Martin Street · Nick Barton · Thomas Terberger (eds.)

Humans, environment and chronology of the late glacial of the North European Plain

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HUMANS, ENVIRONMENT AND CHRONOLOGY OF THE LATE GLACIAL OF THE NORTH EUROPEAN PLAIN

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CONTENTS

AUTHORS

Nick Barton
Institute of Archaeology
36 Beaumont Street
Oxford OX1 2PG, UK
nick.barton@arch.ox.ac.uk

Olivier Bignon
Archéozoologie, histoire des sociétés humaines et des peuplements animaux
UMR 5197 CNRS
and
Membre associé de l'équipe Ethnologie préhistorique
UMR 7041 CNRS Muséum national d'Histoire naturelle, Bâtiment d'Anatomie comparée
55 rue Buffon
F-75005 Paris
bignon@mnhn.fr

Przemysław Bobrowski
Institute Archaeology and Ethnology
Polish Academy of Sciences
Branch Poznań
Ul. Rubież 46
PL-61-612 Poznań
bobrowski@iaepan.poznan.pl

Erik Brinch Petersen
School of Archaeology
Saxo Institute
University of Copenhagen
Njalsgade 80
DK-2300 Copenhagen S
Tel.: +45/35329483
ebp@hum.ku.dk

Eva David
CNRS-UMR 7055 Préhistoire et Technologie
Maison Archéologie et Ethnologie
21, Allée de l'Université
F-92023 NANTERRE cedex
Tel.: +33/(0)1 46 69 24 22
Fax.: +33/(0)1 46 69 25 69
eva.david@mae.u-paris10.fr

Marc De Bie
Vlaams Instituut voor het Onroerend Erfgoed
and
Vrije Universiteit Brussel
Prehistoric Archaeology Unit
Celestijnenlaan 200E
B-3001 Heverlee
marc.debie@rwo.vlaanderen.be

Koen Deforce
Vlaams Instituut voor het Onroerend Erfgoed
Koning Albert II-Laan 19 bus 5
B-1210 Brussels
koen.deforce@rwo.vlaan-deren.be

Tom F. G Higham
Oxford Radiocarbon Accelerator Unit, RLAHA
Dyson Perrins Building
University of Oxford
Oxford OX1 3QY
UK

Roger M. Jacobi
Department of Prehistory and Europe
Franks House
The British Museum
London N1 5QJ
UK
and
Department of Palaeontology
Natural History Museum
London SW7 5BD
UK

Jacek Kabaciński
Institute of Archaeology end Ethnology
Polish Academy of Sciences
ul. Rubież 46
PL-61-612 Poznań
jacek.kabacinski@iaepan.poznan.pl

Michał Kobusiewicz
Institute of Archaeology & Ethnology
Polish Academy of Sciences
ul. Rubież 46
PL-61-612 Poznań
kobusiewicz@iaepan.poznan.pl

Krzysztof Kowalski
National Museum in Szczecin
Staromłyńska Str. 27
PL-70-561 Szczecin

Lars Larsson
Department of Archaeology and Ancient History
Lund University
Fack 117
S-221 00 LUND
Lars.Larsson@ark.lu.se

Tom C. Lord
Lower Winskill
Langcliffe, Nr. Settle,
North Yorks, BD24 9PZ
UK

Rebecca Miller
University of Liège
Service of Prehistory
7, place du XX août, bât. A1
B-4000 Liège
miller@ulg.ac.be

Pierre Noiret
University of Liège
Service of Prehistory
7, place du XX août, bât. A1
B-4000 Liège
pnoiret@ulg.ac.be

Jacques Pelegrin
CNRS-UMR 7055 Préhistoire et Technologie
Maison Archéologie et Ethnologie
21, Allée de l'Université
F-92023 NANTERRE cedex
jacques.pelegrin@mae.u-paris10.fr

Marta Połtowicz-Bobak
Instytut Archeologii UR
Ul. Hoffmanowej 8
PL-35 016 Rzeszów
martap@univ.rzeszow.pl

Tomasz Płonka
Instytut Archeologii Uniwersytetu Wrocławskiego
Szewska Str. 48
PL-50-139 Wrocław

Iwona Sobkowiak-Tabaka
Institute of Archaeology and Ethnology
Polish Academy of Sciences
ul. Rubież 46
PL-61-612 Poznań
iwona.sobkowiak@iaepan.poznan.pl

Martin Street
Römisch-Germanisches Zentralmuseum Mainz
Forschungsbereich Altsteinzeit
Schloss Monrepos
D-56567 Neuwied
street@rgzm.de

Thomas Terberger
Lehrstuhl für Ur- und Frühgeschichte
Universität Greifswald
Hans-Fallada-Straße 1
D - 17489 Greifswald
terberge@uni-greifswald.de

Marijn Van Gils
Vlaams Instituut voor het Onroerend Erfgoed
Prehistoric Archaeology Unit
Celestijnenlaan 200E
B-3001 Heverlee
marijn.vangils@rwo.vlaanderen.be

REBECCA MILLER · PIERRE NOIRET

RECENT RESULTS FOR THE BELGIAN MAGDALENIAN

Over the past 25 years, data concerning the Belgian Magdalenian have been recovered through the systematic excavation of cave sites located in the Meuse Valley and along tributaries of the Meuse in the Ardennes region and at open-air sites in Flanders. Recent syntheses include the analysis of Magdalenian chronology (Charles 1994; 1998), a study of the cluster of cave sites in the Lesse Valley (Stutz 1993; Teheux 1994) and critical analyses of the timing and processes of the Magdalenian colonization of Belgium and northern Europe (Charles 1996; Germonpré 1997; Housley et al. 1997; López Bayón 2000; Street et al. 1994). The most recently excavated sites include Chaleux (Otte 1994), Bois Laiterie (Otte / Straus 1997) and Trou Da Somme. The latest excavation at the latter site contributes new information to the discussion of Magdalenian re-colonization and settlement practices in Belgium.

Trou Da Somme

Trou Da Somme is located at the base of the Massif de la Roche-al-Rue near Waulsort, on the west bank of the Meuse river, 5 km west of Chaleux and other Lesse River sites. The site consists of two caves: the upper cave (TDS II), formerly occupied by the Da Somme family during the 19th century, and the lower cave (TDS I), which contains Late Magdalenian archaeological deposits (Fig. 1).

It was first excavated in 1954 by Verheyleweghen (1958; 1959) and subsequently by Léotard in 1988 (Léotard 1988; 1993), López Bayón in 1997 (López Bayón et al. 1997; 1998) and Miller in 1998 (Miller et al. 1998; Otte et al. 1999).

