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Stones and Bones: Do the Lithic Assemblages at the Middle-Upper Paleolithic Boundary Support the Strict Replacement Hypothesis for Modern Human Origins?

In 1829-30, P.C. Schmerling discovered the fragmentary remains of a child's skull In Engis Cave near Liege, Belgium. These fragments were the first Neanderthal remains to be found. This being the pre-Darwinian period and because they exhibited non-modern morphologies, the scientific community showed very little, if any, interest In the find. In 1848, a partial skull from an adult Neanderthal was discovered In a cave located at Forbes Quarry on the Rock of Gibraltar. Like the Belgium skull fragments, the Forbes Quarry skull received scant attention (Klein 1989). It was not until 1856, when workers quarrying in the Feldhofer Cave in the Neander Valley near Dusseldorf, Germany, unearthed the skeletal remains of what appeared to a human skullcap and several postcranial bones, that people began speculating as to their origins and significance of these odd, non-modern, bones (Klein 1989, Wolpoff 1980).

Since these initial finds in northern Europe, many Neanderthal remains have been found across Europe, as far west as Great Britain and the Iberian peninsula, eastward into western Asia. Remains have been discovered In Russia and former Soviet Union provinces, the former Yugoslavian Republic, France, Spain, Italy, Iraq and Israel (Wolpoff 1980, Tattersall, et al. 1988). The dating of the finds have the Neanderthals occupying Europe and the Near East/Western Asia from ~100,000 to 35,000 years ago, during the late Pleistocene.

The debate: Continuity vs. Replacement

Currently, one of the most controversial debates in paleoanthropology centers around the question regarding the emergence of morphologically modern Homo *sapiens* (MMHs). One of the key issues in the controversy revolves around whether the Neanderthal remains are a link in our evolutionary chain or an evolutionary dead end. Anthropologists, archaeologists, geneticists and other scientists have become embroiled in the debate and are divided on the question, forming two opposing camps. On the one side are the continuity advocates, who claim that the Neanderthals are part of our direct evolutionary past and therefore a distant ancestor. They believe that their data shows MMHs and Neanderthals to differ only at the subspecies level and that they should therefore be classified as Homo *sapiens neanderthalensis*. On the other side, in opposition to this theory, are the advocates of the replacement hypothesis and fanning the flames of the debate, is the often complicated and confusing nomenclature used when discussing and referring to Neanderthals. There is even confusion as to how Neanderthal should be spelled. Traditionally the term Neanderthal has been applied to mean archaic Homo *sapiens* from the earliest part of the Upper Pleistocene In Europe. However, Neanderthal has also been used as a term to mean both a clade and a grade. Clade refers to having features that are shared within a population because of common descent, while grade features are shared because of a common level of organization.

In Europe Neanderthal describes a clade consisting of near modern characteristics, but some workers have used it as though they were referring to grade equivalents in other parts of the world, such as the Far East and Africa (Wolpoff 1980). While the interpretation of the fossil record continues to fuel the controversy, similar discrepancies also occur when examining and analyzing the material record, specifically the lithic assemblages of the Middle-Upper Paleolithic boundary.

This paper's primary focus will be to look at the lithic industries of Western Europe, and the particular questions to be addressed are: If the strict replacement theory of modern human origins is correct, what should we expect to see in the lithic assemblages of the Western European archaeological record, what is actually seen, and how is the material and the archaeological record being interpreted? Does the Mousterian flake industry of Europe belong exclusively to Neanderthals or were morphologically modern Home *sapiens* also producing the same type of lithic using the same or similar techniques? Did the Middle-Upper Paleolithic Transition boundary of Europe actually see a dramatic change in the lithic industries and manufacturing techniques, or were they gradual? And finally, are these changes, if they are as dramatic as the replacement workers believe, actually reflective of a non-indigenous, subtropical population moving into Western and Northern Europe and totally replacing a group that is well adapted to the harsh climate and living conditions of Europe during the last glaciation?

