

Spiennes (Belgium)

No 1006

Identification

<i>Nomination</i>	Archaeological site of the Neolithic flint mines at Spiennes, Mons
<i>Location</i>	Hainaut Province, Walloon Region
<i>State Party</i>	Belgium
<i>Date</i>	5 July 1999

Justification by State Party

The prehistoric flint mine at Spiennes illustrates the development of the first sedentary societies. The first major revolution had taken place in north-western Europe a thousand years earlier and marks the beginning of the Neolithic period, when humans turned to farming, animal husbandry, and crafts and adopted a sedentary way of life. There was already limited cooperation between neighbouring villages and goods were being traded, but life was basically centred on the village and its arts and crafts. Large flint nodules were brought to the manufacturing villages for working into tools. From the second half of the 5th millennium BCE this Neolithic way of life rapidly became more complex.

This can be seen in particular in the improvements brought about by the invention of new mining techniques and the working of mined flint on site. On the one hand the invention of underground flint mining allowed large amounts of better-quality material to be obtained, since it had not been exposed to freezing like flint collected on the surface. It became possible to produce more tools of a better quality. On the other hand the fact that this was done on site also allowed an increase in production because the waste resulting from working, which was extremely heavy, was left behind and only semi-finished products were transported.

The existence of these centres is not entirely unconnected with the appearance of new products. Polished flint axes, the symbol of the Neolithic period, appeared and spread at this time. The use of long blades is also characteristic of this period. These were the main tools manufactured in mining centres, a fact which illustrates the specialization of production. Making axes and fashioning long blades requires skills that only specialized craftsman possessed. The production of tools was enormous and far exceeded the needs of a village community, which indicates that there was already widespread cooperation and a

distribution network for these articles, and is proof that the notion of society had already gone beyond the village.

Around the same time the diversification of human settlement in the plains and on high ground, within elaborate enclosures, also illustrates a greater complexity of socio-economic life. It suggests the existence of sites with different vocations (villages, market centres, and places of ritual) and perhaps a partial hierarchy (local, micro-regional, and regional). Current archaeological data does not provide a definitive answer to this question.

The mining centres, like the higher settlements, show there were already major changes taking place in Europe in the 5th and 4th millennia BCE. They constitute a landmark between the first settled communities and the emergence, probably in the Bronze Age, of true "clan centres." They illustrate human ingenuity through the invention of mining, pre-industrial production, and the new diversity of society.

Criterion i

This process of change throughout Europe is represented in Spiennes by the Michelsberg Culture, which was present in the Middle Neolithic over a vast territory, including a large part of Germany, Belgium, and northern France. Spiennes is a remarkable example of this culture because it has two characteristic sites: a fortified settlement on high ground and a vast flint mine.

Criterion iii

The site at Spiennes is the best known example of prehistoric flint mining. Its shafts are among the deepest ever sunk to extract this raw material. The exceptional size of the blocks of flint that were extracted (some almost 2m long) shows how skilled the Neolithic miners must have been. The technique of "striking," which is characteristic of Spiennes, was developed to allow these blocks to be extracted. It involved loosening them from below, leaving a chalk supporting pillar in the centre, inserting wooden props, knocking down the pillar, and removing the props so that the block collapsed under its own weight.

The mining of these deep beds, which involved ignoring many of the layers of flint encountered during the sinking of the shaft, in order to reach the high-quality stone, shows a good knowledge of the underlying geology by Neolithic miners.

The quality of the worked artefacts is one of the most remarkable illustrations of the great skill of the craftsmen, who produced extremely regular blades and axes 25cm long.

Criterion iv

Category of property

In terms of the categories of cultural property set out in Article 1 of the 1972 World Heritage Convention, this is a *site*.

History and Description

History

The period when Spiennes developed large-scale flint mining, using techniques which may be termed pre-industrial, is known as a result of radiocarbon dating of organic materials such as charcoal, bone, and antler, and also from the artefacts abandoned in the mines or

workshops, such as pottery or cord for binding antler tools. Underground flint mining was taking place there from the second half of the 5th millennium BCE (between 4400 and 4200 BCE), making Spiennes one of the oldest mining sites in Europe. Several dates show that mining activity went on, apparently without interruption, throughout the whole 4th millennium and even during the first half of the 3rd millennium BCE, ie from the beginning of the Middle Neolithic until the Late Neolithic period.

