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Laurence Manolakakis, François Giligny. Territories and lithic resources in the Paris basin during the Middle Neolithic (4200-3600 BC). Capote M., Consegrua S., Diaz-del-Rio P., Terradas X. Proceedings of the 2nd International Conference of the UISPP Commission on Flint Mining in Pre- and Protohistoric Times., Hadrian Books Ltd, Archeopress, British Archaeological Reports, pp.45-50, 2011, International Series 2260, 978 1 4073 0831 9. halshs-00625698

**HAL Id: halshs-00625698**

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Proceedings of the 2nd International  
Conference of the UISPP  
Commission on Flint Mining  
in Pre- and Protohistoric Times  
(Madrid, 14-17 October 2009)

Edited by

Marta Capote  
Susana Consuegra  
Pedro Díaz-del-Río  
Xavier Terradas

BAR International Series 2260  
2011

Published by

Archaeopress  
Publishers of British Archaeological Reports  
Gordon House  
276 Banbury Road  
Oxford OX2 7ED  
England  
bar@archaeopress.com  
www.archaeopress.com

BAR S2260

*Proceedings of the 2nd International Conference of the UISPP Commission on Flint Mining in Pre- and Protohistoric Times (Madrid, 14-17 October 2009)*

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ISBN 978 1 4073 0831 9

Cover figure: Last mining event at Casa Montero, Madrid (c. 5200 cal BC). Illustration by Juan Álvarez-Cebrián

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# Territories and lithic resources in the Paris basin during the Middle Neolithic (4200-3600 BC)

Laurence MANOLAKAKIS and François GILIGNY

## *Abstract*

Neolithic tool-makers of the Paris basin had access to a great diversity of lithic material resources, among them—secondary or tertiary flint, sandstone and orthoquartzite. Tertiary flint and secondary flint were most commonly used for domestic production. These materials can be found mainly in the Mesozoic Senonian limestone (Coniacian and Campanian), and in the Tertiary Saint Ouen (Bartonian) silicified limestone. Other materials are exogenous, such as Jurassic flint originating from the flint mines of Caen-Falaise plain of Normandy (the fringes of the Armorican Massif), used for the production of axes.

The presence of axes manufactured from non-local igneous and metamorphic rocks suggests that some axes were brought to this region from the Armorican massif and the Alps. Others may have come from Vosges, the Central Massif or the Ardennes. This evidence consequently points to the Seine valley's role as an important geographical centre of both distribution and exchange of Armorican and Alpine axes. Evidence points to a sharp difference in use of lithic resources between the Chasséen septentrional and Michelsberg.

## *Keywords*

Flint-mine. Paris basin. Middle Neolithic. Procurement system. Chasséen, Michelsberg.

## 1. Introduction

Neolithic tool-makers of the Paris basin had access to a great diversity of lithic material resources, among them—secondary or tertiary flint, sandstone and orthoquartzite. Tertiary flint and secondary flint can be found mainly in the Mesozoic Senonian limestone of Secondary age (Coniacian and Campanian), and in the Tertiary Saint Ouen (Bartonian) silicified limestone. Other materials are exogenous, such as Jurassic (bathonian) flint originating in Normandy or materials coming from metamorphic rocks of the Alps (jadeite, eclogite), the Armorican Massif (dolerite) and less frequently of the Vosges (pelite-quartz), the Massif Central (both magmatic and volcanic) and the Ardennes (amphibolites), all of which were used for the production of axes.

The presence of axes manufactured from non-local igneous and metamorphic rocks suggests that some axes were brought to this region from the Armorican massif and the Alps. Others may have come from Vosges, the Cen-

tral Massif or the Ardennes. This evidence consequently points to the Seine valley's role as an important geographical centre of both distribution and exchange of Armorican and Alpine axes.

During the second stage of the Middle Neolithic (4200-3600 BC), two different cultures were present in the Paris basin on either side of the Seine-Oise valleys: Chasséen septentrional on the western side and Michelsberg on the eastern side. Both cultures are characterized by the same types of sites: enclosures, open settlements, mines and funerary sites.

