

# Similarities and Differences between the North of France and Neighboring Regions of Belgium and Germany over the Course of the Middle Paleolithic

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## ABSTRACT

The Saalian phase of the Middle Paleolithic (MIS 8 to 6) in northern France, as with Belgium and the Rhine Valley, has been characterized by a poor archaeological record, which seems to reflect discontinuous human occupation of these areas. All of the methods of lithic production from the Middle Paleolithic have been identified, with laminar debitage evident as well (Therdonne, Rheindalen, etc.). In this extensive geographical area, interglacial occupations (SIM 5e) are difficult to identify (Caours, Waziers, Lehringen, Neumark-Nord, Veldwezelt Hez-erwater, etc.), largely for taphonomic reasons.

During the beginning of the last glaciation (MIS 5d to 5a), several sites seem to show considerable similarities in systems of technological production (Seclin, Bettencourt-Saint-Ouen, Rémicourt, Tönchesberg, Wallertheim, etc.). Considered on a large scale, human occupations seem to be part of the same “techno-complex.” During this long phase of climatic transition, the settlement of the northwest appears to be significant and continuous.

The end of the Middle Paleolithic (MIS 4 and 3) is characterized by greater cultural diversity, which seems to distinguish these three regions, and human occupation appears to be discontinuous.

## RÉSUMÉ

Durant la phase saalienne du Paléolithique moyen (SIM 8 à 6), le nord de la France, tout comme la Belgique et la vallée du Rhin, est caractérisé par une faible documentation archéologique, qui semble traduire une occupation humaine discontinue de ces territoires. L'ensemble des systèmes de production lithique du Paléolithique moyen est bien maîtrisé, et l'on note dans ces régions des occurrences ponctuelles du débitage laminaire (Therdonne, Rheindalen,...). Dans cette vaste aire géographique, les occupations interglaciaires (SIM 5e) sont difficiles à mettre en évidence (Caours, Waziers, Lehringen, Neumark-Nord,...), en grande partie pour des raisons d'ordre taphonomique.

Par contre, durant le début de la dernière glaciation (SIM 5d à 5a), plusieurs sites semblent témoigner de grandes similitudes dans les systèmes de production

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technique (Seclin, Bettencourt-Saint-Ouen, Rémicourt, Tönchesberg, Wallertheim,...). Considérées à une échelle large, les occupations humaines semblent faire partie d'un même « technocomplexe ». Durant cette longue phase de transition climatique, le peuplement du Nord-Ouest paraît être important et continu. La fin du Paléolithique moyen (SIM 4 et 3) est par contre caractérisée par une plus grande diversité culturelle qui distingue ces trois régions, et l'occupation humaine apparaît discontinue.

## ZUSAMMENFASSUNG

Die Saalien Phase des Mittelpaläolithikums (MIS 8 bis 6) in Nordfrankreich, wie auch in Belgien und im Rheintal, ist durch ihre geringe Anzahl archäologischer Befunde gekennzeichnet, was auf eine diskontinuierliche menschliche Besiedlung der Gebiete hinweist. Alle Methoden, die für die Produktion von Steinartefakten im Mittelpaläolithikum angewendet wurden, sind identifiziert worden. Darunter sind auch laminare Grundformen erkennbar (Therdonne, Rheindalen usw.). In diesem ausgedehnten geografischen Gebiet sind interglaziale Siedlungen (SIM 5e) vor allem aus taphonomischen Gründen schwer zu unterscheiden (Caours, Waziers, Lehringen, Neumark-Nord usw.).

Zu Beginn der letzten Eiszeit (MIS 5d bis 5a) weisen mehrere Standorte erhebliche Ähnlichkeiten in ihren technischen Produktionssystemen auf (Seclin, Bettencourt-Saint-Ouen, Rémicourt, Tönchesberg, Wallertheim usw.). Im großen Maßstab betrachtet, ergeben die geografisch verstreuten menschlichen Siedlung das Bild eines zusammengehörigen "Technokomplexes".

Das Ende des Mittelpaläolithikums (MIS 4 und 3) ist durch seine kulturelle Vielfalt gekennzeichnet. Die drei benannten Regionen weisen unterschiedliche Merkmale und eine diskontinuierliche menschliche Besiedlung auf.

## INTRODUCTION

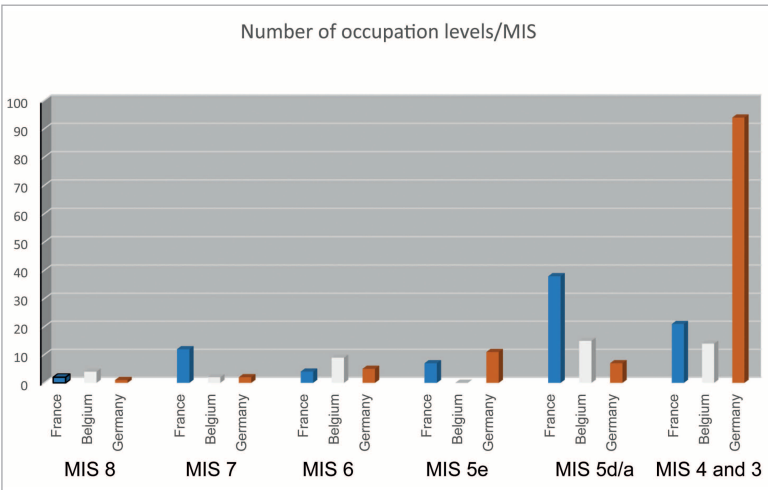
The aim of this article is to provide a French response to the question formulated in the title of this book: Was the Rhine a boundary or a corridor during the Middle Paleolithic? It is clear that the Rhine was difficult to cross during interglacial periods, as it is now, and it appears to have acted as a boundary during the Roman Empire, undoubtedly due to a notion attributed to Julius Caesar (Dignef 2013).

A parallel can be drawn with the Channel River, which isolated Great Britain from the continent at times, for example during isotope stages 6 and 5. But the large plains of the North Sea were dewatered during glacial phases and were crossed by herds of large herbivores and groups of nomadic hunters (Roebroeks 2014). On a smaller scale, the Rhine could also have acted as a boundary, or in any case as an obstacle, and may have been easier to cross during climatic fluctuations in the Pleistocene.

Over the past few years, regional overviews have been established for the North of France (Nord-Pas-de-Calais and Picardy; see Lochter and Depaepe 2015; Hérissou et al. 2016; Lochter et al. 2016), but also for Belgium, a close neighbor of the Rhine Valley (Di Modica et al. 2016). A similar review was recently carried out for Germany (Richter 2016). Modern archaeological methods now allow us to make a certain number of comparisons in these three geographical areas.

Further south, Alsace appears to have been more deserted during the Middle Paleolithic, where the only sites recorded in the literature are Mutzig (Koehler et al. 2016) and the early discoveries at Achenheim (Heim et al. 1982; Junkmann 1995). However, this situation may result from several factors: the absence of Paleolithic archaeological activity for years; the paucity of lithic raw materials or the thickness of the loess cover masking sites. But it is clear that Paleolithic hunters crossed these zones, as shown by the surface site of Lellig in Luxemburg (Le Brun-Ricalents et al. 2013), or the Magdalenian occupations at Morschwiller (Koehler et al. 2013).

