laricheva 1990)
Voennyi Gospital		Siberia	Eastern	29700+/-500	ivory, bone, antler rings (10); teeth-red deer	>10		(Goebel 2004, Medvedev 1998b)
Alkerdi		Spain	Western	28000-22000	shells			(Alvarez Fernandez 2006)
Amalda		Spain	Western	28000-22000	teeth; shells			(Straus 1992)
Bolinkoba		Spain	Western	28000-22000	shells			(Straus 1992)
Cueva Morin		Spain	Western	28000-22000	shells			(Alvarez Fernandez 2006)
Garma (Ia)		Spain	Western	21650+/-760	shells; bone (1)- ibex metacarpal	>1		(Peñalver et al. 2007)
Miron (El)		Spain	Western	28000-22000	stone; teeth-red deer; shells			(Straus 1992)

Mezin		Ukraine	Eastern	29700+/-800, 29100+/-700, 27500+/-800, 21600+/-2200	ivory beads (44) and bracelets (5); bone; shells (600+)	>644	living area	(Kozłowski 1986, Pidoplichko 1998, Soffer 1985)
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## Appendix E: Solutrean Sites

SITE NAME	LAYER	COUNTRY	REGION	TIME (years)	DETAILS	TOTAL NUMBER	CONT EXT	AUTHOR
Badegoule		France	Western	22000-18000	shells			(Alvarez Fernandez 2006)
Chevre (la)		France	Western	22000-18000	shells			(Alvarez Fernandez 2006)
Combe-Saunière		France	Western	22000-18000	bone; ivory; shells; teeth- fox, deer, bison			(Rigaud 1980)
Embuilla	couche 1	France	Western	22000-18000	teeth (1); shells (2?)	~3		(Sacchi 1976)
Embuilla	sector C	France	Western	22000-18000	teeth (1); shell (1)	2		(Sacchi 1976)
Fourneau du Diabolo		France	Western	22000-18000	shells			(Alvarez Fernandez 2006)
Grande Grotte de Bize		France	Western	22000-18000	shells (1); teeth (1)	2		(Sacchi 1976)
Jeans Blanc (les)		France	Western	22000-18000	shells			(Alvarez Fernandez 2006)
Labattut		France	Western	28000-18000	teeth; shells		burial-child-1 year old	(White 2003)
Lacave		France	Western	22000-18000	shells			(Alvarez Fernandez 2006)
Lachaud		France	Western	22000-18000	shells			(Alvarez Fernandez 2006)
Pataud (Abri)	level 5 (K)-Low	France	Western	21780+/-215	shells (22); teeth (20); bone tube (3)	45		(Bricker and David 1984, David 1985, Movius jr. 1975, Movius jr. 1977)
Petite Grotte de Bize		France	Western	22000-18000	shells (4)	4		(Sacchi 1976)
Placard (le)		France	Western	22000-18000	shells			(Alvarez Fernandez 2006)
Roc de Sers		France	Western	19000-17000	teeth- fox; shells			(Alvarez Fernandez 2006, Pettitt 2005)
Salpetrière (la)		France	Western	22000-18000	shells			(Alvarez Fernandez 2006)
Solutré		France	Western	19590+/-280	shells			(Alvarez Fernandez 2006, Pettitt 2005, Thévenot 1978)
Caldeirão (gruta do)		Portugal	Western	26000+/-320	bone- red deer phalanges (12); shells	12		(Duarte et al. 1999, Zilhão 1990)
Salemas	II-III	Portugal	Western	22000-18000	shells (9)	9		(Zilhão 1990)
Vale Boi		Portugal	Western	22000-18000	shells			(Alvarez Fernandez 2006)
Abrerda(l')		Spain	Western	22000-18000	shells			(Alvarez Fernandez 2006)