However, because of the extent of the site it is not yet possible for each mining area to be individually dated. Camp-à-Cayaux and Petit-Spiennes have, however, produced similar dating and so the two plateaux were probably being mined contemporaneously. Dating is under way for the mining sector at the Versant de la Wampe.

However, on both plateaux, different mines intersect one another, showing that there were successive mining phases. At Petit-Spiennes, for example, new shafts were sunk around 3000 BCE in an area which had already been mined between 4400 and 4000 BCE.

The considerable number of artefacts discovered at Spiennes, and more particularly the pottery, give a fairly precise picture of which human groups were engaged in underground flint mining. Other groups have left at times abundant traces, but the reasons for their presence are more difficult to interpret.

The earliest Neolithic remains at Spiennes are two adzes characteristic of the Neolithic Rubané Culture, dating from the second half of the 6th millennium BCE. However, these are surface finds and cannot be taken as evidence that flint was being mined at Spiennes at that time.

Most of the pottery discovered in the flint mining structures and in the workshops and the upper parts of filled-in shafts is characteristic of the Michelsberg Culture. This covers a large area from central Germany to the Rhineland, Belgium, and northern France. It flourished between the last third of the 5th millennium and the middle of the 4th millennium BCE. Broken pottery found at the bottom of shafts shows clearly that it was left there by the miners themselves before the shafts were filled in.

So far as the Late Neolithic is concerned, although the radiocarbon dates suggest that mining went on, no pottery characteristic of the Seine-Oise-Marne Culture (a local group from the first half of the 3rd millennium BCE) has yet been found. The use of axes with splayed blades suggests that they were made from Spiennes flint during the transition between the Late Neolithic and the Bronze Age.

Spiennes was also important during the Metal Ages. Remains probably linked to settlements can be attributed to the Late Bronze Age (8th or 7th century BCE) and the Second (La Tène) Iron Age. At this period the nature of human occupation therefore changed. However, flint was still being used for toolmaking by these peoples. The Late Bronze Age finds include a stone-working workshop, demonstrating that local flint was still being worked on the site. It is not known how the Late Bronze Age craftsmen obtained the local flint – whether by small-scale extraction or scavenging the many pieces of debris left by previous occupations.

Many pits in the La Tène settlement have been found to contain flint. Here, too, the presence of flint-working debris may well have encouraged the Iron Age people to use this abundant material to make tools.

Description

The mining site at Spiennes, situated 6km south-east of Mons, occupies two chalk plateaux separated by the Trouille valley, a tributary of the Haine. The lower plateau, known as Petit-Spiennes or Spiennes "Pa d'la l'iau" (*par delà l'eau* - beyond the water), situated on the left bank, reaches an altitude of 77m. To the south, east, and west, the plateau is abruptly cut off and forms a sort of promontory, which at a height of *c* 35m dominates the boggy plain of the villages of Nouvelles and Harmignies and the valleys of the Wampe and the Trouille. However, in the north the slope of the land is less pronounced and the plateau descends gently towards the present-day village of Spiennes. The plateau on the opposite bank, the Camp-à-Cayaux, has the same topography, with escarpments to the west and south and a plateau reaching 92m and gently sloping to the north.

Spiennes owes its intensive mining activity in the Neolithic period to the presence in its subsoil of the so-called Spiennes Chalk, which is rich in flint. The flint lies in fifteen more or less continuous strata within the chalk. They are composed of irregular oblong flint nodules, 10-30cm in diameter. At certain levels the nodules are replaced by slabs, 1-2m long and 1dm and more in thickness. Different strata were mined in the Neolithic period, from the smaller nodules to the thick slabs.

