Anthropologica et Præhistorica, 114, 2003, 81–84

Aurignacian point, butchery remains and Radiocarbon Accelerator Dates from the *Trou Magrite* at Pont-à-Lesse (Commune of Dinant, Province of Namur, Belgium)

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Abstract

The chronology of Early Upper Palaeolithic settlements across Europe is a key research issue. This note reports on new dating work at the *Trou Magrite*, Belgium, and includes the first direct dating of an Aurignacian type fossil.

Keywords: Aurignacian, Type Fossil, Belgium, *Trou Magrite*, Dating.

Résumé

L'établissement de la chronologie de site archéologique du début du Paléolithique supérieur à travers l'Europe prend une partie de notre recherche. Cette note fait référence à une nouvelle date par AMS du Trou Magrite, *en Belgique, et à la première datation d'une pointe aurignacienne, qui est un fossile-directeur de la période.*

Mots-clés : Aurignacien, fossile-directeur, Belgique, Trou Magrite, datation AMS.

The Aurignacian is among the earliest Upper Palaeolithic technologies in Europe. Containing a range of bone, antler and ivory artefacts, blade technology and composite tools, it is often cited as an example of fully modern human behaviour and its distribution is frequently correlated with the colonisation and dispersal of anatomically modern humans across Western Eurasia. The typological phases of the Aurignacian are broadly thought to have temporal significance, and regional chronologies have been constructed on the assumption that a range of bone, antler and stone type fossils only occurs within restricted temporal horizons (de Sonneville-Bordes, 1960).

During the past decade, researchers have attempted to establish a more detailed chronology for the Upper Palaeolithic settlement of Europe, often using the accelerator mass spectrometry (AMS) method of radiocarbon dating combined with rigorous sample selection. Recent attention has mainly centred on the Late Upper Palaeolithic and human recolonisation of Northern Europe after the Last Glacial Maximum (Charles, 1996; Housley *et al.*, 1997), although research on the chronology of the Early Upper Palaeolithic has also been of importance (Mellars *et al.*, 1987; Hedges *et al.*, 1998), particularly with reference to our understanding of the settlement of Europe by anatomically modern hominids. It is within this context that we report here the results of a dating programme on Early Upper Palaeolithic material from Belgium, which includes what we believe to be the first direct dating of an Aurignacian type fossil.

Recent research at the *Trou Magrite* has provided a wealth of information regarding Early Upper Palaeolithic archaeology of the site,

Lab Code	Date	Material dated	Layer
OxA-4040	17900 ± 200 BP	Charcoal flecks	2 (top)
GX-17017A	22700 ± 1150 BP	Bone apatite	2
GX-17017G	26580 ± 1310 BP	Bone gelatin	2
GX-18538G	30100 ± 2200 BP	Bone gelatin	2 (base)
GX-18537G	34225 ± 1925 BP	Bone gelatin	2 (base)
GX-18540G	27900 ± 3400 BP	Bone gelatin	3
GX-18539G	>33800 BP	Bone gelatin	3
CAMS-10352	41300 ± 1690 BP	Aspartic acid	3 (mid)

Table 1 — Radiocarbon dates for the Aurignacian layers at *Trou Magrite* obtained by Otte & Straus, 1995.

including AMS and conventional dates on bulk samples of bone and charcoal from the two Aurignacian layers (Otte & Straus, 1995; see also Table 1). Although the precise nature of the contextual associations between these samples and the archaeology layers, they are thought to date remains ambiguous. It was suggested that Gx-18538G : 30100 ± 2200 BP and Gx-18537G : 34225 ± 1925 BP were the most dependable dates for the uppermost Aurignacian layer at the site (Straus, 1995 : 64).

The selection of potential AMS samples with direct links to human presence formed a strategic part of the current re-evaluation of the Middle and Early Upper Palaeolithic faunal collections from the *Trou Magrite* by one of the authors (RC). This centred on material excavated during the last century by Édouard Dupont, now held in the Royal Belgian Institute of Natural Sciences. Three single humanly modified bones which could be identified to species and anatomical element were selected for direct dating by AMS. As detailed stratigraphic information relating to the faunal collection was unavailable, the dates obtained (see Table 2) merely provide information on the dating of specific butchery episodes, alongside biostratigraphic information regarding the local presence of lion, reindeer and woolly rhinoceros. They do not have any direct cultural attribution, and consequently the only way of specifically dating Aurignacian presence at *Trou Magrite* was to extract a dating sample from one of the organic type fossils.

A fourth sample, a lozangic point made of reindeer antler (Figure 1), was dated by AMS. This was the only organic type fossil within the RBINS collections uncontaminated by preservatives. Lozangic bone points are normally considered type fossils for the Aurignacian stage II following de Sonneville-Bordes' typology (1960 : 48), although one cannot exclude the possibility that similar bone points might occur in subsequent stages of the Aurignacian. The resulting date, OxA-6564 : 25080 ± 320 BP, is considerably younger than expected.