Aitzbarte IV		Spain	Western	22000-18000	shells			(Alvarez Fernandez 2006)
Amalda		Spain	Western	22000-18000	shells			(Alvarez Fernandez 2006)
Ambrossio		Spain	Western	22000-18000	shells			(Alvarez Fernandez 2006)
Buxú (El)		Spain	Western	22000-18000	teeth (1)- cave bear; shells	1	with cave art	(Alvarez Fernandez 2006, Straus 1992)
Caldas (las)	8	Spain	Western	22000-18000	ivory (1); teeth- mammoth			(Alvarez Fernandez 2002b, Straus 1992)
Cau des Gages		Spain	Western	22000-18000	teeth; shells			(Alvarez Fernandez 2002a, Bhattacharya 1977, Weniger 1990)
Cendres (les)		Spain	Western	22000-18000	shells			(Alvarez Fernandez 2006)
Cueto de la Mina		Spain	Western	22000-18000	teeth- mammoth; shells			(Alvarez Fernandez 2006, Straus 1992)
Ermittia		Spain	Western	22000-18000	shells			(Alvarez Fernandez 2006)
Garma (la)		Spain	Western	22000-18000	shells			(Alvarez Fernandez 2006)
Miron (El)		Spain	Western	22000-18000	shells			(Alvarez Fernandez 2006)
Reclau Viver		Spain	Western	22000-18000	shells	2450		(Alvarez Fernandez 2002a)
Riera (la)	III-IV	Spain	Western	22000-18000	teeth (1)- red deer; bone (1); ivory (2); shells	2		(Alvarez Fernandez 2002b, Alvarez Fernandez 2006, Straus 1992)
Ruso 1 (El)		Spain	Western	22000-18000	shells			(Alvarez Fernandez 2006)

## Appendix F: Epigravettian Sites

SITE NAME	LAYER	COUNTRY	REGION	TIME (years)	DETAILS	TOTAL NUMBER	CONTEXT	AUTHOR
Aggsbach		Austria	Central	22000-11000	shells			(Taborin 2000a)
Grubgraben		Austria	Central	22000-11000	shells			(Taborin 2000a)
Sakažhia- Sagwardazile		Georgia	Eastern	11700+/-80	bone (2)	2		(Nioradze and Otte 2000)
Kastritsa		Greece	Central	22000-11000	shells			(Alvarez Fernandez 2006)
Arene Candide		Italy	Western	11000-10500	teeth- deer; shells		multiple burials (20)	(Formicola et al. 2005)
Cala		Italy	Western	22000-11000	teeth-deer (1)	1		(Mussi 1990)
Enfants (Grotte des)		Italy	Western	18000-11000	shells; teeth-deer		burials	(Alvarez Fernandez 2001, Bhattacharya 1977)
Fanciulli	F	Italy	Western	22000-11000	teeth-deer			(Mussi 1990)
Riparo Mochi	V	Italy	Western	12000-9000	shells (100)	100		(Alvarez Fernandez 2002a, Bhattacharya 1977, Mussi 2000)
Romanelli	A	Italy	Western	11930+/-520	shells; teeth-deer			(Bhattacharya 1977)
Amvrosievka		Russia	Eastern	22000-15000	shells (4)	4	base camp	(Krotova and Belan 1993, Soffer 1990)
Amvrosievka	bone bed	Russia	Eastern	22000-15000	shells (1)	1	bone bed	(Soffer 1990)
Eliseevichi		Russia	Eastern	20570+/-430, 17340+/-170, 15600+/-1350, 14470+/-100, 12970+/-140	shells (105); bone (24)	129		(Soffer 1985)
Kapova Cave	level I	Russia	Eastern	14680+/-150, 13390+/-300	stone (3)-serpentine	3	cave	(Dolukhanov 1997)
Kostenki XIX		Russia	Eastern	20000-18000	shells (2)	2		(Soffer 1990)
Molodova	IV	Russia	Eastern	22000-11000	teeth-fox			(Bhattacharya 1977)
Pushkari I		Russia	Eastern	16775+/-605	bone (1)	1	base camp	(Soffer 1985)
Semenovka 2		Russia	Eastern	22000-11000	shells			(Alvarez Fernandez 2006)
Semenovka 3		Russia	Eastern	22000-11000	shells			(Alvarez Fernandez 2006)



