

## THE SETTING IS NOT THE PLAY: NEANDERTHALS UNBOUND ON THE EUROPEAN LANDSCAPE

Matt Dreher  
Department of Anthropology  
Wichita State University

There have been summary accounts of the landscapes and environments of Europe during the last glacial cycle (Mellars 1996; Davies, Stewart and van Andel 2000). There is a consistency among them all in their basic reconstructions. The general framework has been established by geologists, climatologists, biologists, botanists, etc., and the science employed in the gathering and interpreting of the wide variety of data stands up to logic and is generally unquestioned from within and without the disciplines and subfields that process this data.

Evidence from polar ice caps and ocean basin cores, soil stratigraphies which include pollen analysis, flora and faunal collections, erosion and deposition from glacial action, increases and decreases in polar ice caps and sea-level, as well as any general tectonic activity, all correlate rather exceptionally in telling a similar story about the climatic history of the last 130 ky.

My purpose here though is not to question the correlations of the evidence. I do not pretend to be able to critically question or evaluate the methods and processes of how the evidence is collected and interpreted. As a non-specialist in the areas of research that have accumulated and interpreted this evidence, I am limited in some ways to accepting the science of the day; in essence I am granting legitimacy to the consensus that appears to exist. A specific example of this is the Marine Oxygen Isotope Record. There is a general acceptance of the isotope record, and its implications for very superficial and generalized climate patterns in Europe. I have no ability to question the nature of the isotope record; I can however question its application, and can come to my own conclusions as to whether the variations and fluctuations expressed in the isotope record are significant or not. But this is also not my focus. Rather it is how all of this information is used to formulate a picture of the natural environment, and how that picture is used in understanding the people who lived in that environment.

It is the Neanderthals as people that we are most interested in. Peculiar as they may appear to us, they still speak to us humans. They may have looked

and behaved much differently than we moderns, but they are some kind of variation that we feel compelled to either humbly admit as our ancestors or to vehemently deny them place in our heritage as we would strange uncle Chester who wakes up in an alley, wanders up Main Street in the morning to the local tavern and stumbles back down Main late at night.

Among both the cable television educated general population and the institutionalized intellectuals, there is an overriding impression of Neanderthals as a hulking, stubby man-beast, living in a cave, grunting and pulling his female (not a woman mind you) behind him. And while we may laugh and generally amuse ourselves with the species-centric characterizations of Neanderthals by our learned and unlearned fathers and grandfathers, we laugh partly because we ourselves believe this as a half truth. For we cannot really believe that Neanderthals are people like us; even in our most liberal interpretations there is just too much Neanderthal in Neanderthals.

This historic and still prevalent conception of Neanderthals and all “pre-humans” in general has, I believe, distorted our ability to interpret the Neanderthal life and left us with concepts that are wholly in conflict with how we would understand and interpret modern peoples. In particular it has caused us to see Neanderthals as primitive peoples with crude and ugly tools who, in both their greatest accomplishments and their ultimate failures, were helplessly bound to and determined by the environment that existed in Europe between ca. 130 and 30 kya. Ecological determinist and reductionist explanations of people, while still used and championed, especially within mainstream outlets, are rarely seen as reliable and justifiable explanations of human activity. In fact, studying a natural environment of a people tells us little to nothing about those people, it leaves us with only the background and the props of humanity, and we know that a drama is about the human interaction not the coffee table at center stage or the curtains in the window at stage left.

The unfortunate part for Neanderthals is that all we have left of them is a small sample of their robust skeletons, some sampling of stones they manipulated, and an inferred geologic history of the environment and landscape they existed within. This is not a particularly encouraging situation for the student of culture who wishes to understand who the Neanderthals were, where they came from and where they went. To continue my analogy, it is like trying to evaluate a play by only seeing the stage and the props and the cast list.

This is not to say that we can know nothing. These bits of information can tell us quite a bit about Neanderthals. Through our ability to interpret cultural symbols, stage props can tell us if the action is to take place in a house or out-

doors, in ancient Greece or the pre-civil war south, if the room is a living room or a little girl's bedroom, if it is the 1930's or the Middle Ages. Even the slightest bit of information about the characters such as their names or titles, or a static picture of them in costume and make-up, can present strong clues as to the nature of the drama. With all of this information in hand we can draw on our experiences, not just with other plays but life and our understanding of it, to construct ideas about what the play may be all about. Since genres and types exist within drama, we can make basic assumptions, such as those we may make about a play set in ancient Greece based on the works of Sophocles.

So too this type of analogizing can be employed when dealing with ancient peoples. Of course this entails acknowledging some fundamental assumptions we must make when dealing with the Neanderthals. The first of these is to see Neanderthals as in some way fundamentally human in nature. They must be seen to posses even a small amount of the essence that separates humans from apes, monkeys, birds, trees and rocks, and all the other known things in this world. Another assumed principle is that the processes of the earth operate now as they have in the past. While this is fairly straight forward and uncontested, using this concept in terms of people is not nearly as common and should be used more generally than specifically, since humans posses the ability to do strange and unlikely things which seem to have no rationality or consistency to them.

What these assumptions provide us with is a general picture of Neanderthals as distinguished human beings existing in a specific time and place, within a cultural system that they created and shared, and that their basic existence, their expansion and growth, and their subsequent disappearance, are as dependant on social and cultural settings as they are on the physical setting.