On both sides of the Rhine, archaeological material/sites from northern France, Belgium and Germany offer extensive data for our understanding of the Middle Paleolithic. This article aims to bring to light the similarities and disparities among these geographical areas, which marked the northern margins of Neanderthal expansion and which were discontinuously settled in different ways during the different chrono-climatic phases (Fig. 1).



**Fig. 1.**  
Number of sites per  
chronoclimatic phase.

## THE HUMAN FOSSIL RECORD

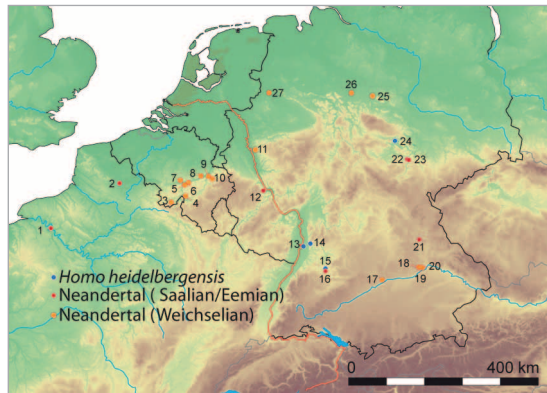
The sediments of the plains in northern France are generally decarbonated and are not conducive to the preservation of bone remains. For the Middle Paleolithic period, only two sites have yielded human remains attributed to Neanderthals: two skulls found at Biache-Saint-Vaast (Tuffreau and Sommé 1988) and an arm found at Tourville-la-Rivière (Faivre et al. 2014). Both sites consist of fine and calcareous fluvatile sediments attributed to MIS 7.

In comparison, the Meuse corridor in Belgium contains abundant Neanderthal fossils (Fig. 2). Remains of this hominin have been found in eight cave sites (Engis, Spy, Goyet, Sclayn, Trou Walou, Couvin, La Naulette, Fonds-de-Forêt). The minimum number of individuals for the Belgian Neanderthal sites is 10 (Toussaint et al. 2011). The context of the human remains from Engis, Goyet and Fonds-de-Forêt cannot be interpreted. On the other hand, those from Sclayn and perhaps La Naulette go back to the beginning of the Weichselian Glacial. Finally, the remains from Trou Walou, Couvin and Spy are “classic” Weichselian Neanderthals.

**Fig. 2.**

Sites with human remains:

1. Tourville-la-Rivière.
2. Biache-Saint-Vaast.
3. Couvin.
4. La Naulette.
5. Spy.
6. Goyet.
7. Sclayn.
8. Trou Walou.
9. Fonds-de-Forêt.
10. Engis.
11. Neandertal.
12. Ochtendung.
13. Mauer.
14. Reilingen.
15. Bad Cannstatt.
16. Steinheim.
17. Hohlenstein-Stadel.
18. Sesselfelsgrötte.
19. Klausennische.
20. Untere Klaue.
21. Hunas.
22. Weimar-Ehringsdorf.
23. Taubach.
24. Bilzingsleben.
25. Salzgitter-Lebenstedt.
26. Sarstedt.
27. Warendorf.



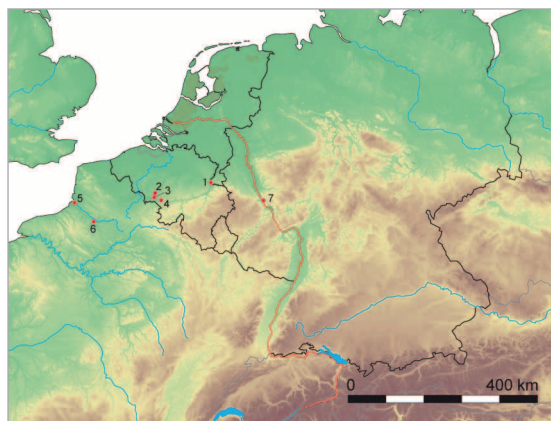
The German human fossils come from cave or open-air sites, generally preserved in alluvial sediments, including travertines. The Mauer mandible, discovered in 1907 and dated to  $609,000 \pm 40,000$  years, has been defined as the *Homo heidelbergensis* holotype (Wagner et al. 2010). It is linked to the middle phase of the Middle Pleistocene. Other fossils attributed to *Homo erectus* or *Homo heidelbergensis* were found at Bilzingsleben (MIS 11), Stuttgart Bad Cannstatt, Steinheim (MIS 9?), whereas the age of the skull from Reilingen is still debated (Street et al. 2006). This is also the case for the skull fragments from Ehringsdorf (MIS 7 or 5e). The site of Ochtendung yielded remains attributable to MIS 6 (von Berg et al. 2000).

For the Upper Pleistocene, the two molars from Taubach are attributed to the Eemian (MIS 5e). Finally, seven sites, including the eponymous site, contain Weichselian Neanderthal remains: Neandertal, Warendorf, Salzgitter-Lebenstedt, Sarstedt, Hohlenstein-Stadel, Sesselfelsgrötte and Klausennische (Street et al. 2006).

## MIS 8, THE BEGINNING OF THE MIDDLE PALEOLITHIC

Generally speaking, the Middle Paleolithic is said to begin with the emergence of the Levallois, in particular, with Levallois debitage. This process is well documented at the site of Kesselt *Op de Schans* in Belgium, where four lithic concentrations attributed to the beginning of MIS 8 show the presence of Levallois, Discoid and prepared core technology (Van Baelen et al. 2007). A recent revision of the alluvial formations from Mesvin IV could confer an age of 350 ka BP on the Levallois debitage assemblage from this site (Haesaerts et al. 2019).

In the Somme Valley, one of the first signs of Levallois debitage was found at Salouel in the gravels of “the Argoeuvres sheet” (Antoine 1990) and appears to date from the end of isotope stage 8 (Fig. 3).



**Fig. 3.**

Sites from isotopic stage 8:

1. Kesseelt Op de Schans.
2. Le Rissori.
3. Mesvin.
4. Saint-Symphorien.
5. Saint-Valéry-sur-Somme.
6. Salouel.
7. Ariendorf.

In Germany, the stratigraphic position of the lithic assemblage from Ariendorf 1, situated under the Wehr tephra, and dated to 220 ka BP, makes it one of the earliest indications of the Middle Paleolithic (Richter 2006).

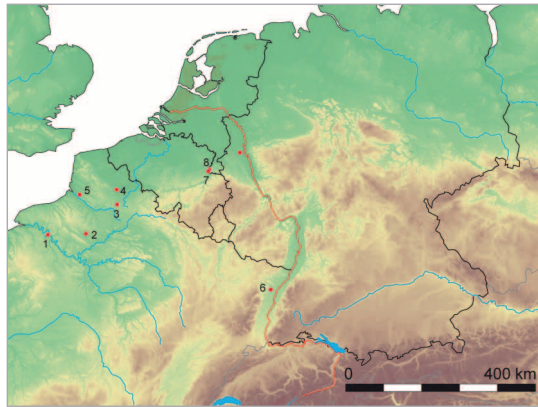
In these three regions, Levallois debitage seems to become widespread during MIS 8, although this lower limit is likely to be pushed further back in the near future (Locht et al. 2018).