Yudinovo		Russia	Eastern	15000-14000, 15660+/-180, 13830+/-850, 13650+/-200	ivory; bone; shells (150)	>150		(Abramova 1993, Soffer 1985)
Achinskaia		Siberia	Eastern	22000-16000	ivory (1)	1		(Vasil'ev 2000)
Afontova Gora II	lowest layer	Siberia	Eastern	20900+/-300	teeth- fox, deer			(Derev'anko and Markin 1998c)
Chernooz'or'ye	layer 1	Siberia	Eastern	11000-10000	bone- pendants and diadems			(Derev'anko and Markin 1998b)
Dvuglazka	layer IV	Siberia	Eastern	22000-16000	pendants		rock shelter	(Derev'anko and Markin 1998c, Vasil'ev 2000)
Kokorevo		Siberia	Eastern	13330+/-10 (earlier)	teeth			(Derev'anko and Markin 1998c)
Krasnyy Yar	Layer VII	Siberia	Eastern	30000-19000, later than 19100+/-100	ostrich eggshell bead blanks (7); stone (3)	10	bead blanks in hearth	(Medvedev 1998b)
Krasnyy Yar	Layer VI	Siberia	Eastern	19100+/-100	teeth (9)- reindeer; pendant (1)	10		(Medvedev 1998b)
Satanay (Gubskiy VII)		Siberia	Eastern	22000-11000	teeth- horse		rock shelter	(Beliaeva 1997)
Stud'onor	layer 10-12	Siberia	Eastern	12500+/-200, 12510+/-80, 12510+/-475	bone- 'uken'			(Goebel 2004)
Ui 2		Siberia	Eastern	22000-11000	stone; bone			(Vasil'ev 1993)
Ushki' I	layer 6	Siberia	Eastern	10860+/-400, 10760+/-100	stone (1)- steatite	1		(Vasil'evskiy 1998)
Ushki' I, V	layer 7	Siberia	Eastern	13600+/-250	stone; amber; agamite		burial (?)	(Vasil'evskiy 1998)
Ust'Kova		Siberia	Eastern	14270+/-100	ivory			(Larichev, Khol'ushkin, and Laricheva 1990)
Gontsy		Ukraine	Eastern	22000-11000	bone-bear; teeth-wolf (1)	>1	occupation	(Pidoplichko 1998)

Mezhirich		Ukraine	Eastern	19280+/-600, 19100+/-500, 18470+/-550, 18020+/-600, 17855+/-950, 15245+/-1080, 14700+/-500, 14530+/-300, 14320+/-270, 14300+/-300	bone; teeth- bison (16), bear (1); amber; ivory; shells	28	winter base camp	(Jochim 2002, Pidoplichko 1998, Soffer 1985)
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## Appendix G: Magdalenian