The topography of the terrain, with several escarpments bordering the Trouille and the Wampe, certainly contributed to the discovery of the flint by Neolithic man, because this was exposed at the surface. However, on the two plateaux the chalk is covered by a layer of silt. In places this is quite thick, especially at the summits, where it reaches 5-7m, whereas at the edges it is thin, if not non-existent. In places a layer of glauconitic sand lies between the two, which is sometimes covered by traces of Quaternary river terraces in which Palaeolithic tools have been discovered.

These variable geological conditions broadly influenced the access to the flint, and therefore the mining methods. However, even where the silt is several metres thick the Neolithic miners did not hesitate to sink a shaft to reach the beds of flint that would give material for high-quality tools.

Currently the site appears on the surface as a large area of meadows and fields strewn with millions of scraps of worked flint. The exceptionally pebbly character of the site's right bank has always been recognized: records give it the name *Camp-à-Cayaux* (the Pebble Field). Even at the end of the last century many plots were unsuitable for farming for this reason.

Underground the site is an immense network of galleries linked to the surface by vertical shafts dug by Neolithic man. Even today the effect of this underground mining is visible in the form of sudden depressions in the land which reveal the existence of shafts dug several thousand years ago.

Spiennes is the largest Neolithic flint mine in Europe. It covers an area estimated by systematic prospecting on foot and excavations for some 150 years to be 100ha. Flint was mined by Neolithic man on the plateaux on either side of the Trouille: on the right bank at Camp-à-Cayaux and on the left bank at Petit-Spiennes, as well as on the plateau itself at Versant de la Wampe.

- Camp-à-Cayaux

The mining zone at Camp-à-Cayaux is the largest of the three flint mining areas, covering almost 65ha. Neolithic man intensively mined the two steep sides of the Trouille as well as the entire plateau between the river and the present Chaussée de Beaumont. In the direction of the village of Spiennes shafts are still visible at the 55m contour line. Towards the summit of the plateau, evidence of shafts and working areas can be seen at the 75m contour line.

Excavations have shown that the shafts form an irregular network. Close to the Station de Recherches, for example, some shafts are only 4m apart whereas others are 14m apart. If the whole of the Camp-à-Cayaux was mined to the same degree there must be 15,000-25,000 shafts.

In this mining zone different mining methods were practised by Neolithic man, from simply hewing out the chalk from the valley side to extraction from highly elaborate structures in the 16m deep shafts.

Along the slopes of the Trouille, different mining remains show that the flint was sometimes mined using short galleries dug at the level of the flint stratum. Elsewhere, several strata appear to have been mined simultaneously, leaving behind a series of stopes and working debris.

At the edge of the plateau and at the heart of Camp-à-Cayaux the situation becomes more complex. Sometimes several different mining techniques coexist in a single sector. At the plateau edge, for example, the flint was mined both in simple pits and in shafts. At the heart of Camp-à-Cayaux 3m deep shafts were dug alongside shafts that could be as deep as 16m. A sample of this remarkable network of low galleries at a depth of 15-16m can still be visited under the Station de Recherches building. The cleared area covers about 250m².

This mixture of remains and different mining techniques amply demonstrates the complexity and value of the Spiennes site. Two factors explain this: on the one hand the site was used over a very long period, and on the other there are more than fifteen successive flint strata.

- Petit-Spiennes

The mining zone known as Petit-Spiennes covers about 14ha. The Neolithic miners intensively worked a 200m strip running parallel to the river. This occupies the entire valley side and extends over the plateau up to an altitude of 70m. Excavations have shown the high density of flint-mining structures. Shafts are to be found on average every 5m, indicating that as many as 5000 shafts may have been sunk here.

The Neolithic workings here are as varied as they are at Camp-à-Cayaux. At the cusp of the plateau and the valley, where the chalk is 1-2m below the surface, there are simple pits, 2-3m wide and 3-4m deep, some of which branch off at the level of the flint stratum, allowing mining to extend

beyond the pit and thus to increase yield. On the plateau where the chalk is not reached until a depth of 3-10m, vertical shafts 6-13m deep have been dug to reach the flint beds. They are the beginning of an underground mining network composed of galleries, the heights of which vary according to the sector. Among them a group of shafts serving high galleries at depths of 8-10m is being excavated in the northern part of the mining zone. Currently an area of about 70m² can already be visited.