While we assume the basic humanity of Neanderthals, we know from our own world that within that humanity is the existence and possibility of extreme diversity. So our analogies taken from more modern times must not be allowed to penetrate beyond the outermost layers, and can only be safely used in general ways. For example we can use what we know of the repopulating of the Americas and the subsequent extermination of the group of people categorized as Native Americans to create an extermination model based on conflict born out of the confrontation between two culturally different people. This model can then be applied very conservatively when attempting to understand the interactions that may have taken place among modern humans and Neanderthals.

The limit of this analogy is, as seen in the American colonial period, that when different people come into contact a variety of things can and will take place.

As we know Native Americans are not gone, although the archaeological record of the future may appear as though they are. Remnants of Native American cultures exist all around us, and their genetics have carried forward and become one of many ingredients of the modern American. The process that took the previous inhabitants of North America from abundant on the landscape to barely noticeable is one of many social phenomena which can include technological superiority. There is no single attributable cause to the extinction of the Native Americans.

It should be noted here that I am using extinction in a way that I assume the archaeological record will look in the distant future. Archaeologists of that day will surely recognize an abrupt morphological and materialistic shift at about this time in their stratigraphies, if we can recognize physical and material differences, surely they will focus on this and the sudden replacement of one type with another, thus seeing an extinction of Native American types.

The outcome of applying the analogy is to see Neanderthal expansion and contraction as being a process of at least some minimal variety of cultural factors, and cannot be explained by a solitary cause. Environmental and biological explanations cannot be seen as primary causes, but rather as effects of cultural processes or at most motivation or stimuli for human activity.

So, since we showed up late to the theater and the cast and crew have gone to the after party and we are left to examine the set and the props and compare them with the information in the program (in the case of our long extended metaphor, the program can be the skeletal record and material culture remains) and speculate on the nature of the drama.

### **The Cast**

When we talk about the Neanderthals as a whole population, we are speaking about those people living throughout Europe and the eastern Mediterranean during the middle to late Pleistocene, associated with middle Paleolithic Mousterian tool technology (Wolpoff 1999). Known Neanderthal sites date throughout Europe and the Near East as early as 130 kya and as late as 30 kya (Swartz and Tattersall 2002, vs. 1 and 2). The European populations are typified by skeletal remains throughout France, Italy, Germany, Croatia, and parts of Eurasia dating between 130-35 kya (Swartz and Tattersall 2002, vs. 1 and 2). In the near East around the Mediterranean, Neanderthals are found as early as 122 kya at Tabun (Swartz and Tattersall 2002, vs. 1 and 2), 60 kya at Kebrara Cave (Arensburg 1985) and Amud Cave (Suzuki, H. 1970). Amud Cave represents, according to Rak (1994, 313), the transition between the middle

and upper Paleolithic.

Neanderthals are defined not only by location and time, there is a distinct morphology of what we are defining here as Neanderthal that separates it from the later European modern sapiens. Generally characterized as still robust compared to moderns, with prominent muscle markings on the bones (Johanson 1996, 228), a long low vault with the characteristic Neanderthal occipital bun (Wolpoff 1999, 623), a somewhat robust face with large nasal openings (Johanson 1996, 216), and reduced and more prominently curved orbital ridges (Johanson 1996, 228). All of this builds a picture of the Neanderthals as stocky muscular humans with a generally robust appearance. A more detailed list is offered in figure 9, and will be addressed later.

### The Props

The material record associated with Neanderthals is thin and highly subjective to individual interpretations, furthering the need for better analogies in the place of direct evidence. The following is far from complete, and is used not as a comprehensive summary of Neanderthal material culture, but as a brief overview of the props associated with Neanderthals.

Neanderthals have been associated with Mousterian and Aurignacian tool technologies (Wolpoff 1999), but are mostly associated with the former. Mousterian industry covers a span of over 160,000 years, beginning 200 kya (Johanson 1996, 258). The industry is characterized by two main production techniques. Both are referred to as Levallois techniques, meaning that a selected core is shaped on one side according to the tool desired and the tool is created by flaking the shaped side and discarding the core.

Scrapers were formed by flaking around the circumference of a disk shaped stone to create a rounded shape. The effect was a tortoise shell shaped core, and a flake that could be retouched along all sides (Johanson 1996, 256). Simek and Smith document that at Krapina over half of the Mousterian tools found were side scrapers, referring to it as a “scraper-rich site” (1997, 566). The “scraper” was clearly the most useful and abundant tool of the Mous-terian.

Flake points were created in the same way as the scrapers, except the core was shaped in a triangle in order to produce a pointed flake. Again the core is not used, causing the Levollis techniques to seem wasteful. It has also been questioned if these points were simply converging side scrapers

(Holdaway 1989), instead of hafted projectile points. Boëda et al. (1998) suggest, however, that bitumen was a hafting adhesive associated with at least late Mousterian. Solecki, when examining the projectiles found at two Zagros Mousterian sites concluded that based on retouching patterns, the overall shape of the points, and the lack of more complex hunting equipment like replacement fore shafts, these Mousterian points were not converging side scrapers, especially since the rounded scraper is so abundant and versatile.