SITE NAME	LAYER	COUNTRY	REGION	TIME (years)	DETAILS	TOTAL NUMBER	CONTEXT	AUTHOR
Chaleux (Grotte de)		Belgium	Central	18000-11000	ivory; stone			(Moreau 2003)
Goyet	third cave	Belgium	Central	18000-11000	teeth (62)- bovid (21), horse (4), wolf (1); bone/antler (1); shells (80+)	>89		(Moreau 2003)
Děravá		Bohemia	Central	18000-11000	shells			(Lázničková-Gonyševová 2002)
Hostim		Bohemia	Central	12420+/-420	stone- ochre			(Lázničková-Gonyševová 2002)
Aveline's Hole		Britain	Western	18000-11000	shell (60+)	>60		(Campbell 1977a, Campbell 1977b)
Church Hole		Britain	Western	18000-11000	bone	1		(Campbell 1977a, Campbell 1977b)
Gough's Cave		Britain	Western	18000-11000	teeth (2)-Vulpes; shell (1)	3		(Campbell 1977a, Campbell 1977b)
Kendrick's Cavern		Britain	Western	18000-11000	teeth (4+)- bear, deer, bison	>4	burial- 3 adults, 1 child (possibly grave goods)	(Campbell 1977a, Campbell 1977b)
Pin Hole		Britain	Western	18000-11000	shell (1); mother-of-pearl? (1)	<2		(Campbell 1977a, Campbell 1977b)
Adlerova		Czech Republic	Central	18000-11000	teeth; shells			(Lázničková-Gonyševová 2002)
Býči Skůla		Czech Republic	Central	18000-11000	stone			(Lázničková-Gonyševová 2002)
Křižova		Czech Republic	Central	15000-10000	bone			(Lázničková-Gonyševová 2002)
Kůlna		Czech Republic	Central	18000-11000	shells			(Lázničková-Gonyševová 2002)
Ochzká		Czech Republic	Central	18000-11000	stone-jet	1		(Lázničková-Gonyševová 2002)

Pekárna Cave		Czech Republic	Central	12940+/-250, 12670+/-80	stone- schist, lignite; bone; ivory			(Lázničková-Gonyševová 2002)
Ryřířská		Czech Republic	Central	18000-11000	bone/antler	1		(Lázničková-Gonyševová 2002)
Angles sone Anglins		France	Western	18000-11000	shells (7)	7		(Alvarez Fernandez 2001)
Aven des Iboussières		France	Western	10210+/-80	shells (1000+); teeth (196)- deer	>1196	multiple burials- 4 adults, 3 juveniles, 1 infant	(d'Errico and Vanhaeren 2002, Vanhaeren and d'Errico 2005)
Badegoule		France	Western	18000-11000	shells (13); teeth (20)- horse (6), Bovine (1+), wolf (1+), fox (1), reindeer	>33		(Hemingway 1980)
Bay		France	Western	18000-11000	bone- horse (1)	1		(Delporte 1974)
Belvis		France	Western	18000-11000	shells (fr.)			(Sacchi 1976)
Birac III		France	Western	18000-11000	pendants (1)	1		(Hemingway 1980)
Bois Laiterie		France	Western	18000-11000	teeth; shells			(Straus 2006)
Bois-Ragot		France	Western	18000-11000	teeth- red deer			(Chollet, Reigner, and Boutin 1974)
Campalou		France	Western	12800+/-300	teeth- red deer (1), reindeer, marmot; shells	1		(Combier 1977)
Canecaude I	couche II	France	Western	18000-11000	shells (11); teeth; stone; bone	>11		(Alvarez Fernandez 2001, Alvarez Fernandez 2002a)
Cap Blanc		France	Western	18000-11000	shells			(Alvarez Fernandez 2006)
Cassegros (grotte de)		France	Western	18000-11000	shells (3); teeth (3)- cervid (1); ivory	>7		(Hemingway 1980, Rigaud 1978)
Champveyres		France	Western	18000-11000	amber			(Alvarez Fernandez 2001)