As at Camp-à-Cayaux, intensive mining required intersecting pits and shafts in different sectors.

- Le Versant de la Wampe

A new mining zone was discovered in the 1970s at the south-western corner of the Petit-Spiennes plateau along the edge of the Wampe during the excavation of the hillfort (see below). Several shafts and galleries were identified not far from where the slope levels off at an altitude of c 70m. Other shafts were also discovered towards the summit of the plateau. The extent of this mining zone is at present difficult to estimate. However, there are indications that this crest was also mined intensively, which indicates that the entire mining area covered more than 100ha.

- Mining technology

The flint was reached by digging 0.80-1.30m diameter cylindrical shafts, usually vertically down from the surface. The depth of the shafts was dependent upon the level at which the best flint was found. Galleries opened out radially from the bottoms of the shafts. These were general short, partly for reasons of safety and partly to enable the miners to make use of natural light as far as possible. The height of the galleries varied according to the depths of the flint beds and whether more than one bed was being dug out simultaneously.

In the case of the Camp-à-Cayaux mines with high galleries, it is apparent that the flint was worked by undercutting large blocks, which were supported on pillars of unexcavated material and wooden props. When the pillars were finally removed, the blocks fell to the floor of the gallery, for breaking up and removal from the mine.

- On-site flint working

Once extracted the flint was worked on-site, as vividly demonstrated by the enormous amount of debris strewn over the site. All the stages of toolmaking can be found - unworked pieces discarded because of their small size or inferior quality, blocks begun and then rejected, large fragments resulting from removal of the coating around the flint (the cortex), smaller fragments which had been more carefully detached from the block in order to be made into tools, tools at various stages of production, often rejected after a mistake in chipping, and occasional finished artefacts ready for use or polishing.

All these objects provide a picture of the way the craftsmen worked and organized their production. The only stage that is still unclear is that of polishing, as in all Neolithic mining centres. It was undoubtedly a lengthy operation but one that did not require great skill. It seems most likely that it took place elsewhere, since only a small quantity of polished pieces and some polishing equipment has been found.

The production at Spiennes, as elsewhere at this time, was mainly of axes for felling trees and long blades to be turned into scythes, scrapers, or knives. The appearance of the polished flint axe seems also to be closely linked to the development of specialized centres. The axes made at Spiennes vary in size from 10cm to 30cm. The pieces found indicate that these were standard sizes. The most common form of axe was triangular or trapezoidal, with a convex cutting edge and teardrop-shaped in cross-section. The blades were also large, some as long as 20-25cm.

This standardization of production illustrates the high technical level of the Spiennes flint workers and the phenomenon of specialized labour. As well as mass production of blades and axes a wide range of other artefacts was made - scissors, knives, scrapers, augers, as well as flint picks used for the mining itself.

The workshops where the flint was worked were situated on the edge of the shafts, as is clear from the enormous quantity of debris found at the top of the filled-in cavity. This debris was perhaps dragged down as the walls of partially open shafts caved in. Some workshops were also set up over shafts which had been almost entirely filled.

- The hillfort

The south-west corner of the Petit-Spiennes plateau has revealed the remains of a hillfort composed of two concentric irregular ditches 5-10m apart. It was originally bordered by two earthworks along the inside of each ditch. These ditches have sloping sides with a flat floor, and were dug to a width varying between 4m and 6m and to an average depth of 1.70m. On the western side near where the slope levels off the enclosure is absent, the escarpment probably acting as sufficient natural defence. So far only one entrance has been discovered, in the east where the two ditches end. They do not end at the same point, however, so the entrance is a sort of zigzag.

The artefacts discovered in the ditches are comparable to the Michelsberg Culture material discovered in the mining sector, in particular the presence of potsherds roughly carved with flint. This enceinte is therefore contemporary with least part of the mining at Spiennes.

The fortified camp also contains an oval area of about 7ha. Some exploratory excavation in the interior has revealed one pit contemporary with pits containing vestiges of daily life found in association with the mines. No other traces of settlements have been discovered so far, though a large area remains unexcavated.