The stratigraphic sequence in TDS I is summarized as follows (Fig. 2): Sterile dolomitic sand (stratum 6) forms the base of the stratigraphic sequence. It is overlain by a uniform silty clay layer containing the Magdalenian occupation (stratum 5). Despite its overall uniformity, stratum 5 is characterized by a degree of disturbance, including pockets of dolomitic sand along the cave walls (stratum 4), and a large bad-

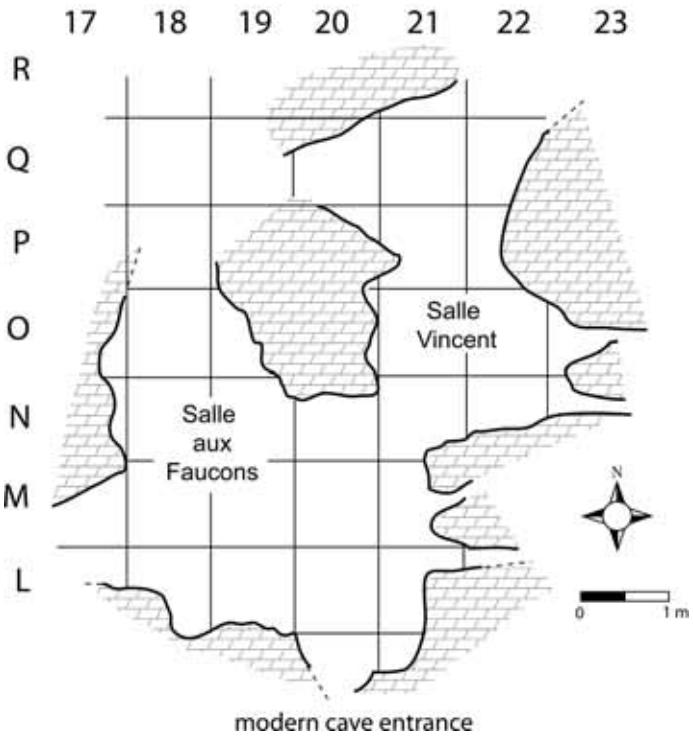

Fig. 1 Trou Da Somme, site plan.

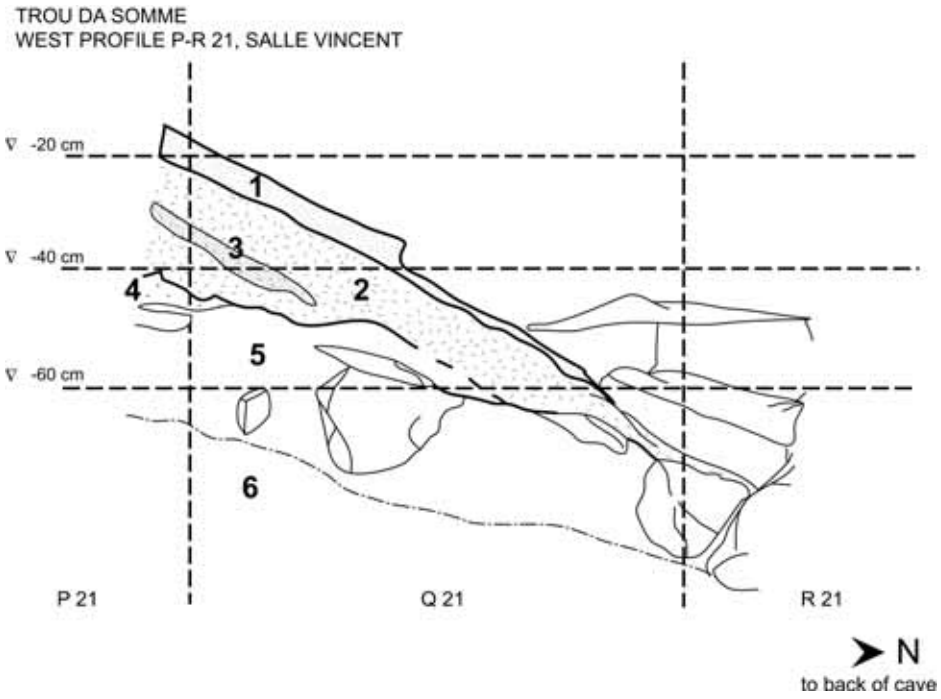

Fig. 2 Trou Da Somme, stratigraphic sequence.

ger den and other smaller, sub-modern, burrows of small mammals (vole and shrew) grouped as stratum 3. The deposits are capped by a thick stalagmitic layer, the lower part of which is porous (stratum 2) and the upper part a finely laminated stalagmitic floor (stratum 1), varying in thickness from 3 to 30 cm.

Belgian Magdalenian chronology

Largely as a result of Charles' (1994) doctoral research on Late Magdalenian chronology in the Ardennes, we have a fairly complete series of radiometric dates for the Belgian sequence ranging from early dates around 16 100 BP[1], but with questionable archaeological association, to 10 700 BP (**Fig. 3**).

Dates of 16 130 ± 250 (Lv-1558) and 16 270 ± 230 BP (Lv-1385) from Trou des Blaireaux (Vaucelles), layer III/1, were obtained on shed antler, but this material was not the result of human accumulation and a correlation with the rare lithics cannot be proven (Housley et al. 1997, 32-33). The earliest dates associated with human presence come from layer III/2 at this site (Lv-1433: 13 930 ± 120 BP) and Verlaine in the Ourthe Valley in eastern Belgium (Lv-690: 13 780 ± 220 BP). These fall within the Dryas I. The majority of dates are found during the »Bølling« climatic optimum, ranging from 13 330 ± 160 BP (OxA-4200) at Trou des Blaireaux to 12 150 ± 150 BP (Lv-686) at Coléoptère, while Trou du Frontal yielded a late date of 10 720 ± 120 BP (Lv-1135). The dates obtained show continuity in the occupation or re-occupation of sites such as Chaleux and Coléoptère over a period of several centuries.

Recent dates for Trou Da Somme also indicate re-occupation of this site, although post-depositional processes have made it impossible to identify separate occupation horizons. The date of 12 815 ± 75 BP (OxA-8308) makes the site penecontemporaneous with early occupations at Chaleux (OxA-4912: 12 860 ± 140 BP) and Trou du Frontal (OxA-4917: 12 800 ± 130 BP), while a second date (OxA-4199: 12 240 ± 130 BP) is penecontemporaneous with a later occupation at Chaleux (Lv-1568: 12 370 ± 170 BP).