In the west, in the Chasséen septentrional, influences from the Chasséen méridional and the Burgundy Chasséen (Chassey) are evident in the pottery, but the lithic industry is clearly based in the local tradition, inherited from the Cerny. In the east, the Paris basin Michelsberg is similar to the Michelsberg of the Rhine both in pottery and lithic industry, with a few differences in the relative frequency of blade and flake debitage.

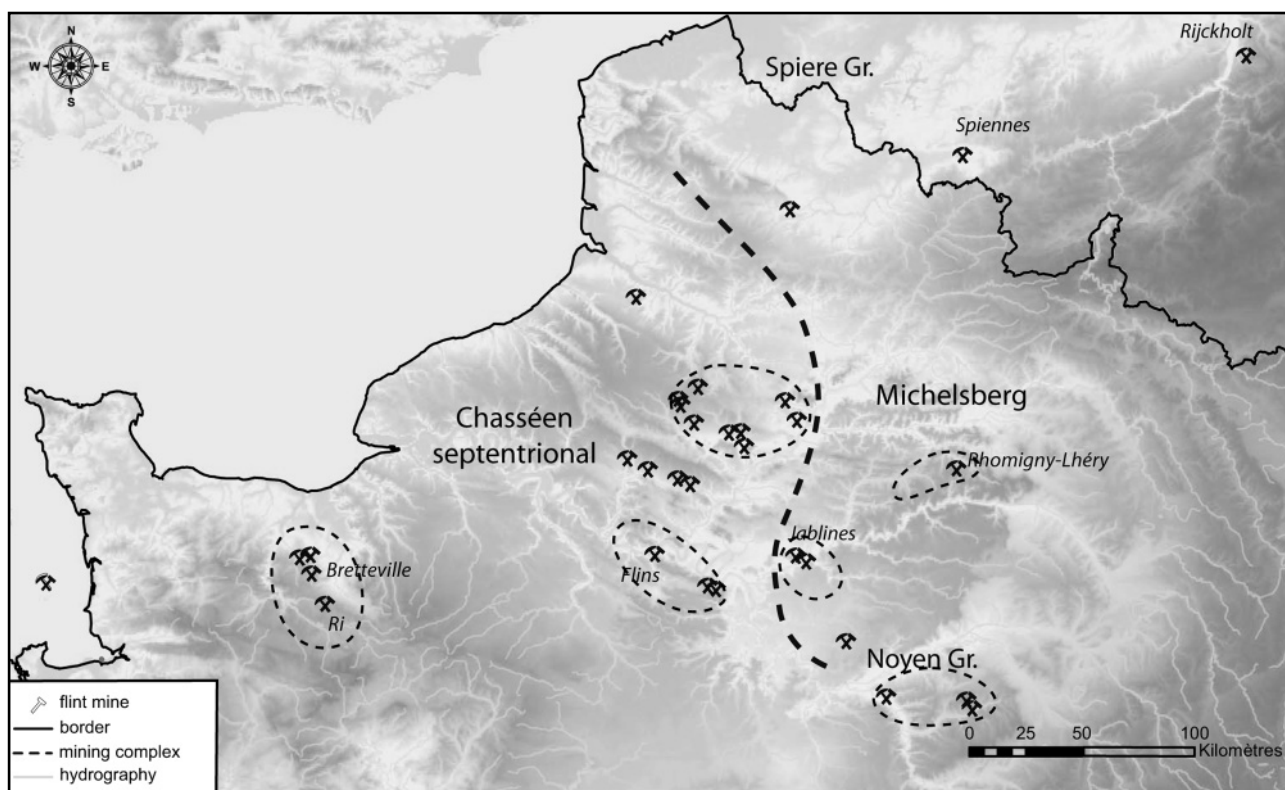


Figure 1. Flint mine distribution and cultural borders during the Middle Neolithic (4200-3600 BC).