The Middle-Upper Paleolithic transition

In Western Europe, there are three recognizable lithic assemblages the occur just before, at and just after the Middle-Upper Paleolithic boundary. They are, respectively, the Mousterian, Perigordian/Chatelperronian and Early Aurignacian. The Mousterian has always been associated with Neanderthals and the Middle Paleolithic. At one time, it was regarded as a culture or groups of cultures, but now it is often referred to in its original sense, to the period from the last interglacial through to about 35,000 to 40,000 B.C., or the beginning of the Upper Paleolithic of Europe and adjoining areas.

The Perigordian/Chatelperronian is an Upper Paleolithic tool industry that occurs at the Middle/Upper Paleolithic Transition boundary. The Chatelperronian lithics of Western Europe are often considered to be an equivalent of the Perigordian Phase I of France. Cro-Magnon, an early modern human, is usually associated with these industries, under the assumption that the methods used to manufacture the lithics, were far too advanced for Neanderthals to have mastered and used. However, Neanderthal remains have been discovered In conjunction with Chatelperronian lithics, thereby decreasing or totally invalidating this theory. The Aurignacian is usually dated from between 35,000 and 25,000 B.C. and is an Upper Paleolithic industry, occurring after the Transition boundary. In Western Europe, it evolved out of the Perigordian /Chatelperronian industries (Whitehouse 1983) and is associated entirely with MMHs.

When Harrold (1989) compares the Mousterian and Middle Paleolithic with the Upper Paleolithic he states that the Upper Paleolithic is characterized by an increased complexity in many areas. Furthermore, he contends that the lithic assemblages demonstrate that; the majority of tools found are manufactured using a blade producing technology only, the assemblages contain a greater variety of tools that are more complex than those occurring before the Upper Paleolithic, and that the lithics occur in more recognizable forms. But, this is not entirely true or accurate. For example, in Northern Spain the lithic assemblages of the early Upper Paleolithic

were produced using predominately a flake technology and were not, necessarily, extremely complex In their make-up (Clark 1993, Straus 1992).

Harrold continues by declaring that during the Upper Paleolithic, bone, antler and ivory were worked by methods that were more complex than those of the past and that the methods were distributed and used over a vast area. His statements, and the presentation of his data, imply, explicitly, that Neanderthals were not capable of manipulating bone, antler, wood and/or ivory in order to make tools or other useful objects, because they did not possess the mental or physical capabilities needed for such fine, and often delicate, work. It is not until the transition, and the appearance of MMHs, he claims, that people begin to produce art.

Mobile and parietal art is produced that has very little, if any, utilitarian value other than being made for aesthetic purposes. It is also at this time, according to Harrold, that people begin to adorn themselves with personal art, all of which is supposed to be of symbolic significance. Harold also maintains that the subsistence patterns change and become more complex and sophisticated at this time. And finally, in conjunction with the change in subsistence patterns, there is also a change occurring In the size of the population; it is increasing and the increases are causing a change In the settlement patterns. As noted earlier, Harrold's statements regarding the complexity of the Middle-Upper Paleolithic assemblages and whether one is a flaked based technology while the other is blade based, does not stand up under strict scrutiny. There are places In Western Europe, such as Northern Spain, that have MMHs of the Upper Paleolithic, using the less refined and complex flake technology. There are also places where the more complex, and therefore 'more technically advanced', blade technology is found in conjunction with Middle Paleolithic Neanderthals (Straus 1988; 1990; 1992).

The aesthetic argument is also debatable. It is just as probable that both forms of art were being produced as forms of communication between different groups, distinctive sub-groups within a larger whole, or to record information regarding past events. The art could have been used as illustration to stress important aspects of oral traditions as they were retold and passed on, as part of some form of ceremony, (e.g. to ask for success in future hunts, the continuation of the fertility of game animals and/or significant plants species, in order to ensure successful hunting and food procurement for the benefit and survival of the group), or even the beginnings of religious/mythological rituals. Art mobilier is not an entirely new invention of the Upper Paleolithic. There is some surviving art mobilier from the Middle Paleolithic. The probability that much of the art from the Middle Paleolithic occurred as either personal body decoration or was made out of extremely perishable materials such as wood, ivory, antler or bone, a very likely and plausible possibility. If this is the case, the likelihood of art produced on these mediums surviving in the archaeological record is very small, thereby giving the impression that art did not occur at all during this time and/or that Neanderthals lacked or were incapable of the complex thought patterns needed to produce such objects.