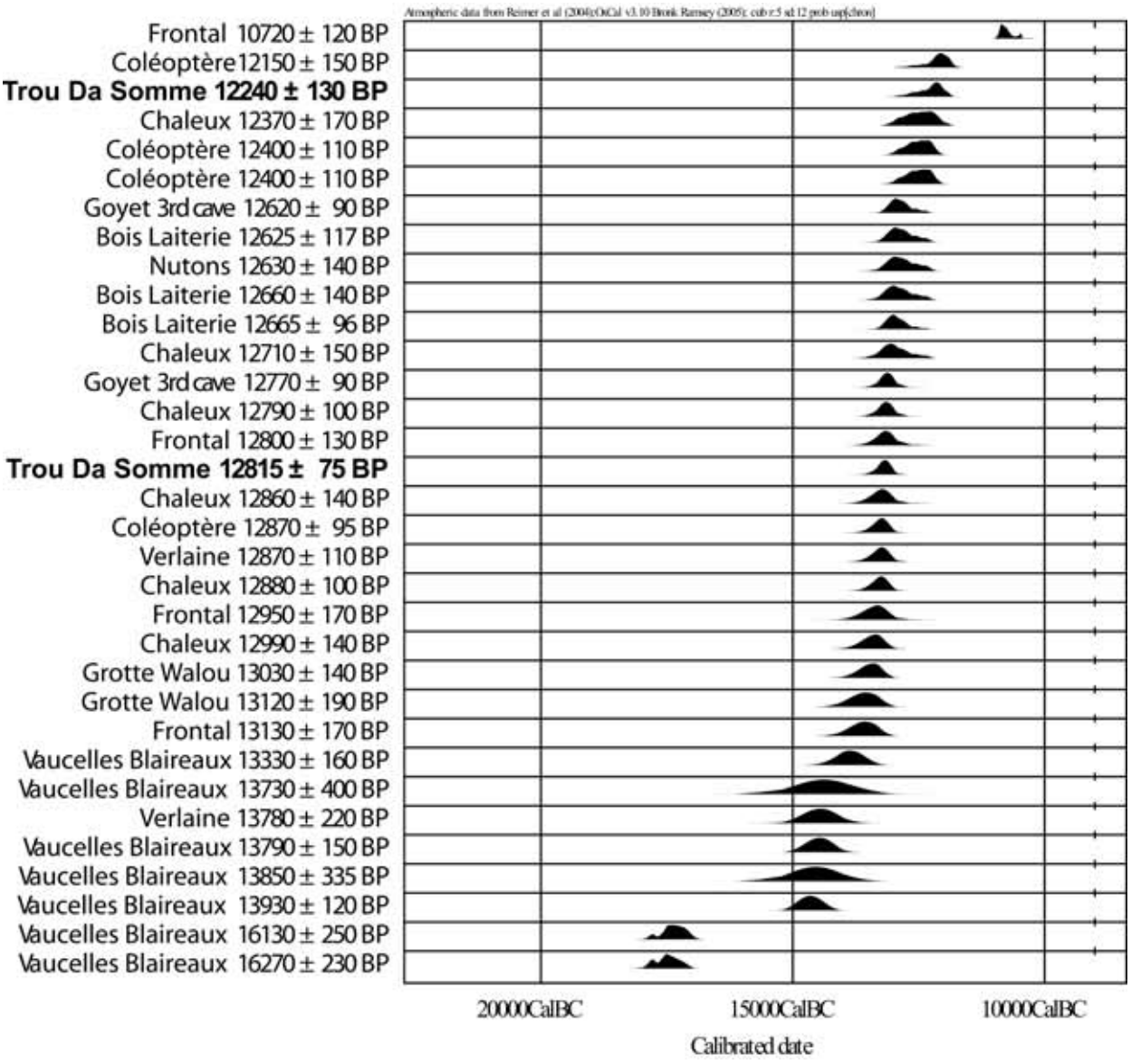

Fig. 3 Radiocarbon dates for the Belgian Magdalenian showing uncalibrated BP and calibrated BC dates (calibrated with OxCal v3.10).

Belgian Magdalenian site distribution (Fig. 4)

Two open-air Magdalenian workshop sites are known north of the Meuse, at Orp (**Fig. 4**, **1**) on the Brabant Plateau (Vermeersch et al. 1987; Vermeersch 1991) and Kanne (**Fig. 4**, **2**) in the province of Limburg near the Dutch border (Vermeersch / Lauwers / Van Peer 1985). Magdalenian cave sites form two occupation clusters. The Meuse Valley group of sites is primarily concentrated between Hastière and Namur, (**Fig. 4**, **4-9**), but also includes Vaucelles (**Fig. 4**, **3**) on the French border near Givet (Bellier / Cattelain 1983), the Goyet caves on the Samson River (**Fig. 4**, **10**) (Germonpré 1996; Germonpré / Sablin 2002) and Engis (**Fig. 4**, **11**) near Liège. Engis, however, could be considered rather to be part of the eastern cluster, the Ourthe Valley group. This smaller group of sites, including Verlaine, Coléoptère and Walou Cave, is concentrated south and east of Liège (**Fig. 4**, **12-14**).

Fig. 4 Location of the principal Magdalenian sites in Belgium. – **1** Orp, – **2** Kanne, – **3** Trou des Blaireaux, – **4** Trou Da Somme, – **5** Trou du Frontal, – **6** Trou des Nutons, – **7** Chaleux, – **8** Trou Magrite, – **9** Bois Laiterie, – **10** Grottes de Goyet, – **11** Engis, – **12** Verlaine, – **13** Grotte du Coléoptère, – **14** Grotte Walou.

Most stratified Belgian cave sites containing Mousterian and/or Aurignacian occupations also contain Magdalenian horizons (Trou Magrite, Goyet, Engis). However, the most of Magdalenian sites contain only a single occupation of this period or are overlain by more recent Late Glacial occupations (e. g. Grotte de Coléoptère). The Magdalenian population thus appears to have occupied the same territory as preceding Middle and Early Upper Palaeolithic populations, but to have exploited it differently. The addition of uniquely Magdalenian cave sites represents an increase in the number of caves that were previously unoccupied and thus a slightly higher density in occupation of the territory. Magdalenian sites vary in function and duration of occupation. They include larger sites such as Chaleux, Magrite and Goyet, which may have served as base camps, as well as smaller sites such as Trou Da Somme, Frontal, Nutons and Bois Laiterie, which may have been short-term camps for specialized activities. This seems to indicate an increase in familiarity with the territory occupied during the Magdalenian, with exploitation of caves within the known territory which were not previously exploited during the Middle and Early Upper Palaeolithic.

Re-colonization models

After a period of abandonment of northwest Europe during the Last Glacial Maximum, Magdalenian groups began to recolonize the region. López Bayón (2000) proposes a dual stage process for Magdalenian re-colonization of Belgium: an initial phase during the Dryas I characterized by short-term occupations, followed by the establishment of regular occupation/re-use of longer-term sites in Belgium during the »Bølling«. In his model, Magdalenian populations arrived from the northeast, with links to populations in the Rhine Valley. Other researchers propose migration from southwest to northeast and thus movement from the Paris Basin to the Meuse Basin and then on to the Rhine Basin (e. g. Rensink 1993). Teheux (1994) suggests an origin for the Belgian Magdalenian in the »Magdalénien à navettes« sites of northern France, citing similarities between Chaleux and La Garenne (Creuse, France).