## 2. Flint mines

The distribution of flint mines in the Paris basin is not uniform, whether or not they date to the middle Neolithic (Figure 1). Certain zones, characterized by a concentration of extraction sites, debitage and polishing workshops, correspond to mining complexes. From east to west, the main zones are:

- the Caen-Argentan plain, situated along the Armorican massif.
- the Seine valley, located downstream from Paris.
- the Picardy plateaus, the north and west of the Oise valley.
- the Marne valley.
- the Romigny-Lhéry and Ourcq plateaus.
- the Pays d'Othe between the Seine et the Yonne.

This distribution affected procurement networks, since not all settlements were located near mines or mining complexes. However, flint was accessible almost everywhere in diverse forms and could be obtained without digging a mine shaft, either through collection from colluvial or alluvial deposits, cleaning of natural sections on slopes or through digging shallow pits. In most cases these means of procurement remain undetected, in the absence of archaeological features.

There are many factors complicating the task of dating the start of mining. One of the most important ones is the long duration of their exploitation and the large standard deviations of radiocarbon dates. The earliest date, from Bretteville-le-Rabet (Ly-3680 : 5560+190 BP), covers the period 4826-3975 at 1 sigma and may correspond to the VSG or Cerny as well as to the Chasséen. The sites, for which the largest numbers of dates are available, show clustering by phases, the earliest of which lie between 4200 and 3800 BC (Jablins and Ri). Flint mines appear to be more frequent during this Middle Neolithic period (Figure 2).

The manufacturing activities at the mines were essentially linked to the production of axes. Those were made at the mines and finished near settlements and in sandstone polishers workshops located along rivers. In the Chasséen, the mines seemed to be separate from settlements, whereas in the Michelsberg, enclosures were located in the near proximity of the extraction sites (Spiennes, Jablines), and, as in the case of Spiennes, long blades were produced directly at the mine.

The axes (and Michelsberg blades) produced at the flint mines represent a specialized production and circulate inside their own culture. However, given that identical Bartonian and Senonian flints can be found in both culture areas, it is difficult to identify circulation of axes made of these materials between Chasséen and Michelsberg. This difficulty is clearly evident for the mines like Jablines, located on the border between the two cultures. In the Chasséen area, the products circulated between mining complexes,