## MIS 7, A FERRASSIE-TYPE MOUSTERIAN

On a broader geographic scale, several lithic assemblages have been linked to a Ferrassie-type Mousterian. This is the case for Biache-Saint-Vaast, in northern France (Sommé and Tuffreau 1988), Level B3 at Rheindahlen in

the Rhine Valley (Bosinski 1995) and Site K at Maastricht-Belvédère (Verpoorte et al. 2016). Similarities between the retouched toolkits from these sites imply that there is a degree of cultural unity in north-western Europe during MIS 7. During the rest of the Middle Paleolithic, this Mousterian facies is only barely represented, or completely absent, in northern Europe (Figs. 4 and 5).

**Fig. 4.**  
Sites from isotopic stage 7:  
1. Tourville-la-Rivière.  
2. Therdonne.  
3. Etrécourt-Manancourt.  
4. Biache-Saint-Vaast.  
5. Drucat. 6. Achenheim.  
7. Kesselt. 8. Maastricht.  
9. Rheindahlen.



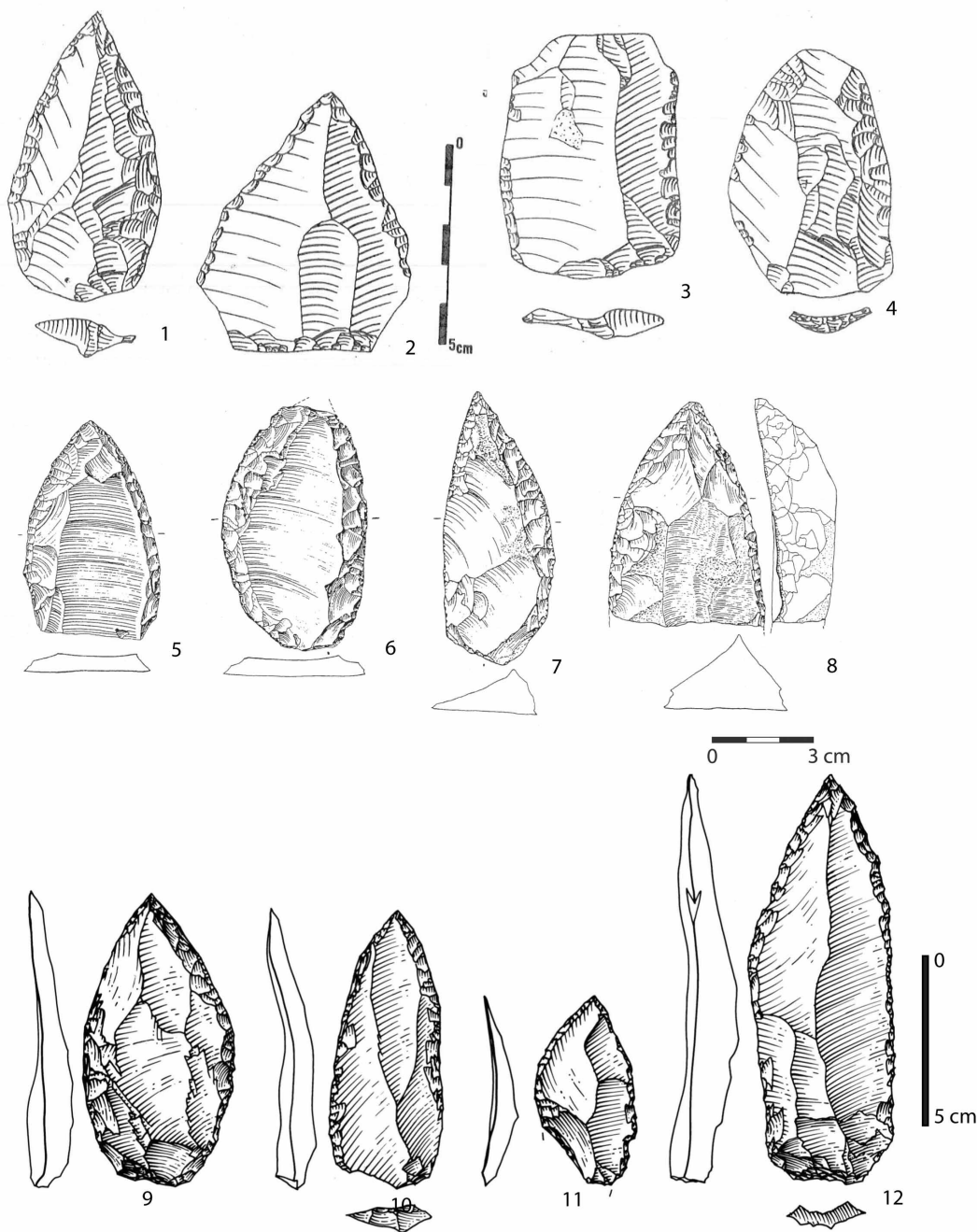
## ASSEMBLAGES WITH A LAMINAR COMPONENT FROM MIS 7

From the beginning of the Middle Paleolithic, all the lithic production systems (Mousterian biface shaping, Levallois, laminar, discoid debitage, etc.) already appear to be perfectly mastered (Locht 2005). In northwest Europe, several sites show the presence of laminar production from the Saalian phase of the Middle Paleolithic onwards. This is well illustrated at the site of Saint-Valéry-sur-Somme (France) at the end of MIS 8 or the beginning of MIS 7 (de Heinzelin and Haesaerts 1983). The N3 series from Therdonne, which also dates from the transition between MIS 7 and 6, also contains a small, but well-mastered, laminar component (Locht et al. 2010).

In Belgium, the lithic series from Rissori also contains a small laminar component, represented by prismatic cores and several crested blades (Adam 1991).

In Germany, after a recent revision of the Rheindahlen stratigraphy, the B1 occupation level was surprisingly attributed to MIS 7 (Schirmer 2016; Richter 2016). Up until then, the chronostratigraphic context of this occupation seemed to be well established, with an attribution to MIS 5 (Bosinski 1995). But an older age for Level B1 is nonetheless consistent with the archaeological record from MIS 7 in northern Europe, as shown by the series with laminar components from Saint-Valéry-sur-Somme, Therdonne and Rissori.





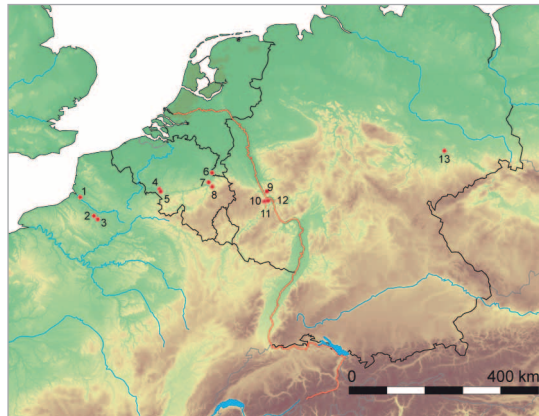
**Fig. 5.**  
MIS 7: Ferrassie-type Mousterian from the North of Europe. 1 to 4. Biache-Saint-Vaast (Tuffreau 1982).  
5 to 8. Rheindahlen B3 (Bosinski 1995). 9 to 12. Maastricht-Belvédère site K (De Loecker 2004).