Material evidence beyond stone tools is sketchy at best. I refer here to the example of the “bone flute” as a representation of the unreliability of Neanderthal material remains. The bone flute found at Divje Babe has been widely interpreted since its discovery, while being defended as an instrument capable of producing “music based on regularly valued notes suggested by the methodical placement of the holes” (Wolpoff 1999, 700), it has also been explained away as the product of animal scavenging (D’Errico 1998). Wolpoff further defends the flute by a reconstruction of the instrument that created a scale very similar to the modern blues scale (1999, 701). It seems more prudent to see things such as the “bone flute” as anomalies in the record rather than meaningful artifacts, until the archaeological record reveals less questionable and greater volume of evidence.

As for material record in general, it is almost tempting to write it off as inconsequential, since it provides little context for which to understand for what purpose items were produced. Of course stone tools do provide insight through inference of what general purposes the tools may have served, but they do not tell us who the Neanderthals were, or how human like they may have been. For we know better as trained students of culture than to infer a social/cultural environment, or lack of, from the perceived hierarchy of technological advancement. In other words, people are not the things they produce, especially in terms of their cognitive environment and their ability to sense, ponder upon, and react or adapt to any form of stimuli.

So far then, we know nothing about Neanderthal life or the course of events that make up their history. The cast and characters with their props have given us only a vague superficial image of the Neanderthals as a specific morphological and technological variety of people, who as we will see, occupied a niche that was substantially different from any yet occupied by humans and our ancestors.

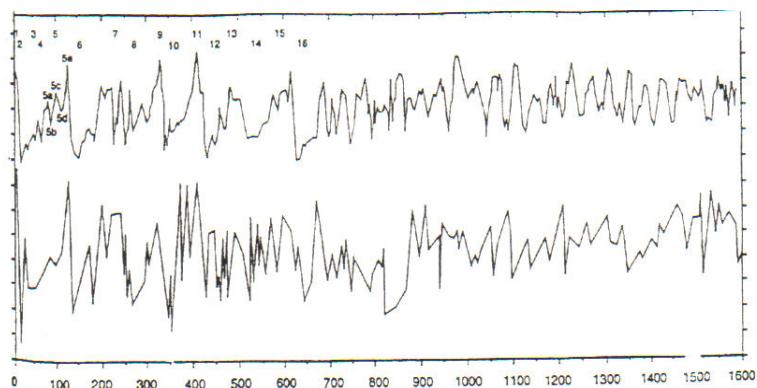


Fig. 1 Long term oxygen isotope record.  
 □Top: From mid Atlantite  
 □Bottom: Tyrrhenian Basin (from Hublin 1998)

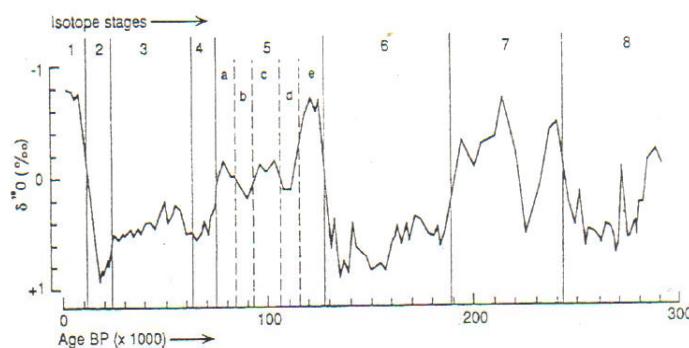


Fig 2 Oxygen isotope record from deep sea sediments last 300 ky  
 □(Mellars 1996)

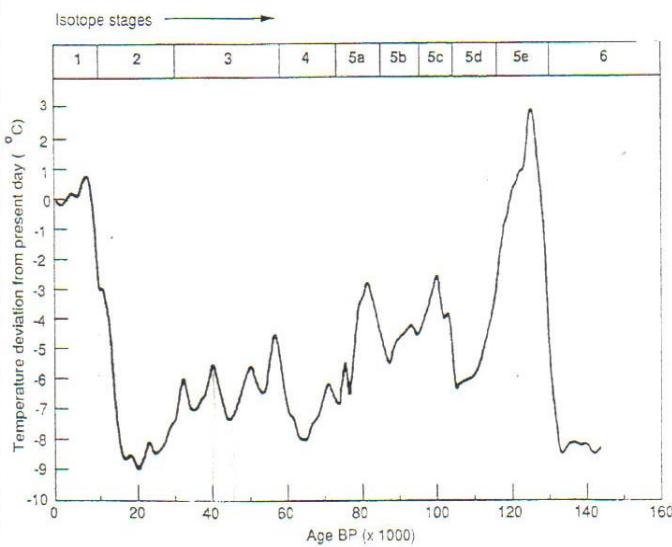


Fig 3 Temperuture variations estimated from Vostok ice core  
 □(Mellars 1996)

## The Setting

The 100 ky period in which Neanderthals existed corresponds quite nicely with the last glacial cycle dating from its onset 130 kya during the Eemian and its terminal period between 30-20 kya leading up to the modern Holocene. The primary accepted theory for ice age processes was put forth by Milankovitch (1941), associating glacial cycles with the earth's orbital patterns. Aitken and Stokes (1997) provide a brief summary of the history of climatic reconstructions based on Milankovitch and the correspondence to the oxygen isotope record as seen in deep sea sediments and polar ice cores. The oxygen isotope record (fig. 1) as seen in both terrestrial and ocean floor sediments, shows a long history of extreme climatic fluctuations. The history of the earth's climate is clearly not one of constants. Of primary interest here are the isotope stages (MIS) 6-3 (figs. 2 and 3), the periods in which Neanderthals populated Europe and Asia.