## chronology and radiocarbon dates for neolithic flint mines in the Paris Bassin

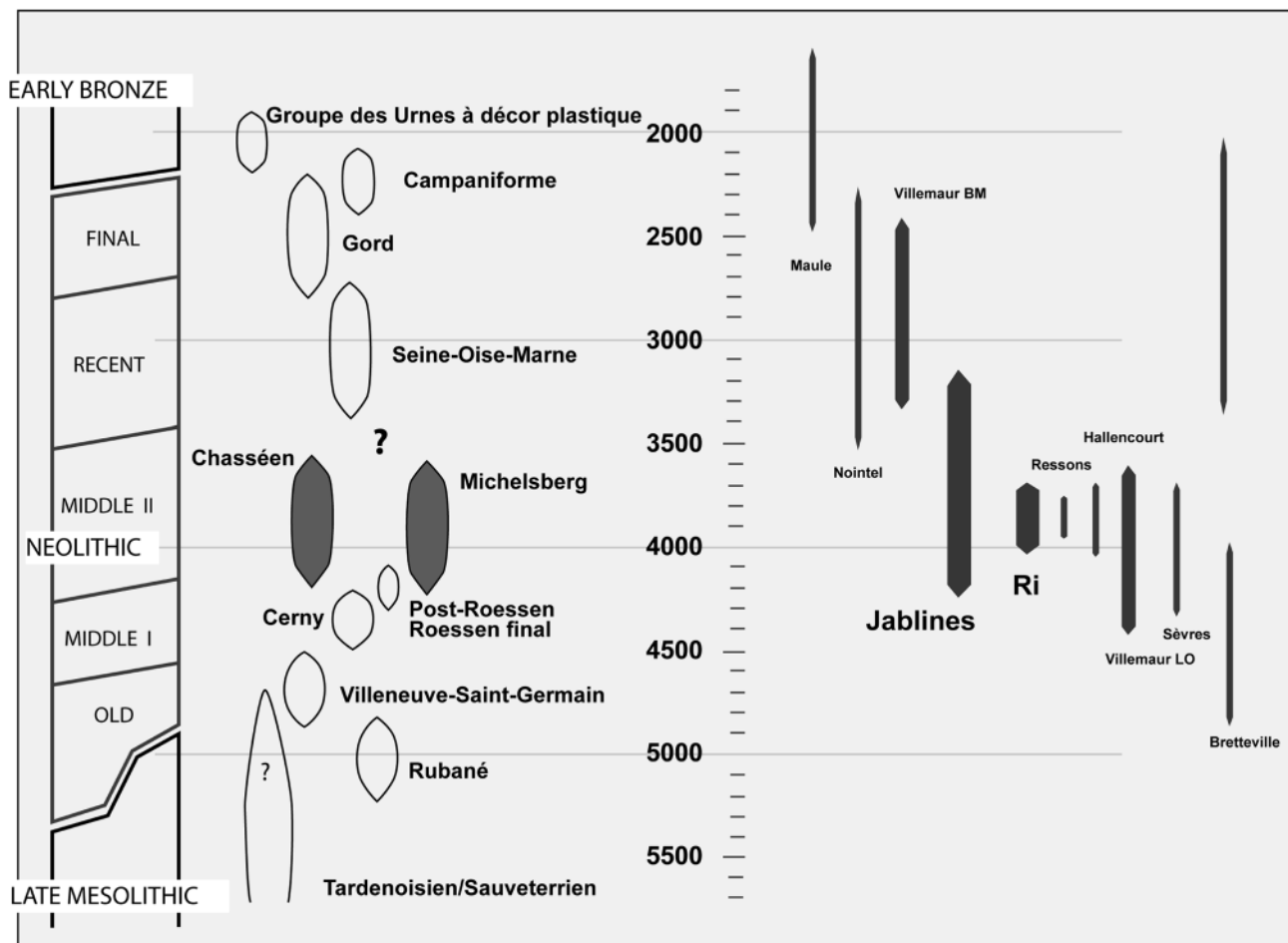


Figure 2. Chronology and radiocarbon dates for Neolithic flint mines in the Paris basin.

illustrated by the example of Bathonian and Bartonian flint axes, which moved in both directions between the Caen plain and the Seine valley. A small number of imported axes were even present in the flint axe production zone (Giligny *et al.* 2009).

Site researchers have identified several procurement distances, ranging from local scale up to distant products. We have distinguished three categories of procurement distance available simultaneously for domestic and specialized axe production: local (0-10km), regional (10-70km), extra-regional (>70km). The products made of long distance materials included in the extra-regional category are sometimes called 'exotic'. Here, we do not make such a distinction and consider even alpine rocks as extra-regional.

### 3. Settlement and enclosure location

Almost all the Chasséen settlements were located on flint sources, even when raw material was of poor quality (Fi-

gure 3). This pattern suggests that the presence of flint resources was an important factor in the choice of settlement location. Louviers is a flood-plain site next to a channel. The secondary flint was extracted from the side of the Eure valley and debitage waste discarded on the surface of the former channels around which the Chasséen settlement developed (Giligny *et al.* 2005). At Jonquières, the raw material came from the vicinity (2 to 4km) (Blanchet et Petit, 1972). At Chartres, the raw material used at the site was of poor quality and came from the area located at 1km distance (Garmond in press).

The frequency of axes in extra-regional materials is higher at Louviers (36%) than at the other Chasséen sites, such as Boury-en-Vexin and Jonquières, where it reaches only 9 to 10%. The site's geographical location, adjacent to a major communication axis, the Seine valley, is the probable explanation.