## THE MIS 6 OCCUPATIONS

The Pleniglacial phase of this isotope stage undoubtedly led to the abandonment of northern Europe during the most extreme phases, interspersed with small human incursions during short phases of climatic amelioration. Only a few archaeological levels in these three geographic areas can be attributed to this long period (Fig. 6).

**Fig. 6.**

Sites from isotopic stage 6:  
 1. Abbeville/Menche-court.  
 2. Plachy-Buyon. 3. Ailly-sur-Noye. 4. St Symphorien.  
 5. Harmignies. 6. Veldwezelt.  
 7. Liège. 8. Trou Walou.  
 9. Wannan. 10. Schweinskopf.  
 11. Tönchesberg. 12. Ariendorf.  
 13. Markkleeberg.



In northern France, Ailly-sur-Noye is attributed to a Tardiglacial context on account of its stratigraphic position and in particular, the malacological study of Level 3 (Locht et al. 2013).

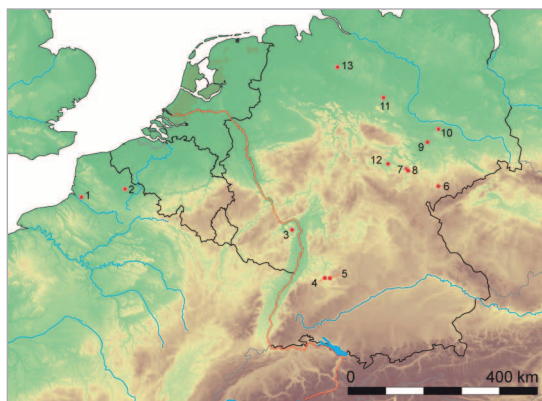
## THE INTERGLACIAL EEMIAN OCCUPATIONS (MIS 5E)

Until recently, Middle Paleolithic occupations during the Eemian in northern and central Europe were only recorded at German, Slovak and Hungarian sites, within travertines or lacustrine sediments. No sites from this period were known in north-western Europe. Based on the available data, certain authors put forward a “green barrier” theory, according to which Neanderthals could not adapt their lifestyle to a temperate climate and a closed, wooded environment (Gamble 1986). For others, taphonomic-related factors were responsible for the absence of Eemian sites, as the erosive action of the last glacial erased interglacial deposits (Roebroeks and Speelers 2002). The discovery of the site of Caours in 2002 confirmed the latter explanation (Antoine et al. 2006). The archaeological levels preserved in fine fluvial sediments were protected from erosion by the upper part of the stratigraphic sequence, made up of much more solid coarse tufas. Since then, the discovery of the site of Waziers showed that this Neanderthal presence during the Eemian in northern France was not an isolated case



(Hérisson et al. 2017). The absence of Eemian occupations, in the strict sense of the term, in Belgium is also undoubtedly due to taphonomic factors in caves and in open-air sites (Fig. 7).

These recent discoveries modify our perception of settlement patterns in Europe during the Pleistocene. Hominins were present in north-western Europe during the Eemian interglacial, as could logically be expected in light of the settlement observed during the preceding interglacial phases. However, the level of current research does not enable us to estimate Neanderthal demography during the Eemian.



**Fig. 7.**  
Sites from isotopic stage 5e:  
1. Caours. 2. Waziers.  
3. Wallertheim. 4. Stuttgart-Untertürkheim. 5. Stuttgart-Bad Cannstadt. 6. Neumark.  
7. Weimar. 8. Taubach.  
9. Rabutz. 10. Gröbern.  
11. Veltheim. 12. Burgtonna.  
13. Lehringen.

After an overview of the literature, it is fitting to make some general observations about lithic assemblages (Wenzel 2007; Pop 2014; Loch et al. 2014; Depaepe 2015; Hérisson et al. 2017). Levallois and Discoid debitage are well represented, but these series seem to be characterized by relatively low levels of technical investment and are of rather average quality.

The difficulties related to sourcing good quality raw materials in a closed, wooded environment may partially account for this (Locht et al. 2014). However, other hypotheses can be put forward, such as the theory that stone tools played a secondary role in relation to other easily accessible raw materials, such as wood, in interglacial contexts (Otte 2015). The Lehringen spear, which dates to the Eemian, and the older spears from Schöningen are remarkable examples of this (Thieme and Veil 1985; Thieme 1997). Wooden artifacts are rarely preserved, and when they are, they shed light on the vegetal component of the Neanderthal hunting toolkit panoply. The use of bitumen for hafting stone tools has been recorded at certain sites in the Near East, implying that sophisticated hafting methods were used for stone tools (Boëda et al. 2008).

The discoveries from Caours and Waziers complete and broaden the Eemian Paleolithic landscape based on German sites. They underline the adaptive faculties of Neanderthals to temperate climates or to Periglacial climates like at Beauvais (Locht et al. 2014).

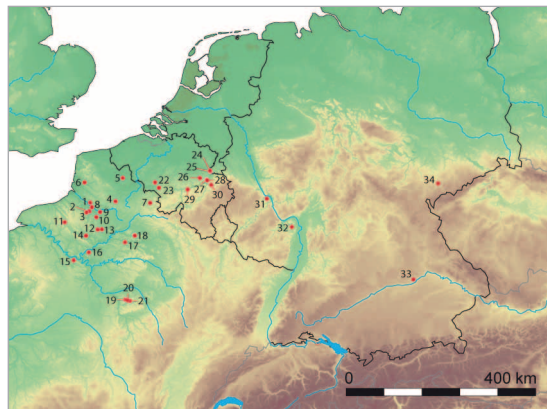
## EARLY WEICHSELIAN ASSEMBLAGES WITH A LAMINAR COMPONENT (MIS 5d TO 5a).

During the Early Weichselian glacial period (MIS 5d to 5a), an original technocomplex developed in northern France (Figs. 8 and 9). Levallois debitage provides the backdrop for this technocomplex, but it is frequently associated with blade production on prismatic cores and point production on convergent unipolar cores (Locht 2005; Goval 2008; Loch et al. 2016). Altogether, 33 archaeological levels have been attributed to the early Weichselian and are divided into sub-stages 5b, 5c and 5b, with an absence of occupation during MIS 5b.