Raw material exploitation

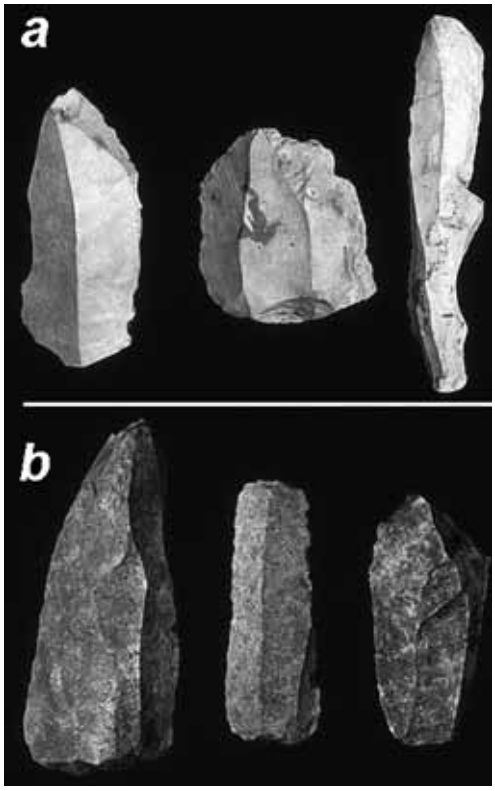

Fig. 5 Trou Da Somme. Main lithic raw materials. – **a** flint, – **b** silicified limestone.

Research on raw material exploitation and lithic sources for the western Meuse Valley group contributes to the question of recolonization or, at least, to the development of contacts between the western Belgian group and the Paris Basin after settlement of the upper Meuse Valley in Belgium. Two of the most commonly used lithic raw material sources at the western Belgian sites indicate exploitation of high quality Belgian flint (Fig. 5a) found to the north and northwest of the main concentration of Magdalenian sites and good quality silicified limestone (Fig. 5b) located to the west and southwest near Charleville-Mézières, France. Macroscopic comparison of flint from the cave sites of Trou Da Somme and Bois Laiterie and the open-air workshop sites of Orp and Kanne suggests that the fine-grained, white-patinated flint from the cave sites is similar to that from Orp. The flint at Kanne, in eastern Belgium near the Dutch border, is quite different, particularly with respect to cortical characteristics, and does not seem to have been transported to the western group sites. The white-patinated flint at Trou Da Somme appears to be identical to Bois Laiterie type 10.

The source of a second raw material, silicified limestone, is located in the Champagne region of France, near Charleville-Mézières, following the Meuse upstream into France (pers. comm., University of Liège). The term »silicified limestone« is that used by Penisson, but the material is actually a form of coarser-grained flint, mottled gray, opaque and matte, which does not patinate. This material is dominant at Trou Da Somme, comprising 57.2 % of the entire lithic assemblage. It is also present at Bois Laiterie, Chaleux and Frontal, but in lower frequencies (fine-grained flint is dominant at these sites).

Other raw materials, including other kinds of good quality flint, probably also from north of the Meuse, local quartzite and sandstone, have a minor presence at Trou Da Somme (each less than 5 % of the lithic assemblage).

Differences in reduction and tool production strategies can be observed in the Trou Da Somme assemblage structure, in response to differences in availability and quality of lithic raw materials exploited (Table 1). Technological activity at Trou Da Somme was focused on the reduction of small, prepared cores (mainly silicified limestone) and the resharpening of transported tools (patinated flint). When assemblage structure is examined in more detail, it can be seen that the main differences in reduction strategies are linked to blade and bladelet production. More blades were made on silicified limestone (45.5 % versus 35.0 %) and more bladelets on patinated flint (15.2 % versus 9.4 %). Crested blades are also more common on silicified limestone, and flakes more common on flint.

The inter-site distribution of raw materials suggests that the Meuse River acted as a conduit for Magdalenian population movement from the Paris Basin to western Belgium. Groups would have followed the Meuse Valley up- and downstream, transporting silicified limestone from near Charleville-Mézières and obtaining flint north of the Meuse once in Belgium. The eastern Ourthe Valley group may have had con-

	white patinated flint		silicified limestone		
Debitage class	n	%	n	%	Total
trimming flakes	18	7.6%	78	12.1%	96
shatter	4	1.7%	6	0.9%	10
flakes	85	35.9%	180	27.9%	265
blades	83	35.0%	294	45.5%	377
crested blades	1	0.4%	14	2.2%	15
bladelets	36	15.2%	61	9.4%	97
cores	1	0.4%	3	0.5%	4
burin spalls	5	2.1%	2	0.3%	7
tablettes		0.0%	1	0.2%	1
angular debris	2	0.8%	3	0.5%	5
platform renewal flakes	2	0.8%	4	0.6%	6
Total	237	100.0%	646	100.0%	883

Table 1 Trou Da Somme, assemblage structure.

nections with the Kanne workshop and Magdalenian populations in western Germany (e.g. Gönnersdorf and Andernach). However, the presence of fossil marine shells at sites in both Belgian clusters suggests affinities and/or contact between them, and thus a broader range of contacts extending from the Paris Basin to the Rhine Basin via Belgium.

Tools

A total of 199 tools was recovered, with backed bladelets most common (n=48), followed by end scrapers (n=27), pièces esquillées (n=26) and pieces with continuous retouch on one or both edges (n=25). Two multiple perçoirs of Chaleux type support a connection between Trou Da Somme and Chaleux. When broken down according to the two most common raw materials, it is evident that raw material characteristics influenced choices for different kinds of tools (**Table 2**). For most tool classes, silicified limestone and pati-

	patinated flint		silicified limestone		other flint
Tool class	n	%	n	%	n
slightly retouched	5	8.5	5	5.0	4
continuously retouched pieces	7	11.9	13	12.9	4
backed bladelets	18	30.5	25	24.8	3
burins	6	10.2	12	11.9	5
truncated pieces	2	3.4	6	5.9	3
borers	4	6.8	7	6.9	3
multi-borers (Chaleux type)	1	1.7	0	0.0	1
endscrapers	3	5.1	19	18.8	4
notches/denticulates	1	1.7	2	2.0	2
sidescrapers	0	0.0	1	1.0	0
splintered pieces	12	20.3	11	10.9	2
Total	49	100.0	92	100.0	31

Table 2 Trou Da Somme, tool frequencies for flint and silicified limestone.