In the Michelsberg, although debitage is mostly of flakes, genuine domestic production of two kinds of blades existed: one, in soft direct percussion, employed Senonian and

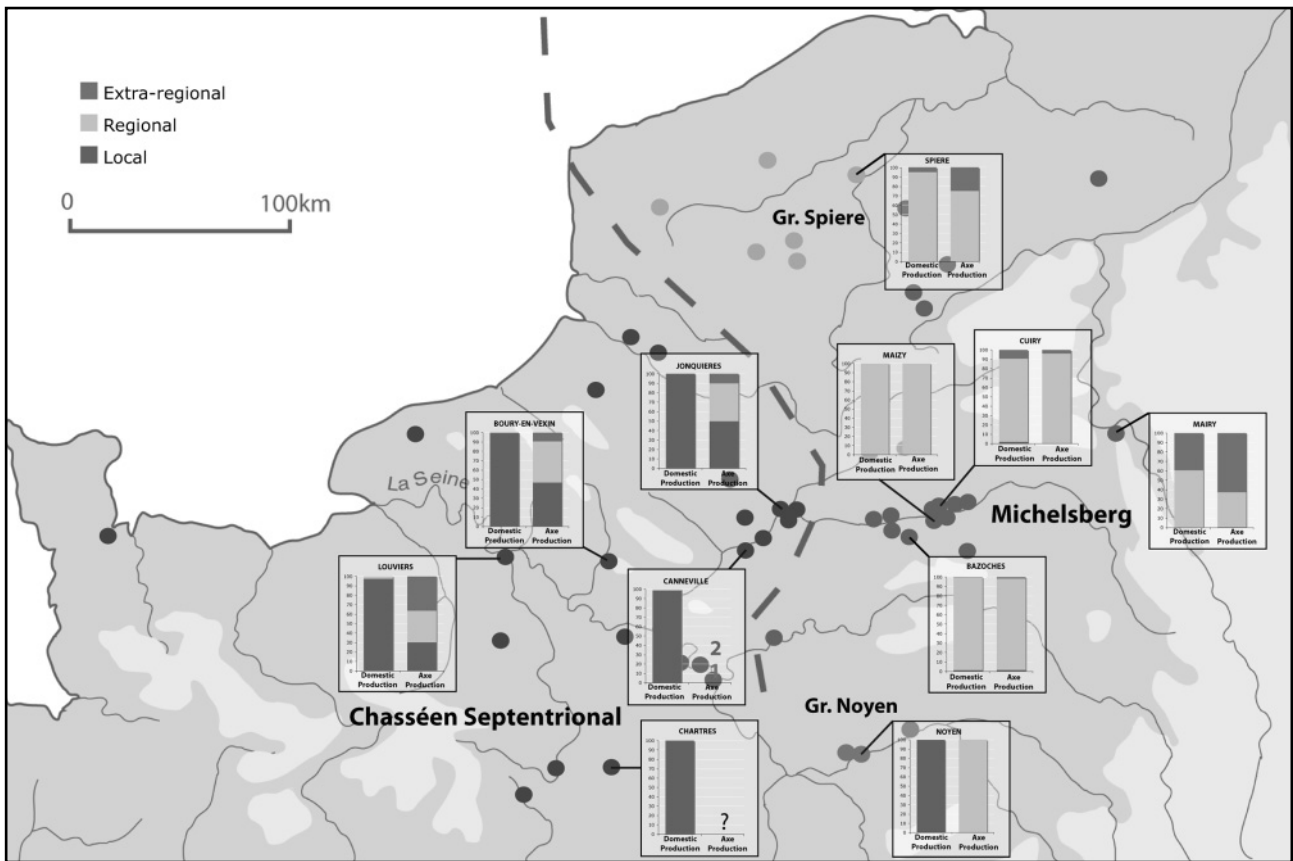


Figure 3. Domestic production versus axe production in Michelsberg and Chasséen settlements and enclosures.