The isotope record for this period shows an extreme cold period that lasted for 60 ky, from 190 kya to 130 kya. At 130 kya a warming began and lasted at its peak for 10 ky (MIS 5e). This is a significant period in Neanderthal history because it is during this period that we first see the full Neanderthal form existing on the landscape. The general climate patterns of MIS 5e can be characterized as similar to modern conditions, with the climate world wide being slightly warmer at first and then leveling out similar to the last 10 kya (Kukla et al. 2002).

A sudden drop off in global temperature happens at 115 kya (MIS 5d). During this period solar radiation was reduced, ice sheets expanded and a generally cool and dry glacial climate existed (Mellars 1996; Davies, Stewart and van Andel 2000). The broad leaf forests that grew up in the previous stage (MIS 5e) throughout France were replaced by coniferous types (Kukla et al. 2002), as tundra covered much of northern Europe and steppe with some hardy pine and birch covered southern and eastern Europe (Mellars 1996; Davies, Stewart and van Andel 2000). Rioul et al. (2001) summarize this period, based on time lag correlations between pollen, diatom and the oxygen isotope record, as being warm and stable during MIS 5e and similarly stable yet cooler during MIS 5d.

A pattern of general cooling and re-warming begins with MIS 5d and continues for 30 ky until the onset of full glacial conditions in MIS 4 at 75 kya. MIS 5c and 5a correspond to generalized warming periods in relation to the cooler periods that preceded (MIS 5d and 5b). The climate fluctuations

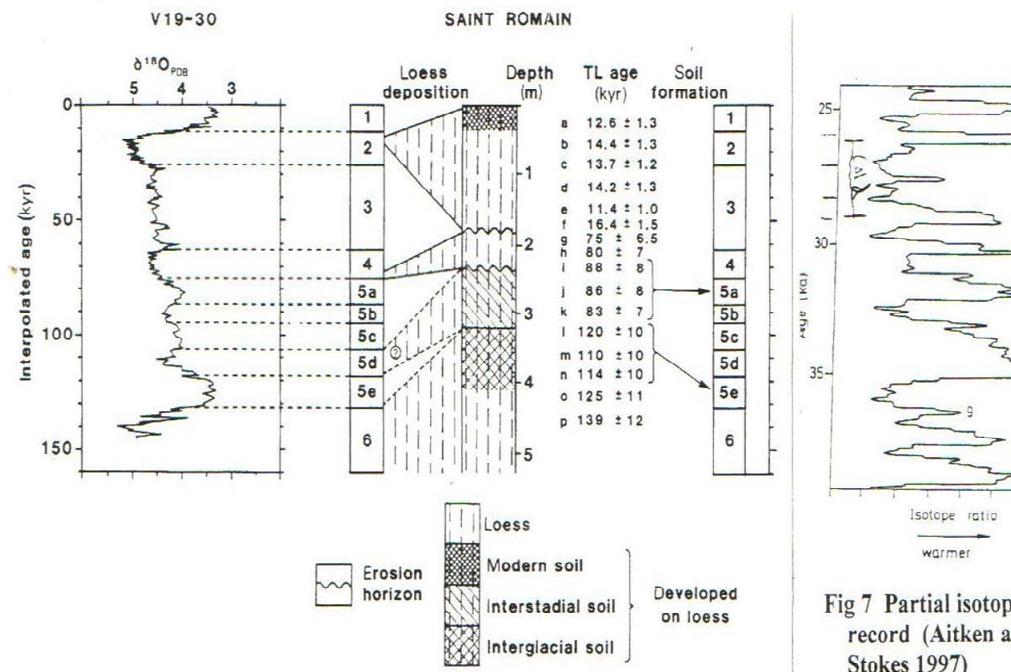


Fig 7 Partial isotop record (Aitken a Stokes 1997)

Fig 4 Loess and soil stratigraphy correlated with isotope record  
□(Wintle et al. 1984)

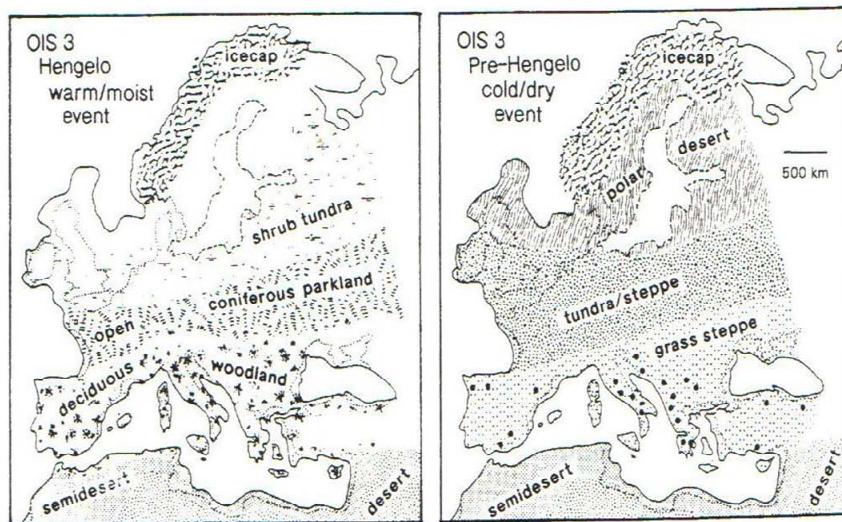


Fig 8 Reconstruction of climate zones for Europe  
□Hengelo 43-40 kya  
□Pre-Hengelo 45 kya