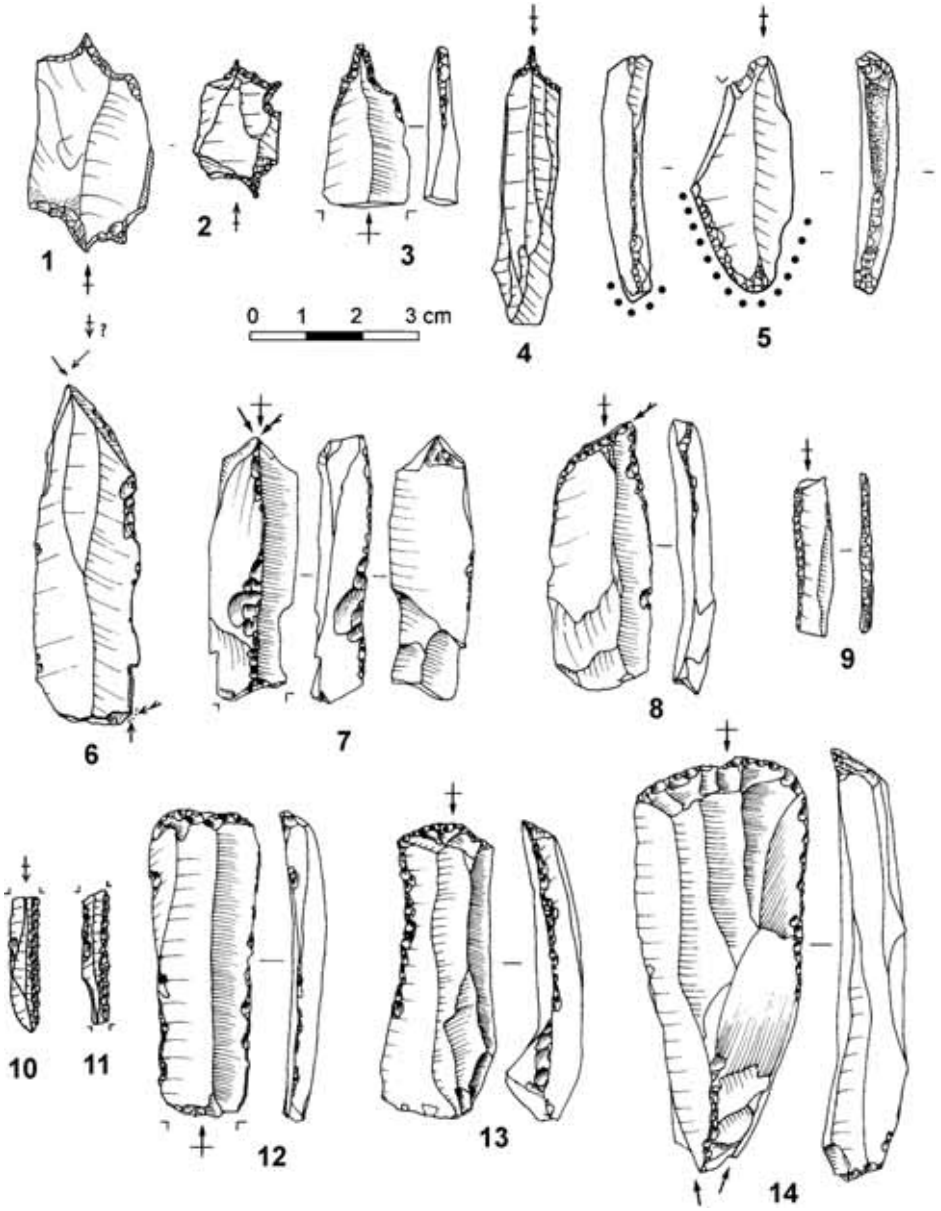

Fig. 6 Trou Da Somme, tools. Flint (1-9): – **1**-**2** Chaleux-type multi-perçoirs, – **3**-**4** perçoirs, – **5** retouched blade with edge smoothing, – **6**-**8** burins, – **9** backed bladelet. Silicified limestone (10-14): – **10**-**11** backed bladelets, – **12**-**14** end scrapers.

nated flint were exploited similarly. However, flint was preferred for backed bladelets (30.5 % versus 24.8 %) and pièces esquillées (20.3 % versus 10.9 %), and silicified limestone for end scrapers (18.5 % versus 5.1 %). Such preferences may be linked to variability in quality between the two materials - relative facility of producing bladelets on flint versus silicified limestone (quality with respect to reduction), to the relative durability of silicified limestone during activities using end scrapers, or to the relative susceptibility to splintering of flint during use (quality with respect to function). The range of tools and techniques corresponds well to the typical panoply of the northern Magdalenian in its late phase (**Fig. 6**). Such lithic tools were accompanied by tools made on bone (e. g., sagaies) to which they were directly linked by the fitting of armatures or indirectly by the necessity of mechanical preparation.

Factorial correspondence analysis (CA) and ascendant hierarchical classification (AHC) were carried out based on the percentages of tool classes at ten Belgian Magdalenian sites to explain, at least in part, vari-

Site	endscrapers n	endscrapers %	burins n	burins %	borers n	borers %	truncated tools n	truncated tools %	backed tools n	backed tools %	composites n	composites %
Chaleux (1865; 1985-88)	279	8.6	492	14.7	703	21.2	174	5.1	864	28.7	116	3.6
Coléoptère B	17	14.5	13	11.1	10	8.5	7	6.0	67	57.3	1	0.9
Frontal	16	9.3	37	21.5	32	18.6	20	11.6	46	26.7	9	5.2
Kanne	9	10.6	35	41.2	3	3.5	3	3.5	7	8.2	2	2.4
Nutons	8	14.8	9	16.7	13	24.1	5	9.3	17	31.5	0	0.0
Orp-east	53	12.1	220	50.2	14	3.2	14	3.2	36	8.2	8	1.8
Orp-west	22	15.4	66	46.2	7	4.9	5	3.5	2	1.4	8	5.6
Trou da Somme	27	13.6	24	12.1	16	8.0	11	5.5	48	24.1	0	0.0
Verlaine	23	11.1	21	10.1	19	9.2	14	6.8	80	38.7	4	1.9
Bois Laiterie (YSS)	21	8.6	35	14.3	18	7.4	23	9.4	89	36.5	2	0.8

Table 3 part 1 Typological tool frequencies and percentages by tool class for the main Belgian Magdalenian sites. Data sources: Chaleux (1865; 1985-88): Dewez 1987; Cabboi 1994; Teheux 1997. Coléoptère B: Dewez 1987. Frontal: Dewez 1987. Kanne: Vermeersch / Lauwers / Van Peer 1985. Nutons: Dewez 1987. Orp-East and Orp-West: Vermeersch et al. 1987. Trou Da Somme: Miller et al. 1998. Verlaine: Dewez 1987. Bois Laiterie: Straus / Orphal 1997.

ability between the sites (**Table 3**). Tool groups include end scrapers, burins, perçoirs (including becs, zinken, micro-perçoirs and multiple perçoirs), truncated tools, backed tools (primarily backed bladelets, but also backed blades and (very few) Azilian or Creswello-Hamburgian points), composite tools, pièces esquillées, retouched blades and flakes, and notches/denticulates. The class »diverse«, present in publications for several sites, was excluded from the analysis.