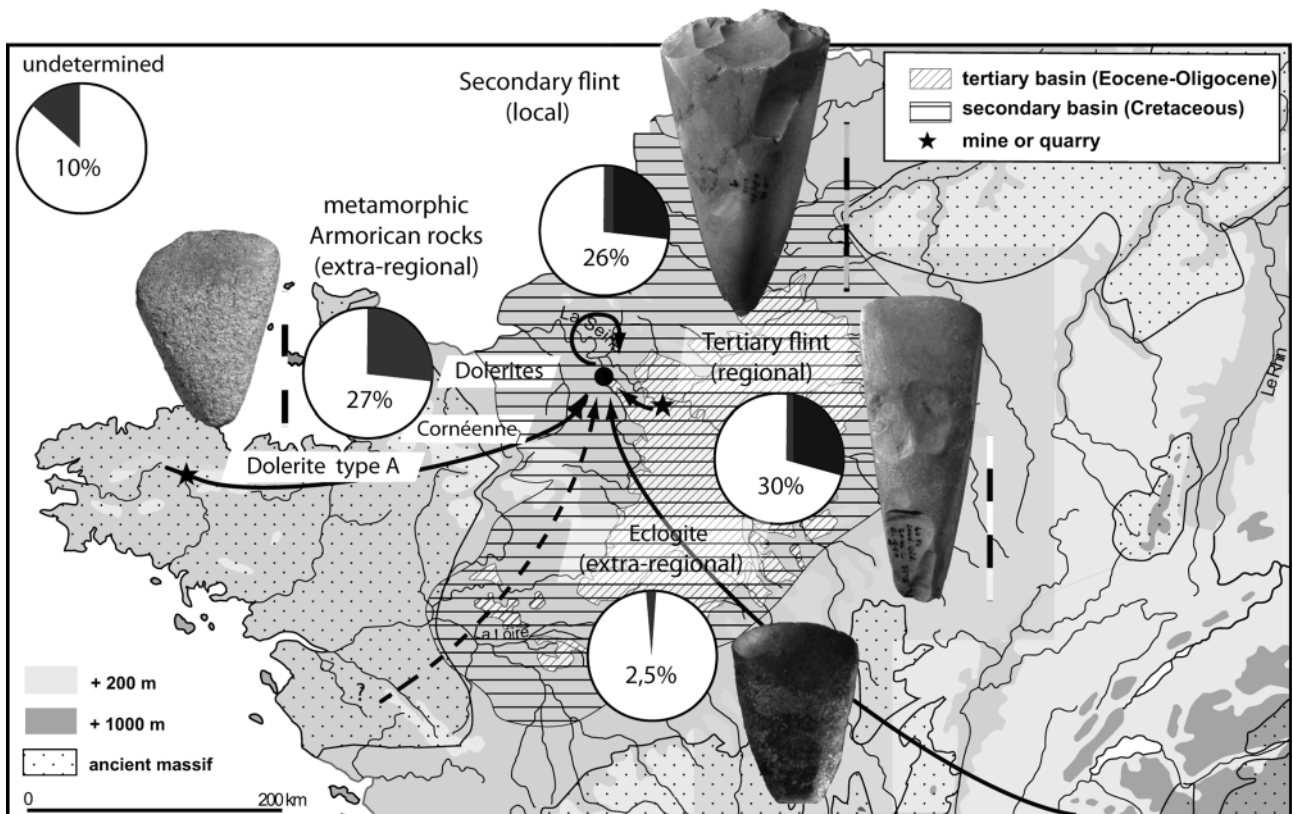


Figure 4. Raw material procurement for axes at Louviers (Chasséen, 3900 BC).

Bartonian flint, and the other, in indirect percussion, was of long blades, employing Bartonian flint from Romigny, Campanian flint from Spiennes, or Maastrichtian flint from Rijckholt (De Grooth 1991). The long blades seem to have been produced at the flint mines. In the settlements located in areas without any flint sources such as those in the Moselle valley, distant materials could be easily obtained (Figure 3) from Champagne, Belgium or the Netherlands. In the Michelsberg, flint axes were made of the same materials as those used in the domestic production. Metamorphic and igneous axes are quite rare or absent. The exchange networks do not seem to extend beyond the culture area.