Sites on high ground, sometimes with elaborate enclosures, were an innovation dating from the end of the 5th millennium and the first half of the 4th millennium BCE. They signify a more diverse occupation of the territory than before, and probably also denoted the emergence of a more complex society, because of the sectors with different functions - settlement, market, or place of worship; local, micro-regional, or regional sites. So far Spiennes is the only hillfort linked with a mining centre: in other words, the two sites illustrating the important changes operating in the earliest village societies to appear after the start of the Neolithic period.

Various occupations bear witness to the fact the site was also in use at a period when vestiges of the hillfort had practically disappeared from the landscape. Flint-working

areas and a hearth occupy pits which have been almost totally filled in, most of an indeterminate age. However, one flint-working area in the southern part of the pit has been dated to the late Bronze Age (8th -7th century BCE).

Management and Protection

Legal status

Every three years the Walloon Government approves a list of the exceptional heritage sites in the Region. The Spiennes site always figures on this list, which was most recently renewed by decree in 1996. By Ministerial Decree the entire site of the Camp-à-Cayaux was classified on 7 November 1991 as a monument. Under the Walloon Town and Country Planning Code classification transfers administrative management of protected sites automatically from municipal to regional authorities. Any interventions on protected sites which may affect their qualities and character (including archaeological excavations) must be submitted for authorization to the Regional branch of the Royal Monuments, Sites and Excavations Committee.

Under the provisions of the land-use planning in the Walloon Region, Spiennes is located in a "green belt", within which only activities relating to farming or forestry are permitted. The Town and Country Planning Code respects the rights of farmers on their own land, with the exception of those portions containing archaeological sites.

Management

Ownership of the 172ha of the Spiennes site is divided between private landowners and public bodies (the Domaine de la Région Wallonne, based in Namur, and the Domaine de la Ville de Mons).

The Archaeology Department of the Directorate General for Town and Country Planning, Housing and Heritage of the Walloon Region is responsible for the preservation of classified sites, and is empowered to intervene if work is needed on the site or the landowner fails to maintain it properly.

The following planning measures have a direct impact on the management of the Spiennes site:

- Mons-Borimage sector plan, adopted by the Walloon Government in November 1983;
- Local authority nature development plan, adopted by the Mons municipality in February 1999;
- Planning and environmental provisions relating to the definition of the buffer zone, provisionally adopted by the Mons municipality in April 1999.

Until the institutional reforms of 1988 in Belgium responsibility for archaeology was the concern of the federal government, whilst that for heritage protection was with the regional government. The current situation assigns both matters to the Walloon Region.

There are now two tiers of management within the region. At the lower level, the City of Mons has adopted a steering plan and urban regulations for the areas bordering the site, which control access to the site. It is also the owner of several plots within the nominated area and is responsible for the interpretation centre project. Overall supervision of the

preservation and protection is the responsibility of the Regional Directorate.

There is currently under active development a project to designate an area surrounding the prehistoric mines as a regional landscape park. This area, for which a number of regulations are already in force, forms an effective buffer zone around the nominated property. It is planned to create an interpretation centre on the edge of the designated area, with easy access to the main road, where parking and other facilities will also be provided. Strict protection of the underground water resources, which supply Mons and its surrounding area, means that parking within the area will be very limited. Access to the prehistoric mines will be on foot or by means of a shuttle minibus service. Excavations have been carried out on the proposed site.

The management of the property is based on partnership. This characteristically Belgian situation involves the administrative agencies referred to above, as well as the voluntary *Société de Recherche Préhistorique en Hainaut (SRPH)*, whose members have been working at Spiennes for many years.

Conservation and Authenticity

Conservation history

The first archaeological discoveries of prehistoric mine shafts were made in the 1840s, but it was not until 1867, when the Mons-Chimay railway line cut part of the Petit-Spiennes plateau, that more systematic work took place. Ever since the reporting of these discoveries to the Royal Academy of Belgium the following year, the mines have been intensively studied, with major excavation programmes in 1912-14 and continuously since 1953, both by official bodies and by the SRPH (under licence).