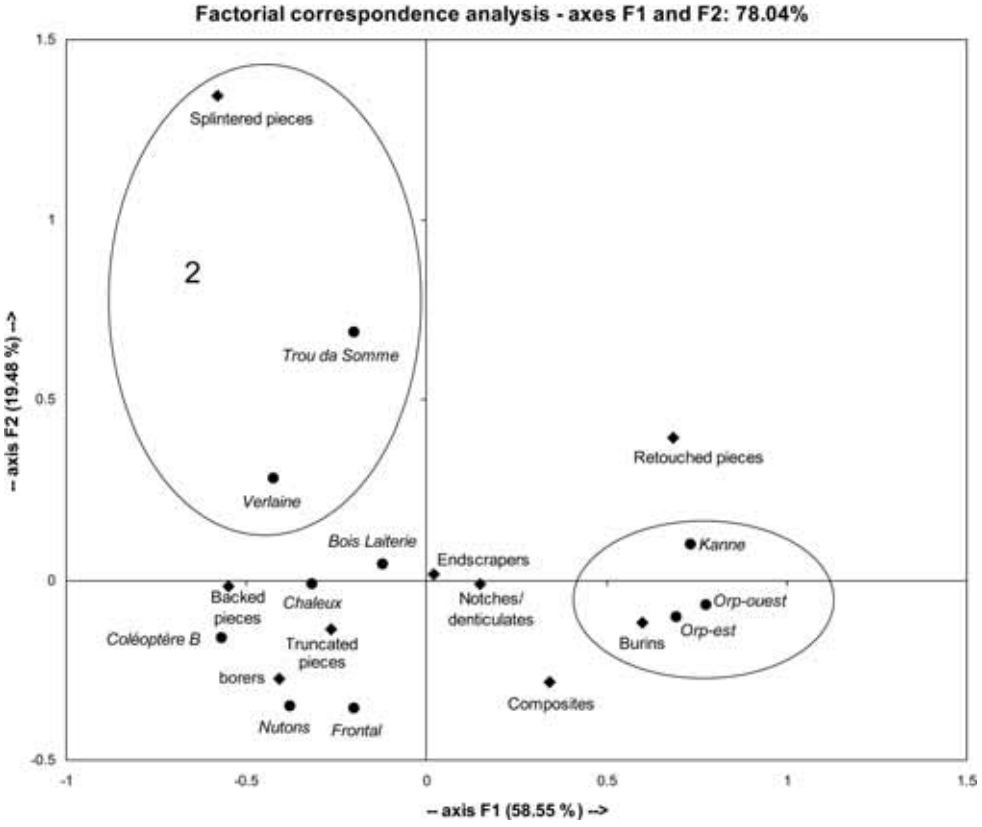

Fig. 7 Variability between ten Belgian Magdalenian sites shown by factorial correspondence analysis (CA) using percentages of tool classes: Factors F1 and F2.

Table 3 part 2 For table caption see Table 3 part 1.

Site	splintered pieces n	%	retouched tools n	%	notches/ denticulates n	%	others n	%	Total n	%
Chaleux (1865; 1985-88)	189	5.8	104	3.7	229	7.1	42	1.5	3192	100
Coléoptère B	0	0.0	2	1.7	0	0.0	0	0.0	117	100
Frontal	1	0.6	0	0.0	11	6.4	0	0.0	172	100
Kanne	0	0.0	21	24.7	5	5.9	0	0.0	85	100
Nutons	0	0.0	0	0.0	2	3.7	0	0.0	54	100
Orp-east	0	0.0	53	12.1	26	5.9	14	3.2	438	100
Orp-west	0	0.0	24	16.8	8	5.6	1	0.7	143	100
Trou da Somme	26	13.1	25	12.6	5	2.5	17	8.5	199	100
Verlaine	18	8.7	10	4.8	14	6.8	4	1.9	207	100
Bois Laiterie (YSS)	2	0.8	36	14.8	16	6.6	2	0.8	244	100

78.04 % of the variability between sites is explained by factors F1 and F2 (**Fig. 7**). First, F1 distinguishes between three sites (Kanne, Orp-East and Orp-West) and all other sites, which could reflect differences between these open-air sites (group 1) and cave sites, or workshop sites of group 1 and sites with other functions, including habitation sites and short-term hunting camps. F1 also opposes burins and backed tools. Referring to **Table 3**, group 1 is correlated with a high percentage of burins, while cave sites tend to have

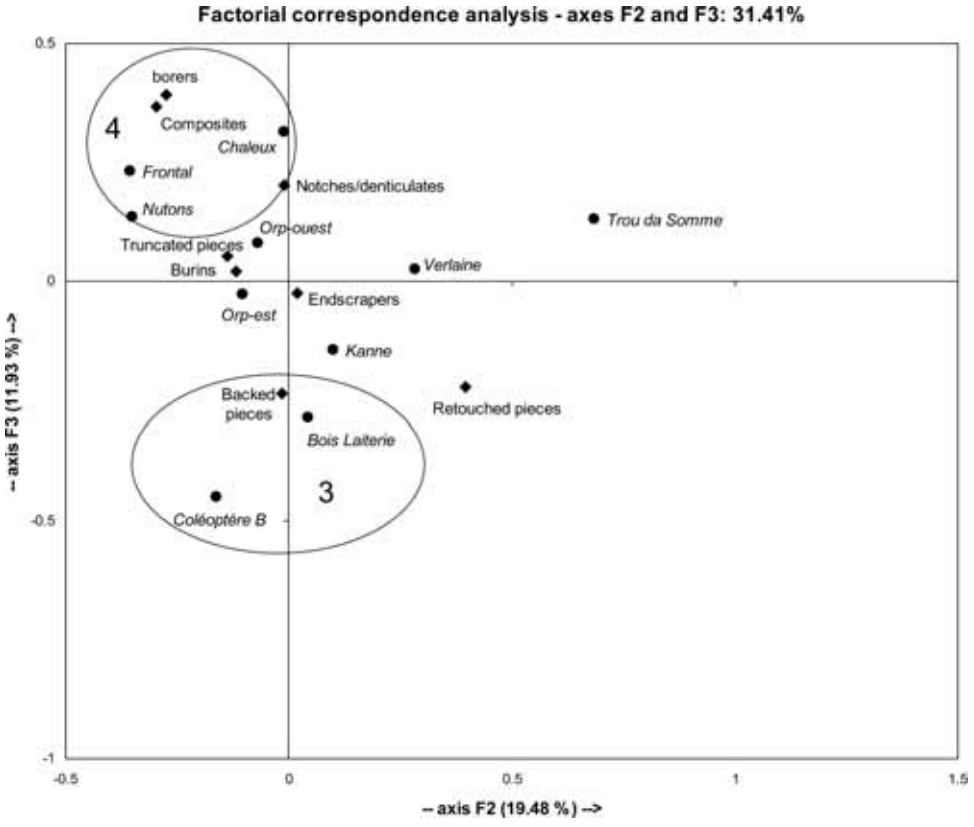

Fig. 8 Variability between ten Belgian Magdalenian sites shown by factorial correspondence analysis (CA) using percentages of tool classes: Factors F2 and F3.