Equivalent assemblages in Belgium include the lithic assemblages from Rémicourt and Mont Saint-Martin in Liège (MIS 5b: Van Der Sloot et al. 2011; Bosquet et al. 2004) and Rocourt (MIS 5c: Otte et al. 1990). This type of laminar production is only found in open-air sites and has not been identified in caves (Di Modica et al. 2016)

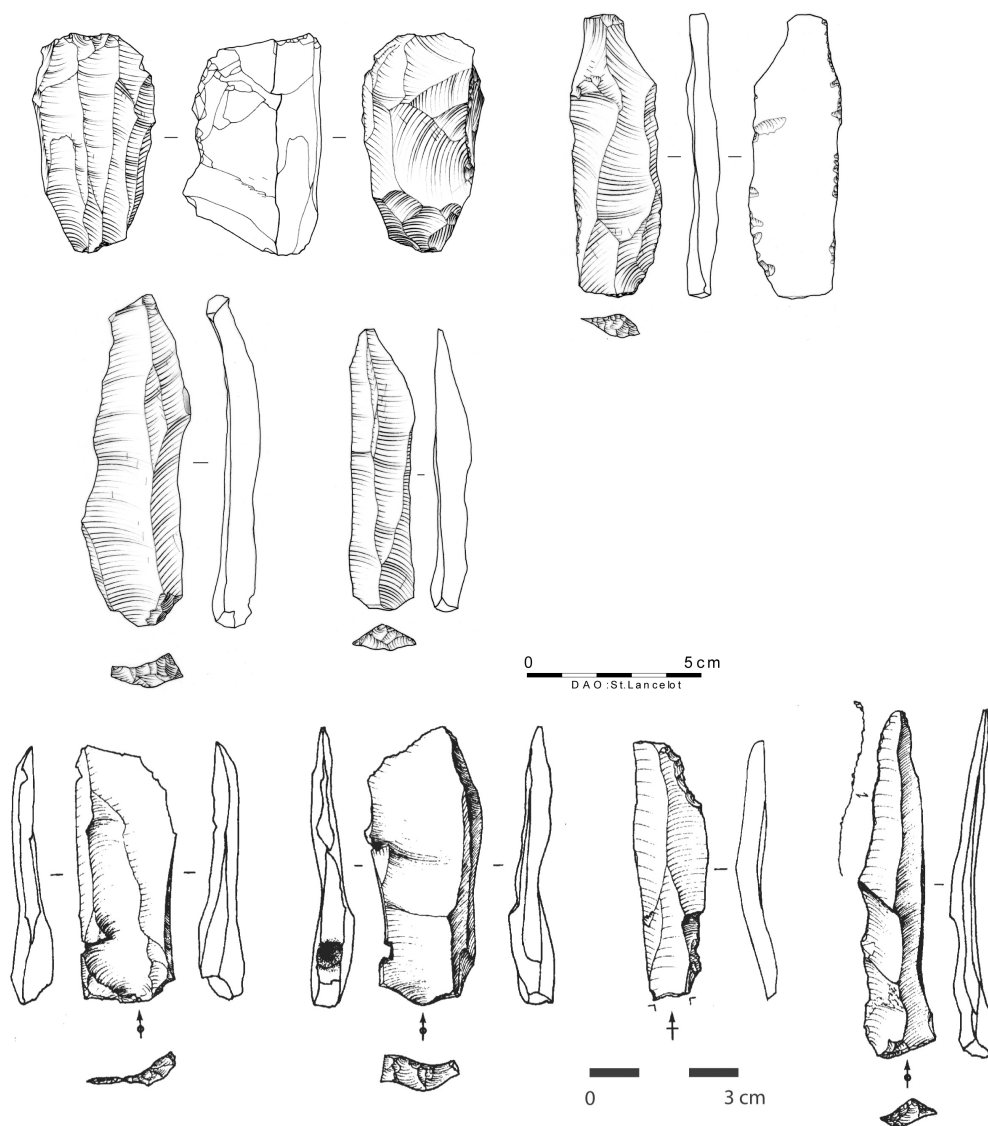
**Fig. 8.**

Sites from isotopic stages 5d to 5a: 1. Bettencourt-Saint-Ouen. 2. Revelles. 3. Fresnoy-au-Va. 4. Rencourt-lès-Bapaume. 5. Seclin. 6. Gouy-Saint-André. 7. Saint-Hilaire-sur-Helpe. 8. Saint-Sauveur. 9. Blangy-Tronville. 10. Ailly-sur-Noye. 11. Mauquenchy. 12. Saint-Just-en-Chaussée. 13. Cuvilly. 14. Auteuil. 15. Soindres. 16. Villiers-Adam. 17. Ploisy. 18. Chavignon. 19. Lailly-Tournerie. 20. Lailly Beauregard. 21. Molinons. 22. Clypot. 23. Harmignies. 24. Veldwezelt. 25. Kesselt. 26. Rémicourt. 27. Rocourt. 28. Liège. 29. Sclayn. 30. Trou Walou. 31. Tönchensberg. 32. Wallertheim. 33. Sesselfels-grotte. 34. Neumark.



In Germany, this technocomplex could be represented by the occupation levels at Tönchesberg 2B (MIS 5d) and Wallertheim D (MIS 5a). In the first site, lithic production is geared towards flakes and blades (Conard 1992). The second is characterized by laminar production (Conard and Adler 1996). For a long time, Level B1 at Rheindahlen was attributed to MIS 5 (Bosinski 1995). In view of the discovery date of the site in 1966, it would even have been logical to group assemblages with a laminar component under the term “Rheindahlian,” as suggested by G. Bosinski (1967). If we accept that Rheindahlen B1 is contemporaneous with the Early Weichselian Glacial, it would incorporate seamlessly with the northern European archaeological landscape (Locht et al. 2010).

This technocomplex characterizes north-western Europe, but does not extend beyond the Rhine, which seems to represent a boundary in this specific case. Tönchesberg and Wallertheim are both on the left bank. Up until now, no assemblages with laminar components have been found



further east; the laminar productions at Piekary II and Cracow are more recent (MIS 4 or 3; Kozłowski 2001, 2002, 2006; Valladas et al. 2003).

#### THE LOWER AND MIDDLE PLENIGLACIAL: A CONTRASTED CULTURAL MOSAIC

No human occupation has been recorded during the Lower Weichselian Pleniglacial (MIS 4) in Germany (Richter 2016). Until recently, this was also true of northern France, which seemed to be completely uninhabited (Locht 2004). However, the discoveries of the occupation levels of Havrin-

**Fig. 9.** Weichselian Early Glacial. Laminar production. 1 to 4. Level N1 at Fresnoy-au-Val (Goval and Loch 2009). 5 to 8. Rémicourt (Bosquet et al. 2004).