Art, such as cave painting, does not occur at the Middle-Upper Paleolithic Boundary. Instead, it originates and is first seen about 20,000 BP, or approximately 15-20,000 years *after* the transition and *therefore* should not and cannot be used as evidence in the debate to support the Replacement hypothesis, even though it has been used In this manner. The changes in subsistence patterns, population size increases and settlement distribution patterns were also not a 'sudden' occurrence at the Middle-Upper Paleolithic Transition. These changes are gradual and can very plausibly be attributed to changes In climate and resource availability, rather than being indicators of a complete replacement of one species by another.

Lithic industries and the Middle-Upper Paleolithic

Lithic assemblages comprise the most enduring records that modern archaeologists have for the people of the Middle-Upper Paleolithic Boundary. These lithic assemblages have been extensively studied and scrutinized by many workers, In many way, "including experimentation, ethno-archaeological investigations, the development of many classification systems and innumerable descriptive reports (Barton 1990)."

According to Mellars 1989a, there are six main divisions in which the "complex of technological changes (339)" can be defined In a serviceable fashion. With these divisions, he echoes the statements that Harrold made In his paper. If strict replacement is the case for the disappearance of the Neanderthals In Europe, the following divisions, summarized as follows, state the conditions that would apply:

1. At the boundary, the lithic industry should shift from a predominately flake manufacturing technology to one of blade manufacturing.

2. We should see the appearance of well defined styles of both end-scrappers and burins. These are relatively abundant in the archaeological record.

3. There should be an emergence of lithic artifacts which are morphologically new, that differ qualitatively, when compared to types that are seen earlier in Middle Paleolithic contexts.

4. These new artifact types appeared, changed, and replaced previous types and each other, with a speed not seen before In the archaeological record.

5. Similar or almost the exact same features that are seen In the lithic industries, are also seen in tools manufactured from bone, antler and ivory.

6. When compared to the Middle Paleolithic industries, the shaping of the Upper Paleolithic tools exhibit what appears to be a standardization and deliberately imposed form.

However, this is not what is seen in the archaeological record. To begin with, at the Middle-Upper Paleolithic Boundary, not all areas of Europe see a technological shift from flake to blade manufacturing at this time. The Cantabrian area of northern Spain and the Saint-Cesaire burial are evidence of this. Straus has documented MMHs in Cantabria Spain as using the 'cruder', Mousterian flake technology, as opposed to the 'more advanced' Perigordian/Chatelperronian blade tool industry, after the Transition Boundary. At Saint-Cesair, a Neanderthal skeleton, who should have had a less advanced tool-kit consisting of flakes, was found buried with a tool-kit that was comprised of Upper Paleolithic blades, a tool type that has always been strictly associated only with MMHs.

Secondly, Mellars assertion that the archaeological record should 'see' the appearance of well defined styles of both end-scrappers and burins, is not true. A closer re-examination of Bordes' lithic typology for the time frame of the Transition, (albeit of the line drawings only and not the actual tools themselves), demonstrates that these tool types were, in fact, part of the Mousterian, i.e. Neanderthal, tool-kit. Although, not found in great numbers, there is no disputing the reality that Neanderthals were capable of, and actually making and using this 'advanced', more complicated tool form. It is possible that the reason more of tools of this nature are not found, is that they were made out of perishable materials such as antler, bone, wood and/or ivory. It should be mentioned that Bordes' *Typologie du Paleolithique* is very artificial and was derived to

suit a preconceived idea that Bordes has about what types of lithic artifacts should be found on either side of the Transition Boundary.