would have followed the pattern of ice expansion accompanied by deforestation and return to tundra in northern Europe and steppe in the south and east during the colder times, followed by the reemergence of pine and birch in the north and deciduous forests in the south and east during the warmer periods (Mellars 1996; Davies, Stewart and van Andel 2000).

A major shift in climate patterns takes place at 75 kya (MIS 4). The isotope record shows a considerable drop off in global temperatures until the onset of MIS 3 at 58 kya. This was a time of full glacial climatic conditions. Ice sheet expansion was at its maximum level since the previous full glacial (MIS 6). Northern Europe consisted of tundra and polar desert at the margins of the ice sheet, while to the south steppe environments existed with some remnants of hardy forests (Mellars 1996; Davies, Stewart and van Andel 2000). During colder periods, when ice sheets were extended, thus lowering absolute sea level, the plains of Eastern Europe can be generally categorized as more continental, with greater seasonal extremes. Much of Eastern Europe would have been abandoned during MIS 4 due to these extremes (Hoffecker 2002).

The isotope record is not the only evidence used for reconstructing climate of the last glacial cycle. Loess deposits, wind blown sediments that are characteristic of cold dry environments, correspond throughout Europe with MIS 4 (NW Europe-Hatté et.al. 1998; Central Ukraine-Rousseau et.al. 2001; Germany-Boenigk and Frechen 2001; Normandy-Wintle, Shackleton and Lautridou 1984; Czech Republic-Cilek 2001). All the above cited show a loess layer being laid down early in MIS 4 and another near the end of MIS 2 corresponding to the glacial maximum leading into the Holocene (fig. 4).

Pollen analysis points toward similar conclusions. Using modern environments as analogies, Guiot et al. (1989) reconstruct continental climate from pollen stratigraphies from Les Echets and Le Grande Pile in Eastern France. Their pollen records show a severe drop in arboreal pollen at approximately 74 kya at both locations (fig. 5). They also show similar activity in the early stages of both MIS 5d and 5b, also cold stages. In their climate reconstructions temperature and precipitation decrease and increase in patterns that match the warming and cooling phases identified in the isotope record. In their reconstructions they identify three periods that operate as unique transition periods between warm and cold events. In the early stages of MIS 5d, 5b, and 4, they identify a period where pollen percentages and temperatures are decreasing rapidly, ice is then forming, but precipitation is momentarily spiked (fig. 6). They consider these brief periods to be transitions in which

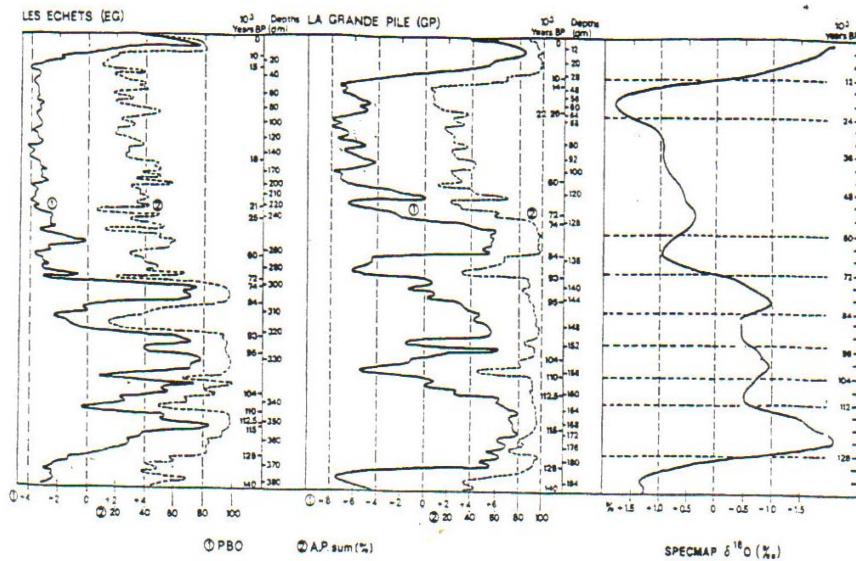


Fig 5 Paleobioclimatic operator and arboreal pollen sum compared with isotpe record  
 □ Les Echets and La Grande Pile (Guiot et al. 1989)