The mining networks at Camp-à-Cayaux excavated in 1912-14 and those at Petit-Spiennes revealed in the excavations since 1953 have been carefully conserved and made accessible to visitors. Work is currently in progress on the rehabilitation and extension of the Station de Recherches at Camp-à-Cayaux (where access may be obtained by researchers to the extensive mines).

Authenticity

The authenticity of the Neolithic flint mines of Spiennes is total. Many have never been excavated and those which are open to the public are in their original condition, with the exception of some modern shoring and props for security reasons.

Evaluation

Action by ICOMOS

An ICOMOS expert mission visited Spiennes in February 2000.

Qualities

The complex of Neolithic flint mines at Spiennes is the largest known in Europe. The mines were in operation for many centuries and the remains vividly illustrate the development and adaptation of technology by prehistoric man over time in order to exploit large deposits of a material

that was essential for the production of tools and implements, and hence for cultural evolution generally.

Comparative analysis

Over 150 prehistoric flint mining centres are known across Europe. Mining began in the Middle Neolithic period and continued in certain regions until the Bronze Age, covering almost three millennia. The techniques employed were varied: trenches, pits, quarries, ~~pits~~, open shafts, and underground workings.

Three European sites are particularly well known: Spiennes (Belgium), Grime's Graves (England), and Krzemionki (Poland). Two other flint mines from the same cultural region as Spiennes are Jablines (France) and Rijckholt-Sainte-Gertrude (The Netherlands).

All these sites illustrate Neolithic technological development, but they differ in their periods of activity, size, and extraction techniques. Grime's Graves covers 37ha, less than half of Spiennes. Its techniques and period of activity (3000-1500 BCE) are different, and it may be considered to complement Spiennes. Krzemionki covers 34ha, and was at the height of its activity around 3400-2600 BCE. It is also complementary to the Spiennes mine in that it is more recent.

Jablines is more comparable with Spiennes, in terms of its dates (4250-3500 and 3100-2800 BCE) and the wide variety of technological features. It is, however, smaller (25ha) and the remains are less impressive, being nowhere more 7.5m deep. Moreover, a fifth of the site was destroyed when a high-speed railway line (TGV) was built to run across it. Rijckholt-Sainte-Gertrude also covers c 25ha, and it shares certain technological features with Spiennes. However, the site is later, mining having begun around 3950-3700 BCE.

Spiennes may therefore justifiably claim to be the most ancient of the European flint mining centres. It is also the biggest and offers a wide range of mining techniques, from the simplest to the most complex. It is especially notable for its archaeological potential, which is recognized as a major research resource for future generations. Finally, it is the only mining site directly associated with a settlement characteristic of the period.

ICOMOS recommendations

Excavations have been in progress at Spiennes for many years, and have produced results of outstanding significance. There appears, however, to be no coordinated policy for future work. ICOMOS urges the State Party to give serious consideration to the establishment of a coordinating body, with representatives from the different administrative bodies, the voluntary organization (SRPH), and university departments, in order to create a long-term research programme, which pays particular attention to the Neolithic occupation of the area, with particular reference to the Camp de Michelsberg hillfort.

The title proposed by the State Party is somewhat unwieldy. ICOMOS suggests that it might be amended to "The archaeological site at Spiennes" or "The Neolithic flint mines at Spiennes."

Brief description

The Neolithic flint mines at Spiennes, covering more than 100ha, are the largest and earliest concentration of ancient mines in Europe. They are noteworthy also for the diversity of technological solutions that they exhibit and for the fact that they are directly linked with a contemporary settlement.

Recommendation

That this property be inscribed on the World Heritage List on the basis of *criteria i, iii, and iv*:

Criterion i The Neolithic flint mines at Spiennes provide exceptional testimony to early human inventiveness and application.

Criterion iii The arrival of the Neolithic cultures marked a major milestone in human cultural and technological development, which is vividly illustrated by the vast complex of ancient flint mines at Spiennes.

Criterion iv The flint mines at Spiennes are outstanding examples of the Neolithic mining of flint, which marked a seminal stage of human technological and cultural progress.

ICOMOS, September 2000