#### 4. Axe procurement system on Chasséen sites

In the Chasséen septentrional, domestic production and common tools were made of strictly local flint (Figure 4). They are made on flakes, sometimes on irregular blades, or long flakes, unlike the Chasséen méridional in southern France. Axe production follows a different pattern : exogenous materials are more numerous than local ones. For example at Louviers, only 1/3 of axes are in local flint, 1/3 are in exogenous flint and 1/3 in exogenous rocks. These metamorphic and igneous rocks come from the American Massif or the Alps.

#### 5. Flint procurement system on Michelsberg sites

In the Michelsberg area, some enclosures like Spiennes were located on flint deposits and used the Campanian flints from the mining complex. But settlements were not always located on flint sources. The procurement patterns demonstrate a preference for good quality materials (Figure 5). In the Aisne valley, mainly Bartonian flint from the Romigny and Lhéry zone (at 20-40km distance) was procured and Senonian flint, probably from the Petit Morin valley or the Aisne-Oise confluence, was used as a complementary resource. The extra-regional flints from the Mons basin appear in very small quantities relative to other raw materials, as do the regional flints of medium quality (Turonian from Rethel). The local flints (Thanetian) of small size and medium quality were not used.

On sites located in zones where raw materials were scarce, such as Mairy, flint procurement was mainly regional (60%) or extra-regional (40%), particularly in the production of the axes. In the Moselle valley, procurement was entirely extra-regional, almost equally divided between Paris basin flints and flints from the Belgian-Dutch zone.

The Chasséen septentrional and Michelsberg are contemporaneous cultures having distinct patterns of flint procurement and production. In the Michelsberg, raw material procurement was characterized by the search for good quality flint for domestic production, whereas in the

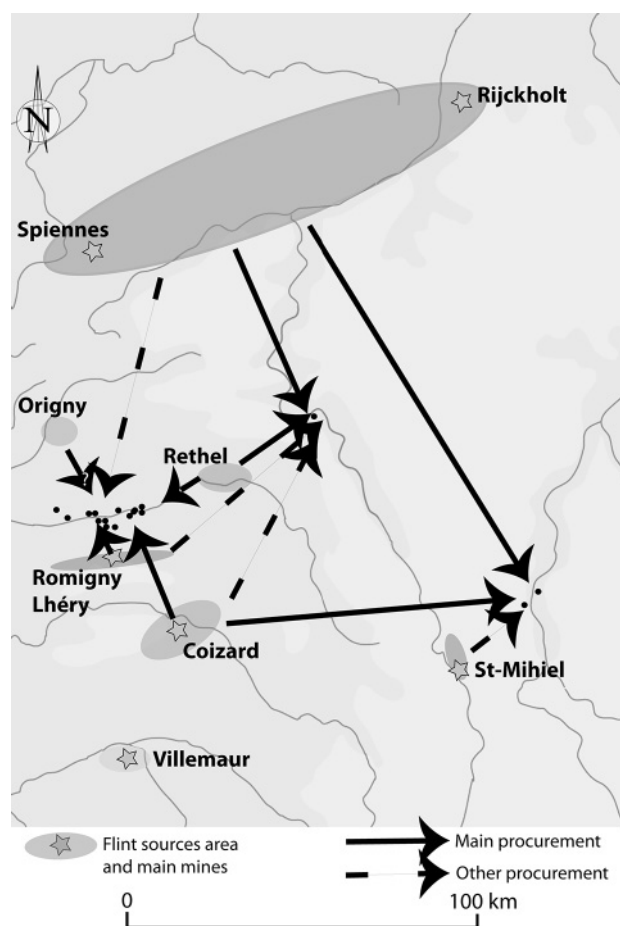


Figure 5. Main flint procurement for Michelsberg settlements and enclosures.

Chasséen, the producers employed local flint material, even that of poor quality. This probably implies varying difficulties of access to flint and/or products from the mines: the communities in the Chasséen area did not have dependable access to good quality flint from the mines and thus needed the guarantee of a local source. *A contrario*, Michelsberg communities had a reliable access to flint and/or products from the mines, regardless of their distance.

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