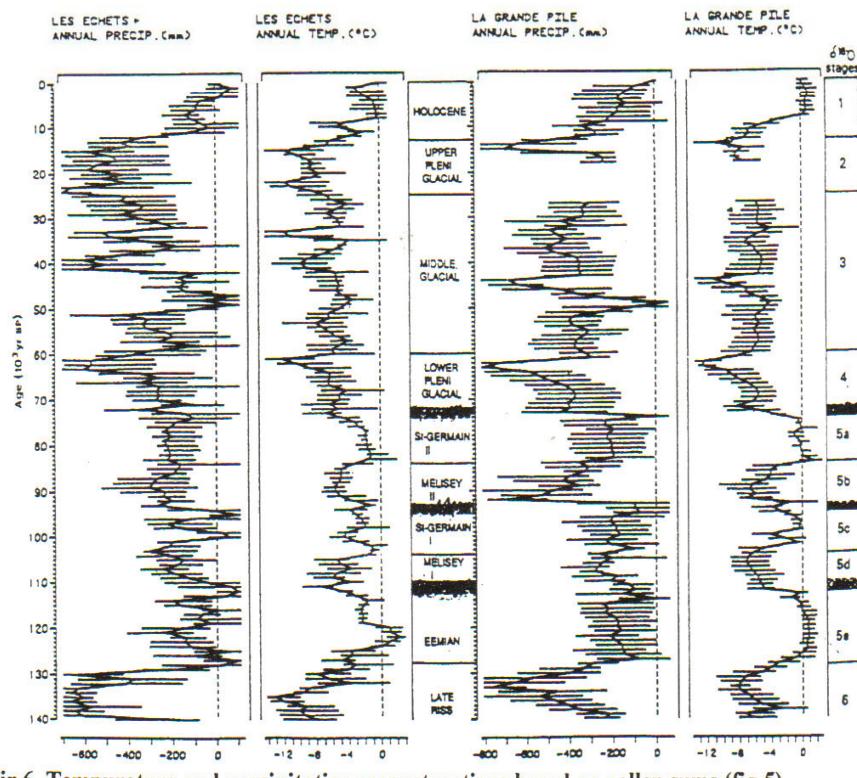


Fig 6 Tempurature and precipitation reconstructions based on pollen sums (fig 5)  
 (Guiot et al. 1989)

ice is forming and the climate is shifting rapidly, but forestation is yet to decrease. These periods they refer to as “post-temperate” (Guiot et.al. 1989, 313).

Immediately after these transition periods pollen percentages remain low, temperatures continue to decrease and precipitation drops of rapidly (figs. 5 and 6). It is this type of environment in which loess deposition would be most likely take place (figs. 4-6) (NW Europe-Hatté et.al. 1998; Central Ukraine-Rousseau et.al. 2001; Germany-Boenigk and Frechen 2001; Normandy-Wintle, Shackleton and Lautridou 1984).

The cold dry climate of MIS 4 bottomed out about 64 kya and then began to warm slowly leading into MIS 3. Temperature reconstructions by Mellars (1996) (fig. 3) show four significant climatic peaks at 58, 51, 40 and 32 kya followed by four corresponding valleys at 54, 46, 36 kya and the last valley being the last glacial maximum MIS 2, which bottoms out at 20 kya. By comparing the MIS 3 with MIS 4 and 5, it can be seen that even in the warmest years of MIS 3, this was still significantly colder, more arid, and marked by generally more open rather than forested vegetation (figs. 2, 5, 6).

Closer analysis shows that within this generally cold period, a great amount of instability existed. Using Aitken and Stokes (1997) (fig. 7) we can see regular and rapid fluctuations in the isotopic record that match up with similar fluctuations in the pollen stratigraphies from Grande Pile (fig. 5), demonstrating the general climatic instability within a severe cold stage (MIS 3). Fig. 8 shows likely vegetative states that would have existed during cold and warm events of MIS 3. The contrast is striking. During cold events most of Europe was covered by tundra and steppe grasslands, as it warmed up deciduous and coniferous forests emerged.

This scenario represents the most extreme transitions of MIS 3, but as fig. 7 shows, many minor fluctuations were happening throughout MIS 3 within hundreds to a thousand years of each other, with a significant cold spell between 29 and 26 kya. These minor fluctuations also show up in the pollen sequence from Grande Pile and Les Echets (fig. 5). This 3 ky cold spell is significant because it follows the last appearances of Neanderthals in the archaeological record.

## **The Story**

These general climate models tell little of local and regional variations in climate patterns. Longitudinal and latitudinal variations, as well as altitudinal

variations all affect the nature of the local environment. From the macro level analysis of climate set forth above, we can assume that these differences would provide even greater diversity upon the Neanderthal landscape. So what does all the above tell us about Neanderthals? Quite little actually, but what it does tell us is that Neanderthals existed within a period in geologic history that was significantly colder and dryer than modern times, and within this generally cold environment there was high degree of variability, and rapid and severe fluctuations. The significance then is that Neanderthals somehow managed to thrive during these very chaotic and unstable times. What then was it about the Neanderthals that enabled them to survive where no man had done so before with such an apparently deficient technological environment? To answer this question and pursue the story line we must back up to the time before the Neanderthals and work our way forward through time.

Hublin (1998) is very helpful in understanding who the Neanderthals are. The key, he believes, is in the accumulation of a series of morphological traits that are used to define Neanderthals (fig. 9). These traits he states were slowly converging throughout the glacial cycles and through an “accretion process” eventually settled in the Neanderthal form (Hublin 1998, 307). The primary point here is that the Neanderthal form was slowly being developed and due to extreme pressures on populations during the coldest times, these traits, some cold adaptations, others not, accumulated and in the warm stages, most importantly MIS 5e, this small population possessing the final accumulation of these traits, spread throughout Europe establishing the Neanderthal type.