Chinchon		France	Western	18000-11000	shells (1)	>1		(Alvarez Fernandez 2001)
Combe Cullier		France	Western	18000-11000	shells			(Alvarez Fernandez 2006)
Créancey	couche 3	France	Western	18000-11000	teeth (1); ivory (1)	2		(Thévenot 1982)
Crouzade		France	Western	18000-11000	bone (1)-reindeer	1		(Sacchi 1976)
Crouzade		France	Western	18000-11000	shells (2); teeth (8)	>10		(Sacchi 1976)
Durif a Enval (l'abri)		France	Western	18000-11000	antler; bone; teeth-bear (1)	>6		(Bonifay 1978, Bonifay 1980, Mazieré 1982)
Duruthy		France	Western	12230, 11890, 11560, 12550, 9200, 9350	teeth (17)- bear; ivory; stone- calcaire	>17	seasonal-fall?	(Arambourou 1976a, Bahn 1983, Bordes 1974, Straus 2006)
Enlene (Morts)		France	Western	18000-11000	shells (2); teeth (23); bone (7); amber (2); stone- lignite (9)	41		(Alvarez Fernandez 2001, Clottes 1981)
Ermitage	III	France	Western	18000-11000	shells (1)	1		(Desbrosse 1976a)
Espéche		France	Western	13370, 13060, 11420, 11110	shells (~1)	>1		(Bahn 1983)
Espeluges		France	Western	11220, 9800, 11110	shells (15); ammonite; stone- steatite	>15		(Alvarez Fernandez 2001, Bahn 1983)
Etiolles		France	Western	18000-11000	shells (1)	1		(Alvarez Fernandez 2001)
Farincourt Cave III		France	Western	18000-11000	shells (1)	1		(Hemingway 1980)
Fritsch (Abri)		France	Western	18000-11000	shells; teeth; pendants (4)	>4		(Hemingway 1980)
Garenne		France	Western	18000-11000	bone- reindeer (1)	1		(Allain 1978)

Gaudry		France	Western	18000-11000	ammonite			(Vandermeersch 1976)
Gazel		France	Western	18000-11000	teeth (11); shells (15); antler (2); stone (2?)	~31		(Sacchi 1976)
Gazel	couche 7	France	Western	18000-11000	shells (3); bone (2); teeth (2)- fox, reindeer; stone (2?)			(Sacchi 1976)
Gourdan		France	Western	18000-11000	shells			(Bahn 1983)
Grande Baume (grotte de la)		France	Western	18000-11000	teeth- wolf (1)	1		(Desbrosse 1976b)
Grande Grotte de Bize		France	Western	18000-11000	shells (2); teeth (1)	3		(Sacchi 1976)
Grappin's Cave		France	Western	15320+/-320	teeth (6)- wolf (1), deer (2), bovid (1), fox (2); bone- bovid vertebrae, deer; ivory; stone- lignite (1)	>7		(Cupillard and Welte 2006)
Isturitz	II	France	Western	18000-11000	shells (132); bone; teeth- seal	>132		(Bahn 1983)
Isturitz	I/II	France	Western	18000-11000	shells (14)		"craft-centre", "meeting place"	(Bahn 1983)
Jean-Blancs (les)		France	Western	18000-11000	shells (1); teeth (1)- bovid	2	rock shelter	(Hemingway 1980, Taborin 1977)
Labastide (grotte de)		France	Western	12310	bone (18)- horse hyoid; teeth	>18		(Bahn 1983, Clottes 1976)
Lachaud	C3	France	Western	18000-11000	shells (1)	1		(Alvarez Fernandez 2001, Alvarez Fernandez 2006)
Lartet		France	Western	18000-11000	shells (1); teeth	>1		(Alvarez Fernandez 2001, Vandermeersch 1978)
Lascaux		France	Western	18000-11000	stone (1); possible beads (7)	~7		(Taborin 1979)