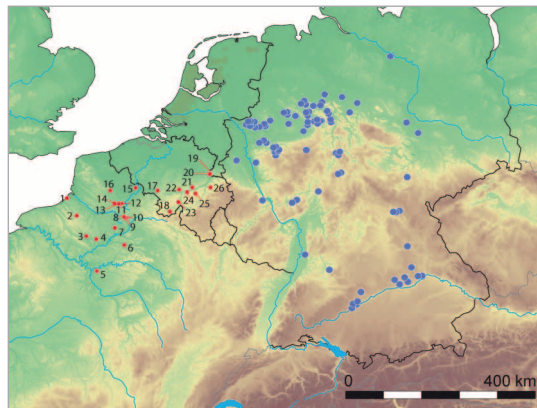
court, dated by OSL to  $65 \pm 3.8$  and  $67.6 \pm 3.9$  ka (Antoine et al. 2014) and of Catigny (OSL:  $62.66 \pm 4$  ka; Loch 2018) challenge this interpretation (Fig. 10). These brief traces of human occupation must have occurred during the Lower Pleniglacial interstadials (MIS 4). Then, during the Middle Pleniglacial (MIS 3), the archaeological record takes the form of a contrasted cultural mosaic with the presence of sites attributed to the Mousterian with denticulates (Beauvais, including the site of Ormesson; Bodu et al. 2013) or to the Mousterian of Acheulean tradition (Saint-Amand-les-Eaux, Ploisy)(Fig. 11). Sites characterized by the presence of preferential Levallois flakes make up a third group (Ault, Gauville, Attilly, Hermies; Loch et al 2016). The last Middle Paleolithic occurrences take place at about 40 ka (Hénin-sur-Cojeul; Marcy et al. 1993).

If we look to eastern France, the Rhine may have been a north/south communication path with the diffusion of *Keilmessergruppen*-type assemblages in the south of Burgundy (Frick and Floss 2017).

In Belgium, the situation seems to be much the same as in northern France. Tenuous traces of occupations are recorded during the Lower Pleniglacial (MIS 4) in Harmignies and Trou Walou, for example (Di Modica et al. 2016). During the Middle Pleniglacial, traces of human

**Fig. 10.**

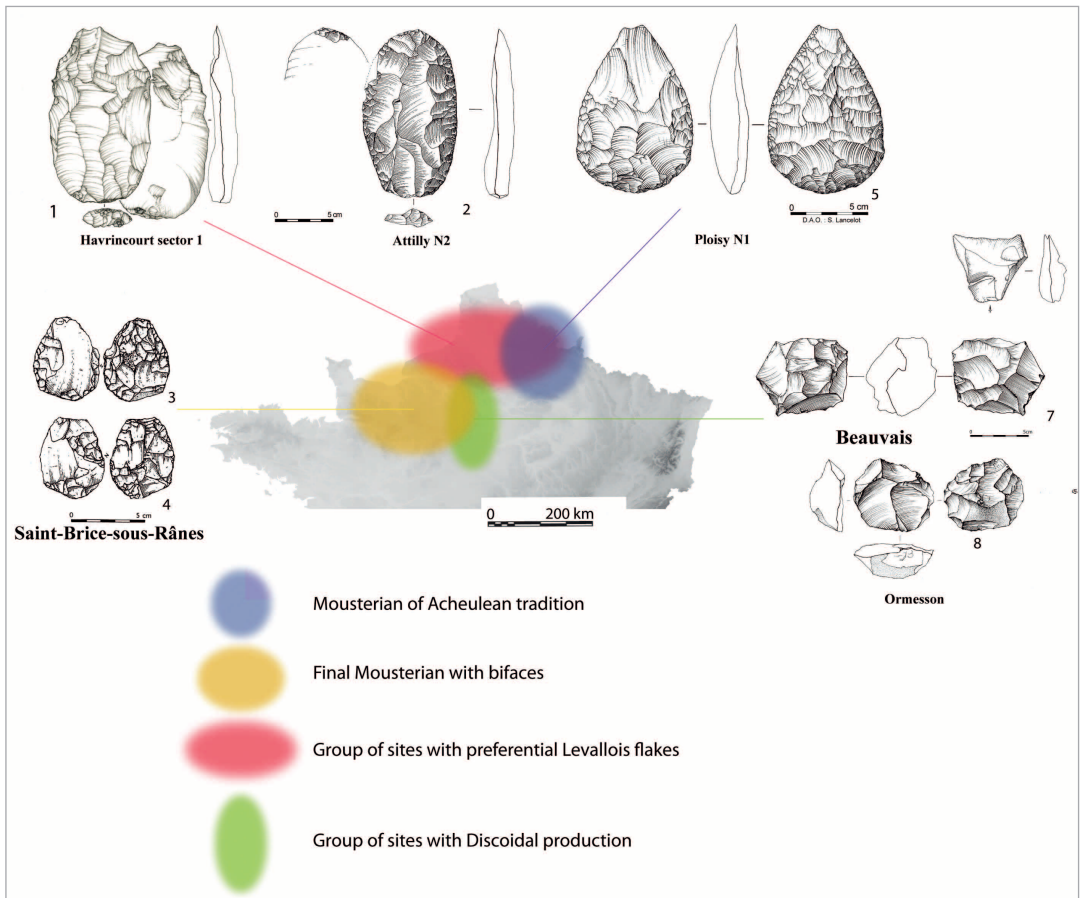
Sites from isotopic stages 4 and 3: 1. Ault. 2. Gauville. 3. Beauvais. 4. Fitz-James. 5. Ormesson. 7. Catigny. 8. Attilly. 9. Savy. 10. Saint-Quentin. 11. Hermies Tio Marché. 12. Havrincourt. 13. Hermies Champ Bruquette. 14. Bapaume. 15. Saint-Amand-les-Eaux. 16. Hénin-sur-Cojeul. 17. Harmignies. 18. Couvin. 19. Veldwezelt. 20. Kesselt. 21. Huccorgne. 22. Spy. 23. Trou du Diable. 24. Sclayn. 25. Trou Al'Wesse. 26. Trou Walou. For the list of German sites, see Richter 2016.



occupations become more frequent (Veldwezelt, Couvin, Trou Walou, Sclayn, Spy, etc.), but none seem to be older than 45 ka BP (Di Modica et al. 2016).

The leaf-shaped points found at Couvin suggest eastern affinities with “Micoquian” groups from Germany (*Blattspitzen*), whereas others point to links with the Mousterian of Acheulean tradition, which would place Belgium at the junction between two different cultural areas (Di Modica et al. 2016).

Neanderthals are present in Belgium until about 38/37 ka BP, as shown by the  $^{14}\text{C}$  dates obtained during the recent revision of the Spy fossils (Semal et al. 2009). These dates imply that Neanderthals may also be