What this provides to our understanding of Neanderthal existence is that their history was one of a series of population contractions and expansions, the last corresponding to the transition between MIS 6 and 5. The fact that this form emerged from a long and cold glacial period does speak to the likely cold adapted advantages the Neanderthal form possessed. When this is seen against the backdrop of the climatic setting presented above, Neanderthals appear to be more than simply cold adapted, they appear to be flexible enough to adapt to a wide variety of environments.

Through reconstructions of the local environments around the Rock of Gibraltar area of the Southern Iberian Peninsula, Finlayson and Pacheco (2000) were able to show that Neanderthals existed and exploited multiple ecosystems during cold and warm times. They also present Neanderthals as “seasonal resource specialists” based on altitudinal migrations, who would have been more dependant on long term adaptations to generationally unrec-

**Fig. 9**Neandertal craniomandibular derived features, unique or most frequent in the group

## Upper face and mandible:

- Rounded supraorbital torus without distinct elements
- High orbits
- Mid-facial prognathism resulting in low subspinal angle, low nasiofrontal angle, large difference between M1 alveolus and zygomatic radii
- Infraorbital area horizontally flat or convex, obliquely receding in alignment with the antero-lateral surface of the zygomatic
- Posterior rooting of the facial crest
- Bucco-lingually expanded anterior dentition
- Extended taurodontism
- Laterally expanded mandibular condyle
- Mental foramina posteriorly set relatively to the dental arcade
- Retromolar space
- Oval horizontal shape of the mandibular foramen
- Large medial pterygoid tubercle

## Cranial vault:

- Secondarily increased relative platycephaly
- “En bombe” cranial shape
- Low symmetrically arched temporal squama
- *Meatus acusticus externus* at the level of the posterior zygomatic arch with a strong inclination of the basal groove of this process
- Highly convex upper scale of the occipital

## Basicranium:

- Flat articular eminence
- Mediolaterally developed postglenoid process
- Elongated foramen magnum
- Root of the stylomastoidian process medial to the anterior end of the digastric groove and stylomastoidian foramen
- Small and inferiorly situated posterior semicircular canal

## Occipito-mastoid area:

- Laterally flattened mastoid process, medially oriented inferiorly
- Tuberulum mastoideum anterius
- Fully developed suprainingac fossa associated with a bilaterally protruding occipital torus

ognizable resource changes due to the fluctuating climate presented above. They conclude that the southernmost European Neanderthals were dwellers of open, probably higher seasonal, savanna-type and wetland environments which would be expected to be those with the highest resource yield, combining a large mammal fauna in structurally accessible conditions with a range of alternative potential resources (fruit, seeds, smaller animals and lithic raw materials). (Finlayson and Pacheco 2000, 148)

It was not until the onset of MIS 2 when extreme cold when the “open wooded savannah...was replaced by less-productive montane pines,” and the Mediterranean vegetation of the higher grounds gave way to an arid steppe (Finlayson and Pacheco 2000, 148). Finlayson and Pacheco state then that the fate of the Neanderthals of Gibraltar can be attributed to severe alterations to their resource environment that coincide with the arrival of modern peoples from the north. The combination of the environmental and social stresses “may have exacerbated an already final panorama” (Finlayson and Pacheco 2000, 148).

Using these two models, one seeing Neanderthals as a collection of morphological traits that emerged successfully from the last significant ice age (MIS 6), the other seeing Neanderthals as highly adaptable to a variety of seasonal resource variations and long term climate changes, it becomes easier to see Neanderthal expansion and contraction as dependant upon processes other than ecological and material ones. Having shown that Neanderthals were highly skilled at living through severe periods in history, having successfully emerged from a glacial period (MIS 6) much longer in duration and equally as intense as the glacial period (MIS 2) often given credit for extinguishing them, we are left with finding other alternatives for understanding what happened to Neanderthals, or more importantly, what they were unable to adapt to 30 kya.

I reiterate here that this is not the point to explain away the natural environment as inconsequential in human processes, rather it is here emphasized that the environment can and will provide opportunities as well as impose limitations on human processes, and that these opportunities and limitations can be the motivation for human activity, leading human populations such as the Neanderthals into environmental and social/cultural situations they are unable to emerge from successfully.

Mellars (2000) proposes an acculturation model for understanding the demise of the Neanderthals. Working under the “confirmation” (Krings et al.

1997) that Neanderthals left no descendants, he presents a scenario where contact between the two populations resulted in the absorption of Neanderthals. Due to the long overlapping period of Châtelperronian and Aurignacian industries throughout France and Northern Spain during MIS 3, Mellars assumes that Neanderthals and Moderns also would have overlapped and had contact with each other. The alternative he states, is to believe that Neanderthals after 200, 000 ky of Middle Paleolithic technology and behavior...independently, coincidentally and almost miraculously ‘invented’ these distinctive features of upper Palaeolithic technology at almost exactly the same time as anatomically and behaviorally modern populations are known to have been expanding across Europe (2000, 38).