Laugerie Haute-Est		France	Western	18000-11000	shells (1); teeth (6)- Bovine, wolf, cervid, fox, ibex; ivory	>8		(Alvarez Fernandez 2001, Hemingway 1980)
Laugerie-Basse		France	Western	18000-11000	shells (20); teeth- red deer; bone beads (2); bone pendant (1)	>23	male burial, seasonal occupation	(Alvarez Fernandez 2001, Rigaud 1976, Taborin 1974, Vanhaeren and d'Errico 2005)
Lestruque		France	Western	18000-11000	shells			(Alvarez Fernandez 2006)
Longue Roche		France	Western	18000-11000	shells (3)	3		(Alvarez Fernandez 2001)
Lourdes		France	Western	18000-11000	teeth- horse	1		(Bahn 1983)
Madeleine		France	Western	18000-11000	shells (39)	33	living area	(Vanhaeren et al. 2004)
Madeleine I		France	Western	10190+/-100	teeth- deer, fox, bone; shells	1564+	3-7 year old child burial	(Taborin 1974, Vanhaeren and d'Errico 2005, Vanhaeren et al. 2004)
Mairie (grotte de la)		France	Western	18000-11000	fossil coral			(White 2003)
Marche (la)		France	Western	18000-11000	shells (1)	1		(Alvarez Fernandez 2001)
Marsoulas		France	Western	18000-11000	stone (1)	1		(Clottes 1976)
Mas d'Azil		France	Western	11690, 11450, 11250	shells (27)	27		(Alvarez Fernandez 2001, Alvarez Fernandez 2002a, Bahn 1983)
Montgauder		France	Western	18000-11000	shells (1)	1		(Alvarez Fernandez 2001)
Moreau		France	Western	18000-11000	stone- schist (1)	1		(Combier 1977)
Passagere et Colomb	couche 2	France	Western	18000-11000	shells (3)	3		(Alvarez Fernandez 2001, Desbrosse 1976a)
Pataud (Abri)	level 2 (E)	France	Western	~21000	shells (3)	3		(Bricker and David 1984, David 1985, Movius jr. 1975, Movius jr. 1977)
Pêcheurs (les)		France	Western	18000-11000	shells (1)	1		(Alvarez Fernandez 2001, Alvarez Fernandez 2002a)
Pegourie		France	Western	18000-11000	teeth (9)- cervid	9		(Hemingway 1980)

Petite Grotte de Bize		France	Western	18000-11000	teeth (1)	1		(Sacchi 1976)
Petite Grotte de Bize	couche 5	France	Western	18000-11000	teeth (1); bone (1)	2		(Sacchi 1976)
Petite Grotte de Bize	couche 3	France	Western	18000-11000	shells (2)	2		(Sacchi 1976)
Pierre Châtel		France	Western	18000-11000	bone- horse hyoid; teeth- reindeer; shells (3); ivory working; amber	>3		(Alvarez Fernandez 2001, Alvarez Fernandez 2002a, Desbrosse 1976a)
Piscine		France	Western	18000-11000	shells			(Vandermeersch 1978)
Placard (le)	C4	France	Western	18000-11000	shells (6); teeth	>6		(Alvarez Fernandez 2001, Taborin 1974, Taborin 1977)
Poron des Cuéches		France	Western	18000-11000	teeth- wolf (1)	1		(Hemingway 1980, Leroi-Gourhan, Brézillon, and Schmider 1976)
Portel		France	Western	18000-11000	stone (1)	1		(Clottes 1976)
Pouzet		France	Western	18000-11000	shells (1)	1		(Alvarez Fernandez 2001)
Pugieu (abri du)		France	Western	18000-11000	shells; teeth- red deer			(Alvarez Fernandez 2001, Desbrosse 1976a)
Rainaud 12		France	Western	18000-11000	shells (1)	1		(Alvarez Fernandez 2001)
Rhodes II		France	Western	18000-11000	shells			(Alvarez Fernandez 2006)
Roc de Marcamps		France	Western	18000-11000	shells			(Alvarez Fernandez 2006)
Roc du Doulet		France	Western	18000-11000	shells (3)	3		(Alvarez Fernandez 2001)
Rocher de la Caille		France	Western	12210+/-480	stone- chlorite-schist (1)	1		(Combiér 1977, Pettitt 2005)
Rocher de la Peine (grotte)		France	Western	18000-11000	shells; teeth (4)-bear, lion	>4		(White 2003)