Third, the Upper Paleolithic, when compared to the Middle Paleolithic, does not see artifacts which are morphologically new or different. Again, close scrutiny of Bordes' typology reveals clear transitional forms from the Middle Paleolithic to the Upper Paleolithic and across the Transition Boundary. Contrary to Mellars' fourth point, the new artifact types did not appear, change, and/or replace each other, or previous types, at a rapid rate. I point to Bordes' typology to illustrate this important detail. Though overlooked by him, and others, and classified as either Mousterian or Aurignacian/Chatelperronian, the transitional types can be observed and recognized as such, when they are approached from a perspective other Bordes'. Bordes believed that the typologies he created were an accurate reflection of the original typologies, those intended by the makers of the tools. This mirrors the European archaeologists' working assumptions and paradigms, that their history and culture is an extension of the past.

Fourth, he is correct in stating that features which are similar or almost exactly the same, are seen in both the lithic industries and in the tools made from ivory, bone or antler of the Upper Paleolithic. He implies, with this assertion, that the people of the Middle Paleolithic were not using these resources for tool manufacture. However, the Replacement Advocates tend to ignore the fact that tools ***were*** being manufactured from bone, ivory and antler in the Middle Paleolithic and that they had 'advanced' features often associated only with MMHs. Unfortunately, due to the nature of the material, it only under optimal conditions will these types of artifacts survive in the archaeological record. Because of this, a skewed perspective of the archaeological record is preserved and presented.

Mellars' last point to be considered, is the assertion that when comparing the Middle Paleolithic to the Upper Paleolithic industries, those of the Upper Paleolithic exhibit what appear to be a standardization and deliberately imposed form, i.e. pattern. As with some of his other points, this one can be refuted by a close review of Bordes' original Paleolithic typology. Pattern is often looked for in the lithic assemblages of the archaeological record to determine the predomination of flakes over blades or vise-verse, or if they occur in roughly equal numbers, and this is how Bordes went about devising his typology for paleolithic tool types and assemblages. However, the patterns that are seen and described
are based upon, and influenced by, the researcher's paradigmatic biases. According to Kuhn 1971, 1974, and Clark 1987, in Clark 1989;

> "A wide diversity of opinion exists about what is regarded as 'reasonable to do with lithics.' These preconceptions (or more formally, paradigmatic biases) play a leading role in our capacity to perceive pattern in the archaeological record. They shape the analytical approaches deemed appropriate to use and they influence typologies of all kinds and at all levels to a marked degree."(28).

Although stone tools cannot directly tell us anything about biological relationships, it is important to keep in mind as one analyzes the lithic assemblages of Western Europe at the Middle/Upper Paleolithic Transition boundary, that they can be used as indicators of certain behaviors and as to whether a new group of beings, in this case a new species, has moved into an area and replaced an existing group, species, or not. The information obtained from the observations of these relationships can then be used to postulate theories and make inferences as to where Neanderthals fall on the line in regards to the evolution of MMHs. The paradigmatic biases of European and American workers greatly influences how the lithic assemblages are interpreted, classified and assigned to specific groups of hominids.

One of the primary differences in the biases noted between Old World and New World Archaeology is how each defines culture. Tied to each one's definition is where, and in what areas, the roots of each tradition were established. These vastly different definitions of culture directly affect how each research tradition views and interprets the lithic assemblages of the Middle-Upper Paleolithic Transition (Table 1).

The Old World paradigm's definition of culture is built upon a sense of nationalism as it developed out of European history. It takes a normative perspective, whereby cultures equal a separate assemblages of traits over space and time. Culture is regarded as resembling a series of steps, a step process, with long periods of cultural stability that are interrupted by short intervals of rapid cultural changes. Old World workers view it as being basically unchanging within analytical levels and as unintelligible. This is because they believe that when cultures changed, they did so abruptly and *en mass* due to ***total population replacement.*** Within the Old World paradigm, cultures of extinct populations are believed to have existed **at the level** of social, ethnic and linguistic groups with culture being essentially ideational (Binford and Sabloff 1982, Clark 1992a, Jones 1993). This belief arose partly from Old World Archaeology's roots in the Natural Sciences, particularly those of Geology and Paleontology. Archaeology is taught as a separate subject from anthropology and is not dependent upon it for its theories and paradigms.