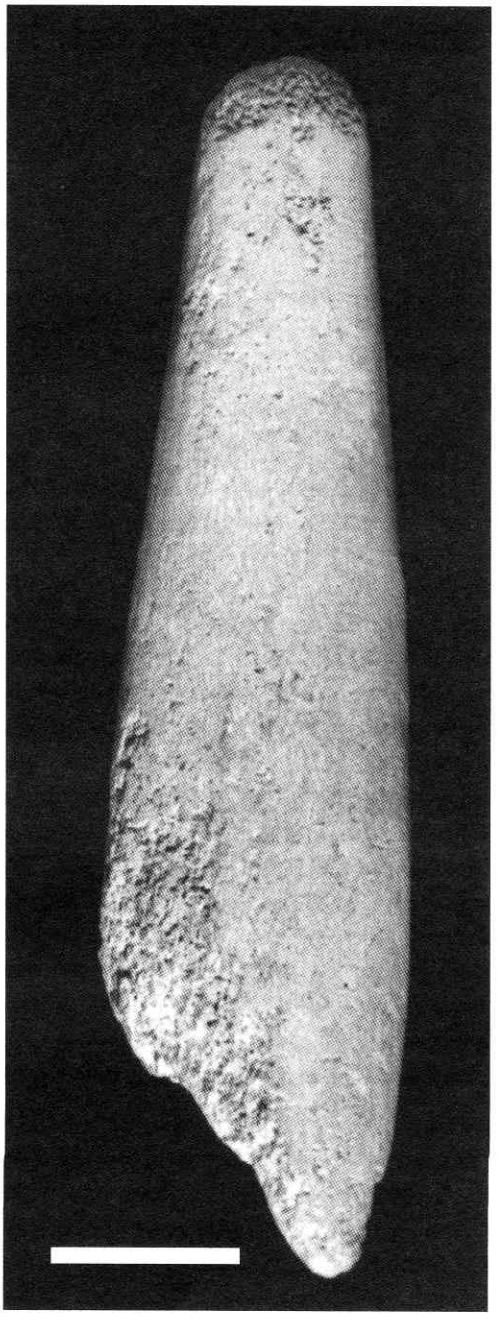

Fig. 1 — Lozangic point from the *Trou Magrite*. OxA-6564 : 25080 ± 320 BP. RBINS, Acc. N° 1918. Scale: 1 cm.

Lab Code	Date	Material dated
OxA-6564	25080 ± 320 BP	Lozangic bone point made of *Rangifer tarandus* antler (RBINS, Acc. No 1923)
OxA-6593	25980 ± 340 BP	Cut 1st phalanx of *Felis leo* (RBINS, Acc. No 2423)
OxA-6594	26320 ± 360 BP	Bone awl made of *Rangifer tarandus* metapodial (RBINS, Acc. No 1918)
OxA-6595	28640 ± 480 BP	Cut ulna of *Coelodonta antiquitatis* (RBINS, Acc No 2407)

Table 2 — New AMS dates from the *Trou Magrite*.

Our four OxA dates received essentially the same, standard, chemical pre-treatment method, including an ion exchange purification stage of the gelatinised collagen fraction extracted from the bone. Experience has shown that this method can be relied upon to remove contamination by carbonaceous material in the environment in the great majority of situations, at least when the extractable collagen content exceeds 1% of the bone weight. However, in critical cases, contamination must always be considered, and can never be entirely disproved on internal evidence alone. The four bones gave similar radiocarbon ages. Their extractable collagen content ranged from 10% to 2.5%, which is well within the range of confidence for this method; in short, they were well-preserved. These data are supported by the C/N ratios of the extracted collagen (between 3.0 and 3.5, being highest for OxA-6593), implying less than *circa* 5% additional non-protein, and in the δC^{13} values. The δN^{15} values of the collagen are also entirely consistent with expectation.

While it is always difficult to assess the reliability of dates in the 30,000 BP range, especially in the absence of external evidence such as good stratigraphic control, an analysis of OxA dates between 30,000 and 45,000 BP suggests problems in ages being too young are very rare indeed at less than 30,000 BP (Hedges & Pettitt, 2000) at least using this type of pre-treatment. Therefore, in the light of careful consideration of the chemistry for each sample, we are confident that the dates, even if surprisingly young, do not suffer from contamination by sources of younger carbon; this view applies specifically to the Aurignacian type fossil, OxA-6564.

Differing suggestions regarding the age of Aurignacian presence at *Trou Magrite* have been made. An age of *circa* 25,000 BP was suggested by Dewez (1985:121) for the layer 2 material which he though to belong to the final Belgian Aurignacian. Lejeune (1994:42) argued that Aurignacian use might lie between 30,000 and 37,000 BP, again on first radiocarbon evidence from the site. Finally Otte & Straus (1995:229–230) suggested an age of *circa* 38,000 BP for initial Aurignacian occupation (layer 3) placing it amongst the earliest Aurignacian sites in Europe, and the second occupation (layer 2) dated between 30,000 and 34,000 BP. This contention was based on available radiocarbon evidence combined with the presence of early Aurignacian type fossils. The main purpose of this note is to say that at present we cannot support so early dates for Aurignacian presence at *Trou Magrite*, given the relatively recent dates for both the lozangic point and other cut marked fauna from the site. We believe that it would now be a useful exercise to attempt further dating work on other organic type fossils of the Early Upper Palaeolithic, which might well shed new light on the detailed chronology of Early Upper Palaeolithic settlement of Europe.

[December 1998]

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