Romaines		France	Western	18000-11000	shells (5+); teeth-deer reindeer (16), ibex (4), marmot (2); ivory	>27		(Alvarez Fernandez 2001, Combier 1977)
Rond-du-Barry (grotte du)		France	Western	15400+/-400, 12380+/-280	shells (5); teeth (1)-reindeer; ivory pendant (1)	>7		(Delporte 1974, Hemingway 1980)
Saint Thibaud-le-Couz		France	Western	18000-11000	shells (24?)	~24		(Taborin 1995)
Sainte Eulalia	couche II+B	France	Western	18000-11000	teeth			(Lorblanchet 1976)
Sainte Eulalia	couche III_C	France	Western	18000-11000	stone			(Lorblanchet 1976)
Salpêtrière (la)		France	Western	18000-11000	shells (1)	1		(Alvarez Fernandez 2001)
Solutré		France	Western	12580	teeth; shells			(Pettitt 2005, Thévenot 1978)
Souci (le)		France	Western	18000-11000	shells			(Alvarez Fernandez 2006)
Souquette (abri la)		France	Western	18000-11000	teeth; shells			(Delage 1938)
St. Germain-la-Rivière		France	Western	18000-11000	teeth- reindeer; stone- steatite; urchin; bone- reindeer metacarpal	24	living area	(Alvarez Fernandez 2001, Vanhaeren and d'Errico 2005)
St. Germain-la-Rivière		France	Western	15780+/-200	teeth (71)- deer; shells (4); stone- steatite (1)	~75	burial- female	(Vanhaeren and d'Errico 2005)
St. Michel d'Arudy (grotte de)		France	Western	18000-11000	teeth- horse; bone (1)- horse hyoid	>1		(Arambourou 1976b, Bahn 1983, White 2003)
Tournal (le)	IVA	France	Western	18000-11000	shells (4)	4		(Alvarez Fernandez 2001, Alvarez Fernandez 2002a)
Tournal (le)	IVC	France	Western	18000-11000	shells (3)	3		(Alvarez Fernandez 2001, Alvarez Fernandez 2002a)
Trilobite (Grotte de)	couche V	France	Western	18000-11000	teeth- wolf (1); shells; stone	>1		(Schmider et al. 1995)
Vache (la)		France	Western	10900, 10590, 9700	shells (3-5)	<5		(Alvarez Fernandez 2001, Alvarez Fernandez 2002a, Bahn 1983)
Zouzette (grotte de la)	grotte 3	France	Western	18000-11000	shells (1)	1		(Desbrosse 1976b)

Andernach-Martinsberg 2	pit 12, KII	Germany	Central	15500	teeth- roe deer(2), reindeer (74), bovid (3); shells (48)	127		(Alvarez Fernandez 2001, Alvarez Fernandez 2002a, Alvarez Fernandez 2006)
Andernach-Martinsberg 2	surface	Germany	Central	18000-11000	shells (8); teeth	>8		(Alvarez Fernandez 2001, Alvarez Fernandez 2002a)
Brillenhöhle		Germany	Central	18000-11000	ivory (13)	13		(Hahn 1995)
Felsställe		Germany	Central	18000-11000	ammonite; shells; gagat			(Weniger 1990)
Gnirshöhle		Germany	Central	18000-11000	shells (2); gagat	2		(Alvarez Fernandez 2001, Weniger 1990)
Gönnersdorf		Germany	Central	15500	shells (27); teeth-deer (6), fox (100); amber; gagat	133		(Alvarez Fernandez 2001, Alvarez Fernandez 2002a, Bhattacharya 1977, Hahn 1995, Weniger 1990)
Hohle Fels		Germany	Central	18000-11000	teeth- roe deer(2); shells (3); ivory; gagat	>5		(Alvarez Fernandez 2001, Weniger 1990)
Kaufertsberg		Germany	Central	18000-11000	teeth; shells; gagat			(Weniger 1990)
Kesslerloch-5		Germany	Central	18000-11000	teeth- roe deer(5)	5		(Alvarez Fernandez 2001)
Kiriegrotte		Germany	Central	18000-11000	teeth; ivory; shells; stone- steatite; gagat			(Weniger 1990)
Munzingen		Germany	Central	18000-11000	shells (2); teeth; gagat	>2	open air	(Alvarez Fernandez 2002a, Bhattacharya 1977, Weniger 1990)
Napoleonskopf		Germany	Central	18000-11000	shells; gagat/lignite			(Weniger 1990)
Neuchâtel-Monruz		Germany	Central	18000-11000	teeth- reindeer			(Alvarez Fernandez 2001)
Petersfels		Germany	Central	18000-11000	teeth- reindeer (5000), bovid (1), ibex (5), marmot (1); shells (1), ammonite; stone-steatite; amber; bone- reindeer phalanges; gagat	5008		(Alvarez Fernandez 2001, Alvarez Fernandez 2002a, Bhattacharya 1977, Hahn 1995, Weniger 1990)
Rislisberg		Germany	Central	18000-11000	teeth- reindeer			(Alvarez Fernandez 2001)