Table 1. Differences in New World/Old World Paradigm.

NEW WORLD PARADIGM	**OLD WORLD PARADIGM**
The definition of culture:	*The definition of culture:*
Developed out of culture area studies	Developed out of European history, nationalism
Received its mandate from social and cultural anthropology	Received its mandate from natural science (esp. geology, paleontology)
Essentially gradualism, emphasized continuity over space and time	Characterized by punctuated equilibrium; emphasized discontinuity in that traits were believed to be congruent with social, ethnic groups
Led to normative (i.e., variety-minimizing) views of culture	Antinormative; cultures equal differentiated packages of traits over space/time
Recognized some vectored change within analytical units	Essentially static within analytical units
Coherent; cultures equated with trait complexes that cohere over space/time	Incoherent; when cultures changed, they changed en bloc and abruptly (because of population replacement)
Existed at a level *above* that of social, ethnic and linguistic groups	Existed *at the level* of social, ethnic and linguistic groups
Many definitions of culture; some phenomenological, others ideational	Definition of culture essentially ideational (i.e., norms, values in people heads)

Note: Metaphysical paradigms: major biases and preconceptions of the Anglophone New World (Canada, United States) and Continental Old World (esp. France, Belgium, Spain, Italy) conceptions of culture (based on Binford and Sabloff 1982)(Clark 1992a).

The New World paradigm's definition of culture came about out of the 'culture area' studies conducted in the New World, and elsewhere, by anthropologists trained in American universities. This paradigm received its directive from Social and Cultural Anthropology. Archaeology is also viewed differently in the New World. It is taught as a subdiscipline of Anthropology, with all of anthropology's paradigms and theories. The New World's paradigm is fundamentally gradualistic in it approach to culture change, accenting continuity over space and time, thereby leading to a normative view of culture such as that of variety minimization. Cultures are visualized as being lucid, in that they are matched with trait complexes that cohere over space and time, They are also perceived as existing **at a level above** that of social, ethnic and linguistic groupings. The paradigms under which New World workers operate, contain many definitions of culture, some phenomenological, others ideational (Binford and Sabloff 1982, Clark 1992a, Jones 1993).

These differences affect how European and American workers attach meaning to the lithics. For the Europeans, a great number of them take it for granted that encoded into each lithic tool's form is an element of symbolism, symbolism being defined as the ideal tool form in the mind of people long dead (Clark 1993a). They also assume that if one were to look hard enough, one could imagine that other forms and morphological variations could be separated out. They then translate these supposed elements of symbolism into a prehistoric equivalent of ethnicity (Clark 1989). This concept, or rational, which is based largely upon the fact that European workers assume that the tool typologies, ***created*** by European workers, faithfully mirrors the typologies of the people who originally made the tools, and have long since died. This makes it difficult for them to accept and recognize that Neanderthals, whom they consider not to be related to MMHs, could and did make complex stone tools. The Replacement Advocates also think along these same lines, forming hypotheses that reflect this concept.

The majority of American workers are at the least leery, and at the best skeptical of the notion that many, if not all, lithic classifications have inherent style and therefore symbolism. Clark expressed this skepticism when he stated, "... even if we grant its [inherent style] existence on a conceptual level, I do not believe it is very easy to isolate on a practical level. I do subscribe to the usefulness of a conceptual distinction between 'style' on the one hand, and 'function' on the other (1989:28)." This dichotomy has also led to what has come to be termed the 'Mousterian Debate'. This debate revolves around the 'culturalist' and 'functionalist' positions. 'Culturalists' perceive lithic variability as being influenced by a cultural convention or technique, while 'functionalist', on the other hand, regard the same variability in the lithic assemblages as being the end results of a combination of how lithics were intended to be utilized by their manufacturers and when they were discarded within their life cycles (Barton 1990, Neeley and Barton 1994). While this is not the definitive dividing line between Old World/New World archaeologists or the Continuity/Replacement Advocates, it is a major factor that influences the ways in which the respective workers view the lithic assemblages.