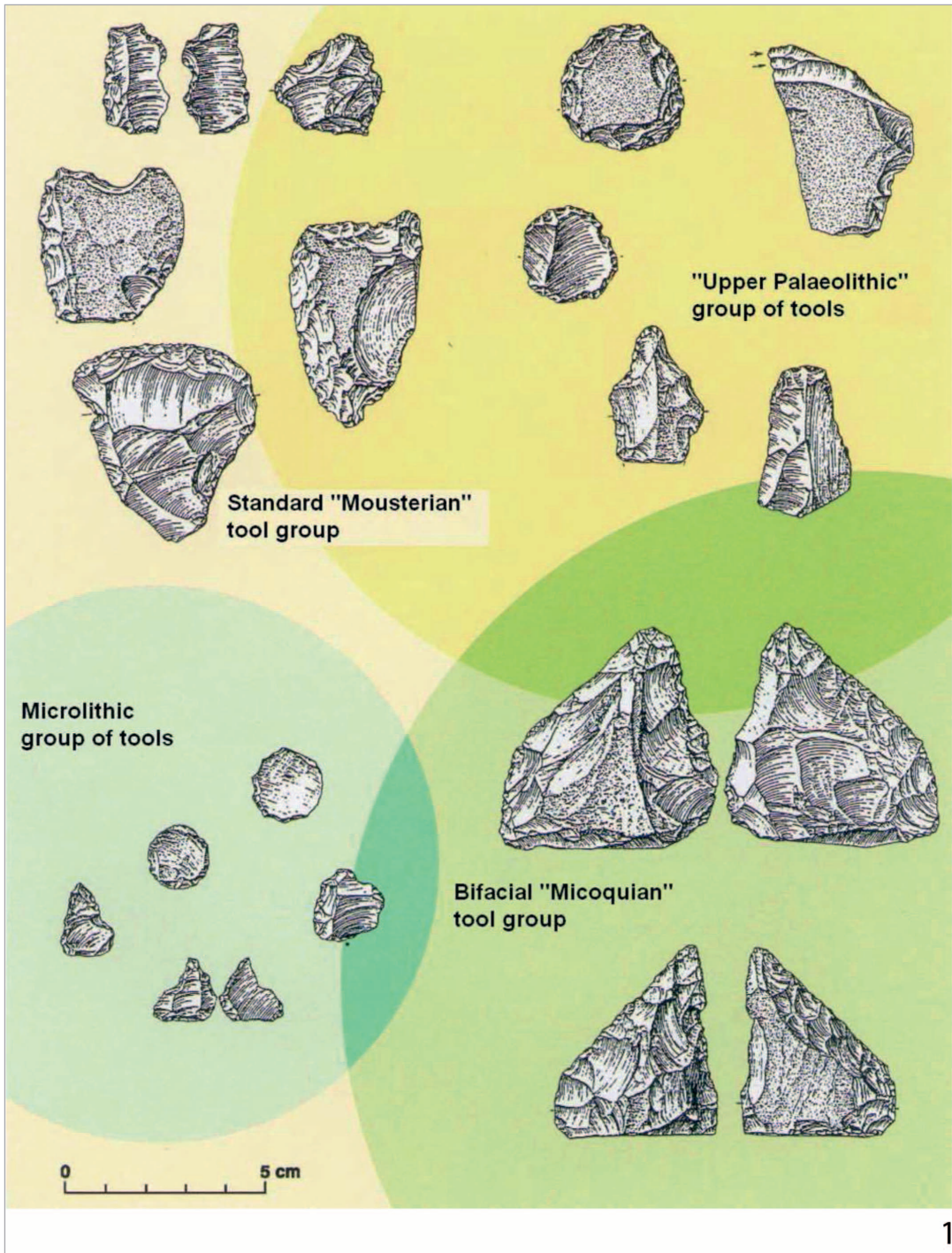


**Fig. 11.** Variability of the lithic industries in northern France during the Lower and Middle Pleniglacial (after Loch et al. 2016).

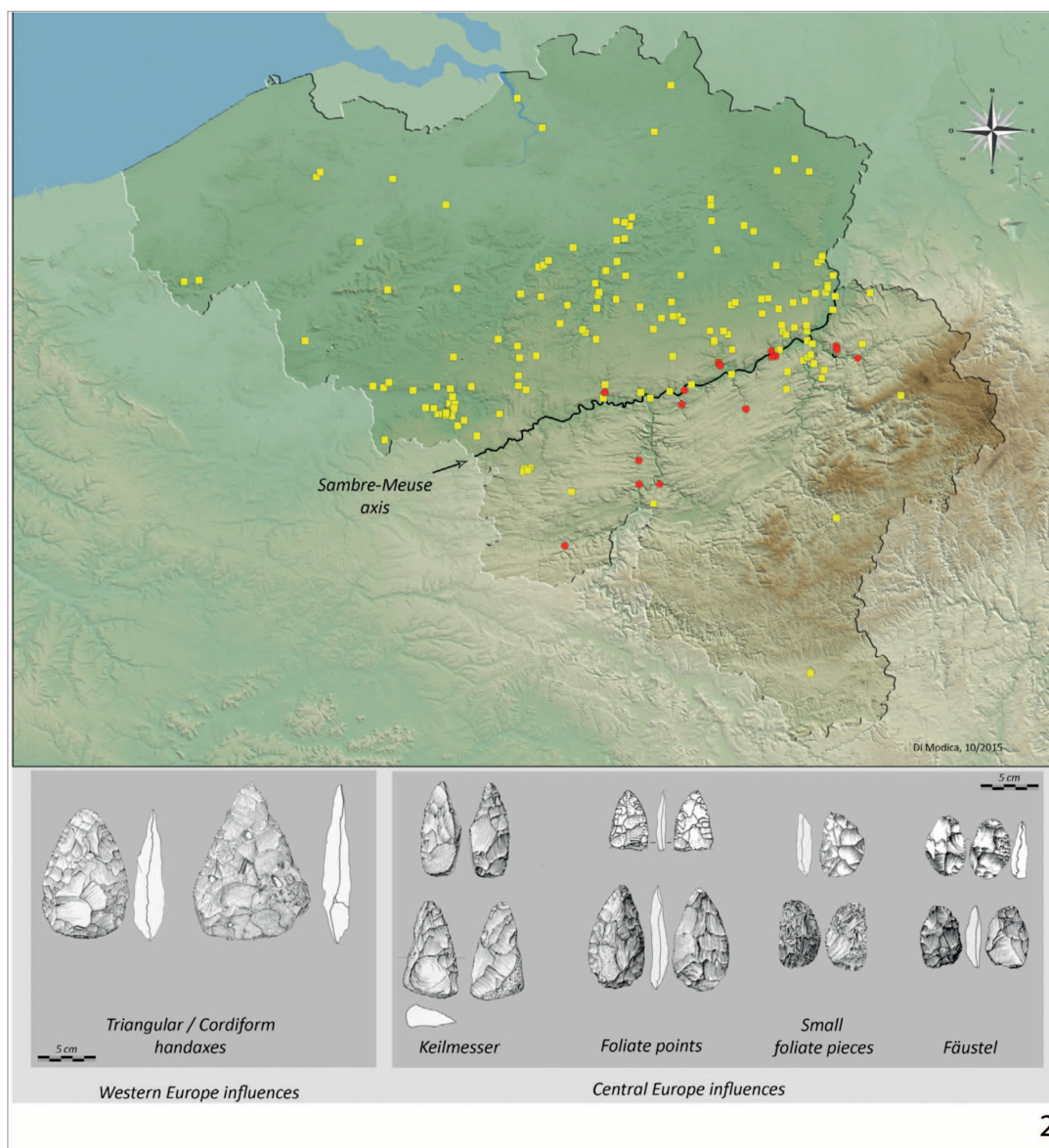
the artisans of the Lincombian-Ranisian-Jerzmanovician, which begins at about 38,000 BP (LRJ; Flas 2013 and 2015). However, this hypothesis has not yet been confirmed (Pirson et al. 2011). Most of the last Mousterian levels are slightly older. The stratigraphic position of Layer 1A at Sclayn suggests an age of 40/37 ka, while level 17 at Trou Walou could be about the same age (Bonjean 2011; Pirson et al. 2011). At the same site, occupation CII-4 is dated by ESR to 45,000 to 50,000.