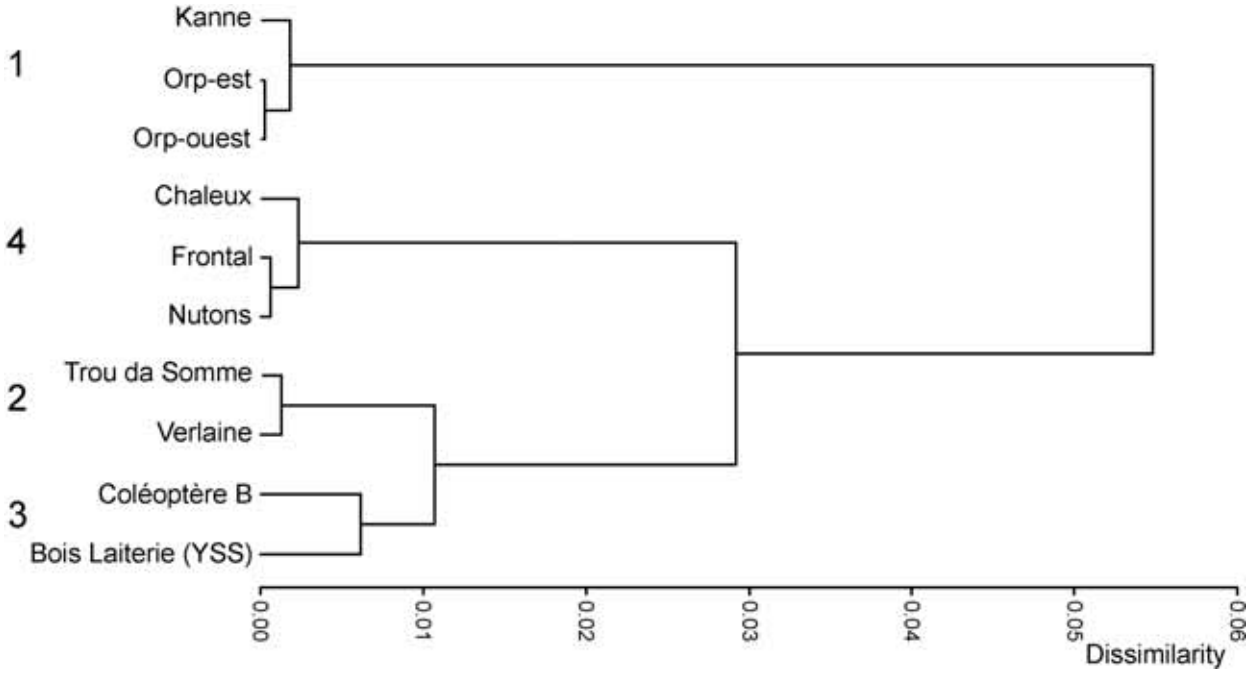

Fig. 9 Dendrogram summarizing the results of ascendant hierarchical classification for ten Belgian Magdalenian sites.

more backed pieces (ranging from 24-57 %). F2 shows a clear opposition between burins and pièces esquillées. It also opposes group 2 (Trou Da Somme, Verlaine) with all other sites. The group 1 sites each have greater than 40 % burins in their toolkits and no pièces esquillées. Group 2, in contrast, contains sites with splintered pieces (13.1 % at TDS and 8.7 % at Verlaine) and the lowest percentages of burins; Chaleux is the only other site with splintered pieces (5.8 %).

The combination of factors F2 and F3 (**Fig. 8**) explains 31.41 % of the variability between sites. F3 separates the cave sites into groups 3 (Bois Laiterie, Coléoptère B) and 4 (Chaleux, Frontal, Nutons) and also separates backed tools and perçoirs. Referring to again to table 3, Coléoptère B has the highest percentage of backed tools (57.3 %). The group 4 sites have the highest percentages of perçoirs, ranging from 18.6 % - 24.1 %; all other sites contain less than 10 %.

End scrapers, truncated tools, composites and notches/denticulates do not play a significant role in this classification of Belgian Magdalenian sites.

In sum then, F1 separates three sites (group 1) from other sites (groups 2 - 4); F1 and F2 separate group 1 sites from group 2 sites; and F3 separates group 3 sites from group 4 sites. On the basis of factorial correspondence analysis of tool classes, the ten analyzed Magdalenian sites form four groups:

Group 1: Kanne, Orp-East, Orp-West	burins
Group 2: Trou Da Somme, Verlaine	splintered pieces
Group 3: Bois Laiterie, Coléoptère B	backed tools
Group 4: Chaleux, Frontal, Nutons	perçoirs

Ascendant hierarchical classification (χ^2 distance, Ward criterion) on the first four factors (F1-F4) produces a dendrogram summarizing these results (**Fig. 9**). As shown by F1, group 1 differs from all other groups, and the dendrogram indicates that this is the most dissimilar contrast between groups of sites. This distinction would separate open-air and cave sites, or workshops versus sites with other functions. The group 4 sites (Chaleux, Frontal and Nutons) are quite similar and geographically close in the Lesse River valley. Chaleux is likely separated from the other two sites by the much larger size of the lithic assemblage, which itself reflects differences in site function (habitat). Group 4 is separated from groups 2 and 3 by the elevated percentage of perçoirs. Although found in the western and eastern groups respectively, the group 2 sites (Trou Da Somme and Verlaine) are similar in percentage for nearly all tool classes as well as toolkit size. Finally, the group 3 sites (Bois Laiterie and Coléoptère B) are separated from group 2 by their higher percentage of backed tools.

Fossil marine shells

Fossil marine shells, dating to the Tertiary and probably coming from the Paris Basin, have been recovered from most Belgian Magdalenian sites, in both the western (Chaleux, Bois Laiterie, Trou Da Somme, Frontal, Trou Magrite, Trou des Nutons and Goyet) and eastern (Coléoptère B, Verlaine) groups. Certain species are common both to Chaleux, which contained the highest number of shells, and other sites: *Bayania lactea*, *Glycimeris pulvinata* and *Hipponyx cornucopia*.
A single perforated fossil shell (*Bayania lactea*) was recovered from Trou Da Somme in 1997. This species is also found at other Magdalenian sites, including Chaleux, Coléoptère B and four specimens at Bois Laiterie. The double perforation was made by pressure and rotation while the same type of shell at Bois Laiterie was perforated by abrasion (López Bayón et al. 1996; Lejeune 1997).
It is of interest that such fossils are found both at Chaleux and the smaller cave sites, indicating a level of importance attributed to such objects. They may reflect notions of ethnic identity and territory, marking even short-term sites as belonging to the same settlement system. 64 fossils of a dozen different species were recovered from Chaleux and even Bois Laiterie, a small cave unsuitable for long-term occupation, contains eight fossils representing five different species. The type found at Trou Da Somme (*Bayania lactea*) is also found at both these sites, as well as at Trou Magrite and Coléoptère B. With respect to Paris Basin sites, Marsangy also has an example of *Bayania*; Étiolles and Bois Laiterie both have *Campanile giganteum*; Pincevent and Verberie have *Turritella* sp. in common with Chaleux, Frontal, Goyet and Verlaine, and *Ancillaria* sp. in common with Chaleux.

Plaques

Plaques of psammite, schist and sandstone have been found at several Magdalenian sites and Trou Da Somme is no exception. 290 fragments of stone plaques were recovered from both chambers, most often vertically oriented, indicating post-depositional movement, probably due to mudflow from the upper cave to the lower cave (see López Bayón et al. 1997). Refitting of 53 fragments in 22 series was possible. Three pairs were found inside the cave, each in close proximity, probably broken in situ without much subsequent disturbance. Another series joins pieces from the two chambers of TDS I, reflecting a greater degree of displacement. A series of five fragments gives an indication of the originally much larger size of the plaques. The transport of such plaques to the cave, probably for paving, reflects a significant degree of investment in making the site more habitable.