Another example of the paradigmatic biases that affect the way in which workers view the lithics is "... the impression that most discussions of paleolithic stone artifacts are couch in terms of (implicit) analogies with modern tools, which tend overall to be highly specific in terms of function (Clark 1989:28)." It is this second paradigmatic bias that is most relevant to the Strict Replacement versus Continuity argument.

The Replacement Theory follows the 'culturalist' line of thought, to an extent, and declares form and style of the Mousterian lithics technologically simple and unimaginative. They lack much in the way of diversity. One of the reasons for this interpretation is that they believe the manufacturers of the Mousterian lithics, Neanderthals, lacked culture. I do not believe this to be the case. I am of the opinion that this is just another one of their ways to de-humanize Neanderthals in an effort to strengthen their position that Neanderthals are not part of the evolutionary chain leading to MMHs. At the Middle/Upper Paleolithic Transition boundary, the lithic assemblage of the Middle Paleolithic was not entirely made up of flakes. Nor did the people, i.e. Neanderthals, lack the mental capabilities and sophistication to manufacture blade tools, as the Replacement Advocates would like to have people believe. “There is no empirical or even common sense basis for Dennell's (1985) and Gargett's (1989:187) claim that the manufacture of bone tools requires a different or a more complex conceptualization process than the manufacture of stone tools. As Marshack (1989a:16) points out, there is no conceptual difference between carving or shaping wood and the carving or shaping of bone, and there is abundant evidence for Lower and Middle Paleolithic wood working from use wear analyses as well as actual preserved implements.” (Hayden 1993:117).

Since we have evidence of the sophisticated abilities to work at least wood and most probably bone, antler and/or ivory, as far back as the Lower Paleolithic by Neanderthals, why should it seem impossible that they should lack the sophistication, finesse and imagination to manufacture blades during the Middle Paleolithic? The bifaces, along with Levallois points and cores of the Mousterian, exhibit a technological sophistication that is "more than adequate testimony (Hayden 1993:117)" as to the Neanderthals elevated cognitive, intellectual and kinesthetic capabilities that would allow them to be able to manufacture and produce blades. Lubell, in a personal communication to Brian Hayden, states that, “There are 'superb' tools in the Middle Paleolithic, technically difficult to make and which are not at all inferior to Upper Paleolithic stone objects'(1993:118).

Hayden agrees and continues with a further statement regarding the complexity of the Mousterian artifacts,

> “The production of Levallois cores is frequently wrongly portrayed in a highly simplified and schematic fashion that belies the difficulty involved. Boeda, who has intensively studied Levallois production, has shown that Levallois production involves a predetermined core shape with two distinct surfaces” (1993:118).

One surface has the restricted function of guiding the fracture front of a pre-planned flake. The other surface is the striking platform for the pre-planned flake. Everything, the angle of the strike, how the striking platform is oriented to the angle of the strike and the force of the blow used, must all be carefully controlled if a proper Levallois flake is to be successfully separated from the core.

> "Production of these Levallois flakes requires a *high* degree of precision, intelligence and training. In my estimation, and in the estimation of other flintknappers, *even today, there are few students of lithic technology that ever achieve a Neandertal's level of expertise in producing good Levallois cores of flakes, while the number of contemporary flintknappers that have successfully mastered the technique for producing good Levallois points probably number less than a score (original emphasis)*"(Hayden 1993:118).

Blades are not exclusive to the Upper Paleolithic, nor flakes to the Middle Paleolithic, therefore removing one of the supporting theories from Strict Replacement. Blades can often constitute up to 40% of many Mousterian lithic assemblages. Forty percent is a vastly different number than the almost 0% of blades in the assemblages that Strict Replacement states that there is. While the blades that are found are not fancy and were not produced through the use of punches, punching is not all that complicated, sophisticated or intricate of technological advances and achievements (Hayden 1993). This discrepancy can be seen in the Mousterian assemblages of the Leant, which have been found to be dominated by blades as opposed to flakes, and the Upper Paleolithic of Cantabrian Spain, where MMHs were producing a tool kit using the simpler blade technology.