In Germany, the situation is more dichotomous. No Lower Pleniglacial human occupations have yet been discovered. During the Middle Pleniglacial, 94 occupation levels attributed to the “Mousterian with a Micoquian Option” are recorded for the 60 to 43 ka time bracket (Richter 2016), if we adopt the “short chronology” of the Micoquian put forward by Richter. The “long chronology” of this facies places a number of these sites in the Early Weichselian Glacial (Conard and Fischer 2000). In this case, only about twenty archaeological levels are recorded for the final phase of the Middle Paleolithic. This seems to end rather suddenly with the disappearance of Neanderthals at about 43 ka (Richter 2016),









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which is slightly earlier than in Belgium and northern France (Locht 2018).

In these three geographic areas, the cultural variability of the last part of the Middle Paleolithic reflects the situation in the whole of Europe (Fig. 12). Cultural traditions comprise regional specificities which indicate the identity of groups and affiliation to territories (Gabori 1976; Otte 2015).

A difference in site density emerges between Belgium and northern France, on the one hand, and Germany, on the other, for the Lower and

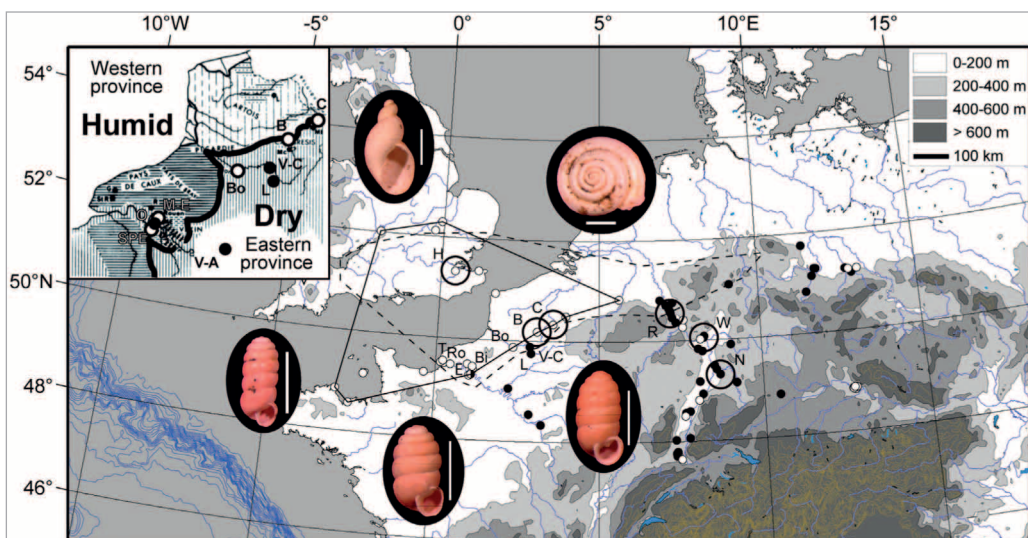
**Fig. 12. left and above**  
Variability of the lithic industries of Germany and Belgium in the Lower and Middle Pleniglacial (after Di Modica et al. 2016 and Richter 2016).

Middle Pleniglacial (Fig. 1). This may be partially explained by the malacological analysis of the Upper Pleniglacial loess sequences. This brings to light two climate-sedimentary domains (Lautridou and Sommé 1974; Moine 2014): one to the west, around the Channel and in Belgium, with a cold and wet environment with little vegetation, thus undoubtedly with few herbivores; and the other to the east, with a hillier landscape with more vegetation and a drier climate (Fig. 13). For the Middle Pleniglacial, the malacofaunal record is less abundant, but the scenario seems to be identical (Moine 2014). If we extrapolate from this, it is possible that the climatic conditions in northern France, beside the Atlantic coast, were cold and wet during much of the Middle Pleniglacial, and thus not conducive to human occupation. Again, humans may only have been present during the short interstadial phases. These climatic conditions could explain the disparity between the archaeological record of Belgium and northern France and that of Germany, for example.

At the end of the Middle Pleniglacial, the transition between the Middle Paleolithic and the Upper Paleolithic in northern Europe is characterized by the emergence of the Lincombian-Ranisian-Jerzmanovician transition facies, which extends from Poland to Great Britain (LRJ; Flas 2011). Two sites are recorded in central Germany (Ranis 2 and Zwergloch), and two in Belgium (Spy and Goyet). This cultural facies is unknown in southern Germany, where the Aurignacian gives way directly to the Middle Paleolithic (Richter 2016).

In spite of the wealth and accuracy of the sedimentary record of northern France, and clear interpretations, no transition facies has been identified in this region. Curiously, Chatelperronian or Lincombian-Ranisian-Jerzmanovician influences have not been recorded in this zone. Therefore, the archaeological record of northern France does not con-

**Fig. 13.** Distribution map of sites that yielded age-checked Weichselian Upper Pleniglacial molluscan records (Moine 2014).



tribute to discussions on the nature of the transition. On the contrary, it gives the impression that a rupture occurred between the two periods, with a shift from one world to another.

## CONCLUSION

The contributions in this volume discuss whether the Rhine was a boundary or a corridor during the Middle Paleolithic. As a result of climatic fluctuations, the Rhine could have been an obstacle, in particular for movements from west to east. The Ferrassie-type Mousterian was identified to the west of the Rhine during MIS 7 (Rheindahlen B3, Maastricht, Biache-Saint-Vaast, etc.), but not to the east of the river. The same applies to MIS 7 and MIS 5 assemblages with laminar debitage, which are confined to the west of the river.

In the three geographic areas of interest here, the Middle Paleolithic emerges during MIS 8 with the onset of Levallois debitage, but few human occupations have been recorded during this Pleniglacial phase. During MIS 7, a certain cultural unity seems to exist in northwest Europe with the presence of a Ferrassie-type Mousterian, but also assemblages with a laminar component occur here as well. Like for MIS 8, few occupation traces are recorded during MIS 6.

The recent discoveries of the sites of Caours and Waziers clearly show that Neanderthals were present in northern France during the Eemian (MIS 5e) and complete the archaeological landscape outlined for this period by the central European sites.

The beginning of the Weichselian Glacial is characterized by the presence of assemblages with a laminar component in northern France, Belgium and Germany. However, the variability of Middle Paleolithic lithic assemblages is best expressed during MIS 4 and especially MIS 3. Site density is much higher in Germany than in Belgium and northern France. This may be a result of environmental factors, as the latter regions were much colder and wetter due to their proximity to the Atlantic coast.

During this period, and probably during earlier phases, the presence of a *Keilmessergruppen*-type facies in eastern France (south of Burgundy) implies that the Rhine/Rhone corridor may have played a role in cultural exchanges and migrations of Neanderthal populations from the center and the west of the continent.

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