While Mellars insists that there were distinctly different cognitive and intellectual capacities between Neanderthals and moderns, he does acknowledge that an acculturation process such as this requires “a high degree of adaptation of the Neanderthal groups to the specific environments of western Europe” (2000, 38). One issue worth questioning is Mellars conclusion that the differing cognitive and behavioral differences that remained even after contact is consistent with the idea that Neanderthals were a different species than moderns, and therefore incapable of full assimilation. This is in stark contrast to our theory, because I do not assume that failure to assimilate cultural and socially is directly or even indirectly related to biological differences. As I have put forth, the events surrounding the terminal period of Neanderthal existence are not biological, or ecological in nature, instead they are based firmly on social and cultural environments that create unique situations for individuals and groups to respond and adapt to.

Zilhão (2000) presents a slightly different take on the nature of Neanderthal extinction as related to the physical and cultural environment of the southern Iberian Peninsula. He prefers to think that “the replacement of Neanderthals by moderns had not been the outcome of a gradual geographic progression of the latter but a punctuated process during which stable biocultural frontiers might have lasted for significant amounts of time.” (2000, 111). In this case he is referring to the Ebro Frontier of the Iberian Peninsula.

Fundamental to Zilhão’s argument is the emergence of the Châtelperronian is prior to the emergence of moderns, and that most features of the “upper-palaeolithic package” are present in Neanderthals since the last interglacial (MIS 5e) (2000, 117). Zilhão is also keen to point out that while Neanderthals in Europe were undergoing a ‘symbolic revolution’ at the time of contact with moderns from western Asia (2000, 118), Neanderthals of Iberia were still, and

continued to be “middle Palaeolithic” up until their disappearance (119). What this suggest according to Zilhão is “that the replacement of Neanderthals by modern humans should be looked at simply as another instance of contact between isolated populations with different, albeit largely parallel, cultural trajectories” (2000, 119).

Further reinforcing our hypothesis, Zilhão denies Neanderthals as ‘cold-adapted species’ and points, as I have above, to their ability to occupy a diversity of ranges, especially and particularly in Iberia (see Finlayson and Pacheco 2000), where he attributes sparse occupation of woodlands as allowing “the survival of less stressed, non-ritualized, ‘Middle-Palaeolithic’ life ways (Zilhão 2000, 119) allowing a more classical type of Neanderthals to exist longer than Neanderthals of Europe and Asia. It should be noted that if Zilhão is wrong about the “cold-adaptation” of Neanderthals it does not change the basis of his argument. Rather than deny Neanderthals as “cold-adapted” form it may be more prudent to de-emphasize the cold-adaptability of Neanderthals in favor of a more generalized adaptability to a variety of environments which include extreme cold.

The significance of Zilhão’s presentation for our purposes is that it again shows not only adaptive ability, but that Neanderthals themselves were not a universal type, and that amongst their populations there were differing influences, stresses, and confrontations exerting pressure or offering opportunities to Neanderthal groups.

Mellars (1998) provides us with a final model for understanding the demise of the Neanderthals. He supposes that despite Neanderthal ability to survive through severe climate variations, the final cold spell beginning 33 kya was much more severe than any previous. Adding to this is the presence of increased numbers of modern humans with superior technology and social organization, further stressing what would have been an already taxing period for Neanderthal populations. Neanderthals were able to co-exist with moderns prior to this cold spell, according to Mellars, based on three complimenting models. The first is based on low population densities, simply put, there were not enough people, moderns and Neanderthals, to directly affect one another.

Where this is not the case there is the model based on the use of different resources. Neanderthals were highly adaptive, and under this model they and moderns could have been dependent upon wholly different niches, therefore limiting contact and competition. The last model allows for ex-

ploitation of similar resources but in successive rather than simultaneous periods. All three of these models offer a significant insight into how Neanderthals and moderns coexisted for over 10 ky in parts of Europe and Asia.

These models become less useful during the last glacial maximum (end of MIS 3 and MIS 2) when populations were dense, resources minimal, and territories were being exploited to a much higher degree, thus increasing competition and creating situations of stressful contact between any human populations.

One likely scenario rarely touched on is that competition would not have been strictly between Neanderthals and moderns, but within the two populations, therefore exerting cultural and social situations internally. This forces us to look beyond the narrow scope of technological superiority, as important factors in Neanderthal contraction. Competition between Neanderthals would not have been determined by technological superiority, but rather depended on the specific cultural mechanism Neanderthals had at their disposal for dealing with their own kind (we are assuming here that Neanderthals would have recognized other Neanderthals as similar to themselves, and moderns as something different, and this may not be true).

### **Conclusion**

The unfortunate admission I must make is that there is nothing that can be said at this point about the nature of Neanderthal social life. The events that led to their “extinction” are yet to be uncovered; all we have is inference and assumption based on the material evidence at hand. However, the unavailability of the types of information necessary for understanding cultural and social systems should not encourage us to settle for reductionist and deterministic interpretations of Neanderthal life.

Our understanding of cultural systems and the processes of human life should lead us to see Neanderthals as more than a single group of people adapted to and determined by a specific environment and limited by the crude nature of their material world. Instead we should see them as a specific variation of human kind, which may have inherently possessed certain pre-adaptations to specific environments, but were not limited by these adaptations, and instead were capable of adapting to a variety of ecological as well as social conditions.

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