Conclusion

As demonstrated, there is more than enough evidence to refute Strict Replacement's claims that Neanderthals are not in the line of Modern Human evolution. As stated earlier in this paper, whereas stone tools cannot directly tells us anything about biological relationships, it is important to keep in mind as one analyzes the lithic assemblages of Western Europe at the Middle-Upper Paleolithic Transition boundary, that they can be used as indicators as to whether a new group of beings, in this case a new species, has moved into an area and replaced an existing group, species, or not. The information obtained from the observations of these relationships can then be used to postulate theories and to make inferences as to where Neanderthals fall on the line in regards to the evolution of MMHs.

Also, blades are not exclusive to the Upper Paleolithic and Neanderthals certainly had the mental faculties to carry out the production of blades during the Middle Paleolithic, which they did. There was not the drastic revolution from flakes to blades at the Middle/Upper Paleolithic boundary that would suggests that a new group of more advanced **Homo** invaded Western Europe and wiped out the existing Neanderthal populations. Even though the lithics of the Near East were not discussed in this paper, it is interesting to note that in such places as the Leant, the Mousterian, i.e. Neanderthal, assemblages have been found to be blade, as opposed to flake, dominated, Combine this with the fact that there are places on Europe during the Upper Paleolithic, such as the Cantabrian area of Northern Spain, that have flaked dominated assemblages, and one cannot help but to doubt the Strict Replacement hypothesis for Modern Human origins.

Furthermore, at the Middle/Upper Paleolithic boundary, we do not see the sudden appearance of new types of tools, such as end-scrappers and burins. These are seen in the lithic assemblages of the Middle Paleolithic, albeit not in the vast quantities that have been observed in the Upper Paleolithic. This does not mean to infer that Neanderthals were incapable of producing such implements, it just means that they probably did not have a great demand or use for them and

therefore, they did not manufacture them in large amounts. There is also the possibility that Neanderthals were not making these tools out of stone, but out of softer, more perishable materials such as wood, ivory, bone or antler, that would not be likely to survive in the archaeological record **unless** the conditions for preservation were perfect; the climate of Europe at the time of the Transition would suggest that this was not the case.

We also do not see in the archaeological record, the sudden emergence of morphologically new or superior types of lithics that *replaced* existing types. When the lithics of the archaeological record of the Middle/Upper Paleolithic boundary are closely examined, a clear progression from one type of form or style of a tool to another can be seen and followed. The transition is a gradual and logical one that intelligent, rational, and imaginative beings would make.

From a strictly common sense point of view, the Strict Replacement scenario does not make much sense. It is difficult to comprehend how a group of beings, MMHs, with their subtropical adaptations, since they are to have came out of Africa and spread across Western and Northern Europe in a relatively short period of time, could totally replace, sans admixture, another group of beings, Neanderthals, who were adapted to the colder and more extreme climates that existed during the Wurm and last interglacial periods.

Not only were the Neanderthals adapted physically to this colder, harsher environment, they also had made **intelligent** behavioral adaptations. They could make efficient use of fire. They had harnessed fire not only for use in cooking, but they also used it for warmth, to heat their shelters. Neanderthals also made efficient use of clothing. Although it may have been crude when compared to the more tailored clothing that MMHs later fashioned, it served its purpose, to keep the body warm and to protect it in the extreme climates that they inhabited. The lithic assemblages at the Middle/Upper Paleolithic Transition do not support the strict replacement hypothesis for Modern Human origins and the demise of European Neanderthals. The neanderthals were one of our ancient ancestors. As Trinkaus and Shipman (1992) express so eloquently, “Seeing Neandertals in context, in the broad sweep of human evolution, is a valuable perspective. But we must not forget that they were neither 'new and improved' versions of Homo *erectus* nor crude prototypes of modern Homo *sapiens*. They were themselves; they were Neandertals - one of the more distinctive, successful and intriguing groups of **humans** [emphasis added] that ever enriched our family history” (419).

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