Teufelsbrücke		Germany	Central	18000-11000	teeth, gagat			(Weniger 1990)
Teufelsküchen		Germany	Central	18000-11000	shells			(Bhattacharya 1977)
Weinberghöhlen (Mauer)		Germany	Central	18000-11000	teeth (25)	25		(Hawkes 1974)
Weisbaden-Igstadt		Germany	Central	18000-11000	shells (fr.) (1)	1	open air	(Alvarez Fernandez 2001)
Caldeirão (gruta do)		Portugal	Western	18000-11000	shells			(Alvarez Fernandez 2006)
Lapa de Picareiro		Portugal	Western	18000-11000	shells			(Alvarez Fernandez 2006)
Altamira		Spain	Western	18000-11000	shells			(Alvarez Fernandez 2006)
Cendres (les)		Spain	Western	18000-11000	shells			(Alvarez Fernandez 2006)
Garma (la)	zone III	Spain	Western	14000-13500	teeth (1)-horse; shells	>1	occupation	(Ontañón 2003)
Horno (El)		Spain	Western	18000-11000	shells			(Alvarez Fernandez 2006)
Juyo (el)		Spain	Western	18000-11000	teeth-deer; shells			(Alvarez Fernandez 2006, Klein 1989)
Llonín		Spain	Western	18000-11000	ivory (1)	1		(Alvarez Fernandez 2002b)
Nerja		Spain	Western	18000-11000	shells			(Alvarez Fernandez 2006)
Piélago II (El)		Spain	Western	18000-11000	shells			(Alvarez Fernandez 2006)
Rascaño Cave	level 2 (E)	Spain	Western	18000-11000	teeth (9)	9		(Straus 1992)
Riera (la)		Spain	Western	18000-11000	teeth (~1)- red deer; shells (~1)	~2		(Straus 1992)
Tito Bustillo		Spain	Western	16000-14500	shells (8); teeth- goat, red deer; antler; bone (4)- horse hyoid	>8	living area	(Alvarez Fernandez 2002a, Behrmann et al. 2002)
Viña (la)		Spain	Western	18000-11000	bone- horse hyoid			(Alvarez Fernandez 2002a)

Hollenberg		Switzerland	Central	18000-11000	teeth (1)	1		(Sauter 1976)
Kesslerloch		Switzerland	Central	18000-11000	antler (1); ivory; amber; teeth; shells	1		(Bhattacharya 1977, Sauter 1976)
Kohlerhöhle		Switzerland	Central	18000-11000	teeth- roe deer(1), reindeer (2); shells (1)	>4		(Alvarez Fernandez 2001, Alvarez Fernandez 2002a)
Rosenhalde		Switzerland	Central	18000-11000	ivory (1)	1		(d'Errico and Cacho 1994)