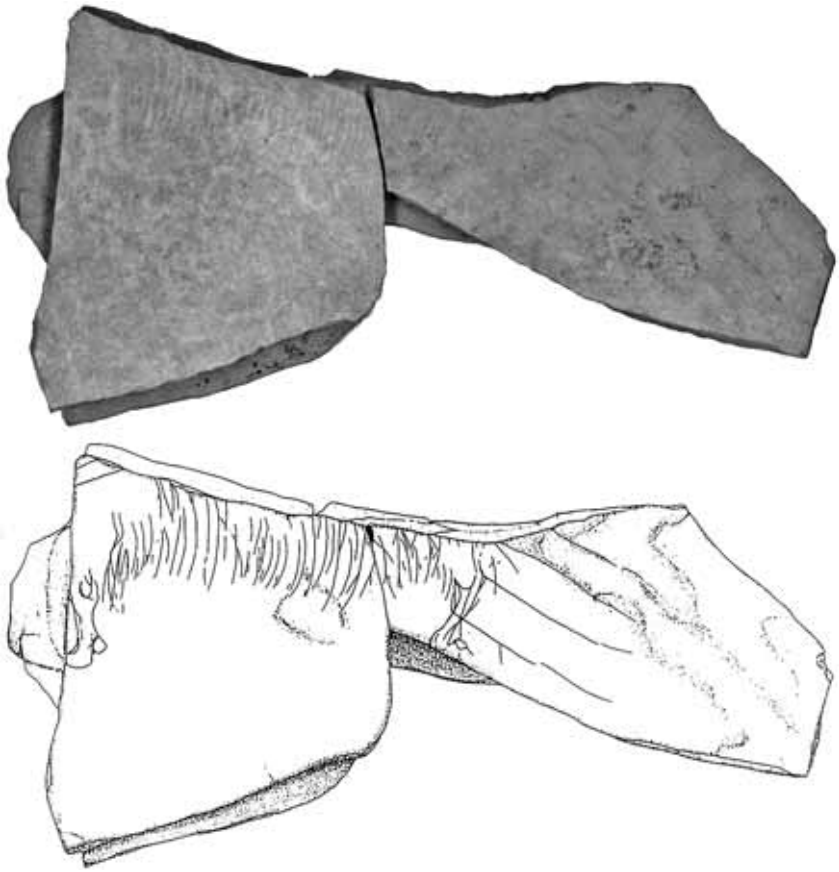

Fig. 10 Trou Da Somme: Engraved plaque.

Engraved plaque

Engraved plaques have also been found in Belgian Magdalenian contexts, often figurative and sometimes with abstract incised lines (possibly due to butchery rather than representing art), and including Trou Da Somme. Engraved plaques at Chaleux depict aurochs and reindeer, a plaque from Frontal depicts a bison, and an engraved reindeer antler from Nutons also depicts a bison, among other motifs (see Lejeune 1987). Two refitted fragments of an engraved plaquette were recovered from Trou Da Somme (**Fig. 10**). The drawing shows the left side of an animal with the front and back limbs and a series of curved lines representing the hair coat hanging from the belly. A series of four rectilinear lines is directed toward the rear limb, one of which is in contact with the limb and another which crosses it. Initial interpretation considered the engraving to represent a rhinoceros or bison rather than aurochs, a caprid, equid or mammoth (Lejeune 1993). However, a more recent interpretation takes into account zooarchaeological criteria and rejects interpretation as rhinoceros or bison: rhinoceros because this species has three digits on the fore- and hind limbs and a marked convex ventral line and bison because it has shorter hair and the ratio between bison limb and body length is disproportionate with that depicted (López Bayón et al. 1997, 74). Other taxa - gracile herbivores, carnivores and aurochs – are also rejected based on limb length and other biomorphological traits. Instead, a series of traits, including short limb length, a long hair coat that entirely covers the animal, hair that begins at the stifle and continues to the thigh, so that only the lower half of the limb lacks hair making details of the fetlock and dew-claw clearly visible, supports the hypothesis that the animal represented is musk ox (*Ovibos moschatus*), a species regularly found at Late Glacial sites in the region, Trou Da Somme included. At Goyet, a date of 12 620 ± 90 BP (GrA-3238) was obtained on musk ox bone.

I. López Bayón also proposes an interpretation of the scene represented based on ethology. The musk ox is less mobile and is less limited by environmental constraints than reindeer. At the end of the Late Glacial, faced with the progressive disappearance of reindeer, Magdalenian hunters would have adapted their hunting strategy to include musk ox. The defensive strategy of musk ox is to form a closed circle, facing outwards, to protect calves inside the circle. If the number of individuals is small, a defensive line is formed instead of a circle. While this would have made it difficult for hunters to attack calves and females, inexperienced and old males are expelled from the herd during the rutting season (August-September) and could have been more easily hunted.

Bone industry

A single fragment of a sagaie made of reindeer antler was recovered in 1988 and a sample from this artefact was used to obtain the date of 12 240 ± 130 BP (OxA-4199) (Charles 1994). The »grooving and splitting« technique used is comparable to that observed on the sagaies recovered at Bois Laiterie (López Bayón et al. 1997).

Discussion

A series of elements is regularly present at the western Belgian Magdalenian sites: use of psammite plaques for paving, presence of fossil shells of various kinds, engraved plaques and other mobile art, a developed antler and bone industry including sagaie points, needles and polishers, exploitation of the same lithic raw material sources. Even the smaller cave sites, such as Trou Da Somme, Bois Laiterie and Frontal, contain plaque paving, fossil shells and mobile art, suggesting both investment in such sites for probable regular re-use and the cultural importance of fossil shells and engravings even at sites of short-term occupation. Lithic sources indicate movement along the Meuse corridor from the Champagne region in France to the plateaus of Belgium. Such elements also link the Belgian sites with groups in the Paris Basin and Rhine Valley and indicate a degree of coherence in terms of population movement and/or contact at an interregional scale.

Note

1 All dates are given in uncalibrated years BP.

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Abstract / Résumé

Recent results for the Belgian Magdalenian

This paper presents the Belgian Magdalenian from the perspective of recent results from the cave site of Trou Da Somme and places the latter in relation to the other known Belgian Magdalenian sites, including caves in Middle Belgium (Chaleux, Bois Laiterie, Goyet, etc.) and open-air sites in Flanders (Orp, Kanne). Emphasis is placed on site function, chronology and lithic raw material procurement. Additionally, an engraved plaque found at Trou Da Somme will be discussed.

Résultats récents pour le Magdalénien Belge

On présente le Magdalénien belge du point de vue des récents résultats obtenus du site du Trou Da Somme, en le mettant en relation aux autres sites magdaléniens, dont des grottes en Wallonie (Chaleux, Bois Laiterie, Goyet,…) et des sites de plein air en Flandres (Orp, Kanne). On discute la fonction du site, la chronologie et l'économie lithique. De plus, on présente des données concernant une plaquette gravée provenant du Trou Da Somme.

Key-words

Magdalenian, Belgium, art, typology, recolonization models.

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